


Greater Norwich Infrastructure Needs & Funding Study

Final Report: Appendix B

Key Assumptions Paper

October 2009



Greater Norwich Infrastructure & Funding Study

Key Assumptions Paper
June 2009

Context

To determine the infrastructure required to enable the growth set out in the Joint Core Strategy, it is essential that there are an agreed set of key assumptions about how the impacts of that growth on the various elements of infrastructure should be modelled. In addition, we have elaborated our approach to determining developer contributions and implications of introducing a Community Infrastructure Levy (CIL).

The objective of this paper is to allow the client group to review and agree the key assumptions and approach before we commence the modelling. This paper includes the key assumptions which will form the basis of the infrastructure assessment including:

- housing and employment growth locations
- the phasing of housing and employment growth
- housing mix and tenure
- the extent of the study area and demographic projections
- the methodology or information we propose to use for identifying the various elements of infrastructure
- the approach to determining the potential levels of developer contribution

The content of this paper has been developed following a review of the first EDAW infrastructure study (January 2008), new information supplied by the GNDP since the beginning of this study in December 2008 and through a series of one to one interviews and meetings with key infrastructure and service providers and stakeholders in Norwich in February 2009 (See Appendix A).

When reviewing the content of this paper we would ask you consider the following questions:

- Are the key assumptions correct?
- Are the proposed approaches to determining the various levels of infrastructure acceptable?
- Is the proposed approach to determining developer contributions acceptable?
- Does the scope sufficiently cover the issues associated with the implementation of CIL?
- Do you think there are any gaps in the assessment?
- Are there any key pieces of information of people we need to still need to see?

Further specific questions are included in the report and we have provided a response sheet for you to respond to them.

Once the client group have approved the key assumptions set out in this paper EDAW will commence the modelling exercise and present the findings at an Infrastructure Funding & Delivery Workshop in April. In addition to assessing the infrastructure requirements EDAW will be exploring the current and potential governance arrangements for delivery growth. A separate workshop looking at the governance issues will take place at the beginning of April.

Links to the Previous Study

This study follows on from the *Norwich Growth Area – Infrastructure Need 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. The study was based on two hypothetical growth options which were developed by the GNDP. 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 below. These trajectories are based on actual housing allocations, as opposed to hypothetical scenarios.

Housing Growth

In order to determine the overall scale and spatial allocation of infrastructure across Greater Norwich it is necessary to agree a set of housing assumptions which provide, where possible, housing projections on a site by site basis. The table below identifies the housing trajectories which will be adopted throughout this study. A total of 49,389 dwellings have been completed, committed or allocated. However, a total of 12,000 homes remains to be determined; reflecting the RSS review, which increased the housing target by a further 2,000 dwellings, and the further target of delivering an additional 10,000 dwellings between 2026 to 2031

Local infrastructure requirements will be determined on the basis of committed and allocated dwellings. However, infrastructure modelled at the district or Greater Norwich level will take account of the 12,000 unallocated dwellings.

Table 1 illustrates the housing trajectories which will be considered by this study.

Table 1: Greater Norwich Housing Allocation and Commitments

	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Broadland													
Rackheath Eco-Community				115	230	230	230	230	230	230	230	230	230
Sprowston Fringe (inside NDR)							125	225	350	350	350	350	350
Additional smaller sites around Broadland NPA							170	170	170	170	170	170	170
Additional sites around rural Broadland							55	55	54	54	54	54	54
Broadland Urban Commitments	186	183	312	281	228	194	147	147	147	147	57	0	0
Broadland Rural Commitments	104	109	103	133	114	33	33	33	0	0	0	0	0
Broadland Urban Windfall	0	0	0	0	0	60	60	60	60	60	60	60	60
Broadland Rural Windfall	0	0	0	0	0	75	75	75	75	75	75	75	75
Broadland NPA Post 2026: NE Sector													
Broadland NPA Post 2026: Elsewhere													
Broadland Rural Post 2026													
Broadland RSS Review	29	29	29	29	29	29	29	29	29	29	29	29	29
Broadland Total	319	321	444	558	601	621	924	1,024	1,115	1,115	1,025	968	968
Norwich													
Norwich							250	250	250	250	250	250	250
Norwich Commitments	564	464	611	669	933	789	516	396	375	275	0	0	0
Norwich Windfall	0	0	0	0	0	160	160	160	160	160	160	160	160
Norwich Post 2026													
Norwich RSS Review	29	29	29	29	29	29	29	29	29	29	29	29	29
Norwich Total	593	493	640	698	962	978	955	835	814	714	439	439	439
South Norfolk													
Wymondham							185	185	185	185	185	185	185
Long Stratton										50	140	230	230
Hethersett							50	90	175	175	175	175	100
Cringleford								50	100	125	125	125	125
Easton							50	90	175	175	175	175	100
Additional smaller sites around South Norfolk NPA							150	150	150	150	150	150	150
Additional sites around rural South Norfolk							81	81	81	81	81	81	81
Additional urban capacity in South Norfolk							6	6	6	6	6	5	5
South Norfolk Urban Commitments	606	742	701	637	590	435	260	155	30	0	0	0	0
South Norfolk Rural Commitments	341	173	110	211	178	180	97	38	0	0	0	0	0
South Norfolk Urban Windfall	0	0	0	0	0	74	74	74	74	74	74	74	74
South Norfolk Rural Windfall	0	0	0	0	0	96	96	96	96	96	96	96	96
South Norfolk NPA Post 2026													
South Norfolk Rural Post 2026													
South Norfolk Review	29	29	29	29	29	29	29	29	29	29	29	29	29
South Norfolk Total	976	944	840	877	797	814	1,078	1,044	1,101	1,146	1,236	1,325	1,175
Grand Total	1,888	1,758	1,924	2,133	2,360	2,413	2,957	2,903	3,030	2,975	2,700	2,732	2,582

	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	Total (2008-31)
Broadland											
Rackheath Eco-Community	230	230	230	230	230	65					3,400
Sprowston Fringe (inside NDR)	350	350	350	350	350						3,850
Additional smaller sites around Broadland NPA	170	170	170	170	130						2,000
Additional sites around rural Broadland	54	54	54	54	54						650
Broadland Urban Commitments	0	0	0	0	0	0	0	0	0	0	2,029
Broadland Rural Commitments	0	0	0	0	0	0	0	0	0	0	662
Broadland Urban Windfall	60	60	60	60	60	60	60	60	60	60	1,080
Broadland Rural Windfall	75	75	75	75	75	75	75	75	75	75	1,350
Broadland NPA Post 2026: NE Sector						600	600	600	600	600	3,000
Broadland NPA Post 2026: Elsewhere						150	150	150	150	150	750
Broadland Rural Post 2026						80	80	80	80	80	400
Broadland RSS Review	29	29	29	29	29	29	29	29	29	29	667
Broadland Total	968	968	968	968	928	1,059	994	994	994	994	19,838
Norwich											
Norwich	250	250	250	250	250						3,000
Norwich Commitments	0	0	0	0	0	0	0	0	0	0	5,592
Norwich Windfall	160	160	160	160	160	160	160	160	160	160	2,880
Norwich Post 2026						250	250	250	250	250	1,250
Norwich RSS Review	29	29	29	29	29	29	29	29	29	29	667
Norwich Total	439	439	439	439	439	439	439	439	439	439	13,389
South Norfolk											
Wymondham	185	185	185	185	165						2,200
Long Stratton	230	230	230	230	230						1,800
Hethersett	60										1,000
Cringleford	125	125	125	125	50						1,200
Easton	60										1,000
Additional smaller sites around South Norfolk NPA	150	150	150	150	150						1,800
Additional sites around rural South Norfolk	81	81	81	80	80						970
Additional urban capacity in South Norfolk	5	5	5	5	5						65
South Norfolk Urban Commitments	0	0	0	0	0	0	0	0	0	0	4,156
South Norfolk Rural Commitments	0	0	0	0	0	0	0	0	0	0	1,328
South Norfolk Urban Windfall	74	74	74	74	74	74	74	74	74	74	1,332
South Norfolk Rural Windfall	96	96	96	96	96	96	96	96	96	96	1,728
South Norfolk NPA Post 2026						800	800	800	800	800	4,000
South Norfolk Rural Post 2026						120	120	120	120	120	600
South Norfolk Review	29	29	29	29	29	29	29	29	29	28	666
South Norfolk Total	1,095	975	975	974	879	1,119	1,119	1,119	1,119	1,118	23,845
Grand Total	2,502	2,382	2,382	2,381	2,246	2,617	2,552	2,552	2,552	2,551	57,072

Source: Greater Norwich Development Partnership

Housing Tenure Mix

The social infrastructure requirements are driven by the population estimates, which are in turn affected by the housing tenure and size mix.

The Joint Core Strategy sets a target of 40% affordable housing to be applied to all sites of five units or more and for the purposes of this study, this threshold will be applied to all developments. 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 provided below is derived from the *Greater Norwich Housing Partnership Housing Review 2008-11* 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.

Table 2: Housing Tenure Mix Assumptions

	Proportion of Total
Private Housing	60%
Affordable Housing	40%
<i>of which:</i>	
<i>Affordable Housing: Social Rented</i>	70%
<i>Affordable Housing: Intermediate</i>	30%

Sources: *Joint Core Strategy, Public Consultation, Regulation 25*
Greater Norwich Housing Partnership Housing Review, 2008-11

Housing Size Mix

The housing size mix will vary across each of the three districts in accordance with varying need. GNDP are to supply the appropriate data for each of the districts, which will then populate the table below.

Providing a robust estimate of the proportion of flats is particularly important as this will affect the Norfolk County Council child yield calculations, which are used to identify education requirements across the three districts.

The housing mix, by district and housing tenure is provided in the tables below.

Table 3-1 Assumed Housing Size Mix: South Norfolk

	Flats			Houses				Total
	1	2	3	1	2	3	4+	
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%

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.

Table3-2: Assumed Housing Size Mix: Norwich

	Flats			Houses				Total
	1	2	3	1	2	3	4+	
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%

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 3-3: Assumed Housing Size Mix: Broadland

	Flats			Houses				Total
	1	2	3	1	2	3	4+	
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%

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 and will inform the population projections that determine the demand for social infrastructure.

Housing Trajectory Contact:

Ruth Carey, GNDP

Employment Projections

The population growth associated with the housing trajectories will increase the requirement for jobs. The extent to which those jobs are provided within Greater Norfolk and the distribution of those jobs within Greater Norfolk will affect commuting patterns sub-regional commuting patterns and the requirements for transport infrastructure. Concentrations of employment may also increase influence the requirement for utilities infrastructure.

The Greater Norwich Employment Growth and Sites and Premises Study is based on the following three employment scenarios:

- **Baseline Scenario:** an employment projection which does not take account of possible constraints on housing or infrastructure development
- **RSS Dwelling Scenario:** as employment projection which assumes that RSS targets are met, but no further dwellings can be constructed
- **Low Growth Scenario:** a projection based on a more pessimistic economic future for Greater Norwich, including significant job losses in the financial sector, a faster rate of decline in manufacturing, lower rates of job creation in public administration, and overall job losses in tradable business services.

The headline results of each employment growth scenario are laid out in the table below.

Table 3: Total Employment Change, 2001-21

	Employees
Baseline Scenario	44,500
RSS Dwelling Led Scenario	39,700
Lower Growth Scenario	18,700

Source: Greater Norwich Employment Growth and Sites & Premises Study

Obviously, due to the economic recession employment is declining nationally and is almost certain to decline 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 the lost output.

After discussions with Norwich City Council, and in light of the fact that if it not possible to accurately predict how the Norwich (or indeed the UK) will perform once the economy enters a recovery, it has been agreed that this study will adopt the Baseline Scenario. This baseline scenario provides the highest level of employment growth and meeting the infrastructure requirements of this scenario will ensure that insufficient provision of appropriate infrastructure does not constrain the growth of the local employment over the next two decades. 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.

Forecasting employment on a lower trajectory may result in an insufficient provision of infrastructure with the potential to constrain growth across the three districts. Furthermore, 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.

One shortfall of the employment trajectories presented in the Employment Growth and Sites and Premises study is that they only run to 2026, where as the housing forecast are to 2031. In the absence of more detailed information and in light of the difficulties in providing reliable employment

forecasts over the long-term 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.

Table 4: Baseline Employment Projections

Baseline	2001	2002	2003	2004	2005	2006	2007	2008	2010	2017	2021	2026	2031	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	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	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	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	42.0

Source: Greater Norwich Employment Growth and Sites & Premises Study

GNDP have also provided assumptions concerning the distribution and phasing of employment land across the GNDP area, which are provided in the following table.

Table 5: Employment Land Projections

		2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Norwich Research Park	B1				5,156	5,156	5,156	5,156	5,156	5,156	5,156	5,156	5,156	5,156
	B2													
	B8													
	Total	0	0	0	5,156	5,156	5,156	5,156	5,156	5,156	5,156	5,156	5,156	5,156
City Centre	B1	5,556	5,556	5,556	5,556	5,556	5,556	5,556	5,556	5,556	5,556	5,556	5,556	5,556
	B2													
	B8													
	Total	5,556	5,556	5,556	5,556	5,556	5,556	5,556	5,556	5,556	5,556	5,556	5,556	5,556
Norwich Airport Business Park	B1							938	938	938	938	938	938	938
	B2							1,500	1,500	1,500	1,500	1,500	1,500	1,500
	B8							563	563	563	563	563	563	563
	Total	0	0	0	0	0	0	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Broadland Business Park	B1			1,830	1,830	1,830	1,830	1,830	1,830	1,830	1,830	1,830	1,830	1,830
	B2													
	B8			1,098	1,098	1,098	1,098	1,098	1,098	1,098	1,098	1,098	1,098	1,098
	Total	0	0	2,929	2,929	2,929	2,929	2,929	2,929	2,929	2,929	2,929	2,929	2,929
Longwater	B1	245	245	245	245	245	245	245	245	245	245	245	245	245
	B2	391	391	391	391	391	391	391	391	391	391	391	391	391
	B8	147	147	147	147	147	147	147	147	147	147	147	147	147
	Total	783	783	783	783	783	783	783	783	783	783	783	783	783
Hethel	B1				625	625	625	625	625	625	625	625	625	625
	B2				1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
	B8				375	375	375	375	375	375	375	375	375	375
	Total	0	0	0	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Smaller scale employment sites	B1	1,507	1,507	1,507	1,507	1,507	1,507	1,507	1,507	1,507	1,507	1,507	1,507	1,507
	B2	536	536	536	536	536	536	536	536	536	536	536	536	536
	B8	904	904	904	904	904	904	904	904	904	904	904	904	904
	Total	2,946	2,946	2,946	2,946	2,946	2,946	2,946	2,946	2,946	2,946	2,946	2,946	2,946
Wymondham	B1	734	734	734	734	734	734	734	734	734	734	734	734	734
	B2	261	261	261	261	261	261	261	261	261	261	261	261	261
	B8	440	440	440	440	440	440	440	440	440	440	440	440	440
	Total	1,435	1,435	1,435	1,435	1,435	1,435	1,435	1,435	1,435	1,435	1,435	1,435	1,435
Rackheath	B1							781	781	781	781	781	781	781
	B2							1,250	1,250	1,250	1,250	1,250	1,250	1,250
	B8							469	469	469	469	469	469	469
	Total	0	0	0	0	0	0	2,500	2,500	2,500	2,500	2,500	2,500	2,500
Grand Total	B1	8,041	8,041	9,871	15,652	15,652	15,652	17,371	17,371	17,371	17,371	17,371	17,371	17,371
	B2	1,188	1,188	1,188	2,188	2,188	2,188	4,938	4,938	4,938	4,938	4,938	4,938	4,938
	B8	1,491	1,491	2,589	2,964	2,964	2,964	3,995	3,995	3,995	3,995	3,995	3,995	3,995
	Total	10,719	10,719	13,648	20,804	20,804	20,804	26,304	26,304	26,304	26,304	26,304	26,304	26,304

		2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	Total
Norwich Research Park	B1	5,156	5,156	5,156	5,156	5,156	5,156	5,156	5,156	5,156	5,156	51,563
	B2											0
	B8											0
	Total	5,156	5,156	5,156	5,156	5,156	5,156	5,156	5,156	5,156	5,156	51,563
City Centre	B1	5,556	5,556	5,556	5,556	5,556	5,556	5,556	5,556	5,556	5,556	72,222
	B2											0
	B8											0
	Total	5,556	5,556	5,556	5,556	5,556	5,556	5,556	5,556	5,556	5,556	72,222
Norwich Airport Business Park	B1	938	938	938	938	938	938	938	938	938	938	6,563
	B2	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	10,500
	B8	563	563	563	563	563	563	563	563	563	563	3,938
	Total	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	21,000
Broadland Business Park	B1	1,830	1,830	1,830	1,830	1,830	1,830	1,830	1,830	1,830	1,830	20,134
	B2											0
	B8	1,098	1,098	1,098	1,098	1,098	1,098	1,098	1,098	1,098	1,098	12,080
	Total	2,929	2,929	2,929	2,929	2,929	2,929	2,929	2,929	2,929	2,929	32,214
Longwater	B1	245	245	245	245	245	245	245	245	245	245	3,179
	B2	391	391	391	391	391	391	391	391	391	391	5,087
	B8	147	147	147	147	147	147	147	147	147	147	1,908
	Total	783	783	783	783	783	783	783	783	783	783	10,174
Hethel	B1	625	625	625	625	625	625	625	625	625	625	6,250
	B2	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	10,000
	B8	375	375	375	375	375	375	375	375	375	375	3,750
	Total	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	20,000
Smaller scale employment sites	B1	1,507	1,507	1,507	1,507	1,507	1,507	1,507	1,507	1,507	1,507	19,587
	B2	536	536	536	536	536	536	536	536	536	536	6,964
	B8	904	904	904	904	904	904	904	904	904	904	11,752
	Total	2,946	2,946	2,946	2,946	2,946	2,946	2,946	2,946	2,946	2,946	38,304
Wymondham	B1	734	734	734	734	734	734	734	734	734	734	9,538
	B2	261	261	261	261	261	261	261	261	261	261	3,391
	B8	440	440	440	440	440	440	440	440	440	440	5,723
	Total	1,435	1,435	1,435	1,435	1,435	1,435	1,435	1,435	1,435	1,435	18,652
Rackheath	B1	781	781	781	781	781	781	781	781	781	781	5,469
	B2	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	8,750
	B8	469	469	469	469	469	469	469	469	469	469	3,281
	Total	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	17,500
Grand Total	B1	17,371	17,371	17,371	17,371	17,371	17,371	17,371	17,371	17,371	17,371	194,504
	B2	4,938	4,938	4,938	4,938	4,938	4,938	4,938	4,938	4,938	4,938	44,693
	B8	3,995	3,995	3,995	3,995	3,995	3,995	3,995	3,995	3,995	3,995	42,432
	Total	26,304	26,304	26,304	26,304	26,304	26,304	26,304	26,304	26,304	26,304	281,629

Source: Greater Norwich Development Partnership

Employment / Economic Development Contacts:

Sharon Quantrell

Phil Morris

Social Infrastructure Assumptions

Education Provision

Existing Demand

In order to determine what additional educational facilities are required to meet the housing growth, it is first necessary to map existing levels of under and over provision. This will allow us to identify areas where:

- Existing capacity may be used to meet some or all of the local increase in demand
- Current levels of over-capacity require that any new development is associated with the expansion of local facilities

This will require access to the following information, which are being provided by Norfolk County Council:

- The existing educational facilities within the study area (in a GIS compatible format)
- Current Numbers on Role (NOR) by facility
- Existing capacity by facility

Projected Demand

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 7 shows the multiplier used to generate the number of pupils that are likely to arise from the development of 100 dwellings.

Table 6: 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	Sixth Form	2.8
Total			50.6

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 child multiplier to the proposed housing growth it has been possible to derive school age population projections associated with housing growth to 2031.

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 will be set out for comparison.

Facilities Equivalent

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 7.2. 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 8 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 7: Education Facilities Equivalence

Facility Type	Capacity Threshold	Notes
Nursery	60 places per standard nursery	
Primary School	210 places per Form Entry (FE)	The preferred size primary school is 2FE (420 places) or 3FE (630 places)
Secondary Schools	150 places per FE	The preferred size for a secondary school is between 6 FE (900 places) and 10FE (1500 places)

Source: Norfolk County Council Planning Obligations Standards, March 2008

Further and Higher Education

The study will be able to model the likely number of pupils aged 16-19 that require further education places as the Government's strategy for compulsory education for this age range is phased in. However, as the range of academic and vocational options available to students is broad, predicting capital costs is likely to be difficult. In order to incorporate further education into this study, the GNDP will need to develop assumptions as to the proportion of 16-19 going into education or training will require additional capital investment.

Higher education requirements resulting from growth are not being taken into consideration in this study as student numbers are not directly related to growth. If there are any new higher education facilities that will have infrastructure implications that are known, these could be fed into the study.

Education Contact

Helen Bates, Norfolk County Council

Healthcare

Existing Demand

EDAW will map the existing provision of GPs and Dentists surgeries to identify how the distribution of existing facilities maps against the proposed growth locations. In line with the approach for identifying education facilities EDAW will seek to identify areas of under and over capacity, however the variation of GP list sizes and the requirement for healthcare among the local population requires this is undertaken on a more qualitative basis. EDAW will liaise with officers within the County Council and local PCT to identify areas where existing services are oversubscribed or where there may be existing provision that can cater for some of the increased demand.

Projected Demand

The demand for healthcare facilities will vary according to a range of local factors, including the age and overall health of the local population and accessibility issues in more rural areas. Population benchmarks will provide a good indication of the appropriate level of provision, however the nature of healthcare means that there will be a greater variation in healthcare requirements than there are for education facilities.

EDAW will liaise with local officers within the County Council and local PCT to discuss the most appropriate local benchmarks. However, if it is not possible to make such local adjustments, EDAW will adopt the following standards based on national benchmarks and existing regional provision:

Facility Type	Capacity Threshold	Notes
GPs	1,800 people per GP	DoH / NHS Standard
Dentists	2,000 people per dentist	School for Health, University of Bath, 2004
Acute Hospital Beds	664 people per bed	East of England Strategic Health Authority Area: Population / Available Beds
Other Beds: Geriatric	361 people of retirement age per bed	
Other Beds: Maternity	7,325 per bed	
Other Beds: Mental Illness	2,150 per bed	
Other Beds: Learning Disability	12,397 per bed	

In the above table the provision of hospital beds are based on regional standards, i.e. the ratio of the regional population to available beds. A regional approach has been adopted as patients may move between sub-regions for specialist treatment, and the provision of beds within a smaller PCT area may not be truly representative of the services accessed by its residents. This approach will ensure that the housing additional demand generated by the housing growth does not place additional strain on local facilities. However, if a local under or over provision is identified, it may be appropriate to adjust the ratio accordingly.

Healthcare Contact

Graham Copsey, Norfolk NHS

Sports and Community Facilities

Sports Facilities

The Sport England facilities calculator can be used to determine the existing level of sports provision within a local authority. By applying a weighted average of the ratio of existing provision to population across the three districts, it is possible to determine what level of sports facilities are required to ensure that the housing growth does not place additional pressure on the existing facilities.

Swimming Pools

	Per 1,000 People:
Swimming pool lanes	0.187
Sports hall courts	0.279

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. EDAW will be seeking to revise these standards to reflect local conditions through liaising with the relevant officers within the County Council.

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

Both libraries and community facilities are assumed to have a minimum size of 300 sq m; however where demand is insufficient for two discrete facilities it may be appropriate to provide integrated community and library facilities.

Sport and Community Facilities Contacts:

To be confirmed

Emergency Services

The following police and emergency services requirements would maintain the average level of provision, measured at the Norfolk County level.

Police

	Existing population per unit
Police officers	528

Source: ONS (Norfolk County Average)

Fire and Rescue

		Existing population per unit
Staff required to maintain County Average	Whole time	2,783
	part time / retained	1,574
Appliances (front line and reserve pumps) required to maintain Borough Average		12,736
Stations to maintain Borough Average		20,502

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

Ambulance Service

	Population per unit
Persons per additional call	8

Source: East of England Ambulance Service NHS Trust

In reality, except for areas of significant population growth, the requirement for fire stations and ambulance facilities will depend on whether the services could meet their statutory response times to new development sites from its existing premises.

Further considerations

A number of social infrastructure requirements are compatible for co-location with one another (i.e. healthcare provision), and potentially other infrastructure requirements (i.e. sporting facilities and open/green space), with associated cost efficiencies. Opportunities for co-location will be explored as part of the delivery options to be undertaken once the need assessment has been completed.

Green infrastructure and open space assumptions

Background

Green infrastructure and open space forms an important component of the spatial vision and objectives of the draft Joint Core Strategy, with reference occurring in both location specific and cross-cutting policies.

Within the 2007 EDAW Infrastructure Need and Funding Study, open space requirements associated with two growth scenarios were modelled. Although the overarching findings of the report still stand, modification to the preferred option will require reassessment of specific open space requirements.

However, green infrastructure in the broader sense (other than that covered by the definition of open space used in the 2007 study) was not covered by the Infrastructure Need and Funding Study. Norfolk County Council's Green Infrastructure Strategy (2007) and subsequent work will provide an important starting point in assessing the green infrastructure demand resulting from proposed growth.

The EDAW study team met with Phil Bennett-Lloyd on 10/03/09 to discuss the approach to consideration of green infrastructure. Further details are provided below.

Current situation

Green infrastructure can be multi-functional and will contribute to a wide range of planning objectives. The draft Joint Core Strategy endorses the Green Infrastructure Strategy (2007) which identifies a provisional list of green infrastructure projects that provides '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 with a draft available June 2009, although work in progress may be able to feed into this study. As a guiding, overarching principle this work is considering a range of 10-30% green infrastructure for land within a development footprint. These figures are intended solely to serve as a guide at this stage. The national guidance for ecotowns is 40%. In addition, Natural England's Access to Natural Green Space standards provides a general benchmark to the provision of accessible greenspace.

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.

Open Space Standards

Open space standards currently set out in policy focus on formal uses, including outdoor sport and play space.

District	Open space standard	Additional details	Source
Broadland	2.4 ha per 1000 population standard / 24m ² per person	<ul style="list-style-type: none"> 8m² children's playing space 16 m² for outdoor sport 	Recreational Open Space SPD (2007)
Norwich	<p>24m² per dwelling, up to a maximum of 20% net site coverage serve residential developments in excess of 40 dwellings or 1 hectare (or 25 dwellings or 0.5 hectare within the city centre)</p> <p>7.5m² play space per child bedspace</p>	<ul style="list-style-type: none"> 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 1000 population standard / 24m ² per person	<ul style="list-style-type: none"> 0 – 14 dwellings – N/A 15 – 24 dwellings – min 400m² children's play space and N/A for older children / adults 24 – 50 dwellings – min 1000m² children's play space and min 2000m² for older children / adults 51 or more dwellings – 17.5m² extra per unit children's play space and 42.5m² extra per unit for older children / adults 	South Norfolk Local Plan's Open Space Policy LEI 7: Open space provision in new development

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 undertaken needs based assessments for a range of open space typologies. The recommendations for provision standards set out in these assessments are included in the table below.

	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

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) and a stand alone figure. The total provision figure includes 'provision for children and young people' or 'outdoor sports and recreation grounds' included in other open space typologies. The stand alone figure is the additional area of provision for children and young people' or 'outdoor sports and recreation grounds' 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' as at present. Consideration of both standards will be included in the study. The total provision figure provides a worst case, if other typologies do not provide any provision for children and young people' or 'outdoor sports and recreation grounds' with the stand alone figure highlighting requirements to maintain the status quo.

Key Green Infrastructure Initiatives

The projects highlighted in the Green Infrastructure Strategy are designed to deliver multi-functional green space, in line with the requirements of East of England Plan policy ENV1, and collectively support the Vision and strategic goals for the Greater Norwich Area as reflected in the four main themes for the Green Infrastructure Strategy:

1. Sustaining and enhancing the character and local distinctiveness of riverscape, landscape and townscapes
2. Making space for wildlife
3. Providing high quality, multi-functional and connected network of accessible greenspace for people
4. Adapting to climate change through sustainable planning and design.

If during the study we can ascertain which of these are directly related to growth, we will include them as a requirement. Until this extra layer of detail can be provided, this study will use the standards for natural and semi natural green space outlined above.

Key assumptions and approach

- The open space provision standards will be used to calculate the demand for the different open space typologies across the GNDP area and plan phases.
- The proportion of the population growth across the GNDP attributable to housing growth at strategic locations will be worked out as a percentage of the total population.
- Understanding what proportion of the population is generated as a result of housing growth will allow us to work out the proportion of the GNDP wide open space requirements that are associated with housing growth.
- Costs associated with providing open space can then be established
- Looking forward, once further work has been completed by the County Council in to the relationship between green infrastructure and growth locations, a greater understanding of what open space required by growth will be delivered by the projects identified in the Green Infrastructure Strategy and what other green infrastructure initiatives are seen integral to supporting growth. This is dependent on further work from Norfolk County Council.
- The cross relationship between green infrastructure and other infrastructure (for example cycle routes and green corridors) will be explored to help identify opportunities for delivery efficiency.

Given that the relationship between growth and the Green Infrastructure Strategy are still being explored, the open space standards currently provide the most robust framework for understanding the infrastructure required as a result of growth in the first instance. Projects identified within the Green Infrastructure Strategy are likely to contribute to this open space provision. In addition the green infrastructure projects will deliver wider benefits and facilities for the GNDP area, the extent to which these are necessitated by, or pre-requisite for growth are yet to be understood fully by the Council. This work is ongoing.

Green Infrastructure Contact:

Phil Bennett-Lloyd
Roger Burroughs

Waste assumptions

Background

Waste infrastructure was not considered in the Norwich Growth Area – Infrastructure Need and Funding Study (2007). The study team met with Mark Allen from Norfolk County Council Waste Management team on the 10/02/09 and has corresponded with Caroline Jeffery, who focuses on waste planning, to discuss the approach to waste management within this study.

Norfolk County Council has responsibility for both waste disposal and waste planning across Norfolk, including the GNDP area. 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, 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 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 however 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. Funds for two contracts have been agreed by Defra which are intended to deliver:

- Contract A will provide a Mechanical and Biological Treatment facility (potentially incorporating anaerobic digestion) with a capacity of 150,000 is currently being procured at Longwater Industrial Estate in Easton / Costessey and this will be in operation by 2011, covering the south-eastern part of the county.
- Contract B is 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 require, along with intention for waste facilities to be delivered through private partnership, this study will not take into consideration the capital costs for waste facilities.

Household Waste Management Centres

Although operationally HWRCs are often run by private partners, the capital cost of establishing and maintaining the centres falls to the County Council.

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 set out in the table below.

HWRC Site	Area (m2)	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 3800m2

Key assumptions and approach

Based on the information above, the total area of HWRC space in the GNDP area is 8390m², 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 district/GNDP wide population growth projections – to establish the total net increase in demand for HWRC space across the three districts.
2. Against the population increase resulting from strategic 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 decrease in population outside of the strategic growth locations.

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 have advised that generally a new facility should be no smaller than 1000m² and ideally around 2500m².

Key delivery partners

Important partners to be included in any consultation related to delivery include:

- Norfolk County Council Waste Operations,

- Waste Partnership & Policy teams,
- District Councils waste departments

Norfolk Waste Partnership is made up of Norfolk County Council, the Waste Disposal Authority (WDA) and seven Waste Collection Authorities (WCAs): Breckland, Broadland, Great Yarmouth, King's Lynn & West Norfolk, North Norfolk, Norwich City and South Norfolk Councils.

For Further Consideration

Energy from waste

Energy from waste is seen as underutilised option for disposal within Norfolk. Waste that is not recycled or composted is therefore almost entirely currently disposed of to landfill. The potential for delivering new energy from waste infrastructure through Contract B and in association with the ecotown proposal will need to be considered in relation meeting renewable energy requirements.

Ecotown

Proposals for Ecotowns, such as the one at Rackheath will need to include sustainable waste and resources plan, covering both domestic and non-domestic waste which sets targets for residual waste levels, recycling levels and landfill diversion, all of which should be substantially more ambitious than the 2007 national Waste Strategy targets for 2020. The plan will have to demonstrate how these targets will be achieved, monitored and maintained and should include consideration of combined heat and power. As such, it is likely that new infrastructure will be delivered through the development of the ecotown. They may well be opportunities for this infrastructure to provide treatment capacity for a catchment wider than just the eco-community.

Utilities Infrastructure Assumptions

Background

The Norwich Growth Area – Infrastructure Need and Funding Study (EDAW, 2007) sets out an assessment of the existing utilities (electricity, gas and water) infrastructure and provides an evaluation of utilities 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. This work will need to be reviewed and updated in order to understand the basic utilities demand resulting from and a pre-requisite to enabling growth.

In addition, Norfolk County Council has commissioned a PPS1 compliant sustainable energy study for the Joint Core Strategy. This will provide further details of the GNDP areas potential to establish a local standard for decentralised and renewable or low carbon energy sources for development and establish a minimum threshold of development if evidence shows this to be necessary. It will assess the viability of achieving high CfSH standards on strategic sites. A draft output of this study is currently with Norfolk County Council to review and may be sufficiently robust for recommendations to be included in this study.

Key assumptions and approach

Utilities work will be undertaken by AECOM (formally Faber Maunsell).

Water

Infrastructure requirements will be informed by the Water Cycle Study. Stage 2a of the study has already been completed by Scott Wilson which identifies broad infrastructure requirements. Stage 2b of the study will refine this work and provide more accurate costs. This is currently underway. As such, the study team will work with Scott Wilson to incorporate the most up-to-date understanding.

Electricity

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.

Gas

National grid will be contacted in relation to provide an understanding of the gas supply requirements.

Key Utilities Contacts

Michael Burrell, Planning Policy Team Leader - 01603 212525 - mikeburrell@norwich.gov.uk
James Bowell, GNDP Project Manager - 01603 430485 - j.bowell@gndp.org.uk

Transport Infrastructure Assumptions

Key Infrastructure Projects

Background Information

The Norwich Growth Area – Infrastructure Need and Funding Study (EDAW, 2007) sets out as 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 was agreed as part of the commission that no further analysis of transport infrastructure would be undertaken by the study team.

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:

- 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 the 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
- Bus Rapid Transit
- Cycle Networks

In light of the above, the study team met with Richard Doleman, Louise Cornell and Mary Richards from Norfolk County Council Planning and Transport team on 11/02/09 to agree the assumptions on which transport infrastructure will be considered in this study.

Key projects identified

Norfolk County Council has identified a range of transport infrastructure projects and estimated costs based on a number of existing studies and emerging thinking relating to the proposed growth scenarios. Key information sources include:

- Norwich Area Transport Strategy + work
- 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

Key infrastructure requirements relating to growth are set out in the table below.

	Transport Infrastructure Requirement	Estimated Cost	Phase
Public Transport			
	City Centre Bus Enhancements	£13,600,000	2011-2021
	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	Widening of rail bridge for bus priority	£10,000,000	?
Long Stratton	BRT Corridor - A140 to City Centre	TBA	TBA
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 Sutton by-pass	£35,000,000	2016
West	Junction improvements - Long Water	£20,000,000	2011-2016
Wymondham	Junction improvements - Thickthorn - including bus priority	£40,000,000	2016
Wymondham	Expand Thickthorn Park and Ride and A11 off slip	£5,000,000	2016
	Local access improvements	£10,000,000	2011-2031
	Village centre enhancements		
Cycling and Walking			
West	Pedestrian / Cycle link to Longwater	£1,500,000	2016
	City Centre public realm enhancement	£11,000,000	2011-2026

Other NATs Interventions			
	BRT A1067	£10,000,000	2021-2026

Source: Norfolk County Council

Public Transport Services

In addition to the proposed physical infrastructure proposed above, there will need to be significant improvements to public transport provision. Work is currently being undertaken to establish the extent of funding required. Further clarification is needed as to what work has been undertaken with service providers to meet demand resulting from housing growth.

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.

Key assumptions and approach

- The projects outlined above are considered to be necessitated by, or a pre-requisite for enabling successful implementation of the preferred growth scenario with the GNDP, as such these projects and cost assumptions will form the basis of the infrastructure modelling.
- A better understanding of additional public transport and cycling infrastructure is required before consideration can be incorporated into the infrastructure modelling.

Key Transport Contact

Richard Dolman – Norfolk County Council

Further considerations

There are potentially a number of cross-cutting themes between transport and the provision of green infrastructure, including coupling cycle routes with green corridors and incorporating SUDs into transport infrastructure projects. Opportunities for where efficiencies from these cross-cutting themes should be explored further.

Sustainability Assumptions

Code for Sustainable Homes

Policy 13 Reducing environmental impact of the draft Joint Core Strategy requires that:

‘To address climate change and promote sustainability, all development will be energy efficient and minimise carbon dioxide emissions, therefore:

- all new housing should match the current Housing Corporation requirements under the Code for Sustainable Homes (to be upgraded over time)’

The Housing Corporation required that grant funded housing met at a minimum Code level 3. The HCA has adopted the Housing Corporations standards for the time being, but is expected to review and develop new ‘quality standards’ in 2011. This is likely to require higher CfSH level compliance, as such it would be prudent to consider referencing CfSH level 4.

Furthermore, there is recognised step change in approach and associated cost between meeting CfSH level 4 and higher standards. The primary driver for this is meeting the more stringent requirements against carbon and water targets. Generally, CfSH level 4 can be reached through improvements to the building envelope, where as higher levels require a more strategic site wide or district approach.

Zero Carbon

The Government has announced its intention for Building Regulations to cover new residential development’s dwelling emission rate being 25% better than target emission rate (baseline) by 2010, 44% better by 2013 and meeting a zero carbon target by 2016. Non-residential development is expected to meet zero carbon targets by 2019. The definition of ‘zero carbon’, proposed is however currently unclear and the DCLG is currently consulting on what form the definition should take. The consultation ‘Definition of Zero Carbon Homes and Non-Domestic Buildings’ (2008) is due to end on 18th March 2009.

One option would be to follow the CfSH and the propose residential Building Regulations correspond to the DER targets set out in CfSH level 3, 4 and 6 respectively (similar topics are covered by BREEAM ratings for non-residential developments). There is however a great deal of debate as to the cost viability of meeting zero carbon through the routes accepted to meet Code level 6. The consultation proposes another options might be that, when on site measures have been exhausted, developer contributions towards larger district schemes that would deliver carbon savings commensurate to that not met by the development to attain net zero carbon.

As mentioned above, in order to meet CfSH levels higher than 4, investment in site wide and district low carbon infrastructure is required. In line with the PPS1 companion on climate Change, locally applicable climate change policy, based on district wide approach to meeting climate change targets that takes into consideration the districts potential for harnessing low carbon infrastructure. Norfolk County Council is currently undertaking a study investigating the implications of PPS1 compliance. This study will establish a local standard for decentralised and renewable or low carbon energy sources for development in the area, and assess the costs associated with such measures against the financial viability of development in the area, advising on sustainable energy solutions that will not reduce the deliverability of development.

A draft of the PPS1 compliant sustainable energy study for the Joint Core Strategy has been provided to Norfolk County Council (Feb 2009) and is currently being review. It is likely that

Rackheath Eco-Community

A proposed 3,400 home eco-community at Rackheath is currently the only 'A' rated settlement, in terms of sustainability, on the Government's Ecotown shortlist. Ecotowns have to meet higher sustainability standards than conventional proposals any additional cost of meeting these standards, based on those set out in the Draft Planning Policy Statement: Eco-towns - Consultation (2008) will be established for proportion of the preferred option being delivered through the development proposed at Rackheath.

Key Assumptions and Approach

- For the purposes of this study it will be assumed that residential properties will be built to CfSH level 4.
- Where possible, low carbon and renewable energy costs associated with development will be drawn from the draft PPS1 compliance study. This will be part of the utilities assessment.
- A sensitivity check will also be carried out for costs against CfSH level 6 to establish a 'worst case scenario' for delivering zero carbon. It should be noted however, that, although there are existing cost assumptions of meeting the CfSH level 6 zero carbon definition, it is likely that definition of zero carbon that is used in the revised Building Regulations will allow contributions to off-site renewables projects and therefore be less cost prohibitive. This is in line with the current zero carbon definition consultation.
- Cost assumptions to meet Ecotown standards will be development in relation to the proportion of the preferred option being delivered through the development proposed at Rackheath.

Infrastructure Funding

Project Costs

Once the infrastructure requirements have been identified under each theme, Gardiner and Theobald will provide a detailed list of project costs. These will be based on recognised standards and the cost of providing similar infrastructure elsewhere and supplemented by local information, where this is available.

EDAW will use its Infrastructure Delivery Model to profile the infrastructure projects over the development period. The profiling of infrastructure projects will be based on the housing trajectories and reflect infrastructure which must be completed prior to the commencement of a housing development, infrastructure which can be delivered alongside housing development, and infrastructure which must be delivered once the local population grows beyond a certain size.

By incorporating the profiling and cost of infrastructure into the delivery model, it is possible to generate cost profiles for the period of development and identify infrastructure costs by area, project, infrastructure theme, or priority classification.

Project Funding

When identifying the infrastructure requirements EDAW will also seek to identify potential funding sources by reviewing existing funding sources and through consultation with delivery providers. EDAW will also use the infrastructure delivery workshop as an opportunity to identify further funding sources.

Once all potential funding sources have been incorporated into the model and profiled on a project-by-project basis, these can be compared with project costs to identify the overall funding shortfall and its profile over time.

The following section sets out the Drivers Jonas' approach to identifying the potential for collecting developer contributions to contribute to any funding shortfall which has been identified.

Developer Contributions

Drivers Jonas will provide advice on the potential maximum level of Developer Contributions that can be applied to new residential and non-residential development within Broadland, Norwich and South Norfolk. The appraisals take into account affordable housing policy, and the effect this policy has on value and in turn the level of CIL tariff that is viable.

Their advice will set out how the levy could be zoned geographically to reflect any differences in market characteristics across the study area.

They will also advise on mechanisms for adjusting the level of CIL and the timing of payments in order to mitigate the risk of stifling development, whilst ensuring CIL contributions are maximised.

Based on the levy rate and the projected level of development, the total tariff contribution that could be achieved will be estimated. This will inform the overall funding strategy to deliver the infrastructure works needed.

In order to establish the potential for capturing land value to fund infrastructure works Drivers Jonas need to understand the characteristics of the local development market. A combination of desk

based and primary market research will be carried out for both residential and non-residential uses to establish:

- Current land values
- Recent development activity
- Pipeline development
- Rental and sales values
- Sales rates for residential schemes

Desk based research will include:

- A review of evidence base reports produced by the Council including, the Housing Market Assessment, Greater Norwich Retail and Town Centres Study, Strategic Land Availability Assessment, and Greater Norwich Employment Growth and Employment Sites and Premises Study
- A search of property transactions identified on the land registry and property research databases over the past two years
- A review of house price tracking websites identifying trends in house prices over the past two years
- A review of recent planning permissions
- Primary research involving talking directly with local sales and letting agents and land buyers. This will also include a two day visit of the area in order to gather information on the developments that are being delivered and marketed, and future development sites.

This will enable Drivers Jonas to build up a detailed understanding of current local market conditions, including supply and demand, and values for a range of uses including residential, office, retail and industrial.

Due to the current economic downturn, the values of most properties have fallen significantly from their peak in the early summer of 2007 and the outlook for all types of property remains uncertain over the short to medium term. As a result, few development schemes, particularly for the larger strategic sites, are currently viable as the cost of delivery (including infrastructure, environmental requirements and affordable housing) outweighs the current value of schemes. As a result the level of CIL that can be charged and ultimately received will be extremely low if not non-existent whilst current economic conditions persist.

However the market and values will recover and this must be taken into consideration when setting CIL policy. Whilst it is impossible to predict future trends in the market with any certainty, Drivers Jonas can look at historic values in order to establish the level of CIL that could be achieved under better market conditions. Drivers Jonas will therefore establish the property values being achieved when they last peaked (i.e. in mid-2007), and the level of CIL that could be charged based on those values.

Financial appraisals

The key to a successful tariff model is that it secures the maximum return for the charging authority, whilst remaining affordable in the marketplace so as not to stifle development. The appraisals therefore aim to show the maximum level of CIL that could be charged, whilst ensuring development remains viable.

The appraisal model works through the following calculation:

Gross Development Value
Less
Cost of Land
Less
Construction cost
Less
Marketing costs
Less
Developer's profit
Equals
Development Surplus/Deficit (available to charge CIL)

The model assumes a single hectare of greenfield land with no abnormal ground conditions, which is developed for either residential or commercial use. It also assumes that CIL is paid on the completion of the scheme (i.e. not as an upfront payment). This is consistent with the approach that the tariff is set at the highest point with the ability to negotiate should site specific circumstances (such as the costs of remediation) make a scheme unviable.

Appraisals are based on a fixed land value, which is established through market research. It is important that when calculating CIL market conditions are reflected as much as possible. This is not a cost based exercise, but one that assesses what CIL could potentially be charged without stifling development. The financial appraisal will assess what developers can potentially afford to pay, not what is needed. The results are likely to show a funding gap, which will need to be met from other funding sources.

In establishing the level of CIL for residential developments the cost of providing affordable housing is taken into consideration, including the impact of housing grant support on viability. However other s.106 costs are not allowed for. Therefore the Development Surplus figure is the sum available for CIL and any other s.106 contributions.

Outputs

Drivers Jonas will produce a report which will be included as a technical appendix to the main report. It will cover the following topics:

1. Market Commentary

In order to understand the assumptions that underpin the appraisals Drivers Jonas will provide a detailed market commentary setting out the findings from the evidence gathered. This will include a general commentary of the property and development market as well as a more detailed analysis of the local area. The local market analysis will include information on:

- Development activity for residential and employment uses

- Sales values/rates being achieved by unit type on new residential developments
- Rental and capital values for employment uses
- Residential and employment land values
- Any pipeline development

2. Tariff Contribution

Drawing on the results of the appraisals Drivers Jonas will advise on the level of CIL that could be supported across the area. This is typically set on a per unit basis for the residential and a per sq m basis for commercial uses.

Drivers Jonas' advice will illustrate how the tariff levels should be adjusted to reflect the different market characteristics of the area. Drivers Jonas will also advise on the potential impact the availability of housing grant to deliver affordable housing has on the level of tariff that could be charged on residential schemes.

Drivers Jonas will also provide an estimate of the total tariff contribution that could be achieved over the period based on the tariff per unit and the projected housing and commercial development that will be delivered. This will inform the overall funding strategy for delivering the necessary infrastructure works.

3. Tariff structure

Drivers Jonas will advise on the options for implementing Tariff. This will include advice on:

- The timing of payments,
- Whether any de minimis thresholds should be applied,
- Whether the levy should vary by housing unit type/size
- Whether a discount should be applied to brownfield sites
- How the levy could be adjusted over time, for example to adjust for inflation or changing market conditions

As part of this exercise Drivers Jonas will review how other authorities have applied a levy for infrastructure works in order to establish any models of best practice that could be adopted for this study area.

Appendix A Meeting / Interview List

Monday 9th February 2009

AM

Joint Core Strategy Team -

Affordable Housing – Mike Burrell

PM

Greater Norwich Development Partnership - Project Steering Group

Demography – Incl. Phil Morris, Wendy Pontin & Ian Coldicut

Tuesday 10th February 2009

Green Infrastructure – Phil Bennett-Lloyd

Waste – Mike Allen

Transport – Richard Dolman, Louise Cornell and Mary Richards