City of York

LDF

Local Development Framework

York Northwest

Transport Topic Paper

August 2010

TRANSPORT TOPIC PAPER

Establishing a transport reference case and emerging direction for York Northwest

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1. EXECUTIVE SUMMARY

1.1 This paper summarises work undertaken by City of York Council and transport consultants Halcrow between 2008 and 2009 to begin to establish a transport framework for the York Northwest area. The transport impacts of the York Central and British Sugar development sites are considered individually and collectively. The work is strategic in scope; allowing assessment of the high level, headline implications of different development and access scenarios. A transport Reference Case has been established to assess the likely impacts of a given mix and quantum of land uses on the highway network and the likely transport measures required as a result of that development. The work sets out a suggested site access approach given the development and transport modelling assumptions, and outlines an indicative package of on-site and off-site transport management measures specific to the individual development sites. The work has been multi-modal in scope, involving appraisal of pedestrian, cycling, public transport and vehicular movement, and being informed by locally specific, person-trip focussed baseline data.

1.2 The work builds on transport work undertaken for the York Northwest Area Action Plan (YNW AAP) Issues and Options Report, and subsequent transport, viability and sustainability appraisal work undertaken to inform the production of Preferred Options. The production of the AAP has now been superseded by the strategic allocation of the YNW area in the Core Strategy and the production of separate Supplementary Planning Documents for individual development sites. This paper will provide the basis of an overarching transport masterplan for the YNW area and inform the preparation of the SPD's for the York Central and former British Sugar sites.

1.3 The transport approach is informed by an over-riding strategy of facilitating development whilst minimising the impacts of travel on the environment. These impacts include: carbon dioxide emissions; nitrogen and particulate emission; noise pollution; detriment to visual and general amenity; and impact on the city's built fabric and historic character.

1.4 The approach taken comprised the following elements:

- Developing optimal access scenarios (routes to the development) based on development and modelling assumptions.
- Establishing a "Reference Case" and assessing its impacts as a baseline for comparison.
- Assessing options to minimise environmental impacts through use of sustainable transport interventions.
- Assembling a complementary package of these sustainable options into a composite "Sustainable Case".

1.5 The Reference Case represents a 'standard' approach to accommodating York's typical trip generation and modal share levels, principally within the highway

network, having regard to a given, theoretical type and level of new development, anticipated network conditions and behaviour, and planned improvements to the transport network. . The Reference Case travel patterns informed the development of a package of vehicular access points, parking levels, network mitigation measures, public transport provision and pedestrian/ cycle infrastructure. This was subsequently tested through further strategic transport modelling.

1.6 The headline findings of the Reference Case were that:

- The predicted impact on the transport network in terms of congestion and delay was significant
- The reference case would result in a 24% increase in network delay and result in a significant number of junctions operating over capacity.
- Impacts on the strategic network, principally the A59 and A1237, were particularly significant and would require mitigation works.
- Fundamentally, the 'standard' approach did not deliver the objective of reducing the impact of travel on the environment

1.7 In managing the transport impacts of development at YNW it will be essential, therefore, that a more sustainable approach to transport is undertaken. This will require more sustainable patterns of travel by future residents, employees and users of the development sites. A combination of achieving a high non-car modal split and network mitigation measures will be required to manage impact. A Sustainable Case has therefore been developed to identify how a more sustainable modal split could be achieved through an integrated approach of restricting accessibility for unsustainable modes of transport, and incentivising sustainable modes of transport through, for example; fast, reliable public transport services and safe, attractive walking and cycling facilities.

1.8 Key local and city-wide transport issues have been identified through the work undertaken to date. Within this topic paper the principles of trip based apportionment is set out together with a list of transport measures likely to be required. These measures are indicative of the types of improvements needed to facilitate a change in travel behaviour and to provide improvements to the network anticipated at this stage. A number of key transport principles are also outlined which will provide direction for emerging policies within the Supplementary Planning Documents to be produced for each of the York Central and former British Sugar sites. The next stage will be to refine the work undertaken to produce a transport masterplan for the York Northwest area which will identify a package of measures and cost mechanism to be applied to development sites within the area.

2. INTRODUCTION

2.1 This paper outlines the specific approaches, assumptions and methodologies behind the thematic transport work undertaken in association with the planning framework for the York Northwest area. It builds on work undertaken for the November 2007 Area Action Plan (AAP) Issues and Options Report and incorporates public and stakeholder consultation responses thereon.

2.2 A comprehensive approach to transport provision is required due to the scale of development planned for York Northwest. This will necessitate a strategic approach to transport solutions in this sector of the city and the wider area, given the already congested nature of the highway network. The overarching transport objective for the city will be to reduce the impact of travel on the environment through maximising sustainable modes of travel and ensuring the area is planned to enable all users and residents to have easy access by walking, cycling and public transport. This also supports the objectives of the City of York's Local Transport Plan 2006-2011 (LTP2) and will be taken forward in the city's future Local Transport Plan (LTP3) for 2011 and beyond.

2.3 The provision of a sustainable transport approach is particularly important for York, as a historic city, where there is limited capacity to absorb additional vehicular traffic as a result of new development. In addition, significant benefits will be provided to:

- the environment;
- the economy, and
- the health and quality of life for residents, workers and visitors to the area.

2.4 This paper outlines work undertaken to assess the transport implications of York Northwest, through the establishment of a transport Reference Case and a Sustainable Case for the area. The transport work will inform further work to be undertaken in the preparation of a Transport Masterplan for the area. The planning framework for the York Northwest area is being taken forward within the Core Strategy as a strategic allocation, and for the two development sites within Supplementary Planning Documents. The emerging strategic approach outlined within this paper will provide the basis for the direction on transport matters within these documents.

2.5 The Reference Case constitutes a traditional "predict and provide" approach to transport planning, and provides a baseline against which alternative approaches to the servicing of the site in transport terms could be compared, for example, levels of parking provision, public transport services, providing attractive pedestrian and cyclist options etc. Building on the Reference Case a range of complementary options to reduce the environmental impact of travel were compiled into a long-list as a "Sustainable Case" for York Northwest.

3. CONTEXT

Policy

3.1 The planning framework for York Northwest will be provided through a Key Allocation in the Core Strategy document supported by Supplementary Planning Documents for the key development sites. The Core Strategy sets out a long term planning vision for York, defining where, when and how much development will take place in the city. The transport vision and objectives for the city are set out in the Local Transport Plan 2 (LTP2), which is currently being replaced by LTP3. The Core Strategy and Local Transport plan facilitate and enable delivery of York's Community Strategy; Without Walls. Both documents have also been shaped by key influences at regional and national level in terms of how they respond to local issues.

3.2 Figure 1, below, sets out a list of current relevant strategic transport documents. These are outlined in more detail at Appendix 1. It should be noted that the scope and nature of new government policy is not currently known, and may significantly alter the strategic transport framework.

Figure 1: List of Key Strategic Transport Documents

Principal Strategic Transport Documents

- The Future of Transport – A Network for 2030 DfT (July 2004)
- New Deal for transport Better for Everyone DETR (July 1998)
- Planning Policy Guidance: Note 13
- Securing the Future (March 2005)
- Delivering a Sustainable Transport System DfT (November 2009)
- Yorkshire and Humber Plan: Regional Spatial Strategy to 2026 incorporating Regional Transport Strategy GOYH (May 2008)
- Leeds City Region Development Programme (November 2006)
- Leeds City Region Transport Strategy (2009)
- York Sustainable Community Strategy (June 2008)
- City of York Local Transport Plan 2006- 2011 (LTP2)
- Emerging York Low Emission Strategy

3.3 The transport policies, currently in place for York (in LTP2) are largely governed by four 'shared priorities' agreed with central Government; these being:

- Tackling Congestion
- Improving accessibility
- Improving safety
- Improving air quality

At present, the primary focus of transport policy in York is to tackle congestion. This is the principal transport objective for local residents, stakeholders and businesses.

3.4 The transport work undertaken demonstrates that much of York's strategic network operates at or over capacity during peak times of day, with particularly acute congestion on the A1237 Outer Ring Road and the constrained city centre junctions. Comparative analysis undertaken for the Core Strategy indicated that without management or mitigation, the network is currently more congested in the North West quadrant of the city, and residential mode share for sustainable transport is lower than the York average in this part of the city. This is likely to be due to more trips having a Leeds destination which makes mitigation more difficult.

3.5 The objective of tackling congestion, whilst assisting with delivery of the other shared priorities, is also key to dealing with some of the greatest challenges facing York including managing its impacts in terms of climate change and air quality. Transport accounts for the generation of 28% of the York's carbon emissions. The Climate Change Framework, currently being prepared, will seek to reduce carbon emissions by 80% by 2050. It is vital that approaches are formulated to manage the existing volume of traffic on York's network. Opportunities offered through new developments will also be taken to develop more far reaching and innovative ways of reducing the number of trips by private motor car, ensuring that vehicle emissions are minimised and residual car trips on the network are managed well.

3.6 These strategic transport policies and priorities are likely to be carried forward in some form into LTP3, which will provide a long term strategy from 2011 and allocate public funding to key projects. LTP3 will also act as an enabler for shorter term implementation (action) plans. LTP3 is currently being produced, having undergone public consultation in 2009 and 2010, and will be adopted in 2011.

3.7 The policy context, is outlined in more detail at Appendix 1, and has been formative in the approach to developing a transport framework for York Northwest. Both the city wide and localised implications of the approach taken have been examined.

Capital Projects

3.8 The Council has developed a strong portfolio of publicly funded capital projects over recent years, which will be delivered over the short, medium and longer term, to support and deliver interventions aimed at minimising the environmental impacts of travel in York. These projects are listed below and outlined in more detail in Appendix 2. These projects are subject to full or partial external funding and will need to be considered in the light of the Comprehensive Spending Review.

- Access York Major Scheme Bid: Phase 1 and 2
- New rail station at Haxby,
- Cycling city programme
- Tram train feasibility work within the Leeds City Region
- City interchange facility

4. PUBLIC CONSULTATION AND STAKEHOLDER FEEDBACK

4.1 Public and stakeholder feedback on the York Northwest Issues and Options Report has provided a useful indication of support or otherwise to the transport approaches raised. An overarching Summary Report to the LDF Working Group (May 2008) set out a summary of key points raised on transport issues and included the following:

i) *There was wide support for increasing the priority of public transport, cyclists and pedestrians over car use. The representations received stressed the need for a full detailed transport study which would consider York Northwest within the surrounding wider highway network. Effective traffic management was highlighted as critical to reducing congestion in the comments made by the Focus Group.*

ii) *The provision of Park & Ride facilities was also widely supported with linkages to a rail halt/local interchange. A linking bridge over the River Ouse was also considered fundamental to the integration of the area with the city centre. Provision of a local interchange on British Sugar was supported, particularly if linked to any tram-train halt and local centre.*

iii) *The provision of tram-train was strongly supported although it was recognised that this would be a long-term project. It was noted that whilst it should be provided for in any plans with a safeguarded route through the area, its feasibility was still being investigated and it may not come forward.*

iv) *Provision of new linked pedestrian and cycle routes within the green infrastructure networks was also supported to promote more walking and cycling.*

v) *The quantitative analysis of responses to the access options (workshop events) generally indicates more agreement with pedestrian and cycle access options than the vehicular/public transport options given, which had objections to all but the Water End and the tram-train options. Difficulties in many of the options have been highlighted in the comments given in the feedback.*

4.2 The need for “a full detailed transport study which would consider York Northwest within the surrounding wider highway network” was acknowledged by the Council, and informed the stages of work outlined in this report. The high priority given to sustainable modes of transport and need for public transport, pedestrian and cycle routes to be promoted has also had a formative influence on the approach to the transport work. Interconnections with other transport initiatives (e.g. tram-train and Park & Ride schemes) and the importance of the city wide context / interrelationship and integration issues have also informed the approach taken.

5. SCOPE AND METHODOLOGY

5.1 The transport work outlined in this paper was undertaken to assess the preferred options stage of work for the York Northwest Area Action Plan. This transport assessment work was undertaken in conjunction with sustainability appraisal and financial viability appraisal work on the emerging York Northwest development scenarios. This work will now be transferred into the Supplementary Planning Documents being prepared for key York Northwest development sites. The work was undertaken by the council's Transport Planning Unit in conjunction with Halcrow, the council's transport consultants. A consistent approach with other city wide transport work has been taken, to ensure co-ordination and use of contemporary, consistent data.

5.2 Transport work has been structured to allow assessment of both the comprehensive transport impact of York Northwest and the individual development sites, (York Central and the former British Sugar site) on the city network. The work has sought to establish five outcomes:

- A suggested access approach to the area with associated outline costs
- The network impact associated with the four preferred option land use development scenarios in a Reference Case and a more Sustainable Case
- An outline costed schedule of strategic network mitigation and management requirements
- Emerging key transport principles, and
- Trip based apportionment principles to share costs for transport mitigation measures between the two development sites.

Scope of work

5.3 The scope of work carried out by the council and its consultants has included:

- Reviewing the policy position and public consultation feedback.
- Appraising all access options and identifying optimal composite access scenarios for testing, leading to the identification of a suggested access approach.
- Modelling the composite scenarios and assessing their impact on the citywide highway network in a reference case and sustainable case.
- Assessing the scope and nature of some localised mitigation measures
- Outlining an apportionment mechanism based on impact between the two development sites
- Assessing the capability for and the impact of increasing public transport provision and the enabling infrastructure needed to achieve this for the Sustainable Case.
- Identifying a pedestrian/ cycle strategy and enabling infrastructure for the Sustainable Case.
- Identifying the broad costs of access and mitigation for all transport modes based on the Sustainable Case to inform financial viability assessment.
- Outlining an emerging strategic direction for York Northwest transport provision with a number of key transport principles.

Methodology

5.4 The broad methodology for testing the Reference Case and Sustainable Case is set out below. More detailed methodology for various stages of work, together with outcomes from testing are set out in Section 6.

Transport Models

City Wide Transport Models

5.5 The council's city-wide multi-modal strategic transport model has been used as the basis for analysis of York Northwest development scenarios, produced as part of the preferred options work. The strategic model is a linked suite of transport models. It includes **SATURN** (**S**imulation and **A**ssignment of **T**raffic to **U**rban **R**oad **N**etworks) as its highway model, EMME2 for public transport with external trip generation (MATT), trip distribution (spreadsheet) and logit mode choice models. The base year model was calibrated and validated with 2008 counts, journey time and public transport information. For future year planning horizons the model has committed and known planning and highway changes included. The council's framework engineering consultants; Halcrow, were commissioned to undertake the transport modelling work. The modelling assumptions used by Halcrow are attached at Appendix 3.

Multi-Modal Assessment Tool for trip generation

5.6 A bespoke **M**ulti-modal **A**ssessmen**t** **T**ool (MATT), which is locationally specific to York, has been developed to generate estimated trip rates and base year modal shares for different and land use quanta and mixes. MATT is based on the 2001 Census journey to work data for sub areas in York with TRICS based multi-modal trip rates applied (although these can be altered if the MATT rates are deemed inappropriate). TRICS is the widely adopted 'industry standard' national trip generation database used extensively for development control. The trip rates from MATT are fed into the strategic transport model. Following emerging best practice, MATT uses person trip rates rather than vehicle trip rates, as has historically been the case in transport modelling (typically using TRICS). It should be noted that whilst refinement of the MATT tool is ongoing (including consideration for housing and employment density), the approach outlined above, nevertheless, allows the modal share impacts of both policy decisions and infrastructure interventions to be modelled more accurately.

Retail Parking Provision Model

5.7 A Retail Parking Provision model (RPP) was used to test the development land use scenarios to give more specific trip rates profiles, mode share and associated parking for retail uses using local data.

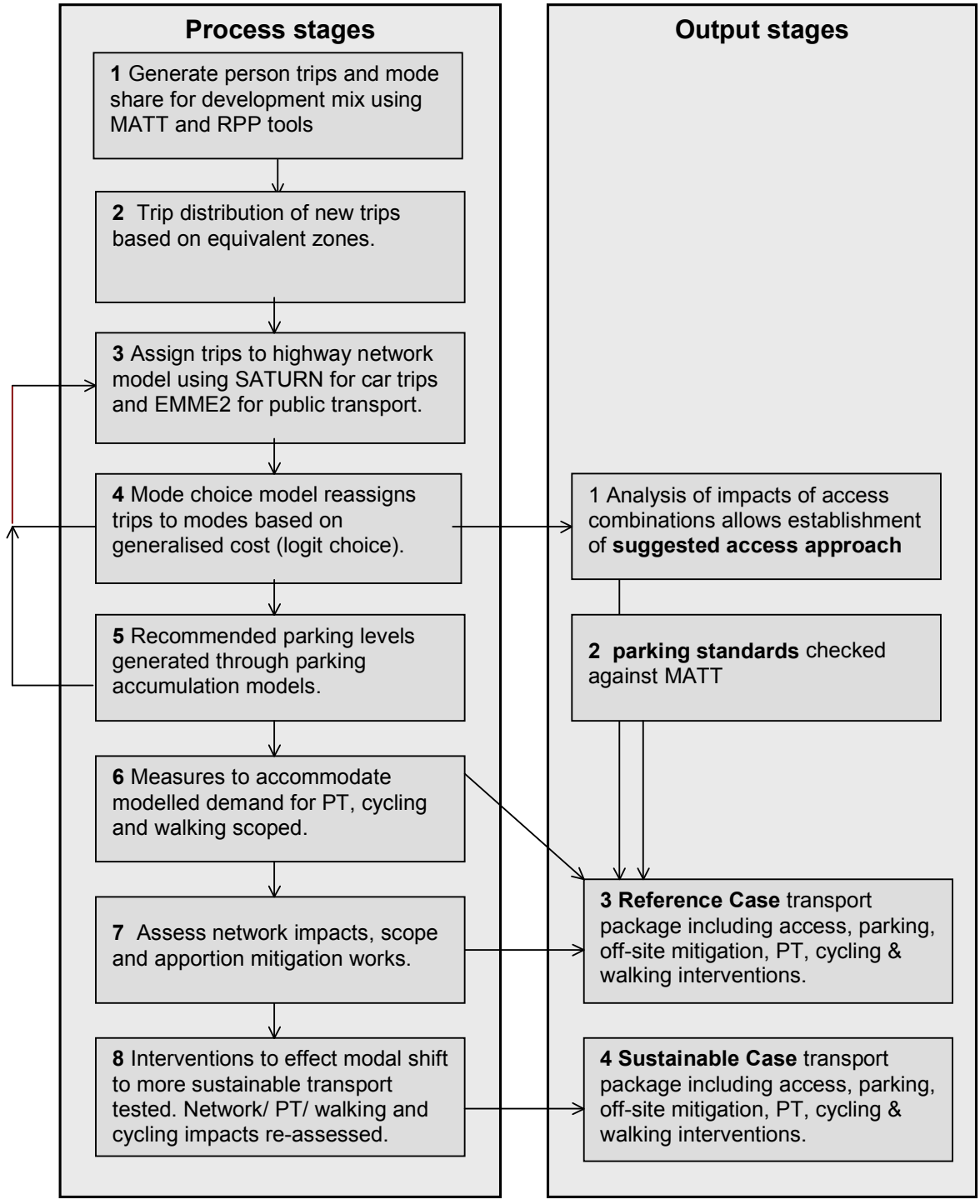
The Modelling Process

5.8 Transport modelling is an iterative process. The outputs from one model are fed as inputs to other models and then fed-back to the prior model until convergence is achieved. This involves the manipulation of many complex and interdependent

variables. The Council's city-wide transport models were used, ensuring consistency with the assumptions and methodologies of other major work streams including the Core Strategy and Major Scheme Bid work. The detailed assumptions to this work are included at Appendix 3.

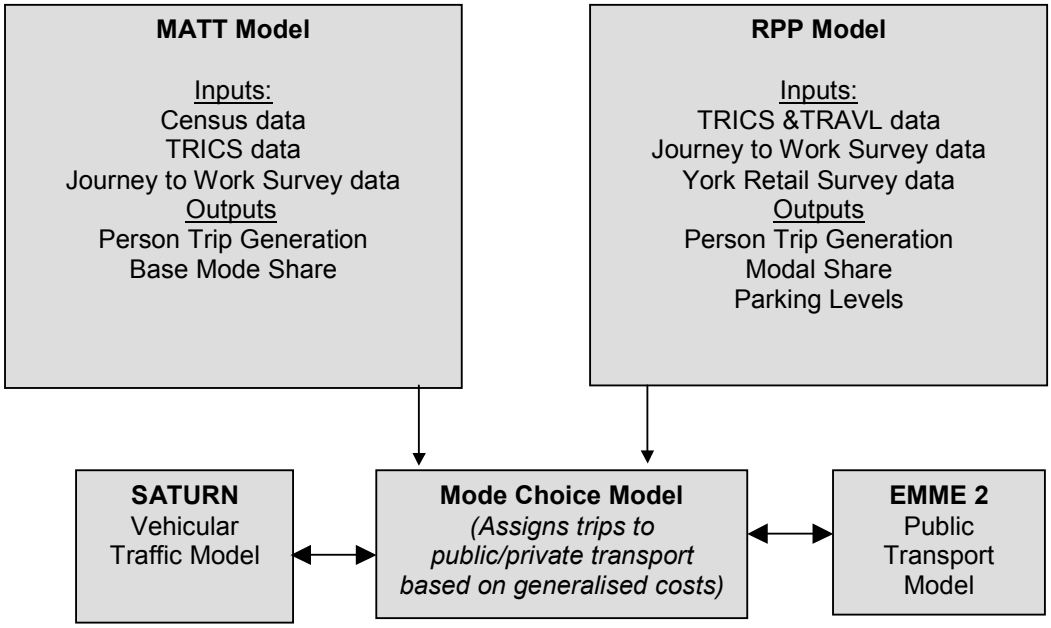
5.9 Figure 2 below illustrates a simplified diagram of the high level methodology and stages of work undertaken. Work was carried out in an iterative process and was subject to ongoing refinement.

Figure 2: York Northwest Modelling: High Level Methodology



5.10 The interrelationships between the components of the transport model are set out in simplified form in Figure 3 below:

Figure3: York Northwest Modelling Process Diagram



Development scenarios tested

5.11 Four development scenarios were produced to assess the capacity of the York Central and British Sugar sites to accommodate different land use mixes and comply with various Council standards and targets, for example relating to open space provision, affordable housing, or community infrastructure. These are set out in figure 4 below. Transport assessment undertaken on all four scenarios, showed that there was no significant variation in trip generation and distribution profiles in the modelled period (AM Peak). The detailed "Reference Case" was therefore built around the first residential development scenario, which was considered to be the most likely land use mix at the time.

Figure 4: York Northwest Development Scenario Summary

	York Central Principal Land Uses	British Sugar Principal Land Uses
Scenario 1	Office/ Leisure Quarter & Residential	Residential
Scenario 2	Office/ Leisure qtr, Residential & All Saints School	Residential
Scenario 3	Office/ Leisure Quarter & Residential	Residential & B8 Employment
Scenario 4	Retail/ Office/ Leisure quarter & residential	Residential

6. ESTABLISHING A YORK NORTHWEST TRANSPORT REFERENCE CASE

Process stage 1: Person Trips and Mode Share

6.1 The reference case was built around York Northwest development scenario 1 (office/leisure quarter and residential land uses, see Figure 4). Person trips were generated for this scenario through the Councils MATT and RPP tools. Modelling indicated that the impacts of development at York Northwest would be felt most severely in the AM peak period (between 8 and 9am on weekdays). Trip generation and other stages of modelling work have, therefore, been concentrated on this time period, although further modelling of the PM peak, Saturday peak and potentially other periods may be required in order to fully understand the impact of development (and particularly comparison retail development). The York Northwest Reference Case AM peak trip generation is set out in Figure 5 below. The trip generation from other development scenarios is also included for comparison.

Figure 5: York Northwest AM Peak Trip Generation
(YNW Transport Testing, Halcrow 2009)

Development Scenario	York Central	British Sugar	Total trips
S1: Residential (Reference Case)	4118	1382	5500
S2: Education	4943	1382	6325
S3: Employment	4118	1440	5558
S4: Retail	3950	1430	5380

6.2 These trips were then assigned to different modes of transport, again using the MATT and RPP tools. Figure 6, below, sets out the outcomes of this stage of modal assignment in the reference case. Public transport trips at York Central are assumed to be split between bus (72%) and rail (28%) in the same proportion as that observed across York City Centre from Journey to Work data.

Figure 6: MATT based AM Peak Modal Share Outputs
(YNW Transport Testing, Halcrow 2009)

Mode	British Sugar %	York Central %
Car Driver	51%	37%
Car Passenger	7%	6%
Pedestrian	13%	25%
PT User	11%	19%
Cyclist	15%	12%
Motorcyclist	2%	1%

Process stage 2: Trips distribution based on equivalent Zones

6.3 The highway (and PT) trips were distributed between SATURN zones based on the existing trip distribution of average equivalent zones in the existing models trip matrix.

Process stage 3: Assign Trips to the Highway

6.4 The SATURN model was used to assign new Passenger Car Unit (PCU) trips to the modelled highway network, with the EMME2 model used to assign new public transport trips. The modelled highway network was updated and revalidated as part of this work, using 2008 counts and journey time information. Known infrastructure improvements such as Access York Phase 1 were also incorporated into the revised model. This stage of work was also informed by work undertaken to establish a Preferred Access Approach, outlined in Output 1 below. Thus differing composite access scenarios were tested in assigning the trips to the modelled highway network. This allowed comparison of a baseline of existing against projected traffic movements and allowed the high level impacts of the new traffic to be assessed.

6.5 This stage of strategic transport modelling assigns new traffic, and redistributes existing traffic to allow interpretation of high level implications on traffic movement. The outputs from the two models are feedback between themselves and the mode choice model until a level of equilibrium is achieved. Plans illustrating the modelled origin and destination patterns by mode for outbound British Sugar trips and inbound York Central trips are given at Appendix 4. Further work will need to be undertaken at a more detailed modelling level to fully understand more localised impacts.

Process stage 4: Modal Choice Re-assignment

6.6 Once trips were assigned to the network, and the high level implications on traffic movement ascertained, a more detailed modal choice definition exercise was undertaken. This involved using a more sophisticated modal choice model. The anticipated origin and destination of all person trips (both inbound and outbound) was examined in the model, and "costs" in terms of time, modal interchange disincentive and financial cost were calculated in order to arrive at a preferred mode of transport for each trip, with trips then assigned back to the network using SATURN and EMME2. For York Central as the output of this process was considered not to reflect the sites city centre location, since modelled car mode share exceeded that in travel to work survey data. The MATT based mode share data was therefore used instead on York Central, and further work may be necessary to understand the influence of price and supply of parking on mode share.

6.7 Figure 7, below, indicates the revised mode share outputs for the British Sugar site, the MATT based outputs for York Central, and, for comparison purposes, city wide 2007/8 journey to work survey modal share data.

Figure 7: York Northwest Revised AM Peak Modal Share Outputs
(YNW Transport Testing, Halcrow 2009& LTP PI Monitoring data)

Mode	York City	York Central	British Sugar
Car Driver	47%	37%	56%
Car Passenger	3%	6%	7%
Pedestrian	22%	25%	13%
PT User	18%	19%	6%
Cyclist	8%	12%	15%
Motorcyclist	2%	1%	2%

6.8 This stage of modal choice modelling resulted in a significant redistribution at British Sugar from public transport to car driver modes, with 5% of all trips shifting in this manner. Some minor shift to alternative modes such as walking and cycling also took place. These changes are most likely to be as a result of the sites distance from the city centre, and poorer public transport accessibility, which are not fully taken into account in the MATT tool.

6.9 In more general terms, the data shows that, reflective of its highly sustainable location, York Central has a much more sustainable trip distribution profile than the city wide data. This is particularly beneficial given the sites destination function, and its potential to attract longer distance trips. However, whilst walking and cycling mode shares are quite significantly higher, public transport is only 1% above the city average. Obviously this reference case stage approach to establishing modal shift is theoretical and does not reflect the usual practice of the developer reducing car based trips to an absolute minimum through the planning process.

6.10 The British Sugar site displays a significantly higher mode share for car drivers than the city average (10% higher). Whilst housing in more suburban locations may be expected to reflect less sustainable travel patterns, the opportunities to make better provision for sustainable modes through the comprehensive redevelopment of the site are not reflected in these Reference Case figures. This modal bias towards car based transport is at the expense of pedestrian and public transport trips, where mode share is significantly below city average. However, cycling emerges as a popular mode of transport on British Sugar, with people nearly twice as likely to cycle here than across the city as a whole.

Output stage 1: Vehicular Access Approach

6.11 An analysis of various vehicular access options was undertaken to inform an access approach to the area. The overriding objective was to facilitate development whilst minimising the environmental impact of travel. The work was informed, where appropriate and relevant, by previously undertaken transport modelling and engineering feasibility work.

6.12 The analysis was undertaken in a staged manner; firstly individual access options from the 2007 Issues & Options report were assessed, these were then compiled into composite access options in three distinct groups: York Central access, British Sugar access and Link Road Access. An approach to each of York Central and British Sugar sites was then developed before testing in conjunction with link road options.

<u>Individual Vehicular Access Option Appraisal</u>

6.13 Assessment of individual vehicular access options presented in the November 2007 Issues and Options consultation paper, was undertaken against a range of issues, as summarised in Figure 8 overleaf;

Figure 8: Individual Vehicular Access Option Analysis: Key Issues

- Engineering Feasibility (including access point and off-site mitigation costs, land requirements and technical feasibility).
- Network Operational Issues (including rat running, congestion, network delay and volume to capacity ratios).
- Modal share impacts.
- Public Transport network capacity implications.
- Environmental issues (conflicting land uses, residential amenity, biodiversity, conservation issues, air quality).
- Operational feasibility (conflict with rail operations).

6.14 An assessment matrix which summarises the outcome of the work undertaken is attached in Appendix 5. As a result of this work, three individual access options were ruled out from further analysis. Other accesses were taken forward as potential options, including some with a restriction on the type of access. The outcomes are summarised in Figure 9, below:

Figure 9: Vehicular Access Option Appraisal Summary
(YNW Transport Testing, Halcrow 2009)

ID	Access	Excluded	Potential	Restrictions
1	Water End		✓	
2	Holgate Business Park		✓	
3	Queen Street		✓	Public transport only
4	Holgate Road/Acomb Road*	✓		
5	Garfield Terrace		✓	Existing residents and NRM
6	Millfield Lane existing British Sugar access		✓	
7	Civil Service Sports Ground		✓	To be modelled with Millfield Lane
8	Plantation Drive		✓	Restricted vehicular traffic
9	From Great North Way	✓		
10	Former Manor School Site		✓	To be modelled with Millfield Lane
11	Ouseacres		✓	Restricted vehicular access
12	Along Railway Line		✓	Public Transport only or all vehicular
13	Allotments	✓		
14	Marble Arch		✓	Public Transport only

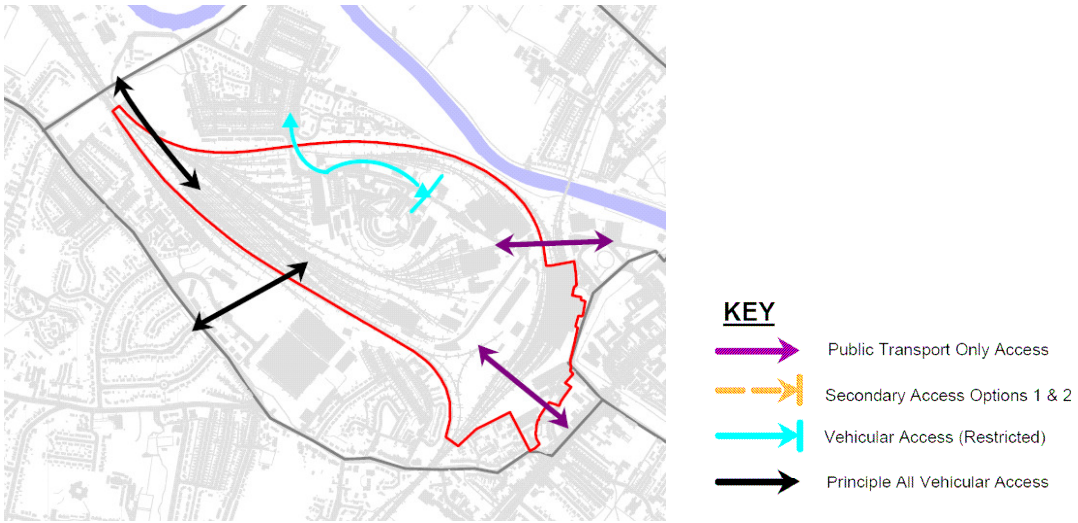
*2008 modelling showed that the network impacts of access ID's 2 and 4 were similar. Access option 4; Holgate Rd was discounted from initial work due to prohibitive cost associated with land acquisition. Subsequently, Network Rail have acquired the Thrall site, potentially reactivating this access option.

Composite Vehicular Access Option Appraisal

6.15 The preferred individual access options were then compiled into composite access approaches. Alternative composite access approaches were tested for comparison purposes against two transport baselines, the first modelled with committed development only, and the second including core strategy growth and short term network improvements, for example Access York Phase 1.

6.16 The Reference Case York Central access approach was built around a strategy of promoting sustainable accessibility of the York Central site, whilst preventing the through flow of general traffic to the already congested city centre. Given the quantum of development anticipated two new vehicular access points were seen to be required. Water End and Holgate Business Park were identified through both the option appraisal process and detailed trip distribution and network impact modelling as the possible points of vehicular access into the site. Restricting vehicular traffic through Leeman Road and providing public transport access at Marble Arch and/or Queen Street were shown through modelling to effectively stop undesirable through-flows of traffic to and from the congested city centre and Inner Ring Road whilst promoting accessibility and integration with the city centre for sustainable modes. This vehicular access arrangement is illustrated in Figure 10 below:

Figure 10: Reference Case: York Central Vehicular Access Approach



6.17 The Reference Case approach to access for the former British Sugar site was predicated on utilising the strategic highway network (Outer Ring Road/A59) to distribute new traffic, where its impacts could also be more easily mitigated and distance it from primarily residential areas, such as Acomb. As a result, access options relied on a combination of access directly to the Outer Ring Road and onto the A59. Four variants were tested: (see plans at Appendix 6)

- Scenario 1: Millfield Lane access only (unconstrained)
- Scenario 2: Millfield Lane & unconstrained civil service sports ground access
- Scenario 3: Millfield Lane & unconstrained former Manor School site access
- Scenario 4: Millfield Lane with either civil service sports ground or former Manor School site serving a restricted site area

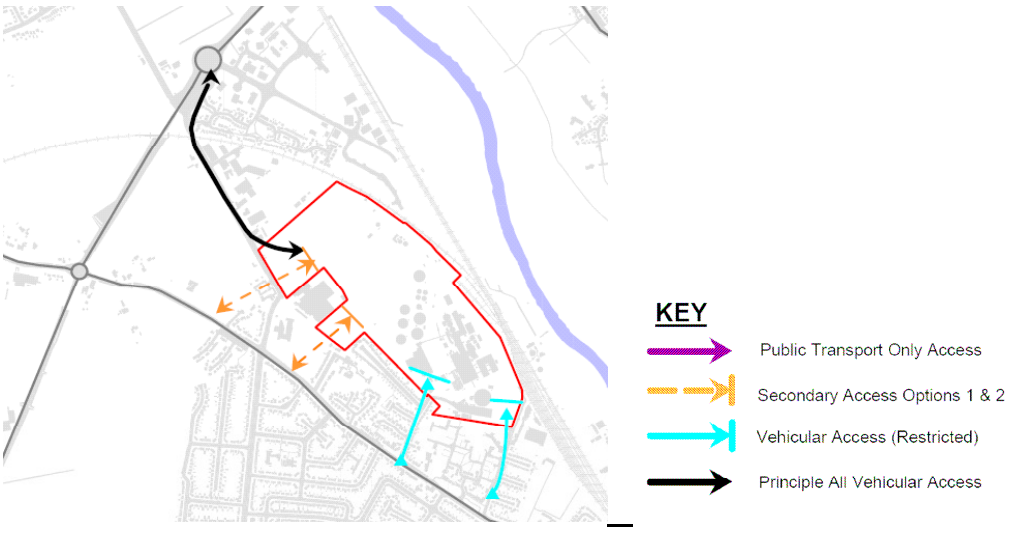
All four scenarios also involved both Plantation Drive and Ouse Acres accommodating a minor proportion of British Sugar development (limited to 48 residential units each – a level commensurate with the scale of trip generation experienced on Plantation Drive at the time of the British Sugar factory being operational) in order to maximise integration with surrounding communities.

6.18 In terms of trip distribution and resultant impacts on links and junctions, Access Scenario 1 concentrates trips onto a focussed area of the network in the Outer Ring Road (A1237). Although the network here is congested, there is more potential to mitigate impacts as there are fewer constraints, eg, built fabric etc. A range of mitigation works for the ORR is currently being investigated by the city, however funding sources for the full proposals remain to be determined. The improvements could be provided or augmented using developer contributions where appropriate. Access scenario 1 would spread city-bound trips arising from the British Sugar site between the A59 and A19 radials.

6.19 However, modelling revealed that a significant proportion of British Sugar traffic will be destined for York City Centre, using the A1237 to access the city-bound A59 radial or A19 radial. Provision of a direct link onto the A59 radial could therefore, negate a portion of this traffic being forced to use the congested outer ring road. This link could also spread traffic accessing the A1237 over two junctions as opposed to just one, spreading the loading between these junctions. Access scenarios 2, 3 & 4 therefore offer distinct advantages over access scenario 1 in terms of network performance, trip distribution, and junction/ link impact.

6.20 Modelling also indicated advantages in terms of radial performance where city-bound British Sugar traffic was dispersed between both the A59 radial and A19 radial. In order to induce this dispersion, it was identified as being important to ensure that not all British Sugar traffic could use the proposed A59 radial direct access. This would require a zoned approach to proposed development, with part of the site only capable of accessing the A59 radial, and part only capable of accessing the A1237, as set out in access scenario 4. A proportion of 75% of traffic to the A1237 and 25% to the A59 radial was assumed, and access scenario 4, as set out in Figure 11 below was taken forward as the British Sugar vehicular access Reference Case approach. The propensity for traffic to rat-run through Poppleton to avoid the A1237 requires further assessment, alongside any preventative measures.

Figure 11: Reference Case: British Sugar Vehicular Access Approach



Link Road Approach

6.21 Figure 12 illustrates the network-wide statistics associated with provision of an all vehicle or public transport only link road from the A1237, via Millfield Lane to York Station, against a no link road option.

Figure 12: York Northwest Link Road – Network Impact Appraisal Summary

Access Option	Total Travel Time	Total Travel Distance	Average Speed	Total highway trips
No Link Road	11,949	296,402	24.7	47,960
All Vehicle Link Road	11,774	294,366	25.0	47,821
Public Transport Link Road	11,948	296,387	24.8	47,818

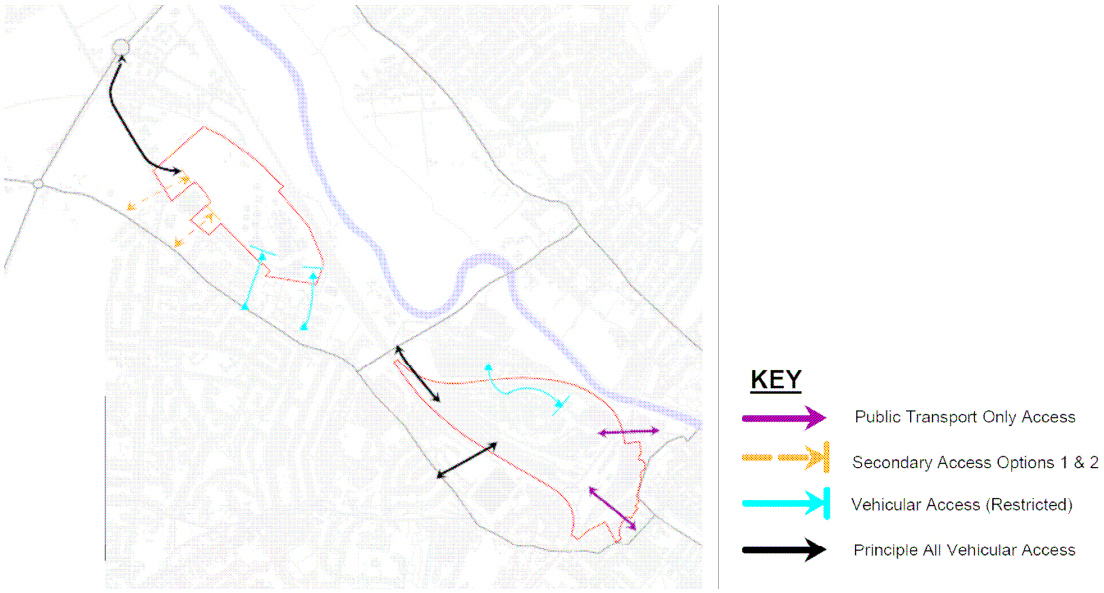
6.22 This high-level testing reveals that provision of an all vehicle link road leads to a 1.5% reduction in total travel time and a 0.7% decrease in total distance travelled when compared to a no link road or a public transport only link road option, both of which have similar network impacts.

6.23 However, more detailed trip distribution analysis reveals that an all vehicle link road effectively forms an additional radial route towards the city centre: 66% of the modelled link road traffic would comprise existing city flows, with only 27% and 7% attributable to York Central and British Sugar respectively. Existing congestion issues mean that traffic from a clockwise direction on the A1237 would find alternative routes to the all vehicle link road in order to access both the British Sugar and York Central sites. Capacity improvements to the A1237 could overcome this.

6.24 To understand in more detail the role of any link road, various local routes between the outer ring road and York Central were modelled for car and public transport traffic. The work divided the link road into 2 sections; Outer Ring Road to Water End (through British Sugar) and Water End to York Rail Station (through York Central). Testing showed that the most significant journey time savings were achieved through using the Water End to York Rail Station link (through York Central), where a saving of up to 23 minutes for cars and 12 minutes for public transport is achieved. The link through British Sugar delivered
very low levels of benefit over use of the existing A59 between the Outer Ring Road and Water End; saving 2-3 minutes at the most on journey times for cars and public transport.

6.25 High level cost benefit analysis undertaken on these modelling outputs confirmed that whilst the benefits of the access from Water End to York Central outweighed the costs of its provision, the vehicular link through British Sugar between the Outer Ring Road and Water End was not cost effective in terms of time savings to PCU and public transport. The Water End – York Central only part of the link road was therefore taken forward with the Reference Caste York Central and British Sugar access approaches to form a comprehensive York Northwest vehicular access approach, as illustrated in Figure 13. Consideration of a British Sugar – Water End link for pedestrians and cyclists is included at section 7.

Figure 13: Reference Case:York Northwest Vehicular Access Approach



Process stage 4 and Output stage 2: Reference Case Parking

6.26 Parking accumulation was modelled for the Reference Case. This allowed the establishment of a level of parking for the land use mix that reflected trip generation and modal share assumptions. This was then compared against maximum Development Control Local Plan standards. The outcomes of this exercise are summarised in Figure 14 below:

Figure 14: Parking Allowance – Demand Comparison
(YNW Transport Testing, Halcrow 2009)

	York Central		British Sugar	
Land Use	LP Parking Standards	MATT estimated Spaces Required	LP Parking Standards	MATT Estimated Spaces Required
Residential	2,207	1,150	2,156	1,360
Leisure	1,251	470	-	-
Employment	1,933	1,160	-	-
Education	75	46	-	-
TOTAL	**5,466**	**2,826**	**2,156**	**1,360**

6.27 As can be seen, the "parking standards" approach would allow significantly increased levels of provision compared with the MATT outputs. This would influence mode share and exacerbate York Northwest's network impacts. Given the objective to shift more travel to sustainable modes of transport, the lower, modelled MATT outputs were, therefore, taken forward in subsequent stages of work. These levels of parking could be delivered through standards as set out in Figure 15, which includes, for comparison purposes, the Local Plan standards:

Figure 15: Reference Case: Parking Standards
(YNW Transport Testing, Halcrow 2009)

Land Use	Modelled Standard	CYC LP Standard
Residential Flats/2 bed houses	0.75 / dwelling	1 / dwelling
Residential 3 & 4 bed houses	1.25 / dwelling	2 / dwelling
Employment	1 / 70m^2	1 / 45m^2

6.28 These parking standards represented the Reference Case approach, which could be refined further in the sustainable case.

Stage 6: Meeting Demand for Public Transport, Cycling & Walking

6.29 In order to meet the modelled Reference Case demand for sustainable modes, the origin, destination and volume of trips were examined in more detail, within the context of existing infrastructure networks. In the first instance, existing infrastructure capacities were explored, and where these were insufficient to meet demand, alternative or additional proposals were developed. These included interventions such as new access routes and additional public transport service provision. Methodologies and findings for each mode are discussed in more detail below.

Public Transport

6.30 A detailed public transport assessment of the Reference Case and Sustainable Case was produced by CYC officers and is appended at Appendix 7. This assessment focussed on the role of the local bus service. Opportunities associated with train and tram-train will need to be explored in more detail in the Transport Masterplan.

6.31 In terms of the reference case, the work identified 929 public transport trips would be generated by the overall York Northwest development in the AM peak, equating to 11% of all trips in the city by 2021. If the current public transport network is assumed to be operating at capacity, this would be the equivalent of an additional 19 single deck buses on the network. However, since the Reference Case effectively replicates existing patterns of movement within the city, and the current public transport system is largely funded by service operators (with a degree of public subsidy), a view was taken that any requirement for new buses would commercially met. Additional infrastructure to facilitate any revised services would, however, be required.

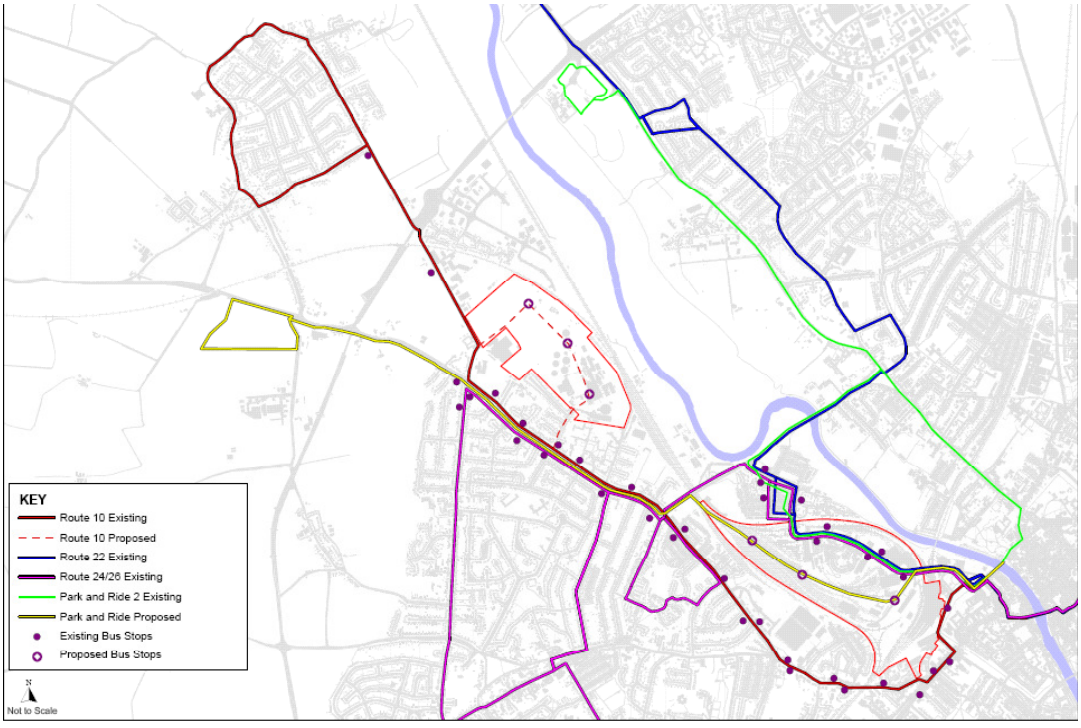
6.32 In terms of service revisions, the work found that potentially services 22/24/26 could cater for 31% of all public transport to York Central. Service 10 could be diverted to serve the British Sugar site and potentially provide direct journeys for 52% of public transport demand from the site. High level infrastructure requirements to facilitate these diversions were assumed as part of the reference case.

6.33 In addition to general bus services, two Park & Ride services were also incorporated into the Reference Case: The proposed Poppleton (A59 radial) Park & Ride, which could be provided through Access York phase 1, would be expanded by 650 parking places to cater for additional York Central demand, and Askham Bar Park & Ride would be expanded by 150 places. The developments would benefit from bus priority measures also to be implemented on the A59 as part of Access York Phase 1.

6.34 The Reference Case public transport package would need to provide new bus stops within the development sites, in order to ensure that all residential units are no more than a 5 minute walk (typically 400m) from accessing a bus service. Provision for improved bus facilities in the vicinity of York station was also included in the Reference Case. The precise location of these facilities would be the subject of more detailed layout considerations as part of the masterplanning of the sites.

6.35 A package of the likely physical infrastructure, operational improvements and service/management provision needed to meet the increased Reference Case level of public transport demand. This was developed and costed to inform viability analysis work. The Public Transport approach for the York Northwest Reference Case is illustrated in Figure 16.

Figure 16: York Northwest Reference Case Public Transport Approach



Walking & Cycling

6.36 York's relatively compact nature is reflected in the cities walking and cycling mode share. The Council is keen to maximise trips by these modes in new development in

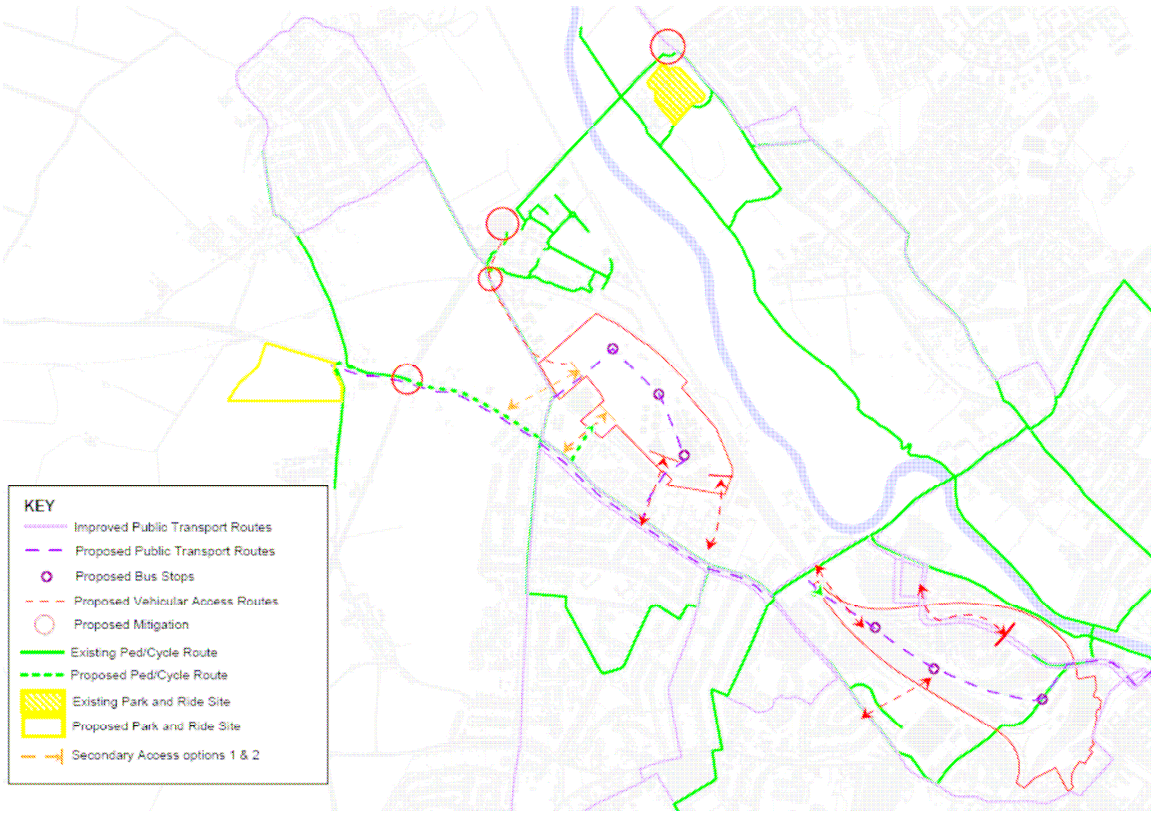
order to reduce the environmental impacts, and achieve health and sustainability objectives; this is reflected in the LTP Road User Hierarchy, which prioritises movement within these modes. Achieving this at York Northwest will involve ensuring safe and attractive connectivity between the development and key origins and destinations.

6.37 The key origin and destination locations were determined by the distance from the sites that people could reasonably be expected to walk or cycle. The Reference Case work identified these locations as being the City Centre, York Business Park, Northminster Business Park and Acomb.

6.38 An audit of existing and proposed linkages from the development sites to these key locations and more general residential areas was then undertaken. The audit took in existing public rights of way, the national and local cycle network, and new routes to be brought forward as part of the Cycling City initiative and improved Park & Ride access.

6.39 The audit showed that high quality dedicated walking and cycling routes would need to be provided wherever feasible in conjunction with the proposed vehicular access routes to York Central and British Sugar and all internal access routes. Alongside these, cycle parking should be provided at York Central destination uses, in line with maximum Local Plan standards. These measures were required to engender cycling and walking to Reference Case levels, i.e.: to the levels surveyed in the existing area (see figure 7) and summarised in Figure 17, below.

Figure 17: York Northwest Reference Case Walking & Cycling Routes



Stage 7: Assess Network Impact, Scope and Apportion Mitigation Works

Assess Network Impact

6.40 The modelling work undertaken allowed the generation of network wide statistics for an unmitigated York Northwest Reference Case. These are illustrated in figure 18 against a baseline which includes other development to 2021, but excludes York Northwest:

Figure 18: York Northwest Reference Case, Unmitigated Network Summary Statistics
2021 AM Peak, Unmitigated York Northwest Reference Case Against Baseline
(YNW Halcrow Transport Testing, 2009)

	Base (Without YNW)	YNW Reference Case without Mitigation		
			Change	% Change
Queues (pcu hrs)	1,366	2,020	+654	+47.9%
Travel Time (pcu hrs	8,717	10,050	+1,333	+15.3%
Distance (pcu km)	255,742	267,372	+11,630	+4.5%
Average Speed (km/hr)	29.3	26.6	-2.7	-9.2%

6.41 Work is currently underway that will consider what level of additional delay on the network would be acceptable and whether the mitigation measures already and yet to be identified, are deliverable and mitigate to a sufficient level. It is also the intention to provide an indication of the extra travel time on an average journey across the network e.g. a 5 mile journey that currently takes 16 minutes would take 20 minutes in 2021, again further work is need to look in greater detail at assumptions and predicted level of growth in housing and employment.

6.42 Notwithstanding this, it can be seen that if the impacts of reference case vehicle trips are not mitigated, York Northwest will have a significant impact on the citywide network, with queue times, in particular, seeing very significant increases.

6.43 Modelling was also structured to enable the identification of potentially critical network junctions and links in terms of existing and committed traffic, core strategy traffic growth, and York Northwest traffic growth, either individually or cumulatively. These outputs were expressed numerically and spatially in GIS plots as increases/ decreases in traffic flows on the network, and increases/ decreases in traffic volumes over capacities of links or junctions.

6.44 The work revealed that significant parts of the network currently operate at or close to capacity in the AM peak. The headlines in terms of residual York Northwest car based trips (having deducted reference case public transport, walking and cycling trips) is circa 1500 arrivals and departures at York Central and 700 at British Sugar in the AM peak. Due to the location of both sites, the travel demands are not unexpectedly focused towards the western half of the city, although some trips will be drawn to a lesser degree to and from the north-east, east and south.

6.45 The Reference Case strategic modelling highlights the most significant impact would be associated with 2021 for the western and northern areas of the outer ring road, much of the inner ring road, the south western sector of the city and the key approaches to York Northwest itself. Key radials, in this case the A1036 Tadcaster Road, B1224 Wetherby Road, A59 Boroughbridge Road, A19 Shipton Road and B1363 Wiggington Road, would see significant increases in car trips, as would the network on the approaches to the two primary access points (Water End and Poppleton Road). In addition, the south western sector of the city, around Woodthorpe and Acomb, was found to be very vulnerable to through car trips, particularly those associated with York Central, avoiding congested roads/queues elsewhere on the network.

Scope Mitigation Works

6.46 In terms of mitigating impact, it can be seen that a strategic approach to managing residual car trips, will be critical to ensure that they utilise the most appropriate parts of the highway network, where either further mitigation may be feasible to ameliorate their impact, or the impact may be deemed, on balance, to be acceptable. It will also be necessary to introduce measures to protect non primary parts of the highway network (and by default the neighbourhoods they serve) where car trips would be drawn to travel through these areas due to favourable conditions and journey times. The access selection stage of York Northwest transport modelling reflected this.

6.47 High level mitigation scoping work was undertaken in two broad categories; A1237 Outer Ring Road works, and works within the Outer Ring Road. The analysis identified potential mitigation works, and also highlighted potential areas where mitigation was less likely to be feasible. Key findings of this work are set out in the following sections

A1237 Outer Ring Road Mitigation

6.48 Even without any further development in the city the existing traffic levels at peak times on the A1237 exceed the capacity of some of the junctions, leading to excessive queuing, journey delays and the transfer of trips to adjacent areas. Reference Case work showed that without significant capacity enhancement measures, the additional car trips expected to be generated by the development and other city growth would put considerable further pressure on this route. These constraints could lead to the transfer of high levels of traffic through the residential areas of the city. Mitigative works to prevent this may further increase A1237 flows.

6.49 The A1237 Outer Ring Road is a very heavily trafficked single carriageway route (daily two way flows exceeding 33,000 vehicles) with 13 roundabouts over the 10 mile length. The route is part of the strategic sub-regional network providing an important crossing of the River Ouse and East Coast Main Line. The section between the A59 and A19 is the busiest link on the entire route with one way traffic flows exceeding 1400 vehicles per hour. Currently these flows are to a degree

restricted by the capacity of the existing roundabouts and it is anticipated that demand would be higher if the junctions were free flowing although the maximum theoretical link capacity is 1600 vehicles/hr per lane on single carriageways. The other main section of delay on the Outer Ring Road is at the Haxby Road roundabout with queuing regularly extending back to the adjacent roundabouts. The increased journey times restricts the movement of traffic in this area of the city and encourages motorists to use adjacent residential and rural routes.

6.50 Work to investigate the opportunity for A1237 Outer Ring Road mitigation was scoped in two stages. The first stage of this work focussed on developing a better understanding of localised A1237 ORR mitigation works, and the second, an understanding of the mitigation likely to be required across the whole A1237, building on work undertaken as part of the Outer Ring Road Study (2008). Work is currently being undertaken with the Highways Agency in order to understand the impacts and required mitigation on the A64 from city wide development.

6.51 The localised A1237 mitigation works explored in detail were focussed around the three junctions on which vehicular movements were most concentrated: the A1237/A59, the A1237/Great North Way and the A1237/A19.

6.52 The work looked at saturation levels on each arm of the roundabouts, with and without York Northwest. A number of approach lanes were found to be already operating above recommended design thresholds. With the addition of York Northwest development congestion issues were found to increase on all three roundabouts junctions. Mitigation measures to reduce delay were identified.

6.53 The proposed Access York Phase 1 project includes significant at-grade roundabout improvements at the A1237/ A59 junction, which were incorporated in the modelling work. However, in addition to this, opportunities for further improvements relating to traffic management measures were identified. These included full signal control, extensions to the queue management operation hours, and engineering additional stacking lane capacity.

6.54 At the A1237/ Great North Way junction, Reference Case mitigation comprised widening entry arms on the A1237, together with widening of Millfield Lane and increasing the circulatory lanes within the roundabout.

6.55 Reference Case mitigation works to the A1237/A19 junction included widening the approach arms to accommodate additional lanes (on A1237 and northern arm); lengthening the two-lane approach from the south; and introducing circulatory changes to accommodate 3 lanes. The majority of these works will be implemented in 2010/11 using City Council funds.

6.56 The Reference Case package of localised mitigation was then tested through SATURN modelling in order to determine the level of improvement to network conditions. Figure 19 sets out the changes to network wide statistics as a result of localised mitigation. This demonstrates that localised mitigation would result in

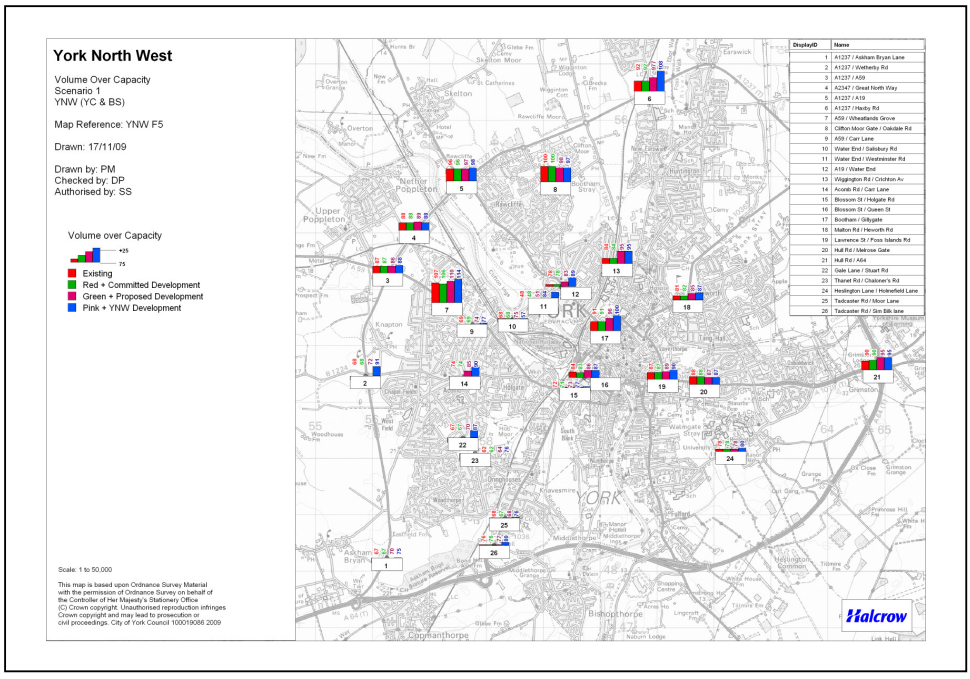
significant improvements to the performance of the whole network, though in comparison with the 2021 baseline, a significant impact is still shown.

Figure 19: York Northwest Reference Case, Network Summary Statistics
2021 AM Peak, Mitigated & Unmitigated York Northwest Reference Case Against Baseline
(YNW Halcrow Transport Testing, 2009)

	Base (Without YNW)	YNW with Mitigation			YNW without Mitigation		
		Value	Change	% Change	Value	Change	% Change
Queues (pcu hrs)	1,366	1,780	414	30.3%	2,020	654	47.9%
Travel Time (pcu hrs	8,717	9,910	1,193	13.7%	10,050	1,333	15.3%
Distance (pcu km)	255,742	268,956	13,214	5.2%	267,372	11,630	4.5%
Average Speed (km/hr)	29.3	27.1	-2.2	-7.5	26.6	-2.7	-9.2%

6.57 Figure 20 below illustrates the extent of the mitigated reference case network impact at 2021 (also attached in Appendix 8). This shows the average capacity of junctions in terms of volume over capacity. A plan showing those junctions where it is only one approach arm that is either reaching or over theoretical capacity, is also attached in Appendix 8. It should be noted that although a junction is at capacity, there is not necessarily an engineering solution to provide more capacity. Available physical space to make alterations is limited, and other solutions may need to be considered.

Figure 20: Reference Case, Network Impact at 2021 (with limited mitigation measures)



6.58 The next stage of work involved a more general assessment of the wider A1237 Outer Ring Road mitigation requirements. Again this was informed by modelled reference case vehicular flows through links and junctions in the AM peak at 2021, and work undertaken for the 2008 Outer Ring Road Study.

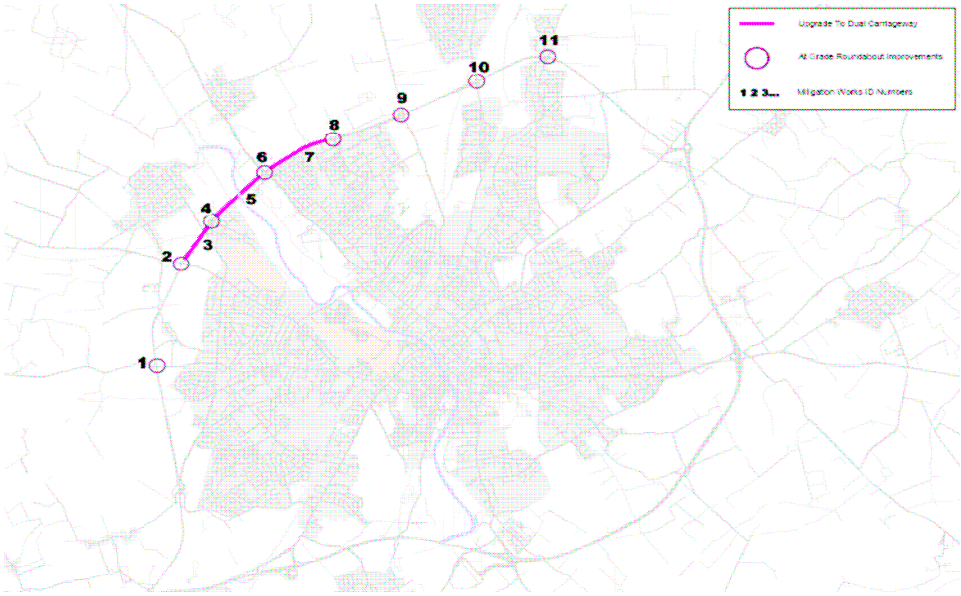
6.59 The maximum link capacity (each way) of the existing single carriageway A1237 is approximately 1600-1700 vehicles per hour. Above these levels vehicle speeds reduce substantially with queue and delay shockwaves rippling through the traffic.

6.60 The work found that the levels of trip generation anticipated later in the modelled period increased the flow substantially on the A1237, and could exceed capacity of the links between roundabouts. Higher development levels could require provision of dual carriageways with or without grade separation at some of the key junctions.

6.61 The Reference Case am peak travel demand for the A1237 is over 1900 vehicles per hour each way on the section of the A1237 between Millfield Lane and the A19. Even with the mitigation measures proposed to the three local A1237 junctions discussed in the previous section, the flow rates suggest that the capacity of the adjacent roundabouts (Wetherby Road and Clifton Moor) would also be exceeded and are likely to require improvement. In particular modelling showed significant evening peak hour queuing in the anti-clockwise direction in this area would be, caused by a lack of capacity at the A59 roundabout. Improvements to the A59 roundabout could increase the anticlockwise pm flow to the Wetherby Road roundabout leading to further significant queuing at this location.

6.62 A Reference Case package of indicative A1237 mitigation works was produced in response to the modelled 2021 development scenario. This package is summarised in figure 21 and in more detail in figure 22. It should be noted, however, that this package is based on the strategic modelling undertaken to date, and based on a 2021 development extent. This mitigation package also assumes complementary mitigation is provided through Access York phase 1. The mitigation modelling for the York Northwest development also assumes that a proportion of the York Central traffic uses the non-principal road network. If a strategy to minimise the increase in traffic flow in residential areas was implemented then further additional capacity is likely to be required on the Outer Ring Road to provide viable alternative routes. More detailed and longer term modelling will be required in order to understand in greater detail what the requisite mitigation package might comprise.

Figure 21: 2021 A1237 Outer Ring Road Mitigation Package
(City of York Council 2010)



Mitigation inside the A1237 Outer Ring Road

6.63 At this stage, the analysis of traffic implications has been carried out at a high strategic level. As with the consideration of any large scale development, additional detailed modelling/assessment will need to be undertaken at the appropriate time. This will allow for a greater and clearer appreciation of transport implications to be made and at a detailed level can influence the contents of transport strategy, through to actual design of measures and/or mitigation. It is clear from Reference Case work undertaken that the scale and thus volume of trips from York Central and British Sugar sites, both individually and combined, will give rise to demands which, if not fully understood and adequately accounted for, will have significant implications on the highway network.

6.64 In order to undertake such assessment, it will be necessary for the developers to undertake micro-simulation modelling of the strategic network as well as and approaches/access points to York Northwest. Such modelling is the only way that the intrinsic links in traffic patterns (and thus impacts) can be fully understood. It is considered essential that this work is carried out given existing network congestion, delay and ancillary issues such as air quality impacts.

6.65 Although this type of modelling will be required to enable detailed consideration of any physical measures that may be required, several broad conclusions may be drawn from the strategic or high-level modelling undertaken regarding mitigation of the reference case within the local network inside the Outer Ring Road.

6.66 It is considered that vehicular movement within the area between Tadcaster Road and Poppleton Road, is likely to require some form of management control, most likely to be achieved through a combination of technological and physical

measures, across a defined cordon area. Areas around Burton Stone Lane, Kingsway North and Crichton Avenue were also identified as being potentially vulnerable to additional car trips generated in particular by York Central. Further detailed modelling of possible traffic management measures will be required to assess the implications of this.

6.67 Increased car trips on radials routes are likely to create worsening conditions along those links and at connecting junctions. Greater delay to journey times, reduced average speeds, longer queues and a spread of such over a longer time period are the likely outcomes of this. There is also the potential for traffic to divert to other non primary parts of the network, with a deterioration of environmental conditions including air quality conditions. The ability of road based public transport to operate as a viable alternative to driving a car would also be affected.

Apportionment of Mitigation Costs

6.68 The process for apportioning costs for mitigation is still in the early stages of development. It is recognised that the impacts of York Northwest are city-wide and not confined to the localised area immediately adjacent to the British Sugar and York Central sites. One of the options being considered is to apportion costs based on the overall number of trips generated by each of the sites. This will generate a contribution towards an identified overall package of works. This package of works has yet to be fully developed and costed. Whilst this process would require a contribution toward a city-wide package of works that other development sites would also contributed toward, there is an expectation that each site would address in isolation those mitigation works more directly and exclusively required in relation to their own site. Another option being considered is to apportion costs according to impact at specific locations. An example of how this might work in relation to the reference case is set out in the following paragraphs. Again it must be noted that further work is required on this approach in terms of the extent of the mitigations works required and how such an apportionment tool might be applied.

6.69 An indicative apportionment schedule for A1237 Outer ring Road mitigation works is outlined at Figure 22 below. This high level data was produced to inform financial testing of development scenarios and will be subject to further refinement. The cost of mitigation works within the A1237 have not been identified as part of this stage of work.

6.70 A “layered” assessment of total traffic generation to 2021 was undertaken. From a baseline including planned network changes (such as Access York Phase 1) and committed development (i.e.: development for which planning permission has been granted), the “layers” of traffic generation were:

1. Baseline.
2. Baseline plus Core Strategy employment & housing growth to 2021 (excluding York Northwest).
3. Baseline plus Core Strategy plus British Sugar only.
4. Baseline plus Core Strategy plus York Central only.

5 Baseline plus Core Strategy plus British Sugar plus York Central.

6.71 Analysis of this data (summarised in Appendix 8 and in Figure 20 above) allowed the apportionment of strategic A1237 mitigation works on the basis of impacts. Each junction on the A1237 was used as a "node", for which an "association" was created to an individual piece of mitigation work to part of the adjoining network link, and to the junction itself. Analysis of the number of new trips passing through the "node" from growth categories 2, 3, 4 & 5 at paragraph 6.68 allowed the total additional traffic to be divided into three categories; Core Strategy Growth (excluding York Northwest), British Sugar growth and York Central growth, with the mitigation requirement and associated cost thereby apportioned to each category of growth in line with the proportion of new trips generated by the category. So for example, if British Sugar were to generate 60% of new traffic at the York Business Park roundabout, the site would be expected to pay for 60% of the requisite mitigation package associated with this node. The resultant apportionment schedule is set out at Figure 22 overleaf.

Figure 22: A1237 Outer Ring Road Apportionment Schedule to 2021

			Apportionment (%)		
ID	Location	Proposed Mitigation Works	YC	BS	Other
1	Wetherby Rd roundabout	Inc. diameter, widen approaches.	47	30	23
2	A59 roundabout	Part-time signals to complement MSB improvements.	0	39	61
3	A59 to York business park link	Dual carriageway.	21	65	14
4	York business park roundabout	Widen approaches.	21	65	14
5	York business park to A19 link	Dual Carriageway.	57	36	7
6	A19 Rawcliffe roundabout	Widen approaches.	93	7	0
7	A19 to Clifton Moor link	Dual Carriageway.	73	10	17
8	Clifton Moor roundabout	Widen approaches, additional A1237 East-bound lane.	73	10	17
9	Wiggington Road roundabout	Widen approaches.	73	10	17
10	Haxby road roundabout	Inc. diameter, widen approaches.	53	13	34
11	Strensall Road roundabout	Inc. diameter, widen approaches.	53	13	34

6.72 This work will inform development of a policy approach that allows flexibility in terms of site and infrastructure delivery and phasing, through identifying joint and individual site infrastructure provision requirements. The apportionment work will require refinement in terms of its detail and scope. An infrastructure phasing and delivery mechanism will also be required in order to secure developer contributions.

Output 3: Reference Case: Summary & Conclusions

6.73 Figure 23 sets out a summary of the reference case measures in section 7.

Figure 23: YNW Reference Case Summary Table

Access Approach
Principal all-vehicular access at Millfield Lane, Water End & Holgate Business Park
Secondary all-vehicular access to limited site areas from Leeman Road (north) Plantation Drive, Ouse Acres and either the former Manor School site or Civil Service Sports Ground
Public transport only access at Marble Arch and/or Queen Street
Pedestrian and Cycling access at Marble Arch, Queen Street, York Rail Station, and all vehicular access points
Walking and Cycling Measures
Dedicated pedestrian and cycle lanes provided in association with all strategic vehicular routes, including new points of access.
Cycle parking provision at maximum Local Plan standards at York Central destination uses.
Public Transport Measures
Provision of 650 additional parking spaces at A59 Park and Ride
Provision of 150 additional parking spaces at relocated Askham Bar Park and Ride
Enabling infrastructure to allow bus access, priorities and halt facilities within development sites in respect of redirected bus services 10, 22, 24 & 26.
Network Mitigation Measures
A1237 ORR junction improvements at Wetherby Road, A59, York Business Park, A19, Clifton Moor, Wiggington Road, Haxby Road & Strensall Road
A1237 ORR upgrade of links to dual carriageway between A59 and Clifton Moor
More localised mitigation requirements (not identified as yet)

6.74 Further work will be required to refine the measures outlined at Figure 23 in order to understand more localised mitigation requirements associated with the development proposals being brought forward.

6.75 The Reference Case was produced for comparative purposes in order to demonstrate the effects of replicating existing York City travel patterns at the York Northwest development. The Reference Case effectively represents an approach to the regeneration of the area, whereby no significant sustainable interventions are made.

6.76 High level transport work undertaken has shown that the Reference Case would have a significant adverse impact on the network. It is also clear from the work undertaken that a significant scale of mitigation would be required, and even where measures are possible there is a potential for significant delays and queuing on the network. The Reference Case approach demonstrates the need to adopt an alternative policy led approach (including setting standards over and above current Council policy) in order to achieve the objective of minimising the impact of development on the environment, through capitalising on the sustainable transport opportunities related to the York Northwest development site.

7. Stage 7 and Output 4: ESTABLISHING A YORK NORTHWEST SUSTAINABLE CASE

7.1 The Reference Case resulted in an 24% increase in network delay and a 5.2% increase in total traffic on the network at 2021 relative to network performance without York Northwest. A significant number of junctions operating over capacity and much of the strategic network operating over capacity. This is likely to have a significant impact in terms of environmental sustainability and economic efficiency within the city. Work is currently ongoing as part of the Core Strategy for the Local Development Framework which will consider the mode split that needs to be achieved in order to retain network delay within parameters deemed to be acceptable. Whether additional delay is acceptable and if so what level has not yet been established as is part of the ongoing work.

7.2 The Reference Case transport work establishes the rationale for seeking a more sustainable approach to transport for York Northwest. This is made all the more compelling when the opportunities associated with this urban brownfield regeneration area and the existing sustainable transport network are considered.

7.3 Work was therefore undertaken to explore the options available to achieve and sustain a modal shift at York Northwest to walking, cycling and public transport. The work built on the baseline Reference Case, targeting those trips anticipated in the modelling to be undertaken using the private motor car. The potential to use an alternative mode of transport for these trips was explored, and opportunities to minimise the impact of residual car-based trips identified. The approach follows DfT best practice, and is facilitated by the identification of person trips and modal share influences in the reference case modelling work.

7.4 The approach identified a combination of incentives to use sustainable modes, and disincentives to using the private car. These incentives and disincentives related to the generalised costs discussed in the reference case, and could influence journey times, financial costs, quality of journey, availability of facilities etc. The measures & improvements are grouped in the following section into themes of walking/ cycling, public transport, parking approaches and mitigating the impacts of residual car trips.

7.5 The work effectively identified a long-list of opportunities, which can be taken forward and developed in more detail in various combinations. This long-list should not be viewed as exhaustive - further options and approaches will almost certainly be identified. The work was undertaken at high level and will need to be subject to further detailed work and refinement. The agreed degree of modal shift associated with individual measures and as a cumulative package will be determined through this process of refinement, and incorporated in the process and outcomes of transport masterplanning and Transport Assessment.

Walking & Cycling

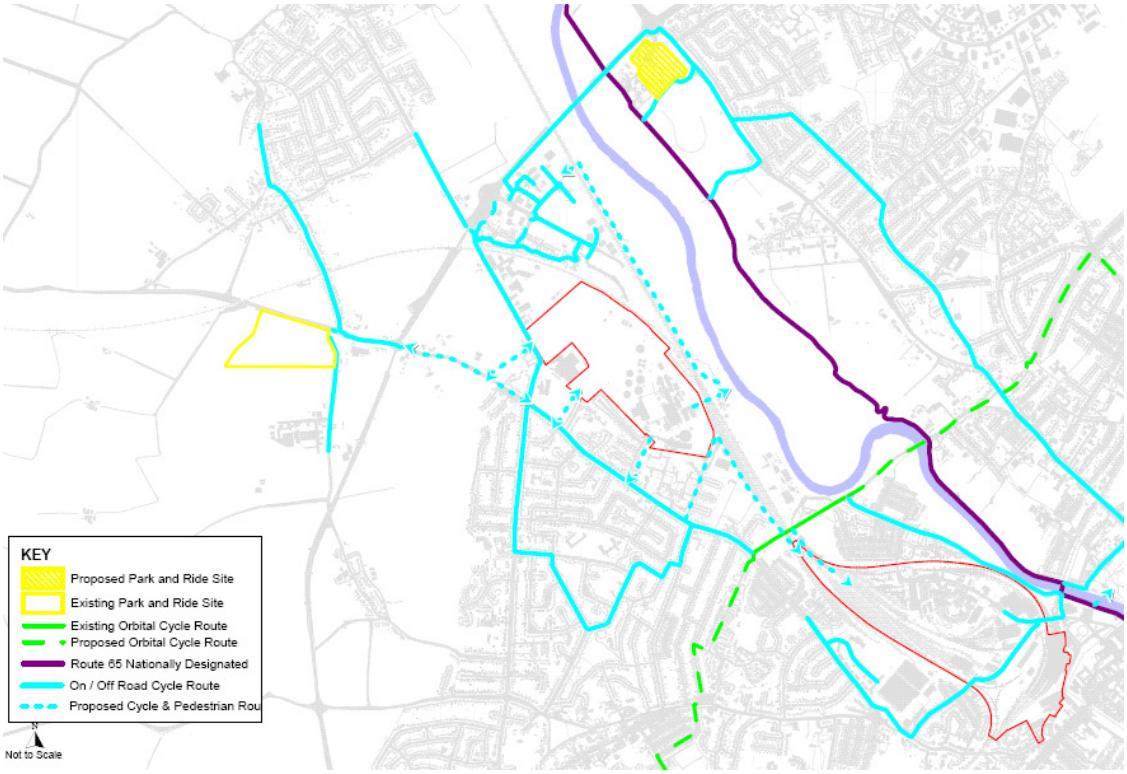
7.6 The reference case set out measures to replicate existing city-wide levels of walking and cycling at York Northwest. These included provision of dedicated pedestrian and cyclist routes within the development and in conjunction with all new vehicular site accesses, as well as standard requirements for cycle parking facilities in conjunction with commercial uses.

7.7 There is an opportunity to increase mode share levels of trips through making walking and cycling more accessible and attractive between relatively proximate locations. The Sustainable Case analysed reference case movement in order to identify key origins and destinations and highlight potential improvements to connectivity. The prioritised hierarchy of locations identified included the City Centre, Northminster Business Park, Clifton Moor, Acomb & Rawcliffe, as well as links between the two development sites themselves. Figure 24 below sets out a range of potential new or improved walking/ cycling links identified through this work

7.8 An initial scoping exercise was undertaken to identify a range of measures which would increase mode share for walking and cycling. Key to this is ensuring that linkages are safe, for pedestrians and cyclists, accessible and attractive, and that cycling facilities are provided at destinations and origins, including modal interchange points. As a minimum requirement routes would be expected to be segregated from vehicular traffic through dedicated lanes, and ideally be completely off-road where appropriate. Opportunities associated with views and integration with green infrastructure should be maximised, and in more central areas, surrounding urban fabric and public realm should be high quality. Routes should also be accessible 24 hours and should be well lit at night to ensure safety. Opportunities for iconic design in new structures should also be explored.

7.9 In order to maximise numbers of trips made by bike, the Sustainable Case incorporates cycle parking as standard at all residential properties. At commercial destination uses at York Central, secure cycle parking and provision/maintenance of good quality changing facilities for employees would also be sought. Provision of a cycling hub facility may also be required, that could offer changing facilities and cycle hire, as well as managing cycle training and cycle buddy schemes.

Figure 24: York Northwest Sustainable Case, Potential Walking & Cycling Linkages



Public Transport

7.10 Public transport offers key opportunities to effect modal shift on a significant scale at York Northwest, thereby reducing the environmental impacts of the development both locally and city wide. The Sustainable Case public transport strategy was based around "capturing" those trips anticipated to be made by car in the reference case modelling work. These trips could be captured through a combination of deployment of the bus network and measures designed to dissuade car use, described in more detail below.

7.11 The approach to public transport strategy focussed around three key areas:

- Local Bus Services: Maximising availability through frequency increases and new routes in order to capture local trips.
- Park & Ride: Increasing the capacity of facilities at Park & Ride sites to capture longer distance trips from beyond the outer ring road.
- Soft Measures: To complement service provision, measures related to making public transport cheaper or making service information more readily available.

Local Bus Services

7.12 In terms of local bus services, the anticipated origin and destination of reference case car trips to and from the York Northwest area was analysed in the context of existing services. The work found clustered latent demand to be concentrated in the Acomb/ Dringhouses and Rawcliffe areas for York Central, with more generalised latent demand dispersed throughout areas inside the Outer Ring Road. For the British Sugar site, the city centre was identified as the principal destination for which latent modal demand existed, with Clifton Moor a secondary centre. The detailed work is appended at Appendix 7.

7.13 At York Central, the existing bus services 22, 24 and 26 identified through the reference case could potentially serve the clustered latent demand in Acomb Dringhouses and Rawcliffe. In order to make these services more attractive to users, the sustainable case identified that service frequencies would need to be increased by a minimum of three services per hour from 0700 to 1900, Monday to Saturday. This would require provision of 5 additional vehicles to routes.

7.14 At British Sugar, the existing number 10 bus service was identified in the Reference Case to be diverted through the development site providing a link to the city centre. In order to make this service more attractive to users the Sustainable Case identified that service frequencies would need to be increased to every 10 minutes from 0700 to 1800, Monday to Saturday with an hourly bus to 2300. This would require provision of 6 additional vehicles to the routes. Service provision and frequencies would need to be discussed with service providers and other key stakeholders to establish the precise level of provision.

7.15 By undertaking these service improvements the modal share for public transport could increase from 6% to up to 17% at the British Sugar site and from 9% to up to 20% at the York Central site. In order to allow bus services to operate under a developer subsidy until such time as travel patterns become firmly established and services stand a good chance of becoming operationally viable at both York Central and British Sugar, it is assumed that the provision of additional vehicles would be funded by the developer for a period of 5 years from the substantial completion of the development.

7.16 The implications of service diversions on bus service availability for existing residents and on service frequency will need to be taken into account in the formulation of transport proposals for the area. On street ticketing facilities for bus services were also included in the Sustainable Case, in order to accelerate boarding/ alighting times, and therefore reduce journey times, making this mode of transport more attractive.

Park & Ride

7.17 In terms of Park and Ride services, the Reference Case included provision of additional parking spaces at the A59 and Askham Bar facilities in order to capture longer distance York city centre bound trips. This level of expansion (650 and 150

spaces respectively) would also be expected in the sustainable case, (however, the level of expansion may need to be reviewed in developing the final package of measures in the adopted sustainable case. Any additional capacity expansion beyond the reference case levels, may require provision of additional parking spaces, and/ or articulated buses which could potentially reduce the need for service frequency improvements. No land options have been taken by the Council to consider providing any additional parking beyond the additional 650 and 150 spaces planned. The developer would have to explore the feasibility of any expansion beyond this as part of any package of negotiated mitigation measures. Complementing this provision, clear incentives to direct journey choice to park & ride could also be required, these would relate to improving journey times and providing more favourable travel conditions.

Soft Measures

7.18 The Sustainable Case also identified a complementary package of "soft measures" aimed at promoting public transport as a mode of transport amongst its potential users. This is particularly important at the outset of the developments occupation, where behaviour is most easily influenced and potentially more likely to be adopted in the longer term. Potential measures which would be required through a travel plan could include provision of information and reduction of cost to the end user.

7.19 In terms of providing information, in addition to a standard "pack" on service availability and timetables etc to each residential property, a package of measures could be required through the travel plan, to enable the relay of "real time" information on bus availability to prospective users. This package could consist of installation of on-bus real time monitors, with display points at relevant bus stops, as well as in each residential property by means of provision of a real time "smart screen" information panel. The information panel scheme could also incorporate a journey planner facility through a dedicated website.

7.20 In order to influence the initial cost of sustainable travel and thereby influence behaviour in the early, formative stages of the sites occupation, a range of incentives could also be included in the travel plan. Residential properties could be provided with a free bus travel pass for the first year of their occupation in order to promote behaviour change at a formative stage. Commercial occupiers could also be required, as part of the ongoing travel planning obligations, to monitor the travel behaviour and trip patterns of their employees, and provide those not benefiting from funded infrastructure improvements (e.g. bus diversions), or living within a reasonable walking or cycling distance, with free or subsidised season tickets for bus, park & ride, or train, dependent on where they live.

Car Drivers

7.21 The Sustainable Case approach to managing car borne traffic at the development sites is focussed in two areas; managing car parking through a package of measures in order to constrain demand for car use, and minimising the impacts of the residual car trips. These are outlined in more detail in the following sections:

Managing Car Parking

7.22 In parallel with the facilitation and promotion of sustainable modes of transport, constraint of car parking availability need to be used as a means of restricting demand for use of motor cars within the sites. Parking availability restrictions were applied to the Reference Case at scales broadly commensurate with the numbers of trips with potential to be shifted from car to sustainable modes. The work was informed by a high level assessment of likely impacts on the wider city in terms of overspill car parking to adjacent areas, (including the role of city centre car parks, both Council operated and privately run, and on street parking etc). This may require further refinement as part of the masterplanning process together with work to better understand the compatibility or otherwise of parking provision associated with different land uses.

7.23 Opportunities for management of car parking for different land uses are considered in more detail in the following sections.

Office Parking

7,24 Office uses offer a greater opportunity to effect mode shift away from car trips than residential uses due to

- The fact that offices are destination uses, to which people establish routine travel patterns;
- The singularity of use of an office unit, as compared to residential units which act as a hub from which many different types of journey originate;
- The potential for employers to pro-actively co-ordinate a sustainable transport policy through management of a travel plan.

7.25 Given the good availability of public transport, and the capacity for Park & Ride services to capture longer distance car trips, several significant office based employers operate in York city centre with a negligible amount of parking with some restricted to visitor, service and disabled parking only.

7.26 This model of parking provision for York Central office uses due to its location adjacent to the rail station and sustainable transport networks, in conjunction with the enabling sustainable case pedestrian, cyclist and public transport measures.

7.27 In terms of modal shift implications, it is likely that a proportion of travellers would still use their cars to access York Central, albeit use parking facilities elsewhere in the city; 35% of the Reference Case AM peak office mode share is assumed to be retained in the car driver category. 50% of office car driver trips are therefore redistributed to public transport, 5% to walking, 5% to cycling and 5% as car passengers. These are initial assumptions and further work will be required in order to refine this approach and fully understand the nature of requisite change to the wider network (particularly in terms of parking availability) and sustainable transport network (e.g. park & ride availability) that would enable this approach.

Residential Parking

7.28 A range of levels of residential car parking could be assumed as part of the Sustainable Case, including car free, where there is close proximity to a range of public transport options and low carbon car club areas for smaller unit types

Retail Parking

7.29 The reference and sustainable case development scenarios do not incorporate comparison retail. Transport testing has also been undertaken in addition to this to understand what the implications of incorporating comparison retail at York Central would be. The outcomes of this in respect of parking provision are summarised below.

7.30 Comparison retail uses are a significant trip generator, particularly in the weekend peak periods. The MATT and RPP tools predict 22 AM peak weekday trips per 1000m^2 of office uses, and 107 trips for the same quantum of comparison retail in the Saturday peak period. A requirement of any potential retail offer at York Central is that it would be complimentary to the existing city centre rather than acting as a competing or stand-alone centre. Significant levels of retail parking at York Central would be likely to encourage use of the area as a retailing destination, distinct to York City Centre with a potentially adverse effect on the cities vitality and viability. Conversely, reducing York Central car parking is likely to encourage more linked trips and ensure greater cohesiveness and complementarity between York Central and the City Centre.

7.31 A balance would need to be struck however, between managing the environmental and city centre impacts of retail through parking, and ensuring that any new retail development at York Central would attract shoppers and was commercially attractive to potential occupiers and investors. It is not unreasonable to assume that as a significant proportion of retail related trips at York Central would be undertaken in conjunction with other activities undertaken in the city centre, or with existing or proposed York Central uses, such as the NRM, a restrictive approach to retail parking provision would be applied at York Central.

7.32 The Sustainable Case working assumption is that on-site parking provision would be made for comparison retail in line with the RPP tool outputs. This models parking on the basis of replicating mode share and linked trip assumptions for the city centre, and generating trip numbers from a profile of representative retail occupiers in the TRICS and TRAVL databases. This level of parking could be reduced further through revised modelling assumptions, and the final sustainable case approach to park and ride provision etc.

7.33 Ancillary small scale retail associated with other uses such as the rail station and National Railway Museum, was modelled in the Sustainable Case, as not requiring additional car parking, and not generating additional trips in its own right.

7.34 Convenience retailing is anticipated to be of a scale that would only serve local needs on both sites. As a result, minimal car parking is anticipated to be provided, with people using sustainable modes for the most part. In further developing a sustainable transport approach for York Northwest opportunities should be explored for convenience retailers to undertake a frequent low-carbon delivery service within the site boundaries for purchased goods. Such an approach would be managed and monitored through relevant travel plans.

Leisure Parking

7.35 The nature and scale of anticipated leisure uses is assumed to be ancillary in the reference case development scenario to other commercial uses. It is anticipated that leisure uses will primarily operate in the evening, and can potentially use parking spaces vacated by daytime uses. No additional parking was therefore assumed in the Sustainable Case for leisure uses. In line with previous assumptions for York Central, the NRM is assumed to be rationalised as part of an overall parking strategy for York Central. Hotel car-parking was assumed at standard MATT based rates, though there may be scope to considerably reduce this at York Central, given its highly sustainable location and other policy issues under consideration.

Rail Related Parking

7.36 A significant quantum of rail related parking exists at the York Central site. This includes commuter car-parking and operational rail related parking.

7.37 Rail commuter car parking is an important facility, offering sustainability benefits through long distance trips being diverted to the rail network. Commuter car parking at the rail station effectively operates as a park and ride facility, however, it does entail high volumes of traffic using the congested city centre network, albeit at a time typically in advance of the modelled AM peak. Opportunities for rail commuters to park remotely and be taken to the train station by bus are limited due to the disincentive of two modal interchanges, and a lack of viability around operating sufficient park and ride facilities at the hours required to meet the needs of rail commuters.

7.38 Given the known sensitive state of the surrounding highway network and resultant air quality issues the extent of rail commuter parking would need to be carefully rationalised and managed within the context of the overall York Central redevelopment.

7.39 Commuter parking facilities are operated and owned by various different parties, though some are known to operate under-capacity in the AM peak. In addition, there are currently around 300 temporary commuter car parking spaces at York Central. The Sustainable Case currently assumes retention of all existing car parking but exclude the 300 temporary spaces.

7.40 It is anticipated that operational rail related parking would be relocated with those rail uses moved off York Central. As part of this, the Sustainable Case transport approach for York Northwest would be to minimise car parking and maximise reliance on sustainable transport. Greater certainty around this will exist once rail relocation requirements are understood in more detail. Where possible, uses would be relocated to parts of the network where they will have least impact. Any retained operational uses at York Central would need to be reviewed in order to minimise car parking and take advantage of existing sustainable transport opportunities and planned improvements.

Minimising the Impact of Residual Car Trips

7.41 Sustainable Case transport work indicates that there will still be a need to mitigate for those remaining car trips generated by York Northwest in order to reduce the impact on the network. Further detailed and strategic modelling will be required in order to identify and understand its precise network impacts. The shifting of trips to more sustainable forms of transport, should, however, have a positive benefit in reducing the scope and scale of mitigation works required as a result of York Northwest development.

7.42 Reference Case work shows that the network impacts and associated mitigation works on the A1237 outer ring road are likely to be significant. The Sustainable Case demonstrates techniques to reduce the level of increase in car trips on the road network and therefore the A1237. Reducing the number of additional trips generated by York Northwest here will also reduce the proportion of the proposed mitigation works that are attributable to the development. Subject to the scale of modal shift and criticality of network conditions, there is an opportunity to reduce the scope of works required. It is expected that the same principals will also apply to more localised network impacts.

7.43 In addition to network mitigation measures to reduce congestion in the city, the sustainable case should incorporate a range of measures to reduce the developments impact on air quality. Draft Core Strategy policy requires that developments such as York Northwest, which have the potential to result in significant increases in emissions of local air pollutants or are likely to result in a significant deterioration in local air quality, will be required to provide suitable low emission and/or air quality mitigation measures. These could include use of vehicle emissions standards on the site, or provision of infrastructure designed to promote use of electric vehicles, in order to reduce emissions and air quality impacts. This could be delivered through, for example, electric car clubs, , or the phased roll-out of dedicated car parking spaces with electric car charging points, within which conventional cars will not be allowed to park. Careful positioning of electric car parking spaces and application of a differential charging system could further incentivise use of these more sustainable vehicles. The spatial configuration of parking could also be used to channel higher proportions of electric vehicles through those access routes within air quality management areas. Provision and maintenance of a car share database on the development sites would also be required.

Summary

7.44 The Reference Case has demonstrated the need to adopt a sustainable transport approach in order to deliver development and in particular at York Central. The Sustainable Case work sets out a range of possible interdependent and complimentary transport interventions that can positively influence mode share to sustainable travel, reducing the environmental impacts of development, leading to healthier behaviour, and potentially reducing the financial implications of the transport approach.

7.45 The sustainable transport measures outlined in this section will require further refinement and application to a spatial masterplan, as well as more detailed modelling in order to be fully understood in combination. Some of the measures, such as restricting levels of car parking and promoting public transport mode share are critical to delivering development. others may be more desirable, with less substantial or easily quantifiable mode share impacts.

7.46 In the reference case it was possible to provide an indication of the increase in traffic on the network and level of additional delay. Work will be undertaken to understand what additional traffic increase and delay could be associated with the Sustainable case.

8. WAY FORWARD: EMERGING TRANSPORT STRATEGIC DIRECTION

8.1 The approach to transport masterplanning will follow the 'Hierarchy of Transport Users' set out in LTP2, with primacy given to increasing the provision of measures to promote walking, then cycling, and public transport usage before infrastructure for vehicles is considered.

8.2 In the case of York Northwest this has even greater importance. Transport modelling work of the Reference Case has identified that without a sustainable transport solution, with an appreciably reduced mode share for car use, vehicular traffic generated by the development is likely to have significant impacts on environmental sustainability and economic efficiency within the city.

8.3 The strategic direction for movement within the YNW will, therefore, need to maximise access to individual development sites but also maximise use of sustainable methods of travel. A bespoke tailored transport solution for the site that maximises all sustainable modes in line with the sustainable case recommendations and within the parameters of what is commercially and operationally feasible will be required.

8.4 A summary of overarching issues arising from transport work is outlined in Figure 25 below.

Figure 25: Summary of Key Issues

Key Issue	Description
Significant impact on network and cost of mitigation	Testing of the Reference Case has shown that there is a significant adverse impact on the network in terms of network delay/congestion and capability due to existing capacity issues and the level of development assessed. The Reference Case also requires extensive and costly mitigation works to be implemented.
Current CYC parking standards will generate levels of traffic which will have a significant impact on the network.	Transport work has shown that the parking standards in the Development Control Local Plan are higher than the projected levels used in the transport modelling the MATT tool. Significantly reduced parking availability is needed to reduce the impact on environmental/air quality and network performance issues. Increased PT provision (to the level required) will only be successful in achieving lower levels of car use, if availability of parking in the new development is restricted.
CYC transport approach for major new development has mainly been	The comprehensive impact of vehicular traffic on the network and associated mitigation costs of traffic resulting from new development is not equitably apportioned between developments throughout York.

considered on a site by site basis.	
Significant impact in terms of environmental sustainability and economic efficiency within the city	A combination of measures will be needed to reduce vehicular trips and change patterns of movement to such a degree whereby their economic, environmental and social impacts on the network become acceptable.

8.5 A number of key principles have emerged from the work carried out to date and are outlined in Figure 26 below.

Figure 26: Key Transport Principles

Key Principle	Reason
Walking and Cycling	
Maximise accessibility to a range of destinations through provision of safe and convenient new routes and infrastructure which overcomes key barriers, links existing off or on-road networks, and provides convenient ancillary facilities.	▪ To facilitate movement and permeability both within the area and to surrounding areas. ▪ To ensure integration with surrounding areas and communities. ▪ In response to comments made on consultation.
Ensure cyclists are accommodated on dedicated lanes, segregated from vehicular traffic and that both pedestrian and cycle networks are integrated wherever possible into high quality physical environments, including green infrastructure corridors.	▪ To promote sustainable choice of transport by providing links which are easy and pleasant to use. ▪ To ensure access to green spaces is maximised and form part of the development. ▪ To create links with green spaces supported in the responses made in public consultation.
Public Transport	
Ensure high quality, appropriate frequency public transport provision from identified origins for York Central commercial uses and to identified destinations for York Central and British Sugar residential populations	▪ To encourage travel by bus where journeys can be made by public transport with direct, frequent services.
Facilitate optimal use of Park & Ride facilities (including an extended A59 Park & Ride)	▪ To encourage travel by bus between the park and ride and the city centre, thereby discouraging cars from the city centre. ▪ To respond to support given to the provision of Park & Ride facilities during previous consultation.
Minimise public transport journey times through, for example, dedicated routes, improved interchange facilities, public transport traffic priority measures etc.	▪ To encourage travel by bus where journeys can be made by public transport with direct, frequent services.

Ensure easily available information on public transport services, including real time service availability information where appropriate.	▪ To encourage travel by bus where journeys can be made by public transport
Promote public transport services as a travel option to new residents of the developments through information availability, personalised journey planning, promotional offers/free travel passes etc.	▪ To encourage by public transport where they can be made.
Tram-train is currently undergoing a national trial in South Yorkshire. These *are due to be completed in 2012 (with possible extension to 2014).* The benefits of including a stop at the British Sugar site are recognised and would be supported should the scheme be progressed. Flexibility will need to be provided to ensure that these proposals can be integrated within development schemes if a tram-train service is provided in the future.	▪ To encourage travel by tram-train if this is implemented in the future. ▪ To respond to comments supporting Tram-Train in previous consultation.
Private Motorised Vehicles	
Minimise parking availability throughout the development as a whole and more stringently in higher accessibility zones of the development, having regard to availability of public transport, development densities and proximity of services.	▪ To reduce the impact of vehicular traffic on air quality (including NO_2/particulates) and greenhouse gas emissions (e.g. CO_2) ▪ To reduce numbers of vehicles on the network.
Reduce direct vehicular trips to the city centre.	▪ To reduce the impact of vehicular traffic on air quality/NO_2 /particulates
Establish car clubs in low parking zones	▪ To reduce the impact of vehicular traffic on air quality and greenhouse gas emissions ▪ Reduce numbers of vehicles on the network arising from new development
Promote the use of more environmentally friendly vehicles through ▪ Differential charging based on environmental performance of vehicles ▪ Provision and maintenance of electric vehicle charging points ▪ Requirements for commercial service vehicles environmental standards.	▪ To reduce the impact of vehicular traffic on air quality/NO_2 /particulates
▪ Mitigate network impacts of residual vehicles through infrastructure works where necessary	▪ To enable an efficient and uncongested network, reducing environmental impacts of car based travel where no alternatives exist

8.6 The Sustainable Case work has enabled a long list of measures to be identified which is aimed at helping to offset the travel demands on the network arising from the level of development anticipated for the YNW area. At this stage these measures are indicative only as precise improvements to the network will emerge from more detailed micro-simulation, PM peak and Weekend peak modelling undertaken by developers. However, given the intention to commence masterplanning and production of development frameworks for the major development sites within YNW it is considered important that these measures area taken into account and necessary infrastructure is provisionally factored into the work at this stage.

8.7 It is clear that a positive approach to Travel Behaviour Change will be important to the successful management of all travel associated with YNW. Securing trip patterns that are by sustainable modes and influencing people to make smarter choices is critical to this. To make this happen a collaborative approach between the Council, development partners, key stakeholders and ultimately the new communities that will occupy the site will be required.

8.8 It is anticipated that the final transport masterplan for York Northwest will incorporate a wide range of the sustainable case measures. The masterplan will be produced by the Council over the coming months, in consultation with, and building on the detailed modelling work to be undertaken by the key stakeholders. The transport masterplan will be reflected in the spatial masterplanning work being undertaken on both York Central and British Sugar, and will inform the travel plans for individual plots/ sites.