Greater Norwich Infrastructure Needs and Funding Study

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in partnership with:

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PLANNING, DESIGN AND ECONOMIC DEVELOPMENT WORLDWIDE

Final Report prepared for Greater Norwich Development Partnership

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Project Context

EDAW AECOM, in collaboration with Drivers Jonas, Faber Maunsell, and Gardiner & Theobald were commissioned in November 2008 by the Greater Norwich Development Partnership (GNDP) to review the infrastructure requirements associated with the delivery of new homes and associated employment development by 2031. In addition to identifying and costing the capital infrastructure required to support the proposed growth, the study also incorporates a review of local authorities' ability to raise developer contributions to cover the cost of delivering the infrastructure requirements and a review of the potential delivery options.

The study is an important part of the evidence base for the Joint Core Strategy for Broadland, Norwich and South Norfolk (the spatial planning strategy that sets out the long term objectives for development in the districts). The study will also be used to inform the development of the Greater Norwich Integrated Development Plan (IDP) this is the GNDPs investment plan and will be updated using this study and the emerging JCS. It sets out the key packages and projects that the Greater Norwich Development Partnership has identified as necessary for the sustainable delivery of housing and job growth targets for Greater Norwich.

Housing Growth

The Joint Core Strategy covers the period 2008 to 2026 and the Greater Norwich Infrastructure Needs & Funding Study (2009) covers the period from 2008-2031. Therefore there are differences in the number of homes and associated infrastructure required to support the growth across the two time periods.

- The Joint Core Strategy covers the period 2008-2026 and the total housing growth for this period is 37,000 across the three districts of Broadland, Norwich and South Norfolk.

- The Study was commissioned to cover the period 2008 to 2031 which extends the housing growth by an additional five years, makes allowance for windfall completions and extrapolates the total housing required to from 37,000 to 57,000.

The purpose of extending the timeline as part of the study was to ensure that any major infrastructure requirements, such as secondary schools, would be captured in the study so they can be planned for well in advance of requirements.

For the purposes of the study the infrastructure requirements were calculated for the phases ending 2016, 2021, 2026 and 2031.

Population Growth

To identify the infrastructure requirements it has been necessary to assess the potential population impacts. This included an assessment of the population that would be generated by (or supported within) new developments and the impact on demographic changes at the district level.

- Where growth is concentrated within a particular location, such as within the strategic growth locations, it is often sufficient to estimate **population generated by the new developments alone.**

- Where growth is more dispersed, or where infrastructure serves a sub-regional area it may be necessary to review the demand for infrastructure in the context of the **net population change**

occurring at the district or GNDP level. This approach considers the demographic changes that are occurring within the existing population in addition to the population change generated by the new development and assesses how these changes will affect the net demand for infrastructure.

Report Content and Structure

The report identifies the following infrastructure requirements:

- Social Infrastructure:
  - Education
  - Healthcare
  - Emergency Services
  - Community Facilities
  - Open Space and Green Infrastructure
  - Waste
- Transport
- Utilities

The report also provides details of any identified funding sources and recommendations on the delivery and management arrangements necessary to deliver this growth including:

- A review of the infrastructure delivery and funding arrangements
- An assessment of the potential **developer tariffs** which may contribute to the cost of providing the identified infrastructure, based on an assessment of local market conditions.
- A summary of infrastructure costs and funding

Infrastructure Requirements & Costs

In addition to phasing, the early identification of the costs of providing the required physical and social infrastructure is an essential element of preparing and planning for growth, not least as this will form an evidence base when bidding for government funding.

We have undertaken a cost assessment using an evidenced benchmarking exercise to determine the current costs associated with the delivery of each piece of infrastructure. The costs relate directly to the infrastructure required to deliver the growth trajectories, and are calculated using the assumptions set out in a Cost Report.

The report sets out the phasing and cost of providing social infrastructure facilities required to meet the demand arising from housing growth, having taken into consideration existing capacity and natural population changes. Opportunities for co-location with other facilities (such as community facilities and sports facilities) that have use and phasing synergies have also been included but there is scope for this to be investigated in more detail based on actual future plans etc.

In relation to Education, Utilities and Open Space we have identified that there is more than one approach to delivering the infrastructure. In some cases this is because further work is required to test that the least expensive option is deliverable and able to meet the requirements of service providers. This report sets out where appropriate the best case and worst case scenarios but assumes the worst case

scenario (most expensive option) as the default scenario so that infrastructure planning is sufficiently robust enough to cope with that eventuality. Despite this we would expect the best case (least expensive option) scenario to be achievable in most cases.

Education

The total cost of provision is almost £226m. Requirements include:

- 30 new pre-schools,
- 14 new primary schools, and
- 4 new secondary schools

This represents the maximum required provision and is consistent with the Norfolk County Council Children's Services' response to the favoured option for Broadland and South Norfolk, which assumes that the child yield is applied to the total development (i.e. it is not discounted for one bed accommodation or flats) and takes a pessimistic view of opportunities to increase student numbers through reconfiguration of existing facilities. The recommendations for Norwich are based on EDAW's analysis which consider existing capacity and demographic changes within Norwich and assume that additional facilities will be required to meet the residual demand.

Opportunities to co-locate pre-schools and primary schools and community facilities have been explored where phasing and location opportunities are present. Similarly, opportunities to co-locate sports facilities with secondary schools have also been investigated. In both cases there is scope for this to be investigated in more detail based on actual future plans etc.

Healthcare

The total cost of providing the necessary healthcare facilities is almost £64 million, which has been discounted to allow for:

- The non-healthcare costs associated with co-located facilities and
- Healthcare demand that is not directly associated with housing growth.

Where possible, dentists and GPs surgeries have been co-located with each other as Primary Care Centres. Following discussions with the Norfolk Constabulary, opportunities for co-locating healthcare facilities with Safer Neighbourhood Teams have also been identified.

Of the total costs, over half (£34 million) are associated with the provision of hospital beds, which will not necessarily be provided within the districts themselves.

Emergency Services

The total cost of providing the necessary emergency services facilities is £14.5 million, which has been discounted to allow for:

- The non-emergency services costs associated with co-located facilities and
- Demand that is not directly associated with housing growth.

Where possible the Safer Neighbourhood Teams have been co-located with Primary Care Centres and Community Facilities to minimise the cost of providing these facilities. This is based on discussions with the Norfolk Constabulary.
The costs associated with smaller and expanded facilities are higher per officer than the larger and co-located facilities, and where possible a smaller number of larger SNT facilities have been proposed.

Community Facilities

Community facilities and associated community facilities will cost in the order of £38.5 million across all areas and facility types.

In Broadland, The Rackheath / Sprowston Growth Triangle will generate significant demand for community and leisure facilities, including two sports centres, a swimming pool, four standard size community spaces and two standard libraries. There will also be demand for community space to serve the wider district.

By 2031 there will be a need for a swimming pool and at least eight indoor sports courts in Norwich. As this demand increases over the growth period, it may be prudent to develop a sport centre earlier in anticipation of this future demand whilst creating capacity to existing demand.

Growth within Norwich will require significant new community space coming forward throughout the growth period, and two additional standard size libraries during the latter phases. There may be capital and revenue cost savings by combining some of these facilities.

In South Norfolk Growth within any one of the specific growth locations is insufficient to generate demand for a new, standard size library or community space in isolation. Collectively, however, they generate the need for an additional library and 3 additional community spaces. The greatest demand arises in Long Stratton and Wymondham. As such, these locations may provide suitable locations for strategic facilities, although both locations have existing facilities already (a new library has however recently been built at Wymondham). In addition, there is significant demand for additional library and community spaces elsewhere in South Norfolk required throughout the growth period that could offer opportunities to locate strategic facilities.

The study has not taken into account privately run community facilities so there is scope to review actual requirements when development proposals come forward.

Green Infrastructure & Open Space

The total cost of providing the necessary green infrastructure and open space is just in excess of £288m. This includes provision of:

- Parks & Gardens
- Natural and semi natural greenspace (including green corridors)
- Informal/amenity open space
- Provision for children and young people (all play areas within other typologies)
- Outdoor Sport (all pitches, green and courts including those within other typologies)
- Allotments & community gardens

It is assumed, for the purposes of this study, that the open space will be delivered alongside development coming forward. Furthermore, there may be cost saving efficiencies in delivering green infrastructure and open space whilst delivering other infrastructure interventions, such as transport improvements. Opportunities for collaborative working in this way should be encouraged.

Waste

The total cost of providing the necessary increase in waste infrastructure is £770,000.

There is demand arising within the GNDP for the equivalent of two additional Household Waste Recycling Centres by 2026. Drawing on the findings above, and in discussion with waste managers at Norfolk County Council the preferred locations for these facilities would be to locate a new facility as part of

development in the Rackheath / Sprowston Growth Triangle, and to utilise opportunities to expand the existing facility at Wymondham.

Utilities

AECOM (formerly Faber Maunsell) have compiled the utilities assessment, investigating the electricity, gas, and water infrastructure requirements. Once loadings were established, AECOM worked with the utility providers EDF Energy (electricity) and National Grid (gas), as well as consultants working on Norfolk's Water Cycle Study, Scott Wilson, to establish infrastructure requirements. Due to a lack of detail regarding the locations of many of these proposed new dwellings, only those dwellings with specified locations, including smaller settlements, have been considered in detail as part of this study.

Electricity

The total cost for electricity infrastructure is almost £50m.

EDF Energy summarise the requirements as follows:

- major reinforcement works would be required in the Greater Norwich area to accommodate the growth proposals;
- a new Grid Substation will be required to the east of Norwich at an existing EDF Energy site on Green Lane;
- three new Primary Substations will be required across the area, while two existing Substations will require the replacement of the transformers and switchgear;
- significant lengths of 132kV and 33kV underground cables will be required to feed these new developments, the laying of which will have the usual impacts on traffic and local residents

Gas

National Grid were unable to provide an estimate of infrastructure cost related to growth due to insufficient detail in the proposals, although they did highlight where reinforcement measures are probably required.

Water

This assessment of water infrastructure has been informed the Stage 2a Water Cycle Study (WCS), prepared by Scott Wilson in September 2008. Stage 2b of the WCS, will further develop the understanding of infrastructure requirements and delivery options associated with growth is currently being worked on. As such, the information included within this report is based on the best knowledge available at this time, but will need to be updated ones the Stage 2b WCS has been completed.

Drawing on the Stage 2a WSC, it is predicted that the potable water infrastructure requirements maximum cost scenario would total £358,800,000. This would include:

- water mains and pumping stations from Heigham WTW to the development sites; and
- pumping stations and pipe work needed to maximise the existing boreholes; and
- pumping stations and pipe work needed for River Wensum reuse; or
- pumping stations and pipe work needed to link to the GOGDS; or
- civils, structural, excavation and land costs relating to water resource storage.

Stage2a of the WCS presents a range of options for delivering waste water infrastructure, and will be investigated further during Stage2b of the study. For the purposes of this study the worst case scenario of £99,530,000 has been incorporated into the cost projections.

Transport

The total cost of the proposed transport infrastructure is just over £389m

The Norwich Growth Area – Infrastructure Need and Funding Study (EDAW, 2007) sets out an assessment of the existing transport infrastructure and provides an evaluation of transport infrastructure demand based on two growth scenarios. Although the preferred proposed growth option subsequently determined differs from the growth scenarios reviewed in 2007, the evaluation is still partly applicable. As such, it has been agreed with the GNDP that no further analysis of transport infrastructure would be undertaken as part of this project and information on interventions included in this section have been identified through Norfolk County Councils ongoing transport work, including the refresh of the Norwich Area Transport Strategy (NATS). This work has identified a number of projects that will be required to support and facilitate the proposed growth, including:

- The Northern Distributer Road
- Highways / junction improvements
- Bus Rapid Transit
- Cycle Networks

Economic Development Activities

The GNDP Integrated Development Plan sets out a range of interventions that are necessary to support the sustained economic growth of the GNDP area. These projects and the associated capital costs (where identified) are considered as part of the overall infrastructure requirements necessary to support the proposed housing growth. These activities cost a total of £36.2 million.

Implementation

The successful delivery of infrastructure is dependent upon a well managed and regularly updated infrastructure delivery framework which should include:

1. Accurate housing and employment growth trajectories;
2. A full record of required and prioritised infrastructure;
3. A cost plan;
4. A funding plan, including all public and private sector funding sources;
5. A robust approach to maximising developers contributions;
6. Organisational Arrangements amongst various service providers, public sector agencies and the private sector.

The infrastructure delivery framework GNDP has developed as the Integrated Development Programme (IDP). The IDP is an evolution of GNDPs programme of development and will form the main delivery framework for the JCS. It sets out the key packages and projects that the GNDP has identified as necessary for the sustainable delivery of housing and employment growth targets for Greater Norwich. The study will form a key part of the evidence base and inform the update of the IDP.

Categorisation

We have categorised or prioritised the different elements of infrastructure relative to its importance in delivering growth. The three categories we have identified are critical, essential and necessary.

- **Critical infrastructure** is infrastructure that this study has identified which must happen to enable physical growth.
- **Essential infrastructure** is infrastructure that is required if growth is to be achieved in a timely and sustainable manner.

- **Desirable infrastructure** is infrastructure that is required for sustainable growth but is unlikely to prevent development in the short to medium term.

Table 1 below provides a summary of the total cost and the categorisation of the different infrastructure themes. It also provides an overview of the project funding that is discussed in the following section.

Table 0-1: Infrastructure Costs and Funding, by Infrastructure Type and Prioritisation

	Critical	Essential	Desirable	Total Costs	Associated Funding	Associated Funding Gap
Education	£0	£224,405,000	£1,620,000	**£226,025,000**	**£0**	**£226,025,000**
Healthcare	£0	£63,813,333	£0	**£63,813,333**	**£0**	**£63,813,333**
Emergency Services	£0	£14,467,500	£0	**£14,467,500**	**£0**	**£14,467,500**
Community Facilities	£0	£5,120,000	£33,410,000	**£38,530,000**	**£0**	**£38,530,000**
Open Space	£0	£288,245,472	£0	**£288,245,472**	**£0**	**£288,245,472**
Waste	£0	£770,000	£0	**£770,000**	**£0**	**£770,000**
Utilities	£507,269,000	£0	£0	**£507,269,000**	**£493,750,000**	**£13,519,000**
Transport	£263,500,000	£113,100,000	£12,500,000	**£389,100,000**	**£100,700,000**	**£288,400,000**
Economic Development	£0	£0	£36,290,000	**£36,290,000**	**£11,620,000**	**£24,670,000**
Additional Funding (Growth Point Funding)					**£14,220,526**	**-£14,220,526**
Total	£770,769,000	£709,921,305	£83,820,000	**£1,564,510,305**	**£620,290,526**	**£944,219,779**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.						

Source: EDAW AECOM/ Gardiner & Theobald

Funding

The report makes a broad assessment of the level of mainstream public funding, utilities AMP funding (a summary of which is provided in the table above), and private sector developer contributions that are either currently committed or are a reasonable future assumption. These assessments are based on discussions with the service and utilities providers during the study period, market analysis and land value capture projections and from our experience of work in the other growth areas. It should be noted that detailed further investigation of public funding sources will be required as part of the ongoing infrastructure planning process. Once the JCS has been adopted and infrastructure providers understand what is required and when a clearer funding picture will emerge the infrastructure delivery framework can be updated.

In reality, whilst the funding sources identified in the report will make a significant contribution towards the funding gap other funding sources and mechanisms will be need to explored and used to provide the cocktail of funding needed to fill the funding gap. The report identifies some of those that should be given consideration including:

- Prudential Borrowing
- Development Agreements
- Local Asset Based Vehicles
- Regional Infrastructure Funds
- Tax Increment Financing
- Business Rate Supplement

Assessing the Opportunities for introducing a tariff based charge

The Government believes that the infrastructure needed to support development should be at least partly funded by owners of land who benefit when planning permission is granted for development.

The key to a successful tariff model is that it is affordable and viable in the marketplace so as not to prevent development being brought forward. We have therefore undertaken a detailed analysis on the local property market and in the report we set out a few of the most salient points that will affect the setting of tariff policy and the potential income that can be derived from developer contributions. In setting the level of tariff, consideration needs to be given to the different market conditions within the region and we have identified a number of discernible sub-markets within Greater Norwich with different cost and value characteristics.

We have identified the cost of infrastructure for each of the growth locations and identified the cost of infrastructure by dwelling. This provides an understanding of the level of required developer contributions per dwelling required to bridge the funding gap.

Given the market context both geographically and over time we have carried out an assessment of the level of tariff that could be achieved based on current and strong market conditions across each of the residential market areas. In setting the charging schedule, consideration will need to be given to applying a variable rate of tariff, particularly for schemes that come forward in the short term, which would otherwise be unviable.

We undertook appraisals for each of the districts, with two sets of appraisals being carried out for South Norfolk for each of the housing market areas identified in this district. The appraisals were based on current sales values and values being achieved during the last peak in the housing market. Given the different nature of residential development within Norwich city in comparison with South Norfolk and Broadland i.e. higher density and predominantly flatted schemes, we applied different density and unit mix assumptions for Norwich City.

To provide an indication of the potential maximum tariff levels that could be applied to residential developments we have used a single hectare development model to assess viability.

Potential Tariff Requirements

- Within Norwich a tariff of £19,469 per dwelling would be needed if contributions from residential schemes are to bridge the funding gap identified. Although this could be achievable for an average sized scheme with housing grant, due to the individual nature of development sites within Norwich flexibility is needed to take into account site specific viability issues.

- Within Broadland the residential tariff required to fund the infrastructure needed for the Sprowston growth area is £28,603 significantly higher than for the rest of Broadland at £6,844. Whilst the tariff rate required for the rest of Broadland is achievable, the rate needed for the growth area is challenging and is likely to only be viable for agricultural sites with no alternative use value and where housing grant is available. This will still require landowners to agree to sell their land at significantly lower values in comparison to values that have been achieved previously.

- The residential tariff requirements for the South Norfolk strategic growth locations range from £10,992 in Cringleford to £61,071 in Wymondham. The detailed requirements by growth location are provide in Table 16-5. Given the range of funding gaps within these areas, the Norwich Housing Market area of South Norfolk and mid South Norfolk area residential schemes will generally only be able to achieve the tariff rate required to cover the funding gap in strong market conditions, on agricultural sites with no alternative use value, and where housing grant is available. However this will require landowners to agree to sell their land at significantly lower values in comparison to those that have been achieved previously.

- Within the rest of South Norfolk a tariff of £20,076 is required and this level of tariff may only be viable for agricultural sites with no alternative use value. In weak market conditions housing grant is likely to still be needed. However this will require landowners to agree to sell their land at significantly lower values in comparison to those that have been achieved previously.

Tariff Policy Options

Given the varying market and policy characteristics and different infrastructure requirements between each of the districts, a variable tariff policy is recommended across Greater Norwich. There are a number of options for this:

1. A district wide tariff rate for Norwich, South Norfolk and Broadland.
2. A tariff rate for each of the growth areas with a separate tariff for the rest of each district.
3. A tariff for each of the housing market areas.

There are a number of issues that need to be considered when establishing the tariff policy, particularly the potential impact on development activity and compliance with current national planning policy.

Review of tariff policy

Given the level of tariff that is required in comparison to historic s.106 contributions, and the potential impact this could have on land values, an adjustment in the market will be required, from both landowners and developers. The public sector will also need to support this process, for example through the provision of additional funding to pump prime infrastructure investment.

Given the time it will take to deliver the infrastructure needed to support future residential and commercial development any tariff policy will need to be reviewed on a regular basis in order to adjust to changing circumstances such as general market conditions, availability of other funding sources, changes in infrastructure requirements and costs. Any review may consider:

- the impact of the policy on development and the market
- the level of contributions secured in comparison to what was achieved prior to the policy being in place
- whether the policy needs to be changed

The infrastructure costs are likely to change over time and the tariff levels will need to be adjusted to reflect this. Going forward GNDP should seek legal advice on the approach taken to setting the tariff rate and the options as to how it could be applied, valuation advice on how to accommodate fluctuations in land values and prices & consult with developers, landowners and the general public on the proposed tariff policy. Recent developments in relation to Community Infrastructure Levy (CIL) may have an impact on the assumptions set out in this report in relation to developer contributions.

Community Infrastructure Levy (CIL)

On July 30th DCLG issued more detailed guidance on the introduction of the CIL regulations, which are due to come into force in April 2010. Our report was written prior to this guidance being issued and therefore the methodology was developed to include the consideration on S106, Tariffs and CIL. The guidance raises a number of issues which will need to be borne in mind when considering establishing a developer contribution policy. In particular it suggests that under a new CIL regime tariffs would not be appropriate and instead CIL should be applied. A consultation exercise is currently underway, which is due to finish on October 23rd. DCLG intend to publish revised regulations in early 2010 taking into account the feedback obtained during the consultation process, at which time it should become clearer how CIL will work in practice. The difference in applying a CIL approach instead of a tariff approach will affect the way that infrastructure costs are apportioned across the whole of the NPA instead of different growth locations and the level of a medium-tariff as opposed to an optimum tariff. However, until the

regulations come into force it is difficult to pre-judge what the Government's final decision will be on these points. The important point with regards to this study is that the evidence, methodology and approach will be capable of being used to underpin a S106, a tariff or a CIL-type policy.

Summary Funding Position

As set out in detail in chapter 17 the level of potential tariff is based on the following key variables:

- the strength of the property market
- the land value
- the availability of housing grant

Using the range of tariffs identified earlier in the report we have made an assessment of the total amount of funding that tariffs could generate across the whole of growth area based on the following two scenarios:

Scenario 1 – High Land Values with housing grant
Scenario 2 – Low Land Values with housing grant

(The definition of High and Low Land values can be found on page 220)

In both scenarios we have assumed that the current weak market will last until 2014 and return to a strong market for the remainder of the growth period.

As described below, the potential developer contributions for residential and employment land ranges from £392.0 million to £834.9 million, reducing the total funding gap between £552.2 and £109.3 million respectively.

Scenario 1: High Market Value for Residential and Employment Land

The table below shows the funding position based on the level of tariff that could be achieved assuming the high land values identified in Chapter 16 (closer to their 2007 peak values) and full housing grant. The table shows that in this scenario the growth area would face a funding gap of £552.2 million over the growth period with a significant funding shortfall in the earlier years of development.

Table 0-2: Accounting for Land Value Capture: Scenario 1, High Land Value

Cost / Income Analysis						
	2008/09-2010/11	**2011/12-2015/16**	**2016/17-2020/21**	**2021/22-2025/26**	**2026/27-2030/31**	**Total**
Funding GAP: Before LVC	£45,865,956	£279,944,746	£135,904,931	£176,310,111	£306,194,036	£944,219,779
LVC: Residential: High Market Value	£1,682,000	£44,362,000	£115,544,000	£104,873,000	£120,319,000	£386,780,000
LVC: Employment Land: High Market Value	£0	£326,155	£1,630,777	£1,630,777	£1,630,777	£5,218,485
Total Funding GAP after LVC: High Market Value	£44,183,956	£235,256,590	£18,730,154	£69,806,334	£184,244,260	£552,221,294
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in						

the light of future economic, market and policy changes. They will be subject to periodic review.

Source: EDAW AECOM

Scenario 2: Low Market Value for Residential and Employment Land

The table below shows the funding position based on the level of tariff that could be achieved assuming the lowest land values identified in Chapter 16 and full housing grant. The table shows that in this scenario the growth area would face a much reduced funding gap of £109.3 million.

Table 0-3: Accounting for Land Value Capture: Scenario 1, Low Land Value

Cost / Income Analysis						
	2008/09-2010/11	2011/12-2015/16	2016/17-2020/21	2021/22-2025/26	2026/27-2030/31	Total
Funding GAP: Before LVC	£45,865,956	£279,944,746	£135,904,931	£176,310,111	£306,194,036	£944,219,779
LVC: Residential: Low Market Value	£2,436,000	£83,374,000	£251,827,000	£229,111,000	£254,798,000	£821,546,000
LVC: Employment Land: Low Market Value	£0	£834,424	£4,172,122	£4,172,122	£4,172,122	£13,350,789
Total Funding GAP after LVC: Low Market Value	£43,429,956	£195,736,321	-£120,094,191	-£56,973,011	£47,223,915	£109,322,990
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.						

Source: EDAW AECOM

In both cases the overall costs include the maximum estimated costs scenario for Education Provision, Water Infrastructure and Open Space. Significant cost savings would be generated by approaching the 'best case' scenario for each of these infrastructure types and meeting the best case scenario in any category would close the funding gap in the Scenario 2 (low land value) and reduce the funding gap in the Scenario 1 (high land value) to £176,791,875.

An overview of the potential costs savings are provided in the table below.

Table 0-4: Best and Worst Case Cost Scenarios for Education, Open Space and Utilities

	Worst Case Costs	Best Case Costs	Potential Cost Saving
Education	£226,025,000	£101,665,000	£124,360,000
Open Space	£288,245,472	£183,038,053	£105,207,419
Utilities	£507,269,000	£410,339,000	£96,930,000
Total	**£1,021,539,472**	**£695,042,053**	**£326,497,419**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.			

Source: EDAW AECOM

The headline implications of adopting the best base infrastructure costs are provided in the table 17-5 below. These are presented for the whole of the growth period.

Table 0-5: Infrastructure Costs and Funding Overview Adopting Best Case Costs

Cost / Income Analysis	
	(Total 2008-31)
Education Costs	£101,665,000
Healthcare Costs	£63,813,333
Emergency Services Costs	£14,467,500
Community Facilities Costs	£38,530,000
Open Space Costs	£183,038,053
Waste Costs	£770,000
Utilities Costs	£410,339,000
Transport Costs	£389,100,000
Economic Development Costs	£36,290,000
Total Infrastructure Costs	**£1,238,012,886**
Total Public / Private Funding	£523,360,526
Funding GAP - Before LVC	**£714,652,360**
LVC: Residential - High Market Value	£386,780,000
LVC: Employment Land - High Market Value	£5,218,485
Total Funding GAP after LVC - High Market Value	**£322,653,875**
LVC: Residential - Low Market Value	£821,546,000
LVC: Employment Land - Low Market Value	£13,350,789
Total Funding GAP after LVC - Low Market Value	**-£120,244,429**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.	

Source: EDAW AECOM

The Public and Private sector funding refers to the funding linked to specific projects, identified in Section 2. This includes funding associated with the utilities providers Asset Management Plans (AMPs), the Community Infrastructure Fund (CIF), and the Regional Funding Allocation (RFA).

The table above shows that assuming low market land values and best case scenario regarding costs that the funding gap could be closed.

Co-ordination and Management

The successful delivery of sustainable and timely employment and housing growth is dependent on strong co-ordination, management and governance. The current governance and support arrangements are based around a voluntary partnership arrangement which has evolved and strengthened over time.

Delivery of the projects within the Growth Programme will be coordinated through the Implementation Unit with strong links into all four Local Authorities.
The Greater Norwich Development Partnership is a successful decision-making, effective body with a proven track record for delivery.

Although the Implementation Unit has grown and strengthened recently and the Partnership at the Director and Member level is working well, it is generally accepted that more formal arrangements are required to engage and work with the full range of infrastructure delivery providers. This will be particularly important in trying to deliver efficiencies through innovative approaches to service delivery such as co-location or shared services.

Going forward, GNDP should use this infrastructure and funding study as a starting point for discussion with the three LSPs operating in the sub-region to identify if there are any opportunities for them to work together on the growth agenda and take a lead on specific infrastructure themes within the plan.

Recommendations/Next Steps

- GNDP should use the findings of this study and work with in particular with social infrastructure service providers to identify innovative ways to further reduce the costs of infrastructure through co-located and/or integrated facilities. This should also consider changes in service provision e.g. community-based healthcare provision, and community-based play/sport education provision so that dependence on new-built actual facilities is reduced and expansion or intensification of existing facilities is maximised.

- Particular attention should be given to Education, Potable Water & Open Space as these infrastructure themes offer the greatest potential for cost saving. Intensive work should be undertaken in the short term to develop delivery solutions that are closer to the 'best case' cost scenarios set out in this report.

- GNDP should establish a formalised way of working with infrastructure providers to review and update the information contained within this report on a regular basis making it able to respond quickly and easily to changes in growth trajectories or local or national political priorities. As part of managing the growth agenda the recommendations should be monitored and updated when new information becomes available or as external factors change.

- GNDP should take the lead role and be seen as the organisation that provides accurate and current information about development progress against the housing and employment growth trajectories allowing infrastructure providers to plan for and fund the delivery of infrastructure in a timely and responsive manner.

- In some cases local planning authority policy decisions have a significant impact on the cost of delivery of infrastructure, e.g. provision of Open Space in South Norfolk. In these cases a review of policy may be necessary make the delivery of the infrastructure possible.

Funding and implementation Strategy

- GNDP should develop a funding strategy which includes an action plan on how to maximise the broad range of funding opportunities included in this report. This will need to consider the amount and timing of funding that is required taking into account the timescales for delivering the infrastructure. The strategy should have short term objectives which include identifying a

range of actions to maximise existing grant fund sources and the potential of the HCA. The strategy should include medium to long term objectives which allow GNDP to be ready to emerging funding sources such as TIF by having the appropriate management and governance arrangements in place.

Maximising Developer Contributions

- GNDP should establish a working group with representatives from the County Council and the three districts to review and explore the issues and options relating to the introduction of a development tariff set out in this report. This should include obtaining legal advice on the options, particularly in terms of their compliance with current planning policy guidance.

- The working group should develop a draft development plan document (Supplementary Planning Document to the Joint Core Strategy) setting out the tariff policy, which will need to be consulted upon with the public, landowners and developers.

- Going forward GNDP should seek legal and additional valuation advice on the approach taken to setting the tariff rate options as to how it could be applied and how best to consult with developers, landowners and the general public on the proposed tariff policy.

Section 1:
Introduction and Growth Context

1 Introduction

1.1 Project Context

EDAW AECOM, in collaboration with Drivers Jonas, Faber Maunsell, and Gardiner & Theobald were commissioned in November 2008 by the Greater Norwich Development Partnership (GNDP) to review the infrastructure requirements associated with the delivery of 57,500 new homes and associated employment development by 2031. In addition to identifying and costing the capital infrastructure required to support the proposed growth, this study also incorporates a review of local authorities' ability to raise developer contributions to cover the cost of delivering the infrastructure requirements and a review of the potential delivery options.

The study is an important part of the evidence base for the Joint Core Strategy for Broadland, Norwich and South Norfolk (the spatial planning strategy that sets out the long term objectives for development in the districts). The study will also be used to inform the development of the Greater Norwich Integrated Development Plan (IDP) which sets out the key packages and projects that the Greater Norwich Development Partnership has identified as necessary for the sustainable delivery of housing and job growth targets for Greater Norwich.

This study follows on from the *Norwich Growth Area – Infrastructure Needs and Funding Study (EDAW, 2007)* which identified the infrastructure requirements of 33,000 additional dwellings within the Norfolk Policy Area (NPA), as set out in the East of England Plan. This previous study was based on two hypothetical growth options which were developed by the GNDP and while this study will review the assumptions adopted in the previous study, the analysis will supersede rather than update its conclusions reflecting:

- Geographic Scope – this study will review the infrastructure requirements of the broader Greater Norwich Area, which includes the whole of Broadland, Norwich, and South Norfolk.
- Revised Housing Trajectories – this study will model the infrastructure requirements of the housing trajectory laid out in Chapter 2. These trajectories are based on actual housing locations, as opposed to hypothetical scenarios.

1.2 Growth Context

The Greater Norwich Development Partnership (GNDP) includes Broadland District Council, Norwich City Council, South Norfolk Council, and Norfolk County Council. It is currently in the process of developing a Joint Core Strategy for the area covered by the three lower tier local authorities[1]. Under proposals identified in the East of England Plan, the GNDP area faced a growth target of 37,500 new homes between 2001 and 2021. However, this growth target has subsequently increased to 47,500 new homes between 2001 and 2026 in the Joint Core Strategy Public Consultation (March 2009). It is also likely that additional homes will be required as a result of the ongoing review on the Regional Spatial Strategy (RSS) between 2026 and 2031, which for the purposes of this study is assumed to be 10,000 homes..

This significant level of housing growth will also be associated with an increase in employment across the GNDP area. Building on the initial RSS target, this study also assumes that employment across the GNDP area will grow in the order of 42,000 jobs between 2008 and 2031.

[1] Excluding that area where the Broads Authority is the Local Planning Authority.

1.3 Report Content and Structure

This report identifies the infrastructure requirements associated with the delivery of the proposed housing growth across GNDP between 2008 and 2031. These findings are based on the assumptions laid out in the *Key Assumptions Paper (EDAW, May 2008)* whose contents were agreed with GNDP and the relevant stakeholders.

The report also provides details of any identified funding sources and recommendations on the delivery and management arrangements necessary to delivery this growth.

The infrastructure requirements identified in this report are those associated with:

- Social Infrastructure, including:
    - Education
    - Healthcare
    - Emergency Services
    - Community Facilities
    - Open Space and Green Infrastructure
- Transport
- Utilities

The remainder of this report is based on the following chapters:

- An overview of the **housing projections** by strategic growth location
- A detailed summary of the **housing size and tenure mix** assumptions which underpin the population impacts
- The **population impacts** associated with the proposed developments
- A review of the **social infrastructure requirements** under each of the categories identified above
- A review of the **utilities infrastructure** necessary to support the growth proposed in the housing trajectories
- A review of **transport infrastructure** necessary to support the proposed growth
- A review of the infrastructure delivery and funding arrangements
- An assessment of the opportunities for introducing **a tariff based charge** which may contribute to the cost of providing the identified infrastructure, based on an assessment of local market conditions.
- A summary of infrastructure costs and funding

1.4 Key Assumptions & Methodological Considerations

The findings of this study are based upon a range of key assumptions and methodologies. These were set out in detail in a Key Assumptions Paper that was agreed with the project client group during the early stages of the project. Certain sections of the paper are restated in the relevant areas of this report. A full copy of the key assumptions paper can be found in Appendix B.

2 Housing Projections

2.1 Introduction

The 2007 Infrastructure Needs and Funding Study was undertaken at the early stage of the Joint Core Strategy preparation and was based around two hypothetical growth scenarios allowing the quantification of infrastructure requirements at the global level. However, since the completion of the 2007 study:

- The GNDP area housing target has increased to 57,500 homes for the period 2001 to 2031
- GNDP and the district councils have agreed detailed housing trajectories to 2031

Consequently, it is necessary to update the findings of the 2007 study to reflect the greater level of proposed housing growth and to provide a greater level of detail concerning the potential scale and distribution of infrastructure facilities across the three districts.

2.2 Overview

The Joint Core Strategy covers the period 2008 to 2026 and the Greater Norwich Infrastructure Needs & Funding Study (2009) covers the period from 2008-2031 therefore there are differences in the number of homes and the infrastructure required to support the growth across the two time periods.

- The Joint Core Strategy covers the period 2008-2026 and the total housing growth for this period is 37,000 across the three districts of Broadland, Norwich and South Norfolk.

- This study was commissioned to cover the period 2008 to 2031 which extends the housing growth by an additional five years and extrapolates the total housing required to 57,000.

The following two tables present the distribution of dwellings over the two growth periods. Overall, 57,000 are required between 2008 and 2026, of which approximately 12,000 have been permitted or allocated. The remaining 25,000 homes are allocated to growth locations within and outside of the Norwich Policy Area (NPA) as identified in the Joint Core Strategy.

Table 2-1: Housing Growth Allocations to 2026

Period 2008-2026	Location	Total
Total requirement as set out in the Joint Core Strategy		37,000
Less the number of homes already permitted or allocated as at 2008		12,000
Balance equals the number of new allocations required in the JCS		25,000
Number of new sites required in the NPA as set out the Joint Core Strategy	9,000 in Broadland 3,000 in Norwich 9,000 in South Norfolk	21,000
Number of new sites required outside of the NPA as set out in the Joint Core Strategy	650 - 1,100 in Broadland 1,000 - 1,600 in South Norfolk	4,000
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.		

Source: GNDP / Norfolk County Council, 2009
(Agreed as part of EDAW's Key Assumptions Paper)

Extending the housing allocation to 2031, a further 5 years, adds a further estimated 12,000 homes to the total required. Adding windfall opportunities to the total adds a further estimated 8,000 homes.

Table 2-2: Housing Growth Allocations to 2031

Period 2008-2031	Location	Total
Total requirement to 2026	as above	37,000
Additional requirement to 2031 **Extrapolation of JCS housing delivery rates for 5 years** **Anticipated results of the RSS refresh**	3,000 planned in Broadland Remainder tba tba	10,000 2,000
Estimated windall opportunities	Not known	8,000
Total requirement for the period 2008-2031		57,000
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.		

Source: GNDP / Norfolk County Council, 2009
(Agreed as part of EDAW's Key Assumptions Paper)

For the purposes of this study the infrastructure requirements have been calculated for the phases: 2016, 2021, 2026 and 2031. The Joint Core Strategy covers the period 2008-2026. Extending the period to 2031 ensures that the strategy meets the obligation of PPS3 to have a 15 year housing land supply at the point of adoption of the strategy.

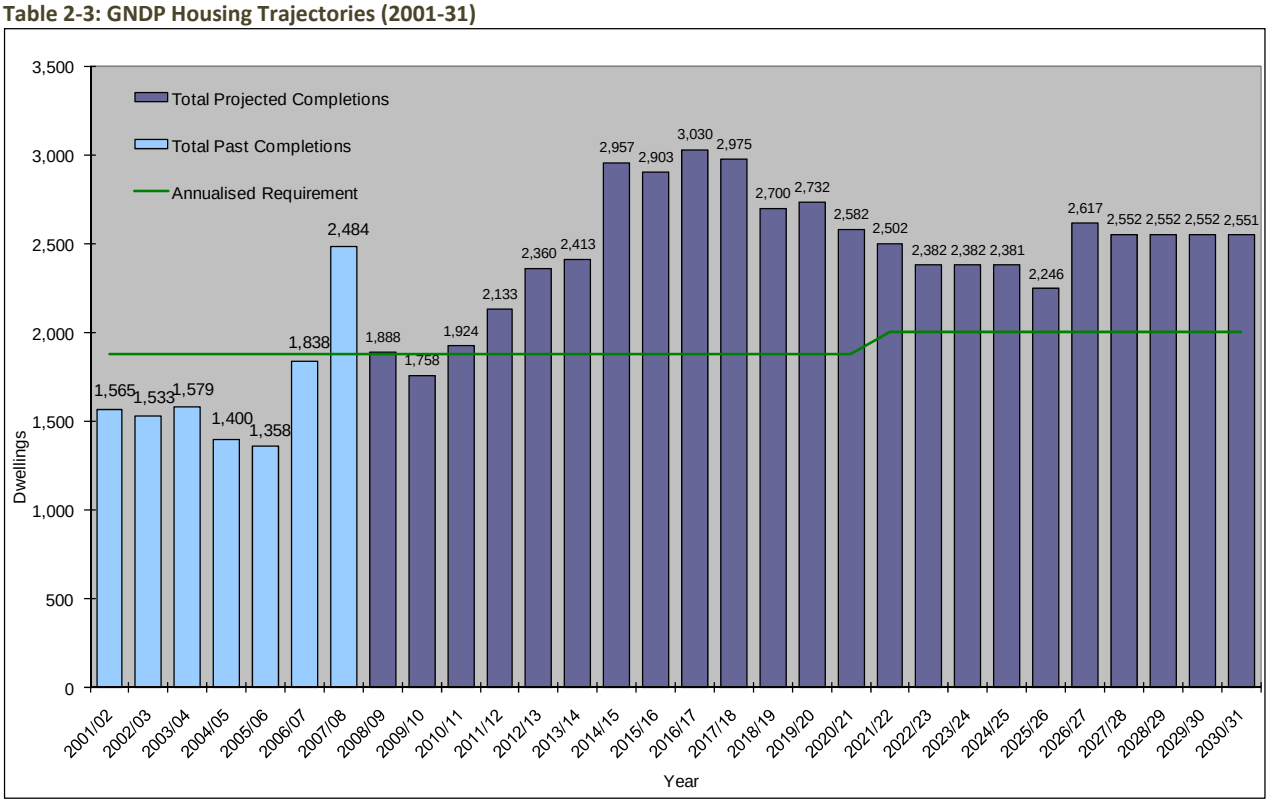
2.3 Detailed Housing Trajectories

The housing trajectories for all housing growth categories by year are illustrated in Table 2-3 below; the light blue bars represent completions to date whereas the darker blue bars represent projected growth. The green Plan line represents the annual level of growth that would be necessary to achieve the headline target of 57,500 additional homes by 2031 and increases from 1,875 to 2,000 homes per year from 2021 to reflect a higher rate of development towards the end of the growth period.

From 2001, approximately 1,500 dwellings were completed each year, rising to 1,800 homes in 2006/07 and almost 2,500 homes in 2007/08. From 2008/09, total completions are expected to fall to under 2,000 completions for the next three years until 2010/11, after which the number of completions is expected to increase steadily until they peak at over 3,000 completions in 2016/17.

Looking forwards in every year besides 2009/10 the projected completions exceed the annual strategic allocation, demonstrating how the total level of completions for 2001-31 is expected to exceed the plan target by 11,329 (including windfall).

Table 2-3: GNDP Housing Trajectories (2001-31)



Source: GNDP / Norfolk County Council, 2009 (Agreed as part of EDAW's Key Assumptions Paper)

The annual housing trajectories by growth location are provided in the Appendix 1 however an overview by five year phase is provided in Table 2-4. GNDP have identified a total of six larger strategic growth locations in Broadland and South Norfolk, plus a greater number of smaller sites across the three districts. Within Broadland, the Rackheath / Sprowston Growth Triangle identified in this report refers to an area of Broadland covering Old Catton, Sprowston, Rackheath, and Thorpe St Andrew.

All housing growth categories have been broken down to the district level and it is possible to link 3,000 of the RSS Review (Post 2026) dwellings to the Rackheath / Sprowston Growth Triangle.

With the exception of the Rackheath / Sprowston Growth Triangle, all development within the strategic growth locations and smaller growth locations is expected to occur between 2011 and 2026. The number of completions at these sites is expected to be sustained at over 2,000 dwellings between 2017/18 and 2021/22, after which the projected completions decline to circa 1,800 dwelling per year between 2022/23 and 2025/26.

Existing commitments represent those sites and plots with existing planning permission and are consequently more likely to come forward earlier in the plan period. Annual completions are expected to come forward at between 1,650 and 2,050 dwellings per year between 2008/09 and 2012/13, after which the total number of completions is expected to decline significantly. All of the existing commitments are expected to be built out by 2019/20.

Windfall completions and 2,000 dwellings associated with the RSS Review are expected to come forward uniformly over the plan period.

Development post 2026 is projected to come forward at a rate of 2,000 homes per year. This is a faster pace of development than the preceding five years, but is consistent with the build out rate projected for the middle of the plan period.

Table 2-4: Housing Allocations by Growth Location, 2008-2031

		Total Completions					
		2008-11	**2011-16**	**2016-21**	**2021-26**	**2026-31**	**Total**
Broadland	Rackheath / Sprowston Growth Triangle	0	1,385	2,900	2,900	65	7,250
	Additional Smaller Sites*		450	1,120	1,080		2,650
	Post 2026 (Rackheath / Sprowston Growth Triangle)					3,000	3,000
	Post 2026 (Elsewhere)					1,150	1,150
	RSS Review*	87	145	145	145	145	667
	Existing Commitments*	997	1,343	351			2,691
	Windfall*		405	675	675	675	2,430
	Broadland Total	1,084	3,728	5,191	4,800	5,035	19,838
Norwich	Strategic Allocations		500	1,250	1,250		3,000
	Existing Commitments*	1,639	3,303	650			5,592
	RSS Review*	87	145	145	145	145	667
	Post 2025*					1,250	1,250
	Windfall*		480	800	800	800	2,880
	Norwich Total	1,726	4,428	2,845	2,195	2,195	13,389
South Norfolk	Wymondham		370	925	905		2,200
	Long Stratton			650	1,150		1,800
	Hethersett		140	800	60		1,000
	Cringleford		50	600	550		1,200
	Easton / Costessey		140	800	60		1,000
	Additional Smaller Sites*		474	1,183	1,178		2,835
	Existing Commitments*	2,673	2,781	30			5,484
	RSS Review*	87	145	145	145	144	666
	Post 2025*					4,600	4,600
	Windfall*		510	850	850	850	3,060
	South Norfolk Total	2,760	4,610	5,983	4,898	5,594	23,845
Grand Total		**5,570**	**12,766**	**14,019**	**11,893**	**12,824**	**57,072**

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

** District-wide*

Source: GNDP / Norfolk County Council, 2009 (Agreed as part of EDAW's Key Assumptions Paper)

The housing projections presented here represent an optimistic view of the potential level of housing completions over the next 22 years. However, in light of current economic conditions and local policy context, no development is anticipated on either the strategic growth locations or smaller development sites prior to 2011. Prior to this, only existing commitments and windfall completions are anticipated to come forward.

Assuming an optimistic scenario ensures that infrastructure requirements are identified at the earliest opportunity. However, this model presents a flexible framework for identifying infrastructure that links each requirement to development at specific growth locations and allows for a re-profiling of infrastructure requirements if development does not occur within the growth locations at the rate identified above. Furthermore, the fact that the rate of completions is expected to peak in 2016/17

suggests that there is scope to speed up the rate of development towards the end of the plan period as required.

Development in the Smaller Growth Locations

While most of the development within the GNDP area will be focused on the Norwich policy area, the remaining amount will be distributed across a geographically extensive rural area. This is reflected in the detailed trajectories presented in Appendix 1 which include a global sum for development outside of the Norwich Policy Area (NPA) within Broadland and South Norfolk.

However, this growth will not be uniformly distributed across the rural areas and while it is not possible at this stage to develop detailed housing trajectories for specific sites within the rural areas, it is possible to identify those markets towns where rural development is likely to be concentrated. These towns have been identified as:

- Aylsham (300 dwellings)
- Diss (300 dwellings)
- Harleston (200 to 300 dwellings)
- Acle (100 to 200 dwellings)
- Loddon/Chedgrave (100 to 200 dwellings)
- Reepham (100 to 200 dwellings)
- Wroxham (100 to 200 dwellings)

3 Housing Mix and Tenure

3.1 Affordable Housing

For the purposes of understanding the infrastructure requirements associated with the proposed growth, it is necessary to understand the expected mix of private and affordable housing as this will affect the assumptions concerning average household characteristics (which are explained in Chapter 4).

The *East of England Plan Policy H2 on Affordable Housing* states that 35% of housing coming forward from planning permissions granted after the publication of the RSS should be affordable. However, in recognition of the housing needs assessment for the three GNDP area districts which finds that 43% of overall housing need can only be met by affordable housing, the *Joint Core Strategy for Broadland, Norwich, and South Norfolk, Regulation 25 (March 2009)* proposes 40% affordable housing will be sought on qualifying sites of five units or more. However, this level of affordable housing is subject to an overall viability assessment to justify that the level of provision is achievable. Justifying provision of less than 40% would require a viability assessment for a specific proposal on a site by site basis.

Furthermore, the Joint Core Strategy Consultation document recognises that 40% affordable housing will not be viable for all sites without public subsidy and indicates that in such cases a financial contribution, such as a grant from the Homes and Communities Agency (HCA) will be sought.

In recognition of the requirements of the Joint Core Strategy, the following affordable housing mix has been agreed with the GNDP for all housing growth included in the trajectories summarised in Table 2-4.

Table 3-1: Assumed Housing Tenure Mix for all Developments

	Proportion of Total
Private Housing	60%
Affordable Housing	40%
of which:	
Affordable Housing: Social Rented	*70%*
Affordable Housing: Intermediate	*30%*
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.	

Source: GNDP / Joint Core Strategy for Broadland, Norwich and South Norfolk, Technical Consultation, Regulation 25, August 2008

For the purposes of this study the 40% requirement will be applied to all developments, not only those of five units or more. The Core Strategy does not provide guidance on the level of affordable housing which should be provided as social rented or intermediate housing. The assumption of 70% being affordable social rented which is provided above is derived from the *Greater Norwich Housing Partnership Housing Review 2008-2011* which projects that 72% of affordable units delivered between 2008 and 2001 will be socially rented. In the absence of detailed policy requirements, it is assumed that this level of provision will continue for the remainder of the growth period. However, in reality there will be some flexibility to respond to the specific circumstances of developments.

3.2 Housing Mix

In order to accurately project the housing associated population growth it is necessary to estimate the likely size mix of housing. Furthermore, for consistency with the Norfolk County Council child yield

calculations that are used to project the requirement for education provision it is also necessary to estimate the likely mix of flats and houses.

The *Greater Norwich Housing Market Assessment (Sept 2007)* identifies the requirement for dwellings, by number of bedrooms for each of the three districts. It also provides information on the extent to which recent completions have come forward as houses or flats. This information was used in conjunction with market intelligence from Drivers Jonas to inform an initial housing mix that was shared with the GNDP and housing officers from each of the local authorities for comment. These comments were then incorporated into the initial mix to provide a refined housing mix that considered local housing demand, market conditions, and policy recommendations. The housing mix, by district and housing tenure is provided in the tables below.

Table 3-2: Assumed Housing Size Mix: South Norfolk

	Flats			Houses				
	1	**2**	**3**	**1**	**2**	**3**	**4+**	**Total**
Market	3.0%	5.0%	0.0%	2.0%	10.0%	50.0%	30.0%	100.0%
Affordable: Social Rented	25.0%	25.0%	0.0%	0.0%	25.0%	20.0%	5.0%	100.0%
Affordable: Intermediate	5.0%	20.0%	0.0%	5.0%	35.0%	30.0%	5.0%	100.0%
Total	9.4%	12.4%	0.0%	1.8%	17.2%	39.2%	20.0%	100.0%
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.								

Source: Agreed with GNDP following recommendations from Drivers Jonas and confirmed with South Norfolk District Council

A significant requirement for family homes has been identified in South Norfolk, with 80% of market properties and over 50% of all properties expected to have more than three bedrooms. However, amongst affordable housing, there is far greater provision of one and two bedroom houses and flats.

Table 3-3: Assumed Housing Size Mix: Norwich

	Flats			Houses				
	1	**2**	**3**	**1**	**2**	**3**	**4+**	**Total**
Market	15.0%	39.0%	8.0%	3.0%	15.0%	15.0%	5.0%	100.0%
Affordable: Social Rented	25.0%	34.0%	3.0%	0.0%	7.0%	10.0%	21.0%	100.0%
Affordable: Intermediate	4.0%	5.0%	8.0%	0.0%	5.0%	28.0%	50.0%	100.0%
Total	16.5%	33.5%	6.6%	1.8%	11.6%	15.2%	14.9%	100.0%
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.								

Source: Agreed with GNDP following recommendations from Drivers Jonas and confirmed with Norwich City Council

The situation in Norwich is very different to South Norfolk, reflecting its city location. A greater proportion of developments are expected to come forward as smaller one and two bedroom properties, particularly flats. In a further departure from the situation in South Norfolk, the greatest provision of family homes (with three or more bedrooms) is within the affordable housing.

Table 3-4: Assumed Housing Size Mix: Broadland

	Flats			Houses				
	1	2	3	1	2	3	4+	Total
Market	2.5%	5.8%	0.0%	1.0%	18.0%	35.0%	37.7%	100.0%
Affordable: Social Rented	25.0%	10.7%	0.0%	17.5%	8.2%	35.0%	3.6%	100.0%
Affordable: Intermediate	20.0%	12.5%	0.0%	5.0%	32.5%	30.0%	0.0%	100.0%
Total	10.9%	8.0%	0.0%	6.1%	17.0%	34.4%	23.6%	100.0%
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.								

Source: Agreed with GNDP following recommendations from Drivers Jonas and confirmed with Broadland District Council

The likely housing mix in Broadland is broadly in line with South Norfolk; however it is less significantly weighted towards family housing, with a greater allocation of two bedroom market properties.

The housing mix identified in the three tables above will be applied to all of the housing developments outlined Table 2-4 and will inform the population projections that determine the demand for social infrastructure.

4 Population Forecasts

4.1 Introduction

In order to identify the likely infrastructure requirements arising from the proposed housing growth it is necessary to estimate its potential impact on the local population. This requires us to consider the type of growth proposed, particularly whether the development occurs within a strategic growth location or is dispersed across existing urban and rural areas.

- Where growth is concentrated within a particular location, such as within the strategic growth locations, it is often sufficient to estimate **population generated by the new developments** alone.

- Where growth is more dispersed, or where infrastructure serves a sub-regional area it may be necessary to review the demand for infrastructure in the context of the **net population change** occurring at the district or GNDP level. This approach considers the demographic changes that are occurring within the existing population in addition to the population change generated by the new development and assesses how these changes will affect the net demand for infrastructure.

The methodologies for both approaches are laid out below.

4.2 The Population Generated by the New Developments

Overview

In order to accurately assess the infrastructure requirements associated with the housing growth, it is necessary to determine the likely characteristics of the households that will fill these new dwellings. This is particularly important in the strategic growth locations, where the proposed level of growth will have a significant impact on the local population.

By applying local average household size parameters to the housing trajectories for each growth location, it is possible to estimate the number of the people that are expected to live within each development location.

Additional detail, such as the age profile of this population, can be derived by using other parameters such as the child yield. Developing an understanding of the population age profile is of particular relevance when projecting demand for education facilities.

Methodology

Each combination of housing size and tenure (summarised in the District Housing Mix tables in Chapter 3) is associated with a unique Average Household Size (AHS) which can be applied to the detailed housing trajectories to provide an estimate of the number of people that will live within each proposed dwelling.

The AHS coefficients are derived from the 2001 Census Tables CO511 which provides the average characteristics of households which have moved within or into the GNDP area within the previous 12 months. While the Census data was undertaken in 2001, it provides the most comprehensive review of recently moving households and is sensitive to the local conditions within the GNDP area.

The following tables provide details of the assumptions made in relation to household characteristics, by tenure and dwelling type.

Table 4-1: Average Household Size Assumptions, by Tenure and Dwelling Size

		Average Household Size (persons)		
		Market Housing	**Affordable Housing: Intermediate**	**Affordable Housing: Social Rented**
Flat	**1 bed**	1.1	1.1	1.2
	2 bed	1.2	1.2	1.6
	3 bed	1.1	1.1	1.9
House	**1 bed**	1.4	1.4	1.4
	2 bed	1.6	1.6	2.2
	3 bed	2.2	2.2	3.3
	4 bed	2.8	2.8	3.3
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.				

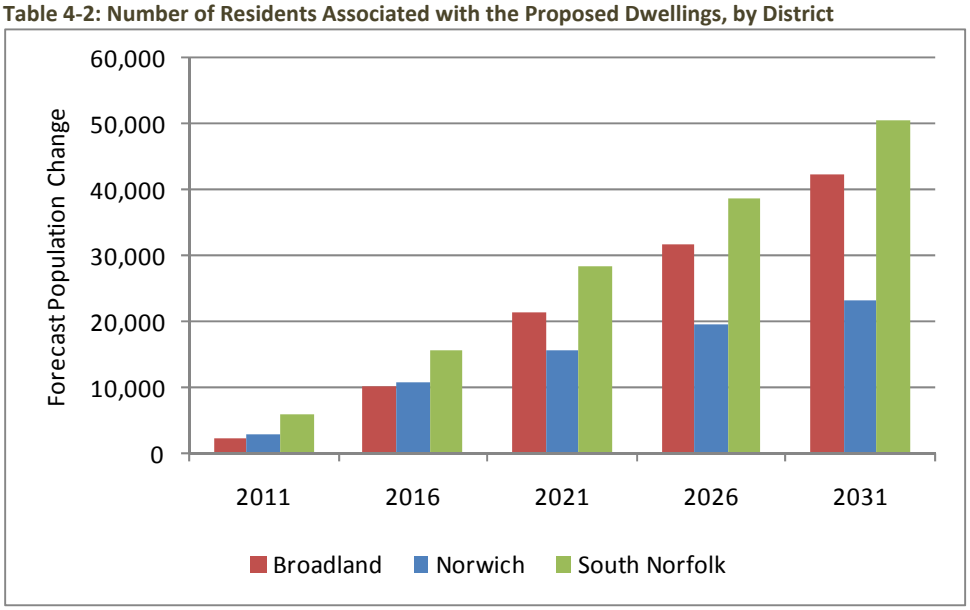
Source: Census, 2001

Population Impacts

Given the housing and tenure mix identified in Chapter 3 and the average household characteristics described above, it is possible to estimate that the 57,072 new dwellings expected to come across the GNDP area between 2008 and 2031 will house 116,000 people. The greatest number (51,000 residents) is expected in South Norfolk, which has been allocated the greatest share of development, followed by Broadland (with 42,000 residents).

A lower number of residents are associated with the housing growth in Norwich, reflecting the more limited development projected to occur within the city over this time, in addition to the smaller AHS associated with flats and smaller properties that are more likely to be developed within the city.

Table 4-2: Number of Residents Associated with the Proposed Dwellings, by District



Source: EDAW, 2009

This is the population associated with the new homes only, and does not take any account of changes within the existing population. When broken down by growth location, it provides a means of estimating the localised demand for infrastructure in areas where growth is relatively concentrated. However the effective modelling of the demand for infrastructure in areas where growth is more dispersed, or where infrastructure is provided at the district or sub-regional level, will require additional analysis to review the likely demographic changes within the existing population.
The table below presents the number of residents that are expected to be living in the new homes developed within each location.

Of these, the development within the Rackheath / Sprowston Growth Triangle is associated with the largest population, of almost 22,000 residents. This is because development in Broadland is concentration within this single strategic growth location and development within this site is expected to continue post 2026.

Conversely, housing growth in South Norfolk is based on a greater number of smaller development sites and each development location has a correspondingly smaller number of residents associated with it.

Table 4-3: Development Associated Population Projections, by Growth Location

		2011	2016	2021	2026	2031
Broadland	**Rackheath / Sprowston Growth Triangle**	0	2,959	9,155	15,351	21,899
	Development elsewhere in district	2,316	7,322	12,217	16,276	20,485
	Total	**2,316**	**10,281**	**21,371**	**31,627**	**42,384**
Norwich	**Norwich**	**3,004**	**10,709**	**15,660**	**19,480**	**23,300**
South Norfolk	**Wymondham**	0	785	2,746	4,665	4,665
	Long Stratton	0	0	1,378	3,817	3,817
	Hethersett	0	297	1,993	2,121	2,121
	Cringleford	0	106	1,378	2,545	2,545
	Easton / Costessey	0	297	1,993	2,121	2,121
	Development elsewhere in district	5,853	14,144	18,827	23,435	35,297
	Total	**5,853**	**15,629**	**28,315**	**38,704**	**50,566**
Grand Total		**11,173**	**36,619**	**65,347**	**89,810**	**116,250**

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

** Includes the population associated with development at smaller locations, existing commitments, assumed windfall development and the RSS review and post 2026 housing allocations.*
Source: EDAW, 2009

It is also important to recognise that a significant proportion of the population generated by the new developments will be located outside of the strategic growth locations, reflecting development on smaller sites, existing commitments, and assumed windfall. While it will be possible to make some assumptions concerning the requirement for infrastructure to meet the needs of these developments, given their dispersed nature, it will not always be possible to recommend a list of discrete facilities for these sites.

For example, development within the rural market towns identified in 2.3 is expected to be in the order of 100 and 300 dwellings over the growth period. Development of this scale would support a population of between 200 and 600 people which is unlikely to generate sufficient demand for additional facilities. However, this growth could potentially place additional pressure on existing facilities and trigger either the requirement for a new facility or the expansion of existing facilities. A review of social infrastructure

requirements generated by growth within the smaller growth locations is provided where appropriate in section 2.

Child Yield

For consistency with local policies, this study has adopted the Norfolk County Council methodology for forecasting the demand for educational facilities. This approach is used to inform NCC's Planning Obligations Standards and is based on the following average child yields per 100 housing units developed.

Table 4-4: Norfolk County Council Pupil Generation Figures (per 100 dwellings)

Age Range	No. of years cohorts	Type of School	Multiplier (no. of Children)
3 - 5	2	Pre-School	8.4
5 - 11	7	Primary	25.4
11 - 16	5	High	14.0
16 - 18	2	Post-16	2.8
Total			50.6
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.			

Source: Norfolk County Council Planning Obligations Standards, March 2008

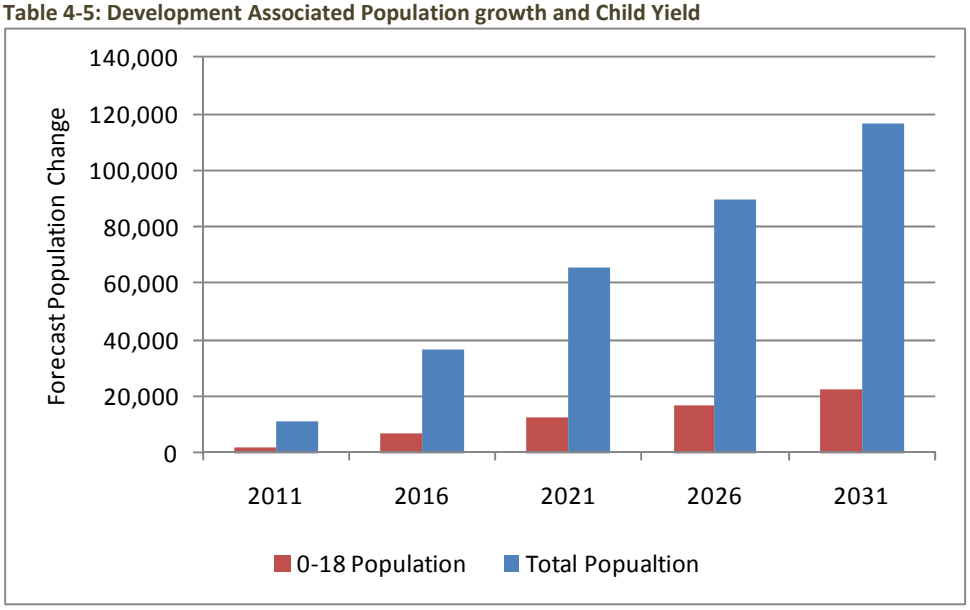
These pupil generation figures are subject to the following qualifications:

- No children are assumed on developments comprising one-bed accommodation or sheltered housing
- For flats, apartments and maisonettes, the above multipliers are discounted by a factor of 50%, reflecting the fact that fewer children are likely to arise from these types of dwellings.

By applying the dwelling tenure and size multiplier identified in Table 4-4 it is possible to derive 'Effective Housing Trajectories for Education' which account for the discount factors identified above. From these adjusted housing trajectories it will be possible to project the additional demand for educational places to the end of the plan period.

The figure below illustrates that, of the 116,000 residents associated with the new developments, 8,800 (or 8%) will be under 18. This reflects the NCC Child Yields and the proportion of properties that are expected to come forward as 1 bed properties or flats.

Table 4-5: Development Associated Population growth and Child Yield



Source: EDAW 2009

Table 4-6 presents the child yield by age category and growth location. In many cases the number of under-18s is relatively low and is unlikely to generate the requirement for a complete facility for secondary and post-16 provision. However, development within most of the growth locations is likely to require primary schools and it is possible that small increases in demand for secondary and post-16 provision in some locations may trigger the requirement for new facilities if the existing sites are unable to cater for the necessary levels of expansion.

A further consideration relating to education is the need to manage the infrastructure associated with the housing growth that is dispersed outside of the strategic growth locations, as such growth is unlikely to trigger the requirement for any new infrastructure. The requirements associated with this growth will be reviewed in the context of the district wide demographic projections, however potential capacity constraints within specific locations, such as the South Norfolk Market towns, will be identified as appropriate.

Table 4-6: Development Associated Child Yield, by Growth Location

		Child Yield (2008/09 - 2030/31)				
		Pre-School (Ages 3-4)	Primary (Ages 5-11)	Secondary (Ages 12-16)	Post-16 (Ages 17-18)	Total Child Yield
Broadland	Rackheath / Sprowston Growth Triangle	680	2,057	1,134	227	4,097
	Development elsewhere in district	636	1,924	1,060	212	3,833
	Total	1,316	3,981	2,194	439	7,930
Norwich Total		693	2,097	1,156	231	4,177
South Norfolk	Wymondham	153	462	254	51	920
	Long Stratton	125	378	208	42	752
	Hethersett	69	210	116	23	418
	Cringleford	83	252	139	28	502
	Easton / Costessey	69	210	116	23	418
	Development elsewhere in district	1,155	3,492	1,925	385	6,957
	Total	1,654	5,003	2,757	551	9,966
Grand Total		**3,664**	**11,080**	**6,107**	**1,221**	**22,074**

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

** Includes the population associated with development at smaller locations, existing commitments, assumed windfall development and the RSS review and post 2026 housing allocations.*

Source: EDAW, 2009

4.3 Net Population Change (District Wide Demographic Projections)

Overview

Determining the number of residents associated with the proposed housing, as described above, is useful for determining the localised requirements associated with development within specific locations. This is particularly important for the strategic growth locations where development is likely to be of a sufficient scale to trigger the requirement for discrete infrastructure facilities.

However, this approach does not take account of the wider population changes occurring at the district level nor the potential impact this may have on the capacity associated with existing facilities. Incorporating existing population change within our analysis provides a greater level of sophistication to the analysis and provides the opportunity to assess whether capacity would come forward within existing facilities that can be used to serve the population associated with the new housing.

This is particularly important with regard to education, where an ageing population across the district may reduce the district wide requirements for education over time and reduce the requirement to build other new facilities (e.g. health facilities) that serve the new dwellings.

Methodology

The district wide demographic projections have been provided to EDAW by Norfolk County Council, which adopted the following methodology.

Using data gathered primarily from the Office for National Statistics Sub-National Population Projections, Mid Year estimates, and 2001 Census, and CLG Household Projections, Norfolk County Council has

produced demographic projections constrained to the level of assumed housing growth. These were generated through the following process:

- Rates of births, deaths, and migration were applied to each age and sex cohort of the existing population to model the demographic trend.

- Household formation rates were applied to the projected population to model the projected number of households consistent with that population, and Census-based conversion factors were applied to households to produce the number of dwellings required to house those households.

- As the projections were to be constrained to housing growth, the levels of in-migration were adjusted for each area in turn until the resultant population, when converted by the model into households and hence into dwelling requirement, led to the assumed number of additional dwellings. The process resulted in what it termed 'dwelling-led' projections.

The demographic projections are calculated separately at county and district level, and the district results are adjusted to ensure consistency between the sum of districts and the county total. Using this approach, NCC provided bespoke population projections which incorporated the housing numbers presented in Chapter 2. By comparing the population projections with the existing population it is possible to identify the net demand for infrastructure by district, which reflects:

- The proposed level of house building to 2031

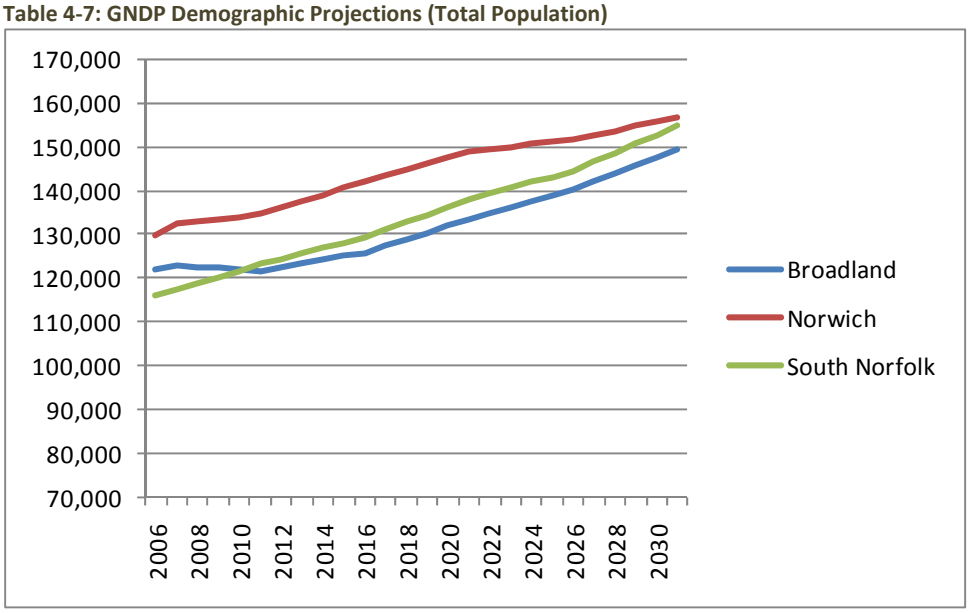
- Demographic change consistent with that level of house building.

District Wide Demographic Projections

In 2006[2] the total population of the GNDP area stood at approximately 368,000 and at the district level ranged from 117,000 residents in South Norfolk to 130,000 in Norwich. Over the whole of the plan period, the population of the GNDP area is expected to grow by 92,900 people. The strongest growth is expected to occur in South Norfolk (39,000 residents), both Norwich and Broadland are both expected to grow by just over 27,000 residents. The patterns of total growth are provided in table 4.7

[2] The NCC Demographic Projections run from 2006 to 2031. While this does not precisely fit with our analysis, 2006 has been used as the start date on the advice of county council due to the assumptions made concerning population change over the five years following 2006.

Table 4-7: GNDP Demographic Projections (Total Population)

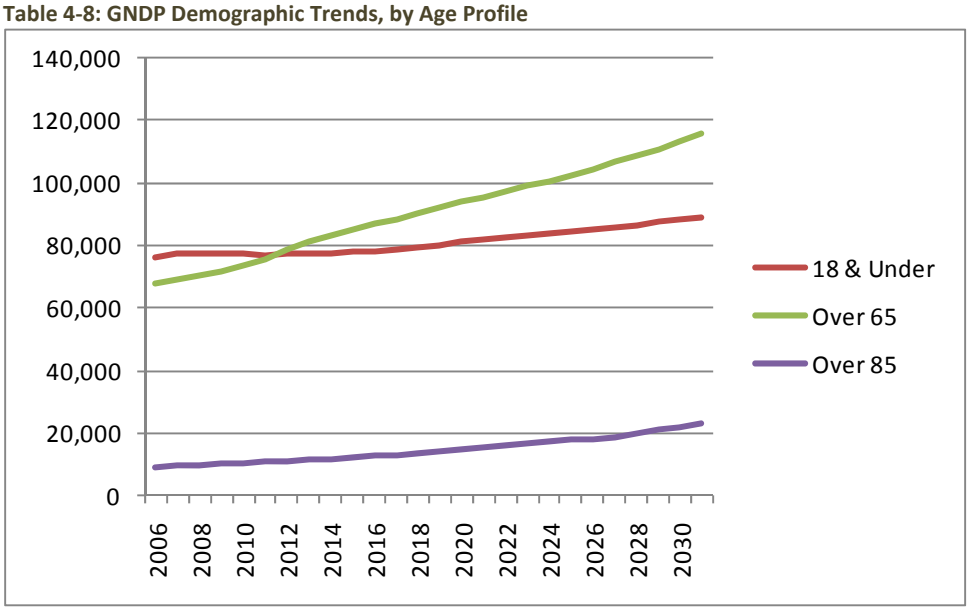


Source: Norfolk County Council, 2009

The figure below demonstrates that the population of GNDP will age considerably over the growth period. Overall the total number of under-18s is expected to increase by 13,000 (or 18%) between 2006 and 2008, compared to growth of 48,000 (or 70%) of those aged over 65.

Further aging is also expected within the over 85s group. Between 2006 and 2031, the total number of GNDP residents aged over 85 is expected to increase by 14,000 to 23,000 – or by one and a half times the total number of over 85s in 2006.

Table 4-8: GNDP Demographic Trends, by Age Profile



Source: Norfolk County Council, 2009

This GNDP wide pattern of demographic change does however hide wide variation at the district level, details of which are provided in Table 4-9. For example, Broadland is expected to see a relatively stable population of residents aged 18 and under, compared to Norwich which is projected to experience significant growth within this age group.

Furthermore, both the over 65 and over 85 populations of Broadland and South Norfolk are projected to grow significantly to 2031. The growth of these populations in Norwich, while still significant, is to a much smaller degree.

Table 4-9: Demographic Population Change, 2006-31

	Broadland		Norwich		South Norfolk		GNDP Area	
	Total	**%**	**Total**	**%**	**Total**	**%**	**Total**	**%**
18 & under	-80	0%	10,736	44%	2,642	10%	13,298	18%
19 to 64	5,708	8%	12,209	14%	13,947	21%	31,864	14%
65 to 84	15,821	73%	1,684	10%	16,393	80%	33,898	58%
85 and Over	5,748	182%	2,473	80%	5,628	192%	13,849	151%
Total Population	27,197	22%	27,102	21%	38,610	33%	92,909	25%

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

Source: Norfolk County Council, 2009

Overall, the variations in the demographic patterns will reflect the characteristics of the existing population within the respective areas.

Linking the Residents of New Development to the District Wide Population Change

The total population of the GNPD area is projected to grow by 92,900 people by 2031. This growth takes account of the population generated by the proposed housing growth and demographic changes projected to occur within the existing population.

This is lower than the 116,000 residents generated by the proposed housing developments and suggests that the population associated with the existing housing stock is declining in line with a national decline in average household size.

This GNDP wide trend is reflected within the figures for Broadland and South Norfolk. However, the projected population demographics for Norwich suggest that some limited population growth would occur in the city in the absence of housing growth.

4-10: Comparison of the Population Generated by Housing Developments & District Wide Population Projections

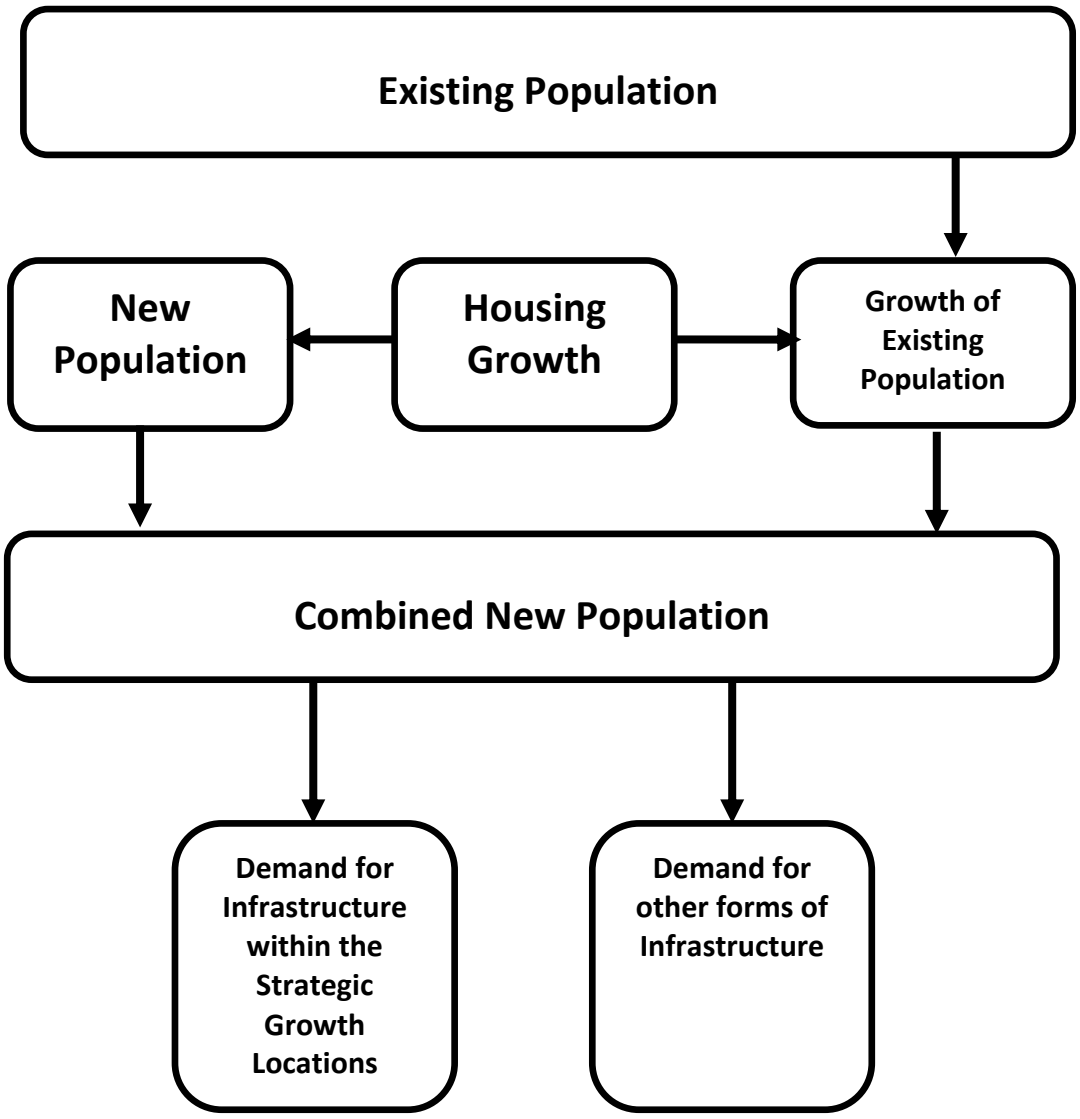
	Total Residents Associated with New Dwellings (2031)	District Wide Population Growth (2006-310)
Broadland	42,384	27,197
Norwich	23,300	27,102
South Norfolk	50,566	38,610
GNDP	**116,249**	**92,909**

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

Source: EDAW / Norfolk County Council Demographic Projections

GNDP Population Growth Dynamics and Impact on Infrastructure Demand

The following diagram illustrates the relationship between changes in the existing population and the population associated with new development and the cumulative impact that has on demand for new infrastructure.



5 Employment

5.1 Overview

Delivering sustainable communities that are linked to a vibrant and dynamic sub-region requires that the growth of housing and the associated infrastructure requirements be linked to the availability of local jobs. At the most basic level, it is necessary to ensure that sufficient land is allocated to employment in strategic locations in order that the proposed developments do not create areas wholly dependent on out-commuting or areas where local people are unable to access appropriate employment opportunities. However, the location and quality of employment sites may also act as a driver for the local and sub-regional economies, through promoting a higher value and diverse employment base which contributes to the objectives of the districts' Sustainable Communities Strategies.

The need to link broader economic development issues and the spatial allocation of housing and employment land is underpinned by the Sub-National Review (SNR)[3] and the move towards providing a Single Integrated Regional Strategy (SIRS) which builds on the work of the Regional Economic Strategy (RES) and Regional Spatial Strategy (RSS) to date.

5.2 Policy Context

Joint Core Strategy

Objective 5 of the *Joint Core Strategy for Broadland, Norwich, and South Norfolk, Regulation 25 (March 2009)* recognises the need to promote economic growth and diversity and to provide a wide range of jobs across the three districts. It identifies that existing employment sites will be safeguarded and additional land will be provided for employment development in line with the requirements of the RSS, which will involve meeting the needs of inward investors, new businesses and existing businesses wishing to expand or relocate.

Furthermore, Objective 11 of the Joint Core Strategy calls for the need to reduce the need to travel, stating that preference will be given to a range of facilities including employment sites that are accessible by walking, cycling and public transport. This will have direct implications on the location of employment sites across the GNDP area, particularly how they relate to the distribution of housing growth.

In relation to the economy more broadly, Policy 6 of the core strategy sets a target for providing 33,000 new jobs between 2008 and 2026. This is also associated with the requirement to increase the proportion of higher value, knowledge economy jobs while ensuring that opportunities are available for the development of all sectors of the economy and workforce. Specifically, this will require:

- Addressing the needs of small and start-up businesses through the allocation of new smaller scale employment sites and the retention of a range of existing smaller scale employment sites
- Addressing larger scale needs through the allocation of sufficient land to provide a choice and range of sites
- Support for enterprise hubs at Norwich Research Park and East of England Production Innovation Centre (EPIC)

[3] The Review of Sub-National Review of Economic Development and Regeneration

In relation to the Norwich Policy Area (NPA) the Joint Core Strategy proposes significant employment development at the following strategic locations:

- Significant expansion of office provision in the City Centre
- Significant expansion of health, higher education and, in particular, science park activity at University of East Anglia/Norwich Research Park
- A new business park associated with the Airport and focussed on airport related uses
- An extension to Broadland Business Park
- Consolidation of activity at Longwater
- Expansion of activity at Hethel relating to automotive and high tech engineering
- Increased employment land provision at Wymondham
- New employment development at Rackheath to serve the major growth location.

Norwich Employment Growth and Sites & Premises Study

The Sites and Premises Study presents employment three forecasts for the Greater Norwich area, based on a:

- Baseline Scenario, which is not constrained to proposed levels of house building or infrastructure development
- RSS Dwelling Scenario, which is built on the assumption that RSS dwellings are met, but no other dwellings are constructed
- Low Growth Scenario, which has been run to examine the consequences of a more pessimistic economic future for Greater Norwich.

The following table summarises the main outputs of the three employment scenarios and the associated growth in dwellings. The projections were run over the period 2001-21.

Table 5-1: Employment Scenario Results

	Change 2001-21	
	Dwellings	**Employees**
Baseline	44,200	44,500
RSS Dwellings Scenario	37,900	39,700
Lower Growth Scenario	38,200	18,700
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.		

Source: Greater Norwich Employment Growth and Sites & Premises Study, 2008

5.3 Employment Implications

The employment targets identified above present a wide range of potential employment across the GNDP area to 2021. However, the level of employment which will be supported throughout the GNDP area will have implications on the availability of land and have particular implications on the transport and utilities assessments. The following section outlines the approach adopted in determining the headline employment assumptions that informed this study.

Short Term vs. Long Term Employment Trends

Employment is declining nationally in light of the national recession, and it almost certainly declining across Greater Norwich, however in the longer term employment should return to its pre-recession growth trajectories and may even grow faster to recover some of its lost output. Consequently, after

discussions with Norwich City Council, and in light of it is not possible to accurately predict how the Norwich (or indeed the UK) economy will perform once the economy enters a recovery, it has been agreed that this study will continue to use the employment projections reported in the employment land study, which identify the long term growth potential of the Greater Norwich economy.

Employment Scenarios

The Employment Land study provides three employment scenarios, however for clarity of reporting it would be simpler to base the analysis on a single projection. While the Lower Growth Scenario may be the most appropriate scenario over the coming few years, growth may return to its longer term trajectory, and it may not be appropriate to adopt this scenario for the whole of the growth period.

The RSS employment scenario constrains longer term employment growth to the level of housing growth allocated in the RSS, however as Chapter 2 indicates, the housing trajectories (including windfall allocations) indicate that housing growth across the three districts will be higher than the RSS allocations to 2021.

The level of housing growth identified in the GNDP housing trajectories as coming forward between 2001 and 2021 across Greater Norwich is 44,100, which is broadly in line with the total dwellings associated with the baseline employment growth. In conjunction with the fact that modelling the most optimistic level of employment growth will ensure that the situation does not arise where insufficient provision of appropriate infrastructure constrains the growth of employment, it has been agreed with the client group that the Baseline Scenario will be adopted in this study.

Furthermore, by modelling the requirements of the baseline scenario, it is not necessary to model the requirements of the RSS or Lower Growth Scenarios as the infrastructure requirements associated with these will be adequately met by the infrastructure requirements associated with the baseline scenario. While the current recession will limit the potential for economic and employment growth over the coming years, the economy will recover and employment growth will return. In the longer term the capacity issues reflected within the employment forecasts will remain valid.

Projecting Forwards to 2031

One shortfall of the employment trajectories presented in the Employment Growth and Sites and Premises study is that they only run to 2026, whereas this study is reviewing the infrastructure requirements to 2031. In the absence of more detailed information and in light of the difficulties in providing reliable employment forecasts over the long-term, the employment projections for the period 2021-31 will be derived by extrapolating from the projected Greater Norwich employment growth for the period 2001-26.

These employment projections which are considered within this study are provided over the page. They refer to the total number of employees and considerably exceed the Joint Core Strategy Targets for the reasons identified above.

These employment projections do not include self-employees; as such individuals are unlikely to place significant demands on employment space and associated infrastructure; for instance many self-employed individuals will work from offices within their home.

Table 5-2: Baseline Employment Projections – Total Employment Change (000s)

Baseline	2001	2002	2003	2004	2005	2006	2007	2008	2010	2017	2021	2026	2031	Employment Change 2001-21	Employment Change 2008-31
Norwich	100.0	100.8	96.0	96.0	102.0	98.1	96.9	97.4	99.0	104.2	106.0	107.4	108.9	6.0	11.5
Broadland	44.3	41.5	49.8	52.2	49.1	50.3	50.5	50.9	51.5	53.8	54.3	55.1	57.6	10.0	6.7
South Norfolk	38.6	47.9	51.0	51.4	53.4	55.1	55.7	56.5	58.2	64.2	67.2	71.1	80.3	28.6	23.8
Total	**182.9**	**190.2**	**196.8**	**199.6**	**204.5**	**203.5**	**203.1**	**204.8**	**208.7**	**222.2**	**227.5**	**233.6**	**246.8**	**44.6**	**42.0**

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

Source: Greater Norwich Employment Growth and Sites & Premises Study / EDAW

In relation to sectoral opportunities for growth, the sites and premises study identifies:

- **Science-based industries.** Norwich has the potential to increase higher value-added employment in particular by building on the strength of research institutions in the fields of health, life sciences and environmental technologies. The sites and premises study identifies the potential to create 2,000 jobs in this sector over the next 10 years and double that amount during East of England Plan period going forward to 2026.
- **Creative Industries.** The sites and premises study identifies that Norwich has established strengths in the creative industries which make it a key sector for support. It recommends continuing with the initiatives already in place plus: initiatives to support business development by linking creative industries firms with other sectors in greater Norwich; potentially establishing a single site one stop shop for creative businesses to focus on the provision and dissemination of knowledge and movements in technology; developing the 'hard' infrastructure underpinning the sector, including the consideration of a fast broadband network; and promoting graduate retention to support the sector.
- **Tourism.** Norwich and the surrounding rural areas could increase the economic benefits from tourism activities through broadening Norwich's appeal among under-represented younger and more affluent visitors; developing a presence in the national business visitor destination market; and renewing the appeal of the Broads-related tourism in the context of declining 'traditional' Broads holidays
- **Construction,** which is likely to be a major employment growth area in coming years in particularly in association with the proposed housing growth. Its 3,200 baseline forecast increase in employment in the sector between now and 2026 would constitute on its own nearly 10% of the overall greater Norwich employment growth target.
- **Advanced Engineering,** which includes a range of firms in different subsectors with particular local strengths in (but not limited to) motorsports, the oil and gas sector, and aircraft maintenance. However the study notes that a lack of skilled workers remains a key issue for the sector at national as well as local level.
- **Financial Services.** The study identifies that Norwich has a cluster of financial services employment which stands out compared to other UK cities because of the high number of jobs in relation to the city's overall population. It recognises that this constitutes both an opportunity to build on and a potential threat, because of the risk that a large employer might downsize significantly. This risk has obviously increased substantially in light of the national recession and the recent spate of jobs cuts announced in this sector, both within and outside Norwich.
- **Retail.** Greater Norwich is identified as having a thriving retail sector which offers scope for further job growth. The city centre accounts for a significant proportion of regional comparison goods shopping, supported by the outstanding built environment which helps to attract visitors from a broad catchment area. The report also recognises that retail is also thriving in several of the market towns. One of the key considerations identified in the report is the need to decide the extent to which it is desirable to allow retail provision and employment to expand towards its maximum potential, and how much additional retail floorspace to accommodate. In particular this should be balanced against facilitating a higher value added knowledge economy within the city.
- **Food sector.** Despite a number of national brands in this sector locating some of their activities in Norwich, employment forecast shows an ongoing decline in this sector, suggesting that it should not be a major focus area for proposals to support employment growth.

5.4 Supply of Employment Land

In conjunction with the employment scenarios, Norfolk County Council have provided trajectories for delivery of employment land at each of the strategic employment locations indentified in the Joint Core Strategy and repeated in section 5.2.

It has also been possible to identify the broad employment uses that will come forward at each location (by B1, B2, and B8 designation). This is important when assessing the potential to raise developer contributions on employment land as this is likely to vary across land uses.

The following table provides the employment land trajectories by each strategic employment location identified by Norfolk County Council by five year phase. Detailed phasing by year is provided in Appendix 1.

5-3: Employment Land Phasing (sq m)

		2010/11	2015/16	2020/21	2025/26	2030/31	Total
Norwich Research Park	**B1**	0	25,781	25,781	25,781	25,781	103,125
	B2	0	0	0	0	0	0
	B8	0	0	0	0	0	0
	Total	**0**	**25,781**	**25,781**	**25,781**	**25,781**	**103,125**
City Centre	**B1**	16,667	27,778	27,778	27,778	27,778	127,778
	B2	0	0	0	0	0	0
	B8	0	0	0	0	0	0
	Total	**16,667**	**27,778**	**27,778**	**27,778**	**27,778**	**127,778**
Norwich Airport Business Park	**B1**	0	1,875	4,688	4,688	4,688	15,938
	B2	0	3,000	7,500	7,500	7,500	25,500
	B8	0	1,125	2,813	2,813	2,813	9,563
	Total	**0**	**6,000**	**15,000**	**15,000**	**15,000**	**51,000**
Broadland Business Park	**B1**	1,830	9,152	9,152	9,152	9,152	38,438
	B2	0	0	0	0	0	0
	B8	1,098	5,491	5,491	5,491	5,491	23,063
	Total	**2,929**	**14,643**	**14,643**	**14,643**	**14,643**	**61,500**
Longwater	**B1**	734	1,223	1,223	1,223	1,223	5,625
	B2	1,174	1,957	1,957	1,957	1,957	9,000
	B8	440	734	734	734	734	3,375
	Total	**2,348**	**3,913**	**3,913**	**3,913**	**3,913**	**18,000**
Hethel	**B1**	0	3,125	3,125	3,125	3,125	12,500
	B2	0	5,000	5,000	5,000	5,000	20,000
	B8	0	1,875	1,875	1,875	1,875	7,500
	Total	**0**	**10,000**	**10,000**	**10,000**	**10,000**	**40,000**

		2010/11	2015/16	2020/21	2025/26	2030/31	Total
Smaller scale employment sites	**B1**	4,520	7,533	7,533	7,533	7,533	34,654
	B2	1,607	2,679	2,679	2,679	2,679	12,321
	B8	2,712	4,520	4,520	4,520	4,520	20,792
	Total	**8,839**	**14,732**	**14,732**	**14,732**	**14,732**	**67,768**
Wymondham	**B1**	2,201	3,668	3,668	3,668	3,668	16,875
	B2	783	1,304	1,304	1,304	1,304	6,000
	B8	1,321	2,201	2,201	2,201	2,201	10,125
	Total	**4,304**	**7,174**	**7,174**	**7,174**	**7,174**	**33,000**
Rackheath	**B1**	0	1,563	3,906	3,906	3,906	13,281
	B2	0	2,500	6,250	6,250	6,250	21,250
	B8	0	938	2,344	2,344	2,344	7,969
	Total	**0**	**5,000**	**12,500**	**12,500**	**12,500**	**42,500**
Grand Total	**B1**	25,952	81,698	86,854	86,854	86,854	368,213
	B2	3,564	16,439	24,689	24,689	24,689	94,071
	B8	5,571	16,883	19,977	19,977	19,977	82,386
	Total	**35,087**	**115,021**	**131,521**	**131,521**	**131,521**	**544,671**

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

Source: Norfolk County Council

Overall 68% of employment is expected to come forward as B1, with the majority (12.8 ha or 35% of the total) coming forward within Norwich City Centre. Outside of the town centre, 10.3 ha are expected to come forward within the Norwich Research Park.

The largest amount of industrial employment land is expected to come forward at the Airport Business Park, with 25.5 ha of B2 space and 9.5 ha of B8 space in addition to almost 16 ha of B1.

5.5 Economic Development Activities

The GNDP Integrated Development Plan sets out a range of interventions that are necessary to support the sustained economic growth of the GNDP area. These projects and the associated capital costs (where identified) are laid out in the table below. They are considered as part of the overall infrastructure requirements necessary to support the proposed housing growth. These activities cost a total of £36.2 million and are linked to funding of £11.6 million.

Table 5-4: Economic Development Activities Identified in the GNDP GNDP Integrated Development Plan

Economic Development Activity	Total Cost	Total Funding
Hethel Technology Park	£11,000,000	
Managed Workspaces, business starter and grow-on units - COSTS TBC		
North City Regeneration Area - Creative Workspace / Workshop Units	£2,000,000	£500,000
Rose Lane Area Development - Land Assembly	£1,150,000	
HEART - Halls Project (pro-rated from 5 years)	£18,720,000	£11,120,000
East Norwich - Deal and Utilities Site - TBC		
Financial Services Centre of Excellence - TBD		
Knowledge City - NSAD - TBC		
Knowledge City - City College Redevelopment - TBC		
Expansion of Postwick Park and Ride Facility	£3,270,000	
Pump Priming of Community Travel Group	£150,000	
Norwich International Airport		
Northern Industrial Estate		
Managed Workspace, Business Starter and Grow On Units		
Total	£36,290,000	**£11,620,000**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.		

Source: GNDP Integrated Development Plan

Table 5-5: Economic Development Activities costs and funding sources Identified in the GNDP Integrated Development Plan

ECONOMIC DEVELOPMENT / INTEGRATED DEVELOPMENT PLAN					
#	**Prioritisation**	**Geography**	**Funding Source**	**Total Costs & % Funding**	**Assumed Funding**
149	**Hethel Technology Park**			£11,000,000	**£0**
	Desirable	South Norfolk Wide			£0
150	**Managed Workspaces, business starter and grow-on units - COSTS TBC**			£0	**£0**
	Desirable	South Norfolk Wide			£0
151	**North City Regeneration Area - Creative Workspace / Workshop Units**			£2,000,000	**£500,000**
	Desirable	Norwich	IDP Identified Funding	25%	£500,000
152	**Rose Lane Area Development - Land Assembly**			£1,150,000	**£0**
	Desirable	Norwich			£0
153	**HEART - Halls Project (pro-rated from 5 years)**			£18,720,000	**£11,120,000**
	Desirable	Norwich	IDP Identified Funding	59%	£11,120,000
154	**East Norwich - Deal and Utilities Site - TBC**			£0	**£0**
	Desirable	Norwich			£0
155	**Financial Services Centre of Excellence - TBD**			£0	**£0**
	Desirable	Norwich			£0
156	**Knowledge City - NSAD - TBC**			£0	**£0**
	Desirable	Norwich			£0
157	**Knowledge City - City College Redevelopment - TBC**			£0	**£0**
	Desirable	Norwich			£0
158	**Expansion of Postwick Park and Ride Facility**			£3,270,000	**£0**
	Desirable	Broadland Wide			£0
159	**Pump Priming of Community Travel Group**			£150,000	**£0**
	Desirable	Broadland Wide			£0
160	**Norwich International Airport**			£0	**£0**
	Desirable	Broadland Wide			£0
161	**Northern Industrial Estate**			£0	**£0**
	Desirable	Broadland Wide			£0
162	**Managed Workspace, Business Starter and Grow On Units**			£0	**£0**
	Desirable	Broadland Wide			£0
Total Funding - Economic Development / IDP					**£11,620,000**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Table 5-5: Economic Development Activities: Costs, Funding, and Prioritisation Overview

	Total Costs	**Total Funding**	**Funding Gap**
Critical	£0	£0	£0
Essential	£0	£0	£0
Desirable	£36,290,000	£11,620,000	£24,670,000
Total	**£36,290,000**	**£11,620,000**	**£24,670,000**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.			

Source: EDAW, 2009

Section 2:
Infrastructure Requirements

6 Social Infrastructure: Education

6.1 Policy Context

Education provision is a key element of the GNDP's draft Joint Core Strategy. Objective 7, 'to allow people to develop to their full potential by providing educational facilities to support the needs of a growing population', reinforces the Spatial Vision that acknowledges the importance of education in the creation of sustainable communities at strategic development sites and where education facilities will be part of the focal point of key service areas within rural areas.

This objective is affirmed through Policy 18 Communities and culture, whereby 'all development will be expected to maintain or enhance the quality of life and well being of communities' and as such it is 'essential to ensure that there is sufficient provision and access to schools and adult learning opportunities for existing and future populations'.

The County Council Planning Obligations set out the expectation that pupils generated through new development in urban areas will, in the first instance, attend the local catchment school. However, if the catchment school is at full capacity, the County Council may consider the next nearest school with places providing it lies within the statutory maximum distance a child would be expected to walk (i.e. 2 miles for the age range 5 – 8 and 3 miles for the age-range 8 plus.)

6.2 Assumptions

Predicting the school age population generated by housing growth

This study uses the pupil generation figures set out in Norfolk County Council Planning Obligations Standards, and is based on the average child yields per 100 housing units developed. Each of the multipliers is for a Full-Time Equivalent (FTE) nursery or school place. Table 6-1 shows the multiplier used to generate the number of pupils that are likely to arise from the development of 100 dwellings

Table 6-1: Norfolk County Council Pupil Generation Figures (per 100 dwellings)

Age Range	No. of years cohorts	Type of School	Multiplier (no. of Children)
3 - 5	2	**Pre-School**	8.4
5 - 11	7	**Primary**	25.4
11 - 16	5	**High**	14.0
16 - 18	2	**Post-16**	2.8
Total			50.6
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.			

Source: Norfolk County Council Planning Obligations Standards, March 2008

For this study, these pupil generation figures are subject to the following qualifications:

- No children are assumed to be generated by one-bed accommodation or sheltered housing units
- For flats, apartments and maisonettes, the above multipliers are discounted by a factor of 50%, reflecting the fact that fewer children are likely to arise from these types of dwellings.

By applying the child multiplier to the proposed housing growth it has been possible to derive school age population projections associated with housing growth to 2031 as set out in Table 6-2. These are consistent with the population projections presented in Section 4.2.

Table 6-2: Development Associated Child Yield, by Growth Location

		Child Yield (2008/09 - 2030/31)				
		Pre-School (Ages 3-4)	**Primary (Ages 5-11)**	**Secondary (Ages 12-16)**	**Post-16 (Ages 17-18)**	**Total Child Yield**
Broadland	**Rackheath / Sprowston Growth Triangle**	680	2,057	1,134	227	4,097
	Elsewhere in district*	636	1,924	1,060	212	3,833
	Total	**1,316**	**3,981**	**2,194**	**439**	**7,930**
Norwich Total*		**693**	**2,097**	**1,156**	**231**	**4,177**
South Norfolk	**Wymondham**	153	462	254	51	920
	Long Stratton	125	378	208	42	752
	Hethersett	69	210	116	23	418
	Cringleford	83	252	139	28	502
	Easton / Costessey	69	210	116	23	418
	Elsewhere in district*	1,155	3,492	1,925	385	6,957
	Total	**1,654**	**5,003**	**2,757**	**551**	**9,966**
Grand Total		**3,664**	**11,080**	**6,107**	**1,221**	**22,074**

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

** Includes the population associated with development at smaller locations, existing commitments, assumed windfall development and the RSS review and post 2026 housing allocations.*

Source: EDAW, 2009

Overall the total child yield generated by new development is expected to by 22,074 by 2031. The greatest requirement is for primary school age children (11,080), however there is also a significant requirement attached to secondary schools (6,107).

Child yield is expected to be highest in South Norfolk (9,966 school age children), reflecting the higher level of housing growth proposed for this district, whereas the total requirement for Norwich is only 4,177.

Norfolk County Council's Approach to Projecting Child Yield

Norfolk County Council Children's Services' response to favoured option assessment of education need was calculated by applying the multiplier to all housing, without refinement for one-bed accommodation and flats. As such, Norfolk County Council's findings present a worst case scenario for each of the strategic growth locations.

The requirements identified by Norfolk County Council and the variation with the EDAW's analysis are presented in shaded boxes and the end of each section. The costs presented at the end of this chapter are based on the 'worst case' NCC requirements.

It should be noted that the costs of providing the necessary level of education will be lower if a proportion of developments are non-child yielding (for example if the developments reflect the housing mix identified in Section 3.2) or if alternative methods of managing demand in the smaller strategic growth locations are adopted.

Existing capacity and facilities requirements

The initial demand for education facilities that is generated by the proposed developments across GNDP is determined from the projections of school age children presented in Table 6-2. An assessment of the existing capacity of facilities located within a 2 or 3 mile radius of the strategic growth locations is then used to refine the facility requirements needed to meet projected demand. Data on school capacity and number of students on the roll in 2009 was supplied by the Planning & Buildings Section Children's Services Norfolk County Council.

The facilities standards outlined in Table 6-3 are then used to determine the requirement for new facilities. Where the thresholds identified below are not met, it will be necessary to explore the expansion of existing facilities or other management options.

Table 6-3: Typical Facility Standards

Facility Type	Capacity Threshold	Notes
Pre-School	60 places per standard nursery	
Primary School	210 places per Form Entry (FE)	The optimal size primary school is 2FE (420 places)
Secondary Schools	150 places per FE	The minimum size for a secondary school in an urban area is between 6 FE (900 places)
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.		

Source: Norfolk County Council Planning Obligations Standards, March 2008

Changes in net population

As detailed in chapter 4, the population generated by the proposed housing growth is one of many factors affecting net population change within each district and across the whole of the GNDP. In order to establish the total education facility requirements outside of the strategic growth locations, projected changes in the existing population must also be considered.

For Norwich, given that strategic growth is occurring across the city, the facility requirements identified as necessary to meet this change in population have been calculated so that the requirements directly attributable to the population generated by housing growth and the requirements due to natural population change elsewhere can be identified.

Within South Norfolk and Broadland, the existing population is projected to decline in the absence of the proposed housing growth and this has been considered when assessing the of facility requirements associated with housing developments outside of the strategic growth locations. However, in recognition of the uneven distribution of development across the district, the population generated by housing growth in smaller developments (for example within the market towns), has been compared with local education provision to identify whether these additional houses are likely to trigger local requirements for new facilities.

Opportunities for co-locations

To highlight potential efficiency and cost savings, opportunities for co-locating pre-schools and primary schools have also been investigated. Opportunities for co-locating other compatible uses, such as sports facilities and community facilities have also been identified where there are requirement and phasing synergies.

6.3 Pre-School

Facility requirements to support population generated from housing growth

Table 6-4 shows that by 2031, there will be demand for 3,664 pre-school education places generated by the proposed housing growth. The greatest demand arises in South Norfolk, particularly outside of the strategic growth locations, whereas 680 places are demanded in the Rackheath / Sprowston Growth Triangle alone.

Overall the demand rises slowly prior to 2011, reflecting the GNDP housing trajectories, and increases steadily thereafter.

Table 6-4: Pre-school age population generated through housing growth

		2011	2016	2021	2026	2031
Broadland	Rackheath / Sprowston Growth Triangle	0	92	284	477	680
	Development elsewhere in district*	72	227	379	506	636
	Total	**72**	**319**	**664**	**982**	**1,316**
Norwich	**Norwich**	**89**	**319**	**466**	**580**	**693**
South Norfolk	Wymondham	0	26	90	153	153
	Long Stratton	0	0	45	125	125
	Hethersett	0	10	65	69	69
	Cringleford	0	3	45	83	83
	Easton / Costessey	0	10	65	69	69
	Development elsewhere in district*	**191**	**463**	**616**	**767**	**1,155**
	Total	**191**	**511**	**926**	**1,266**	**1,654**
Grand Total		**353**	**1,149**	**2,056**	**2,828**	**3,664**

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

** Includes the population associated with development at smaller locations, existing commitments, assumed windfall development and the RSS review and post 2026 housing allocations.*

Source: EDAW, 2009

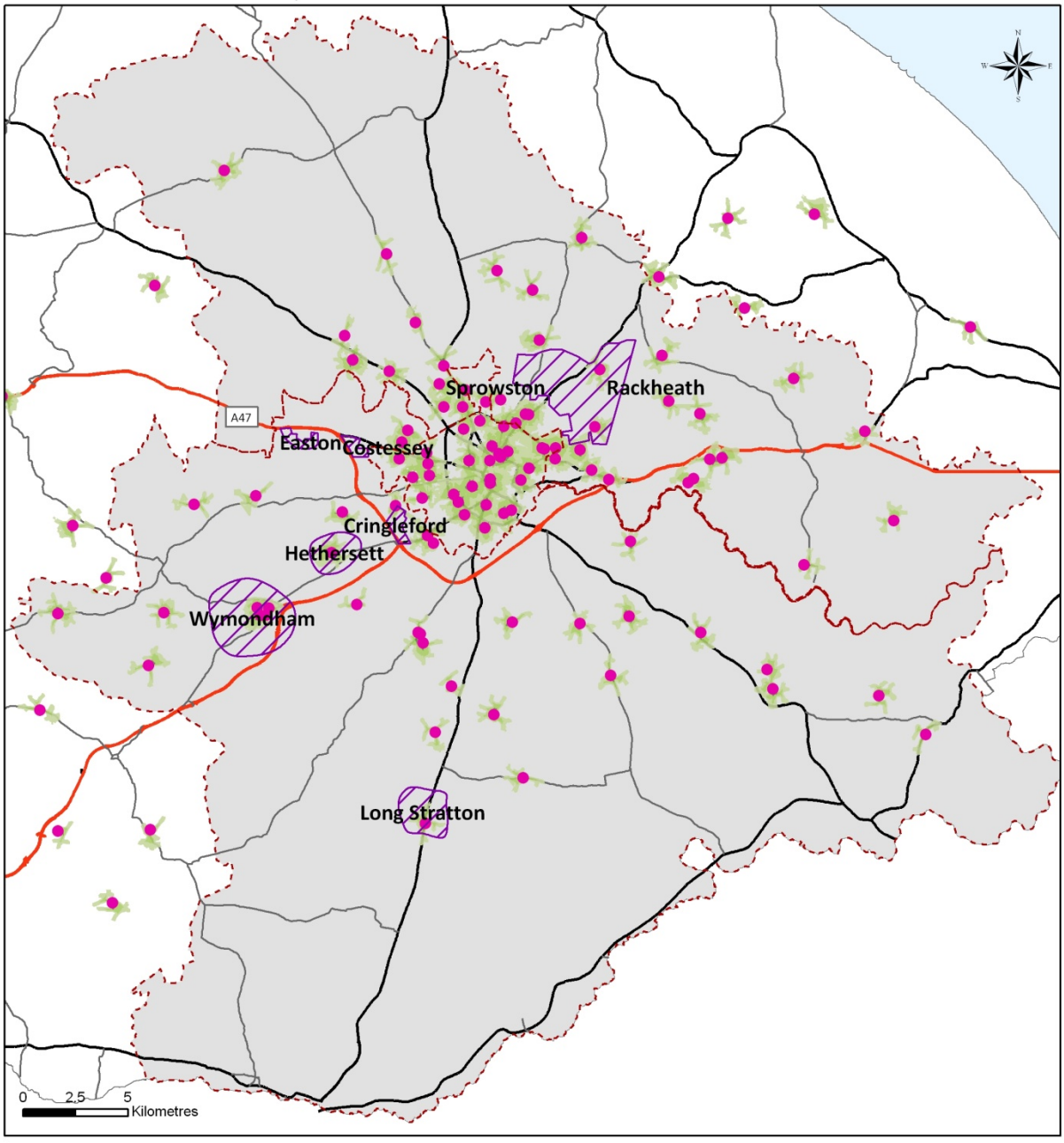
Considering existing capacity

Norfolk County Council does not record available capacity at its pre-school facilities, however, to provide context the map over the page shows that there are currently 102 pre-school facilities distributed relatively evenly across the GNDP area; 35 of are in Broadland, 32 in Norwich and 35 in South Norfolk. These facilities include:

- pre-school facilities attached to infant and primaryschools,
- private, voluntary and independent pre-school facilities
- playgroups & pre-schools
- day nurseries
- independent schools
- maintained nursery classes / schools
- private nurseries
- children's centres

Access to Pre-School Facilities

Greater Norwich Infrastructure Study



Pre-School Facilities

Pre-School Facilities Access

5 minute walk

5-10 minute walk

10-15 minute walk

Counties

Growth Locations

Study Area

Districts

Trunk Road

A Roads

B Roads

Data Source: Norfolk County Coucil, ONS, Ordnance Survey

Last Updated: May 2009

Facility requirements to support population generated from housing growth

Table 6-5 sets out the pre-school facility requirements necessary to meet the demand for pre-school places generated by the proposed housing growth. It is based on the assumption of a standard pre-school accommodating 60 children and shows that the proposed housing growth will generate demand for approximately 22 pre-school facilities in Broadland, 12 in Norwich and 28 in South Norfolk by 2031.

Table 6-5: Pre-School Facilities Requirements Generated by the Proposd Housing Growth (based on 60 places per facility)

		2011	2016	2021	2026	2031
Broadland	**Rackheath / Sprowston Growth Triangle**	0.0	1.5	4.7	7.9	11.3
	Development elsewhere in district*	1.2	3.8	6.3	8.4	10.6
Norwich	**Norwich**	**1.5**	**5.3**	**7.8**	**9.7**	**11.6**
South Norfolk	**Wymondham**	0.0	0.4	1.5	2.5	2.5
	Long Stratton	0.0	0.0	0.8	2.1	2.1
	Hethersett	0.0	0.2	1.1	1.2	1.2
	Cringleford	0.0	0.1	0.8	1.4	1.4
	Easton / Costessey	0.0	0.2	1.1	1.2	1.2
	Development elsewhere in district*	**3.2**	**7.7**	**10.3**	**12.8**	**19.2**
Grand Total		**5.9**	**19.2**	**34.3**	**47.1**	**57.8**

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

** Includes the population associated with development at smaller locations, existing commitments, assumed windfall development and the RSS review and post 2026 housing allocations.*

Source: EDAW, 2009

Implications of District Wide Net Population Change

The following series of tables show how the demand for pre-school places generated from housing growth within the strategic growth locations relates to the projected district wide population change forecast to occur across the each district. By contrasting these figures, it is possible to infer the net population change likely to occur outside of the growth locations and can be used to estimate pre-school demand in areas located 'elsewhere' in each district.

Table 6-6: Net change in pre-school population – Broadland

	2011	2016	2021	2026	2031
Demand Associated with District Wide Net Population Change	-68	-220	-192	-85	75
Demand Generated by Development in the Strategic Growth Locations	0	92	284	477	680
Inferred Demand Outside of the Strategic Growth Locations	**-68**	**-312**	**-476**	**-562**	**-605**

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

Source: EDAW / NCC Demographic Projections

Table 6-7: Net change in pre-school population – Norwich

	2011	2016	2021	2026	2031
Demand Associated with District Wide Net Population Change	857	1,113	1,353	1,571	1,607
Demand Generated by Development in the Strategic Growth Locations	89	319	466	580	693
Inferred Demand Outside of the Strategic Growth Locations	**768**	**794**	**887**	**991**	**914**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: EDAW / NCC Demographic Projections

Table 6-8: Net change in pre-school population – South Norfolk

	2011	2016	2021	2026	2031
Demand Associated with District Wide Net Population Change	94	79	111	198	422
Demand Generated by Development in the Strategic Growth Locations	0	49	310	500	500
Inferred Demand Outside of the Strategic Growth Locations	**94**	**30**	**-199**	**-302**	**-78**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: EDAW / NCC Demographic Projections

Table 6-8 and Table 6-6 show a net decline in demand for pre-school places in Broadland and South Norfolk outside of the strategic growth locations. This will reflect the population decline that is expected to occur in these areas in the absence of housing growth and the significant population projected for these two districts.

Conversely, there is likely to be an increase in demand for pre-school places in Norwich above that which is generated from housing growth in the strategic sites located within the city.

Pre-school facility requirements

When the change in demand associated with district wide population change is taken into consideration alongside the demand generated by the housing growth, as set out in Table 6-9, the district wide requirements for pre-school facilities can be predicted. The figures highlights a net decline in the demand for pre-school facilities outside of the strategic growth locations in Broadland and South Norfolk, reflecting the declining and ageing population projected to occur in these areas. In Norwich, there is additional demand for pre-school facilities beyond that generated by the proposed housing growth.

Table 6-9: Pre-school Facility Demand Generated by Housing Growth and Considering District Wide Population Change

		2011	2016	2021	2026	2031
Broadland	**Rackheath / Sprowston Growth Triangle**	0.0	1.5	4.7	7.9	11.3
	Development elsewhere in district	1.2	2.3	1.6	0.5	-0.7
Norwich	**Norwich**	**14.3**	**18.6**	**22.6**	**26.2**	**26.8**
South Norfolk	**Wymondham**	0.0	0.4	1.5	2.5	2.5
	Long Stratton	0.0	0.0	0.8	2.1	2.1
	Hethersett	0.0	0.2	1.1	1.2	1.2
	Cringleford	0.0	0.1	0.8	1.4	1.4
	Easton / Costessey	0.0	0.2	1.1	1.2	1.2
	Development elsewhere in district	1.6	0.5	-3.3	-5.0	-1.3
Grand Total		**5.9**	**19.2**	**34.3**	**47.1**	**57.8**

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

** Includes the population associated with development at smaller locations, existing commitments, assumed windfall development and the RSS review and post 2026 housing allocations.*
Facility requirements are based on 60 places per pre-school facility
Source: EDAW, 2009

The facility demand presented in Table 6-9 are associated with the following facility requirements, which would meet demand generated by housing growth across the district after considering capacity that may become available elsewhere in the district as a result of the projected net population change.

Within Norwich the facilities identified below are only those whose demand is generated by the proposed housing growth. There would be the requirement to provide an additional 16 pre-school facilities across the district, however these have not been included here as they are not associated with the proposals for growth.

Table 6-10: Pre-school Facility Requirements by Housing Growth Location

		Growth Phase Ending:				
		2011	**2016**	**2021**	**2026**	**2031**
Broadland	**Rackheath / Sprowston Growth Triangle**			4 x 60 place pre-school facility	3 x 60 place pre-school facility	4 x 60 place pre-school facility
	Elsewhere in Broadland	No additional requirements (however it may be necessary to reorganise existing provision)				
Norwich		60 place pre-school facility	60 place pre-school facility	2 x 60 place pre-school facility	60 place pre-school facility	7x 60 place pre-school facility
South Norfolk	**Wymondham**			30 pre-school places 60 place pre-school facility	60 place pre-school facility	
	Long Stratton				2 x 60 place pre-school facility	
	Hethersett			60 place pre-school facility		
	Cringleford				60 place pre-school facility	
	Easton / Costessey			60 place pre-school facility		
	Elsewhere in South Norfolk	No additional requirements (however it may be necessary to reorganise existing provision)				
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.						

Source: EDAW

Development within the Smaller Market Towns

Table 6-11 present the demand for pre-school facilities generated by the housing growth projected to occur in the smaller growth locations across the GNDP area. Phasing is not available for housing growth in these areas and the demand presented here is the total demand by 2031. These housing figures are included in the figures for 'elsewhere in Broadland' and 'elsewhere in South Norfolk' in other parts of this chapter.

Overall, the 300 dwellings expected to come forward at Diss and Harleston will generate demand for approximately 21 pre-school places in each location. This is equivalent to a third of a standard pre-school facility and will not trigger the demand for a new facility as it is expected that demand in these areas will be met through existing provision serving the areas.

Housing growth in the other smaller growth locations is below this level and so is the resulting demand for pre-school infrastructure.

Table 6-11: Pre-school population generated through housing growth in smaller growth locations

Location	Pre-school population
Diss	21
Harleston	21
Acle	14
Reepham	14
Wroxham	14
Loddon	14
Blofield	3
Brundall	3
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.	

Source: EDAW / GNDP Joint Core Strategy

6.4 Primary Schools

Demand Generated by the Proposed Housing Growth

Table 6-12 shows that the proposed housing growth is likely to generate demand for 11,800 primary school places across the GNDP area. Demand is greatest across South Norfolk, where demand for 5,003 places is generated, however the majority of this demand is associated with development outside of the strategic growth locations.

The majority of demand in Broadland is generated from developments within the Rackheath / Sprowston Growth Triangle, whereas demand in Norwich is associated with the strategic sites that are located across the city.

Table 6-12: Primary Shool places generated by Housing Growth

		2011	2016	2021	2026	2031
Broadland	Rackheath / Sprowston Growth Triangle	0	278	860	1,442	2,057
	Development elsewhere in district*	218	688	1,147	1,529	1,924
	Total	**218**	**966**	**2,007**	**2,970**	**3,981**
Norwich	**Norwich**	**270**	**964**	**1,409**	**1,753**	**2,097**
South Norfolk	Wymondham	0	78	272	462	462
	Long Stratton	0	0	136	378	378
	Hethersett	0	29	197	210	210
	Cringleford	0	10	136	252	252
	Easton / Costessey	0	29	197	210	210
	Development elsewhere in district*	**579**	**1,399**	**1,863**	**2,319**	**3,492**
	Total	**579**	**1,546**	**2,802**	**3,829**	**5,003**
Grand Total		**1,067**	**3,476**	**6,218**	**8,553**	**11,080**

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

** Includes the population associated with development at smaller locations, existing commitments, assumed windfall development and the RSS review and post 2026 housing allocations.*

Source: EDAW, 2009

Facility requirements to support population generated from housing growth

Table 6-13 sets out the number of 420 place primary schools that would be needed to meet the demand for primary school places resulting from the demand generated by the proposed housing growth up to 2031.

These figures do not take account of existing capacity within each district or the net population change projected to occur within the existing population.

Table 6-13: Primary Schools Neccessary to Meet the Demand Generated from Housing Growth (420 place schools)

		2011	2016	2021	2026	2031
Broadland	**Rackheath / Sprowston Growth Triangle**	0.0	0.7	2.0	3.4	4.9
	Development elsewhere in district*	0.5	1.6	2.7	3.6	4.6
	Total	**0.5**	**2.3**	**4.8**	**7.1**	**9.5**
South Norfolk	**Wymondham**	0.0	0.2	0.6	1.1	1.1
	Long Stratton	0.0	0.0	0.3	0.9	0.9
	Hethersett	0.0	0.1	0.5	0.5	0.5
	Cringleford	0.0	0.0	0.3	0.6	0.6
	Easton / Costessey	0.0	0.1	0.5	0.5	0.5
	Development elsewhere in district*	**1.4**	**3.3**	**4.4**	**5.5**	**8.3**
Grand Total		**2.5**	**8.3**	**14.8**	**20.4**	**26.4**

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

** Includes the population associated with development at smaller locations, existing commitments, assumed windfall development and the RSS review and post 2026 housing allocations.*

Source: EDAW, 2009

Within the strategic growth locations, demand varies from almost five 420 place schools in the Rackheath / Sprowston Growth Triangle to only 0.5 of a school within Easton / Costessey. A significant requirement is also generated by developments projected for outside of the strategic growth locations.

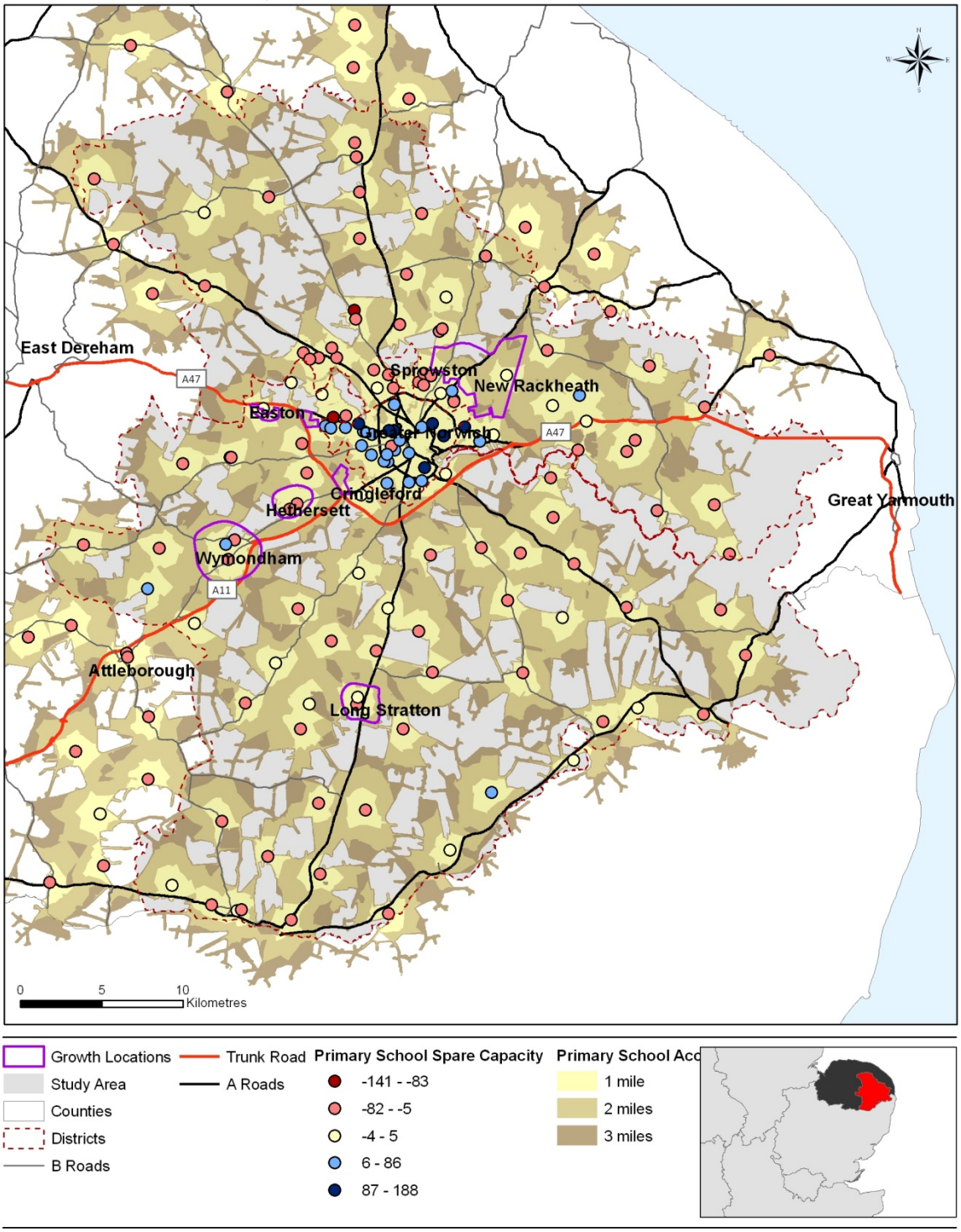
Considering existing capacity

There are 145 primary schools in the GNDP area, including both infant and junior schools. These include 66 primary schools in South Norfolk, 26 in Norwich and 53 in Broadland.

The following map shows the location and an indication of the capacity of primary schools across the GNDP area.

Access and Capacity of Primary Schools

Greater Norwich Infrastructure Study



Data Source: Norfolk County Coucil, ONS, Ordnance Survey

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Last Updated: June 2009

Below, the capacity of schools falling with each of the growth locations is considered in turn. Where there is capacity in schools within a growth location, this has been factored into the facility requirements below. Consideration of capacity has also been given to schools that lie within two and three miles of the growth location and could potentially take pupils from growth locations in line with the County Council Planning Obligations policy relating to the statutory maximum distance a child can walk to school. This is shown for context and has not been incorporated into the facility requirements.

Rackheath / Sprowston Growth Triangle

Although the Rackheath / Sprowston Growth Triangle covers a large area, it is primarily a green field location and there is only one existing primary school within the proposed growth area, Rackheath Primary School. Rackheath Primary School is currently at capacity.

There are an additional 25 primary schools that lie within three miles of the growth location boundary that could potentially be used to manage the emerging primary age population generated through housing growth at this location, these are detailed in Table 6-14.

Table 6-14: Primary Schools within 3 miles of Rackheath / Sprowston Growth Triangle

School	Distance from growth location (miles)	Unfilled Capacity
Cecil Gowing Infant School	1	22
Dussindale Community Primary School	1	0
Falcon Junior School	1	19
Lodge Lane Infant School	1	15
Old Catton CE Junior School	1	42
Rackheath Primary School	1	-4
Sparhawk Infant School & Nursery	1	-30
Spixworth Infant School	1	37
Sprowston Infant School	1	22
Sprowston Junior School	1	-3
White Woman Lane Junior School	1	20
Woodland View Junior School, Spixworth	1	56
Garrick Green Infant School	2	20
Hillside Avenue Primary School	2	-72
Lionwood Junior School	2	188
Little Plumstead CE Primary School	2	3
Mousehold Infant School & Nursery	2	91
Salhouse Church of England Voluntary Controlled Primary School	2	40
St. William's Primary School	2	-107
Firside Junior School	3	37
Frettenham Primary School	3	2
Heather Avenue Infant School	3	20
Horsham St. Faiths VC Primary School	3	21
Magdalen Gates Primary School	3	64
Mile Cross Primary School	3	55
St. John's Community Primary School	3	23
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.		

Source: Norfolk County Council

Norwich

There are 32 primary schools within Norwich with a combined capacity of 2,011 places. The proposed housing growth proposed for Norwich will be distributed across the city and the primary school demand it generates could potentially be accommodated within this capacity. It has therefore been included in the consideration of facility requirements. However, it is important to note at this stage that this capacity

takes no account of projected demand associated with demographic change within the existing population.

Wymondham

There are three primary schools in Wymondham. Both Ashleigh Infant School and Nursery and Browick Road Infant School have some space capacity, but Robert Kett Junior School is currently oversubscribed by 22 places. The net capacity in Wymondham's primary schools is 47 places.

There are seven further schools that are within three miles of the Wymondham growth location that could potentially be used to manage the population generated due to housing growth; these are outlined in Table 6-15.

Table 6-15: Primary Schools within 3 miles of Wymondham

School	Distance from growth location (miles)	Unfilled Capacity
Carleton Rode CE VA Primary School	1	16
Wicklewood Primary School	2	15
Hethersett VC Junior School	3	12
Morley Church of England Primary School	3	-14
Spooner Row Primary School	3	-2
Woodside Infant and Nursery School	3	10
Wreningham VC Primary School	3	5
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.		

Source: Norfolk County Council

Long Stratton

Long Stratton has two primary schools. St. Mary's VC Junior School is at capacity, but Manor Field Infant & Nursery School has spare capacity of 33 places.

There are an additional five schools within 3 miles of Long Stratton, with a combined unfilled capacity of 97 places, as set out in Table 6-16.

Table 6-16: Primary Schools within 3 miles of Long Stratton

School	Distance from growth location (miles)	Unfilled Capacity
Forncett St. Peter CE VA Primary School	2	-1
Preston, CE Primary School, Tasburgh	2	15
Shelton with Hardwick Community School	2	21
Aslacton Primary School	3	31
Hapton CE VC Primary School	3	29
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.		

Source: Norfolk County Council

Hethersett

There are two schools in the Hethersett growth location, Hethersett VC Junior School and Woodside Infant and Nursery School. Both have unfilled capacity totalling 22 places.

There are an additional nine schools within 3 miles of Hethersett, with a combined unfilled capacity of 193 places, as set out in Table 6-16.

Table 6-17: Primary Schools within 3 miles of Hethersett

School	Distance from growth location (miles)	Unfilled Capacity
Little Melton Primary School	1	43
Ashleigh Infant School and Nursery	3	48
Barford Primary School	3	32
Bawburgh School	3	23
Browick Road Infant School	3	21
Carleton Rode CE VA Primary School	3	16
Cringleford CE VA Primary School	3	-2
East Harling Primary School	3	34
Robert Kett Junior School	3	-22
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.		

Source: Norfolk County Council

* Since Sept 07, Lt Melton Primary has been growing a year group at a time into a primary. By Sept 10 their unfilled capacity will be down to 27 places.

Cringleford

Cringleford CE VA Primary School is the only school in Cringleford and is currently about at capacity.

The close proximity of Cringleford to Norwich means that there are numerous primary schools, with a combined unfilled capacity of 978 places, within three miles. These schools could potentially be used to manage the primary age population growth generated through the housing growth.

Easton / Costessey

There is one school in Easton, St. Peter's CE VC Primary School, which is at capacity. Although there are no schools identified directly within the proposed growth area identified at Costessey there is a primary school at the new Queen's Hill development in Costessey together with Costessey Infant and Costessey Junior Schools in Costessey itself, with capacity for a further 104 pupils. In addition, there are 15 schools within three miles of the growth locations.

Table 6-18: Primary Schools within 3 miles of Easton / Costessey

School	Distance from growth location (miles)	Unfilled capacity
Chapel Break Infant School	1	19
St Michaels VA Junior School	1	6
Bawburgh School	2	23
Clover Hill Infant School & Nursery	2	49
Larkman Primary School	2	53
St. Augustine's Catholic Primary School	2	-2
Valley Primary School	2	143
Bluebell Primary School	3	51
Henderson Green Primary School	3	14
Little Melton Primary School	3	43
Wensum Junior School	3	104
West Earlham Community Infant School	3	20
West Earlham Junior School	3	75
Barford Primary School	3	32
East Harling Primary School	3	34

Source: Norfolk County Council

Implications of District Wide Net Population Change

The following series of tables show how the demand for primary school places generated from housing growth within the strategic growth locations relates to the projected district wide population change forecast to occur across the each district. By contrasting these figures, it is possible to infer the net population change likely to occur outside of the growth locations and can be used to estimate primary school demand in areas located 'elsewhere' in each district.

Table 6-19: Net change in primary population – Broadland

	2011	2016	2021	2026	2031
Demand Associated with District Wide Net Population Change	-589	-493	-527	-384	85
Demand Generated by Development in the Strategic Growth Locations	0	278	860	1,442	2,057
Inferred Demand Outside of the Strategic Growth Locations	**-589**	**-771**	**-1,387**	**-1,826**	**-1,972**

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

Source: EDAW / NCC Demographic Projections

Table 6-20: Net change in primary population – Norwich

	2011	2016	2021	2026	2031
Demand Associated with District Wide Net Population Change	-148	1747	2447	3019	3597
Demand Generated by Development in the Strategic Growth Locations	270	964	1,409	1,753	2,097
Inferred Demand Outside of the Strategic Growth Locations	**-418**	**783**	**1,038**	**1,266**	**1,500**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: EDAW / NCC Demographic Projections

Table 6-21: Net change in primary population – South Norfolk

	2011	2016	2021	2026	2031
Demand Associated with District Wide Net Population Change	-179	-10	128	166	753
Demand Generated by Development in the Strategic Growth Locations	0	147	939	1,511	1,511
Inferred Demand Outside of the Strategic Growth Locations	**-179**	**-157**	**-811**	**-1,345**	**-758**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: EDAW / NCC Demographic Projections

Table 6-19 and Table 6-20 indicate that the demand for primary provision will decline in the parts of Broadland and South Norfolk located outside of the strategic growth locations, reflecting the declining and ageing populations of these areas. This is in line with the findings for pre-school provision.

Conversely, demand within Norwich will increase outside of the strategic sites, reflecting the population growth that is projected across the city even in the absence of housing growth. However, the dominant driver of primary school demand within the city remains the proposed housing growth, which accounts for increasing demand of 2,097 places.

Primary school facility requirements

The total demand for primary schools, taking into consideration existing capacity and changes in the net population, is set out in Table 6-22. It shows that, in Broadland the development in the Rackheath / Sprowston Growth Triangle will generate significant primary school demand, but elsewhere in the district, a reduction in the net population is sufficient enough to result in a reduction in demand despite other proposed housing growth. It is a similar situation in South Norfolk, although the facility demand at strategic locations is lower. In Norwich, existing capacity can cater for a large proportion of the facility demand resulting from housing growth and natural population change.

Table 6-22 Primary School Demand, Accounting for Existing Capacity and District Wide Population Projections (based on 420 place schools)

		2011	2016	2021	2026	2031
Broadland	Rackheath / Sprowston Growth Triangle	0.0	0.7	2.0	3.4	4.9
	Development elsewhere in district*	-1.4	-1.8	-3.3	-4.3	-4.7
Norwich	**Norwich**	**-5.1**	**-0.6**	**1.0**	**2.4**	**3.8**
South Norfolk	Wymondham	-0.1	0.1	0.5	1.0	1.0
	Long Stratton	-0.1	-0.1	0.2	0.8	0.8
	Hethersett	-0.1	0.0	0.4	0.4	0.4
	Cringleford	0.0	0.0	0.3	0.6	0.6
	Easton / Costessey	0.0	0.1	0.5	0.5	0.5
	Development elsewhere in district*	-0.4	-0.4	-1.9	-3.2	-1.8

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

** Includes the population associated with development at smaller locations, existing commitments, assumed windfall development and the RSS review and post 2026 housing allocations.*

Source: EDAW, 2009

Demand for facilities in the Rackheath / Sprowston Growth Triangle remains from Table 6-13, reflecting the limited capacity that is available close to this growth location. Demand in Wymondham, Long Stratton and Hethersett has decreased marginally, after accounting for local capacity, however the decrease is not sufficient to significantly alter the recommendations.

The greatest adjustment in demand is associated with the areas of Broadland and South Norfolk located outside of the growth locations, where demand decreases between 2008 and 2031 as a result of projected changes in the existing population.

These figures generate the following requirements for primary schools across the GNDP area.

Table 6-23: Primary School Facility Requirements by Housing Growth Location

		Growth Phase Ending:				
		2011	**2016**	**2021**	**2026**	**2031**
Broadland	**Rackheath / Sprowston Growth Triangle**			2 x 420 place primary school	2 x 420 place primary school	1 x 420 place primary school
	Elsewhere in Broadland	No net additional requirement (although some reorganisation of provision may be required within the district)				
Norwich				2 x 420 place primary school		2 x 420 place primary school
South Norfolk	**Wymondham**				1 x 420 place primary school	
	Long Stratton				1 x 420 primary school (with limited spare capacity)	
	Hethersett				1 x 420 primary (also serving demand at Cringleford)	
	Cringleford					
	Easton / Costessey	No additional requirements Some expansion of existing facilities may be necessary				
	Elsewhere in South Norfolk	No net additional requirement (although some reorganisation of provision may be required within the district)				

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

Source: EDAW

Norfolk County Council Children's Services' Response to Favoured Option: Primary

Assuming that all developments are child yielding (i.e. that no flats or 1 bedroom houses are developed), the child yields for primary education identified in Table 4-4 are applied to the total housing trajectory for each area. This approach generates the following requirements, which are consistent with the recommendations in the Norfolk County Council Children's Services response to the Favoured Options.

Broadland	**Rackheath / Sprowston Growth Triangle**	6 x 420 primary
	Development elsewhere in district	Expansion of existing
Norwich	**Norwich**	Expansion of existing
South Norfolk	**Wymondham**	1 x 420 primary
	Long Stratton	1 x 420 primary
	Hethersett	1 x 315 Primary School
	Cringleford	1 x 315 Primary School
	Development elsewhere in district	N/A

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

Norfolk County Council Children's Services' assessment of primary school demand to 2031 is largely consistent with the finding identified in Table 6-10 above. However, the increase in child yield under the

NCC approach does generate demand for an additional primary school within the Rackheath / Sprowston Growth Triangle.

Development in the Smaller Growth Locations

Table 6-24 present the demand for primary school facilities generated by the housing growth projected to occur in the smaller growth locations across the GNDP area. Phasing is not available for housing growth in these areas and the demand presented here is the total demand by 2031. These housing figures are included in the figures for 'elsewhere in Broadland' and 'elsewhere in South Norfolk' in other parts of this chapter.

Overall, the 300 dwellings expected to come forward at Diss and Haleston will generate demand for approximately 63 primary school places in each of the locations. This is significantly under the requirements for a new primary, and given the projected decline in demand outside the strategic growth locations, it is expected that demand for these primary places can be met through existing provision.

Demand elsewhere is less significant and is less likely to require the expansion or construction of new facilities.

Table 6-24: Primary population generated through housing growth in the smaller growth locations

Location	Primary school population	Current unfilled capacity
Diss	63	Three schools, Diss Church Junior School, Diss Infants & Nursery Community School and Roydon Primary School have a combined capacity of 40 places
Harleston	42	Harleston C of E VA Primary School is about at capacity.
Acle	42	Acle St. Edmund VC Primary School has capacity of 53 places
Reepham	42	Reepham Primary School is about at capacity
Wroxham	42	St. John's Community Primary School has a capacity of 23 places
Loddon	21	Loddon Infant School and Loddon Junior School have a combined capacity of 33 places
Blofield	10	Blofield Primary School is at capacity
Brundall	10	Brundall School has capacity of 83 places
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.		

Source: EDAW

6.5 Secondary Schools

Demand Generated from the Proposed Housing Growth

Table 6-25 shows that housing growth is likely to generate demand for 6,107 secondary school places across the GNDP area. These are distributed as 2,757 places in South Norfolk, 2,194 places in Broadland, and 1,156 places in Norwich. Demand within the strategic growth locations in South Norfolk is relatively limited (circa 100 to 250 places), where as the demand in the Rackheath / Sprowston Triangle exceeds 1,100.

Table 6-25: Secondary school age population generated through housing growth

		2011	2016	2021	2026	2031
Broadland	Rackheath / Sprowston Growth Triangle	0	153	474	795	1,134
	Development elsewhere in district*	120	379	632	843	1,060
	Total	**120**	**532**	**1,106**	**1,637**	**2,194**
Norwich	**Norwich**	**149**	**531**	**777**	**966**	**1,156**
South Norfolk	Wymondham	0	43	150	254	254
	Long Stratton	0	0	75	208	208
	Hethersett	0	16	109	116	116
	Cringleford	0	6	75	139	139
	Easton / Costessey	0	16	109	116	116
	Development elsewhere in district*	319	771	1,027	1,278	1,925
	Total	**319**	**852**	**1,544**	**2,111**	**2,757**
Grand Total		**588**	**1,916**	**3,427**	**4,714**	**6,107**

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

** Includes the population associated with development at smaller locations, existing commitments, assumed windfall development and the RSS review and post 2026 housing allocations.*

Source: EDAW, 2009

Facility requirements to support population generated from housing growth

Table 6-26 sets out the number of 900 place secondary schools that would be needed to meet the demand for secondary school places resulting from the demand generated by the proposed housing growth up to 2031.

These figures do not take account of existing capacity within each district or the net population change projected to occur within the existing population.

The Rackheath Sprowston Growth Triangle is the only strategic growth location in which the demand generated by proposed housing would trigger the requirement for an additional secondary school.

Table 6-26: Facility requirements to meet secondary school age population generated from housing growth

		2011	2016	2021	2026	2031
Broadland	**Rackheath / Sprowston Growth Triangle**	0.0	0.2	0.5	0.9	1.3
	Development elsewhere in district*	0.1	0.4	0.7	0.9	1.2
Norwich	**Norwich**	**0.2**	**0.6**	**0.9**	**1.1**	**1.3**
South Norfolk	**Wymondham**	0.0	0.0	0.2	0.3	0.3
	Long Stratton	0.0	0.0	0.1	0.2	0.2
	Hethersett	0.0	0.0	0.1	0.1	0.1
	Cringleford	0.0	0.0	0.1	0.2	0.2
	Easton / Costessey	0.0	0.0	0.1	0.1	0.1
	Development elsewhere in district*	0.4	0.9	1.1	1.4	2.1
Grand Total		**0.7**	**2.1**	**3.8**	**5.2**	**6.8**

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

** Includes the population associated with development at smaller locations, existing commitments, assumed windfall development and the RSS review and post 2026 housing allocations.*

Source: EDAW, 2009

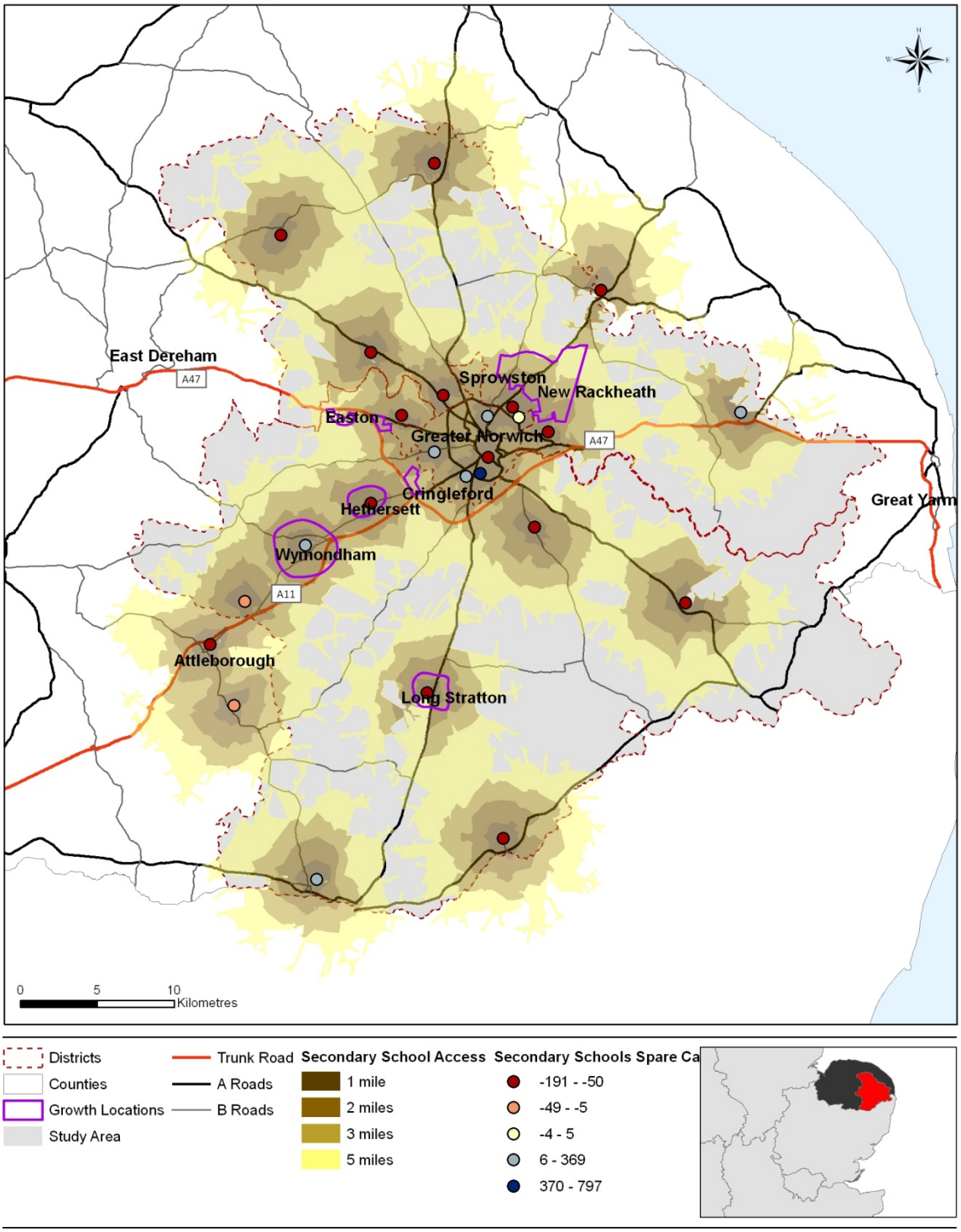
Considering existing capacity

There are 22 secondary schools within the GNDP area; seven in Broadland, six in Norwich and nine in South Norfolk. In addition, there are three schools, two in Breckland and one in North Norfolk, which take pupils living within the GNDP area.

The map over the page shows the location and an indication of the capacity of secondary schools across the GNDP area. It also illustrates the areas within GNDP that are within five miles travel of each facility.

Access and Capacity of Secondary Schools

Greater Norwich Infrastructure Study



Data Source: Norfolk County Coucil, ONS, Ordnance Survey

Last Updated: June 2009

The capacity / oversubscription of schools within the strategic growth locations has been incorporated in to the facility requirements below to determine where existing capacity may meet some of the demand generated by housing growth. In addition this section provides an overview of the capacity of schools located within 3 miles of each location that could potentially be utilised to help manage demand from growth within the Planning Obligations policies.

Rackheath / Sprowston Growth Triangle

There are currently no secondary schools in the Rackheath / Sprowston Growth Triangle. There are however six schools within three miles that could potentially be used to manage secondary school demand whilst development takes place.

Table 6-27: Secondary Schools within 3 miles of Rackheath / Sprowston Growth Triangle

School	Distance from growth location (miles)	Unfilled Capacity
Sprowston Community High School	1	116
Thorpe St. Andrew School	1	68
Open Academy	1	unknown
Sewell Park College	2	206
Broadland High School	3	94
Notre Dame High	3	-56
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.		

Source: Norfolk County Council

Norwich

There are six secondary schools within Norwich, with a combined unfilled capacity of 1366 places. Much of this spare capacity comes from Hewett High School, which has a total capacity of just over 1800, but only 1011 on role in 2009.

Table 6-28: Secondary Schools within Norwich

School	Unfilled Capacity
City of Norwich School	50
Earlham High School*	369
Hewett High School	797
Notre Dame High	-56
Open Academy	unknown
Sewell Park College	206
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.	

*Note that Earlham High School will be renamed the City Academy from September 2009. Work to rebuild the school in 2011 should increase capacity by 900 places.

Source: Norfolk County Council

Wymondham

The High school at Wymondham is currently oversubscribed by 112 places. Wymondham College is within three miles of Wymondham, but has limited capacity and Hethersett High School is also within three miles but spare capacity will be required to meet the population generated by housing growth there. Norfolk County Council Children's Services' have advised that the site is constrained, making expansion difficult without increasing density.

Long Stratton

Long Stratton has a single secondary school, currently with an unfilled capacity of 191 places. There are no other secondary schools within three miles of this growth location.

Hethersett

Hethersett High School is the only secondary school in Hethersett. It currently has further capacity for 67 students. Norfolk County Council Children's Services' have advised that the site is constrained, making expansion difficult without increasing density.

There are two additional secondary schools within 3 miles of Hethersett, with a combined capacity of 193 places.

Table 6-29: Secondary Schools within 3 miles of Hethersett

School	Distance from growth location (miles)	Unfilled Capacity
City Academy	3	230
Wymondham High School	3	-112
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.		

Source: Norfolk County Council

Cringleford

There are no secondary schools at Cringleford, with students attending Hethersett High. There are however three secondary schools within three miles that could potentially be used to meet the demand generated from housing growth.

Table 6-30: Secondary Schools within 3 miles of Long Stratton

School	Distance from growth location (miles)	Unfilled Capacity
City Academy	2	230
Hewett High School	3	797
City of Norwich School	3	50
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.		

Source: Norfolk County Council

Easton / Costessey

Costessey High School serves both Easton and the existing population at Costessey. It has a current capacity of an additional 89 places. Norfolk County Council advises that the potential for expansion is limited. City Academy, with unfilled capacity of 230 places is located within 3 miles of Costessey.

Considering changes in the net population

The following series of tables show how the demand for secondary school places generated from housing growth relates to the projected district wide population change forecast to occur across the whole district to give an understanding of the net population change outside of the growth locations. This can be used to estimate demand for areas 'elsewhere' in the districts.

Table 6-31: Net change in secondary population – Broadland

	2011	2016	2021	2026	2031
Demand Associated with District Wide Net Population Change	-170	-391	-184	-204	9
Demand Generated by Development in the Strategic Growth Locations	0	153	474	795	1,134
Inferred Demand Outside of the Strategic Growth Locations	**-170**	**-544**	**-658**	**-999**	**-1,125**

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

Source: EDAW / NCC Demographic Projections

Table 6-32: Net change in secondary population – Norwich

	2011	2016	2021	2026	2031
Demand Associated with District Wide Net Population Change	-952	-1382	210	639	1109
Demand Generated by Development in the Strategic Growth Locations	149	531	777	966	1,156
Inferred Demand Outside of the Strategic Growth Locations	**-1,101**	**-1,913**	**-567**	**-327**	**-47**

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

Source: EDAW / NCC Demographic Projections

Table 6-33: Net change in secondary population – South Norfolk

	2011	2016	2021	2026	2031
Demand Associated with District Wide Net Population Change	60	-92	215	245	505
Demand Generated by Development in the Strategic Growth Locations	0	81	517	833	833
Inferred Demand Outside of the Strategic Growth Locations	**60**	**-173**	**-302**	**-588**	**-328**

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

Source: EDAW / NCC Demographic Projections

The demand for secondary school places is projected to decline outside of the strategic growth locations in each of the districts. However the overall decline is only marginal in Norwich by 2031 and significantly less than the requirement for a discrete school in South Norfolk. However, the greatest decline is projected in Broadland, where the requirement for secondary school places will decline by 1,125 places by 2031.

Secondary school facility requirements

The total demand for secondary schools (based on a 900 pupil school), taking into consideration existing capacity and the projected net population change across each district, is set out in Table 6-34. It shows that there is demand for a large new secondary school (approx. 1100 pupils) within the Rackheath / Sprowston Growth Triangle.

However, there is also significant demand for secondary facilities beyond the current capacity at Wymondham, and limited demand at Cringleford and Easton / Costessey. While the combined increase in demand for secondary provision across the South Norfolk growth location is lower than the size of a secondary there are constrained opportunities for increasing the efficiency of the existing schools at these locations. While potential options for expanding the facilities located on these sites should be investigated in the first instance, it may be necessary to relocate existing provision elsewhere within the growth locations and provide new facilities catering for existing demand and the demand generated by new developments. Alternatively, if an additional facility is required, it may be possible, with some student movement management, to accommodate all the increase in demand within one new facility.

Table 6-34 Secondary school facility requirements

		2011	2016	2021	2026	2031
Broadland	Rackheath / Sprowston Growth Triangle	0.0	0.2	0.5	0.9	1.3
	Development elsewhere in district	-0.2	-0.6	-0.7	-1.1	-1.2
Norwich	**Norwich**	**-2.6**	**-3.1**	**-1.3**	**-0.8**	**-0.3**
South Norfolk	Wymondham	0.1	0.2	0.3	0.4	0.4
	Long Stratton	-0.2	-0.2	-0.1	0.0	0.0
	Hethersett	-0.1	-0.1	0.0	0.0	0.0
	Cringleford	0.0	0.0	0.1	0.2	0.2
	Easton / Costessey	0.0	0.0	0.1	0.1	0.1
	Development elsewhere in district	**0.1**	**-0.2**	**-0.3**	**-0.7**	**-0.4**
Grand Total		**-2.9**	**-3.8**	**-1.4**	**-0.9**	**0.1**

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

** Includes the population associated with development at smaller locations, existing commitments, assumed windfall development and the RSS review and post 2026 housing allocations.*

Source: EDAW, 2009

The facility demand presented in Table 6-34 is associated with the following facility requirements, which would meet demand generated by housing growth across the district after considering capacity that may become available elsewhere in the district as a result of the projected net population change.

Table 6-35: Secondary School Facility Requirements by Housing Growth Location

		Growth Phase Ending:				
		2011	**2016**	**2021**	**2026**	**2031**
Broadland	**Rackheath / Sprowston Growth Triangle**				1,200 place secondary school	
	Elsewhere in Broadland	No additional requirements				
Norwich		No additional requirement (potential reorganisation of activity in light of housing growth patterns)				
South Norfolk	**Wymondham**	Requirement for 680 places across each of the growth locations. There are a number of options for meeting these requirements, identified in the text above.				
	Long Stratton					
	Hethersett					
	Cringleford					
	Easton / Costessey					
	Elsewhere in South Norfolk	No additional requirements				
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.						

Source: EDAW

Norfolk County Council Children's Services' Response to Favoured Option: Secondary

Assuming that all developments are child yielding (i.e. that no flats or 1 bedroom houses are developed), the child yields for 11-16 secondary education identified in Table 4-4 are applied to the total housing trajectory for each area. This approach generates the following requirements, which are consistent with the recommendations in the Norfolk County Council Children's Services response to the Favoured Options.

Broadland	**Rackheath / Sprowston Growth Triangle**	1400 secondary
	Development elsewhere in district	Expansion of existing
Norwich	**Norwich**	Expansion of existing
South Norfolk	**Wymondham**	1680 secondary
	Long Stratton	Expansion of existing
	Hethersett	1120 secondary – to also serve Cringleford
	Cringleford	See above
	Costessey/Easton	1200 secondary
	Development elsewhere in district	Expansion of existing
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.		

Norwich County Council Children's Services' assessment of secondary school requirements presents a worst case scenario, which assumes that theconstrained existing sites at Wymondham, Hethersett and Costessey cannot be reconfigured to accommodate the increase in demand. This generates a significantly greater requirement than those identified in Table 6-23.

The costs associated with NCCs approach are included in the costs tables that follow, however it should

be noted that these represent a worst case and if the housing coming forward approaches the housing mix identified in Chapter 3, or if alternative methods of delivering this requirement are adopted, the total costs associated with secondary education may be substantially reduced.

6.6 Post 16 Education Requirements Schools

The following series of tables sets out the demand for six form places by district. It summaries the student numbers generated by the proposed housing growth (set out in Table 6-1) and considers the impact of net population change among the existing population. This approach is similar to that laid used when assessing the requirement for primary and secondary education requirements outside of the strategic growth locations.

Table 6-36: Demand for Six Form Places - Broadland

	District Wide Demand for Post-16 Places
Demand Generated by Proposed Housing Growth (District wide)	439
Demand associated with district wide net population change	-320
District Wide Demand for six form places	**119**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.	

Source: EDAW / NCC Demographic Projections

Table 6-37: Demand for Six Form Places - Norwich

	District Wide Demand for Post-16 Places
Demand Generated by Proposed Housing Growth (District wide)	231
Demand associated with district wide net population change	2,286
District Wide Demand for six form places	**2,517**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.	

Source: EDAW / NCC Demographic Projections

Table 6-38: Demand for Six Form Places – South Norfolk

	District Wide Demand for Post-16 Places
Demand Generated by Proposed Housing Growth (District wide)	551
Demand associated with district wide net population change	107
District Wide Demand for six form places	**608**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.	

Source: EDAW / NCC Demographic Projections

Current reforms to the education system are expected to greatly impact on the levels of demand for education infrastructure as well as the type and form that such infrastructure takes. With education or some form of training becoming compulsory up to the age of 18 years, a full suite of further education options are being made available, each requiring different facilities and supporting infrastructure.

Given that these reforms have not yet fully been implemented it has not been possible at this stage to identify what infrastructure demand will be created. Current thinking suggests that education and training is less likely to be delivered in a traditional manner and is more likely to be delivered through a mixture of classroom and work-based environments. In some instances this may require an increase in specialist/work-type accommodation within secondary schools.

Norfolk County Council Children's Services' Response to Favoured Option: Post 16

Assuming that all developments are child yielding (i.e. that no flats or 1 bedroom houses are developed), the child yields for post-16 provision identified in Table 4-4 are applied to the total housing trajectory for each area. This approach generates the following requirements, which are consistent with the recommendations in the Norfolk County Council Children's Services response to the Favoured Options.

Broadland	**Rackheath / Sprowston Growth Triangle**	280 place post-16
	Development elsewhere in district	
Norwich	**Norwich**	
South Norfolk	**Wymondham**	400 place post-16
	Long Stratton	
	Hethersett	
	Cringleford	
	Costessey/Easton	200 place post-16
	Development elsewhere in district	

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

Norwich County Council Children's Services' recommendations for post 16provision have been included in the cost set out in Table 6-39.

6.7 Education Infrastructure Overview and Costs

Table 6-39 below sets out the phasing and cost of providing the education facilities required to meet the demand arising from housing growth, having taken into consideration existing capacity and natural population changes. Opportunities for co-location with other facilities (such as community facilities and sports facilities) that have use and phasing synergies have also been included with the proportion of the total cost required for the education facility only also included in the table.

The detailed cost assumptions are laid out in the Infrastructure Costs Report (Appendix D). Secondary schools costs are based on per capita build costs associated recently completed or ongoing school developments, identified by Gardiner and Theobald. These vary from the assumptions adopted by NCC in the BSF Funding Model for secondary and post 16 provision. However once more detailed education plans are forthcoming it will be possible to refine the costs to reflect the true scale of each development.

The costs below represent a worst case (most expensive) scenario as they are based on the Norfolk County Council Children's Services' response to the favoured option for Broadland and South Norfolk, which assumes that the child yield is applied to the total development (i.e. it is not discounted for one bed accommodation or flats) and takes a pessimistic view of opportunities to increase student numbers through reconfiguration of existing facilities. Deviations from this approach may generate considerable cost savings. The recommendations for Norwich are based on EDAW's analysis which consider existing capacity and demographic changes within Norwich and assume that additional facilities will be required to meet the residual demand; this generates a 'worst case' analysis compared to the approach adopted by NCC.

The total cost of provision is £226 million, after discounting co-located facilities by the cost not attributable to education.

Appendix G presents an alternative overview of education provision that is consistent with the EDAW's approach elsewhere in this report and is based on the housing mix presented in Chapter 3. The child yields associated with flats and one bedroom properties are discounted and a less pessimistic view is adopted concerning the ability to manage increased capacity within South Norfolk within existing facilities. This approach generates significant cost savings over the requirement identified here and the total costs of provision is in the order of £102 million.

Table 6-39: Education facility costs

District	Growth Location	Infrastructure Requirement	Completion Date	Total Cost	Education Associated Costs
Broadland	**Rackheath / Sprowston Growth Triangle**	60 place pre-school	2021	£540,000	£540,000
		60 place pre-school *co-located with 600 sq m combined community space and library*	2021	£1,980,000	£540,000
		2 x 420 place primary with integrated 60 place nursery	2021	£10,280,000	£10,280,000
		60 place pre-school	2026	£540,000	£540,000
		2 x 420 place Primary & Integrated 60 place pre-school	2026	£10,280,000	£10,280,000
		1400 Secondary School with 280 post-16 places *co-located with 4 x indoor sports courts*	2026	£41,380,000	£39,380,000
		2 x 60 place pre-school	2031	£1,080,000	£1,080,000
		420 place primary & 60 place pre-school	2031	£5,140,000	£5,140,000
		420 place primary & 60 place pre-school *co-located with 600 sq m combined community space and library*	2031	£6,580,000	£5,140,000
Norwich	**Norwich**	1 x 60 place pre-school	2011	£540,000	£540,000
		1 x 60 place pre-school	2016	£540,000	£540,000
		2 x 420 place primary & Integrated 60 Place pre-school	2021	£10,280,000	£10,280,000
		60 place pre-school *co-located with 600 sq m combined Community Centre and Library*	2026	£1,980,000	£540,000
		2x 420 place primary both with integrated 60 place pre-school	2031	£10,280,000	£10,280,000
		60 place pre-school *co-located with 300 sq m library*	2031	£1,440,000	£540,000
		4 x 60 place pre-school	2031	£2,160,000	£2,160,000
South Norfolk	**Wymondham**	30 pre-school places	2021	£285,000	£285,000
		420 place primary with integrated 60 place nursery	2021	£5,140,000	£5,140,000
		60 place pre-school	2026	£540,000	£540,000
		1680 place secondary school with 400 post-16 places	2031	£48,720,000	£48,720,000
	Long Stratton	60 place pre-school	2026	£540,000	£540,000
		420 place primary & integrated 60 place pre-school *co-located with Combined Community Centre and Library (300 sq m)*	2026	£5,860,000	£5,140,000

District	Growth Location	Infrastructure Requirement	Completion Date	Total Cost	Education Associated Costs
	Hethersett	60 place pre-school	2021	£540,000	£540,000
		315 place primary	2026	£2,300,000	£2,300,000
		1,120 secondary school (to serve Cringleford as well)	2031	£26,300,000	£26,300,000
	Cringleford	1 x 60 place pre-school	2026	£540,000	£540,000
		315 place primary	2026	£2,300,000	£2,300,000
	Easton / Costessey	1 x 60 place pre-school	2021	£540,000	£540,000
		210 place primary	2026	£2,500,000	£2,500,000
		1,200 place secondary with 200 post-16 places	2031	£32,840,000	£32,840,000
Total Costs				£233,965,000	£226,025,000
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: EDAW / Gardiner & Theobald

N.B. The costs set out in the table above are based a cost assessment undertaken by Gardiner and Theobald using a benchmarking technique which takes an average from the cost of developing similar schools across the country. They include development to shell and core only and does not include fixtures, fittings and any specific educational equipment. It is intended to provide a strategic view of costs over the growth period only. Detailed and more accurate costs will need to be worked up during the detailed design stage when things such as the complexity of the site will be considered. Norfolk County Council have identified that they would expect the costs could be higher than set out above with a typical 210 place primary costing £4.5m and as a 420 place primary school costing £6m.

Table 6-40: Education Activities costs and funding sources Identified in the GNDP GNDP Integrated Development Plan

EDUCATION				
Prioritisation	**Geography**	**Funding Source**	**Total Costs & % Funding**	**Assumed Funding**
Nurseries				
60 place pre-school facility			£540,000	**£0**
Essential	Sprowston / Rackheath Growth Triangle			£0
60 place pre-school facility			£540,000	**£0**
Essential	Sprowston / Rackheath Growth Triangle			£0
2 x 60 place pre-school			£1,080,000	**£0**
Essential	Sprowston / Rackheath Growth Triangle			£0
60 place pre-school facility			£540,000	**£0**
Essential	Norwich			£0
60 place pre-school facility			£540,000	**£0**
Essential	Norwich			£0
4 x 60 place pre-school			£2,160,000	**£0**
Essential	Norwich			£0
30 pre-school places			£285,000	**£0**
Essential	Wymondham			£0
60 place pre-school facility			£540,000	**£0**
Essential	Wymondham			£0
60 place pre-school facility			£540,000	**£0**
Essential	Long Stratton			£0
60 place pre-school facility			£540,000	**£0**
Essential	Hethersett			£0
60 place pre-school facility			£540,000	**£0**
Essential	Cringleford			£0
60 place pre-school facility			£540,000	**£0**
Essential	Easton			£0
Primary Schools				
2 x 2 FE Primary & Integrated 60 place pre-school			£10,280,000	**£0**
Essential	Sprowston / Rackheath Growth Triangle			£0
2 x 2 FE Primary & Integrated 60 place pre-school			£10,280,000	**£0**
Essential	Sprowston / Rackheath Growth Triangle			£0

2 FE Primary & 60 place pre-school			£5,140,000	**£0**
Essential	Sprowston / Rackheath Growth Triangle			£0
2 FE Primary & 60 place pre-school co-located with 600 sq m combined community space and library			£6,580,000	**£0**
Essential	Sprowston / Rackheath Growth Triangle			£0
2 x 2 FE Primary & Integrated 60 Place pre-school			£10,280,000	**£0**
Essential	Norwich			£0
2 x 2 FE Primary & Integrated 60 Place pre-school			£10,280,000	**£0**
Essential	Norwich			£0
2 FE Primary & Integrated 60 Place pre-school			£5,140,000	**£0**
Essential	Wymondham			£0
2FE Primary & integrated 60 place pre-school co-located with Combined Community Centre and Library (300 sqm)			£5,860,000	**£0**
Essential	Long Stratton			£0
2 FE Primary (to also serve Cringleford) - Hethersett Asociated Costs			£2,300,000	**£0**
Essential	Hethersett			£0
2 FE Primary (to also serve Cringleford) - Cringleford Asociated Costs			£2,300,000	**£0**
Essential	Hethersett			£0
Secondary Education				
1,400 place secondary school with 280 post-16 places co-located with 4 x indoor sports courts			£41,380,000	**£0**
Essential	Sprowston / Rackheath Growth Triangle			£0
1,680 place secondary school with 400 post-16 places			£48,720,000	**£0**
Essential	Wymondham			£0
1,120 secondary school (to serve Cringleford as well) - Hethersett Associated Costs			£13,150,000	**£0**
Essential	Hethersett			£0
1,120 secondary school (to serve Cringleford as well) - Cringleford Associated Costs			£13,150,000	**£0**
Essential	Hethersett			£0
1,200 place secondary with 200 post-16 places			£32,840,000	**£0**
Essential	Easton			£0
		0	£0	**£0**
Total Assumed Funding - Education				**£0**
Total Assumed Infrastructure Costs – Education				**£226,025,000**
Total Assumed Funding Gap – Education				**£226,025,000**

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

Source: GNDP Integrated Development Plan

Table 6-41: Education Costs, Funding, and Prioritisation Overview

	Total Costs	Total Funding	Funding Gap
Critical	£0	£0	£0
Essential	£224,405,000	£0	£224,405,000
Desirable	£1,620,000	£0	£1,620,000
Total	**£226,025,000**	**£0**	**£226,025,000**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.			

Source: EDAW, 2009

7 Social Infrastructure: Healthcare

7.1 Policy Context

The Policy 18: Communities and Culture of the *Joint Core Strategy for Broadland, Norwich, and South Norfolk, Regulation 25 (March 2009)* recognises the need to provide adequate and accessible health facilities across the Joint Core Strategy area and in particular the strategy recognises that the larger scale development will need to be supported by a range of new infrastructure investments, including facilities health services.

With reference to the major growth locations, the Joint Core Strategy states that they possess a *'distinctive (and) high quality sustainable community with a vibrant and attractive district centre and a network of local centres serving existing neighbouring communities and new residents alike, providing shops, health, education and community services easily accessible by foot, bicycle and public transport*'.

In relation to rural areas, the Joint Core Strategy indicates that the key towns and service centres will be focal points for communities and have better access to healthcare facilities, which is of particular importance when managing the requirements of windfall developments, existing commitments, and growth within the smaller growth locations.

More broadly the Joint Core Strategy supports the Sustainable Communities Strategies which seeks to promote health more broadly, including the promotion of healthier and safer communities in combination with higher quality environments.

7.2 Existing Provision

GPs

The following map presents the distribution of GPs across the GNDP area. There is broad coverage across much of the area, and each of the strategic growth locations, besides Easton, contains a surgery. Coverage is greatest within Norwich, where 23 surgeries (including branch surgeries) have been identified, and a more detailed map illustrating the coverage of GPs surgeries within the city has also been included on the following page.

In addition to GPs surgeries located within the three districts there are a number surgeries located in other districts close to the GNDP boundary which could potentially meet the requirements associated with development in the smaller growth locations.

Dentist

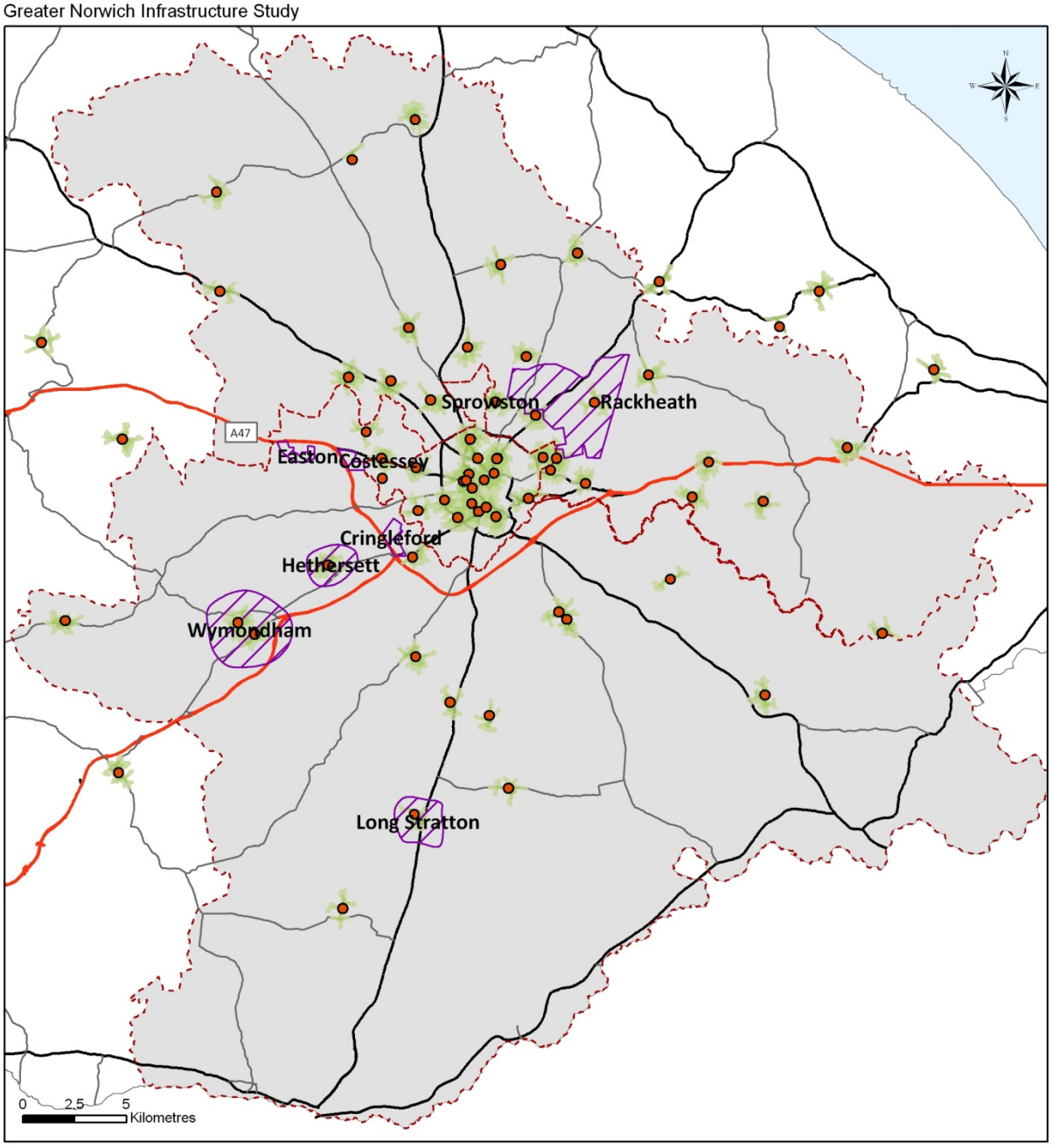
As would be expected, service is less comprehensive in the rural parts of the district, particularly to the south of the GNDP area, and it may be necessary to ensure that development in smaller sites to the south of the district have easy access to provision in the South Norfolk towns and service centres via public transport.

The provision of dentists is less comprehensive, with provision more heavily concentrated within Norwich and the surrounding towns and service centres. Of the strategic growth locations, neither Easton nor the Sprowston / Rackheath Growth Triangle contain dentist surgeries. However, there are a number of surgeries to the east of Norwich which may serve Sprowston and Rackheath and Easton is in close proximity to provision at Costessey. In the early years of development, when trigger points for new

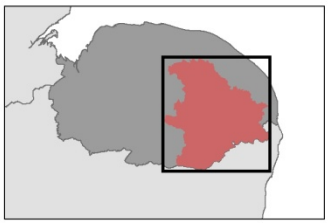
facilities have not yet been reached, it will be necessary to ensure that developments have good links to their surrounding towns and service centres, to ensure accessibility to these existing facilities.

Access to GP's

Greater Norwich Infrastructure Study



GP
5 minute walk
5-10 minute walk
10-15 minute walk
Counties
Study Area
Districts
Growth Locations
Trunk Road
A Roads
B Roads



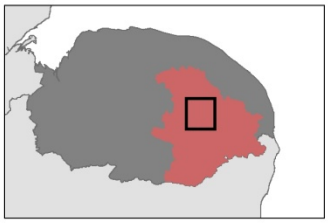
Data Source: Norfolk County Coucil, ONS, Ordnance Survey

Last Updated: May 2009

Access to GPs- Norwich

Greater Norwich Infrastructure Study

GP
5 minute walk
5-10 minute walk
10-15 minute walk
Counties
Study Area
Districts
Growth Locations
Trunk Road
A Roads
B Roads

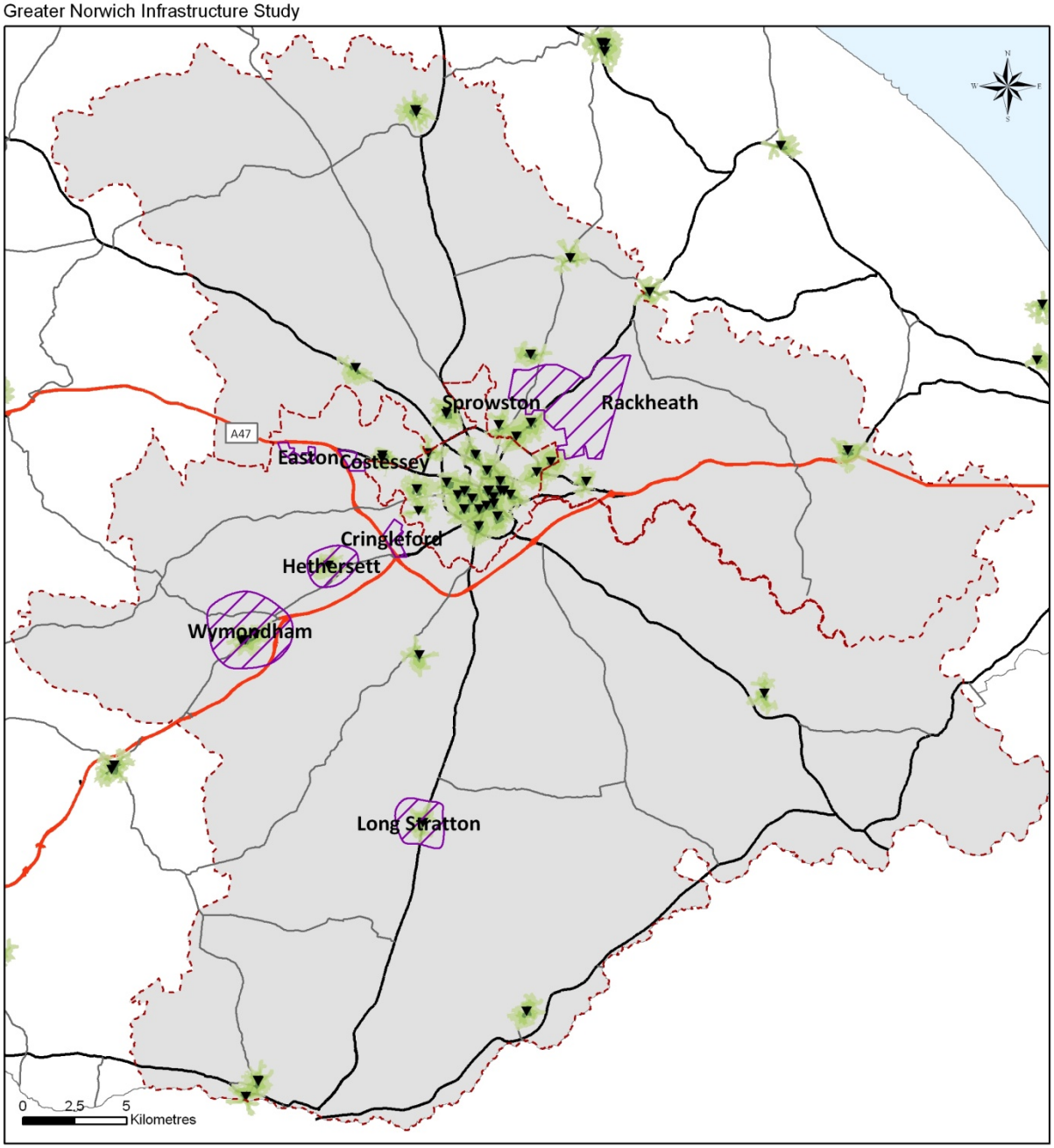


Data Source: Norfolk County Coucil, ONS, Ordnance Survey

Last Updated: May 2009

Access to Dentists

Greater Norwich Infrastructure Study



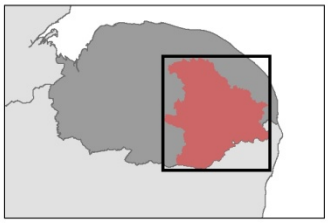
▼ Dentists

Dentist Access

- 5 minute walk
- 5-10 minute walk
- 10-15 minute walk

- Counties
- Study Area
- Districts
- Growth Locations

- Trunk Road
- A Roads
- B Roads

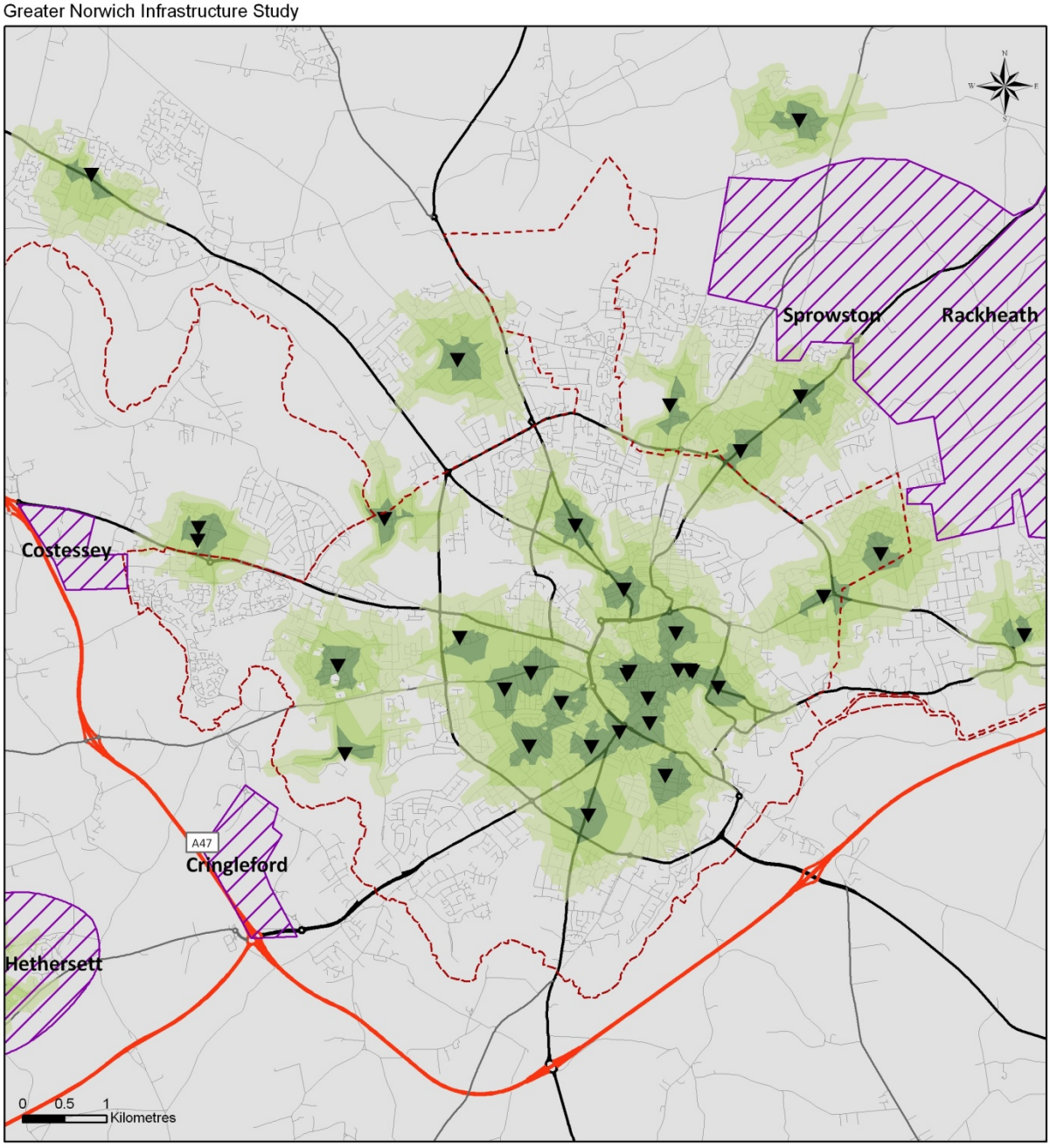


Data Source: Norfolk County Coucil, ONS, Ordnance Survey

Last Updated: May 2009

Access to Dentists- Norwich

Greater Norwich Infrastructure Study



Dentists

Dentist Access

5 minute walk

5-10 minute walk

10-15 minute walk

Counties

Study Area

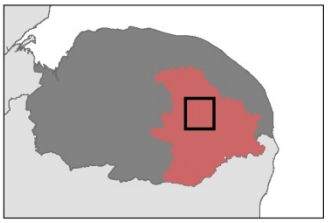
Districts

Growth Locations

Trunk Road

A Roads

B Roads



Data Source: Norfolk County Coucil, ONS, Ordnance Survey

Last Updated: May 2009

7.3 Infrastructure Requirements Overview

Assumptions

The healthcare requirements described in this section are based on the population generated by the proposed housing growth, details of which are provided in section 4.2. However, in areas where growth is dispersed across the district and where facilities (such as hospital beds) are provided at the sub-regional level, the projected net population change at the district level has also been considered in order to identify whether the demand generated by the proposed growth may be met through existing facilities as a result of local demographic change.

The following standards are applied to the total residents of each area to identify the associated healthcare infrastructure requirements:

- 1,800 people per GP, based on the Department of Health standard
- 2,000 people per dentist, based on the University of Bath School of Health (2004) standard

Hospital bed requirements are based on the number of beds necessary to maintain the East of England Strategic Health Authority average per head, as follows:

- 664 people per acute hospital bed
- 361 people per geriatric bed
- 7,325 people per maternity bed
- 2,150 people per mental illness bed
- 12,397 people per learning difficulty bed

Hospital beds will be provided at facilities strategically located to serve sub-regional healthcare requirements and the bed requirements identified here represent the impact of the proposed developments on the demand for services provided by the Strategic Health Authority. Hospital beds are unlikely to be provided within the strategic growth locations and in some case the expanded provision may occur at facilities located outside of the GNDP area.

A further consideration in relation to hospital beds is the increasing requirement for more flexible forms of care and for greater levels of community based care. However, in the absence of appropriate policy guidance and the fact that such care is not directly linked to growth of the population, it has not been possible to provide an assessment of how such provision may be brought forward across the GNDP area. However, the infrastructure requirements below do reflect the demographic projections of the GNDP area to 2031 for the total population and for those of retirement age. This, in conjunction with Table 4-9: Demographic Population Change, 2006-31, will help delivery providers tailor the provision of care in light of the proposed housing growth.

7.4 GP Requirements

Broadland

Demand Generated from Housing Growth

The housing developments proposed for Broadland generate a population of 42,384 by 2031, which corresponds to demand for 23.5 GPs. Of these, 12 are required within the Sprowston / Rackheath Growth Triangle.

Currently there is only one GP surgery located within the Rackheath / Sprowston Growth Triangle, although a number of surgeries are located close to its boundary. The level of demand generated by the housing development represents a significant increase over the current level of provision and meeting this demand would require the provision of a number of discrete facilities to be located within the growth area.

Demand for a further 11 GPs is generated elsewhere across the district as a result of proposed developments within the smaller growth locations and through windfall and committed housing, which are assumed to be distributed across Broadland.

The GP requirements across Broadland are relatively evenly phased over the whole growth period, suggesting that the facilities may be brought forward in a staggered manner as sufficient demand arises within the local area.

Table 7-1: GP Demand Generated by New Housing Growth: Broadland

	GPs (Cumulative)				
	2011	**2016**	**2021**	**2026**	**2031**
Rackheath / Sprowston Growth Triangle	0.0	1.6	5.1	8.5	12.2
Elsewhere in Broadland	1.3	4.1	6.8	9.0	11.4
Broadland Housing Associated Demand	1.3	5.7	11.9	17.6	23.5
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: EDAW

Considering District Wide Population Change

The demographic projections for Broadland suggest that net population change of approximately 27,200 people across the district will create demand for an additional 15 GPs. This includes the demand generated by the housing growth and the impact of changes within the existing population of Broadland.

Table 7-2: Impact of Net Population Change on GP Demand: Broadland

	GPs (Cumulative)				
	2011	**2016**	**2021**	**2026**	**2031**
Broadland Total	-0.3	2.0	6.2	10.1	15.1
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: EDAW / NCC Demographic Projections

These findings suggest that in the absence of the new housing developments, which generate demand for 23.5 GPs across the district, the demand for GPs across Broadland would decrease as the demand generated by housing growth exceeds the demand associated with the population projections. Without housing growth demand for GPs across Broadland would decrease by 8 GPs (the demand for 15.1 GPs across the district minus the housing growth associated demand of 23.5 GPs).

However, this pattern will not apply uniformly outside of the strategic growth locations. Across Broadland the demand for GPs will increase in areas where smaller, windfall, and committed developments are concentrated and decline elsewhere.

Given the proposals for 12 GPs to be provided in the Rackheath / Sprowston Growth Triangle, it is only necessary to provide a net increase of 3 GPs elsewhere in Broadland in order to meet the district wide demand of 15 GPs associated with projected net population change. The remaining demand will be met through capacity coming forward within existing facilities due to the declining demand elsewhere in the district, explained above. The 3 GPs demanded outside the strategic growth locations are likely to be required in the smaller growth locations and would most likely be provided through the expansion of existing facilities.

In some instances, local patterns of population change may require further reorganisation of provision to ensure that the distribution of facilities is aligned with local demand. However, it is not possible to assess when or how this may occur without a greater understanding of the areas where population decline is likely.

The degree to which local demand is adequately met by locally accessible facilities should be monitored on an ongoing basis as housing development outside of the strategic growth locations comes forward.

Facility Requirements

The level of demand presented above suggests that the following GPs facilities will be required within Broadland to support the proposed level of housing growth. Sections 7.7 and 7.8 identify the potential for reducing the associated costs of this provision by delivering combined GP and dentist provision through Primary Care Centres.

Prior to the growth phase ending in 2021 the level of demand for GPs is not sufficient to require the provision of additional facilities, as it is anticipated that the demand can be met through existing facilities. However, by 2021 it is necessary to provide a new facility supporting 5 GPs within the strategic growth location and the expansion of an additional facility elsewhere in the district.

The GP facility proposed within the growth location for the phase ending 2026 will not be operating at full capacity at this time. However, local demand is sufficient to provide an additional smaller facility to support growth, and rapid pace of housing growth post 2026 will ensure that it is operating at capacity shortly after completion.

In reality, the expansion of GP facilities outside of the strategic growth location will vary according to the nature of growth elsewhere in the district and the potential to meet the demand arising at existing local facilities. However, the recommendation to expand a single GP surgery every five years between the growth phases ending 2021 and 2031 represents the net increase in demand occurring across the district and is based on the housing trajectories and district wide demographic projections.

Table 7-3: GP Facilities Requirements, by Growth Phase: Broadland

	Growth Phase Ending:				
	2011	**2016**	**2021**	**2026**	**2031**
Rackheath / Sprowston Growth Triangle	None – utilise existing provision	None – utilise existing provision	**Facilities for 5 GPs**	**Facilities for 5 GPs (providing capacity of 1.5 GPs to support future growth)**	**Facilities for 2 GPs**
Elsewhere in Broadland	No additional requirements	No additional requirements	**Expand existing facilities (1GP)**	**Expand existing facilities (1GP)**	**Expand existing facilities (1GP)**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: EDAW

Norwich

Demand Generated by New Housing Developments

The housing growth proposed for Norwich generates demand for an additional 12.9 GPs across the city. There are currently 23 GP surgeries distributed across the city of Norwich however, given the level of demand associated with the housing growth, it is likely to be more effective to support the rising demand through a smaller number of purpose built facilities rather than expanding a larger number of existing facilities.

Table 7-4: GP Demand Generated by New Housing Growth: Norwich

	GPs (Cumulative)				
	2011	**2016**	**2021**	**2026**	**2031**
Norwich Housing Growth Associated Demand	1.7	5.9	8.7	10.8	12.9
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: EDAW

Considering City Wide Population Change

The demographic projections for Norwich suggest that net population change across the city will create demand for an additional 15 GPs by 2031, which includes the demand generated by the new developments.

Given that the housing developments generate demand for an additional 13 GPs, it is possible to infer that 2 GPs would be required by 2031 even in the absence of housing growth due to growth of the existing population.

The need to provide facilities for 15 GPs will be considered when identifying necessary facilities, however the costs associated with 2 GPs will be discounted from the facilities costs as these are not directly associated with the proposed housing growth.

Table 7-5: Impact of Net Population Change on GP Demand: Norwich

	GPs (Cumulative)				
	2011	**2016**	**2021**	**2026**	**2031**
Norwich	2.8	7.0	10.7	12.4	15.1
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: EDAW / NCC Demographic Projections

Facility Requirements

The level of demand presented above suggests that the following GPs facilities will be required within Norwich to support the proposed level of housing growth.

As early as 2011 the net population change projected to occur in Norwich is sufficient to require a small surgery for 3 GPs that is strategically located within Norwich. Of these, demand for 2 GPs is generated by the proposed housing and only two thirds of the costs of this facility are attributable to development.

To reflect the efficiencies associated with providing healthcare from larger facilities, from which a greater range of services may be provided, it is suggested that the increased demand between 2011 and 2016 be met through existing surgeries located within the city. This allows for a larger facility to be provided in 2021 which would be strategically placed to meet the needs of a broad section of the city and whose requirements are wholly attributable to the housing growth. Sections 7.7 and 7.8 identify how a similar requirement for dentists provides the possibility of providing this facility as part of a combined Primary Care Centre incorporating dentist and other related services.

A similar approach is suggested for the provision of GPs after 2021, with the increased demand up to 2026 being met by existing facilities and a new facility housing 6 GPs being provided by 2031. As with the smaller GP surgery, demand for only five of the six GPs housed in this facility is directly attributable to housing growth. The demand for the sixth GP is due to growth within the existing population and the costs associated with this facility are discounted accordingly.

Table 7-6: GP Facilities Requirements, by Growth Phase: Norwich

	Growth Phase Ending:				
	2011	**2016**	**2021**	**2026**	**2031**
Norwich	**Facility for 3 GPS (of which 2 GPs linked to housing growth)**	Utilise Existing Facilities	**Facilities for 6 GPs & Utilise Existing Facilities**	Utilise Existing Facilities	**Facilities for 6 GPs (of which 5 GPs are linked to housing growth)**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: EDAW

South Norfolk

Demand Generated by New Housing Developments

The housing growth proposed for South Norfolk generates a population of 50,566 people which corresponds to demand for 28 GPs. The breakdown of demand by strategic growth location is provided in the table below and indicates that GP demand within the strategic growth locations may be met by providing three GPs in Wymondham, two GPs in Long Stratton and one GP each in Hethersett, Cringleford, and Easton. The overall demand within the growth locations is for 8 GPs.

The housing developments at Wymondham and Long Stratton both generate sufficient GP demand to provide new facilities. The smaller level of development in the remaining growth locations will require the expansion of existing facilities. Of these, Hethersett currently contains a GP surgery and a surgery is located close to the boundary of the proposed developments at Cringleford and Costessey. Easton is located further from existing provision, however it is likely that developments located here would need to be served by the facilities currently serving Costessey, due to the low level of demand generated by development on this site.

Within the strategic growth locations the phasing of growth suggests that the greatest demand for facilities will occur during the phases ending 2021 and 2026.

Elsewhere in South Norfolk the proposed development is expected to generate demand for an additional 19.6 GPs, reflecting growth within the smaller growth locations in addition to the windfall and existing commitments that are assumed to be distributed across the district.

Table 7-7: GP Demand Generated by New Housing Growth: South Norfolk

	GPs (Cumulative)				
	2011	**2016**	**2021**	**2026**	**2031**
Wymondham	0.0	0.4	1.5	2.6	2.6
Long Stratton	0.0	0.0	0.8	2.1	2.1
Hethersett	0.0	0.2	1.1	1.2	1.2
Cringleford	0.0	0.1	0.8	1.4	1.4
Easton / Costessey	0.0	0.2	1.1	1.2	1.2
Elsewhere in South Norfolk	3.3	7.9	10.5	13.0	19.6
Total South Norfolk	3.3	8.7	15.7	21.5	28.1
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: EDAW

Considering District Wide Population Change

The demographic projections for South Norfolk suggest that the projected net population change across the district will require an additional 21.5 GPs. This includes the demand generated by the new developments in addition to changes within South Norfolk's existing population.

Table 7-8: Impact of Net Population Change on GP Demand: South Norfolk

	GPs (Cumulative)				
	2011	**2016**	**2021**	**2026**	**2031**
South Norfolk Total	3.9	7.3	12.2	15.7	21.5
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: EDAW / NCC Demographic Projections

These findings suggest that the demand for GPs would decrease across South Norfolk as a whole in the absence of housing growth and is similar to the pattern described for Broadland earlier in this section.

As with Broadland, the patterns of population change within the district suggest that demand will increase in areas experiencing housing growth and decline in other parts of South Norfolk where the local population is expected to decline.

In light of the requirement for 8 GPs to be provided within the strategic growth locations by 2031, these figures identify a need to provide a further 13 GPs outside of the growth locations by 2031. They are most likely to be provided within the smaller growth locations or where windfall developments and existing commitments may be clustered to meet increasing demand in these areas.

The remainder of the demand generated by housing growth elsewhere in South Norfolk can be met by capacity which is expected to come forward in existing facilities in these areas. However, this situation should be monitored closely to ensure that the spatial distribution of capacity is appropriate to serve the demand generated by developments as they come forward.

Facility Requirements

The level of demand presented above suggests that the following GPs facilities will be required within South Norfolk to support the proposed level of housing growth. Sections 7.7 and 7.8 identify the potential for reducing the associated costs of this provision by delivering combined GP and dentist provision through Primary Care Centres.

In the period ending 2011, increasing demand for GPs occurs outside of the strategic growth locations and is driven by growth of the existing population and demand generated by windfall developments.

By 2016, housing growth within each strategic growth locations is still insufficient to generate demand for GP facilities however there is further demand for GP facilities outside of the growth locations.

Due to the phasing of development within South Norfolk, the majority of infrastructure facilities are required between 2016 and 2021. This includes a facility for 3 GPs within Wymondham and the expansion of facilities in Hethersett, Cringleford, and Easton / Costessey. There is no surgery located within the Easton growth location, demand within this site is not sufficient for a standalone facility, however it may be possible to expand the surgery currently located close to the Costessey growth location.

By 2026 is it necessary to provide a facility for 2 GPs within Long Stratton. Demand generated by housing development within the other Growth Locations will be met through the new and expanded facilities provided in the previous phase (2016-21).

Elsewhere in the district, there is the need to provide a net increase of 1 GP between 2021 and 2026 and a further 5 GPs before 2031. In reality, the expansion of GP facilities outside of the strategic growth location will vary according to the nature and distribution of local housing growth. The requirements identified here are estimates based on the housing trajectories and district wide demographic projections. Further information is provided in the discussion of growth within the market towns which is presented below.

Table 7-9: GP Facilities Requirements, by Growth Phase: South Norfolk

	Growth Phase Ending:				
	2011	**2016**	**2021**	**2026**	**2031**
Wymondham	No requirement	Utilise existing facilities	**Facility for 3 GPs**	Utilise existing provision	No further requirement
Long Stratton	No requirement	Utilise existing facilities	Utilise existing facilities	**Facilities for 2 GPs**	No further requirement
Hethersett	No requirement	Utilise existing facilities	**Expand existing facilities by 1 GP**	Utilise existing provision	No further requirement
Cringleford	No requirement	Utilise existing facilities	**Expand existing local facilities by 1 GP**	Utilise existing provision	No further requirement
Easton / Costessey	No requirement	Utilise existing facilities	**Expand existing local facilities by 1 GP**	Utilise existing provision	No further requirement
Elsewhere in South Norfolk	**Provision for 4 additional GPs**	**Provision for 3 additional GPs**	No additional requirement	**Provision for 1 additional GP**	**Provision for 5 additional GPs**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: EDAW

Development within the Smaller Growth Locations

Table 7-10 presents the demand for GPs generated by the housing growth projected to occur in the smaller growth locations across the GNDP area. Phasing is not available for housing growth in these areas and the demand presented here is the total demand generated by 2031. These housing figures are included in the figures for 'elsewhere in Broadland' and 'elsewhere in South Norfolk' in other parts of this chapter.

Housing growth is not sufficient in any of the growth locations to require additional GP provision. The greatest requirement is within Diss and Harleston, where there a requirement for 0.4 GPs in each.

However, where it is necessary to expand provision in rural locations, it will be important to consider the requirements in these locations, and their ability to service requirements arising from windfall and committed developments.

Table 7-10: GP Demand Generated Though Smaller Housing Locations in Smaller Growth Locations

Location	**Pre-school population**
Diss	0.4
Harleston	0.4
Acle	0.2
Reepham	0.2
Wroxham	0.2
Loddon	0.2
Blofield	0.1
Brundall	0.1
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.	

Source: EDAW / GNDP Joint Core Strategy

7.5 Dentists Requirements

Broadland

Demand Generated by New Housing Developments

Across Broadland the proposed housing development generates the demand for an additional 21.2 dentists, which are evenly split between the Rackheath / Sprowston Growth Triangle and developments elsewhere in the district.

There are currently seven dentist surgeries located close to the Rackheath / Sprowston Growth Triangle, however the scale of demand generated by development within the growth location will still require a number of purpose built facilities.

Development occurring elsewhere in Broadland generates demand for an additional 10 dentists, however this demand will be spread across the district and relate to the distribution of development in the smaller growth locations, windfall developments and existing commitments.

Table 7-11: Dentist Demand Generated by New Housing Growth: Broadland

	Dentists (Cumulative)				
	2011	**2016**	**2021**	**2026**	**2031**
Rackheath / Sprowston Growth Triangle	0.0	1.5	4.6	7.7	10.9
Elsewhere in Broadland	1.2	3.7	6.1	8.1	10.2
Total Broadland	1.2	5.1	10.7	15.8	21.2
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: EDAW

Considering District Wide Population Change

The demographic projections for Broadland suggest that net population change across the district will create demand for an additional 13.6 dentists by 2031, which includes the demand generated by the new developments and the impact of other changes within the existing population.

Given that the demand generated by the housing growth proposed for Broadland (21.2 dentists) exceeds the increase associated with the projected district wide population change, it is possible to infer that the demand for dentists would decline in the absence of housing growth. These findings are in line with the projected requirements for GPs over the same period and reflect the projected decline in the population of Broadland without housing growth.

Table 7-12: Impact of Net Population Change on Dentist Demand: Broadland

	Dentists (cumulative)				
	2011	**2016**	**2021**	**2026**	**2031**
Broadland	-0.3	1.8	5.6	9.1	13.6
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: EDAW / NCC Demographic Projections

As facilities for 11 dentists are to be provided within the Rackheath Sprowston Growth Triangle to meet the demand generated by housing growth there, a net increase of 3 dentists is required elsewhere in Broadland to meet the district wide requirements (13.6 dentists) that are associated with net population change.

In line with GPs, there may be a need to reorganise dental provision within the district to reflect local patterns of population change, however it is not possible to provide such detailed recommendations here. The extent to which current provision matches ongoing need should be monitored as housing growth comes forward.

At this stage it is assumed that the facilities for the 3 dentists required outside of the growth location will come forward through the expansion of existing facilities in areas where concentrations of windfall, committed, and smaller developments have generated increases in local demand.

Facility Requirements

These findings suggest that in the absence of the new housing developments, which generate demand for 21.2 dentists across the district, the demand for dentists across Broadland would decrease as the demand generated by housing growth exceeds the demand associated with the population projections. Without housing growth demand for dentists across Broadland would decrease by 7.6 dentists.

However, this pattern will not apply uniformly outside of the strategic growth locations. Across Broadland the demand for dentists will increase in areas where smaller, windfall, and committed developments are concentrated and decline elsewhere.

Given the proposals for 11 dentists to be provided in the Rackheath / Sprowston Growth Triangle, it is only necessary to provide a net increase of 3 dentists elsewhere in Broadland in order to meet district wide demand associated with projected net population change. The remaining demand will be met through capacity coming forward within existing facilities due to the declining demand elsewhere in the district, explained above. The 3 dentists demanded outside the strategic growth locations are likely to be required in the smaller growth locations and would most likely be provided through the expansion of existing facilities.

In some instances, local patterns of population change may require further reorganisation of provision to ensure that the distribution of facilities is aligned with local demand. However, it is not possible to assess when or how this may occur without a greater understanding of the areas where population decline is likely.

The degree to which local demand is adequately met by locally accessible facilities should be monitored on an ongoing basis as housing development outside of the strategic growth locations comes forward.

Table 7-13: Dentist Facilities Requirements, by Growth Phase: Broadland

	Growth Phase Ending:				
	2011	**2016**	**2021**	**2026**	**2031**
Rackheath / Sprowston Growth Triangle	No requirement	Utilise existing provision	**Facilities for 4 Dentists**	**Facilities for 4 Dentists**	**Facilities for 3 Dentists**
Elsewhere in Broadland	No requirement	E**xpand existing provision by 2 Dentists**	No further requirement	No requirement	**Expand existing provision by 1 Dentist**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: EDAW

Norwich

Demand Generated by New Housing Developments

The housing growth proposed for Norwich generates demand for 11.6 dentists across the city, which is of sufficient scale to require purpose built facilities strategically located around the city.

The greatest increase in demand occurs between 2011 and 2021, reflecting the rate of house building proposed across the city during that time, however steady increases in demand are projected to 2031.

Table 7-14: Dentist Demand Generated by New Housing Growth: Norwich

	Dentists (cumulative)				
	2011	**2016**	**2021**	**2026**	**2031**
Norwich	1.5	5.4	7.8	9.7	11.6
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: EDAW

Considering District Wide Population Change

The projected population growth expected to occur in Norwich by 2031 is expected to generate additional demand for 13.6 GPs, which reflects the demand for 11.6 GPs generated by the proposed housing growth plus demand for a further 2 dentists linked to growth of the existing population.

This suggests that in the absence of housing growth, there will be a net increase in demand for 2 dentists.

Table 7-15: Impact of Net Population Change on Dentists Demand: Norwich

	Dentists (cumulative)				
	2011	**2016**	**2021**	**2026**	**2031**
Norwich	2.5	6.3	9.6	11.1	13.6
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: EDAW / NCC Demographic Projections

Facility Requirements

Across Norwich there is the requirement to provide facilities for an additional 14 dentists by 2031, which will require the construction of new facilities. However, as the requirement for only 12 of these GPs is directly associated with the housing growth, the costs of dental provision across Norwich will be discounted accordingly.

The following table identifies how the necessary level of dental provision may be brought forward within the city. Opportunities for co-location with GPs and non-Healthcare related facilities are identified at the end of this chapter.

The projected level of demand does not trigger a new facility until the phase ending 2016, when it is necessary to provide 4 further dentists across the city. A facility for a further five dentists is required by 2021.

Between 2026 and 2031 it will be necessary to provide facilities for a further 5 dentists, however the demand for only 3 dentists are associated with the housing growth. The additional requirement is associated with growth among the existing population and the costs associated with this facility will be discounted accordingly.

Table 7-16: Dentists Facilities Requirements, by Growth Phase: Norwich

	Growth Phase Ending:				
	2011	**2016**	**2021**	**2026**	**2031**
Norwich		**Facility for 4 dentists**	**Facility for 5 dentists**		**Facility for 5 dentists (only 3 dentists are associated with growth)**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: EDAW

South Norfolk

Demand Generated by New Housing Developments

The housing growth proposed for South Norfolk will generate demand for an additional 25.3 dentists across the district. However this is predominantly associated with development within the smaller growth locations in addition to the windfall and committed developments that are expected to come forward across the district. In total, demand for 17.6 dentists is associated with these types of development.

Total demand for 7.7 dentists is generated by demand within the strategic growth locations, ranging from demand for 1.1 GP in the Easton / Costessey to 2.3 dentists in Wymondham.

Table 7-17: Dentist Demand Generated by New Housing Growth: South Norfolk

	Dentists				
	2011	**2016**	**2021**	**2026**	**2031**
Wymondham	0.0	0.4	1.4	2.3	2.3
Long Stratton	0.0	0.0	0.7	1.9	1.9
Hethersett	0.0	0.1	1.0	1.1	1.1
Cringleford	0.0	0.1	0.7	1.3	1.3
Easton / Costessey	0.0	0.1	1.0	1.1	1.1
Elsewhere in South Norfolk	2.9	7.1	9.4	11.7	17.6
Total South Norfolk	2.9	7.8	14.2	19.4	25.3
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: EDAW

These figures suggest that there is a need to provide facilities for 2 dentists in Wymondham and Long Stratton and 1 dentist in each of Hethersett, Cringleford, and Easton / Costessey. Facilities for these 7 GPs will be delivered through a combination of purposes built facilities and the expansion of existing facilities.

Implications of South Norfolk Net Population Change

Overall, the net population change projected to occur across South Norfolk by 2031 will be associated with demand for an additional 19.3 dentists over this period. This is lower than the level of demand generated by total housing growth across the district due to the population decline projected for South Norfolk in the absence of housing growth.

Table 7-18: Impact of Net Population Change on Dentist Demand: South Norfolk

	Dentists				
	2011	**2016**	**2021**	**2026**	**2031**
South Norfolk	3.5	6.6	10.9	14.2	19.3
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: EDAW / NCC Demographic Projections

Providing a net increase of 19 dentists across the district, including facilities for 7 dentists within the strategic growth locations requires that facilities for 12 additional dentists be provided across the district in addition to the facilities for 7 dentists that will be provided within the growth locations.

As with district wide provision in Broadland, the precise distribution of dentists will reflect the localised patterns of population change due to changes within the existing population and the impact of localised concentrations of housing growth. This is particularly true of the smaller growth locations, described in greater detail below.

Facilities Requirements

The following table presents a summary of dentist facilities that are necessary to meet the increase in demand associated with the proposed housing growth and the district wide net population change.

Prior to 2016 there is no need to provide facilities within the strategic growth locations and all of the increase in demand may be met through the expansion of existing facilities elsewhere in the district. By the end of the phase ending 2021 it is necessary to expand facilities serving Hethersett and Easton / Costessey to meet the demand generated by the housing growth.

Facilities for 2 dentists will be provided in Wymondham by 2021, this exceeds the requirement for 1.4 dentists demanded in Wymondham at this time, however the early provision allows the facilities to be co-located with the GP facilities phased at this time. By 2026 this dentist facility will be operating at capacity.

Additional facilities are required in the growth locations during in the phase ending 2026, with facilities for 2 dentists being provided in Long Stratton and the expansion of facilities serving Cringleford. After 2026, there is projected to be a further need to expand facilities located outside of the strategic growth locations.

Table 7-19: Dentist Facilities Requirements, by Growth Phase: South Norfolk

	Growth Phase Ending:				
	2011	**2016**	**2021**	**2026**	**2031**
Wymondham	No requirement	Utilise existing facilities	**Facility for 2 Dentists**	Utilise existing provision	No further requirement
Long Stratton	No requirement	Utilise existing facilities	Utilise existing facilities	**New facilities for 2 dentists**	No further requirement
Hethersett	No requirement	Utilise existing facilities	**Expand existing facilities by 1 Dentist**	Utilise existing provision	No further requirement
Cringleford	No requirement	Utilise existing facilities	Utilise existing facilities	**Expand existing local facilities by 1 Dentist**	No further requirement
Easton / Costessey	No requirement	Utilise existing facilities	**Expand existing local facilities by 1 Dentist**	Utilise existing provision	No further requirement
Elsewhere in South Norfolk	**Provision for 4 additional dentists**	**Provision for 3 additional dentists**	No additional requirement	No additional requirement	**Provision for 5 additional dentists**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: EDAW

7.6 Hospital Bed Requirements

Approach

This section assesses the impact of the proposed housing growth on the demand for hospital beds across the GNDP area. This approach does not reflect the shift towards flexible healthcare provision or the increasing level of care that is being provided within communities. However, such approaches are not directly linked to housing growth and will place a greater emphasis on the relative health of communities across the GNDP area. In the absence of detailed planning policy in relation to this more flexible form of healthcare provision, the approach adopted below provides indicative information on the potential scale and costs of healthcare provision associated with the proposed housing growth.

The hospital beds described here are unlikely to be provided within the strategic growth locations. Instead, the Strategic Health Authority will assess the impact of net population change on the sub-regional requirement for hospital beds. This net population change will reflect the demand generated by the proposed housing growth in addition to demographic changes within the existing population.

However, for the purposes of this study it is necessary to assess the implications of the proposed housing growth only on local and strategic infrastructure requirements. This requires disaggregating the requirements generated by the housing growth from the district wide requirement for hospital beds to determine the true cost that may be attributable to the development.

The following sections present (i) the demand for hospital beds generated by the proposed housing growth, and (ii) the demand associated with district wide net population change. From these figures it is possible to infer the cost of bed provision attributable to housing growth alone.

For the following section only presents the total requirements by 2031, however detailed phasing is provided at the end of this chapter.

Demand Generated by New Housing Developments

Overall the level of housing growth proposed for the GNDP area generates demand for an additional 284 hospital beds. The greatest number are required in acute care, however this also includes the requirement for 54 mental illness beds and 29 geriatric beds.

The greatest requirement is associated with South Norfolk, where the greatest level of housing growth is expected to come forward.

Table 7-20: Hospital Bed Demand Generated by Proposed Housing Growth, 2031

	Beds					
	Acute Care	**Maternity**	**Mental Illness**	**Learning Disability**	**Geriatric**	**Total**
Broadland	63.8	5.8	19.7	3.4	11.1	103.8
Norwich	35.1	3.2	10.8	1.9	6.4	57.4
South Norfolk	76.2	6.9	23.5	4.1	11.8	122.4
Total	175.1	15.9	54	9.4	29.3	283.6
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.						

Source: EDAW

Considering District Wide Population Change

The requirements identified above are those that are directly associated with the proposed housing growth across GNDP. However, they do not take account of the potential impact of net population change occurring elsewhere within the district.

For example, in areas such as Broadland and South Norfolk, where the population is expected to decline in the absence of housing growth, for hospital beds capacity would also be expected to come forward over this period in the absence of housing growth. This projected capacity may be used to meet some of the requirements associated with the proposed housing growth and reduce the need to provide new facilities.

The following table presents the requirement associated with net population change within each district. This includes the requirement generated by the proposed housing growth plus the impact of net population change within the existing population.

Table 7-21: Hospital Bed Demand Associated with Net Population Change, 2031

	Beds					
	Acute Care	**Maternity**	**Mental Illness**	**Learning Disability**	**Geriatric**	**Total**
Broadland	41.0	3.7	12.6	2.2	59.7	119.3
Norwich	40.8	3.7	12.6	2.2	11.5	70.8
South Norfolk	58.1	5.3	18.0	3.1	61.0	145.5
Total	139.9	12.7	43.2	7.5	132.2	335.6
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.						

Source: EDAW

From the two tables above it is possible to identify that the total requirements associated with Broadland and South Norfolk are lower than the demand generated by housing growth in these areas. The requirements identified in Table 7-20 for these areas are lower than the requirements identified in Table 7-21, suggesting that the demand for hospital beds would decline in these areas in the absence of housing growth. This would be due to a decline in the total population of these areas in the absence of housing growth. In these cases it is not necessary to provide facilities to meet the total demand generated by housing growth as it is possible to utilise the capacity that will come forward as the population elsewhere in the district declines.

Conversely the total requirement for Norwich is higher than the demand generated by the proposed housing growth. This suggests the demand for hospital beds will increase even in the absence of housing growth and no capacity will become available between now and 2031. In this case it is necessary to provide facilities that meet the total demand associated with the proposed housing growth.

The pattern which occurs for geriatric beds requirement within Broadland and South Norfolk is similar to acute beds in Norwich. In this case, even though the total population of these districts is expected to decline in the absence of housing growth, the population is expected to age significantly and further increase the demand for geriatric beds.

Hospital Bed Requirements

By matching the demand for beds generated by housing growth with the requirements associated with the district wide net population change it is possible to determine the requirements that are directly attributable to the proposed housing growth. These requirements take account of any projected capacity

arising from projected population changes. In effect the figures below are the minimum requirement for each district and bed type in the two tables presented above.

Table 7-22: Hospital Bed Requirements Directly Attributable to the Proposed Housing Growth, 2031

	Beds					
	Acute Care	**Maternity**	**Mental Illness**	**Learning Disability**	**Geriatric**	**Total**
Broadland	41	4	13	2	11	71
Norwich	35	3	11	2	6	57
South Norfolk	58	5	18	3	12	96
Total	134	12	41	7	29	224
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.						

Source: EDAW

7.7 Detailed Infrastructure Requirements

The following section summarises the infrastructure facilities that are necessary to meet the demand generated by the proposed level of housing growth across the GNDP.

In order to ensure that facilities are delivered in the most cost efficient way, opportunities for co-locating healthcare facilities have been identified where appropriate, such as opportunities for co-locating GPs and Dentists into a Primary Care Centre. The following section presents further opportunities for co-locating facilities across infrastructure themes, such as co-locating PCCs with Safer Neighbourhood Teams or Community Facilities.

The vast majority of facilities are expected to come forward during the middle part of the plan period (2016-26) reflecting the rate of housing growth in this period. While housing development does occur prior to 2016, in many cases the scale of growth is not sufficient to meet the necessary trigger points for new facilities.

In South Norfolk, with growth spread across a greater number of growth locations, growth is not of a sufficient magnitude in many areas to trigger the requirement for a new facility, which is more likely to be met by the expansion of existing facilities.

Within Norwich, the sites chosen for facilities must be located in strategically accessible locations, to allow for the fact that development in Norwich will be more dispersed than elsewhere.

Table 7-23: Detailed Facility Requirements

District	Location	Facility Requirement				
		2008-11	**2011-16**	**2016-21**	**2021-26**	**2026-31**
Broadland	**Rackheath / Sprowston Growth Triangle**			Primary Care Centre (5 GPs & 4 Dentists)	Primary Care Centre (5 GPs & 4 Dentists)	Combined Surgery (2 GPs & 3 Dentists)
	Elsewhere in District		Expand existing facilities (2 GP & 2 Dentists)			Expand existing facilities (1 GP & 1 Dentist)
Norwich		GP Surgery (3GPs) *Demand for 2 generated by housing)*	Dentist Surgery (4 Dentists)	Primary Care Centre (6GPs & 5 Dentists)		Primary Care Centre (6GPs & 5 Dentists) *Demand for 5 GPs & 3 Dentists generated by housing*
South Norfolk	**Wymondham**			Combined Surgery (3 GPs & 2 Dentists)		
	Long Stratton				Combined Surgery (2 GPs & 2 Dentists)	
	Hethersett			Expand Existing Facilities (1 GP & 1 Dentist)		
	Cringleford			Expand Existing Facilities (1 GP)	Expand Existing Facilities (1 Dentist)	
	Easton / Costessey			Expand Existing Facilities (1 GP & 1 Dentist)		
	Elsewhere in South Norfolk	Expand Existing Facilities (4 GPs & 4 Dentists)	Expand Existing Facilities (3 GPs & 3 Dentists)		Expand Existing Facilities (1 GP)	Expand Existing Facilities (5 GPs & 5 Dentists)
Total GNDP		13 Acute Care Beds 29 Maternity Beds 32 Mental Illness Beds 26 Learning Disability Beds 35 Geriatric Beds	1 Acute Care Bed 3 Maternity Beds 3 Mental Illness Beds 2 Learning Disability Beds 3 Geriatric Beds	4 Acute Care Beds 9 Maternity Beds 10 Mental Illness Beds 8 Learning Disability Beds 11 Geriatric Beds	1 Acute Care Bed 2 Maternity Beds 2 Mental Illness Beds 1 Learning Disability Bed 2 Geriatric Beds	3 Acute Care Beds 6 Maternity Beds 7 Mental Illness Beds 6 Learning Disability Beds 7 Geriatric Beds
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.						

Source: EDAW

7.8 Infrastructure Overview and Costs

The total cost of providing the necessary healthcare facilities is almost £64 million, which has been discounted to allow for:

- The non-healthcare costs associated with co-located facilities and
- Healthcare demand that is not directly associated with housing growth.

Where possible, dentists and GPs surgeries have been co-located with each other as Primary Care Centres. Following discussions with the Norfolk Constabulary, opportunities for co-locating healthcare facilities with Safer Neighbourhood Teams have also been identified.

Of the total costs, over half (£34 million) are associated with the provision of hospital beds, which will not necessarily be provided within the districts themselves.

Table 7-24: Healthcare Facilities and Costs

District	Growth Location	Infrastructure Requirement	Completion Date	Total Cost	Healthcare & Housing Growth Associated Cost
Broadland	Rackheath / Sprowston Growth Triangle	**Primary Care Centre** (5 GPs & 4 Dentists) *co-located with 12 Officer Safer Neighbourhood Team*	**2021**	£3,350,000	£2,840,000
		Primary Care Centre (5 GPs & 4 Dentists) *co-located with 12 Officer Safer Neighbourhood Team*	**2026**	£3,350,000	£2,840,000
		Combined Surgery (2 GPs & 3 Dentists)	**2031**	£1,800,000	£1,800,000
	Elsewhere	**Expand existing facilities** (3 GPs & 3 Dentists)	**2009-31**	£1,350,000	£1,350,000
Norwich		**GP Surgery** (3GPs) Demand for 2 GPs only generated by housing growth Costs discounted by 33%	**2011**	£1,033,333	£1,033,333
		Dentists Surgery (4 Dentists)	**2016**	£1,250,000	£1,250,000
		Primary Care Centre (6 GPs, 5 dentists)	**2021**	£4,500,000	£4,500,000
		Primary Care Centre (6 GPs, 5 dentists) Only 4 GPs & 3 Dentists related to Growth Costs discounted by 45%	**2031**	£2,925,000	£2,925,000
South Norfolk	Wymondham	**Combined Surgery** (3 GPs, 2 Dentists)	**2021**	£1,800,000	£1,800,000
	Long Stratton	**Combined Surgery** (2 GPs, 2 Dentists) *co-located with 7 Officer Safer Neighbourhood Team*	**2026**	1475000	1175000
	Hethersett	**Expand Existing Facilities** (1 GP, 1 Dentist)	**2021**	£550,000	£550,000
	Cringleford	**Expand Existing Facilities** (1 GP, 1 Dentist)	**2021-2026**	£550,000	£550,000
	Easton / Costessey	**Expand Existing Facilities** (1 GP, 1 Dentist)	**2021**	£550,000	£550,000
	Elsewhere	**Expand Existing Facilities** (13GPs, 12 Dentists)	**2008-2031**	£6,925,000	£6,925,000
GNDP Wide		**13 Acute Bed**	**2008-2031**	£25,700,000	£25,700,000
		12 Maternity Beds	**2008-2031**	£2,000,000	£2,000,000
		41 Mental Illness Beds	**2008-2031**	£3,200,000	£3,200,000
		7 Learning Disability Beds	**2008-2031**	£2,275,000	£2,275,000
		29 Geriatric Beds	**2008-2031**	£550,000	£550,000
Total Costs				**£65,133,000**	**£63,813,333**

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

Source: EDAW / Gardiner & Theobald

Table 7-25: Healthcare Activities costs and funding sources Identified in the GNDP GNDP Integrated Development Plan

HEALTH					
#	Prioritisation	Geography	Funding Source	Total Costs & % Funding	Assumed Funding
91	**Primary Care Centre (5 GPs & 4 Dentists) co-located with 12 Officer Safer Neighbourhood Team**			£3,350,000	**£0**
	Essential	Sprowston / Rackheath Growth Triangle			£0
	Essential	Sprowston / Rackheath Growth Triangle			£0
92	**Primary Care Centre (5 GPs & 4 Dentists) co-located with 12 Officer Safer Neighbourhood Team**			£3,350,000	**£0**
	Essential	Sprowston / Rackheath Growth Triangle			£0
	Essential	Sprowston / Rackheath Growth Triangle			£0
93	**Combined Surgery (2 GPs & 3 Dentists)**			£1,800,000	**£0**
	Essential	Sprowston / Rackheath Growth Triangle			£0
	Essential	Sprowston / Rackheath Growth Triangle			£0
94	**Expand existing facilities (3 GPs & 3 Dentists)**			£1,350,000	**£0**
	Essential	Broadland Elsewhere			£0
	Essential	Broadland Elsewhere			£0
95	**GP Surgery (3GPs) (Demand for 2 GPs only generated by housing growth hence costs discounted by 33%)**			£1,033,333	**£0**
	Essential	Norwich			£0
	Essential	Norwich			£0
96	**Dentists Surgery (4 Dentists)**			£1,250,000	**£0**
	Essential	Norwich			£0
	Essential	Norwich			£0
97	**Primary Care Centre (6 GPs, 5 dentists)**			£4,500,000	**£0**
	Essential	Norwich			£0
	Essential	Norwich			£0
98	**Primary Care Centre (6 GPs, 5 dentists) (Only 4 GPs & 3 Dentists related to Growth hence costs discounted by 45%)**			£2,925,000	**£0**
	Essential	Norwich			£0
	Essential	Norwich			£0
99	**Combined Surgery (3 GPs, 2 Dentists)**			£1,800,000	**£0**
	Essential	Wymondham			£0
	Essential	Wymondham			£0
100	**Combined Surgery (2 GPs, 2 Dentists) co-located with 7 Officer Safer Neighbourhood Team**			£1,475,000	**£0**
	Essential	Long Stratton			£0
	Essential	Long Stratton			£0

101	**Expand Existing Facilities (1 GP, 1 Dentist)**			£550,000	**£0**
	Essential	Hethersett			£0
	Essential	Hethersett			£0
102	**Expand Existing Facilities (1 GP, 1 Dentist)**			£550,000	**£0**
	Essential	Cringleford			£0
	Essential	Cringleford			£0
103	**Expand Existing Facilities (1 GP, 1 Dentist)**			£550,000	**£0**
	Essential	Easton			£0
	Essential	Easton			£0
104	**Expand Existing Facilities (13GPs, 12 Dentists)**			£6,925,000	**£0**
	Essential	South Norfolk Elsewhere			£0
	Essential	South Norfolk Elsewhere			£0
105	**13 Acute Bed**			£25,700,000	**£0**
	Essential	GNDP Wide			£0
	Essential	GNDP Wide			£0
106	**12 Maternity Beds**			£2,000,000	**£0**
	Essential	GNDP Wide			£0
	Essential	GNDP Wide			£0
107	**41 Mental Illness Beds**			£3,200,000	**£0**
	Essential	GNDP Wide			£0
	Essential	GNDP Wide			£0
108	**7 Learning Disability Beds**			£2,275,000	**£0**
	Essential	GNDP Wide			£0
	Essential	GNDP Wide			£0
109	**29 Geriatric Beds**			£550,000	**£0**
	Essential	GNDP Wide			£0
	Essential	GNDP Wide			£0
Total Funding - Health					**£0**
Total Assumed Infrastructure Costs – Health					**£63,813,333**
Total Assumed Funding Gap – Health					**£63,813,333**

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

Source: GNDP GNDP Integrated Development Plan

Table 7-26: Healthcare Costs, Funding, and Prioritisation Overview

	Total Costs	Total Funding	Funding Gap
Critical	£0	£0	£0
Essential	£63,813,333	£0	£63,813,333
Desirable	£0	£0	£0
Total	**£63,813,333**	**£0**	**£63,813,333**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.			

Source: EDAW, 2009

8 Social Infrastructure: Emergency Services

8.1 Policy Context

The Joint Core Strategy recognises emergency services as essential supporting infrastructure for the delivery of its housing growth targets. It also identifies that the costs associated with community safety facilities, including the emergency services, would be among those expected to be covered by Community Infrastructure Levy (CIL) contributions.

In relation to the future provision of policing, discussions with the Norfolk Constabulary have identified that this will be concentrated in population centres and while population standards can be useful in identifying likely areas of future demand, the actual provision of policing moving forwards will depend on levels of crime. Norfolk Constabulary has indicated that their preferred approach for the expansion of policing within Norfolk is through the Safer Neighbourhood Teams (SNTs), and there is unlikely to be a requirement for new police stations.

This expansion of SNTs is most likely to be delivered through increasing the numbers of officers within existing teams, rather than increasing the number of teams. However, this is still likely to require additional facilities within the expanded population centres, as SNTs operate from a number of bases to ensure that they are integrated into the communities they serve. There are many opportunities for co-locating SNTs with other forms of social infrastructure; including secondary schools, and other community facilities; the SNT is able to operate flexibly to the requirements of the co-located provision, and in many cases will only require dedicated office space within the facility.

This chapter also reports on the potential impacts on the fire and ambulance services; however in these areas the requirement for new facilities is most likely to arise from their need to meet their statutory response time. Furthermore, meeting the response times for the ambulance service often has limited impacts on capital expenditure as response times can be maintained by locating ambulances at strategic locations around the district.

8.2 Existing Provision

The map below presents the distribution of emergency services provision across the three districts. As with most other forms of provision the facilities are clustered within the city of Norwich, however a brief summary of each infrastructure category is provided below.

Police

There are four police stations located across GNDP including one in the centre of Norwich and one strategically located for the Sprowston / Rackheath growth area. The other two are located in the two major growth locations in South Norfolk (Wymondham and Long Stratton). There is little provision located to the north of the area and while this area does not contain any of the major growth locations, there may be increasing demand from the growth of smaller development sites.

The police points are located throughout the district, however a more detailed summary of the Safer Neighbourhood Teams across the GNDP area is provided in the following section.

Fire Service

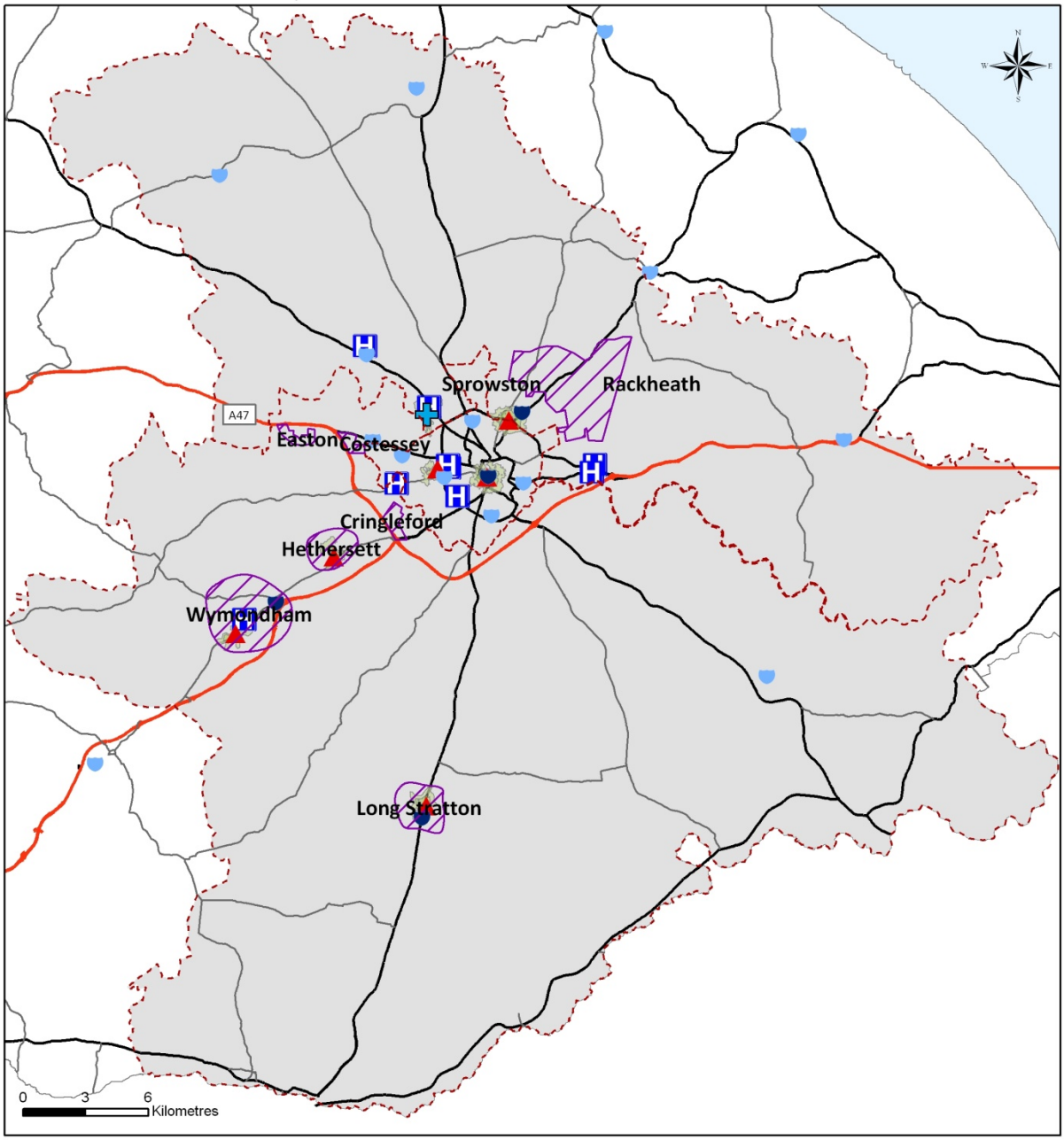
There are six fire stations located within the GNDP area, all of which are well placed to serve the proposed housing growth at the strategic growth locations. Two are located within Norwich and one is strategically located close to the Sprowston / Rackheath development locations. Within South Norfolk, there are stations at three of the growth locations (Wymondham, Long Stratton, and Hethersett) and the other sites at Easton and Costessey are located close to the station to the east of Norwich.

Ambulance Service

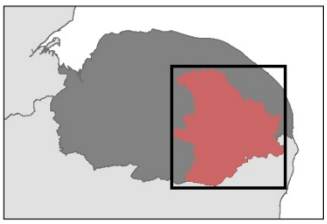
The single ambulance depot is located in Broadland, towards the north of Norwich. However, there are a number of hospitals which are located close to the growth locations and may provide facilities for ambulance staff. Long Stratton is the development location sited furthest from any ambulance or hospital provision.

Emergency Services

Greater Norwich Infrastructure Study



Police Stations
Police Point
Ambulance
Firestations
Hospitals
Counties
Study Area
Growth Locations
Districts
Trunk Road
A Roads
B Roads



Data Source: Norfolk County Coucil, ONS, Ordnance Survey

Last Updated: May 2009

Safer Neighbourhood Teams

Broadland

There are currently seven safer neighbourhood teams serving Broadland. The Acle team currently serves Rackheath and the Sprowston & Spixworth team currently services Sprowston. Both have a total of 9 officers.

Overall, the SNTs in Broadland have between seven and nine officers.

Table 8-1: Safer Neighbourhood Teams - Broadland

SNT	Details
Reepham	4 Police Officers 3 PCSOs
Aylsham	4 Police Officers 3 PCSOs
Acle (serving Rackheath)	5 PCs 4 PCSOs
Taverham & Drayton	5 PCs 3 PCSOs
Hellesdon & Horsford	6 PCs 4 PCSOs
Sprowston & Spixworth (Serving Sprowston)	5 PCs 4 PCSOs
Thorpe St. Andrew (serving the Rackheath / Sprowston Growth Triangle)	7 PCs 3 PCSOs

The SNTs serving the strategic growth locations are highlighted.
Source: http://www.safernorfolk.co.uk/

Norwich

There are currently seven SNTs serving Norwich, all of which are larger than the teams serving Broadland and South Norfolk, with between eight and 21 police officers. The teams in Norwich also provide a broader range of services through co-locating SNTs with City Council staff. In addition to providing facilities for Police Constables and PCSOs, they provide facilities for Special Constables, Neighbourhood Wardens, and Community Support Officers.

Table 8-2: Safer Neighbourhood Teams - Norwich

SNT	Details
Mile Cross Catton Fiddlewood	13 Police Officers 8 PCSOs 2 SCs + Community Support Officers, Neighbourhood Wardens, and Housing Officers
Heartsease Thorpe Hamlet	5 Police Officers 3 PCSOs 7 SCs + Community Support Officers, Neighbourhood Wardens, and Housing Officers
Lakenham Tuckswood	7 Police Officers 9 PCSOs + Community Support Officers, Neighbourhood Wardens, and Housing Officers
University Eaton	6 Police Officers 5 PCSOs + Community Support Officers, Neighbourhood Wardens, and Housing Officers
Earlham Marlpit Larkman	10 Police Officers 4 PCSOs + Community Support Officers, Neighbourhood Wardens, and Housing Officers
West Centre	15 PCs 6 PCSOs + Community Support Officers, Neighbourhood Wardens, and Housing Officers
City Centre	14 Police Officers 9 PCSOs + Community and Neighbourhood Support

Source: http://www.safernorfolk.co.uk/

South Norfolk

There are a total of eight SNTs in South Norfolk, four of which serve the strategic growth locations. SNTs range in size from between eight and 13 officers and include facilities for community and neighbourhood support officers.

Like Norwich, the teams in South Norfolk co-locate with staff from South Norfolk Council, including Community and Neighbourhood Support Officers.

Table 8-3: Safer Neighbourhood Teams – South Norfolk

SNT	Details
Wymondham	4 Police Officers 2 PCSOs + Community and Neighbourhood Support Officers
Hethersett Mulbarton (serving Hethersett & Cringleford)	4 Police Officers 3 PCSOs + Community and Neighbourhood Support Officers
Poringland	4 Police Officers 3 PCSOs + Community and Neighbourhood Support Officers
Loddon	4 Police Officers 3 PCSOs + Community and Neighbourhood Support Officers
Long Stratton	4 Police Officers 3 PCSOs + Community and Neighbourhood Support Officers
Diss	5 Police Officers 4 PCSOs + Community and Neighbourhood Support Officers
Harleston	4 Police Officers 3 PCSOs + Community and Neighbourhood Support Officers
Bowthorpe Costessey (Serves Easton)	9 Police Officers 4 PCSOs + Community and Neighbourhood Support Officers

The SNTs serving the strategic growth locations are highlighted.

Source: http://www.safernorfolk.co.uk/

8.3 Infrastructure Requirements Overview

The emergency services requirements identified in this chapter are based on the demand generated by the proposed housing growth. When determining the requirements for Safer Neighbourhood Teams located within strategic growth locations, this approach is sufficient. However, when determining the requirements for policing outside of the strategic growth locations or for the district wide requirements associated with the Fire and Ambulance Services, it will be necessary to review the requirements in light of the projected net population change. This approach is consistent with the approach for identifying the requirements associated with other forms of social infrastructure.

The requirements for the police and fire service are based on the level of provision necessary to maintain the Norfolk average level of provision. The policing parameters are based on 528 people per police officer which has been sourced from the Office for National Statistics.

The precise level of policing necessary to support the proposed housing growth will reflect a range of factors, including local crime rates and any associated socio-economic factors. However, it is not possible to predict how the proposed levels of growth may impact on these factors or how they may change over time. Maintaining the average level of police provision ensures that the proposed level of growth does not overstrain local police forces.

It was also agreed, following discussions with Norfolk Constabulary that any additional policing provision would be delivered through Safer Neighbourhood Teams located within the new housing development or close to areas of population growth.

The fire service requirements are based on the existing population per fire appliances (both front line and reserve pumps) across Broadland, South Norfolk, and Norwich, which currently stands at 12,736 people per appliance[4].

The ambulance requirements are based on the East of England Ambulance Service NHS Trust standard of an additional emergency call-out per 8 additional residents, which provides an indication of the potential impact on the local ambulance service.

8.4 Police Service Requirements

Broadland

Demand Generated from Housing Growth

The population generated by the proposed housing growth in Broadland is associated with the requirement for an additional 83 Police Officers. Of these, demand for 43 officers occurs in the Rackheath / Sprowston Growth Triangle, almost all of which arises post 2016. The remaining requirement reflects housing growth in the smaller growth locations, windfall developments, and existing commitments.

The requirement for 43 officers within the Rackheath / Sprowston Growth Location will be provided through a number of Safer Neighbourhood Teams that are strategically located within the growth location, reflecting localised need. These facilities will be located with other forms of social infrastructure where possible.

[4] Source: *CLG,* Appendices to the Fire and Rescue Service Operational Statistics Bulletin for England: 2007/08

Table 8-4: Policing Demand Generated by New Housing Growth: Broadland (Cumulative)

	Police Officers				
	2011	**2016**	**2021**	**2026**	**2031**
Rackheath / Sprowston Growth Triangle	0	6	18	30	43
Elsewhere in Broadland	5	14	24	32	40
Total Broadland	5	20	42	62	83
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: EDAW

Implications of Broadland Net Population Change

By 2031 the demographic projections for Broadland suggest that the district wide demand for policing will increase by 53 officers. This includes the demand generated by the proposed housing growth plus the impact of net population change among the existing population.

Table 8-5: Impact of Net Population Change on Police Demand: Norwich

	Police Officers				
	2011	**2016**	**2021**	**2026**	**2031**
Broadland	-1	7	22	36	53
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: EDAW

Of these 53 officers, facilities for 43 will be provided within the strategic growth location, which suggests that facilities for a further 10 should be provided elsewhere within the district. This may be provided through a single SNT, but is most likely to be provided through expansion of existing facilities in areas of local concentrated housing growth.

Facility Requirements

The level of demand presented above suggests that the following Police facilities will be required within Broadland to support the proposed level of housing growth. The potential for co-locating these facilities with other forms of social infrastructure is discussed in section 8.7 below.

Overall three new SNTs would be provided within the strategic growth location, together providing facilities for 37 officers. The remaining 6 officers will be housed within existing SNTs that have been appropriately expanded (e.g. Sprowston and Spixton or Acle).

Table 8-6: Policing Facilities Requirements, by Growth Phase: Broadland

	Growth Phase Ending:				
	2011	**2016**	**2021**	**2026**	**2031**
Rackheath / Sprowston Growth Triangle		Expansion of existing SNT (6 officers)	SNT (12 officers)	SNT (12 officers)	SNT (13 officers)
Elsewhere in Broadland		Expand existing SNT (1 officer)	Expand existing SNT (3 officer)	Expand existing SNT (2 officer)	Expand existing SNT (5 officer)
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: EDAW

Norwich

Demand Generated from Housing Growth

The level of housing growth proposed for Norwich generates demand for an additional 53 Police Officers, which could be catered for by expanding the existing SNTs located across the city.

Table 8-7: Policing Demand Generated by New Housing Growth: Norwich (Cumulative)

	Police Officers				
	2011	**2016**	**2021**	**2026**	**2031**
Norwich	7	25	36	45	53
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: EDAW

Implications of Norwich Net Population Change

By 2031 the demographic projections for Norwich suggest that the city wide net population change will be associated with demand for an additional 62 officers. This exceeds the requirement generated by the proposed housing growth as the population in Norwich is expected to grow even in the absence of housing growth.

Within Norwich the requirement for police officers is nine officers over and above that generated by the proposed housing growth, i.e. nine officers are associated with growth of the existing population only.

Table 8-8: Impact of Net Population Change on Police Demand: Norwich

	Police Officers				
	2011	**2016**	**2021**	**2026**	**2031**
Norwich	11	29	44	51	62
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: EDAW / NCC Demographic Projections

Facility Requirements

The facilities associated with the policing requirement identified for Norwich are set out in the table below. Meeting the requirements of the proposed housing would require the expansion of existing facilities to cater for 53 additional officers. The need to provide facilities for a further 9 officers to meet the needs of local population growth not generated by housing growth has not been included here.

Table 8-9: Policing Facilities Requirements, by Growth Phase: Norwich

	Growth Phase Ending:				
	2011	**2016**	**2021**	**2026**	**2031**
Norwich	Expand existing SNT by 10 officers	Expand existing SNT by 15 officers	Expand existing SNT by 13 officers	Expand existing SNT by 6 officers	Expand existing SNT by 9 officers
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: EDAW

South Norfolk

Demand Generated from Housing Growth

The housing growth proposed for South Norfolk is sufficient to generate demand for 99 additional officers across the district. Of these, the requirement for only 30 officers required in the strategic growth locations. The requirement for the remaining 69 officers is generated by housing growth within the smaller growth locations, in addition to windfall development and existing commitments.

Table 8-10: Policing Demand Generated by New Housing Growth: South Norfolk

	Police Officers (Cumulative)				
	2011	**2016**	**2021**	**2026**	**2031**
Wymondham	0.0	1.5	5.4	9.2	9.2
Long Stratton	0.0	0.0	2.7	7.5	7.5
Hethersett	0.0	0.6	3.9	4.2	4.2
Cringleford	0.0	0.2	2.7	5.0	5.0
Easton / Costessey	0.0	0.6	3.9	4.2	4.2
Elsewhere in South Norfolk	11.5	27.8	37.0	46.0	69.3
Total South Norfolk	11.5	30.7	55.6	76.0	99.3

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

Source: EDAW

The demand for 30 officers generated by developments within the strategic growth locations will be met by providing new or, where possible, expanded Safer Neighbourhood Teams located within the developments.

Implications of South Norfolk Net Population Change

The demographic projections suggest that net population change within South Norfolk will generate demand for an additional 89 police officers by 2031. Given that facilities for 30 officers will be provided within the strategic growth locations, this suggests that facilities for a further 59 officers should be provided elsewhere within the district.

Table 8-11: Impact of Net Population Change on Police Officer Demand: South Norfolk

	GPs (Cumulative)				
	2011	**2016**	**2021**	**2026**	**2031**
South Norfolk Total	16	30	50	65	89

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

Source: EDAW / NCC Demographic Projections

It is not necessary to provide facilities for the 99 officers, as identified in Table 8-10 above, as the projections for net population change over this period suggest that the demand for police officers would decline (due to a declining population) in the absence of housing growth within the district.

Facility Requirements

There is sufficient demand to provide small Safer Neighbourhood Teams within each of the strategic growth locations. These are all phased for completion between 2016 and 2026.

The team in Wymondham is phased for completion in 2021, but will not operate at capacity until 2026, however this approach recognises that there will be a requirement for a lower level of additional policing prior to this point.

Outside of the strategic growth locations, there is a need to expand existing facilities in each of the growth phases, in response to a high level of housing growth elsewhere in the district.

Table 8-12: Policing Facilities Requirements, by Growth Phase: South Norfolk

	Growth Phase Ending:				
	2011	**2016**	**2021**	**2026**	**2031**
Wymondham			SNT (9 Officers)		
Long Stratton				SNT (7 officers)	
Hethersett			SNT (4 officers)		
Cringleford				SNT (5 officers)	
Easton / Costessey			SNT (5 officers)		
Elsewhere in South Norfolk	Expand existing SNTs (16 officers)	Expand existing SNTs (14 officers)	Expand existing SNTs (2 officers)	Expand existing SNTs (3 officers)	Expand existing SNTs (24 officers)
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: EDAW

Development within the Smaller Growth Locations

The following table presents the demand for police officers generated by growth within the smaller growth locations. These requirements are incorporated into the demand generated by development 'elsewhere in Broadland' and 'elsewhere in South Norfolk' in the preceding section.

Where a range of dwellings is provided in the Core Strategy, the higher level of development has been assessed here.

It is clear that development within these locations is not of a sufficient scale to generate additional Safer Neighbourhood Teams, but there is sufficient demand for an additional officer in Diss, Harleston and 0.8 of an officer in Acle, and Reepham, Wroxham, and Loddon. This demand should be considered when

determining which SNTs located outside of the strategic growth locations to expand, as development comes forward.

Table 8-13: Demand Generated by Growth in the Smaller Growth Locations

	Police officers
Diss	1.2
Harleston	1.2
Acle	0.8
Reepham	0.8
Wroxham	0.8
Loddon	0.8
Hingham	0.4
Blofield	0.2
Brundall	0.2
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.	

Source: EDAW

8.5 Fire and Ambulance Infrastructure Requirements

Due to the nature of fire and ambulance provision, which serves a wide area, the requirements are calculated at the district level. The following section presents the results associated with (i) the demand generated by the proposed housing growth and (ii) the net population change projected by Norwich County Council demographers.

Demand for Fire and Ambulance Services

The demographic projections represent a significant additional requirement for the fire and ambulance services. Across the whole of the GNDP area the net population change is associated with 7 fire appliances and capacity to response to an additional 11,600 ambulance calls (approximately 30 additional calls each 24 hour period). The demand generated by housing growth alone is even higher, as it does not take into account the declining population across GNDP that would occur in the absence of housing growth in Broadland and South Norfolk.

However the most appropriate method for bringing forward additional facilities will depend on the how the fire and ambulance services evolve moving forward. For example, it is unlikely that there will be additional capacity requirements associated with the ambulance service, as the increased demand could potentially be met through the reorganisation of existing provision and the use of strategically located stand-points or facilities at hospitals. Ambulances may be based at these with limited impact on capital expenditure. Such a means of expanding the service will however have impacts on revenue spending which are not captured in this report.

The provision of fire services is more complicated, as fire appliances must be based at stations for much of the time. The existing six fire stations across the GNDP area are well positioned in relation to the strategic growth locations and it may be possible to provide the necessary levels of service from these sites. However, the precise requirements would need to be based on a review of fire service provision across the Norfolk area, particularly the service's ability to meet its statutory targets for response times in light of the proposed housing developments.

The figure of 7.4 appliances provides an indication of the scale of expansion that would be required to maintain the existing level of provision per head across the GNDP area.

Table 8-14: Fire Appliance and Ambulance Service Emergency Calls

	Fire Appliances				Additional Emergency Ambulance Calls			
	Broadland	Norwich	South Norfolk	Total	Broadland	Norwich	South Norfolk	Total
Housing Growth Generated Demand	3.3	1.8	6.5	11.6	5,298	2,912	6,321	14,531
Change Associated with Net Population Change	2.1	2.1	3.0	7.3	3,400	3,388	4,826	11,614
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.								

Source: EDAW, 2009

8.6 Detailed Infrastructure Requirements

The following table provides an overview of the facilities requirements identified in each of the growth locations and the remaining demand for emergency services across the rest of each district. The

requirements are limited to the provision of police services, in light of the comments above on the fire and ambulance services.

The majority of demand for policing provision can be met through facilities for Safer Neighbourhood Teams located at the heart of the proposed developments. The following section identifies the options for co-locating these facilities with other facilities that are being developed during at a similar time within the same locations.

While the requirement at Hethersett is below five officers, it is suggested that a facility for five officers be provided here, which also meets some of the district wide increase in demand. This will avoid providing a very small facility and reduce the costs associated with overheads.

Table 8-15: Detailed Facility Requirements

District	Location	Facility Requirement				
		2008-11	**2011-16**	**2016-21**	**2021-26**	**2026-31**
Broadland	**Rackheath / Sprowston Growth Triangle**		Expansion of existing SNT (6 officers)	SNT (12 officers)	SNT (12 officers)	SNT (13 officers)
	Elsewhere in District		Expand existing SNT (1 officer)	Expand existing SNT (3 officer)	Expand existing SNT (2 officer)	Expand existing SNT (5 officer)
Norwich		Expand existing SNT by 10 officers	Expand existing SNT by 15 officers	Expand existing SNT by 13 officers	Expand existing SNT by 6 officers	Expand existing SNT by 9 officers
South Norfolk	**Wymondham**			SNT (9 Officers)		
	Long Stratton				SNT (7 officers)	
	Hethersett			SNT (4 officers)		
	Cringleford				SNT (5 officers)	
	Easton / Costessey			SNT (5 officers)		
	Elsewhere in South Norfolk	Expand existing SNTs (16 officers)	Expand existing SNTs (14 officers)	Expand existing SNTs (1 officers)	Expand existing SNTs (3 officers)	Expand existing SNTs (24 officers)
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.						

Source: EDAW

8.7 Infrastructure Overview and Costs

The total cost of providing the necessary emergency services facilities is almost £15 million, which has been discounted to allow for:

- The non-emergency services costs associated with co-located facilities and
- Demand that is not directly associated with housing growth.

Where possible the Safer Neighbourhood Teams have been co-located with Primary Care Centres and Community Facilities to minimise the cost of providing these facilities. This is based on discussions with the Norfolk Constabulary.

The costs associated with smaller and expanded facilities are higher per officer than the larger and co-located facilities, and where possible a smaller number of larger SNT facilities have been proposed.

Table 8-16: Emergency Service Facilities and Costs

District	Growth Location	Infrastructure Requirement	Completion Date	Total Facility Cost	Emergency Service & Housing Growth Associated Cost
Broadland	**Rackheath / Sprowston Growth Triangle**	**Safer Neighbourhood Team** (6 officers)	**2016**	£250,000	£250,000
		Safer Neighbourhood Team (12 Officers) *co-located with Primary Care Centre (5GPs & 4 Dentists)*	**2021**	£3,350,000	£510,000
		Safer Neighbourhood Team (12 Officers) *co-located with Primary Care Centre (5GPs & 4 Dentists)*	**2026**	£3,350,000	£510,000
		Safer Neighbourhood Team (13 Officers)	**2031**	£552,500	£552,500
	Elsewhere	**Expand existing Safer Neighbourhood Teams** (10 Officers)	**2009-31**	£870,000	£870,000
Norwich		**Expand existing Safer Neighbourhood Teams** (53 Officers)	**2009-31**	£4,600,000	£4,600,000
South Norfolk	**Wymondham**	**Safer Neighbourhood Team** (9 officers) *co-located with 400 sq m Combined Community Centre & Library*	**2021**	£1,345,000	£385,000
	Long Stratton	**Safer Neighbourhood Team** (7 officers) co-located with Combined Surgery (2GPs & 2 Dentists)	**2026**	£1,475,000	£300,000
	Hethersett	**Safer Neighbourhood Team** (5 officers) *also serving developments outside the strategic growth location*	**2021**	£450,000	£450,000
	Cringleford	**Safer Neighbourhood Team** (5 officers)	**2026**	£450,000	£450,000
	Easton / Costessey	**Safer Neighbourhood Team** (5 officers)	**2021**	£450,000	£450,000
	Elsewhere	**Expand existing Safer Neighbourhood Teams** (58 Officers)	**2009-31**	£5,140,000	£5,140,000
Total Costs				**£22,282,500**	**£14,467,500**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: EDAW / Gardiner & Theobald

Table 8-17: Emergency Service Activities costs and funding sources Identified in the GNDP GNDP Integrated Development Plan

EMERGENCY SERVICES					
#	Prioritisation	Geography	Funding Source	Total Costs & % Funding	Assumed Funding
110	**Safer Neighbourhood Team (6 officers)**			£250,000	**£0**
	Essential	Sprowston / Rackheath Growth Triangle			£0
	Essential	Sprowston / Rackheath Growth Triangle			£0
111	**Safer Neighbourhood Team (13 Officers)**			£552,500	**£0**
	Essential	Sprowston / Rackheath Growth Triangle			£0
	Essential	Sprowston / Rackheath Growth Triangle			£0
112	**Expand existing Safer Neighbourhood Teams (10 Officers)**			£870,000	**£0**
	Essential	Broadland Elsewhere			£0
	Essential	Broadland Elsewhere			£0
113	**Expand existing Safer Neighbourhood Teams (53 Officers)**			£4,600,000	**£0**
	Essential	Norwich			£0
	Essential	Norwich			£0
114	**Safer Neighbourhood Team (9 officers) co-located with 400 sq m Combined Community Centre & Library**			£1,345,000	**£0**
	Essential	Wymondham			£0
	Essential	Wymondham			£0
115	**Safer Neighbourhood Team (5 officers)**			£450,000	**£0**
	Essential	Hethersett			£0
	Essential	Hethersett			£0
116	**Safer Neighbourhood Team (5 officers)**			£450,000	**£0**
	Essential	Cringleford			£0
	Essential	Cringleford			£0
117	**Safer Neighbourhood Team (5 officers)**			£450,000	**£0**
	Essential	Easton			£0
	Essential	Easton			£0
118	**Expand existing Safer Neighbourhood Teams (58 Officers)**			£5,140,000	**£0**
	Essential	South Norfolk Elsewhere			£0
	Essential	South Norfolk Elsewhere			£0
Total Funding - Emergency Services					**£0**
Total Assumed Infrastructure Costs – Emergency Services					**£14,467,000**
Total Assumed Funding Gap – Emergency Services					**£14,467,000**

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

Source: GNDP GNDP Integrated Development Plan

Table 8-18: Emergency Services, Costs, Funding, and Prioritisation Overview

	Total Costs	Total Funding	Funding Gap
Critical	£0	£0	£0
Essential	£14,467,500	£0	£14,467,500
Desirable	£0	£0	£0
Total	**£14,467,500**	**£0**	**£14,467,500**

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

Source: EDAW, 2009

9 Social Infrastructure: Community Facilities

9.1 Policy Context

The Policy 18: Communities and Culture of the Joint Core Strategy recognises the importance of protecting and enhancing the cultural assets and leisure facilities within the GNDP, as well the importance of supporting community cohesion.

Leisure and cultural assets are also highlighted as important economic drivers in Policy 15: The economy, playing a notable role in supporting the offer of the urban area of Norwich as set out in Policy 3: Norwich City Centre. The main towns and service centres will also be expected to provide sufficient leisure and community facilities.

9.2 Assumptions

For the purposes of this study, community facilities covers public leisure centres (court space and swimming pool lanes, libraries, communal community space (such as community halls) and cultural facilities (concert halls and conference centres).

Leisure Facilities
The Sport England facilities calculator has been used to determine the existing level of sports provision within a local authority on a per capita basis, as set out in Table 9-1. By applying this ratio of existing provision per head to the population generated by the proposed housing growth, it is possible to determine the level of leisure facilities necessary to ensure that the housing growth does not place additional pressure on the existing facilities.

Table 9-1: Current Provision of Leisure Facilities

	Per 1,000 People:
Swimming pool lanes (25 metres)	0.187
Sports hall courts	0.279
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.	

Source: Sport England Facilities Calculator

In relation to facilities, a public swimming pool is assumed to have a minimum size of 4 swimming lanes and a sports hall is assumed to contain a minimum of 2 sports courts.

Community Facilities
The following community and library space standards are based on nationally recognised standards and, in the absence of existing locally defined standards, have been used in this study to estimate the area demand for community space and libraries.

Table 9-2: Community Facility Provision Standards

Facility Type	Sq m per person	Source
Community Space	0.0610	Milton Keynes SPG – Social Infrastructure Planning obligations
Library Space	0.0265	DCMS 2000 Standard with LTGSIF Research to uplift
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.		

It has been assumed that both libraries and community facilities have a minimum size of 300 sq m; however where demand has been identified as being insufficient for two discrete facilities integrated community and library facilities have been considered.

9.3 Existing Provision

Leisure Facilities

There are five publicly funded leisure centres in the GNDP area, four of which are in South Norfolk and one in Norwich as show in the following map. These include:

- Framingham Earl Community Sports Centre
- Long Stratton Leisure Centre
- Wymondham Leisure Centre
- Diss Swim & Fitness Centre
- The Norman Centre, Norwich

The mix of facilities at the leisure centres varies between centres, but includes squash courts, fitness suits and sports halls. Two of the centres in South Norfolk have swimming pools, Wymondham and Diss. Additional facilities are supplied by the private sector, including Riverside Swimming Centre in Norwich which provides swimming lessons supported by the City Council.

It is also important to recognise that additional non-publically funded leisure facilities will be provided within each district and this may reduce the demand for facilities identified here.

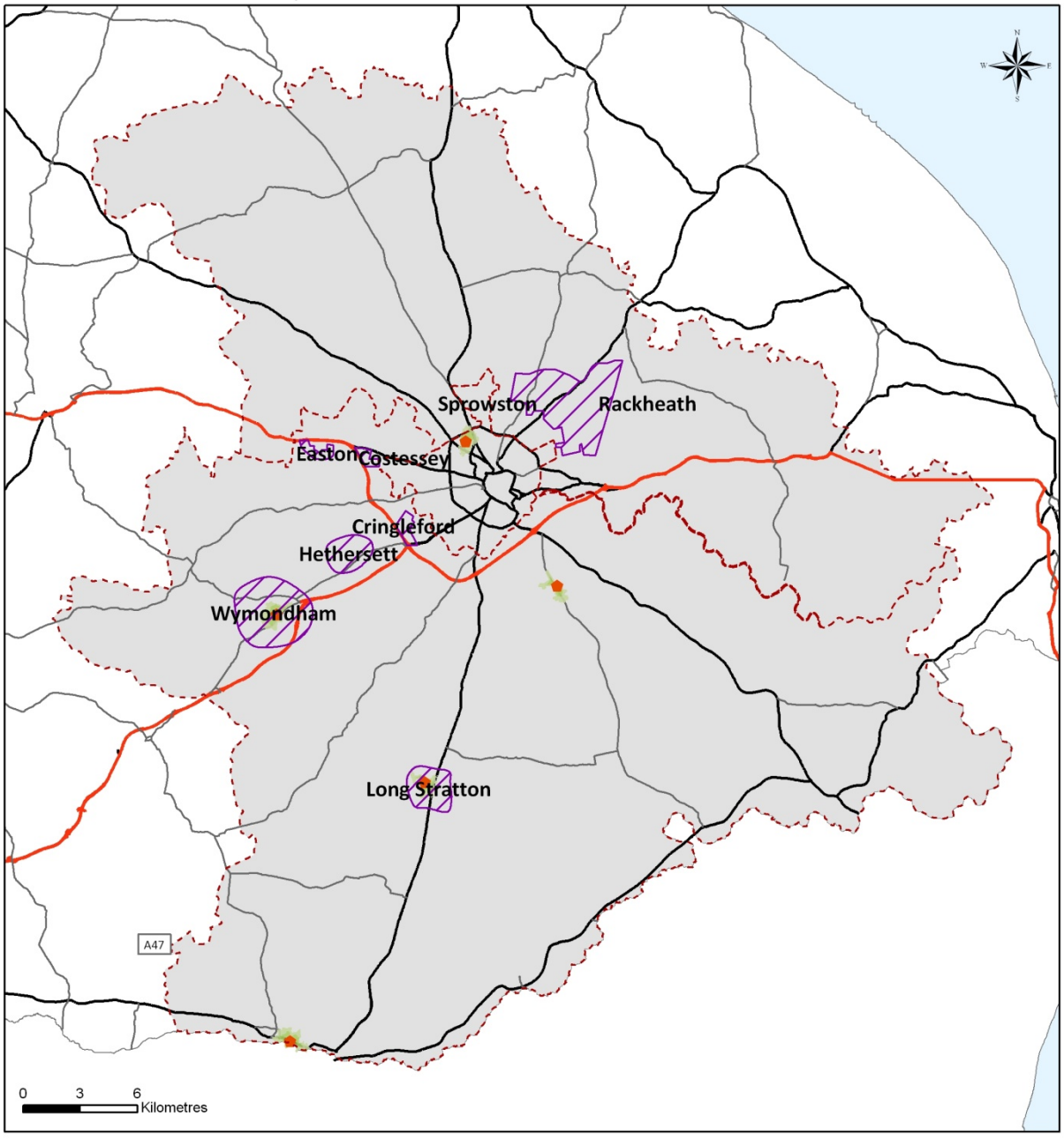
Community Facilities

There are 25 libraries in the GNDP area. These are generally clustered in and around Norwich, with some facilities in the key service centres including the proposed growth locations of Sprowston, Long Stratton and Hethersett. There is also a new library and community centre at Wymondham. The growth locations of Easton, Cringleford and Rackheath do not currently have libraries as shown in the following map.

Due to data limitations, it has not been possible to analyse existing community space provision as part of this study.

Access to Leisure Centres

Greater Norwich Infrastructure Study



Leisure Centres

Leisure Access

5 minute walk

5-10 minute walk

10-15 minute walk

Counties

Study Area

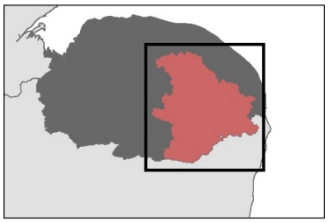
Growth Locations

Districts

Trunk Road

A Roads

B Roads

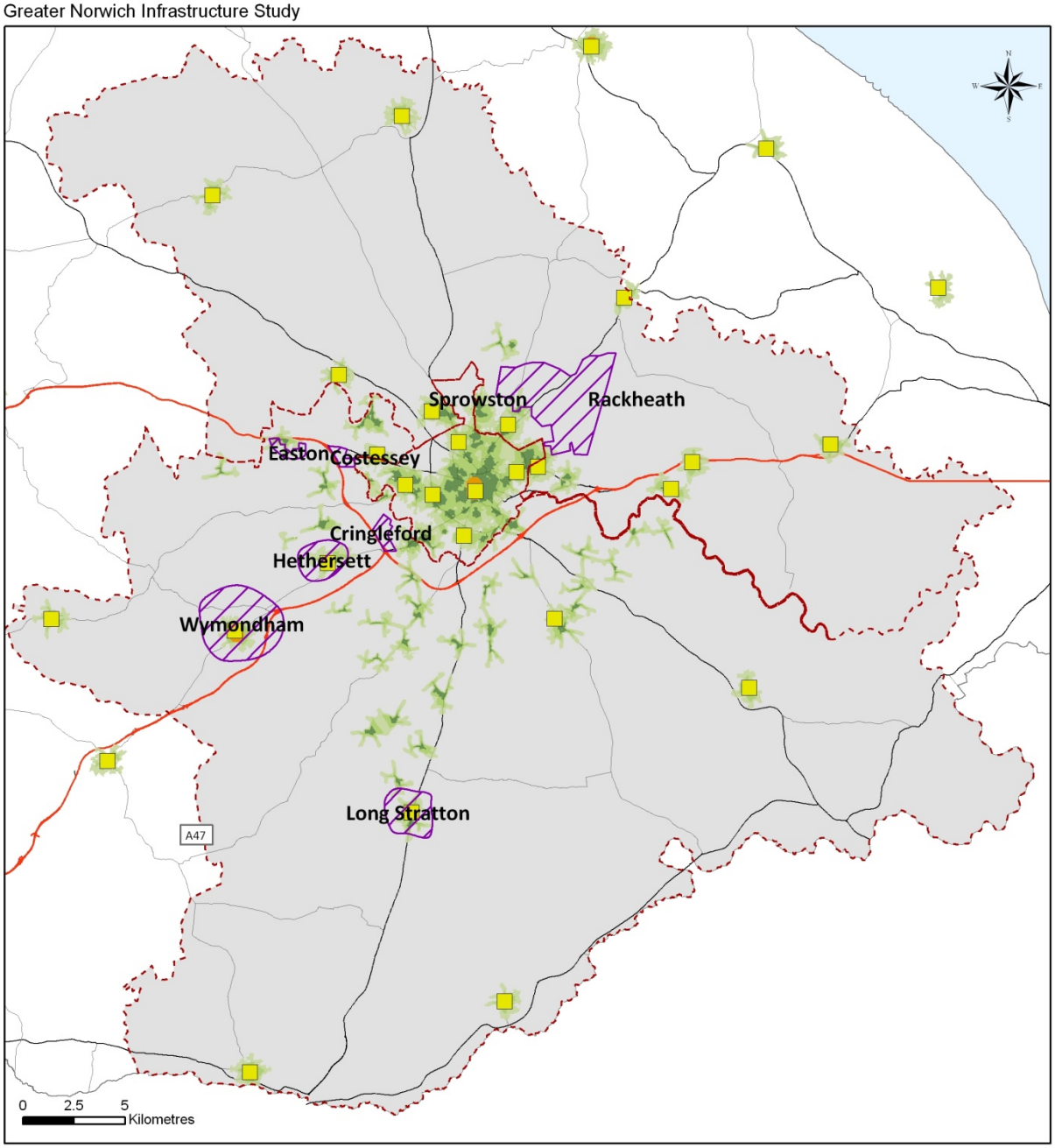


Data Source: Norfolk County Coucil, ONS, Ordnance Survey

Last Updated: May 2009

Access to Community Facilities

Greater Norwich Infrastructure Study



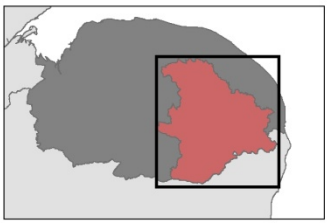
Community Facility Access

- 5 minute walk
- 5-10 minute walk
- 10-15 minute walk

- Job Centres
- Libraries
- Growth Locations

- Counties
- Study Area
- Districts

- Trunk Road
- A Roads
- B Roads



Data Source: Norfolk County Coucil, Ordnance Survey, EDAW AECOM

Last Updated: May 2009

9.4 Community Facility Infrastructure Requirements

Swimming Pool Lanes

Demand Generated from Housing Growth

Table 9-3 sets out the demand for swimming pools generated from the proposed housing growth. Across the whole of the GNDP area housing growth generates demand for over five swimming pools of 4x25m. The Rackheath / Sprowston Growth Triangle is the only single growth location to generate sufficient demand for a pool, however housing growth across Norwich also generates the requirement for over four lanes.

The greatest demand is within South Norfolk, however this demand is more dispersed across the district and less dependent on growth within strategic growth locations.

Table 9-3: Demand for Swimming pool lanes Generated by New Housing Growth

		2011	2016	2021	2026	2031
Broadland	Rackheath / Sprowston Growth Triangle	0.0	0.6	1.7	2.9	4.1
	Development elsewhere in district	**0.4**	**1.4**	**2.3**	**3.0**	**3.8**
	Total	**0.4**	**1.9**	**4.0**	**5.9**	**7.9**
Norwich	Norwich	**0.6**	**2.0**	**2.9**	**3.6**	**4.4**
South Norfolk	Wymondham	0.0	0.1	0.5	0.9	0.9
	Long Stratton	0.0	0.0	0.3	0.7	0.7
	Hethersett	0.0	0.1	0.4	0.4	0.4
	Cringleford	0.0	0.0	0.3	0.5	0.5
	Easton / Costessey	0.0	0.1	0.4	0.4	0.4
	Development elsewhere in district	1.1	2.6	3.5	4.4	6.6
	Total	**1.1**	**2.9**	**5.3**	**7.2**	**9.5**
Grand Total		**2.1**	**6.8**	**12.2**	**16.8**	**21.7**

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

** Includes the population associated with development at smaller locations, existing commitments, assumed windfall development and the RSS review and post 2026 housing allocations.*

Source: EDAW, 2009

Implications of Net Population Change

Table 9-4 sets out the demand for swimming pool lanes based on the population change projected to occur across each district. This includes the demand generated by the proposed housing growth plus the demand associated with demographic changes within the existing population.

The total requirement is for 17.4 25m lanes across the whole of the GNDP area. This is lower than the requirement identified in Table 9-3 due to the population decline that is projected to occur in South Norfolk and Broadland in the absence of housing growth. However, even once this correction based on demographic change is considered, demand for four 4x25m pools arises across the GNDP area, one pool in each district plus an additional pool serving the residual requirement in each district.

Table 9-4: Demand for Swimming Pool Lanes from GNDP Population (Cumulative)

	25m Swimming Pool Lanes Demanded				
	2011	**2016**	**2021**	**2026**	**2031**
Broadland	-0.1	0.7	2.1	3.4	5.1
Norwich	0.9	2.4	3.6	4.2	5.1
South Norfolk	1.3	2.5	4.1	5.3	7.2
GNDP Total	2.2	5.5	9.8	12.9	17.4
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: EDAW / Norfolk County Council

The figure below presents the findings by growth location within each of the three districts, after taking account of the projected demographic changes. Demand within each growth location is based on the housing generated demand in that area. The demand elsewhere in the district is the residual between the requirements associated with the district wide demographic projections and the demand generated by housing growth in the strategic growth locations. As with Table 9-4 the overall requirement within GNDP is for 17.4 pools.

Table 9-5: Total Swimming pool lane demand, accouniting for district wide net popualtion change

		25m Swimming Pool Lanes Demanded				
		2011	**2016**	**2021**	**2026**	**2031**
Broadland	**Rackheath / Sprowston Growth Triangle**	0.0	0.6	1.7	2.9	4.1
	Development elsewhere in district	-0.1	0.1	0.4	0.5	1.0
	Total	**-0.1**	**0.7**	**2.1**	**3.4**	**5.1**
Norwich	**Norwich**	**0.9**	**2.4**	**3.6**	**4.2**	**5.1**
South Norfolk	**Wymondham**	0.0	0.1	0.5	0.9	0.9
	Long Stratton	0.0	0.0	0.3	0.7	0.7
	Hethersett	0.0	0.1	0.4	0.4	0.4
	Cringleford	0.0	0.0	0.3	0.5	0.5
	Easton / Costessey	0.0	0.1	0.4	0.4	0.4
	Development elsewhere in district	1.3	1.9	2.2	2.4	4.3
	Total	**1.3**	**2.5**	**4.1**	**5.3**	**7.2**
Grand Total		**2.2**	**5.5**	**9.8**	**12.9**	**17.4**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.						

** Includes the population associated with development at smaller locations, existing commitments, assumed windfall development and the RSS review and post 2026 housing allocations.*

Source: EDAW, 2009

The demand identified above is associated with the following facility requirements. As identified, this represents a 4x25m pool in each district plus a strategically located pool which serves the residual requirements of the whole GNDP. Given the additional demand arising in South Norfolk, this may be best located towards the south of the area.

Table 9-6: Swimming Pool Facility Requirements

		Growth Phase Ending:				
		2011	**2016**	**2021**	**2026**	**2031**
Broadland	**Rackheath / Sprowston Growth Triangle**					4 x 25 metre lane swimming pool
	Elsewhere in Broadland	No additional requirements				
Norwich				4 x 25 metre lane swimming pool		
South Norfolk					4 x 25 metre lane swimming pool	
			4 x 25 metre lane swimming pool *(meeting GNDP residual demand)*			
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.						

Source: EDAW, 2009

Indoor Sport Hall Courts

Facility requirements to support population generated through housing growth

Table 9-7 sets out the demand arising for sports hall courts generated from the proposed housing growth. Assuming a minimum of 2 sports courts per facility, sports courts will be required within the Rackheath / Sprowston Growth Triangle and Norwich. Demand within the smaller strategic growth locations within Broadland do not quite trigger the demand for facilities, however there is a significant demand across the whole of South Norfolk.

Table 9-7: Sports hall court requirements to meet demand from population generated through housing growth

		Sports Halls Demanded				
		2011	**2016**	**2021**	**2026**	**2031**
Broadland	**Rackheath / Sprowston Growth Triangle**	0.0	0.8	2.6	4.3	6.1
	Development elsewhere in district	0.6	2.0	3.4	4.5	5.7
	Total	**0.6**	**2.9**	**6.0**	**8.8**	**11.8**
Norwich	**Norwich**	**0.8**	**3.0**	**4.4**	**5.4**	**6.5**
South Norfolk	**Wymondham**	0.0	0.2	0.8	1.3	1.3
	Long Stratton	0.0	0.0	0.4	1.1	1.1
	Hethersett	0.0	0.1	0.6	0.6	0.6
	Cringleford	0.0	0.0	0.4	0.7	0.7
	Easton / Costessey	0.0	0.1	0.6	0.6	0.6
	Development elsewhere in district	1.6	3.9	5.3	6.5	9.8
	Total	**1.6**	**4.4**	**7.9**	**10.8**	**14.1**
Grand Total		**3.1**	**10.2**	**18.2**	**25.1**	**32.4**

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

** Includes the population associated with development at smaller locations, existing commitments, assumed windfall development and the RSS review and post 2026 housing allocations.*

Source: EDAW, 2009

Implications of Net Population Change

The demand for sports hall courts associated with the net population change projected to occur within each district is presented in Table 9-8. Demand for sports hall courts follows a similar pattern as to the demand for swimming pool lanes in that a declining population in areas outside the growth locations reduces the total demand measured at the district level.

Table 9-8: Headline Demand for Sports Hall Courts (Cumulative)

	Sports Halls Demanded				
	2011	**2016**	**2021**	**2026**	**2031**
Broadland	-0.1	1.0	3.1	5.1	7.6
Norwich	1.4	3.5	5.4	6.2	7.6
South Norfolk	2.0	3.7	6.1	7.9	10.8
GNDP Total	3.2	8.2	14.6	19.2	25.9
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: EDAW / Norfolk County Council

Demand by growth location, once accounting for the projected population change occurring across the district is presented in the table below. Demand within each growth location is based on the housing generated demand in that area. The demand elsewhere in the district is the residual between the requirements associated with the district wide demographic projections and the demand generated by housing growth in the strategic growth locations. A total of 25 courts are demanded across the GNDP area, although much of this is due to the requirements outside of the strategic growth locations.

Table 9-9: Total sports hall court demand, accounting for district wide population change

		2011	**2016**	**2021**	**2026**	**2031**
Broadland	**Rackheath / Sprowston Growth Triangle**	0.0	0.8	2.6	4.3	6.1
	Development elsewhere in district	-0.1	0.2	0.5	0.8	1.1
	Total	**-0.1**	**1.0**	**3.1**	**5.1**	**7.2**
Norwich	**Norwich**	**1.4**	**3.5**	**5.4**	**6.2**	**7.6**
South Norfolk	**Wymondham**	0.0	0.2	0.8	1.3	1.3
	Long Stratton	0.0	0.0	0.4	1.1	1.1
	Hethersett	0.0	0.1	0.6	0.6	0.6
	Cringleford	0.0	0.0	0.4	0.7	0.7
	Easton / Costessey	0.0	0.1	0.6	0.6	0.6
	Development elsewhere in district	2.0	3.3	3.3	3.6	6.5
	Total	**2.0**	**3.7**	**6.1**	**7.9**	**10.8**
Grand Total		**3.2**	**8.2**	**14.6**	**19.2**	**25.9**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.						

** Includes the population associated with development at smaller locations, existing commitments, assumed windfall development and the RSS review and post 2026 housing allocations.*

Source: EDAW, 2009

The demand identified above is associated with the following facility requirements. Given the extent of demand, it has been possible to recommend that facilities come forward in groups of four courts, to cut down on the costs associated with building twice as many smaller facilities. Much of the provision is required at the district level, rather than within the strategic growth locations, except for Broadland where the district wide provision will be met by facilities in the Rackheath / Sprowston Growth Triangle, due to insufficient demand arising elsewhere.

Table 9-10: Sports Courts Facility Requirements

District	Location	Facility Requirement				
		2008-11	2011-16	2016-21	2021-26	2026-31
Broadland	**Rackheath / Sprowston Growth Triangle**				4 x indoor sports courts	4 x indoor sports courts (meeting some district wide demand)
	Elsewhere in District	No additional requirements				
Norwich				4 x indoor sports courts		4 x indoor sports courts
South Norfolk	**Wymondham**	No additional requirement Demand met through district wide provision				
	Long Stratton					
	Hethersett					
	Cringleford					
	Easton / Costessey					
	Elsewhere in South Norfolk		4 x indoor sports courts		4 x indoor sports courts	4 x indoor sports courts
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.						

Source: EDAW, 2009

Libraries

Facility requirements to support population generated through housing growth

Table 9-11 sets out the demand arising for libraries from the population generated from the proposed housing growth. The pattern of demand across the strategic growth locations and elsewhere is similar to swimming pools and sports courts. On the basis that a minimum size for a library is 300 sq m, the Rackheath / Sprowston Growth Triangle is the only area which generates sufficient demand for a facility.

Table 9-11: Demand for Library Provision Generated by Housing Growth (square metres)

		2011	2016	2021	2026	2031
Broadland	Rackheath / Sprowston Growth Triangle	0	78	243	407	580
	Development elsewhere in district	61	194	324	431	543
	Total	**61**	**272**	**566**	**838**	**1,123**
Norwich	**Norwich**	**80**	**284**	**415**	**516**	**617**
South Norfolk	Wymondham	0	21	73	124	124
	Long Stratton	0	0	37	101	101
	Hethersett	0	8	53	56	56
	Cringleford	0	3	37	67	67
	Easton / Costessey	0	8	53	56	56
	Development elsewhere in district	155	375	499	621	935
	Total	**155**	**414**	**750**	**1,026**	**1,340**
Grand Total		**296**	**970**	**1,732**	**2,380**	**3,081**

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

** Includes the population associated with development at smaller locations, existing commitments, assumed windfall development and the RSS review and post 2026 housing allocations.*

Source: EDAW, 2009

Implications of Net Population Change

Table 9-11 sets out the demand for library space resulting from the projected GNDP wide population changes. The total demand across the GNDP area is lower in reflection of the declining population that is projected to occur in Broadland and South Norfolk in the absence of housing growth. As with the other facility types, the requirement is higher in Norwich as the population here is still expected to increase in the absence of housing development.

The greatest demand remains in South Norfolk, reflecting the higher level of housing allocated to this district and the greater proportion of family sized homes expected to come forward, compared to areas such as Norwich.

Table 9-12: Headline demand for libraries (Cumulative)

	Library Demand (square metres)				
	2011	**2016**	**2021**	**2026**	**2031**
Broadland	-14	95	295	481	721
Norwich	133	334	511	590	718
South Norfolk	188	348	580	750	1,023
GNDP Total	307	777	1,386	1,821	2,462
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: EDAW / Norfolk County Council

Table 9-13 sets out the demand for libraries by growth location, after accounting for the demographic changes occurring at the district level. It shows that there will be significant demand for library space, particularly in Rackheath/Sprowston Growth Triangle and Norwich. Facilities spread through South Norfolk will also be important, particularly as no single growth location will generate sufficient demand for a new facility outright.

Table 9-13: Total library demand, accounting for district wide population change (square metres)

		Library Demand (square metres)				
		2011	**2016**	**2021**	**2026**	**2031**
Broadland	**Rackheath / Sprowston Growth Triangle**	0	78	243	407	580
	Development elsewhere in district	-14	17	52	74	140
	Total	**-14**	**95**	**295**	**481**	**721**
Norwich	**Norwich**	**133**	**334**	**511**	**590**	**718**
South Norfolk	**Wymondham**	0	21	73	124	124
	Long Stratton	0	0	37	101	101
	Hethersett	0	8	53	56	56
	Cringleford	0	3	37	67	67
	Easton / Costessey	0	8	53	56	56
	Development elsewhere in district	188	309	328	346	619
	Total	**188**	**348**	**580**	**750**	**1023**
Grand Total		**307**	**777**	**1386**	**1821**	**2462**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.						

** Includes the population associated with development at smaller locations, existing commitments, assumed windfall development and the RSS review and post 2026 housing allocations.*

Source: EDAW, 2009

Given the limited demand for library facilities in many of the strategic growth locations and the potential for co-locating such facilities with community space, a summary of library necessary to meet this demand will be provide in the following section on.

Community space

Facility requirements to support population generated through housing growth

Table 9-14 sets out the demand arising for community facilities from the population generated from the proposed housing growth. This pattern of demand mirrors that of libraries, however the higher requirement is due to the variation in the square meter per head standard applied to community facilities.

Assuming that 300 sq m is the minimum size for a facility, the strategic growth locations in South Norfolk still fall short of requiring a new facility, however demand may be sufficient when combined with library provision.

Table 9-14: Demand for Community Space Provision Generated by Housing Growth (square metres)

		Community Space Demand (square metres)				
		2011	**2016**	**2021**	**2026**	**2031**
Broadland	**Rackheath / Sprowston Growth Triangle**	0	181	558	936	1,336
	Development elsewhere in district	141	447	745	993	1,250
	Total	**141**	**627**	**1,304**	**1,929**	**2,585**
Norwich	**Norwich**	**183**	**653**	**955**	**1,188**	**1,421**
South Norfolk	**Wymondham**	0	48	168	285	285
	Long Stratton	0	0	84	233	233
	Hethersett	0	18	122	129	129
	Cringleford	0	6	84	155	155
	Easton / Costessey	0	18	122	129	129
	Development elsewhere in district	357	863	1,148	1,430	2153
	Total	**183**	**653**	**955**	**1,188**	**1,421**
Grand Total		**682**	**2,234**	**3,986**	**5,478**	**7,091**

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

** Includes the population associated with development at smaller locations, existing commitments, assumed windfall development and the RSS review and post 2026 housing allocations.*

Source: EDAW, 2009

Implications of Net Population Change

Table 9-15 sets out the demand for community space associated with the projected population change for each district. Once again the variation with the figures above relates to whether the population in each district is expected to decline or grow in the absence of housing growth.

Table 9-15: Headline demand for community space (Cumulative)

	Community Space Demand (square metres)				
	2011	**2016**	**2021**	**2026**	**2031**
Broadland	-32	219	679	1,107	1,659
Norwich	306	768	1,176	1,358	1,653
South Norfolk	433	802	1,335	1,727	2,355
GNDP Total	706	1,788	3,190	4,192	5,667

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

Source: EDAW / Norfolk County Council

Table 9-16 sets out the demand for community facilities by growth location, after accounting for the demographic changes occurring at the district level. Similarly to library space it shows that there will be significant demand for community space, particularly in Rackheath/Sprowston Growth Triangle and Norwich. Facilities spread through South Norfolk will also be important, particularly as no single growth location will generated sufficient demand for a new facility outright, although demand in Wymondham and Long Stratton is sufficient when combined with library provision.

Table 9-16: Total community space demand

		Community Space Demand (square metres)				
		2011	**2016**	**2021**	**2026**	**2031**
Broadland	**Rackheath / Sprowston Growth Triangle**	0	181	558	936	1336
	Development elsewhere in district	-32	38	121	170	323
	Total	**-32**	**219**	**679**	**1,107**	**1,659**
Norwich	**Norwich**	**306**	**768**	**1,176**	**1,358**	**1,653**
South Norfolk	**Wymondham**	0	48	168	285	285
	Long Stratton	0	0	84	233	233
	Hethersett	0	18	122	129	129
	Cringleford	0	6	84	155	155
	Easton / Costessey	0	18	122	129	129
	Development elsewhere in district	433	711	756	796	1424
	Total	**433**	**802**	**1,335**	**1,727**	**2,355**
Grand Total		**706**	**1,788**	**3,190**	**4,192**	**5,667**

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

** Includes the population associated with development at smaller locations, existing commitments, assumed windfall development and the RSS review and post 2026 housing allocations.*

Source: EDAW, 2009

The library and community space demand identified above is associated with the following facilities and phasing. The phasing of provision in Wymondham allows for the co-location of facilities with a Safer Neighbourhood Team.

Table 9-17: Detailed Facility Requirements

District	Location	Facility Requirement				
		2008-11	**2011-16**	**2016-21**	**2021-26**	**2026-31**
Broadland	**Rackheath / Sprowston Growth Triangle**		300sqm Community space	600sqm Combined community space and library	300sqm Community space	600sqm Combined community space and library
	Elsewhere in District				300sqm Community space	
Norwich			2 x 300 sq m Community Centre	300 sq m Community Centre	Combined Community Centre and Library (600 sq m)	300sqm library
South Norfolk	**Wymondham**			400 sq m Combined Community Centre & Library		
	Long Stratton				Combined Community Centre and Library (300 sq m)	
	Hethersett	No Additional Requirement				
	Cringleford					
	Easton / Costessey					
	Elsewhere in South Norfolk		1 x Combined Community Centre and Library (600 sq m) 1 x Community Centre (300 sq m)			2 x Combined Community Centre and Library (600 sq m)

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

Source: EDAW

9.5 Development within the Smaller Growth Locations

The following table presents the demand for police officers generated by growth within the smaller growth locations. These requirements are incorporated into the demand generated by development 'elsewhere in Broadland' and 'elsewhere in South Norfolk' in the preceding section.

Where a range of dwellings is provided in the Core Strategy, the higher level of development has been assessed here.

It is clear that demand in each of these locations is of insufficient magnitude to generate demand for additional facilities within these areas. However, they do contribute to additional demand at the district level.

Table 9-18: Demand Generated by Growth in the Smaller Growth Locations

	Swimming Pool Lanes	Sport Courts	Community Space	Library Space
Diss	0.1	0.2	38.8	16.9
Harleston	0.1	0.2	38.8	16.9
Acle	0.1	0.1	25.9	11.2
Reepham	0.1	0.1	25.9	11.2
Wroxham	0.1	0.1	25.9	11.2
Loddon	0.1	0.1	25.9	11.2
Hingham	0.0	0.1	12.9	5.6
Blofield	0.0	0.0	6.5	2.8
Brundall	0.0	0.0	6.5	2.8
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.				

Source: EDAW

9.6 Detailed Infrastructure Overview, Costs, and Phasing

Broadland

The Rackheath / Sprowston Growth Triangle will generate significant demand for community and leisure facilities, including two sports centres, a swimming pool, four standard size community spaces and two standard libraries. There will also be demand for community space to serve the wider district.

Norwich

By 2031 there will be a need for a swimming pool and at least six indoor sports courts in Norwich. As this demand increases over the growth period, it may be prudent to develop a sport centre earlier in anticipation of this future demand whilst creating capacity to existing demand.

Growth within Norwich will require significant new community space coming forward throughout the growth period, and two additional standard size libraries during the latter phases. There may be capital and revenue cost savings by combining some of these facilities.

South Norfolk

Growth within any one of the specific growth locations is insufficient to generate demand for a new, standard size library or community space in isolation. Collectively, however, they generate the need for

an additional library and 3 additional community spaces. The greatest demand arises in Long Stratton and Wymondham. As such, these locations may provide suitable locations for strategic facilities, although both locations have existing facilities already (a new library has however recently been built at Wymondham). In addition, there is significant demand for additional library and community spaces elsewhere in South Norfolk required throughout the growth period that could offer opportunities to locate strategic facilities.

Table 9-19 sets out the community facilities and associated costs associated with community facilities, which is in the order of £40 million across all areas and facility types.

Table 9-19: Infrastructure Costs

District	Growth Location	Infrastructure Requirement	Phase	Total Costs	Community Facility Associated Costs
Broadland	Rackheath / Sprowston Growth Triangle	300sqm Community space	2016	£540,000	£540,000
		600sqm Combined community space and library *co-located with 60 place pre-school facility*	2021	£1,980,000	£1,440,000
		4xIndoor Sports Courts *co-located with 1,400 place secondary school*	2026	£39,380,000	£2,000,000
		300sqm Community space	2026	£540,000	£540,000
		4x25m lane swimming pool	2031	£2,500,000	£2,500,000
		4xIndoor Sports Courts	2031	£2,000,000	£2,000,000
		600sqm Combined community space and library *co-located with 420 place primary & 60 place pre-school*	2031	£6,580,000	£1,440,000
	Broadland	300sqm Community space	2026	£540,000	£540,000
Norwich	Norwich	4x25m lane swimming pool	2021	£2,500,000	£2,500,000
		2 x 300 sq m Community Centre	2016	£1,080,000	£1,080,000
		4xIndoor Sports Courts	2021	£2,000,000	£2,000,000
		300 sq m Community Centre	2021	£540,000	£540,000
		Combined Community Centre and Library (600 sq m) *co-located with 60 place pre-school*	2026	£1,980,000	£1,440,000
		4xIndoor Sports Courts	2031	£2,000,000	£2,000,000
		300sqm library co-located with 60 place pre-school	2031	£1,440,000	£900,000
South Norfolk	Wymondham	400 sq m Combined Community Centre & Library co-located with space for SNT (9 officers)	2026	£1,345,000	£960,000
	Long Stratton	Combined Community Centre and Library (300 sq m) *co-located with 2FE Primary & integrated 60 place pre-school*	2026	£5,860,000	£720,000
	South Norfolk	4xIndoor Sports Courts	2016	£2,000,000	£2,000,000
		Combined Community Centre and Library (600 sq m)	2016	£1,450,000	£1,450,000
		Community Centre (300 sq m)	2016	£540,000	£540,000
		4x25m lane swimming pool	2026	£2,500,000	£2,500,000
		4xIndoor Sports Courts	2026	£2,000,000	£2,000,000

District	Growth Location	Infrastructure Requirement	Phase	Total Costs	Community Facility Associated Costs
		4xIndoor Sports Courts	2031	£1,500,000	£1,500,000
		4x25m lane swimming pool	2031	£2,500,000	£2,500,000
		2 x Combined Community Centre and Library (600 sq m)	2031	£2,900,000	£2,900,000
Total Costs				**£88,195,000**	**£38,530,000**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: EDAW / Gardiner & Theobald

Table 9-21: Community Facilities Activities costs and funding sources Identified in the GNDP GNDP Integrated Development Plan

COMMUNITY FACILITIES					
#	**Prioritisation**	**Geography**	**Funding Source**	**Total Costs & % Funding**	**Assumed Funding**
119	**300sqm Community space**			£540,000	**£0**
	Desirable	Sprowston / Rackheath Growth Triangle			£0
120	**600 sq m combined community space and library co-located with 60 place pre-school facility**			£1,980,000	**£0**
	Desirable	Sprowston / Rackheath Growth Triangle			£0
121	**300sqm Community space**			£540,000	**£0**
	Desirable	Sprowston / Rackheath Growth Triangle			£0
122	**4x25m lane swimming pool**			£2,500,000	**£0**
	Desirable	Sprowston / Rackheath Growth Triangle			£0
123	**4xIndoor Sports Courts**			£2,000,000	**£0**
	Desirable	Sprowston / Rackheath Growth Triangle			£0
124	**300sqm Community space**			£540,000	**£0**
	Desirable	Broadland Elsewhere			£0
125	**4x25m lane swimming pool**			£2,500,000	**£0**
	Desirable	Norwich			£0
126	**2 x 300 sqm Community Centre**			£1,080,000	**£0**
	Desirable	Norwich			£0
127	**4xIndoor Sports Courts**			£2,000,000	**£0**
	Desirable	Norwich			£0
128	**300 sqm Community Centre**			£540,000	**£0**
	Desirable	Norwich			£0

129	**600 sq m combined community space and library co-located with 60 place pre-school**			£1,980,000	**£0**
	Desirable	Norwich			£0
130	**4xIndoor Sports Courts**			£2,000,000	**£0**
	Desirable	Norwich			£0
131	**300 sqm library co-located with 60 place pre-school**			£1,440,000	**£0**
	Desirable	Norwich			£0
132	**4xIndoor Sports Courts**			£2,000,000	**£0**
	Desirable	GNDP Wide			£0
133	**Combined Community Centre and Library (600 sqm)**			£1,450,000	**£0**
	Desirable	GNDP Wide			£0
134	**Community Centre (300 sqm)**			£540,000	**£0**
	Desirable	GNDP Wide			£0
135	**4x25m lane swimming pool**			£2,500,000	**£0**
	Desirable	GNDP Wide			£0
136	**4xIndoor Sports Courts**			£2,000,000	**£0**
	Desirable	GNDP Wide			£0
137	**4xIndoor Sports Courts**			£1,500,000	**£0**
	Desirable	GNDP Wide			£0
138	**4x25m lane swimming pool**			£2,500,000	**£0**
	Desirable	GNDP Wide			£0
139	**2 x Combined Community Centre and Library (600 sqm)**			£2,900,000	**£0**
	Desirable	GNDP Wide			£0
Total Funding - Community Facilities					**£0**
Total Assumed Infrastructure Costs – Community Facilities					**£38,530,000**
Total Assumed Funding Gap – Community Facilities					**£38,530,000**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: GNDP GNDP Integrated Development Plan

Table 9-20: Community Facilities Costs, Funding, and Prioritisation Overview

	Total Costs	Total Funding	Funding Gap
Critical	£0	£0	£0
Essential	£5,120,000	£0	£5,120,000
Desirable	£33,410,000	£0	£33,410,000
Total	**£38,530,000**	**£0**	**£38,530,000**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.			

Source: EDAW, 2009

10 Green Infrastructure and Open Space

10.1 Policy Context

Green infrastructure and open space form an important component of the spatial vision and objectives of the draft Joint Core Strategy, with references occurring in both location specific and cross-cutting policies.

Green infrastructure can be multi-functional and will contribute to a wide range of planning objectives in addition to providing open space. Such multi-functional uses include: managing flood risk through SuDS; enhancing biodiversity; transport corridors; and local food production. The draft Joint Core Strategy endorses the Green Infrastructure Strategy (2007) which identifies a provisional list of green infrastructure projects that provide 'an indication of the scale and nature of green infrastructure projects needed to support the needs of people and wildlife in response to proposed growth in the Greater Norwich Area'.

Further work is currently being undertaken to provide more information on the viability and deliverability of the identified key green infrastructure projects and their relation to the preferred growth option. This work is due for publication in August 2009. Although, to date, the Green Infrastructure Study has only been able to provide context to this study, the forthcoming work will provide an opportunity to demonstrate how some of the requirements set out within this study can be met and illustrate any shortfall in provision.

Although green infrastructure and open space are inextricably linked, the appropriate provision of accessible open space is an important consideration in its own right within the draft Joint Core Strategy. There is no overarching standard for open space provision within the draft Joint Core Strategy and each of the districts have slightly different approaches towards open space provision, particularly in relation to play space.

Table 10-1 sets out each of the three districts' open space standards currently set out in policy. These focus on formal uses, including outdoor sport and play space.

Table 10-1: Current Open Space Policy Requirements

District	Open space standard	Additional details	Source
Broadland	2.4 ha per 1,000 population standard / 24 sq m per person	8 sq m children's playing space 16 sq m for outdoor sport	Recreational Open Space SPD (2007)
Norwich	24 sq m per dwelling, up to a maximum of 20% net site coverage to serve residential developments in excess of 40 dwellings or 1 hectare (or 25 dwellings or 0.5 hectare within the city centre) 7.5 sq m play space per child bed space where there are more than 10 child bedspaces	0.8 hectares (1.5 acres) of outdoor playing pitches per 1000 population across the whole city 0.4 hectares (0.75 acres) of sporting and recreational facilities measured across the city 0.5 hectares (1.0 acres) of informal children's play and amenity open space per 1000 population within each sector of the city An equipped younger children's play area within a 240 metre radius (400 metres average walking distance) of residential properties in each sector Local informal open space for older children within a 480 metre radius (800 metre average walking distance) of residential properties in each sector Formal recreation and/or youth activities within a 600 metre radius (or 1 kilometre walking distance) from residential properties A designated nature conservation site with public access or site for natural play (of at least 0.2 hectares) within each sector.	Open space SPD (2006)
South Norfolk	2.4 ha per 1,000 population standard / 24 sq m per person	0 – 14 dwellings – N/A 15 – 24 dwellings – min 400sq m children's play space and N/A for older children / adults 24 – 50 dwellings – min 1,000 sq m children's play space and min 2,000 sq m for older children / adults 51 or more dwellings – 17.5 sq m extra per until children's play space and 42.5 sq m extra per unit for older children / adults	South Norfolk Local Plan's Open Space Policy LEI 7: Open space provision in new development
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.			

Source: Broadland District Council, Norwich City Council and South Norfolk District Council

In light of the limited scope of policy, and in response to the requirements set out in PPG17, the two district councils and the City Council have commissioned needs based assessments. These assessments take into consideration quantity, quality and accessibility, drawing on the following policy and best practice guidance:

- PPG17 (ODPM)
- The Natural Accessible Greenspace Standards (Natural England)
- Towards a Level Playing Field (Sport England)
- Raising the standard (Green Flag)

The recommendations for provision standards set out in these assessments are included in Table 10-2.These standards set out the average open space requirements per 1000 population for a range of open space typologies.

Table 10-2: Open Space Needs Assessment Open Space Provision Standards

ha/1000 population	Broadland	Norwich	South Norfolk
Parks and Gardens	1.13ha	0.62ha	0.98ha
Natural and semi natural green space (including green corridors)	3.74ha	2.46ha	5.08ha
Informal/amenity open space	0.22ha	1.0ha	0.71 ha
Provision for children and young people (all play areas within other typologies)	0.36ha	N/A	1.9ha
Provision for children and young people (stand alone)	0.17ha	0.16ha	0.84 ha
Outdoor Sport (all pitches, greens and courts including those within other typologies)	1.68ha	N/A	1.82ha
Outdoor sports facilities and 'recreation grounds'	0.97ha	1.01ha	1.03ha
Allotment and community gardens	0.16ha	0.44ha	0.11ha
Total	**6.39ha**	**5.69ha**	**8.75ha**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.			

Source: Broadland District Council, Norwich City Council and South Norfolk District

Note: The Open Space Assessments for both Broadland and South Norfolk include two provision standards for both 'children and young people' and for 'outdoor sports and recreation grounds'. These are a total provision figure (shaded) which includes provision within other open space typologies and a figure for 'stand alone' facilities. The stand alone figure is the additional area of provision that would be required assuming that the other open space typologies continue to provide the same proportion of provision for 'children and young people' or 'outdoor sports and recreation grounds'.

The total provision figure provides a worst case, assuming that if other typologies do not provide any additional provision for children and young people' or 'outdoor sports and recreation grounds'. The stand alone figure, which highlights the requirements to maintain the status quo are highlighted throughout this chapter in brackets.

10.2 Assumptions

Using the open space need standards set out in Table 10-2 along with the demographic projections for population supplied by Norfolk County Council, it is possible to estimate the total open space requirement across the GNDP to 2031. It is then possible to estimate the proportion of this open space that will need to be delivered to meet the needs of the population generated by housing growth. This is necessary to ensure that the growth locations each meet the open space requirement identified above. This assumes that open space will be delivered elsewhere in the GDNP to bring other areas with an open space deficit up to the standards.

Table 10-3 sets out the population generated by housing growth as a proportion of the total population across the district.

Table 10-3: Population generated due to housing growth as a proportion of total population

	2011		2016		2021		2026		2031	
	Pop	***%***	**Pop**	***%***	**Pop**	***%***	**Pop**	***%***	**Pop**	***%***
Rackheath / Sprowston Growth Triangle	0	*0%*	2,959	*2.4%*	9,155	*7.3%*	15,351	*11.5%*	21,899	*15.6%*
Elsewhere in Broadland	2,316	*1.9%*	7,322	*6.0%*	12,217	*9.7%*	16,276	*12.2%*	26,894	*14.6%*
Broadland Total	**2,316**	***1.9%***	**10,281**	***8.5%***	**21,371**	***17.0%***	**31,627**	***23.7%***	**42,384**	***30.2%***
Norwich Total	**3,004**	***2.3%***	**10,709**	***8.0%***	**15,660**	***11.0%***	**19,480**	***13.1%***	**23,300**	***15.3%***
Wymondham	0	*0.0%*	785	*0.6%*	2,746	*2.1%*	4,665	*3.4%*	4,665	*3.2%*
Long Stratton	0	*0.0%*	0	*0.0%*	1,378	*1.1%*	3,817	*2.8%*	3,817	*2.6%*
Hethersett	0	*0.0%*	297	*0.2%*	1,993	*1.5%*	2,121	*1.5%*	2,121	*1.5%*
Cringleford	0	*0.0%*	106	*0.1%*	1,378	*1.1%*	2,545	*1.8%*	2,545	*1.8%*
Easton/Costessey	0	*0.0%*	297	*0.2%*	1,993	*1.5%*	2,121	*1.5%*	2,121	*1.5%*
Elsewhere in South Norfolk	5,853	*5.0%*	14,144	*11.5%*	18,827	*14.6%*	23,435	*17.0%*	35,297	*24.4%*
South Norfolk Total	**5,853**	***5.0%***	**15,629**	***12.7%***	**28,316**	***21.9%***	**38,703**	***28.0%***	**50,566**	***35.0%***
GNDP Total	**367,877**	***100%***	**379,458**	***100%***	**397,193**	***100%***	**420,170**	***100%***	**436,604**	***100%***

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

10.3 Open Space Requirements

Open Space Requirement Associated with District Wide Net Population Change

Based on the changes in the GNDP wide population, in order to meet the open space needs assessment standards, there would need to be a total of 3,623ha of open space across the GNDP. Table 10-4 shows how this requirement is spread across the three districts and over each the growth phases.

Table 10-4: Headline Demand for Open Space (Cumulative)

	Open Space (ha)				
	2011	**2016**	**2021**	**2026**	**2031**
Broadland	887	917	972	1,023	1,089
Norwich	766	809	847	864	891
South Norfolk	1,318	1,383	1,474	1,539	1,642
Greater Norwich	2,970	3,109	3,292	3,425	3,623

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

Source: EDAW / Norfolk County Council
Note: Total provision figures have been included to calculate this table

Based on the requirements set out above, Table 10-5 provides greater details as to the quantity and type of open space to be delivered by 2031. A phased breakdown of this information is provided in Appendix E. It shows that, by far the greatest requirement will be for additional natural and semi natural open space. There is also significant demand for additional parks and gardens, and outdoor sport facilities.

Table 10-5: Headline Demand for Open Space by Typology to 2031

Open Space (ha)	Parks and Gardens	Natural and Semi Natural	Informal / amenity open space	Provision for children and young people	Outdoor sports facilities and recreation grounds'	Allotment and community gardens	**Total**
Broadland	169	559	33	54 (25)	251 (145)	24	**1,089 (955)**
Norwich	97	385	157	25	158	69	**891**
South Norfolk	154	786	110	294 (130)	282 (159)	17	**1,642 (1356)**
Total	**419**	**1730**	**299**	**180**	**463**	**110**	**3202**

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

Source: EDAW / Norfolk County Council

The open space requirements set out in Table 10-4 and Table 10-5 provide a desired baseline of open space provision from which the open space requirements associated with housing growth can be estimated.

Open Space Demand Generated by Housing Growth

The tables in this section present the open space requirements generated by the proposed level of hosing growth. They are the level of open space necessary to meet the standard identified above.

Broadland

In meeting the open space standards set out in Table 10-6, there will be a requirement for the strategic growth locations in Broadland to deliver an additional 328.9ha of open space. As per the open space standards, by far the largest requirement is for natural and semi natural greenspace. Details of the requirements by phasing across the growth period are included in appendix E.

Table 10-6: Housing Growth Related Open Space Demand in Broadland by Typology to 2031

	Parks and Gardens	Natural and Semi Natural	Informal / amenity open space	Provision for children and young people	Outdoor sports facilities and recreation grounds'	Allotment and community gardens	Total
Rackheath /Sprowston Growth Triangle	26.3	87.2	5.1	8.4 (4.0)	39.2 (22.6)	3.7	169.9 (149.0)
Elsewhere in Broadland	24.6	81.6	4.8	7.9 (3.7)	36.6 (21.2)	3.5	159.0 (139.3)
Broadland Total	**51.0**	**168.7**	**9.9**	**16.2 (7.7)**	**75.8 (43.8)**	**7.2**	**328.9 (288.3)**

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

Source: EDAW

Norwich

By 2031, there will be a need for an additional 136.8ha of open space to be in line with the open space standards resulting from the needs assessment, as set out in Table 10-7. Further details as to phasing requirements are outlined in appendix 5.

Table 10-7: Housing Growth Related Open Space Demand in Norwich by Typology to 2031

	Parks and Gardens	Natural and Semi Natural	Informal / amenity open space	Provision for children and young people	Outdoor sports facilities and recreation grounds'	Allotment and community gardens	Total
Norwich Total	**14.9**	**59.1**	**24.0**	**3.8**	**24.3**	**10.6**	**136.8**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.							

Source: EDAW

South Norfolk

The requirements for open space provision are most significant in South Norfolk, requiring an additional 574.8ha of open space to be provided as part of the strategic housing growth, as outlined in Table 10-8. Appendix 5 provides more details as to the open space requirements by phase. The greatest demand is clearly associated with growth outside of the strategic growth locations.

Table 10-8: Housing Growth Related Open Space Demand in South Norfolk by Typology to 2031

	Parks and Gardens	Natural and Semi Natural	Informal / amenity open space	Provision for children and young people	Outdoor sports facilities and recreation grounds'	Allotment and community gardens	Total
Wymondham	5.0	25.4	3.5	9.5 (4.2)	9.1 (5.1)	0.5	53.0 (43.8)
Long Stratton	4.1	20.8	2.9	7.8 (3.4)	7.4 (4.2)	0.4	43.4 (35.8)
Hethersett	2.3	11.5	1.6	4.3 (1.9)	4.1 (2.3)	0.2	24.1 (19.9)
Cringleford	2.7	13.8	1.9	5.2 (2.3)	5.0 (2.8)	0.3	28.9 (23.9)
Easton / Costessey	2.3	11.5	1.6	4.3 (1.9)	4.1 (2.3)	0.2	24.1 (19.9)
Elsewhere in South Norfolk	37.5	192.1	26.8	71.8 (31.8)	68.8 (38.9)	4.2	401.3 (331.3)
South Norfolk Total	**53.7**	**275.2**	**38.5**	**102.9 (45.5)**	**98.6 (55.8)**	**6.0**	**574.8 (474.6)**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.							

Source: EDAW

10.4 Infrastructure Overview and Costs

Table 10-9 sets out the costs that have been assumed to deliver the different types of open space.

Table 10-9: Assumed Costs

Parks and Gardens	£500,000 per ha
Natural and Semi Natural	£75,000 per ha
Informal / amenity open space	£200,000 per ha
Provision for children and young people	£640,000 per ha
Outdoor sports facilities and recreation grounds'	£250,000 per ha
Allotment and community gardens	£160,000 per ha
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.	

Source: Gardiner and Theobald

Table 10-10 sets out the costs associated with delivering the total quantum of open space required to be in line with the provision standards set out in Table 10-2. For further details on the cost for each of the different open space typologies, please see appendix E.

Table 10-10: Infrastructure Costs

District	Growth Location	Infrastructure Requirement	Cost – Based on total provision	Cost – Based on stand-alone only
Broadland	**Rackheath**	Open space	£36,458,010	£29,485,319
	Elsewhere	Open space	£34,103,356	£27,580,999
Norwich	**Norwich**	Open space	£26,815,874	£26,815,874
South Norfolk	**Wymondham**	Open space	£13,525,853	£9,148,371
	Long Stratton	Open space	£11,066,607	£7,485,030
	Hethersett	Open space	£6,148,115	£4,158,350
	Cringleford	Open space	£7,377,738	£4,990,020
	Easton / Costessey	Open space	£6,148,115	£4,158,350
	Elsewhere in South Norfolk*	Open space	£146,601,804	£69,215,740
Total			£288,245,472	£183,038,053
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.				

Source: EDAW / Gardiner & Theobald

Funding and opportunities to reduce costs

As highlighted in Table 10-10, there are considerable cost savings associated with delivering 'provision for children and young people' and 'outdoor sports and recreation' as part of other open space typologies, and therefore only requiring additional stand-alone facilities only.

It can be seen from the table that the costs for providing open space in South Norfolk are disproportionately higher than Norwich or Broadland. This is predominantly as a result of the more generous open space requirements set out in South Norfolk's local plan open space policy. If this was brought more into line with the requirements in Norwich and Broadland the costs could be reduced significantly.

The cost estimate for natural and semi-natural open space is based on the need to create new space, and makes up approximately 15% of the open space cost. As Norfolk is a predominantly a rural county, considerable cost savings could be achieved by working in partnership with local land owners to allow access to their land that would reduce the need for natural and semi-natural open space creation. There are a number of schemes, such as Natural England's Higher Level Stewardship and the Woodland Improvement Grant supported by the Forestry Commission.

In addition, it is assumed, for the purposes of this study, that the open space will be delivered alongside development coming forward. However, it will be important to review these findings as further work is undertaken on the Green Infrastructure Strategy. The Green Infrastructure Strategy is likely to make recommendations, including some related to open space, for delivering green infrastructure projects which would off-set the open space provision requirements set out in this report. Furthermore, there may be cost saving efficiencies in delivering green infrastructure and open space whilst delivering other infrastructure interventions, such as transport improvements. Opportunities for collaborative working in this way should be encouraged.

However, the higher cost has been incorporated into the assessment in the following section to identify the maximum funding necessary to support this infrastructure. Should the lower costs be achieved, this would reduce the requirement for alternative funding and an indication of this impact of achieving this will be provided.

Table 10-11Open Space Activities costs and funding sources Identified in GNDP Integrated Development Plan (Based on Total Provision)

OPEN SPACE					
#	**Prioritisation**	**Geography**	**Funding Source**	**Total Costs & % Funding**	**Assumed Funding**
140	**Combined Open Space**			£36,458,010	**£0**
	Essential	Sprowston / Rackheath Growth Triangle			£0
141	**Combined Open Space**			£34,103,356	**£0**
	Essential	Broadland Elsewhere			£0
142	**Combined Open Space**			£26,815,874	**£0**
	Essential	Norwich			£0
143	**Combined Open Space**			£13,525,853	**£0**
	Essential	Wymondham			£0
144	**Combined Open Space**			£11,066,607	**£0**
	Essential	Long Stratton			£0
145	**Combined Open Space**			£6,148,115	**£0**
	Essential	Hethersett			£0
146	**Combined Open Space**			£7,377,738	**£0**
	Essential	Cringleford			£0
147	**Combined Open Space**			£6,148,115	**£0**
	Essential	Easton			£0
148	**Combined Open Space**			£146,601,804	**£0**
	Essential	South Norfolk Elsewhere			£0
Total Assumed Funding – Open Space					£0
Total Assumed Infrastructure Costs – Open Space					£288,245,472
Total Assumed Funding Gap – Open Space					£288,245,472
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: GNDP GNDP Integrated Development Plan

Table 10-12: Open Space Costs, Funding, and Prioritisation Overview (Based on total provision)

	Total Costs	Total Funding	Funding Gap
Critical	£0	£0	£0
Essential	£288,245,472	£0	£288,245,472
Desirable	£0	£0	£0
Total	**£288,245,472**	**£0**	**£288,245,472**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.			

Source: EDAW, 2009

11 Waste

11.1 Policy Context

Objective 9 of the Joint Core Strategy encourages waste reduction, reuse, recycling, composting and safe energy recovery to minimise the contribution to climate change and address the impact of the strategy. Policy 13 states that all developments will contribute to conserving scarce resources, and make sustainable use of resources.

Responsibility for waste disposal and planning across Norfolk lies with Norfolk County Council. As a Waste Disposal Authority, the County Council has responsibility for disposing and/or treating household municipal waste (HMW) (and trade waste of similar composition) collected by the Waste Collection Authorities within the District and City councils. In addition, the County Council has responsibility for providing Household Waste Recycling Centres (HWRC). The Joint Municipal Waste Management Strategy for Norfolk (2006 with an update report on 2008) sets out how Norfolk proposes to manage municipal waste up until 2020.

As a Waste Planning Authority, the County Council also has to ensure that there is adequate provision of waste facilities coming forward to provide adequate capacity to dispose of and/or treat all other kinds of waste, including commercial and industrial, construction and demolition, and hazardous waste. Norfolk County Council's emerging Waste and Minerals Development Framework (WMDF), including the Core Strategy at preferred options stage, sets out the County's spatial vision for waste management in relation to the proposed growth set out in the East of England RSS up to 2021.

At present, however, there is no comprehensive waste capacity assessment for Norfolk that can be used to determine the quantity, type and therefore likely cost of required facilities/infrastructure required to dispose of and/or treat the complete spectrum of waste streams in relation to growth that can be incorporated into this study. Notwithstanding this, the delivery of waste infrastructure will be delivered by private partners, and as such, the capital costs on the Council are likely to be small.

For example, the needs case for additional municipal waste treatment has been articulated in Outline Business Case for PFI credits (www.norfolk.gov.uk/futureofwaste). This document sets out proposals for two additional waste treatment contracts that will deliver an additional waste management municipal waste treatment capacity of over 300,000tpa. Defra has agreed a PFI Contract that will bring forward an Energy from Waste facility with a capacity of around 155,000tpa. NCC has purchased land on the Willows Industrial Estate PE34 3RD which bidders may use.

Norfolk County Council Waste Management team indicate that, with the provision of new facilities currently undergoing procurement tendering and maximising capacity in existing facilities, there is sufficient capacity to manage waste arising from proposed growth over the next 25 years. This does not, however, take into consideration the residual municipal waste that cannot be treated and is sent to landfill, coupled with the limits on landfill capacity (which, at current projections, will be diminished by 2023). This is likely to trigger the need for further municipal waste treatment infrastructure.

Given that, at present, there is not enough information to provide details as to the quantity, type and cost of facilities required, along with the intention for waste facilities to be delivered through private partnership, this study will not take into consideration the capital costs for waste processing and disposal facilities, but will focus on the cost associated with providing HWRCs.

11.2 Existing Provision and Assumptions

For the purposes of this study, cost will be based on maintaining the current standard of provision (by area) based on the HWRC operating within the GNDP boundary. Under the scope of the study there has not been an opportunity to evaluate the adequacy of this provision.

There are seven HWRC in the GNDP area, as show in Table 11-1 and Table 11-2, with areas ranging between 650 and 2,300 sq m.

Table 11-1 – Household Waste Recycling Centres in the GNDP area

HWRC Site	Area (sq m)	Notes
Bergh Apton	1038	Planning permission for this site expires 30/09/2012
Ketteringham	2282	Recently expanded
Mayton Wood	1313	
Mile Cross	850	
Morningthorpe	938	Constrained
Strumpshaw	1313	Constrained
Wymondham	656	Potential land available for extension up to 3800 sq m
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.		

Based on the information above, the total area of HWRC space in the GNDP area is 8390 sq m, serving a population in 2007 of 372,570. This is an average of 0.023m of HWRC space per person. This average area per person can then be used as a multiplier against population projections to estimate the future additional demand for HWRC space. This has been done in two ways:

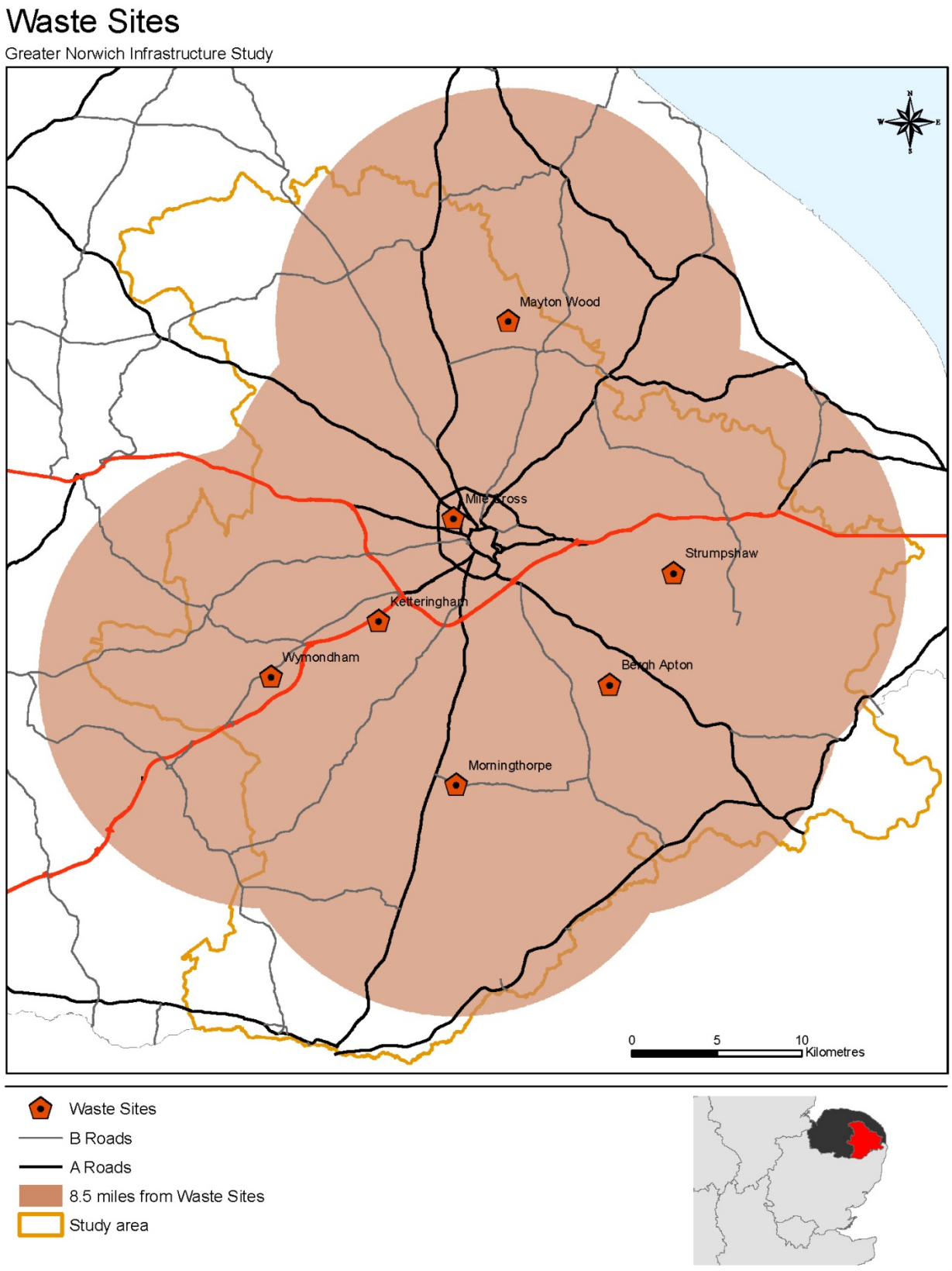
1. Against the population generated by strategic housing growth to provide spatial context as to where demand will be greatest. This figure is higher than the net increase in demand as it does not take into consideration population change outside of the strategic growth locations.

2. Against district/GNDP wide population growth projections – to establish the total net increase in demand for HWRC space across the three districts.

In addition, there is an aspirational target that all households within Norfolk should be within 8.5 miles of a HWRC.

Although smaller facilities are operationally viable, Norfolk County Council has advised that generally a new facility should be no smaller than 1000 sq m and ideally around 2500 sq m.

Household Waste Recycling Centres in the GNDP area



11.3 HWRC Requirements

HWRC Demand Generated by Strategic Housing Growth

As the additional HWRC space demand generated by each specific growth location is limited, Table 11-2 presents the demand for HWRC space generated from the strategic growth by district. Appendix E contains a detailed breakdown of demand by strategic growth location.

Table 11-2: Housing Growth Demand for HWRC (Cumulative)

	HWRC Area (sq m)				
	2011	**2016**	**2021**	**2026**	**2031**
Broadland	53.3	236.5	491.5	727.4	974.8
Norwich	69.1	246.3	360.2	448.0	535.9
South Norfolk	134.6	359.5	651.3	890.2	1163.0
Greater Norwich	257.0	842.2	1503.0	2065.6	2673.7

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

This requirement would be sufficient to serve the strategic housing development, assuming no change in demand elsewhere in the districts. They do not account for demographic change within the population. However, understanding the demand from the strategic growth is still important as is demonstrates that the demand will be greatest in South Norfolk and Broadland where demand from development is skewed along the A11 corridor and in the Rackheath / Sprowston growth triangle.

HWRC Demand Resulting from District Wide Net Population Change

The requirement arising from the overall projected change in each districts' population is presented below. Based on these demographic projections of total population change there would need to be a need to provide an additional 2140 sq m of HWRC space across the GNDP to maintain the current provision standards. Table 10-4 shows how this requirement is spread across the three districts and over each of the growth phases.

Table 11-3: Headline Demand for HWRC (Cumulative)

	HWRC Area (sq m)				
	2011	**2016**	**2021**	**2026**	**2031**
Broadland	-12.0	82.5	256.1	417.3	625.5
Norwich	115.2	289.5	443.4	512.2	623.3
South Norfolk	163.1	302.3	503.3	651.3	888.0
Greater Norwich	266.4	674.3	1,202.7	1,580.7	2,136.9

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

Source: EDAW / Norfolk County Council

The requirement is lower in South Norfolk and Broadland than the requirement associated with housing growth as the population of these areas is assumed to decline in the absence of housing growth. The converse, however, is true of Norwich.

11.4 Infrastructure Overview and Costs

There is demand arising within the GNDP for the equivalent of two additional HWRCs by 2026. Drawing on the findings above, and in discussion with waste managers at Norfolk County Council the preferred locations for these facilities would be to locate a new facility as part of development in the Rackheath / Sprowston Growth Triangle, and to utilise opportunities to expand the existing facility at Wymondham. Estimated costs and funding sources are outlined in and

Table 11-4: Infrastructure Costs

District	Growth Location	Infrastructure Requirement	Phase	Growth Associated Cost
Broadland	Rackheath / Sprowston Growth Triangle	HWRC – 1200 sq m	2021	£450,000
South Norfolk	Wymondham	HWRC – extension of existing facility 1000 sq m	2031	£320,000
Total Waste Infrastructure Costs				**£770,000**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.				

Source: EDAW / Gardiner & Theobald

Table 11-6: Waste Activities costs and funding sources Identified in the GNDP GNDP Integrated Development Plan

Waste					
#	**Prioritisation**	**Geography**	**Funding Source**	**Total Costs & % Funding**	**Assumed Funding**
64	**HWRC - 1200 sq m**			£450,000	£0
	Essential	Sprowston / Rackheath Growth Triangle			£0
82	**HWRC - extension of existing facility 1000 sq m**			£320,000	£0
	Essential	South Norfolk Wide			£0
Total Assumed Funding - Waste					£0
Total Assumed Infrastructure Costs – Waste					£770,000
Total Assumed Funding Gap – Waste					£770,000
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: GNDP GNDP Integrated Development Plan

Table 11-5: Education Costs, Funding, and Prioritisation Overview

	Total Costs	Total Funding	Funding Gap
Critical	£0	£0	£0
Essential	£770,000	£0	£770,000
Desirable	£0	£0	£0
Total	**£770,000**	**£0**	**£770,000**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.			

Source: EDAW, 2009

12 Utilities Infrastructure

AECOM (formerly Faber Maunsell) have compiled the utilities assessment, investigating the electricity, gas, and water infrastructure requirements. AECOM undertook a loading assessment based on the housing and employment projections provided in the "Key Assumptions Paper". Due to a lack of detail regarding the locations of many of these proposed new dwellings, as such only those dwellings with specified locations, including smaller settlements, have been considered in detail as part of this study.

Once loadings were established, AECOM worked with the utility providers EDF Energy (electricity) and National Grid (gas), as well as consultant working on Norfolk's Water Cycle Study, Scott Wilson, to establish infrastructure requirements.

It should be noted that throughout the course of the study the development details have been refined. It can be seen that the total number of dwellings has increased by approximately 8,000. The housing growth at specific locations is largely unaffected by this update, and as such changes in loading requirements were not significant. The focus of the update was on the non-specified development, where numbers have changed. These non-specified dwellings include:

- urban and rural committed developments;
- windfall schemes;
- schemes resulting from the Regional Spatial Strategy (RSS) review;
- small rural schemes in Broadland and South Norfolk; and,
- projected post-2026 developments.

Where possible, comments have been made regarding any potential implications of the additional non-specified dwellings. However, it should be noted that a detailed assessment of the likely utility costs will not be possible until the proposed locations and phasing of all of the new developments are confirmed.

Further details of the method undertaken, loading calculations, correspondence with utility companies and more detailed analysis of the infrastructure requirements can be found in the accompanying report Greater Norwich Infrastructure Need and Funding Study – Utilities Assessment, included in appendix F. Below is a summary of their findings.

12.1 Electricity

Background

As part of the Norwich Growth Area – Infrastructure Need and Funding Study (EDAW, 2007), EDF energy provided details of the electricity infrastructure requirements to meet the needs of the proposed options. Building on these existing contacts and information, EDF have provided an updated response in light of the preferred growth option.

Summary of requirements

EDF Energy summarise the requirements as follows:

- major reinforcement works would be required in the Greater Norwich area to accommodate the growth proposals;

- a new Grid Substation will be required to the east of Norwich at an existing EDF Energy site on Green Lane;
- three new Primary Substations will be required across the area, while two existing Substations will require the replacement of the transformers and switchgear;
- significant lengths of 132kV and 33kV underground cables will be required to feed these new developments, the laying of which will have the usual impacts on traffic and local residents

EDF Energy has provided indicative costing for the proposed works and the likely timescales. These are summarised in

Table 12-1: Indicative cost and phasing of electricity infrastructure requirements

Substation	Work required	Phase	Total cost	Developer contribution
Hurricane Way Primary	New Primary Substation on existing site	2016	£5,436,000	£1,630,000
Norwich Airport North	New Primary Substation on new site = 33kV circuits	2021	£6,320,000	£6,320,000
Sprowston / Rackheath No. 2	New Primary Substation on new site = 33kV circuits	2026	£4,313,000	£4,313,000
Hapton Primary	Replacement of transformers and switchgear in existing site	2026	£2,530,000	£430,000
Wymondham Primary	Replacement of transformers and switchgear in existing site	2026	£2,530,000	£826,000
Norwich East Grid	New Gird Substation on existing site +132kV cables	2021	£17,060,000	0
St Stephens	Reinforcement of existing Substation +132kV cables	2031	£10,750,000	0
Total			£48,939,000	£13,519,000
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.				

Source: EDF Energy / AECOM

12.2 Gas

Background

No previous correspondence with National Grid was available to inform this study, and as such, a developer's enquiry letter was forwarded to National Grid's Transmission and Distribution arms.

As there are no specific details of the development locations, assumptions have been made by National Grid in their analysis. The main assumption is that connections will be made, where possible, to existing Medium Pressure (MP) and Intermediate Pressure (IP) mains. Where no such main exists, the connection has been made to the nearest supply, potentially a Low Pressure (LP) main. As the proposed location of each development currently covers a wide area, a single central connection point has been assumed. Once the proposals have been progressed further, a more detailed assessment can be made for each development.

Summary of requirements

The National Grid has identified areas where reinforcement work would be required to accommodate the proposed levels of growth, summarised in Table 12-2. Due to the limited level of detail in relation to proposed development, the National Grid are are unable at this stage to provide a meaningful estimate of cost.

Table 12-2: Summary of gas infrastructure requirements

Area	Additional information:	Phase
Rackheath / Sprowston Growth Triangle	IP connection	2016-2021
Thorpe St Andrew (Broadland Business Park)	No reinforcement required	N/A
Norwich	IP connection	2021
Wymondham	MP connection – combined effect with Hethersett and Cringleford	2016
Long Stratton	IP connection – substantial reinforcement	2016
Hethersett	MP connection – combined effect with Wymondham and Cringleford	2021
Cringleford	MP connection – combined effect with Wymondham and Hethersett	2016
Easton	LP connection, but LP and IP reinforcement	2021
Costessey (Longwater)	LP connection	2016
Colney (Norwich Research Park)	No reinforcement required	N/A
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.		

Source: National Grid / AECOM

12.3 Water

This study has been informed the Stage 2a Water Cycle Study (WCS), prepared by Scott Wilson in September 2008. Stage 2b of the WCS, will further develop the understanding of infrastructure requirements and delivery options associated with growth is currently being worked on. As such, the information included within this report is based on the best knowledge available at this time, but will need to be updated ones the Stage 2b WCS has been completed.

Potable Water Supply

It has been assumed in the Stage 2a WCS that all of the development sites would be supplied from the existing Heigham WTW, which has sufficient spare capacity to receive additional water to supply the Greater Norwich area.

Additional water resources would be required to supply this level of new development and the potential sources that have been considered are:

- Existing Thorpe St Andrew and Colney boreholes;
- River Wensum reuse;
- Great Ouse Groundwater Development System (GOGDS); and,
- Water resource storage.

The costings provided in the WCS include the following:

- water mains and pumping stations from Heigham WTW to the development site; and
- pumping stations and pipe work needed to maximise the existing boreholes; and
- pumping stations and pipe work needed for River Wensum reuse; or
- pumping stations and pipe work needed to link to the GOGDS; or
- civils, structural, excavation and land costs relating to water resource storage.

Based on the projected development phasing for each development area, the following potential funding phasing has been identified for the provision of potable water. These figures provide best case (Table 12-3) and worst case (Table 12-4) costings depending on which of the additional water resources is selected.

It should be noted in relation to the worst case figures that the actual costs could be markedly reduced with the selection of a more favourable additional water resource. However, the "up front" costs of the infrastructure from Heigham WTW and from the two existing boreholes are unlikely to change significantly from those shown in the table.

With regard to the best case costs, the "up front" infrastructure costs are the same, assuming the first phases of each development is fed from the existing boreholes. However, many of the best case options of additional water resources make use of the Great Ouse Groundwater Development Scheme. The costs attributed to this option in the WCS only consider the infrastructure from Heigham WTW, with no account being taken of costs outside the WCS study area. Therefore, it is likely that the costs included in Table 12.3 are underestimated.

Table 12-3: Potable Water Infrastructure Costs – Best Case Scenario

Area	Cost per Year band (£M)				Total (£M)
	2016	2021	2026	2031	
Norwich TOTAL	**15.3**	**2.8**	**0**	**0**	**18.1**
Broadland - Rackheath	20.9	5.2	0	0	**26.1**
Broadland - Sprowston Fringe	23.3	4.2	0	0	**27.5**
Broadland - Thorpe St Andrew (Broadland Business Park)	15.1	1.0	0	0	**16.1**
Broadland Smaller Sites	51.1	0		0	**51.1**
Broadland TOTAL	**110.4**	**10.4**	**0**	**0**	**120.8**
South Norfolk - Wymondham	23.0	4.2	0	0	**27.2**
South Norfolk - Long Stratton	0	31.1	0	0	**31.1**
South Norfolk - Hethersett, Cringleford & Colney	12.8	2.7	0	0	**15.5**
South Norfolk - Easton and Costessey	10.1	2.1	0	0	**12.2**
South Norfolk Smaller Sites	72.2	0	0		**72.2**
South Norfolk TOTAL	**118.1**	**40.1**	**0**	**0**	**158.2**
GRAND TOTAL	**243.8**	**53.3**	**0**	**0**	**297.1**

Source: Scott Wilson / AECOM

Table 12-4: Potable Water Infrastructure Costs – Worst Case Scenario

Area	Cost per Year band (£M)				Total (£M)
	2016	2021	2026	2031	
Norwich TOTAL	**15.3**	**28.9**	**0**	**0**	**44.2**
Broadland - Rackheath	20.9	8.3	0	0	**29.2**
Broadland - Sprowston Fringe	23.3	11.6	0	0	**34.9**
Broadland - Thorpe St Andrew (Broadland Business Park)	15.1	6.6	0	0	**21.7**
Broadland Smaller Sites	51.1	0	0	0	**51.1**
Broadland TOTAL	**110.4**	**26.5**	**0**	**0**	**136.9**
South Norfolk - Wymondham	23.0	8.0	0	0	**31.0**
South Norfolk - Long Stratton	0	35.6	0	0	**35.6**
South Norfolk - Hethersett, Cringleford & Colney	12.8	8.3	0	0	**21.1**
South Norfolk - Easton and Costessey	10.1	7.7	0	0	**17.8**
South Norfolk Smaller Sites	72.2	0	0		**72.2**
South Norfolk TOTAL	**118.1**	**59.6**	**0**	**0**	**177.7**
GRAND TOTAL	**243.8**	**115.0**	**0**	**0**	**358.8**

Source: Scott Wilson / AECOM

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Funding options for the provision of potable water to the development sites is to be investigated as part of the Stage 2b of the WCS.

Waste Water Treatment

The Stage 2a WCS investigated a number of options for the conveyance and treatment of wastewater from the development areas, as follows:

- Option 1 – upgrading the existing Whitlingham WwTW. It is understood that Whitlingham WwTW has 109,000PE of spare headroom capacity, equating to approximately 52,000 new properties, so volumetric upgrade would have negligible resultant cost. Other items included in the costs are nutrient load removal for the additional load and also the primary sewer linking the development area to the WwTW.
- Option 2 – Upgrade existing local WwTW. Many of the development areas have a local WwTW that could be utilised and upgraded where necessary to accommodate the proposed development.
- Option 3 – New WwTW close to the development area. Cost includes the provision of a new local WwTW to receive all of the flow from the proposed development. As the new WwTW would be located within the development area, the cost of strategic sewers has been assumed to be negligible.

While all three options have been considered for the larger growth areas, only Option 2 has been considered for the smaller, more rural development sites. In addition, for the Norwich City growth area, only Option 1 has been considered as this is the only feasible option.

Costings, including potential phasing, have been assembled in Table 12-5 for larger sites and Table 12-6 for smaller sites.

Table 12-5: Waste Water Treatment Infrastructure Costs for Larger Developments

Option	WwTW	Cost per Year band (£M)				Total (£M)
		2009-2016	2017-2021	2022-2026	2027-2031	
1	Whitlingham	42.9	14.4	4.3	2.7	64.3
	TOTAL Option 1	**42.9**	**14.4**	**4.3**	**2.7**	**64.3**
2	Whitlingham (Norwich only)	5.0	0.8	0.4	0	6.2
	Wymondham	13.8	22.4	0.5	-	36.7
	Rackheath	48.0				48.0
	TOTAL Option 2	**66.8**	**23.2**	**0.9**	**0**	**90.9**
3	Whitlingham (Norwich only)	5.0	0.8	0.4	0	6.2
	Rackheath (new)	16.7				16.7
	Sprowston Fringe (new)	24.4				24.4
	Thorpe St Andrew (new)	1.3				1.3
	Wymondham (new)	11.4				11.4
	Long Stratton (new)	10.5				10.5
	Hethersett area (new)	11.4				11.4
	Easton area (new)	10.5				10.5
	TOTAL Option 3	**91.2**	**0.8**	**0.4**	**0**	**92.4`**

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

Source: Scott Wilson

Table 12-6: Waste Water Treatment Infrastructure Costs for Smaller Developments

Option	WwTW	Cost per Year band (£K)				Total (£K)
		2009-2016	2017-2021	2022-2026	2027-2031	
2	Reepham	182	29	609	-	820
	Aylsham	342	2,409	29	-	2,780
	Belaugh	502	29	29	-	560
	Acle-Damgate	1,362	29	29	-	1,420
	Diss	182	29	29	-	240
	Harleston	372	29	29	-	430
	Sisland	822	29	29	-	880
	TOTAL	**3,764**	**2,583**	**783**	**0**	**7,130**

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

Source: Scott Wilson

As Stage2a of the WCS presents a range of options for delivering waste water infrastructure, and will be investigated further during Stage2b of the study, for the purposes of this study the worst case scenario (option 3 for large sites plus option 2 for smaller sites) has been incorporated into the cost projections. Once the Stage2b WCS has been produced, revised costs can be incorporated.

Funding (Worst Case Scenario)

The following table presents the range of funding sources that have been identified the infrastructure projects raised in this chapter. As is described above, the worst case scenario for waste water has been incorporated into the cost projections.

Table 12-5: Main Services/Utilities Activities costs and funding sources Identified in the GNDP Integrated Development Plan (Worst Case Scenario)

Main Services / Utilities					
#	Prioritisation	Geography	Funding Source	Total Costs & % Funding	Assumed Funding
Electricity and Power Supply					
25	**Hurricane Way Primary - New primary substation on existing site**			£5,436,000	£3,806,000
	Critical	Norwich	AMP	70%	£3,806,000
26	**Norwich Airport North - new primary sub-station + 33kV circuits**			£6,320,000	£0
	Critical	Norwich			£0
27	**Norwich Airport North - new primary sub-station + 33kV circuits**			£4,313,000	£0
	Critical	Broadland Wide			£0
28	**Hapton Primary - replacement of transformers amd switchgear in existing site**			£2,530,000	£2,100,000
	Critical	South Norfolk Wide	AMP	83%	£2,100,000
29	**Wymondham Primary - Replacement of transformers and switchgear in existing site**			£2,530,000	£1,704,000
	Critical	South Norfolk Wide	AMP	67%	£1,704,000
30	**New Grid Sub-station on existing site + 132kV cables**			£17,060,000	£17,060,000
	Critical	Norwich	AMP	100%	£17,060,000
31	**Reinforcement of existing sub-station +132kV cables**			£10,750,000	£10,750,000
	Critical	Norwich	AMP	100%	£10,750,000
Water					
33	**Potable Water**			£44,200,000	£44,200,000
	Critical	Norwich	AMP	100%	£44,200,000
34	**Potable Water- Rackheath**			£29,200,000	£29,200,000
	Critical	Sprowston / Rackheath Growth Triangle	AMP	100%	£29,200,000
35	**Potable Water - Sprowston Fringe**			£34,900,000	£34,900,000
	Critical	Sprowston / Rackheath Growth Triangle	AMP	100%	£34,900,000
36	**Potable Water - Thorpe St Andrew (Broadland Business Park)**			£21,700,000	£21,700,000
	Critical	Broadland Wide	AMP	100%	£21,700,000
37	**Potable Water - Broadland Smaller Sites**			£51,100,000	£51,100,000
	Critical	Broadland Elsewhere	AMP	100%	£51,100,000
38	**Potable Water - Wymondham**			£31,000,000	£31,000,000
	Critical	Wymondham	AMP	100%	£31,000,000
39	**Potable Water - Long Stratton**			£35,600,000	£35,600,000
	Critical	Long Stratton	AMP	100%	£35,600,000
40	**Potable Water - Hethersett Cringleford, Colney (Hethersett Costs)**			£7,033,333	£7,033,333
	Critical	Hethersett	AMP	100%	£7,033,333
47	**Potable Water - Hethersett Cringleford, Colney (Cringleford Costs)**			£7,033,333	£7,033,333
	Critical	Cringleford	AMP	100%	£7,033,333
47	**Potable Water - Hethersett Cringleford, Colney (Colney Costs)**			£7,033,333	£7,033,333
	Critical	South Norfolk Elsewhere	AMP	100%	£7,033,333
48	**Potable Water - Easton and Costessey**			£17,800,000	£17,800,000
	Critical	Easton	AMP	100%	£17,800,000

48	**Potable Water - South Norfolk Smaller Sites**			£72,200,000	£72,200,000
	Critical	South Norfolk Elsewhere	AMP	100%	£72,200,000
49	**Waste Water: Whitlingham (Norwich only)**			£6,200,000	£6,200,000
	Critical	Norwich	AMP	100%	£6,200,000
50	**Waste Water: Rackheath (new)**			£16,700,000	£16,700,000
	Critical	Sprowston / Rackheath Growth Triangle	AMP	100%	£16,700,000
51	**Waste Water: Sprowston Fringe (new)**			£24,400,000	£24,400,000
	Critical	Sprowston / Rackheath Growth Triangle	AMP	100%	£24,400,000
52	**Waste Water: Thorpe St Andrew (new)**			£1,300,000	£1,300,000
	Critical	Broadland Elsewhere	AMP	100%	£1,300,000
53	**Waste Water: Wymondham (new)**			£11,400,000	£11,400,000
	Critical	Wymondham	AMP	100%	£11,400,000
54	**Waste Water: Long Stratton (new)**			£10,500,000	£10,500,000
	Critical	Long Stratton	AMP	100%	£10,500,000
55	**Waste Water: Hethersett area (new)**			£11,400,000	£11,400,000
	Critical	Hethersett	AMP	100%	£11,400,000
56	**Waste Water: Easton area (new)**			£10,500,000	£10,500,000
	Critical	Easton	AMP	100%	£10,500,000
57	**Waste Water: Reepham**			£820,000	£820,000
	Critical	Broadland Elsewhere	AMP	100%	£820,000
58	**Waste Water: Aylsham**			£2,780,000	£2,780,000
	Critical	Broadland Elsewhere	AMP	100%	£2,780,000
59	**Waste Water: Belaugh**			£560,000	£560,000
	Critical	Broadland Elsewhere	AMP	100%	£560,000
60	**Waste Water: Acle-Damgate**			£1,420,000	£1,420,000
	Critical	Broadland Elsewhere	AMP	100%	£1,420,000
61	**Waste Water: Diss**			£240,000	£240,000
	Critical	South Norfolk Elsewhere	AMP	100%	£240,000
62	**Waste Water: Harleston**			£430,000	£430,000
	Critical	South Norfolk Elsewhere	AMP	100%	£430,000
63	**Waste Water: Sisland**			£880,000	£880,000
	Critical	South Norfolk Elsewhere	AMP	100%	£880,000
Total Assumed Funding - Main Services / Utilities					£493,750,000
Total Assumed Infrastructure Costs – Main Services/Utilities					£507,269,000
Total Assumed Funding Gap – Main Services/Utilities					£13,519,000
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: GNDP Integrated Development Plan

Table 12-7: Utilities Costs, Funding, and Prioritisation Overview (Worst Case Scenario)

	Total Costs	Total Funding	Funding Gap
Critical	£507,269,000	£493,750,000	£13,519,000
Essential	£0	£0	£0
Desirable	£0	£0	£0
Total	**£507,269,000**	**£493,750,000**	**£13,519,000**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.			

Source: EDAW, 2009

Funding (Best Case Scenario)

The following table presents the range of funding sources that have been identified for the infrastructure projects raised in Best Case Scenario presented in this chapter. As is described above, these costs have not been incorporated into the model, but the funding gap associated with the Best Case Scenario is discussed in Chapeter 15.

Table 12-5: Main Services/Utilities Activities costs and funding sources Identified in the GNDP Integrated Development Plan (Best Case Scenario)

Main Services / Utilities					
	Prioritisation	**Geography**	**Funding Source**	**Total Costs & % Funding**	**Assumed Funding**
Electricity and Power Supply					
	Hurricane Way Primary - New primary substation on existing site			£5,436,000	£3,806,000
	Critical	Norwich	AMP	70%	£3,806,000
	Norwich Airport North - new primary sub-station + 33kV circuits			£6,320,000	£0
	Critical	Norwich			£0
	Norwich Airport North - new primary sub-station + 33kV circuits			£4,313,000	£0
	Critical	Broadland Wide			£0
	Hapton Primary - replacement of transformers amd switchgear in existing site			£2,530,000	£2,100,000
	Critical	South Norfolk Wide	AMP	83%	£2,100,000
	Wymondham Primary - Replacement of transformers and switchgear in existing site			£2,530,000	£1,704,000
	Critical	South Norfolk Wide	AMP	67%	£1,704,000
	New Grid Sub-station on existing site + 132kV cables			£17,060,000	£17,060,000
	Critical	Norwich	AMP	100%	£17,060,000
	Reinforcement of existing sub-station +132kV cables			£10,750,000	£10,750,000
	Critical	Norwich	AMP	100%	£10,750,000
Water					
	Potable Water			£18,100,000	£18,100,000
	Critical	100%	AMP	100%	£18,100,000
	Potable Water- Rackheath			£26,100,000	£26,100,000
	Critical	100%	AMP	100%	£26,100,000
	Potable Water - Sprowston Fringe			£27,500,000	£27,500,000
	Critical	100%	AMP	100%	£27,500,000
	Potable Water - Thorpe St Andrew (Broadland Business Park)			£16,100,000	£16,100,000
	Critical	100%	AMP	100%	£16,100,000
	Potable Water - Broadland Smaller Sites			£51,100,000	£51,100,000
	Critical	100%	AMP	100%	£51,100,000
	Potable Water - Wymondham			£27,200,000	£27,200,000
	Critical	100%	AMP	100%	£27,200,000
	Potable Water - Long Stratton			£31,100,000	£31,100,000
	Critical	100%	AMP	100%	£31,100,000
	Potable Water - Hethersett Cringleford, Colney (Hethersett Costs)			£5,166,667	£5,166,667
	Critical	100%	AMP	100%	£5,166,667
	Potable Water - Hethersett Cringleford, Colney (Cringleford Costs)			£5,166,667	£5,166,667
	Critical	100%	AMP	100%	£5,166,667
	Potable Water - Hethersett Cringleford, Colney (Colney Costs)			£5,166,667	£5,166,667
	Critical	100%	AMP	100%	£5,166,667
	Potable Water - Easton and Costessey			£12,200,000	£12,200,000

	Critical	100%	AMP	100%	£12,200,000
	Potable Water - South Norfolk Smaller Sites			£72,200,000	£72,200,000
	Critical	100%	AMP	100%	£72,200,000
	Waste Water: Whitlingham			£64,300,000	£64,300,000
	Critical	100%	AMP	100%	£64,300,000
Total Assumed Funding - Main Services / Utilities					£396,820,000
Total Assumed Infrastructure Costs – Main Services/Utilities					£410,339,000
Total Assumed Funding Gap – Main Services/Utilities					£13,519,000
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: GNDP Integrated Development Plan

Table 12-8: Utilities Costs, Funding, and Prioritisation Overview (Worst Case Scenario)

	Total Costs	**Total Funding**	**Funding Gap**
Critical	£410,339,000	£396,820,000	£13,519,000
Essential	£0	£0	£0
Desirable	£0	£0	£0
Total	**£410,339,000**	**£396,820,000**	**£13,519,000**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.			

Source: EDAW, 2009

13 Transport Infrastructure

13.1 Context

The Norwich Growth Area – Infrastructure Need and Funding Study (EDAW, 2007) sets out an assessment of the existing transport infrastructure and provides an evaluation of transport infrastructure demand based on two growth scenarios. Although the preferred proposed growth option subsequently determined differs from the growth scenarios reviewed in 2007, the evaluation is still partly applicable. As such, it has been agreed with the GNDP that no further analysis of transport infrastructure would be undertaken as part of this project and information on interventions included in this section have been identified through Norfolk County Councils ongoing transport work.

Norwich Growth Area – Infrastructure Need and Funding Study (EDAW, 2007)

The previous infrastructure Need and Funding Study identified that 'in order to sustain the level of growth planned for the Norwich area it is clear that a significant change in travel patterns will need to be undertaken, not just for the new residential population and employment workforce, but also for the existing residents of Norwich, Broadland and South Norfolk'.

The study set out a number of modal trends that are still generally relevant. For example 'traffic in and around Norwich is increasing due to a number of factors such as the growth in housing, jobs, car use and economic activity. As a consequence, congestion around the junctions where the radial routes cross the inner and outer ring roads is rising'. 'However, although traffic is generally increasing on the network, flows across the inner ring road and out of the city centre have reduced slightly as a consequence of the Norwich Area Transportation Strategy (NATS) implementation, particularly the Park and Ride schemes'.

It identifies that bus use was low, generally because 'access to public transport is poor outside Norwich City Centre and, added to that, orbital bus services are nonexistent' and that 'the Greater Norwich public transportation network must be improved to support the planned growth in population and jobs and to allow a sustainable development of this area'.

Walking and cycle networks are also constrained, 'with few cycle links that connect Norwich City Centre to the surrounding areas within the NPA. There are provisional cycle routes to the south west, however, cycle routes in other areas are generally poor. The National Cycle Route 1 that crosses the NPA south-east to north-west and runs through Norwich City Centre, consists of both on-road provision and traffic-free routes. However generally there is considerable scope in enhancing the coverage of the cycle network within the NPA'.

Updating the Norwich Area Transport Strategy

Norfolk's Local Transport Plan sets out the high-level strategy for transport across the county. It outlines how the County Council will develop the transport system to meet both existing and future challenges. The urban areas of the county have more complex issues, as such, Norfolk County Council has developed transportation strategies for these areas, including Norwich. The Norwich Area Transportation Strategy (NATS) was developed following extensive public consultation and covers the built up area of Norwich plus the surrounding ring of villages.

The most recent NATS (NATS4), published in 2006, was designed to sets out a transportation strategy for the Norwich Area until 2021. Given the new development proposals, Norfolk County Council is currently

undertaking an update of the NATS and developing a complementary implementation plan. The refresh of the NATS work has been informed by a variety of studies and initiatives including:

- The spatial distribution of growth set out in the joint core strategy
- Norwich Growth Area – Infrastructure Need and Funding Study
- East of England Regional Spatial Strategy requirements
- A47 Southern Bypass Junction Study – Capacity Assessment
- District Local Plans
- Rackheath Ecotown proposals
- Committed housing development

The full refresh will, however, not be complete until summer 2009, however preliminary work from this work has been provided by Norfolk County Council as the bases for assessment in this study. The refreshed NATS is likely to provide additional information on projects that have committed to in previous strategies and introduce new initiatives including:

- The Northern Distributer Road
- Highways / junction improvements
- Enhanced bus provision including bus rapid transit and core bus routes
- Cycle Networks

Northern Distributor Road

The Northern Distributor Road will link with the A47 to help distribute traffic around the north of Norwich in order to help to stop traffic using unsuitable suburban and rural roads and reduce congestion on other main roads. The NATS identifies the Northern Distributor Road as an important element to enable growth within and around Norwich.

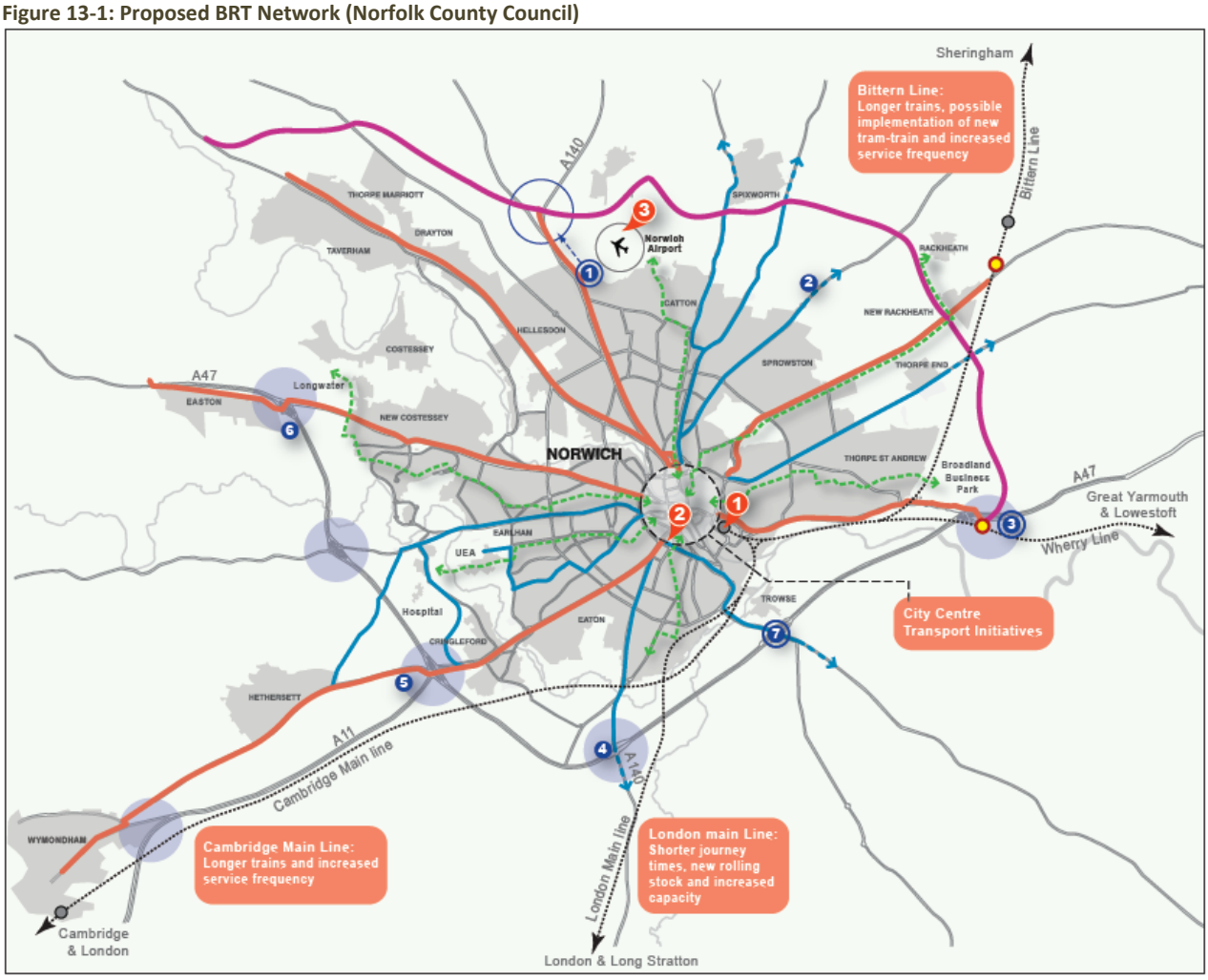
Highways and Junction Improvements

There are a number of stretches of road and junctions that will are currently near or at capacity that will require upgrading to remain functional or to help facilitate growth in key areas. One such scheme is Postwick Junction where Norfolk County Council has submitted a joint planning application with a developer, for a new business park development. The Council have undertaken traffic modelling that 'highlighted the capacity problems of this junction and the constraints that limit the options for improvement'.

Public Transport

One of the major public transport initiatives currently being considered is the Bus Rapid Transit Network. It is proposed that this will be a 'new and innovative form of public transport that links the city centre with surrounding residential areas, key employment destinations and major areas of growth on dedicated corridors'. Although the exact extent of the service is still being investigated, it is likely that the BRT will include up to six Rapid Transit routes into the city centre with priority for buses along these corridors making journeys faster with fewer delays on services at 10 minute frequencies throughout the day and evening.

Figure 13-1: Proposed BRT Network (Norfolk County Council)



- Junction Capacity Improvements
- Existing Rail Station
- Proposed Rail Station
- 1 Airport Park & Ride (Potential relocation and expansion)
- 2 Sprowston Park & Ride
- 3 Postwick Park & Ride (Expanded Facilities)
- 4 Harford Park & Ride
- 5 Thickthorn Park & Ride
- 6 Costessey Park & Ride
- 7 Possible Trowse Park & Ride

- 1 Rail Station public transport interchange
- 2 Bus Station public transport interchange
- 3 Airport public transport interchange with improved public transport access
- Northern Distributor Road
- Bus Rapid Transit Corridors with Bus Priority Measures
- Core Bus Routes
- Indicative Key Cycle Corridors (exact routes to be defined)
- Railways

Source: Norfolk County Council

Cycle Network

Norfolk County Council has identified a core cycle network that includes routes popular with existing cyclist. It is intended that these be used to help prioritise the delivery of cycle infrastructure like cycle lanes or storage facilities. Work is currently being undertaken to refine this network to understand the

relationship of these routes with growth locations and to identify a number of showcase routes to be developed as exemplars of high quality cycling facilities. The extent of potential infrastructure provision required as part of cycle route improvements is currently unclear at this stage.

13.2 Infrastructure Overview and Costs

Norfolk County Council has used this preliminary work to update the NATS to identify a range of key transport infrastructure projects along with estimated costs to be incorporated into this study, as set out in Table 13-1.

Table 13-1: Transport Infrastructure and Costs

	Transport Infrastructure Requirement	Estimated Cost	Phase
Public Transport			
Norwich	City Centre Bus Enhancements	£13,600,000	2011-2021
North East	BRT Corridor - Yarmouth Road	£11,000,000	2021-2026
North East	BRT Corridor - Salhouse Road, Gurney Road	£5,000,000	2011-2016
North East	BRT Corridor - growth areas (western end) via airport to A140 to City Centre	£10,000,000	2011-2026
West	BRT Corridor - City Centre via Dereham Road (IDP)	£6,500,000	2011-2021
Wymondham, Hethersett, Cringleford	Bus priority - Hethersett Lane / Hospital / NRP / UEA / City Centre	£3,000,000	2011-2016
Wymondham, Hethersett	Bus priority - B1172	£2,000,000	2011-2016
Wymondham	Rail station improvements	£3,000,000	2011
Wymondham	Widening of rail bridge at station	£7,000,000	2016
Long Stratton	Bus priority - approach to Harford Junction	£2,000,000	2016
North East	Relocate / new rail station at Rackheath	£25,000,000	TBA
	Travel plans - travel awareness campaign and improved information	£5,000,000	2011-2031
Roads and Highways			
North East	NDR	£110,000,000	2011-2016
North East	Development link BBP to Salhouse Road	£5,000,000	2011/2026
North East	Poswick Hub	£25,000,000	2011
South Norfolk Fringe	NRP transport infrastructure	£13,500,000	2016
Long Stratton	A140 Long Stratton by-pass	£35,000,000	2016
West	Junction improvements - Long Water	£20,000,000	2011-2016
Wymondham	Junction improvements - Thickthorn - including bus priority, Park & Ride, and A11 off slip	£45,000,000	2016
GNDP Wide	Local access improvements	£10,000,000	2011-2031
GNDP Wide	Village centre enhancements		
Cycling and Walking			
West	Pedestrian / Cycle link to Longwater	£1,500,000	2016
Norwich	City Centre public realm enhancement	£11,000,000	2011-2026
Other NATs Interventions			
	BRT A1067	£10,000,000	2021-2026
Total Cost		£389,100,000	
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.			

Source: Norfolk County Council

Table 13-2: Transport Activities costs and funding sources Identified in the GNDP Integrated Development Plan

TRANSPORT INITIATIVES					
#	**Prioritisation**	**Geography**	**Funding Source**	**Total Costs & % Funding**	**Assumed Funding**
Public Transport					
1	**City Centre Bus Enhancements**			£13,600,000	**£0**
	Essential	Norwich			£0
	Essential	Norwich			£0
2	**BRT Corridor - Yarmouth Road**			£11,000,000	**£0**
	Essential	Sprowston / Rackheath Growth Triangle			£0
	Essential	Sprowston / Rackheath Growth Triangle			£0
3	**BRT Corridor - Salhouse Road, Gurney Road**			£5,000,000	**£0**
	Essential	Sprowston / Rackheath Growth Triangle			£0
	Essential	Sprowston / Rackheath Growth Triangle			£0
4	**BRT Corridor - growth areas (western end) via airport to A140 to City Centre**			£10,000,000	**£0**
	Essential	Sprowston / Rackheath Growth Triangle			£0
	Essential	Sprowston / Rackheath Growth Triangle			£0
5	**BRT Corridor - City Centre via Dereham Road (IDP)**			£6,500,000	**£0**
	Essential	South Norfolk Elsewhere			£0
	Essential	South Norfolk Elsewhere			£0
6	**Bus priority - Hethersett Lane / Hospital / NRP / UEA / City Centre (Wymondham associated costs)**			£1,000,000	**£0**
	Essential	Wymondham			£0
	Essential	Wymondham			£0
7	**Bus priority - Hethersett Lane / Hospital / NRP / UEA / City Centre (Hethersett associated costs)**			£1,000,000	**£0**
	Essential	Hethersett			£0
	Essential	Hethersett			£0
7	**Bus priority - Hethersett Lane / Hospital / NRP / UEA / City Centre (Cringleford associated costs)**			£1,000,000	**£0**
	Essential	Cringleford			£0
	Essential	Cringleford			£0
7	**Bus priority - B1172 (Wymondham associated Costs)**			£1,000,000	**£0**
	Essential	Wymondham			£0
	Essential	Wymondham			£0
8	**Bus priority - B1172 (Hethersett associated Costs)**			£1,000,000	**£0**
	Essential	Hethersett			£0
	Essential	Hethersett			£0
8	**Rail station improvements**			£3,000,000	**£0**
	Essential	Wymondham			£0
	Essential	Wymondham			£0
9	**Widening of rail bridge at station**			£7,000,000	**£0**
	Essential	Wymondham			£0
	Essential	Wymondham			£0
10	**Widening of rail bridge for bus priority**			£10,000,000	**£0**
	Essential	Long Stratton			£0
	Essential	Long Stratton			£0

11	**BRT Corridor - A140 to City Centre**			£0	**£0**
	Essential	Long Stratton			£0
	Essential	Long Stratton			£0
12	**Bus priority - approach to Harford Junction**			£2,000,000	**£0**
	Essential	Long Stratton			£0
	Essential	Long Stratton			£0
13	**Relocate / new rail station at Rackheath**			£25,000,000	**£0**
	Essential	Sprowston / Rackheath Growth Triangle			£0
	Essential	Sprowston / Rackheath Growth Triangle			£0
14	**Travel plans - travel awareness campaign and improved information**			£5,000,000	**£0**
	Essential	GNDP Wide			£0
	Essential	GNDP Wide			£0
Total Assumed Funding – Public Transport					**£0**
Total Assumed Infrastructure Costs – Public Transport					**£103,100,000**
Total Assumed Funding Gap – Public Transport					**£103,100,000**
Roads and Highways					
15	**NDR (Broadland costs only)**			£55,000,000	**£39,850,000**
	Critical	Broadland Wide	Regional Funding Allocation	72%	£39,850,000
15	**NDR (Norwich costs only)**			£55,000,000	**£39,850,000**
	Critical	Norwich	Regional Funding Allocation	72%	£39,850,000
16	**Development link BBP to Salhouse Road**			£5,000,000	**£0**
	Critical	Sprowston / Rackheath Growth Triangle			£0
17	**Postwick Hub**			£25,000,000	**£21,000,000**
	Critical	Sprowston / Rackheath Growth Triangle	Community Infrastructure Fund	84%	£21,000,000
18	**NRP transport infrastructure**			£13,500,000	**£0**
	Critical	South Norfolk Elsewhere			£0
19	**A140 Long Sutton by-pass**			£35,000,000	**£0**
	Critical	Long Stratton			£0
19	**Junction improvements - Long Water**			£20,000,000	**£0**
	Critical	South Norfolk Wide			£0
19	**Junction improvements - Thickthorn - including bus priority, Park & Ride, and A11 off slip**			£45,000,000	**£0**
	Critical	Wymondham			£0
20	**Local access improvements**			£10,000,000	**£0**
	Critical	GNDP Wide			£0
21	**Village centre enhancements**			£0	**£0**
	Essential	GNDP Wide			£0
22	**BRT A1067**			£10,000,000	**£0**
	Essential	GNDP Wide			£0
Total Assumed Funding – Roads & Highways					**£100,700,000**
Total Assumed Infrastructure Costs – Roads & Highways					**£273,500,000**
Total Assumed Funding Gap – Roads & Highways					**£162,800,000**
Walking and Cycling					
23	**Pedestrian / Cycle link to longwater**			£1,500,000	**£0**
	Desirable	South Norfolk Wide			£0

24	**City Centre public realm enhancement**			£11,000,000	**£0**
	Desirable	Norwich			£0
Total Assumed Funding – Walking & Cycling					**£0**
Total Assumed Infrastructure Costs – Walking & Cycling					**£12,500,000**
Total Assumed Funding Gap – Walking & Cycling					**£12,500,000**
Total Assumed Funding – ALL TRANSPORT					**£100,700,000**
Total Assumed Infrastructure Costs – ALL TRANSPORT					**£389,100,000**
Total Assumed Funding Gap – ALL TRANSPORT					**£288,400,000**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: GNDP GNDP Integrated Development Plan

Table 13-2: Transport Costs, Funding, and Prioritisation Overview

	Total Costs	Total Funding	Funding Gap
Critical	£263,500,000	£100,700,000	£162,800,000
Essential	£113,100,000	£0	£113,100,000
Desirable	£12,500,000	£0	£12,500,000
Total	**£389,100,000**	**£100,700,000**	**£288,400,000**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.			

Source: EDAW, 2009

Opportunities to reduce costs – synergies with other infrastructure

Transport interventions are, by nature, costly. There are, however, considerable opportunities for reducing cost by taking advantage of potentially efficiencies. For example, co-ordinating the installation of utilities infrastructure with highways improvements, creating open space and green infrastructure with new transport and cycling corridors and incorporating SuDS into junction improvements.

Section 3: Infrastructure Delivery

14 Infrastructure Delivery

14.1 Context

This study is a key piece of the evidence base driving the delivery and implementation of the JCS. It will inform the main policy addressing the delivery and funding of infrastructure which is set out below.

Policy 20 Implementation and monitoring

All development will be accompanied by appropriate infrastructure provided in tandem and with arrangements for its subsequent maintenance. Provision will be achieved through:

- Active use, where necessary, by the local planning authorities and County Council of their legal powers to bring about strategically significant development, (including compulsory purchase).
- Coordination with the investment programmes of other public bodies and utility providers.
- Taking full advantage of mainstream Government funding
- Innovative approaches to capital investment based on forecast future revenue.
- Contributions from all residential and commercial development in the plan area through a Community Infrastructure Levy and, for site specific requirements, Planning Obligations. In all cases appropriate allowance will be made for infrastructure directly provided on site as part of the development.
- In the case of community or social development, a reduced contribution, taking account of the social value of the development concerned.

The resulting funds will be managed through an Integrated Development Programme by the authorities forming the Greater Norwich Development Partnership (or their successor[s]). The level of any charge made under the community infrastructure levy will be reviewed periodically through the publication of a supplementary planning document and updated between reviews by reference to relevant cost indices.

Future maintenance of infrastructure provided will be achieved either through adoption by a public body with appropriate maintenance payments, or other secure arrangements such as the establishment of a local infrastructure management body. This will apply to all infrastructure, including, where applicable:

- Sustainable Drainage Systems (SuDS)
- Local and renewable energy generation.
- Green infrastructure and the implementation of green infrastructure strategies, including habitat creation, pedestrian and cycle links, recreation facilities, parks, trees, hedgerows, woodland and landscaping
- Community and recreation facilities [education facilities, community halls, health facilities, libraries, social services facilities, allotments etc]
- Water conservation measures
- Improved public transport facilities
- Other appropriate transport infrastructure
- Emergency services including crime prevention
- Waste management/ recycling/composting facilities
- Street furniture
- Public art
- Utilities
- Affordable or supported housing

The quality of new developments will be assured through the careful scrutiny of Design and Access statements for all appropriate developments and a requirement for their implementation. Strategic Growth Locations require an accredited design process giving local people an opportunity to shape development and which guarantees implementation of the whole scheme. The developer[s] of major Strategic Growth Locations will also be required to enter into an ongoing commitment to support community development throughout the period until the development is built and first occupied.

Source: Joint Core Strategy for Broadland, Norwich and South Norfolk. Technical Consultation

14.2 Implementation

The successful delivery of this policy is dependent upon a well managed and regularly updated infrastructure delivery framework which should include:

1. Accurate housing and employment growth trajectories;
2. A full record of required and prioritised infrastructure;
3. A cost plan;
4. A funding plan, including all public and private sector funding sources;
5. A robust approach to maximising developers contributions;
6. Organisational Arrangements amongst various service providers, public sector agencies and the private sector.

Accurate housing and employment trajectories and a full record of required infrastructure are set out earlier in this report. The remainder of the report identifies the approach that has been taken to prioritise the required infrastructure and its' cost, explores the potential funding mechanisms that GNDP may exploit to meet those costs and assesses the amount of developer contributions that could be generated by development.

The infrastructure delivery framework GNDP has developed is known as the Integrated Development Programme (IDP). The IDP is an evolution of GNDPs programme of development and will form the main delivery framework for the JCS. It sets out the key packages and projects that the GNDP has identified as necessary for the sustainable delivery of housing and employment growth targets for Greater Norwich. This study will form a key part of the evidence base and will inform the update of the IDP.

The IDP is an iterative document, which will continue to evolve through regular updating as and when new infrastructure projects are identified and when funding from a variety of sources has been secured for some or all of the projects. In this respect, the Programme will be fully reviewed and regularly updated. The next major review will be when this study is completed.

The IDP serves a number of purposes including:

(a) A clear, public document of what and where new infrastructure is needed for the area, when and how much will it cost, and who is likely to fund it.
(b) A 'bidding' document to a variety of public agencies and Government, seeking their commitment to assist in funding the projects.
(c) A document which can be used in negotiations with private sector developers, as they would equally be expected to contribute to some of the projects at the same time they are developing their sites; and
(d) A key piece of 'evidence' to demonstrate that, with the right investment, the sustainable growth of the area as set out in the emerging Core Strategy can be achieved.

As part of this study we have developed an excel based infrastructure delivery framework, presented in Appendix A of this report, which provides GNDP with a management tool to regularly update the IDP by regularly updating the growth trajectories, infrastructure requirements, phasing, funding, and costs. The model also allows the identification of the overall funding gap for delivery of infrastructure. The framework becomes the property of GNDP and can be updated as and when information about the type or timing of infrastructure changes.

Once the Joint Core Strategy has been adopted the successful delivery of infrastructure will be dependent upon the ongoing management and updating of this infrastructure delivery framework and the IDP. The key components set out above will change during the growth period and GNDP should establish a mechanism for monitoring these changes at regular intervals and updating the framework accordingly.

14.3 Reducing Cost and Prioritising Infrastructure

The early identification of when infrastructure is required is also fundamental to ensuring growth targets are met. In the previous section of this report we identified when each individual item of infrastructure will be required. The detailed phasing programme set out below identifies when each of the pieces of infrastructure required, to facilitate the development of the growth trajectories, will need to be developed often over more than one year to allow for funding packages and programme management to be established and for the construction to be undertaken.

An important part of developing the phasing element of the Infrastructure Delivery Framework is prioritising the delivery of the infrastructure that is required. This allows GNDP and its stakeholders to make informed decisions, particularly when there is a funding gap, about what infrastructure is funded and when. This information is also important in developing a greater understanding about the extent of the funding challenge facing the growth area and allows GNDP and its stakeholders to focus more of their attention on those projects that are fundamental to delivering growth.

To do this we have categorised or prioritised the different elements of infrastructure relative to its importance in delivering growth. The three categories we have identified are critical, essential and desirable. The classification of each piece of infrastructure is provided in Appendix A and summary tables are provided in the following section.

Critical infrastructure is infrastructure that this study has identified must happen to enable physical growth. These infrastructure items are known as ‘blockers’ or ‘showstoppers’ and are most common in relation to transport and utilities infrastructure when, for example sewerage systems are at capacity, therefore preventing the development of homes until substantial upgrades in the sewerage system have been completed. This infrastructure is highlighted in red in the phasing programme.

In other growth areas ‘showstoppers’ have resulted in development being held up for in excess of five years. This can have serious implications for meeting residential dwelling growth targets. Showstoppers are identified by the use of red blocks in the phasing programme. The critical infrastructure identified at this stage as potential showstoppers are for example:

- Norwich Northern Distributor Route
- The Long Stratton Bypass
- Norwich Southern Bypass Junctions

Failure to provide these pieces of infrastructure could result in significant delays in the projected growth trajectories.

Essential infrastructure is infrastructure that is required if growth is to be achieved in a timely and sustainable manner. Although infrastructure in this category is unlikely to prevent physical development in the short term failure to invest in it, as suggested below, could result in delays in development in the medium term. As developments are completed and pressure increases on the various elements of infrastructure, further development could be deemed inappropriate and unsustainable by planning authorities, resulting in the refusal of planning permission for later phases of development. This infrastructure is highlighted in amber in the phasing programme.

Finally, infrastructure identified as **desirable infrastructure** is infrastructure that is required for sustainable growth but is unlikely to prevent development in the short to medium term. This infrastructure is highlighted in green in the phasing programme. Although infrastructure identified within this category is the least important in allowing sites to be developed its importance to the overall success of development and the growth agenda should not be underestimated.

It should be stressed that this assessment has been made on the information that was available during the study. As part of managing the growth agenda the recommendations should be monitored and updated when new information becomes available or as external factors change.

14.4 Costs

In addition to phasing, the early identification of the costs of providing the infrastructure is an essential element of preparing and planning for growth, not least as this will form an evidence base when bidding for government funding.

It can be difficult to ascertain accurate costs across such large pieces and different types of infrastructure and any assessment is clearly a snap shot of costs at one particular time. Costs can change quickly and significantly in response to things such as fluctuations in the cost of raw materials or labour. In many instances the infrastructure recommendations we have made will require further detailed feasibility studies to be undertaken including a detailed assessment of individual project costs. We have prepared a strategic cost assessment to provide a credible indication of the total infrastructure costs required to deliver growth.

In the case of Education and provision of potable water infrastructure the potential solutions for the delivery of the required infrastructure vary and therefore also have different costs implications. For both of these types of infrastructure we have identified the best and worst case scenario in cost terms. These are set out below and taken into account later when the overall funding gap is determined.

The cost assessment was undertaken by cost consultants Gardiner and Theobald (G&T) who have used an evidenced benchmarking exercise to determine the current costs associated with the delivery of each piece of infrastructure. The costs relate directly to the infrastructure required to deliver the growth trajectories, and are calculated using the assumptions set out in Cost Report in appendix D (to follow).

During the study it became apparent that several of the infrastructure projects identified had already undergone, or are currently the subject of additional, detailed feasibility assessments. Where additional information was available, this was cross referenced with the findings of the G&T report to ensure that there were no significant differences.

The infrastructure costs, by infrastructure type and priority are identified in Table 14- below.

Table 14-1: Infrastructure Costs, by Infrastructure Type and Prioritisation

	Critical	Essential	Desirable	Total
Education Costs	£0	£224,405,000	£1,620,000	**£226,025,000**
Healthcare Costs	£0	£63,813,333	£0	**£63,813,333**
Emergency Services Costs	£0	£14,467,500	£0	**£14,467,500**
Community Facilities Costs	£0	£5,120,000	£33,410,000	**£38,530,000**
Open Space Costs	£0	£288,245,472	£0	**£288,245,472**
Waste Costs	£0	£770,000	£0	**£770,000**
Utilities Costs	£507,269,000	£0	£0	**£507,269,000**
Transport Costs	£263,500,000	£113,100,000	£12,500,000	**£389,100,000**
Economic Development Costs	£0	£0	£36,290,000	**£36,290,000**
Total	**£770,769,000**	**£709,921,305**	**£83,820,000**	**£1,564,510,305**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.				

Source: EDAW / Gardiner & Theobald

This table provides an overview of the costs broken down by infrastructure type and priority category. It shows that utilities have the greatest overall cost and the greatest cost in the critical priority category.

Where two facilities are co-located, the classification relates to the facility's primary use. Hence, the £1.6 million desirable costs associated with education relate to the provision of pre-school facilities within community centres. The £5.1 million of essential costs associated with community facilities co-located with primary and secondary schools. Specific information on each facility is provided in Appendix A.

14.5 Prioritisation by growth area

Another approach to prioritisation is to identify the infrastructure requirements and costs associated with each of the strategic growth locations. This allows GNDP and its stakeholders to identify whether, from a cost and delivery perspective, it is sensible to focus on the delivery of the less expensive and technically challenging growth locations first. In order to inform this we have separately identified and mapped the total infrastructure requirements for the each of the strategic growth locations. These provide 'at a glance' the infrastructure requirements of each of the growth locations.

To determine the costs associated with each growth location we have allocated costs on the following principles:

- **GNDP wide:** Strategic infrastructure that is necessary to support the quantum of growth proposed for the whole of the GNDP area. This predominantly consists of sub-regional transport improvements but also includes the sub-regional requirement for acute medical care and the recognition that there will be a residual requirement for sports provision at the sub-regional level (for sports courts and swimming pools) that are not met by the provision identified in each growth location.

- **District wide:** Strategic infrastructure that is required to support the quantum of growth located within the district. These requirements are not related to the distribution of growth and may not be attributed to specific growth locations.

- **The Strategic growth locations:** local infrastructure that is directly attributable to growth within the growth locations. This will include all forms of social infrastructure plus local transport and utilities requirements.

- **Elsewhere within the district (Broadland and South Norfolk only):** Infrastructure requirements that are associated with housing growth located outside of the strategic growth locations. This

will include smaller transport and utilities improvements necessary to allow development in rural areas, the expansion of facilities located outside of the strategic growth locations, plus their contribution to acute bed requirements. These costs differ from the District wide costs identified above as a direct link may be made between the dwellings coming forward outside of the strategic growth locations and the infrastructure requirements. No requirements are associated with 'Elsewhere in Norwich' as all proposed development within the city occurs within the 'Norwich Strategic growth location'.

For details of how each infrastructure project has been allocated to each geography identified below, please refer to the costs summary tables presented at the end of each chapter in Section 2 and Appendix A.

The table below identifies the total infrastructure costs for each of the growth locations broken down into critical, essential & desirable. It shows that the Sprowston Rackheath Triangle has the highest level of infrastructure costs of any of the strategic growth locations.

Table 14-2: Infrastructure Costs, by Growth Location and Prioritisation

	Critical	Essential	Desirable	Total
Broadland Wide	£81,013,000	£0	£3,420,000	£84,433,000
Sprowston / Rackheath Growth Triangle	£135,200,000	£173,030,510	£7,560,000	£315,790,510
Broadland Elsewhere	£57,980,000	£36,323,356	£540,000	£94,843,356
Norwich	£144,966,000	£78,524,207	£44,410,000	£267,900,207
South Norfolk Wide	£25,060,000	£320,000	£12,500,000	£37,880,000
Wymondham	£87,400,000	£83,355,853	£0	£170,755,853
Long Stratton	£81,100,000	£30,941,607	£0	£112,041,607
Hethersett	£18,433,333	£40,588,115	£0	£59,021,448
Cringleford	£7,033,333	£9,917,738	£0	£16,951,071
Easton / Costessey	£28,300,000	£43,028,115	£0	£71,328,115
South Norfolk Elsewhere	£94,283,333	£165,166,804	£0	£259,450,137
GNDP Wide	£10,000,000	£48,725,000	£15,390,000	£74,115,000
Total	£770,769,000	£709,921,305	£83,820,000	£1,564,510,305

Source: EDAW / Gardiner & Theobald

This table provides a further level of analysis providing a breakdown of the total infrastructure cost be growth location by infrastructure type.

Table 14-1: Infrastructure Costs, by Infrastructure Type and Growth Location (£000s)

	Education Costs	Healthcare Costs	Emergency Services Costs	Community Facilities Costs	Open Space Costs	Waste Costs	Utilities Costs	Transport Costs	Economic Development Costs	Total Infrastructure Costs
Broadland Wide	£0.0	£0.0	£0.0	£0.0	£0.0	£0.0	£26,013.0	£55,000.0	£3,420.0	£84,433.0
Sprowston / Rackheath Growth Triangle	£72,920.0	£7,480.0	£1,822.5	£10,460.0	£36,458.0	£450.0	£105,200.0	£81,000.0	£0.0	£315,790.5
Broadland Elsewhere	£0.0	£1,350.0	£870.0	£540.0	£34,103.4	£0.0	£57,980.0	£0.0	£0.0	£94,843.4
Norwich	£24,880.0	£9,708.3	£4,600.0	£10,460.0	£26,815.9	£0.0	£89,966.0	£79,600.0	£21,870.0	£267,900.2
South Norfolk Wide	£0.0	£0.0	£0.0	£0.0	£0.0	£320.0	£5,060.0	£21,500.0	£11,000.0	£37,880.0
Wymondham	£54,685.0	£1,800.0	£385.0	£960.0	£13,525.9	£0.0	£42,400.0	£57,000.0	£0.0	£170,755.9
Long Stratton	£5,680.0	£1,175.0	£300.0	£720.0	£11,066.6	£0.0	£46,100.0	£47,000.0	£0.0	£112,041.6
Hethersett	£31,440.0	£550.0	£450.0	£0.0	£6,148.1	£0.0	£18,433.3	£2,000.0	£0.0	£59,021.4
Cringleford	£540.0	£550.0	£450.0	£0.0	£7,377.7	£0.0	£7,033.3	£1,000.0	£0.0	£16,951.1
Easton / Costessey	£35,880.0	£550.0	£450.0	£0.0	£6,148.1	£0.0	£28,300.0	£0.0	£0.0	£71,328.1
South Norfolk Elsewhere	£0.0	£6,925.0	£5,140.0	£0.0	£146,601.8	£0.0	£80,783.3	£20,000.0	£0.0	£259,450.1
GNDP Wide	£0.0	£33,725.0	£0.0	£15,390.0	£0.0	£0.0	£0.0	£25,000.0	£0.0	£74,115.0
Total	**£226,025.0**	**£63,813.3**	**£14,467.5**	**£38,530.0**	**£288,245.5**	**£770.0**	**£507,269.0**	**£389,100.0**	**£36,290.0**	**£1,564,510.3**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.										

Source: EDAW / Gardiner & Theobald

15 Funding Arrangements

The identification of existing and potential future funding sources is also essential to ensure the timely delivery of infrastructure. Infrastructure providers have notoriously complex financial planning approaches to funding and in the majority of cases bids need to be made many years in advance.

As the definition of infrastructure needed to support new development has expanded beyond the basics of transport, water and energy utilities into social and community facilities and green infrastructure, so has the range of funding options with which it is beneficial for GNDP to be conversant. One of the most significant of these is likely to be developer contributions but it is important that they are viewed as part of a much wider and integrated process to exploring funding options. The types of funding streams that are available varies between infrastructure sectors and some more innovative funding streams, that we explore later, require primary legislation before they can exploited. We have in earlier sections of the report identified opportunities for co-location of facilities but GNDP and its partners should use the information contained within this report to explore in more detail opportunities for pooling resources to achieve investment efficiencies as projects in growth areas come forward.

Another issue with funding is that the requirement for infrastructure funding is generally front loaded. This means the funding is usually required during the early years of growth when the infrastructure is required to be developed in advance or in tandem with development. This is problematic in cash flow terms in that returns on investment are not likely to be realised until much later.

In relation to the total infrastructure costs we have made a broad assessment of the level of mainstream public funding, utilities AMP funding, and private sector developer contributions that are either currently committed or are a reasonable future assumption. These assessments are based on discussions with the service and utilities providers during the study period, market analysis and land value capture projections and from our experience of work in the other growth areas. It should be noted that detailed further investigation of public funding sources will be required as part of the ongoing infrastructure planning process. Once the JCS has been adopted and infrastructure providers understand what is required and when a clearer funding picture will emerge the infrastructure delivery framework and IDP can be updated.

15.1 Public Sector funding

The provision of infrastructure will be dependent on significant levels of mainstream public sector funding sources including the Homes and Communities Agency, Local Transport Plan, Growth Point Funding, Regional Funding Allocation and Community Infrastructure Funding (CIF). Justifying the level of expenditure requires a comprehensive business plan-led solution that links the infrastructure provision to growth trajectories. Establishing a likely baseline for public sector ‘income’ is vital to understanding cash flows and potential shortfalls or gaps.

Clearly one of the principle concerns is the relative short timescale of public sector funding programmes. It is therefore very difficult to get public sector organisations to confirm funding for projects over a twenty two year growth period. Furthermore, except in exceptional circumstances it is generally accepted that all the capital costs of social and community infrastructure should be met by developers.

The Integrated Development Plan (IDP) is the key document that GNDP uses for supporting funding bids. The current IDP will evolve to include all housing and employment led growth infrastructure projects as they are identified.

GNDP has already attracted significant funding public sector funding to support growth. There are three key sources of funding:

1. **Growth Point Funding 2009-2011 - £14,220,526**

Of this funding £10,557,500 has been committed to projects in 2008-2010 leaving £3,663,026 still to be allocated. GNDP is in discussions with HCA to agree what projects should receive that funding, four strategic projects have been identified:

- Bus Rapid Transit along Dereham Road
- Hethel Engineering Centre Phase II
- Enterprise Centre
- Minor Works Budget

Although government funding regimes can change at any time, particularly if there is a change of government it is expected that GNDP will be able to bid for funding post 2011.

2. **Community Infrastructure Fund – £21m**

The DfT have identified that the improvements sought at Postwick Hub are dependent upon the proposed Norwich Northern Distributor Route but DfT/CLG Ministers have agreed to proceed with Postwick Hub on condition that Ministers grant the NNDR Programme Entry later this year. Ministers have agreed with the Homes and Communities Agency to offer some flexibility to enable around £21m of funding for Postwick Hub to extend into 2011/12. This gives flexibility to allow Postwick Hub the delivery time needed, but accommodates the need to await the decision on the NNDR.

3. **East of England Development Agency Regional Funding Allocations (RFA2) including Single Budget Programmes– £83,205,000**

Regional Funding Allocations refer to Central Government's administering of funds for use on transport, housing and economic development projects. The RFA process provides regions with long term indicative planning assumptions up to 2015/ 16 for transport, housing and economic development. These include:

- Transport: Regional Development Agency Single Budget, capital funding projected for major schemes under the Local Transport Plan system, major Highways Agency schemes other than on those roads of the greatest strategic national and international importance, and, where it can be associated with the region specifically, rail franchise and infrastructure
- Housing: Regional Housing Pot and Housing Market Renewal Pathfinder funding but not ALMO funding or major repairs allowance
- Economic Development: covered under the RDAs Single Budget Allocations

Funded by Central Government, the aim of an RFA is to give regions the opportunity to feed into future spending decisions and show how their priorities for their region can be better aligned to form a coherent, credible and strategic vision for the region.

Although not set out in detail within the RFA2 we understand that EEDA have committed expenditure of £79.7 million to the Northern Distributor Route.

Other Transport Funding

The funding required for transport infrastructure makes up the greatest proportion of funding required. For the purposes of this study we have assumed that some of funding for transportation will come from

the LTP but other funding sources include County Council's own resources. Community Infrastructure Fund and Growth Area Funding will also contribute to transport infrastructure costs as set out above.

Clearly, developer contributions should also be considered but our assessment of these will be dealt with under a standard charge approach detailed below.

Other Utilities Funding

The funding for utilities at a strategic level is usually paid for by the respective utilities company through their asset management plans (AMPs). All incumbent utility undertakers are obliged to submit AMPs to their Regulator, which identify the capital investment that the undertaker has committed to, over the next 5 or 10 years. This investment is sourced from the company's revenue and covers expansion or enhancement of the strategic utility network against projected growth in demand. AMPs are reviewed and approved by the regulating authorities that protect the interests of the customers. Typically, AMPs use revenue from customer charges to fund the provision of the following strategic elements;

- Electricity: Grid sub-stations
- Gas: Reinforcement to the high/intermediate mains
- Water: New abstraction points and treatment works
- Waste Water: New or upgrade works to treatment works

Connection of developments to the non-strategic mains is not included in AMP's. All strategic AMP works can only be undertaken by the incumbent and as such, are known as non-contestable works. Prediction of the growth in demand is notoriously difficult as the planning process can only give one or two years notice of significant additions to urban centres. It is therefore important that planned growth is identified as early as possible and utilities providers notified so that it can be taken into account when preparing their AMPs. In some cases utilities may refuse to cover all the costs associated with some strategic infrastructure if they are deemed to be excessive.

In these cases developer contributions may be necessary; this is likely to be the case in Sprowston Rackheath Growth Triangle where significant upgrades are likely to be required to the waste water and electricity infrastructure. We also understand that EEDA have forward funded electricity infrastructure in Harlow so this is another option that could be explored.

Other Social Infrastructure Funding

In most cases the capital costs associated with social infrastructure required to mitigate the impacts of development are borne by the developer who will provide a facility to shell and core standard (the building without its fit out and equipment) or will contribute to a pooling arrangement to provide such a facility. In some cases there may be potential for additional public sector funding, particularly in relation to areas such as education that are currently experiencing significant capital investment.

In some cases, public sector funding may be available to improve existing facilities and / or redevelop them to national standards. For examples the national Building Schools for the Future Programme aims to rebuild or renew England's state secondary schools. These programmes may not be able to provide funding to support growth; however it may be possible to achieve cost efficiencies by combining the redevelopment of existing provision with the expansion of a facility to support growth.

For example, where a school that will be eligible for BSF funding must also be expanded to support the growth of the local population, it may be possible for BSF to support the redevelopment of the school and for developer contributions to cover the additional cost of providing further forms of entry. This is likely to cost less than the total costs of extending a school which is not undergoing redevelopment, however the BSF funding will still be safeguarded for the improvement of existing provision.

There may also be funding available from the Strategic Health Authority and Primary Care Trust, Council's library or leisure service, and the emergency service providers, where provision of additional facilities to mitigate development coincide with service provider plans to re-provide, extend or enhance existing facilities. This does not reduce the requirement on the developer to mitigate the impact of development, but may indicate different delivery solutions. This should be considered as part of the ongoing development of the infrastructure delivery framework and IDP.

The funding for social infrastructure is notoriously difficult to accurately identify, particularly over such a long growth period. Each element of social infrastructure relies upon different funding sources which can be complex and change at short notice in response to local and national political priorities.

For the purposes of this study we have assumed that there is currently no guaranteed funding available towards the provision of required social infrastructure. Once the Joint Core Strategy has been adopted the infrastructure providers will be able to start to plan more effectively and provide information on what funding is likely to be available and when. It is likely that some additional public funding will become available during the growth period, therefore reducing the funding gap further, but it should be noted that public sector funding is likely to be squeezed in the short to medium term.

15.2 Other Potential Existing Funding Mechanisms

In reality, whilst the funding sources set out above will make a significant contribution towards the funding gap other funding sources and mechanisms will be need to explored and used to provide the cocktail of funding needed to fill the funding gap. Set out below are some of those that should be given consideration.

Prudential Borrowing

The introduction of the Prudential Borrowing framework from 2004 simplified the former Capital Finance Regulations and allows councils flexibility in deciding their own levels of borrowing based upon its own assessment of affordability. The framework requires each authority to decide on the levels of borrowing based upon three main principles as to whether borrowing at particular levels is prudent, sustainable and affordable.

Currently the majority of a council's borrowing, access funds via the 'Public Works Loan Board'. The Board's interest rates are determined by HM Treasury in accordance with section 5 of the National Loans Act 1968. In practice, rates are set by Debt Management Office on HM Treasury's behalf in accordance with agreed procedures and methodologies. For example, fixed interest rates are based on gilt yields and are determined each night to take effect from start of business the next working day. Councils can usually easily and quickly access borrowing at less than 5%.

A number of local authorities have discussed the possibility of exploiting these very attractive borrowing rates and taking a more active role in speculative physical development. However to date, we are not aware of any council that has taken a genuinely speculative role (i.e. for profit purposes) in relation to large scale physical development in the UK. The principle barrier is the core question of whether the purpose of local government is to have the development expertise in-house and its willingness to arrange the on-balance sheet funding necessary given the inherent risks involved.

The most likely issue for local authorities will be whether or not to utilise Prudential Borrowing which can be arranged at highly competitive rates but remains 'on-balance sheet' or more expensive bond financing which is off-balance sheet and does not have recourse to the local authority in the event of default. Prudential borrowing can make an important contribution to overcoming the problem of forward funding projects, particularly when future income streams from development are expected.

Pros	Cons
• simple and clear • low cost of borrowing • already approved by government and currently in use • quick and easy to arrange	• on balance sheet and thus recourse to the local authority in the event of default • limited fund raising potential as based on conservative, 'prudential' borrowing principles

Development Agreements

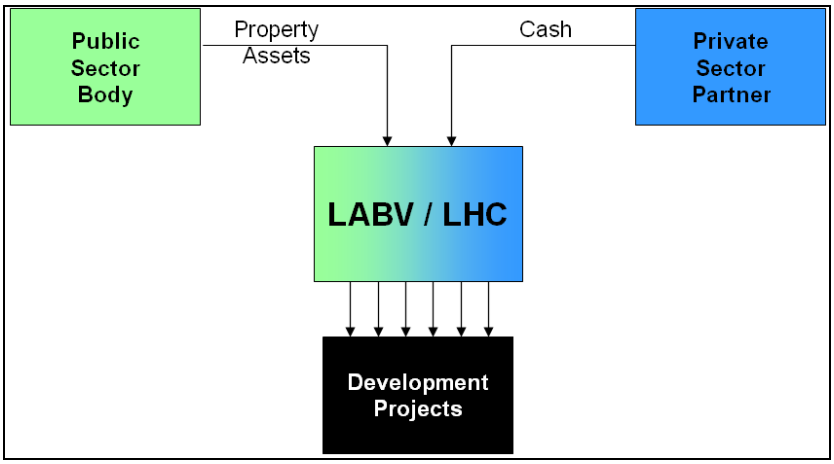
Development agreements are a traditional form of development funding whereby a landowner reaches a legal agreement with a developer to procure development works on their land, typically to generate an income stream from the completed development in the form of rental income. Thus the developer gains access to a development site not in his ownership, and the landowner benefits from a cash injection, share of profit realised from the development and the developer's expertise. Typically the agreement will be conditional and contain a number of restrictions such as type, form, density of development and conditions which may include key performance criteria such as submission of planning application and project phase start dates.

The nature of the agreements will vary widely, and might be a straightforward building agreement or agreed with a master developer on a wider masterplan area. The traditional model is for the developer to procure the works, funding them through private equity or third party finance, in return for a profit on its development costs. The structure of the deal will vary – the landowner may agree to grant a long lease (in excess of 125 years) to the developer so that it can realise any rental income or capital assets arising from disposals.

Pros	Cons
• Site specific so in principle developer pays fair proportion • Uplift in value realised through completed development • Private sector / specialist developer skills utilised to develop plot • Using private sector finance to develop the land	• Only work in relation to single sites: • Don't allow for holistic view • Don't allow synergistic value • Slow and difficult to agree • Only one capital receipt is received unless overage provisions are included in the agreement • Can result in having to deal with a number of different developers if on a plot by plot basis • Can miss out on 'value capture' and unlikely to maximise asset values

Local Asset Backed Vehicles (LABV)

LABVs are special purpose vehicles owned 50/50 by the public and private sector partners with the specific purpose of carrying out comprehensive, area-based regeneration and/ or renewal of operational assets. In essence, the public sector invests property assets into the vehicles which are matched in case by the private sector partner, as demonstrated in the figure below:



The partnership may then use these assets as collateral to raise debt financing to develop and regenerate the portfolio. Assets will revert back to the public sector if the partnership does not progress in accordance with pre-agreed timescales through the use of options.

Control is shared 50/ 50 and the partnership typically runs for a period of ten years, the purpose and long term vision of the vehicle is enshrined in the legal documents which protect the wider economic and social aims of the public sector along with pre-agreed business plans based on the public sector's requirements.

Many local authorities are now investigating this approach, with the London Borough of Croydon being the first LA to establish a LABV in November 2008, further detail of which is contained within the case study below

Pros	Cons
• Control – retain control of asset through 50/50 deadlock position • Leverages significant private sector investment • longer term regeneration • New source of potential funding given likely end of ERDF as we know it • Ability to subsidise uneconomic sites by the prospective future uplift of the whole • Share risk with private sector partner • Flexible – can be tailored to suit specific public sector needs	• State aid implications • Procurement process can be timely and expensive • Governance could be complex with multiple LAs • Will require LA to come together and vest assets for sub regional aims

Case Study – Croydon Borough Council

In November 2008 Croydon Council became the first local authority to set a pioneering Local Asset Backed Vehicle (LABV), in partnership with John Laing plc. The £450 million joint venture will regenerate significant sites across Croydon town centre and deliver new flagship council headquarters.

The 25 year URV partnership will provide the phased regeneration of four important town centre sites with the creation of two 40 storey towers with approximately 650 residential units; a combination of both private and affordable accommodation. In total the four sites will create approximately 1,250 new residential units and 20,000 ft² of retail space, all to be delivered between 2012 and 2017.

The project also includes the delivery of a brand new 240,000 ft² headquarters office building at Fell Road for the council. It is anticipated that the council's land value and share of development profit will be sufficient to pay for the building and its running costs for many years.

With the council's long-term regeneration strategy, they also have the option to add additional sites into the partnership as and when further development is required over the next 25 years.

Regional Infrastructure Fund (RIF)

EEDA intends to set up a Regional Infrastructure Fund similar to the one that has been set up by SWERDA. The objective is to raise £1b within the next few years. EEDA believe that a RIF could assist with bridging funding gaps particularly for transport infrastructure projects and bringing forward schemes on an accelerated timetable. It could also potentially lever additional funds so more projects can be funded. EEDA commissioned work to look at the potential of developing a RIF early in 2008 but we understand that they found it difficult to identify the required funding, therefore this may be a longer term option.

The RIF would provide capital investment to pump prime growth related infrastructure ahead of housing or commercial development starting. It will also enable schemes to go ahead, even if there is no direct link to a particular development scheme.

Pros	Cons
• The RIF recovers its investments as development occurs • Can be applied more than once to generate income for infrastructure • Supported by Government – significant funding made available • Recovery of public sector investment – cost now, revenue later	• Possibility that the RIF doesn't recover its previous investments, therefore, creating a funding gap before it can fund further infrastructure • No upfront raising of capital – therefore the gap will need to be bridged • Requires forward planning to predict funds for future developments

15.3 Future Funding Mechanisms

Given the changing economic climate and reduction in UK and EU funding sources, there is a need for local and regional authorities to look at new and independent means of funding regeneration. We discuss below various financing mechanisms and options available in the near future which may be used to unlock the delivery of infrastructure.

Tax Increment Financing (TIF)

TIFs enable local authorities to finance infrastructure investment by borrowing against future expected increase in tax revenues that would follow an infrastructure investment. Infrastructure may include improvements to highways, provision of community amenities, retail provision and public open space.

Widely used by local government bodies in the US, Tax Increment Financing is a means of dealing with the problem of delivering infrastructure for growth ahead of the new homes being built. It is not a tool currently available to local authorities in the UK, due to the centralised nature of tax system. New legislation would be needed to enable local authorities in the UK to mirror this approach, not least because the council tax could not be used in this way.

Pros	Cons
• Proven mechanism having been successfully adopted in 49 out of 50 US states • Significant fund raising potential • Can be adopted in conjunction with s106 monies • Funds infrastructure works upfront to attract investment to an area • Paid for by future taxpayers therefore no additional burden on existing taxpayers	• Requires change in UK legislation • Cost 'spillovers' to tax payers outside the TIF district • Potential issues with state aid • Risk of 'gentrification' as original occupiers are displaced as the district improves • Funding can go towards what would have been traditionally privately funded improvements. • Large scale borrowing by local authorities may be restricted given current economic climate

Business Rates Supplement (BRS)

The BRS, proposed by local government tsar Sir Michael Lyons, would allow councils to charge a variable precept on existing business rates. The councils could then retain the money and spend it on major public infrastructure such as rapid transit schemes. National business groups such as the Confederation of British Industry have lobbied hard against the SBR.

For example, a two pence in the pound supplement on the business rate is set to be levied on most businesses in London to pay for Crossrail. Although SBR will require primary legislation, it is now likely it will happen as this is reported to be the only way the final piece of the financing cocktail can be found in the short term, given the official go-ahead for the project has been given by the Prime Minister.

Pros	Cons
• simple and clear • easily ring-fenced way to raise additional revenue • stable revenue stream • potential to underpin borrowing • already approved by government and currently being implemented • it is possible for 2 or more authorities to cooperate together to raise a BRS in order to deliver economic development of a larger geographical scale	• limited fund raising potential • politically difficult • significant resistance from business leaders • some local authorities have already rejected (e.g. Manchester CC) • HMT fears impact on total tax burden • best applied at the city region level • will compromise business improvement districts (BIDs) as the SBR and BID levy falls almost exclusively on business • Difficulties in applying this across the local authority boundaries.

16 Assessing the Opportunities for introducing a Tariff-based Charge

16.1 Context

Delivering housing and economic growth, requires increased investment in infrastructure to mitigate the impact of development and make growing communities sustainable. The Government believes that the infrastructure needed to support development should be at least partly funded by owners of land who benefit when planning permission is granted for development.

In response to this belief the Government has introduced provisions within the Planning Act, which received Royal Assent on 27 November 2008, for a Community Infrastructure Levy (CIL). The intention is to establish a new way to increase investment in the vital infrastructure that growing communities need, and try to provide some capital towards the significant infrastructure cost that will be generated. A replacement for the poorly received Planning Gain Supplement (PGS) proposals, the Act allows for regulations to be prepared empowering local councils to apply a Community Infrastructure Levy on new developments in their areas to support infrastructure delivery.

The proposals require Local Authorities to adopt a "top down" approach and cost up their infrastructure need in order to support their adoption of a tariff. The Authority can then go on to adopt a tariff level that is deemed to be viable in the locality and will help towards payment of the required infrastructure cost. The detail in relation to the setting and charging of a tariff has not yet been provided in any of the consultation documentation. It is understood that the key intention for CIL is to ensure that it is set at what is being referred to as the "Goldilocks" level. That is not so high as to prevent development but not so low as to limit the return that the Council can receive from new development to help fund the infrastructure that is needed.

The Authority will have to be open book in the infrastructure that is needed and have a clear delivery plan to ensure confidence from developers. It is likely that there will need to be in practice some form of viability test that would enable developers to renegotiate the level of tariff charged in particular circumstances, for example sites where the developer is taking responsibility for the provision of infrastructure as part of their development.

Following the introduction of the Planning Act the DCLG now needs to formally consult on the proposals and had initially proposed finalising them in Spring 2009. However due to a variety of factors, not least the current instability in the development market and the economy as a whole, it was announced in the previous budget that this will be delayed, with the introduction of CIL regulations not anticipated until at least the Autumn of 2010.

In light of this the Government is encouraging Local Authorities and Local Delivery Vehicles to bring forward their own tariff proposals. This will require a robust technical as well as policy basis. Any tariff policy will have to comply with the general terms in Circular 05/05 on the scope of obligations and satisfy the key tests within it namely:

(i) relevant to planning;
(ii) necessary to make the proposed development acceptable in planning terms;
(iii) directly related to the proposed development;
(iv) fairly and reasonably related in scale and kind to the proposed development; and
(v) reasonable in all other respects.

A recent case decision by the Secretary of State highlights the importance of this issue. The Secretary of State rarely intervenes in anything other than major development projects. But she decided to do so for a scheme of 49 apartments recently in Greenhithe, Kent on the basis that it raised particularly important issues.

The key issue in this case was the use of a tariff based system to secure contributions from developers towards transport improvements. The Council had an interim transport tariff policy that sought a flat contribution of £5,000 per dwelling. However, on what turned out to be a critical factor, the policy did not form part of the approved development plan.

The Secretary of State, whilst generally endorsing the principle of a tariff approach, reiterated that it must comply with the approach set out in National Policy Statements, in particular PPS1 (Delivering Sustainable Development) and PPS12 (Local Spatial Planning), as well as satisfying the provisions of the Circular on planning obligations.

Although appeal cases have to be looked on individually, there appear to be some broad principles set down in this decision which are of particular relevance:

- If a tariff policy is likely to carry significant weight, it should be justified and effective, consistent with national policy and based upon robust and credible evidence. It should also have been the subject of consultation;
- A local authority should assess whether a tariff based approach is the most appropriate when considered against other alternatives; and
- If the local authority requires a robust framework for seeking contributions from developers then it needs to ensure it has a solid policy-based foundation.

In the absence of a robust policy base, then local authorities may have to be more prepared and willing to negotiate with developers on a site by site basis. In an economic climate where there is much pressure on development viability, requests for Section 106 contributions are likely to come under intense scrutiny. Local Planning Authorities will need to consider how robust their policy framework is in that context.

Market Context

A more detailed analysis is provided in the market commentary section of the report. However we have drawn out a few of the most salient points that will affect the setting of tariff policy and the potential income that can be derived from developer contributions.

Residential market

Escalating house prices has been a feature of the UK economy for a considerable period and the last decade has been one of almost unbroken growth. The economic success of Greater Norwich has helped fuel the housing market in this region with house prices trebling since the mid 1990s.

Given the buoyant market conditions the residential property market has been very active within Greater Norwich in recent years, with the rate of development activity across the region as a whole increasing during the course of this decade.

Over the fourteen year period up to 2007 Broadland has the highest annual rate of housing completions, principally due to the high number of units that were constructed in the district during the 1990s. However as the availability of Greenfield sites reduced, more attention was focused on Norwich city, particularly as the rising house prices made the development of Brownfield sites in the city more

commercially attractive. Although the annual rate of completions in Broadland has declined in recent years this has been more than compensated for by the increases in Norwich and South Norfolk. Consequently the total rate of development for the three districts combined has increased during the last six years up to 2008.

However, despite the buoyant market conditions at no point (with the exception of 2007/8) has the actual annual completion rate achieved the target completion rate for the sub-region of 1,875 units per annum between 2001 and 2021. Given the current economic climate, historic completion rates and the fact that it is unlikely the existing annual housing targets will be achievable in the short to medium term, which will have implications on the ability to secure financial contributions from residential development during this period. Construction activity has slowed, with new starts having reduced by over 50% between 2007 and 2008. National data suggests starts for 2009 are 30% of 2007 levels.

In both Broadland and South Norfolk most new homes are houses, which make up over 80% of new properties in these districts. In Broadland only 12% are of new homes were flats and in South Norfolk only 10%. In Norwich the proportion of new development comprising houses is lower at 60%. However these percentages vary significantly geographically within this market as the proportion of flats is much greater within Norwich City.

The reduction in house prices since the market peaked in 2007 has been greatest for flats. In order to sell units, developers are having to reduce their prices significantly in addition to offering other financial incentives. Some are now trying to let units instead of sell them.

Within the new homes market there appears to be stronger demand for high quality family housing especially detached two storey village homes. This suggests that in the short to medium term the delivery of high density flatted developments within Norwich city will continue to slow, with more residential development concentrating on suburban housing schemes.

The implications of the current economic climate are particularly acute for the larger strategic sites, which have become increasingly important in the delivery of house building targets. However the prospects of these sites being developed in the short term are poor as the cost of delivery (including infrastructure, environmental credentials, affordable housing and other Section 106 agreements) is prohibitive in comparison with the current value of schemes. Even where sites are potentially viable, developers are finding the high, up-front costs impossible to finance. Without a fundamental change in the way these sites are brought forward, it seems unlikely that large numbers of units will be delivered on them in the short to medium term.

However the housing market is cyclical. The period over which the current housing projections are set will result in a number of different market conditions being experienced, which has implications for the amount and timing of developer contributions secured.

In setting the level of tariff consideration also needs to be given to the different market conditions within the sub-region, as there are a number of discernible sub-markets within Greater Norwich with different cost and value characteristics.

Overview of Sales

Research of the local land market and sales values for residential uses has identified differences in value within Greater Norwich.

A summary of maximum average sales values per sq ft achieved for new build residential developments for each of the market areas is provided in the following table. The values are based on an assessment of sales evidence from individual schemes together with comments from sales agents, the detail of which is provided in the market commentary section of the report:

Table 16-1: Sales Rates by Housing Market Area

	Houses maximum average sales rate £ per sq ft			Flats maximum average sales rate £ per sq ft		
	2009	**2007**	**% change**	**2009**	**2007**	**% change**
Norwich City	£205	£230*	-11	£254	£300*	-15
Rest of Norwich housing market)	£178	£230	-22	£172	£230	-25
Broadland and mid South Norfolk	£185	£220	-16	£189	£230	-18
Rest of South Norfolk	£172	£204	-16	£143	£194	-26
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.						

** Based on anecdotal evidence from selling agents, not transactional evidence.*

Source: Drivers Jonas

- The figures above illustrate that average sales values per sq ft are highest in Norwich City for both houses and flats for both periods.
- Price decreases for houses over the past year have been greatest in the South Norfolk (Norwich housing market) area. The significant amount of housing development that has taken place in recent years in this part of Greater Norwich may be a contributory factor to this. This increase in supply, with a number of schemes competing against each other, coupled with a sharp fall in demand due to current market conditions has affected values.
- Values for Broadland and mid South Norfolk are slightly higher than for the Rest of South Norfolk.
- The value of new flats has generally reduced significantly more than the value of new houses, with the greatest decreases being experienced in the Rest of South Norfolk housing market. A key factor is the lack of first time buyers entering the property market resulting in a significant reduction in demand for flats.
- Demand is highest for good quality family housing, particularly two storey three and four bedroom houses.
- Average per sq ft sales values are generally highest for smaller unit sizes.
- Construction activity has slowed due to the reduction in the number of sales. For example the number of new house starts in Norfolk reduced from 3,649 in 2007 to 1,691 in 2008.

Overview of Land Values

Land values are affected by sales values and therefore also vary geographically. However the value of land is affected by a number of other factors such as the size and location of the plot, the objectives of the vendor, its current use, access to existing infrastructure, planning policy, and contamination levels. These factors, together with the confidential nature of many land transactions make reliable data collection on land values problematic. Due to the different characteristics of individual sites it is also difficult to generalise about land values.

However in order to try to gain an understanding of the land market and values in Greater Norwich we have held discussions with a number of land buyers and local agents. They commented that they have not undertaken any land transactions in the last twelve to eighteen months, and that there have been very few development land transactions generally. This is largely attributable to the poor state of the prevailing market conditions. Land owners are retaining plots until purchasers are financially able to submit offers closer to their sale price expectations. They believe that land values have fallen by around 50% since the peak in 2007, although there is little transactional evidence to support this.

Their feedback suggests that values for serviced Greenfield residential sites in Norwich (excluding section 106 costs) were approximately £1,000,000 to £1,200,000 per acre in 2007 with values now being closer to £500,000 to £600,000 per acre.

However within Norwich city a significant proportion of new development is delivered on Brownfield land. Given the unique nature of individual Brownfield development sites it is impossible to generalise about Brownfield land values. However in order to get an understanding of values, we have researched prices paid for a number of development sites. The Wensum Clothing Factory is a 0.6 hectare (1.46 acre) site on Northumberland street in west Norwich, which was acquired in February 2007 for £726,000 (£490,500 per acre). The site has planning permission to deliver 48 residential units and 418 sq m of office space.

In west Norwich a 1.56 hectare (3.85 acre) site on Earlham Road was acquired for £3m in May 2005 (£780,000 per acre). Planning permission was subsequently secured to deliver 41 housing units. Start Rite shoe factory on Crome Road in north-east Norwich was acquired in 2005 for £2.5m (£1.1m per acre), which subsequently received planning for 151 residential units.

This illustrates the wide range of values being achieved for Brownfield land within Norwich city, which are dependent on individual site characteristics and the nature of development that can be delivered on them as well as general market conditions. Any tariff policy will need to contain sufficient flexibility to address viability issues associated with individual development sites.

With regards to South Norfolk and Broadland comments from land buyers and agents suggest there is little difference between values in the northern part of South Norfolk and Broadland, with both areas being well connected to Norwich city and closely interrelated with the Norwich housing market. Values per acre have historically been around £800,000 to £1,000,000 per acre at their peak for serviced Greenfield residential land. However values are slightly lower in the southern more remote and self contained part of South Norfolk, although this does depend on the characteristics of the individual sites.

For Greenfield un-serviced strategic land (i.e. no infrastructure servicing the site) bought without permission on the basis of hope value, we were advised by land buyers that they would be prepared to pay in the region of one third to one half of the full residential land value.

Employment Market

The region has been severely affected by the recession, with further deterioration likely over the next six to twelve months.

In the occupier market confidence has plummeted, which is starting to affect rental values. The investment market has yet to 'bottom-out' with up to a 15% decrease in capital values, and predictions of further falls between 5% to 10%, as yields continue to shift outwards.

In terms of development, many developers will currently only develop with a pre-let, and finance is unlikely to be available from lenders without a tenant secured before construction commences.

Offices

During the last decade there has been little new office development in Norwich City centre, with development focusing on out of town business parks. A number of blue chip companies have been attracted to these locations by the modern, high quality, accessible office space, which is available at competitive rents.

However in the last couple of years there is evidence to suggest a shift back towards Norwich City centre with the delivery of the Whitefriars scheme, which will provide approximately 220,000 sq ft of new office space when completed. DEFRA has already taken a lease for approximately 30,000 sq ft. Planning permission has also been granted for a major mixed use scheme at Duke's Wharf, which will provide 125,000 sq ft of new office space, although construction has been delayed as a result of current market conditions.

Prime rents for Grade A office space at both Norwich City and premier business park locations such as Broadland Business Park are around £16.50 per sq ft.

Industrial

Norwich is not a recognised industrial location, being too far from the UK's distribution network and unable to attract major occupiers and therefore investors. According to a recent PROMIS report Norwich's industrial stock has reduced by over 35% during the past 20 years. There is currently very little development activity taking place, with only 5,000 sq ft currently under construction in the Norwich industrial market. The newest development is the Salhouse Business Park, located to the north east of Norwich City Centre. It offers a range of plots of land available for the development or through design and build of smaller industrial units to larger warehouse buildings, offices and other higher value uses. Plots are for sale at £400,000 per acre.

South Norfolk benefits from a strong manufacturing sector. For example in Beccles/Bungay and Harleston it employs 19% of the working population, and in Diss 17%. The sub-regional average is 14%. The district contains a number of significant employers such as the sports car manufacturer Group Lotus in Hethel, and Hamlin electronics and Stadium Power in Diss. Norwich Research Park in Colney is home to several leading research institutes, with a particular strength in food and bio-technology.

Feedback from local agents is that industrial rents don't tend to vary hugely across the various locations within a 10 mile radius of Norwich city. Top industrial rents in and around Norwich were around £6.25 at their peak in 2007, and have reduced by approximately 8-10% since then.

Retail

Norwich city reaches an extensive catchment area, spreading across Norfolk and the wider East of England region. It is currently placed 5th in the national ranking of shopping locations. According to the GVA Grimleys Retail and Town Centres Study in October 2007, it was achieving around 44% market share of available comparison goods expenditure from the 3 districts. City centre retail floor space in Norwich is estimated at 2.22 million sq ft. The most recent addition to Norwich's retail offer is Chapelfield Shopping Centre, which opened in September 2005.

The upper ground mall in Chapelfield together with Haymarket and the southern half of Gentlemen's Walk are considered the strongest pitches. At the end of 2008, agents estimated prime rents in Norwich at £200 to £220 per sq ft Zone A.

At Castle Mall shopping centre, top Zone A rents of £140 per sq ft have been achieved on the ground floor. On the first floor, rents are lower ranging from £55-£75 per sq ft Zone A.

Outside of Norwich city there are a number of locally important market towns, although they cannot compete with the larger scale retail centres in Norwich City Centre and out of town retail parks.

Maximum rents achieved at the retail parks have been as high as £35 per sq ft in 2007, which was achieved at Riverside Retail Park. However rents vary significantly between the retail parks depending on their location.

Land Values

There is little transactional evidence. However local agents advised that the value of well located land with efficient infrastructure provision serviced for office development currently is around £250,000-£400,000 per acre, with higher values being achieved closer to Norwich city. Salhouse Business Park currently has office development plots are for sale at £400,000 per acre.

Previously values of approximately £500,000-£600,000 per acre were being achieved during the peak market conditions.

For industrial land local agents advised that the value of serviced land in the peak of the market in 2007 was approximately £400,000-£450,000 per acre. They were of the opinion that industrial land values had dropped in the region of 20% to around £320,000-£370,000 per acre.

For un-serviced land we have been advised that a 20% reduction on serviced land values is fairly typical.

Methodology and findings

The key to a successful tariff model is that it is affordable and viable in the marketplace so as not to prevent development being brought forward.

Given the market context both geographically and over time we have carried out an assessment of the level of tariff that could be achieved based on current and strong market conditions across each of the residential market areas. In setting the charging schedule consideration will need to be given to applying a variable rate of tariff, particularly for schemes that come forward in the short term, which would otherwise be unviable.

To provide an indication of the potential maximum tariff levels that could be applied to residential developments we have used a single hectare development model to assess viability.

We undertook appraisals for each of the districts, with two sets of appraisals being carried out for South Norfolk for each of the housing market areas identified in this district. The appraisals were based on current sales values and values being achieved during the last peak in the housing market. Given the different nature of residential development within Norwich city in comparison with South Norfolk and Broadland i.e. higher density and predominantly flatted schemes, we applied different density and unit mix assumptions for Norwich City.

In assessing the potential to secure tariff from employment schemes we applied a single acre model. Our analysis has focused on industrial and office uses. Given the reasonably homogenous nature of office and industrial developments it is possible to draw general conclusions about the values that could be generated from these types of uses.

The retail sector is more complex, comprising a number of subsectors each with different value characteristics. In addition values vary significantly over small geographical areas, particularly within Norwich city centre. It is therefore impossible to make general assumptions about retail values over a wide area, and we have therefore not modelled this sector. However it is still possible to apply a tariff for retail development based on the infrastructure that will need to be delivered in order to make it acceptable in planning policy terms. Flexibility will be needed to allow site specific issues to be taken into consideration.

The model works through the following calculation:

Gross Development Value (GDV)

LESS

Cost of land

(including duty and fees)

LESS

Construction Cost

(including landscaping, contingency and professional fees)

LESS

Marketing costs for completed units (legal and agency fees)

LESS

Developers Profit

EQUALS

Development Surplus/ Deficit

The Gross Development Value (GDV) is the calculation of the total income arising from all sales. In our appraisals of residential schemes this includes the sales of both the private and affordable units.

Although our appraisals are theoretical we have tried to ensure they reflect reality as much as possible. We have applied market comparable rates in terms of sales values, build costs, land value and development timescales, all of which can have a significant effect on the viability of schemes. We have also applied market standard rates in terms of profit margins and fees. We have assumed the tariff is payable once construction of the housing units begins. We have not included any abnormal site costs such as demolition and remediation.

For schemes outside of Norwich city we have adopted a density rate of 40 units per hectare. Within Norwich city we have applied a density of 90 units per hectare, which reflects the average density of planning permissions granted for schemes within the city predominantly in the last ten years.

We have not allowed for any S106 costs (except affordable housing) in our model appraisal. This is in accordance with the CIL guidance to date, which suggest a single levy to allow for all the traditional S106 costs with the exception of only affordable housing (in terms of residential schemes) and on site works such as specific landscaping requirements.

Subject to all of the variables described above, it is therefore difficult to apply a single levy across all areas which may have different demand levels and consequently different values. Likewise the availability of Housing Corporation grant support for affordable units when considering residential schemes is of key significance and will vary by district and individual schemes within each district. To assess these sensitivities we have carried out the appraisals on a number of different scenarios testing the primary variables of:

- Affordable Housing grant support
- Land value
- Sales values

Affordable Housing

We have assumed 40% affordable housing is provided with a 70/30 split between the social rented and intermediate housing. Affordable housing values are very sensitive to the availability of housing grant. In assessing affordable housing values where grant funding is available we have taken into consideration the levels of housing grant that have historically been provided in Greater Norwich. This is illustrated in the table below, which is based on the grant allocations achieved in the current bidding round during which market conditions have deteriorated, and the previous bidding round when market conditions were stronger.

Table 16-2: Grant Rates

	Market	Social Rent	Intermediate
Norwich	Strong	£12,663	£15,759
	Weak	£12,489	£18,548
Broadland	Strong	£12,862	£16,617
	Weak	£10,528	£18,548
South Norfolk	Strong	£8,953	£27,313
	Weak	£10,003	£18,548
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.			

Source: Drivers Jonas

Because we have used actual figures for grant allocated, there are some anomalies as funding allocated in individual districts does not always follow national or local trends. The average allocation for a district can be skewed by a particular scheme receiving a significant allocation (such as a large regeneration project).

However we would caveat the above figures strongly, as previous grant allocations have no bearing on future allocations. Local and national policy is for no grant to be allocated to affordable housing delivered via S106 agreement. In addition, the Housing Corporation issued guidance for the 2008/11 bidding rounds whereby any scheme that needs grant in order to be viable will have to justify this by undergoing a financial viability test.

If a scheme requires additional funding in order to make it deliverable, meets an identified housing need in an area, and complies with the HCA's Design and Quality Standards, (as well as any additional standards imposed through the planning system, such as Code for Sustainable Homes Level 4), then it is more likely that an application for grant funding for the scheme will be successful.

Therefore whilst future grant allocations cannot be predicted, the grant assumptions made in the appraisals are as robust as can be at this early stage in the process, based on HCA policy and the information available.

It is also important to point out that the funds available in any funding cycle are finite, and once all funding has been allocated then unless additional monies are made available then there will be no further funding allocations made. Given the significant allocation of grant in the months since the establishment of the HCA, it is likely that we will soon reach a point where all funds earmarked for 2008/11 have been allocated. Unless the government is able to allocate additional monies for affordable housing, there will be no further allocation of funds until 2011.

We would therefore recommend that early consultation is made with the Homes and Communities Agency to begin discussions over the likelihood of securing housing grant support, as the issue of grant support is critical to securing tariff based on an affordable housing target of 40%. The HCA will not confirm that a specific level of grant would be allocated against the schemes, but should be able to confirm that the assumptions made are reasonable.

Based on the grant allocations shown in the previous table the following affordable housing values have been applied in our appraisals:

Table 16-3: Affordable Housing Values in Weak and Strong Housing Markets

	Grant	Broadland £ per sq ft	South Norfolk £ per sq ft	Norwich £ per sq ft
Strong	With Grant	£148	£134	£146
	Without Grant	£97	£94	£97
Weak	With Grant	£131	£127	£144
	Without Grant	£89	£86	£96
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.				

Source: Drivers Jonas

The above figures are a blended rate for the social and intermediate tenures taking into account the 70/30 split between social rented and intermediate housing. The figures clearly illustrate the sensitivity of affordable housing values to the availability of grant, which will have a knock on effect on the amount of developer contributions that can be secured from residential schemes.

In order to assess the amount of housing grant that would need to be secured to achieve the “with grant” affordable housing values we have multiplied the per unit grant rate by the number of affordable houses that are forecast to be delivered during the plan period. This is shown in the table below, which provides a breakdown for each district of the number of affordable houses that are forecast to be delivered post 2011 (when the next bidding round begins), the grant rates by affordable housing tenure and the resulting total grant.

Table 16-4: Affordable Housing and Potential Grant

	No. of affordable houses post 2011		Grant rate per unit		Total Grant	
Norwich	Social rented	3,265	Social rented	£12,663	Social rented	£41,344,695
	Intermediate	1,400	Intermediate	£15,759	Intermediate	£22,062,600
Broadland	Social rented	5,251	Social rented	£12,862	Social rented	£67,538,362
	Intermediate	2,251	Intermediate	£16,617	Intermediate	£37,404,867
South Norfolk	Social rented	5,904	Social rented	£8,593	Social rented	£50,733,072
	Intermediate	2,530	Intermediate	£27,313	Intermediate	£69,101,890
Total	Social Rented	14,420	Social Rented	£11,069	Social rented	£159,616,129
	Intermediate	6,181	Intermediate	£20,805	Intermediate	£128,569,357
Total						**£288,145,486**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.						

Source: Drivers Jonas

The affordable housing unit numbers are calculated based on 40% of the overall housing trajectory of 51,502 units post 2011. The per unit grant rates that have been applied are based on the allocations achieved during the 2005-2008 bidding round when market conditions were stronger, as most commentators expect market conditions to improve during 2010. However it should be noted that previous grant allocations have no bearing on future allocations, and only provide us with a best estimate at this stage.

Land Values

The level of tariff is also very sensitive to the land value. As we are trying to establish a viable level of tariff we have modelled an assumed cost of land explicitly within the appraisal to estimate the level of surplus (or amount possibly left over for tariff) once all of the development costs are accounted for. We have carried out an assessment of current and historic land values within Greater Norwich to inform these inputs and adopt as much commercial reality as possible.

However given the unique characteristics of individual sites (particularly brownfield sites) generalising about current and historic land values is problematic. Further there may also be scope to reduce land values through the implementation of a tariff policy, particularly if this is justified by robust evidence demonstrating the need for infrastructure investment, whilst still maintaining development viability.

By implementing a tariff policy this will enable developers to take this into account when negotiating land acquisitions, thereby ensuring that the price they pay for the land enables them to support the level of tariff proposed within policy. However there is a risk where the tariff results in a significant reduction in land values relative to historic values that have been achieved, this could lead to a period of stagnation as landowners may not be prepared to sell their land at these reduced values. The greater the reduction in land value arising a result of the introduction of the tariff the longer this period of stagnation could last,

particularly given the current economic climate. However providing the residential land value is above existing use or alternative use value, then residential development remains viable. Given the complexities concerning land value we have carried out appraisals to illustrate the potential tariff levels that could be achieved based on a range of land values in both weak and strong market conditions.

However, it should be noted that should these land values be proven to be different for an individual scheme then sufficient flexibility will need to be provided within the tariff policy to allow site specific viability issues to be taken into consideration when negotiating the tariff to be paid.

Potential Tariff

The results of our appraisals show the development surplus (i.e. spare cash available for levy contributions) or deficit (where the costs of development outweigh the GDV of the scheme). We have divided the sum for residential schemes by the total number of units (i.e. private sale and affordable) in order to produce a tariff rate per unit. It is also possible to work on the basis that the tariff would be charged on private sale units only. However we consider that as the charging of the tariff will be linked to planning permission, it should be calculated on the total number of proposed units and paid by the developer. It is not considered that the payment of tariff for affordable units would be passed on to an RSL partner.

With regards to commercial schemes the economics of development are less attractive in comparison with residential schemes, and the ability to secure tariff contributions from this type of development is more limited. Any surplus has been divided on the basis of a per sq m rate.

There are two key issues that need to be considered when setting the tariff:

- current planning policy with respect to planning obligations and;
- viability

The development of CIL regulations has been delayed, and any local tariff policy will need to comply with current national planning policy, particularly the requirements of circular 05/05. Therefore the tariff policy needs to be supported by a clear evidence base identifying the infrastructure investment that is needed to make proposed development acceptable in planning policy terms. A clear link needs to be demonstrated between development and the infrastructure needed to mitigate the impact of development.

Given the different characteristics of each district within Greater Norwich, different tariff rates are likely to be needed for each one.

The following table is based on the information set out previously in the report and illustrates the total infrastructure costs identified for each of the growth locations and the areas outside of the growth locations by district, and identifies the total funding gap that needs to be bridged. The tables excludes the £14,220,526 Growth Point funding as this is not linked to specific projects and, like developer contributions may contribute to the overall funding gap identified at the bottom of the table.

It also shows the housing growth forecast for each area, which underpins the infrastructure requirements, and the funding gap on a rate per residential unit basis.

Table 16-5: Infrastructure Costs and Funding by Dwelling and Growth Location

	Infrastructure Costs	Infrastructure Funding	Public Sector Funding Gap	Total (Non-Committed) Dwellings	Funding Gap per dwelling
Sprowston / Rackheath Growth Triangle	£356,062,429	£148,694,077	£207,368,352	7,250	**£28,603**
Broadland Elsewhere	£164,766,516	£97,035,923	£67,730,593	9,897	**£6,844**
Norwich	£285,287,468	£133,486,000	£151,801,468	7,797	**£19,469**
Wymondham	£177,107,728	£42,750,967	£134,356,761	2,200	**£61,071**
Long Stratton	£117,238,595	£46,387,155	£70,851,441	1,800	**£39,362**
Hethersett	£61,908,664	£18,592,864	£43,315,800	1,000	**£43,316**
Cringleford	£20,415,730	£7,224,770	£13,190,961	1,200	**£10,992**
Easton / Costessey	£74,215,331	£28,459,530	£45,755,800	1,000	**£45,756**
South Norfolk Elsewhere	£307,507,844	£83,438,715	£224,069,129	11,161	**£20,076**
Total	**£1,564,510,305**	**£606,070,000**	**£958,440,305**	**43,305**	**£22,132**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.					

Source: Drivers Jonas / EDAW

There are significant variations between the district in terms of the infrastructure investment needed and the level of funding gap. The highest funding gap occurs within the growth areas identified in South Norfolk, equating to an average cost of £42,700 per housing unit. Broadland outside of the Sprowston growth area has the lowest requirement at approximately £7,000 per unit. The average costs per dwelling by district are shown below:

Table 16-6: Average Cost per Dwelling

	Average unit rate
Broadland	£16,044
Norwich	£19,469
South Norfolk	£28,949
Greater Norwich	£22,132
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.	

Source: Drivers Jonas / EDAW

Therefore based on the identified infrastructure investment requirement highlighted in the above tables and the level of funding already identified, the per dwelling funding gap identified could potentially justify the tariff rate providing a clear link can be demonstrated between the need for infrastructure and the proposed development within each area. However viability also needs to be taken into account.

In order to assess this we have estimated the land values that could be achieved if developer contributions from residential developments alone were to bridge the funding gap. We have also assessed the tariff rates that could be achieved based on a range of land values, which can be benchmarked against alternative use values in order to establish whether a particular tariff rate is achievable for residential development.

Norwich

The following table shows the land values that could be achieved within Norwich if a tariff of £19,469 per unit was applied. The results are based on appraisals of a hypothetical 90 unit per hectare residential scheme, 60% of which are flats, and 40% houses. The density reflects the average density of a sample of 156 schemes that have secured planning permission. However it should be noted that this varies for individual schemes with densities ranging from approximately 20 units per hectare to in excess of 200 units per hectare. This will affect the viability of individual schemes, the residual land values that can be achieved, and hence the level of contribution that can be paid by the developer.

This mix of units reflects the trend in private residential development and the unit mix requirements for affordable housing.

Table 16-7: Land Values Necessary to Meet Average Cost Per Dwelling - Norwich

	Market characteristics	Tariff (per unit)	Housing Grant	Estimated Land Value (£ per acre)
Norwich	Strong	£19,469	With	£350,000
			Without	Negative land value
	Weak	£19,469	With	£90,000
			Without	Significant negative land value
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.				

Source: Drivers Jonas

Under strong market conditions, and with housing grant, a tariff rate of £19,469 is potentially achievable where the existing or alternative use value of the site is below £350,000. Under weak market conditions this figure reduces to approximately £90,000 per acre. Given that many sites within Norwich are Brownfield sites with unique characteristics it is impossible to generalise about existing or alternative use values. In order to gain an understanding of the potential range of existing/alternative use values within Norwich we have carried out a desktop assessment for a number of residential sites within the city looking at the value of the site based on its current or previous use.

A housing scheme on Earlham Road was developed on allotments. It is estimated that the previous use value equates to approximately £25,000 per acre in a strong market and £20,000 per acre in a weak market. For a scheme on Northumberland Road, which was developed on a site that was formerly a

clothing factory, the previous use value in a strong market is estimated to be approximately £475,000 per acre, and approximately £215,000 per acre in a weak market. The previous use value of a one acre site on Muspole street, formally used as a depository building and public house, is estimated to be £900,000 per acre in a strong market and £460,000 per acre in a weak market.

Whilst the above are only indicative values they do show that the range of previous use values is wide. However for some sites with low existing or alternative use values a tariff of approximately £19,500 per unit is achievable in a strong market if housing grant is available at a similar level to historic allocations, based on a 90 unit per hectare residential scheme. Where the previous or existing use value is significantly higher than £350,000 per acre in a strong market a much higher density scheme would be needed in order to be able to support a tariff of around £19,000 per unit.

It should be noted that a tariff of £19,500 per unit represents a significant increase on the s.106 contributions that have generally been achieved in the past. From a sample of six schemes the s.106 contributions ranged from approximately £1,100 per unit to £3,600 per unit. In addition the percentage of affordable housing was lower than 40% in all cases.

Therefore a s.106 tariff of £19,500 a unit combined with a requirement for 40% affordable housing, places a significantly more onerous financial commitment on developers in comparison with what has typically been agreed in the past, and will require a shift in sentiment from developers in order to achieve this level of contributions.

Given the unique nature of individual development sites within Norwich it will be important to ensure there is sufficient flexibility within the tariff policy to allow site specific negotiations to take place, taking into account viability issues associated with the development of a particular site.

As a guide the following table illustrates the potential tariff rates that could be achieved based on a range of land values (assuming a 90 unit per hectare scheme).

Table 16-8: Tariff Associated with a Range of Land Values - Norwich

District	Market characteristics	Land Value (per acre)	Housing Grant	Tariff (per unit)
Norwich	Strong	£550,000	With	£13,000
			Without	-£500
		£450,000	With	£16,000
			Without	£2,500
		£300,000	With	£21,000
			Without	£7,500
	Weak	£275,000	With	£13,500
			Without	-£3,000
		£250,000	With	£14,000
			Without	-£2,000
		£200,000	With	£16,000
			Without	0
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.				

Source: Drivers Jonas

Broadland

This district is divided into two areas:

- The Sprowston/Rackheath growth triangle, which lies within Rest of Norwich housing market (i.e. the part of the Norwich housing market outside of Norwich City).
- The rest of Broadland, which lies within the Broadland/Mid South Norfolk housing market.

The table below illustrates the land values that could be achieved based on the tariff rates that are needed in the Sprowston growth area and the sales values achieved within the Rest of Norwich Housing Market area.

Table 16-9: Land Values Necessary to Meet Average Cost Per Dwelling – Broadland Strategic Growth Areas

Broadland district area	Market characteristics	Tariff (per unit)	Housing Grant	Estimated Land Value (£ per acre)
Sprowston/Rackheath growth triangle	Strong	£28,603	With	£270,000
			Without	£65,000
	Weak	£28,603	With	Negative land value
			Without	Significant negative land value
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.				

Source: Drivers Jonas

In strong market conditions with housing grant support a land value of approximately £270,000 is achievable. This exceeds Greenfield agricultural land values, and would therefore be viable for these types of sites. However this is below historic employment land values based on feedback from local agents (see commentary on land values in Employment Market section of this report). Therefore this level of tariff may only be viable for agricultural sites with no alternative use value in strong market conditions. Even in these instances there is a risk that the landowner may not release the site for residential development as this would represent a significant drop in value relative to historic residential land values achieved in strong market conditions.

As a guide the following table illustrates the potential tariff rates that could be achieved based on a range of land values.

Table 16-10: Tariff Associated with a Range of Land Values – Broadland Strategic Growth Areas

Broadland District area	Market characteristics	Land Value (£ per acre)	Housing Grant	Tariff (per unit)
Sprowston/Rackheath growth triangle	Strong	£500,000	With	£12,000
			Without	-£2,500
		£450,000	With	£15,500
			Without	£1,000
		£400,000	With	£19,000
			Without	£4,000
		£350,000	With	£23,000
			Without	£8,000
	Weak	£250,000	With	£5,000
			Without	-£7,500
		£200,000	With	£9,000
			Without	-£3,500
		£150,000	With	£12,000
			Without	£0
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.				

Source: Drivers Jonas

The remainder of Broadland requires a lower level of investment in infrastructure. This is shown in the table below together with the potential impact on land value.

Table 16-11: Land Values Necessary to Meet Average Cost Per Dwelling – Elsewhere in Broadland

Broadland district areas	Market characteristics	Tariff (per unit)	Housing Grant	Estimated Land Value (£ per acre)
Broadland elsewhere	Strong	£6,844	With	£520,000
			Without	£320,000
	Weak	£6,844	With	£275,000
			Without	£110,000
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.				

Source: Drivers Jonas

In terms of the rest of Broadland a tariff of £6,844 per unit results in a land value of approximately £520,000 in a strong market assuming housing grant is provided. Under strong market conditions, and with the availability of housing grant this level of tariff could potentially be supported as residential land values are likely to exceed existing or alternative use values for the majority of sites. This also mirrors historic residential values for un-serviced Greenfield sites based on feedback from local agents. Without grant the value reduces to around £320,000 per acre. Although this is lower than historic residential and employment land values it is still significantly higher than agricultural land values. This level of tariff would therefore be viable for agricultural land. The issue is whether there would be sufficient value to encourage a landowner to release the land for residential development.

If the average tariff rate needed to fund the infrastructure across the whole of Broadland of £16,044 per unit (see Table 16-6) is applied this results in a land value of approximately £380,000 per acre in a strong market and £150,000 per acre in a weak market (assuming housing grant is provided). This exceeds agricultural land values. However at £380,000 per acre this is slightly lower than historic employment land values reported by local agents as generally being achieved during peak market conditions for un-serviced Greenfield land. Without housing grant residential values would reduce to approximately £190,000 per acre in a strong market and produces a negative land value in a weak market. Whilst in a strong market this may be viable for agricultural land with no alternative use value, this is below historic and current employment land values.

As a guide the following table illustrates the potential tariff rates that could be achieved based on a range of land values.

Table 16-12: Tariff Associated with a Range of Land Values – Elsewhere in Broadland

	Market characteristics	Land Value (£ per acre)	Housing Grant	Tariff (per unit)
Broadland elsewhere	Strong	£500,000	With	£8,000
			Without	-£6,000
		£450,000	With	£12,000
			Without	-£2,000
		£415,000	With	£14,000
			Without	£0
		£350,000	With	£19,000
			Without	£5,000
	Weak	£250,000	With	£9,000
			Without	-£3,000
		£225,000	With	£10,000
			Without	-£1,000
		£200,000	With	£12,000
			Without	£0

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

Source: Drivers Jonas

South Norfolk

South Norfolk divides into three housing market areas:

- Norwich housing market area (outside of the city including Hethersett, Easton and Cringleford growth areas)
- Broadland/Mid South Norfolk market area (including Wymondham and Long Stratton growth areas)
- Rest of South Norfolk

With regards to the Norwich housing market area the following table illustrates the land values that could be achieved based on the tariff rates that are needed to fund the infrastructure required for each of the growth areas here.

Table 16-13: Land Values Necessary to Meet Average Cost Per Dwelling – South Norfolk Strategic Growth Areas

	Market characteristics	Tariff (per unit)	Housing Grant	Estimated Land Value (£ per acre)
Hethersett	Strong	£43,316	With	£5,000
			Without	Significant negative land value
	Weak	£43,316	With	Significant negative land value
			Without	Significant negative land value
Cringleford	Strong	£10,992	With	£460,000
			Without	£290,000
	Weak	£10,992	With	£150,000
			Without	Marginal
Easton	Strong	£45,756	With	Negative land value
			Without	Significant negative land value
	Weak	£45,756	With	Significant negative land value
			Without	Significant Negative land value
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.				

Source: Drivers Jonas

Cringleford is the most likely area where the level of tariff needed to fund the infrastructure required could potentially be met, where a tariff of £10,992 per unit is required. In strong market conditions and with housing grant this results in a land value of approximately £460,000 per acre. This exceeds agricultural land values and matches employment land values for un-serviced Greenfield sites reported by local agents.

The other growth areas have significantly higher infrastructure costs, which if met purely by developer contributions from residential schemes, is likely to render most of them unviable.

The average contribution required for the above growth areas is £31,957 per residential unit. Taking this average rate and applying it to the entire area produces the following results:

Table 16-14: Tariff Associated with a Range of Land Values – South Norfolk (Norwich Housing Market Area)

	Market characteristics	**Tariff (per unit)**	**Housing Grant**	**Estimated Land Value (£ per acre)**
South Norfolk (Norwich housing market)	Strong	£31,957	With	£170,000
			Without	Nil land value
	Weak	£31,957	With	Significant negative land value
			Without	Significant negative land value
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.				

Source: Drivers Jonas

Based on an average tariff rate across all the growth areas it is unlikely that the tariff needed to fund the infrastructure would be viable except in a strong market for agricultural sites with no alternative use value.

As a guide the following table illustrates the potential tariff rates that could be achieved based on a range of land values.

Table 16-15: Tariff Associated with a Range of Land Values – South Norfolk (Norwich Housing Market Area)

District	Market characteristics	Land Value (£ per acre)	Housing Grant	Tariff (per unit)
South Norfolk (Norwich Housing Market)	Strong	£500,000	With	£8,000
			Without	-£3,500
		£450,000	With	£11,500
			Without	£0
		£400,000	With	£15,000
			Without	£3,500
		£350,000	With	£19,000
			Without	£7,000
	Weak	£250,000	With	£4,000
			Without	-£8,000
		£200,000	With	£7,000
			Without	-£5,000
		£140,000	With	£12,000
			Without	£0

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

Source: Drivers Jonas

Mid South Norfolk

The following table illustrates the land values that could be achieved based on the tariff rates that are needed within each of the growth areas located within Mid South Norfolk.

Table 16-16: Tariff Associated with a Range of Land Values – South Norfolk (Mid South Norfolk)

	Market characteristics	Tariff (per unit)	Housing Grant	Estimated Land Value (£ per acre)
Wymondham	Strong	£61,071	With	Significant negative land value
			Without	Significant negative land value
	Weak	£61,071	With	Significant negative land value
			Without	Significant negative land value
Long Stratton	Strong	£39,362	With	Negative land value
			Without	Significant negative land value
	Weak	£39,362	With	Significant negative land value
			Without	Significant negative land value
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.				

Source: Drivers Jonas

Given the scale of infrastructure needed it is unlikely the funding gap will be bridged purely by contributions from schemes within this area.

As a guide the following table illustrates the potential tariff rates that could be achieved based on a range of land values.

Table 16-17: Tariff Associated with a Range of Land Values – South Norfolk (Mid South Norfolk)

District	Market characteristics	Land Value (£ per acre)	Housing Grant	Tariff (per unit)
Mid South Norfolk	Strong	£500,000	With	£4,000
			Without	-£7,000
		£450,000	With	£8,000
			Without	-£3,000
		£350,000	With	£15,000
			Without	£3,000
	Weak	£250,000	With	£7,500
			Without	-£4,000
		£225,000	With	£9,000
			Without	-£2,000
		£200,000	With	£11,000
			Without	£0
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.				

Source: Drivers Jonas

Rest of South Norfolk

The table below illustrates the land values that could be achieved based on the tariff rates that are needed in the Rest of South Norfolk to meet the infrastructure funding requirement across the district.

Table 16-18: Tariff Associated with a Range of Land Values – South Norfolk (Elsewhere in South Norfolk)

	Market characteristics	Tariff (per unit)	Housing Grant	Estimated Land Value (£ per acre)
South Norfolk (Rest of)	Strong	£20,076	With	£160,000
			Without	£5,000
	Weak	£20,076	With	£10,000
			Without	Significant negative land value
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.				

Source: Drivers Jonas

Applying the average unit cost identified for South Norfolk results in a land value of £160,000 in strong market conditions with grant, and £5,000 without grant. This level of tariff may only be viable for agricultural sites with no alternative use value in both weak and strong market conditions.

As a guide the following table illustrates the potential tariff rates that could be achieved based on a range of land values.

Table 16-19: Tariff Associated with a Range of Land Values – South Norfolk (Elsewhere in South Norfolk)

District	Market characteristics	Land Value (£ per acre)	Housing Grant	Tariff (per unit)
South Norfolk (Rest of)	Strong	£400,000	With	£3,500
			Without	-£8,000
		£350,000	With	£7,000
			Without	-£4,500
		£290,000	With	£12,000
			Without	£0
		£250,000	With	£14,500
			Without	£2,500
	Weak	£200,000	With	£6,500
			Without	-£5,500
		£150,000	With	£10,000
			Without	-£2,000
		£140,000	With	£14,000
			Without	£2,000

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

Source: Drivers Jonas

Summary

- Within Norwich a tariff of £19,469 per dwelling is needed if contributions from residential schemes are to bridge the funding gap identified. Although this could be achievable for an average sized scheme with housing grant, due to the individual nature of development sites within Norwich flexibility is needed to take into account site specific viability issues.
- Within Broadland the residential tariff required to fund the infrastructure needed for the Sprowston growth area is significantly higher than for the rest of Broadland at £8,005. Whilst the tariff rate required for the rest of Broadland is achievable, the rate needed for the Sprowston growth area is challenging and is likely to only be viable for agricultural sites with no alternative use value and where housing grant is available. This will still require landowners to agree to sell their land at significantly lower values in comparison to values that have been achieved previously.
- Within both the Norwich Housing Market area of South Norfolk and mid South Norfolk area the tariff needed to fund the infrastructure required for the growth areas is not viable. The exception is Cringleford, where the level of investment needed is much lower. However this will still require strong market conditions and housing grant. Landowners will also need to be prepared to accept a reduction in land value compared to historic peak values for residential land based on feedback from local agents
- Within the rest of South Norfolk the level of tariff required may only be viable for agricultural sites with no alternative use value. Housing grant is likely to still be needed. However this will

require landowners to agree to sell their land at significantly lower values in comparison to those that have been achieved previously.

- Any tariff policy will require flexibility in order to enable site specific viability issues to be taken into account and ensure that the contributions being sought do not stifle the development of individual schemes.

Commercial tariff

We assessed the tariff that could be achieved for office and industrial development within Norwich city and surrounding area by undertaking appraisals for a hypothetical office and industrial scheme on a one acre site.

Offices

The table below sets out the results of our office appraisals:

Table 16-20: Potential Tariff Rates for Office Space

	Tariff rate	**Land Value £ per acre**	
		Strong market	**Weak market**
Norwich City	£19 per sq m (£1.75 per sq ft)	£400,000	Negative land value
	£32 per sq m (£3 per sq ft)	£350,000	Negative land value
	£43 per sq m (£4 per sq ft)	£300,000	Negative land value
Norwich suburbs Business Parks	£18 per sq m (£1.70 per sq ft)	£350,000	Negative land value
	£37 per sq m (£3.50 per sq ft)	£300,000	Negative land value
	£57 per sq m (£5.30 per sq ft)	£250,000	Negative land value
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.			

Source: Drivers Jonas

The results suggest that tariff is only achievable during strong market conditions. This is primarily due to the outward shift in the yield during weaker market conditions, which has a major impact on the capital values of office schemes. The GNDP may therefore wish to consider delaying the introduction of a tariff for these types of schemes until market conditions improve.

The upper land value in the table mirrors local agents' views of approximate land values that prevailed during the previous peak in the market for un-serviced Greenfield land.

Industrial

Greater Norwich is not a recognised industrial location. The only area where tariff may be possible are for industrial schemes in and close to Norwich city, where rents are highest. The table below sets out the results of our appraisals.

Table 16-21: Potential Tariff Rates for Industrial Land

	Tariff rate	Land Value £ per acre	
		Strong market	**Weak market**
Norwich City	£0	£180,000	Negative land value
	£11 per sq m (£1 per sq ft)	£160,000	Negative land value
	£22 per sq m (£2 per sq ft)	£145,000	Negative land value
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.			

Source: Drivers Jonas

As with the office developments tariff is only possible during strong market conditions. However landowners would need to be willing to sell their land at values below those that were being achieved during the previous peak in the market.

Tariff Policy Options

Given the varying market and policy characteristics and different infrastructure requirements between each of the districts, a variable tariff policy is recommended across Greater Norwich. There are a number of options for this:

4. A district wide tariff rate for Norwich, South Norfolk and Broadland.

5. A tariff rate for each of the growth areas with a separate tariff for the rest of each district.

6. A tariff for each of the housing market areas.

There are a number of issues that need to be considered when establishing the tariff policy, particularly the potential impact on development activity and compliance with current national planning policy.

Option 1

Within **Norwich** although values for residential schemes within the city vary geographically, the general market characteristics are fairly uniform in that the housing market is largely governed by the economic performance of Norwich city. The infrastructure requirements identified for Norwich can also be directly linked with all development that is delivered within it. Therefore a standard tariff covering the entire district is appropriate. The unique nature of individual development sites will be a key factor in determining the level of contributions that can be secured from developments within Norwich. Site specific negotiations between the developer and the local planning authority will be required in most cases, but a standard tariff will set the benchmark for those negotiations. It will also assist developers in their negotiations to acquire sites within Norwich, as they will be able to reflect the tariff policy in their discussions with landowners.

Within **Broadland** residential values vary slightly geographically, but the general housing market characteristics are fairly uniform across the district given its close links with the Norwich City economy. The other issue is the high infrastructure costs associated with the Sprowston growth area and relatively low costs elsewhere in Broadland. A uniform tariff rate across the entire district could enable schemes delivered outside the Sprowston growth area to cross subsidise the infrastructure needed to enable development within the growth area to be delivered. However if contributions were required from schemes outside the growth areas in order to facilitate their development then the delivery of the growth areas would be dependent on schemes being delivered elsewhere in the district. In order for this option

to be justifiable in planning policy terms a link between the infrastructure needed within the growth area and development within the rest of Broadland would need to be demonstrated. Otherwise it may be open to challenge.

In addition although the majority of Broadland is closely interrelated with the Norwich economy two housing market areas have been identified within the district. A standard tariff across Broadland may not reflect the varying development economics within the district as well as the concentration of infrastructure requirements within the Sprowston/Rackheath growth area.

This also applies to **South Norfolk** where the housing market and infrastructure characteristics are not uniform. The northern part of the district where the growth areas are concentrated is closely connected to the Norwich City economy. Whereas the southern part of the district is more self contained. Like Broadland, the infrastructure requirements vary across the district, with a much higher tariff rate required for the growth areas in order to bridge the funding gap.

Given the lower tariff rate required from schemes outside the growth areas there may be an opportunity for these schemes to cross subsidise the infrastructure needed for the growth areas. However the southern part of South Norfolk is more self-contained. Consequently it may be more difficult to clearly demonstrate a link between development being delivered here and the need for it to contribute funding towards the infrastructure required in the northern part of the district in order to make it acceptable in planning policy terms.

In addition a standard tariff could have a disproportionate affect on land values and developer returns given the different residential sales values within the district. This could encourage developers to target the higher value areas, particularly the growth areas, where landowners may be more likely to release their land. However this will depend on the level of flexibility within the tariff policy to allow the tariff to be adjusted to reflect the economics of a particular development site.

Option 2

A specific tariff for each of the growth areas would meet the requirements of existing policy particularly Circular 05/05, as the contributions secured from developers would be directly linked to the infrastructure needed to facilitate the development within and outside of the growth areas.

This approach would also enable specific implementation strategies to be drawn up for each growth area, particularly if a funding package can be procured for an individual growth area, which does not depend on contributions being secured from development being delivered elsewhere in the district. This could potentially reduce the risk and increase certainty for developers that the infrastructure that is needed will be delivered, with the timescales for delivery being known, which could catalyse the development of the growth areas.

Further certainty could also be provided through the preparation of a masterplan for each growth area setting out in more detail the nature and scale of development that could be delivered. This would enable more detailed viability assessments to be carried out and provide more planning policy certainty. The local authority, developers and landowners would be able to work together around a common set of objectives and delivery strategy enabling a more structured approach to the delivery of each growth area.

Any implementation strategy would need the agreement of the landowners within each growth area (unless the local authority is prepared to use its CPO powers). As part of this exercise land values would need to be agreed with them in order to be able to set an appropriate tariff rate.

However viability is an issue given the scale of the funding gap associated with the majority of the growth areas, which will be difficult to bridge through developer contributions alone. In addition given the current state of the economy developers are unlikely to be able or willing to provide significant up front contributions towards infrastructure delivery prior to development commencing. Therefore the public sector will need to play an increasingly important role in pump priming infrastructure investment and explore other funding opportunities (outlined in the funding strategy section of the report).

Consideration could also be given to the level of tariff for the rest of Greater Norwich (outside of the growth areas), and whether there is an opportunity to set it at a level that would enable developer contributions to be secured to cross subsidise the growth areas. This may be of particular relevance to Broadland where the infrastructure costs are relatively low outside of the Sprowston growth area. Viability and planning policy issues would need to be taken into account.

A business plan could be prepared setting out how the growth area would be funded and delivered, which the authority can then promote to potential public and private sector funding partners in order to attract additional investment.

Option 3

The Norwich housing market covers Norwich city and parts of Broadland and South Norfolk. Development economics are very different within the city in comparison to the suburbs, particularly in terms of the density of development, the unit mix, sales values and development costs. The characteristics of development sites are also different with a significant amount of development within Norwich city being delivered on Brownfield land.

Therefore from a viability perspective applying a uniform tariff rate to the Norwich Housing market area is problematic. However a tariff for Norwich city and a separate tariff for the rest of this housing market may be possible.

The other market areas comprise:

- the remaining part of Broadland and mid South Norfolk (Long Stratton and Wymondham) and;
- the rest of South Norfolk (Diss, Harleston, Beccles, Bungay).

From a viability perspective applying a tariff across each market area is possible, and would provide a more consistent approach in comparison to option 2. This may reduce the risk of developers targeting areas where the tariff rate is lower. However within our appraisals we have assumed a constant level of developer's profit. Therefore providing the land is acquired at a price that reflects a particular tariff policy the developer's return should not be affected.

The main issue will be the impact the tariff rate has on the land value. Although a residential scheme may still be viable on the basis that the residential land value exceeds the existing or alternative use value of the site, if the tariff reduces the residential land value significantly in comparison to prices that have been achieved in the past, or if land value patterns vary geographically as a direct result of a variable tariff rate, there is a risk that those landowners most affected will not release or delay the release of their sites for development. Development will be targeted at areas where agreement can be reached with the landowners to sell their land.

This risk also applies to option 2. However the main difference with option 3 is that the tariff may not relate as closely to the infrastructure costs that need to be incurred to facilitate the development of a particular site. As a result the tariff may be challenged by developers and landowners on the grounds that the level of contributions being sought are not justified or reasonable.

In addition as the tariff would reflect market characteristics as opposed to infrastructure investment requirements, it will be uniform across the growth areas within each market area. Therefore for those growth areas requiring a higher level of investment in infrastructure the funding gap may be greater. Unless other funding sources are secured to close the funding gap, the development of the growth areas requiring a greater level of investment in infrastructure could take longer.

Whichever option is pursued any tariff policy will need to be flexible and allow developers to negotiate on a site by site basis in order to ensure that site specific issues are take into account and individual schemes remain viable. This is particularly important in Norwich city where a significant amount of development will be delivered on Brownfield land.

Review of tariff policy

Given the level of tariff that is required in comparison to historic s.106 contributions, and the potential impact this could have on land values, an adjustment in the market will be required, from both landowners and developers. The public sector will also need to support this process, for example through the provision of additional funding to pump prime infrastructure investment.

Given the time it will take to deliver the infrastructure needed to support future residential and commercial development any tariff policy will need to be reviewed on a regular basis in order to adjust to changing circumstances such as general market conditions, availability of other funding sources, changes in infrastructure requirements and costs. Any review may consider:

- the impact of the policy on development and the market
- the level of contributions secured in comparison to what was achieved prior to the policy being in place
- whether the policy needs to be changed

The infrastructure costs are likely to change over time and the tariff levels will need to be adjusted to reflect this. Therefore any policy should be index linked for example to the Royal Institution of Chartered Surveyors Building Cost Information Services. This index has been commonly used in other tariff policies that have been adopted elsewhere.

17 Summary of Infrastructure costs verses Income

This framework has presented a detailed account of the likely infrastructure projects which will be required to match the housing and employment growth set out in each of three options up to 2031. The report has presented the likely cost of these projects over time, the public sector funding currently available to offset these costs and in the last section we have presented the likely additional income expected from developer contributions. Table 17-1 below summarises the phased total figures for these stages, this assumes the maximum estimated costs scenario for Education Provision, Water Infrastructure and Open Space.

17.1 Costs and Funding Overview

Table 17-1: Infrastructure Costs and Funding Overview

Cost / Income Analysis						
	2008/09-2010/11	2011/12-2015/16	2016/17-2020/21	2021/22-2025/26	2026/27-2030/31	Total
Education Costs	£540,000	£0	£18,405,000	£75,420,000	£131,660,000	£226,025,000
Healthcare Costs	£5,499,540	£11,604,779	£19,082,534	£11,835,256	£15,791,225	£63,813,333
Emergency Services Costs	£1,190,980	£3,389,138	£3,334,165	£2,521,737	£4,031,481	£14,467,500
Community Facilities Costs	£0	£5,610,000	£7,440,000	£9,740,000	£15,740,000	£38,530,000
Open Space Costs	£25,465,105	£66,508,572	£59,614,627	£50,209,809	£86,447,359	£288,245,472
Waste Costs	£0	£0	£450,000	£0	£320,000	£770,000
Utilities Costs	£3,587,760	£340,612,240	£130,389,667	£16,242,667	£16,436,667	£507,269,000
Transport Costs	£21,568,389	£273,054,724	£21,258,605	£21,014,310	£52,203,972	£389,100,000
Economic Development Costs	£26,520,000	£9,770,000	£0	£0	£0	£36,290,000
Total Infrastructure Costs	£84,371,775	£710,549,452	£259,974,598	£186,983,777	£322,630,703	£1,564,510,305
Total Public / Private Funding	£38,505,819	£430,604,707	£124,069,667	£10,673,667	£16,436,667	£620,290,526
Funding GAP - Before LVC	£45,865,956	£279,944,746	£135,904,931	£176,310,111	£306,194,036	£944,219,779

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

Source: EDAW

17.2 Considering Land Value Capture

Using the range of tariffs identified earlier in the report we have made an assessment of the total amount of funding that tariffs could generate across the whole of growth area based on the following two scenarios:

Scenario 1 – High Land Values with housing grant
Scenario 2 – Low Land Values with housing grant

In both scenarios we have assumed that the current weak market will last until 2014 and return to a strong market for the remainder of the growth period.

Scenario 1: High Market Value for Residential and Employment Land

The table below shows the funding position based on the level of tariff that could be achieved assuming the high land values identified in Chapter 16 (closer to their 2007 peak values) and full housing grant. The table shows that in this scenario the growth area would face a funding gap of £552.2 million over the growth period with a significant funding shortfall in the earlier years of development.

Table 17-2: Accounting for Land Value Capture: Scenario 1, High Land Value

Cost / Income Analysis						
	2008/09-2010/11	2011/12-2015/16	2016/17-2020/21	2021/22-2025/26	2026/27-2030/31	Total
Funding GAP - Before LVC	£45,865,956	£279,944,746	£135,904,931	£176,310,111	£306,194,036	£944,219,779
LVC: Residential - High Market Value	£1,682,000	£44,362,000	£115,544,000	£104,873,000	£120,319,000	£386,780,000
LVC: Employment Land - High Market Value	£0	£326,155	£1,630,777	£1,630,777	£1,630,777	£5,218,485
Total Funding GAP after LVC - High Market Value	£44,183,956	£235,256,590	£18,730,154	£69,806,334	£184,244,260	£552,221,294
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.						

Source: EDAW

Scenario 2: Low Market Value for Residential and Employment Land

The table below shows the funding position based on the level of tariff that could be achieved assuming the lowest land values identified in Chapter 16 and full housing grant. The table shows that in this scenario the growth area would face a much reduced funding gap of £109.3 million.

Table 17-3: Accounting for Land Value Capture: Scenario 1, High Land Value

Cost / Income Analysis						
	2008/09-2010/11	2011/12-2015/16	2016/17-2020/21	2021/22-2025/26	2026/27-2030/31	Total
Funding GAP - Before LVC	£45,865,956	£279,944,746	£135,904,931	£176,310,111	£306,194,036	£944,219,779
LVC: Residential - Low Market Value	£2,436,000	£83,374,000	£251,827,000	£229,111,000	£254,798,000	£821,546,000
LVC: Employment Land - Low Market Value	£0	£834,424	£4,172,122	£4,172,122	£4,172,122	£13,350,789
Total Funding GAP after LVC - Low Market Value	£43,429,956	£195,736,321	-£120,094,191	-£56,973,011	£47,223,915	£109,322,990
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.						

Source: EDAW

Table 17-4a: Infrastructure Costs, Funding, and Land Value Capture by Prioritisation

Cost / Income Analysis (Annual)												
		2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/19 - 2030/31	Total (2008/9-2030/21)
Critical Infrastructure	Infrastructure Costs	£0	£10,521,736	£10,566,858	£55,628,028	£45,341,490	£45,355,897	£45,503,766	£384,253,087	£3,224,942	£170,373,197	£770,769,000
	Infrastructure Funding	£0	£8,185,980	£8,185,980	£24,374,040	£15,940,000	£15,940,000	£15,940,000	£354,704,000	£1,137,333	£150,042,667	£594,450,000
	Critical Infrastructure Funding Gap	£0	£2,335,756	£2,380,878	£31,253,988	£29,401,490	£29,415,897	£29,563,766	£29,549,087	£2,087,608	£20,330,531	£176,319,000
Essential Infrastructure	Infrastructure Costs	£0	£16,272,467	£19,756,769	£20,445,295	£20,623,390	£23,283,579	£24,338,830	£26,351,403	£17,460,437	£541,389,133	£709,921,305
	Infrastructure Funding	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
	Essential Infrastructure Funding Gap	£0	£16,272,467	£19,756,769	£20,445,295	£20,623,390	£23,283,579	£24,338,830	£26,351,403	£17,460,437	£541,389,133	£709,921,305
Desirable Infrastructure	Infrastructure Costs	£7,446,667	£9,887,094	£9,920,184	£7,495,178	£1,770,426	£1,780,991	£2,699,428	£5,678,664	£603,979	£36,537,389	£83,820,000
	Infrastructure Funding	£166,667	£3,873,333	£3,873,333	£3,706,667	£0	£0	£0	£0	£0	£0	£11,620,000
	Desirable Infrastructure Funding Gap	£7,280,000	£6,013,761	£6,046,850	£3,788,511	£1,770,426	£1,780,991	£2,699,428	£5,678,664	£603,979	£36,537,389	£72,200,000
Total Infrastructure Costs		£7,446,667	£36,681,298	£40,243,811	£83,568,500	£67,735,306	£70,420,467	£72,542,024	£416,283,155	£21,289,358	£748,299,720	£1,564,510,305
Infrastructure Project Funding		*£166,667*	*£12,059,313*	*£12,059,313*	*£28,080,707*	*£15,940,000*	*£15,940,000*	*£15,940,000*	*£354,704,000*	*£1,137,333*	*£150,042,667*	*£606,070,000*
Growth Point Funding		*£0*	*£7,110,263*	*£7,110,263*	*£0*	*£0*	*£0*	*£0*	*£0*	*£0*	*£0*	*£14,220,526*
Total Infrastructure Funding		£166,667	£19,169,576	£19,169,576	£28,080,707	£15,940,000	£15,940,000	£15,940,000	£354,704,000	£1,137,333	£150,042,667	£620,290,526
Total Funding Gap		£7,280,000	£17,511,721	£21,074,234	£55,487,794	£51,795,306	£54,480,467	£56,602,024	£61,579,155	£20,152,025	£598,257,053	£944,219,779
LVC: Residential - High Market Value		£0	£841,000	£841,000	£1,416,000	£1,991,000	£6,286,000	£15,249,000	£19,420,000	£22,672,000	£318,064,000	£386,780,000
LVC: Employment Land - High Market Value		£0	£0	£0	£0	£0	£0	£0	£326,155	£326,155	£4,566,175	£5,218,485
Total Funding GAP after LVC - High Market Value		£7,280,000	£16,670,721	£20,233,234	£54,071,794	£49,804,306	£48,194,467	£41,353,024	£41,832,999	-£2,846,130	£275,626,878	£552,221,294
LVC: Residential - Low Market Value		£0	£1,218,000	£1,218,000	£2,598,000	£3,978,000	£10,390,000	£24,831,000	£41,577,000	£48,613,000	£687,123,000	£821,546,000
LVC: Employment Land - Low Market Value		£0	£0	£0	£0	£0	£0	£0	£834,424	£834,424	£11,681,940	£13,350,789
Total Funding GAP after LVC - Low Market Value		£7,280,000	£16,293,721	£19,856,234	£52,889,794	£47,817,306	£44,090,467	£31,771,024	£19,167,730	-£29,295,399	-£100,547,887	£109,322,990

The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.

Source: EDAW

Table 17.3a above allows you to identify that the cumulative funding gap for critical infrastructure only to 2016/17 is £155,988,469. It also shows that the potential Land Value Capture (LVC) during that period assuming high market land values is £69, 368, 311 or assuming low market land values £136, 091, 849, which would almost close the funding gap for critical infrastructure over that time period.

In tables 17-3 and 17-4 the overall costs include the maximum estimated costs scenario for Education Provision, Water Infrastructure and Open Space. Significant cost savings would be generated by approaching the 'best case' scenario for each of these infrastructure types and meeting the best case scenario in any category would close the funding gap in the Scenario 1 (low land value) and reduce the funding gap in the Scenario 2 (high land value) to £322.6 million.

An overview of the potential costs savings are provided in the table below.

Table 17-5: Best and Worst Case Cost Scenarios for Education, Open Space and Utilities

	Worst Case Costs	Best Case Costs	Potential Cost Saving
Education	£226,025,000	£101,665,000	£124,360,000
Open Space	£288,245,472	£183,038,053	£105,207,419
Utilities	£507,269,000	£410,339,000	£96,930,000
Total	**£1,021,539,472**	**£695,042,053**	**£326,497,419**
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.			

Source: EDAW

The variance in education infrastructure costs is particularly relevant in the case of South Norfolk. The worst costs case scenario assumes that new secondary schools are required in Wymondham, Hethersett, and Easton. If the increase in capacity can be provided by more cost effective means e.g. the extension of existing facilities then the impact on education costs for facilities in South Norfolk would be significantly reduced as is illustrated in the best case scenario set out above.

The headline implications of adopting the best base infrastructure costs are provided in the table 17-5 below. These are presented for the whole of the growth period.

Table 17-6: Infrastructure Costs and Funding Overview Adopting Best Case Costs

Cost / Income Analysis	
	(Total 2008-31)
Education Costs	£101,665,000
Healthcare Costs	£63,813,333
Emergency Services Costs	£14,467,500
Community Facilities Costs	£38,530,000
Open Space Costs	£183,038,053
Waste Costs	£770,000
Utilities Costs	£410,339,000
Transport Costs	£389,100,000
Economic Development Costs	£36,290,000
Total Infrastructure Costs	£1,238,012,886
Total Public / Private Funding	£523,360,526
Funding GAP - Before LVC	£714,652,360
LVC: Residential - High Market Value	£386,780,000
LVC: Employment Land - High Market Value	£5,218,485
Total Funding GAP after LVC - High Market Value	£322,653,875
LVC: Residential - Low Market Value	£821,546,000
LVC: Employment Land - Low Market Value	£13,350,789
Total Funding GAP after LVC - Low Market Value	-£120,244,429
The tables are an initial high-level overview of the infrastructure required. All figures are indicative and are likely to vary in the light of future economic, market and policy changes. They will be subject to periodic review.	

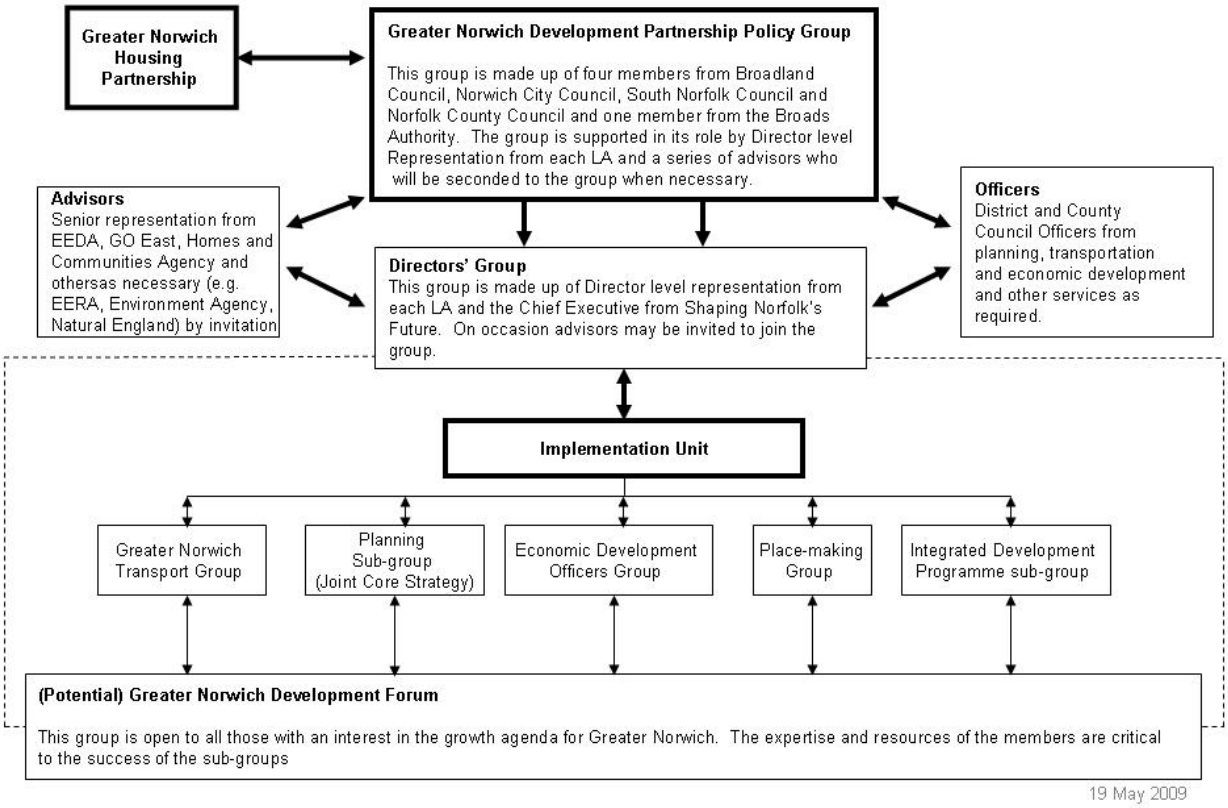
Source: EDAW

The table above shows that assuming low market land values and best case scenario regarding costs that the funding gap could be closed.

18 Co-ordination and Management

The successful delivery of sustainable and timely employment and housing growth is dependent on strong co-ordination, management and governance. The current governance and support arrangements are based around a voluntary partnership arrangement which has evolved and strengthened over time. The current structure is set out in Table 18-1.

Table 18-1: Greater Norwich Development Partnership Structure



The GNDP Policy Group

The Greater Norwich Development Partnership Policy Group exercises political leadership of the Greater Norwich Development Partnership. This group is made up of four members from Broadland, Norwich City Council, South Norfolk Council, Norfolk County Council and a member from the Broads Authority. The group is supported in its role by the Director level representation from each Local Authority and a series of advisors who will be seconded into the group when necessary.

The GNDP Directors Group

The Directors are responsible for directing the GNDP Programme on behalf of the authorities and ensuring it meets its objectives. A Director from each of the authorities (Broadland, Norwich, South Norfolk, Norfolk County Council, and The Broads Authority) and Shaping Norfolk's future are members of the group.

The GNDP Implementation Unit

Delivery of the projects within the Growth Programme will be coordinated through the Implementation Unit with strong links into all four Local Authorities.
The Greater Norwich Development Partnership is a successful decision-making, effective body with a proven track record for delivery. Key achievements to date include:

- The establishment of an Implementation unit, supported by officers across the authorities with a number of sub-groups responsible for delivering the growth agenda for The area
- A co-located cross-authority team to deliver the Joint Core Strategy
- Delivery of a major transport infrastructure project as part of delivering the Norwich Area Transport Strategy. This project was completed in time and budget.
- Additional funding obtained to support the growth agenda
- The publication of a number of key studies supporting the delivery of the growth agenda.
- The establishment of a communications strategy including a website dedicated to the growth programme.
- The formation of a Private Sector forum involving local agents, developers and house builders in helping to shape the programme.

A diagnostic analysis of the Partnership by the Planning Advisory Service showed the Partnership to be robust and effective despite a number of changes to key Members and Officers.

The Partnership has commissioned a Greater Norwich Economic Strategy currently at consultation stage. The strategy is being developed working with local businesses and their representatives including the Norfolk Chamber of Commerce.

The GNDP Policy Group recognises the benefits of a formal LDV and will be considering various options once the LGR recommendations are known.

Engaging with Infrastructure Delivery Providers

Although the Implementation Unit has grown and strengthened recently and the Partnership at the Director and Member level is working well, it is generally accepted that more formal arrangements are required to engage and work with the full range of infrastructure delivery providers. This will be particularly important in trying to deliver efficiencies through innovative approaches to service delivery such as co-location or shared services.

Going forward, GNDP should use this infrastructure and funding study as a starting point for discussion with the three LSPs operating in the sub-region to identify if there are any opportunities for them to work together on the growth agenda and take a lead on specific infrastructure themes within the plan.

19 Recommendations/Next Steps

19.1 Infrastructure Planning

- GNDP should use the findings of this study and work with service providers to identify innovative ways to further reduce the costs of infrastructure including more co-location, changes in service provision so that dependence on actual facilities is reduced and expansion or intensification of existing facilities.

- Particular attention should be given to Education, Potable Water & Open Space as these infrastructure themes offer the greatest potential for cost saving. Intensive work should undertaken in the short term to develop delivery solutions that are closer to the 'best case' cost scenarios set out in this report.

- GNDP should establish a formalised way of working with infrastructure providers to review and update the information contained within this report on a regular basis making it able to respond quickly and easily to changes in growth trajectories or local or national political priorities. As part of managing the growth agenda the recommendations should be monitored and updated when new information becomes available or as external factors change.

- GNDP should take the lead role and be seen as the organisation that provides accurate and current information about development progress against the housing and employment growth trajectories allowing infrastructure providers to plan for and fund the delivery of infrastructure in a timely and responsive manner.

- In some cases local planning authority policy decisions have a significant impact on the cost of delivery of infrastructure, e.g. provision of Open Space in South Norfolk. In these cases a review of policy may be necessary make the delivery of the infrastructure possible.

19.2 Funding and implementation Strategy

- GNDP should develop a funding strategy which includes an action plan on how to maximise the broad range of funding opportunities included in this report. This will need to consider the amount and timing of funding that is required taking into account the timescales for delivering the infrastructure. The strategy should have short term objectives which include identifying a range of actions to maximise existing grant fund sources and the potential of the HCA. The strategy should include medium to long term objectives which allow GNDP to be ready to emerging funding sources such as TIF by having the appropriate management and governance arrangements in place.

19.3 Maximising Developer Contributions

- GNDP should establish a working group with representatives from the County Council and the three districts to review and explore the issues and options relating to the introduction of a development tariff set out in this report. This should include obtaining legal advice on the options, particularly in terms of their compliance with current planning policy guidance.

- The working group should develop a draft development plan document (Supplementary Planning Document to the Joint Core Strategy) setting out the tariff policy, which will need to be consulted upon with the public, landowners and developers.

- Going forward GNDP should seek legal advice on the approach taken to setting the tariff rate options as to how it could be applied and how best to consult with developers, landowners and the general public on the proposed tariff policy.

19.4 Consideration of Draft CIL Regulations Guidance

On July 30th DCLG issued more detailed guidance on the introduction of the CIL regulations, which are due to come into force in April 2010. The majority of this report was written prior to this guidance being issued. However the guidance raises a number of issues, which need to be borne in mind when considering establishing a CIL policy. A consultation exercise is currently underway, which is due to finish on October 23rd. DCLG intend to publish revised regulations in early 2010 taking into account the feedback obtained during the consultation process, at which time it should become clearer how CIL will work in practice.

The guidance has changed the context within which this report has been written, which has implications in terms of its findings and conclusions.

1. Setting the tariff rate

The guidance explains that the tariff needs to be set at a level that is viable for most developments within the policy area, and that the tariff will be mandatory. Whilst our approach takes viability into account, we have tried to assess the potential maximum level of tariff that could be achieved by applying the highest sales vales we identified through our market research into our financial appraisals. This was on the basis that the Charging Authority could then set the tariff at the highest level, but then negotiate on individual schemes to take site specific viability issues into account (in a similar way to the practice for agreeing affordable housing provision).

However the guidance makes clear that CIL will be mandatory and that negotiation will not be permitted (except possibly in exceptional circumstances). This will no doubt be a key issue during the consultation process. However the implications of this are that the tariff may need to be set at a lower level in order to ensure that most schemes can afford to pay it. The downside is that there may be schemes, which could afford to pay more and do not have to do so. This was the logic behind our approach of setting the tariff at the maximum level in order to try to avoid this. However given the current guidance a different approach to calculating tariff may be required, for example based on average sales values for an area as opposed to maximum values. More detailed consideration may also need to be given to assessing the implications of developing on brownfield land, which will

be affected by issues such as contamination and existing use values. This is a particular issue for Norwich as our report shows a wide range of existing use values in this area. In addition a high proportion of development is delivered on Brownfield land.

2. Variable rate

Our approach involved assessing viability based on two different market conditions, i.e. strong and weak markets. The rationale behind this was that the tariff would need to reflect different market conditions in order to ensure development remained viable. This could be achieved for example by implementing a variable rate over time, which is an approach that has been adopted by a number of authorities in their tariff policies, for example the London Thames Gateway Development Corporation. However although the guidance allows for setting a variable rate geographically, it does not allow the policy to adopt a variable rate over time. You cannot for example charge £1,000 per unit in year 1, £2,000 in year 2, £3,000 in year 3 and so on. Therefore in order to establish a CIL rate that would remain viable through a range of economic cycles assessing viability based on taking an average of the costs and values that prevailed over a number of years may be appropriate.

As mentioned in the previous paragraph the CIL rate can vary geographically to reflect different market conditions. In our report we identify a number of options for this, i.e. by growth area, by market area, or by district. However this analysis was carried out in the context of the existing circular 05/05, as our understanding was that the introduction of CIL had been delayed. However it appears that CIL will be coming into force in April 2010. Given the flexibility to charge CIL for strategic infrastructure, and the removal of the requirement for contributions to link directly to the impact of development, this alters the context of our analysis of the options for setting a variable tariff rate geographically. CIL paves the way for charging a tariff on a much wider geographic scale. Developers will not be able to challenge the policy on the basis that the contributions do not directly relate to their development, providing it can be clearly demonstrated that infrastructure is needed across the policy area to support all development within that area.

3. CIL vs Planning Obligations

CIL is optional. The intention is for Planning obligations and CIL to co-exist, but each having their own discreet purposes. Planning obligations would be limited to what is necessary in order to make a development acceptable in planning policy terms (based on the tests in Circular 05/05), with CIL contributions being sought for general infrastructure across the policy area. The Government does not propose that planning obligations should be deducted from CIL liabilities. However given the mandatory nature of CIL the only means of enabling site specific viability issues to be taken into account in agreeing the level of contributions that can be secured from a development, is through flexibility in respect of planning obligations, such as affordable housing. Therefore any assessment of affordable housing policy needs to take into account the level of contributions that will be sought through CIL and vice versa. Our analysis does this, particularly in terms of assessing the impact of housing grant on viability. However given the lack of flexibility in relation to CIL, and the requirement to ensure it is viable for most developments, consideration needs to be given as to whether you assume housing grant is available or not when setting the CIL rate. The availability of housing grant in the medium term is uncertain, particularly given the pressure on central government funding. In order to ensure that the CIL rate is viable for most schemes a more prudent approach may be to assume no housing grant is available when assessing viability.

4. Summary

This is a complex issue. At present there are more questions than answers. However if CIL is to be mandatory with no flexibility to negotiate to reflect site specific viability issues, this is likely to require a different approach to assessing viability. Value and cost assumptions adopted in the financial appraisals may need to be reviewed in order to calculate a tariff that is viable for most schemes across a wide geographical area and longer timescale. The situation should become clearer early next year once the consultation process has been completed and the DCLG issue revised regulations and guidance.

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