

Greater Norwich Joint Core Strategy

Public Transport Requirements of Growth

Technical Note – Appraisal of Emerging Option, December 2008

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This technical note presents the results of an appraisal of an emerging favoured option for the distribution of housing growth within the Norwich Policy Area (Table 1) using the methodology from Chapter 2 of the Mott MacDonald report 'Greater Norwich Joint Core Strategy – Public Transport Requirements of Growth'.

Table 1: Possible Option

Location	Number of Houses
Norwich	4,000
Broadland smaller site	2,000
North East (Sprowston/Rackheath area)	6,000
Wymondham	2,200
Long Stratton	1,800
Hethersett	1,000
Cringleford	1,200
Easton	1,000
South Norfolk smaller sites	1,800
TOTAL	21,000

This option delivers total housing growth of 21,000 new properties. The trip rates used in the following calculations are the same as those used in previous work, but the total number of peak hour person trips has been adjusted for the new housing total to give figures of 12,823 between 2011 and 2021, and 11,532 between 2021 and 2031.

As the Norwich and Broadland allocations are the same as those appraised in previous work, the focus of this appraisal is on the additional trips generated by the sites within South Norfolk District.

By apportioning the above figures for the overall increase in peak hour person trips for 2011 to 2021, and 2021 to 2031 according to the distribution of housing growth under the new option the level of trip generation for each South Norfolk location can be derived. The results of these calculations and the total number of bus trips based on the current 8% bus mode share are presented in Table 2 below.

Table 2: Geographical Distribution of Additional Trips

Location	Increase in Peak Hour Home-based Person Trips Based on Current Mode Share	
	2011-2021	2021-2031
Norwich	2,442	2,197
Broadland smaller site	1,221	1,098
North East	3,664	3,295
Wymondham	1,343	1,208
Long Stratton	1,099	989
Hethersett	611	549
Cringleford	733	659
Easton	611	549
South Norfolk smaller sites	1,099	988
Total	12,823	11,532
Total Bus Trips (@ 8% modal share)	1,026	923

The EDAW growth infrastructure study proposed increases in bus mode share across the Norwich Policy Area to 13% by 2021 and 15% by 2031. However, it will be necessary to set higher public transport mode share targets for the major growth locations to achieve these revised overall mode shares for the NPA as a whole.

It will be easier to influence travel behaviour in the new growth locations by providing high quality public transport from the outset of development than it will be to change mode choice for journeys within the existing Norwich urban area. The new growth locations should therefore be expected to outperform the existing urban area in terms of their contribution to overall mode share target for the NPA.

As in previous work the initial calculations for the distribution of additional bus trips between the major growth locations are therefore based on bus mode share targets for these areas of 16% by 2021 and 20% by 2031. Table 3 presents the results of these calculations.

Table 3: Geographical Distribution of Additional Bus Trips

	Increase in Peak Hour Home-based Bus Trips Based on Proposed Mode Share Targets for Growth Locations	
Location	2011-2021 (16% Bus Mode Share)	2021-2031 (20% Bus Mode Share)
Norwich	391	439
Broadland smaller site	195	220
North East	586	659
Wymondham	215	242
Long Stratton	176	197
Hethersett	98	110
Cringleford	117	132
Easton	98	110
South Norfolk smaller sites	176	197
Total	2,052	2,306

Using bus mode share targets for the growth areas of 16% by 2021 and 20% by 2031 and the distribution of additional bus trips between the major growth locations set out in Table 3 (excluding the Norwich and Broadland sites and the South Norfolk 'smaller sites'), the service levels and vehicle capacity required to meet the projected level of demand from each location in 2021 and 2031 are presented in Table 4 below.

The following network options involving two of the growth areas on the A11 corridor being served by the same route have also been considered:

- A Wymondham – Norwich via Hethersett service
- A Hethersett – Norwich via Cringleford service

Table 4: Proposed Peak Service Levels in 2021 and 2031

Location	2021				2031			
	Demand (trips per hour)	Frequency (minutes)	Practical Vehicle Capacity	Service Capacity (trips per hour)	Demand (trips per hour)	Frequency (minutes)	Practical Vehicle Capacity	Service Capacity (trips per hour)
Wymondham	215	15	60	240	457	6	52	520
Long Stratton	176	15	52	208	373	7/8	52	416
Hethersett	98	30	52	104	208	15	52	208
Cringleford	117	20	52	156	249	12	52	260
Easton	98	30	52	104	208	15	52	208
Combination Options								
Wymondham & Hethersett	313	10	60	360	665	5	60	720
Hethersett & Cringleford	215	15	60	240	457	6	52	520

 Demand below level required to support a dedicated 'turn up and go' service

Proposed Service Levels for 2021

The proposals for 2021 are based on the use of either 12 metre semi-low floor buses with an absolute maximum capacity of 69 (44 seated plus 25 standing) and a practical capacity of 52 in accordance with the CfIT guidance, or higher capacity 13.5 metre single deck buses with a practical capacity of 60.

The effect of the dispersal of housing growth across a greater number of sites in South Norfolk District relative to all options considered previously is that, on the assumptions made, none of the individual growth locations is projected to generate sufficient peak demand in 2021 to support a dedicated 'turn up and go' service operating every 10 minutes.

The projected level of peak demand from the **Wymondham** growth location in 2021 is below that necessary to support a dedicated 'turn up and go' service operating every 10 minutes, with peak demand only reaching 69% of the capacity of such a service. This level of demand would support a dedicated service operating every 15 minutes.

The projected level of peak demand from the **Long Stratton** growth location in 2021 is also below that necessary to support a dedicated 'turn up and go' service operating every 10 minutes, with peak demand only reaching 56% of the capacity of such a service. This level of demand would support a dedicated service operating every 15 minutes.

The projected level of peak demand from the **Hethersett** growth location in 2021 is sufficient only to support a dedicated service operating every 30 minutes. In practice it is likely that the most effective means of providing for this additional demand would be the extension and enhancement of existing bus services.

The projected level of peak demand from the **Cringleford** growth location in 2021 is sufficient only to support a dedicated service operating every 20 minutes. Alternatively there may be scope to provide a more frequent service by diverting existing bus services operating on Roundhouse Way.

The projected level of peak demand from the **Easton** growth location in 2021 is sufficient only to support a dedicated service operating every 30 minutes. Easton currently has only three buses per hour to Norwich throughout the day, with additional peak services. A feeder service from Easton to the Costessey Park & Ride site might be a cost effective means of delivering a turn up and go service for this area. Otherwise it is likely that the most effective means of providing for this additional demand would be the extension and enhancement of existing bus services.

Combination Options

Assuming it is possible to design a single route to serve both the **Wymondham and Hethersett** growth locations, the projected combined peak demand in 2021 would be just above the threshold required to support a dedicated 'turn up and go' service.

Assuming it is possible to design a single route to serve both the **Hethersett and Cringleford** growth areas, the projected combined peak demand in 2021 is still only sufficient to support a dedicated service operating every 15 minutes.

A holistic approach to the design of a high quality public transport network to serve the A11 corridor between Wymondham and Norwich to incorporate and replace the existing service of four daytime buses per hour on this corridor would have the potential to support two 'turn up and go' services in 2021 as follows:

- Wymondham (growth area) – Wymondham Town Centre – Hethersett (B1172) – Newmarket Road – Norwich City Centre
- Hethersett – Hethersett (growth area) – Cringleford (growth area) – Newmarket Road – Norwich City Centre

There would be potential to link these services with routes serving the North East growth area to create cross-city services on a South West to North East axis.

Proposed Service Levels for 2031

As for 2021, the proposals for 2031 are based on the use of either 12 metre semi-low floor buses with an absolute maximum capacity of 69 (44 seated plus 25 standing) and a practical capacity of 52 in accordance with the CfIT guidance, or higher capacity 13.5 metre single deck buses with a practical capacity of 60.

On the basis of the assumptions made, the **Wymondham** and **Long Stratton** growth locations have the potential to support a 'turn up and go' peak service frequency in 2031.

The projected level of peak demand from the **Hethersett, Cringleford and Easton** growth locations in 2031 remains below the threshold required to support a dedicated 'turn up and go' service for each individual location. Demand from Hethersett and Easton would support dedicated services operating every 15 minutes, with demand from Cringleford sufficient to support a 12 minute interval service.

Key Public Transport Issues

Previous work has concluded that a distribution of housing growth based on a smaller number of larger development sites would be the preferred option from a public transport perspective in order to provide strong market opportunities for high frequency bus services and greater scope for truly Public Transport-Orientated Developments.

The latest emerging option for the distribution of housing growth within South Norfolk District proposes the dispersal of growth across a greater number of smaller sites. Appraisal of this option has shown that none of the growth areas proposed under this option are of sufficient size to individually support a 'turn up and go' bus service in 2021.

There is a further concern with developments of less than 2,000 homes as proposed at Long Stratton, Hethersett, Cringleford and Easton in that these may be too small to effectively implement the concept of Public Transport-Orientated Development, and it will be difficult to achieve a step change between the public transport mode share for the new developments and the existing public transport mode share for travel from these areas to Norwich.

However, if the proposals for development on the A11 corridor are considered collectively, there are a total of 4,400 additional houses proposed for this corridor. If public transport priority access to the individual development sites on this corridor can be provided in a way that enables buses to penetrate a series of developments along the corridor without deviation from a relatively direct route, then there is a potential market that may be just sufficient in size to support the development of a Bus Rapid Transit service, subject to a holistic approach to the design of a high quality public transport network to incorporate and replace the existing service of four daytime buses per hour on this corridor. Increasing the total housing allocation for Wymondham, Hethersett and Cringleford to 5,000 would provide greater comfort regarding the market potential for BRT on this corridor.

If this option is adopted, the market potential on the A140 corridor is insufficient to support the development of a Bus Rapid Transit service on this corridor. We would therefore recommend that public transport improvements associated with the proposed development at Long Stratton are delivered through the extension and enhancement of existing bus services.

The proposed development of 1,000 homes at Easton is of insufficient size to be a driver for radical improvements to public transport, but should be considered in the round with the other planned and committed developments on the Dereham Road corridor. A Bus Rapid Transit service has been proposed for this corridor as part of the current work to refresh NATS. The business case for an incremental extension of a BRT service on the Dereham Road corridor to Easton should be considered within a holistic approach to the design of a high quality public transport network to serve this corridor.

Interventions to Support This Option

As indicated above, an essential intervention to support this option is the provision of public transport priority access to the individual development sites on the A11 corridor in a way that enables buses to penetrate a series of developments along the corridor without deviation from a relatively direct route.

Without more information on the spatial relationships between the growth areas on the A11 corridor and the existing development it is difficult to be prescriptive about the form of these public transport access links. However, assuming that the Cringleford growth area is located between Roundhouse Way and the A47 Southern Bypass, we would propose a new public transport, pedestrian and cycle bridge over the A47 to the north of the Thickthorn interchange to provide a direct link between the Hethersett and Cringleford growth areas and enable buses to avoid delays at Thickthorn.

The masterplanning process for the individual sites on the A11 corridor will need to support an overarching plan for the spatial relationships between these sites and a holistic vision for a high quality public transport network for this corridor.

A continuous bus lane on the A140 from the Harford Park & Ride site to the B1113 junction is proposed as an intervention to support the enhancement of existing bus services on the Norwich – Long Stratton corridor. There is potential to provide an inbound bus lane on Ipswich Road north of the Outer Ring Road but this would be at the expense of the existing on-street parking on this section of Ipswich Road. Alternatively there is also potential to develop Hall Road as a bus priority route in place of Ipswich Road.

The proposal for 1,800 houses spread across smaller sites on the South Norfolk fringe of Norwich risks the dispersal of public transport demand in a way that will not support significant improvements to existing bus services. Potential locations for smaller developments which would facilitate incremental improvements to good existing bus links to Norwich include Mulbarton and Poringland.

Development on smaller sites in South Norfolk which cannot support good conventional public transport services may require expansion of the Harford Park & Ride site or the construction of a new Park & Ride site at Trowse to be brought forward to pull existing demand from the A146/B1332 corridor away from Harford.

Conclusion

The proposal for a total of 4,400 additional houses on the A11 corridor is at the borderline of providing a potential market sufficient in size to support the development of a Bus Rapid Transit service. Increasing the total housing allocation for Wymondham, Hethersett and Cringleford to 5,000 would provide greater comfort regarding the market potential for BRT on this corridor and would strengthen the business case for a BRT scheme.