

Warwickshire County
Council

**Middle Quinton Eco-
town**

Review of Strategic
Transport Assessment

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Transport Assessment

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1 Introduction

Arup have been commissioned by Warwickshire County Council to assist in the various discussions held with the promoters of the Middle Quinton Eco-town and to review the submissions provided to them. This report summarises the outcome of this process, which culminated in submission of a Strategic Transport Assessment Report by the Eco-town promoters to the Department for Communities and Local Government on 30 September 2008. This final document was not reviewed or commented on by Arup prior its submission and therefore this report incorporates observations on the final document.

2 Overview

There remain a number of areas of the Strategic Transport Assessment (STA), particularly regarding the mitigation strategy and its deliverability, which are not fully addressed. Without further information on these areas there can be only be limited confidence in the overall validity of the Movement Strategy because, if the proposed mitigation is not deliverable, many of the assumptions made regarding traffic impact on the highway network will not be valid. In the event that further information is provided and the proposed mitigation strategies are proven to be robust then the STA can be considered to provide an appropriate level and standard of assessment in relation to trip generation, distribution, assignment and modal share which is commensurate with the current stage of development of the Eco-town proposals.

In particular the STA lacks evidence regarding the package of mitigation proposed for Stratford-upon-Avon and the proposals for provision of a guided busway between the development and neighbouring towns lack clarity. Considerable further technical work and assessment is required before the feasibility and deliverability of these proposals can be assessed with confidence. Of note the proposals, which are central to the mitigation strategy require the use of land not in control of the developer and which are currently in use as a recreational cycleway. A summary of the main areas not sufficiently addressed in the STA is provided at the end of this report.

Undertaking the most accurate assessment possible using the level of information available is clearly important. However, in considering the proposals it should be noted that the strategic outcome of the assessment is unlikely to change significantly should the total traffic levels generated by the site vary by +/- approximately 10%.

The objective of an STA is to address issues of principle, identify the broad magnitude and direction of impact and identify the principles of how these impacts can be mitigated. It is recognised and accepted in the STA that further more detailed work will be required before detailed impacts and mitigation proposals can be set out. Should this be compared to the equivalent standard of a full Transport Assessment of sufficient detail to support a conventional Outline or Detailed Planning application a considerably higher level of more detailed work would need to be provided in due course. Notwithstanding this, the STA would be considerably strengthened by the provision of more detailed information at the current stage of assessment.

The Travel Plan framework is critical to the ability to successfully delivery the movement strategy and the proposed framework sets out a comprehensive range of measures. However, there is a lack of substantive information regarding monitoring or strategies should the overall targets not be met. The proposals are for a stretching and ambitious upper limit of 40% car borne mode share. Therefore the issue of applying retrospective measures to address target shortfalls is a key issue which would benefit from further information in order to provide for a more robust Travel Plan.

The STA demonstrates the highest impact from residual traffic (that which left using the highway network once all demand management techniques have been applied) will be experienced in Stratford-upon-Avon. The level of traffic is significant and two possible mitigation strategies are set out. These strategies appear to have the potential to be

successful. However, limited information or analysis is provided in the STA in order that an assessment of whether the impacts of residual traffic can be sufficiently mitigated, or whether the mitigation can actually be delivered. This is an area which requires significant further work before a preferred strategy could be adopted.

3 Trip Generation

The trip generation set out in the STA is based on the national TRICS database. Whilst this may provide a helpful benchmark and an adequate guide for the purposes of the current document, ultimately it is considered unlikely that it can provide a robust basis for trip estimation as, by definition, the travel behaviour of an Eco-Town should be atypical. The Eco-Towns transport worksheet suggests reference to the DfT Guidance on Transport Assessment, which in turn suggests that *'unless there is a clear valid comparable situation, the assessment trips should be constructed from first principles based on a detailed analysis of the daily operation of the proposed development'*.

For the purposes of the STA the use of TRICS to determine an all mode trip rate appears reasonable. A simple 2001 Census based analysis of broadly comparable sized settlements has been undertaken to estimate the degree of trip containment within the Eco-town. This has been combined with an ambitious 20% target for the total proportion of employment which is proposed to be home based working. This provides a total trip containment factor of 25% used in the assessment. Separately to the STA information regarding a series of sensitivity tests on the total trip generation has also been provided. Following a review of this information it is considered that the method used to predict the total quantum of trips which might be generated on the wider transport network from the proposed development is sufficiently robust for the current level of assessment. In order to comply with guidance a first principles approach should be adopted in future to provide the primary basis and a comparator for the further more detailed assessment.

The trip generation assessment makes no discount for existing uses, however, existing car trips are discounted from those new trips assigned to the highway network.

4 Mode Split

The generic transport remit for an Eco-town can be generalised as needing to successfully meet stretching objectives for sustainable mode choice and, critically, to deliver a step change in 'normal' travel patterns. Important to achieving this is a target lead approach to transport outcomes, which has been adopted in the STA.

Within the proposed development a high proportion of pedestrian and cycle based trips have been assumed to take place. The degree to which this can be robustly assessed is restricted by the currently limited level of detail available for the site layout. Nevertheless, the site is relatively compact, trip generators and attractors are proposed to be well distributed and there is a firm commitment to the provision of suitability designed infrastructure (low traffic speeds, dedicated user facilities, and priority measures). This, combined with what is proposed to be predominately fee paying off street parking provision at locations of significant trip attraction, suggests that the assumption that the major proportion of internal trips will be pedestrian or cycle based is reasonable. As 25% of all trips are internal to the site this is a significant contributory factor to meeting the overall target of just 40% of daily trips being undertaken by car (the Eco-town criteria suggest no more than 50% as a guide).

The modal split of the external trips generated by the Eco-town is strongly influenced by both the proposed parking strategy and public transport provision available. Modal demand has been assessed using a logit generalised cost model which focuses on movement between the Eco-town and Stratford-upon-Avon and Evesham. This disregards journeys which are not to or from the Eco-town. Car driver/passenger trips are taken to be the dominant mode share for external trips to destinations other than Stratford-upon-Avon and Evesham and are broadly in line typical values which might be expected. Journeys to

Evesham and Stratford-upon-Avon are taken to be 57% bus based, which is a function of the provision of a heavily fare subsidised high frequency guided bus service to each destination and comparatively high parking charges within the Eco-town for non-residential uses. The analysis appears to assume a flat rate charge for parking of £2.50 within the Eco-town as part of an analysis which is bias to Journey to Work travel behaviour. This is reasonable as the basis for providing an initial guide, as one of the primary objectives is to determine impact within the busiest period on the highway network (the AM peak) and to inform the peak capacity requirements for the guided busway. However, it would be expected that travel outside this time for shorter duration activities maybe subject to a different charging regime which is not reflected by the current logit model. A possible effect of this may be to reduce the overall level of annual demand predicted for the bus service. Commentary on the provision of the bus service and parking is provided in further sections of this report and the remainder of this section focuses on assessment of model split for journeys to/from Evesham and Stratford-upon-Avon.

The logit model uses a generalised cost equation to compare car and bus alternatives. This is an established and reasonable method of assessment for the purposes of a strategic assessment which, based on the available information, appears to have been employed correctly. Based on the main input parameters set out in the STA it appears the prediction of high bus mode share is fair. However, there are a number of weaknesses which would benefit from being addressed and once taken into account could reduce bus mode share.

Sensitivity tests undertaken by the promoters and reported in a letter (Capita Symonds, 15th August 2008) for journeys to Evesham suggest that car based trips could be 10% higher than predicted. In assessing the need for highway mitigation it was accepted that it would be appropriate to take this into account when considering highway impacts. It is recommended that should the proposals continue to be progressed that this work is undertaken.

The principal area of concern is the validation of the logit model against journeys between Alcester and Stratford-upon-Avon, which currently only benefit from a relatively low level of public transport service. Further validation of the model against a more representative sample (for example Stratford-Warwick and journeys to Evesham) would provide greater confidence in the robustness of the model.

Other areas of further analysis which should be addressed include sensitivity testing to reflect the ready supply of parking (PNR and public charged) in Stratford-upon-Avon and higher value of time and longer destination walk distances for bus journeys in Stratford-upon-Avon.

5 Distribution and Assignment of Trips

Distribution of trips is based on 2001 Census data, which is the only readily available information source to base an assessment on without undertaking specific surveys. This approach is reasonable for the current level of assessment. Car based trips have been assigned to the highway network using a combination of navigational software and local information. Again this is an established technique which is reasonable to use for the current strategic level of assessment. However, should the proposals continue to be promoted then a more detailed assignment model based trip assessment is likely to be necessary.

6 Mitigation

6.1 Public Transport Provision

A key element of the mitigation strategy is provision of a guided bus service between Evesham and Stratford-upon-Avon via Middle Quinton using high quality vehicles. The Stratford-upon-Avon section would be served by an articulated vehicle and the southern section by single unit vehicle. Facilities would be made for a through service between

Evesham and Stratford-upon-Avon not entering Middle Quinton which may have potential to increase accessibility to the rail network for the existing towns and remove existing car trips from the network. However, provision for such a service has not been factored into the financial deliverability assessment.

Service frequency during the 07:00 to 19:00 period would be every 10mins, seven days a week, reducing outside these hours, nominally to 4 buses per hour.

Services into Stratford-upon-Avon are proposed to use the former railway line and then run on-road within the urban area. There are a number of issues which may preclude or potentially restrict the delivery of this arrangement or which may have additional consequences which are not addressed in the STA:

- The proposed type of vehicle for the Stratford-upon-Avon leg is a single articulated vehicle, nominally based on the ftr Streetcar. This is incorrectly stated as having a seating capacity of 125. Whilst seating formats and design can vary, published information by the manufacturer suggest a maximum seated capacity of 37, the remainder being standing. Whilst this vehicle has only been suggested as indicative of the type of vehicle which could be employed, vehicles which would have sufficient seated capacity to accommodate the 77 passenger loading predicted (which includes only Middle Quinton traffic and no other patronage which may be generated) are generally double articulated. Such vehicles typically have larger swept paths and turning circles and are more likely to encounter access issues within existing urban areas. The total route distance travelled by the service is 10.5km, taking approximately 16 minutes. In order to meet the high standard of provision which is aspired to it would be desirable for all passengers to be able to sit for this time. Additionally there are restrictions which limit the speed of road based vehicles carrying standing passengers. This issue requires much greater detailed further coverage in order that the deliverability and standard of service which would be provided can be assessed.
- Stratford-upon-Avon has a number of restricted and difficult junctions which an articulated vehicle would need to negotiate. It is suggested in the STA that vehicle tracking plots have been undertaken which confirm the necessary movements could be accommodated. These have not been supplied and so cannot be assessed. There is a risk that in order to accommodate the necessary turns, particularly at signalised junctions, the junction alignment and geometry would need to be altered. Should this require stop lines or other geometry to be changed there is a significant risk that junction capacity could be adversely impacted. In this event both existing congestion and proposed bus journey times would be adversely affected. Should double articulated vehicles be required in order to enable sufficient seated capacity this impact could be worsened.

Other public transport provision includes the extension of a number of local bus services into the site and the provision of a demand responsive community bus scheme. The provision of these reflects the need to integrate with the wider rural area and appears appropriate to the level of trips that are predicted to be generated into these areas. No significant modal share changes or revenue generating assumptions appear to have been adopted on the back of these services and they have been included in the financial deliverability assessment, which would appear to be robust.

It is proposed to provide interchange improvements, waiting, ticketing and cycle parking improvements at 'neighbouring' rail stations. This may help to make onward rail journeys for those who have used the bus services easier and may also provide some wider benefit. However, it is not proposed to deliver rail service enhancements. No account for significant rail mode share has been made in the STA and therefore this position appears robust and reasonable.

The STA sets out an aspiration for the future provision of a passenger tram-train or heavy rail service, however, no account for the impact of its provision or dependence on the delivery

of it has been included in the assessment. It is stated that the existing southern rail link will be used to serve a logistics operation from the site to bring freight in and out. There is no detail provided about this and B8 warehousing uses or any account for trip generation from such an operation do not appear to be included in the assessment or in the site plans provided. It is therefore assumed that this proposal is being pursued outside of the Eco-town proposal and that, other than serving to enable the import of construction materials, the presence of an existing rail line does not have a significant enabling impact on the proposals.

6.2 Travel Planning & Demand Management

The STA sets out a framework for an 'Overarching Travel Plan' which will be supported by lower order Travel Plans for individual elements of the development. This sets out a high standard of target to ensure that no more than 40% of trips generated by the development will be car borne. It is recognised that the detail of a travel plan cannot be set out until more detailed proposals are developed, however, the STA sets out a comprehensive range of standard recognised techniques and measures which might be included. The delivery of measures to support the use of sustainable modes is dealt with elsewhere in this report. A second key element to the Travel Plan highlighted in the STA which is likely to be critical to the delivery of the stretching target for car mode share is the management of car parking, which is discussed further below.

The STA sets out that non-residential parking will be predominately charged for and provided in off-street car parking (although it is unclear if parking will be subject to a high flat rate charge throughout the day or have lower or free of charge for short and limited stay events). Revenue from parking charges will support the public transport provision and fund the on-going implementation and management of the Travel Plan. This is a reasonable management strategy which plays a major role in the financial sustainability of the proposals. Approximately 10% of residential dwellings are anticipated to be car free. However, there is no proposal to link fiscal measures to residential parking and instead supply is limited to a maximum of 1 space per dwelling for 90% of the residential units. A community levy of £75 per house is to be made to support the delivery of the Travel Planning on the site. It is possible that availability of zero cost residential parking with charged non-residential parking may lead to some trips which are predicted to be retained internally becoming external car borne trips. On the basis of the information available in the STA this potential effect cannot be assessed and may not occur, however, if proposals are to be developed then further consideration of the issue should be provided.

There is limited discussion of monitoring or the measurement of performance and what measures might be undertaken should targets not be met. This does not undermine the Travel Planning principles set out in the STA, however, must be addressed in order to provide a robust travel plan should the proposals be developed further.

6.3 Highways

There is no analysis of the impact of HGV movements from the site. There is reference in the STA to proposals for a logistics centre which is linked to rail freight. Typically such a development would also generate significant HGV movements, however, as employment uses included in the assessment are taken as B2 general industrial and B1 Business Park and the logistics centre is not referenced on the Eco-town plan it is understood that this proposal is not part of the Eco-town and will be dealt with separately. The site currently generates significant HGV movements and as such as any further proposals for HGV generating uses emerge this will need to be assessed and considered carefully.

The STA sets out likely traffic increases which might be experienced in the villages surrounding the Eco-town and states that the level of increases would be unlikely to cause operational/capacity issues. It is also recognised in the STA that environmental impacts may be generated which cannot be assessed until a more detailed assessment has been

completed. It therefore commits to the provision of environmental mitigation or remedial measures should these be identified as necessary. This position appears commensurate with the level of traffic generation identified.

Two alternative mitigation strategies are set out for Stratford-upon-Avon; one focusing on the provision of the Western Relief Road from the A46 through to the existing southern section; the second being the provision of Park & Ride and Travel Planning and demand management measures in Stratford-upon-Avon and the use of increased non-residential parking charges in Middle Quinton (along with other Travel Plan initiatives). The effects of the former strategy are completely unexplored, whereas the latter strategy is predicted to reduce the net additional traffic in Stratford-upon-Avon by approximately 50%. Under the latter strategy total additional traffic is 210 vehicles in the worse peak hour using Clopton Bridge and 140 using Seven Meadows Road. The STA suggests that this impact can be accommodated without significant works. There is limited supporting analysis behind the reductions in traffic generation which could potentially be achieved by the second mitigation strategy and it is not clear whether it could be achieved or not. The remaining residual impact on Clopton Bridge may conflict with other strategic initiatives being considered in the town centre and Bridgeway area. Additionally the performance impact on what is a constrained network cannot be assessed without detailed modelling work. No junction analysis has been undertaken and there is no assessment of the impact of these additional vehicles in the future year which they might occur in.

The STA recognises that further on going work is required in order to establish the best mitigation package for Stratford-upon-Avon. Whilst it would not be expected that a strategic assessment would be able provide a complete answer to the level of impact in Stratford-upon-Avon or the detail of appropriate mitigation strategy, it is clear that there remains great uncertainty about whether the impacts can be mitigated. When combined with consideration of the uncertainty over potential adverse traffic congestion impacts which could be caused by the introduction of articulated buses to the network (arising from the potential need for junction works) it is impossible to identify the highways impact of the proposals on Stratford-upon-Avon with the current level of information available. Considerable further technical work is required in order to make a robust assessment of the highway impact of the proposals.

6.4 Deliverability

The financial deliverability assessment does not include any assessment of the capital costs of any of the proposed mitigation. Provided that this is accommodated by the development then measures should be deliverable. The long term financial prospects of the public transport and Travel Plan measures have been considered in the STA. Given the high level of unknowns at this stage of the development of the proposals the assessment generally appears robust. However, there are a number of significant omissions regarding the guided busway which also relate to its general procurement:

- There is no commentary on how any required third party land will be required or whether the Greenway is available for use. The northern section of the busway requires the use of land which is not owned by the promoters and is currently occupied by a cycleway. There is likely to be opposition to use of the Greenway for a guided bus and there is no certainty that the land for the guided busway will be available. There is commitment to early delivery of the bus proposals and without consideration of this issue the viability of achieving this cannot be commented on.
- It is unclear who would own the infrastructure and no consideration is given to how the 12km of busway will be maintained or managed. These are potential significant issues which will influence the deliverability of a proposal which is central to delivery of the proposed development and movement strategy.

- South of Middle Quinton the busway will be required to run alongside heavy rail. There is no evidence supplied that the potential safety implications of this are acceptable. This is a key issue which requires commentary and evidence. Furthermore the busway will be required to operate on a single track with passing places. There is no assessment of the frequency with which these can be provided and whether this is sufficient to enable reliable operation at the speeds assumed in the demand assessment.

Additionally the application of car parking charges in Middle Quinton will significantly influence both the modal demand and financial deliverability. Currently the assessment appears to be based on commuter behaviour and should parking charges vary significantly for shorter periods than all day parking then the financial and demand outcomes would change. Management of parking supply will be critical to delivery of the movement strategy, in particular the control on-street parking levels both in residential and community/retail areas. There is no discussion in the STA or inclusion in the financial appraisal for this management.

Further to the commentary above regarding mitigation within Stratford-upon-Avon there is also no deliverability or financial assessment of the proposed mitigation strategies. There are therefore a number of potential key elements such as a completion of the Western Relief Road or provision of a new Southern Park and Ride which are not assessed. The later in particular can be expected to create significant on-going revenue implications which are not included in the assessment. The former, as well as generating on-going maintenance costs, will clearly also be subject to significant capital outlay and delivery barriers.

7 Summary of STA Aspects Requiring Further Work

The following provides a simple summary of the key areas of the STA which would benefit from the provision of further information or evidence. This should be provided now or in the future in order that the Highway Authorities can be confident that the predicted outcomes, impacts and conclusions are robust and that the proposed mitigation has a realistic prospect of being deliverable. Development of the STA into a more detailed full Transport Assessment would require further information and work beyond that detailed below.

- Refinement of the public transport demand model based on a more robust set of validation criteria and more detailed assessment of peak and off-peak demand, including sensitivity tests for parking supply and charging.
- Evidence that a suitable articulated bus capable of providing seated transport between Middle Quinton and Stratford-upon-Avon is available and that it can navigate the urban area without significant adverse impact on existing highway capacity.
- Evidence that the two alternative mitigation strategies for Stratford-upon-Avon are capable of delivering the benefits and impacts asserted and can be delivered, specifically:
 - Demonstrating the ability to procure and fund completion of the Stratford Western Relief Road and that doing so would remove sufficient traffic from the town centre to accommodate newly generated traffic from the development.
 - Demonstrating that the 'enhanced' travel planning measures are capable of delivering the suggested traffic reductions and that additional residual traffic impacts are capable of being accommodated and would not preclude existing proposals to reduce traffic in key areas of the town.
- Provision of information, and if necessary factoring into the financial model, details on how the proposed guided bus way will be maintained and operated.

- Provision of evidence that the potential safety issues of operating the proposed busway alongside an active rail line to the south of Middle Quinton can be acceptably addressed.