

NW Bicester Masterplan

Interim Access and Travel Strategy

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A2Dominion

NW Bicester Masterplan

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1 Introduction and Overview

The masterplan and related documents set out the spatial vision to provide up to 6000 new homes at NW Bicester.

This document sets out the access and travel proposals for the NW Bicester Masterplan. It demonstrates how the development will be accessed by all modes of travel, the measures proposed to meet Eco town targets and how the anticipated impacts of travel generated by the development have been assessed.

Arriving at the strategy for access and travel has involved an iterative process of development and testing of proposals, discussions with Local Authority officers and consultation with wider stakeholders. The details of proposals will continue to be confirmed as planning applications are prepared and submitted, in line with the overall strategy set out in this document. This document represents a summary of the proposals to aid understanding and consideration of the Masterplan.

The strategy is set out in the following sections:

- Policy and Targets:
 - Eco-Town Standards
 - Bicester policy context;
 - Eco-town standards for travel;
 - Targets for NW Bicester mode share and containment of trips
- Achieving sustainable travel targets:
 - Walking and cycling linkages;
 - Bus strategy;
 - Travel planning
- Highway access and parking;
- Assessment of transport impacts;
- Issues for further consideration.



1.1 Development context

NW Bicester is being promoted as a site for up to 6000 new homes, after previously being identified as an Eco-town location within the Planning Policy Statement 1 supplement entitled Eco-Towns A Supplement to Planning Policy Statement 1 (July 2009) (PPS 1 Supplement).

In addition, the development proposal includes non-residential areas comprising commercial floorspace, leisure facilities and social and community facilities.

Planning permission was secured for the Exemplar stage of the development in 2012. The Exemplar stage comprises 393 dwellings. Development of this part of the site is anticipated to commence in 2014.

1.2 The Role of this Document

This strategy is one of a number of documents prepared on behalf of A2Dominion in support of the master plan. The Supplement to PPS1 requires the preparation and submission of a master plan to demonstrate the eco town standards set out in the PPS supplement will be addressed.

The masterplan will therefore provide the context for the formulation and preparation of subsequent planning applications. It is open to the Council to adopt the master plan for development control purposes.

This Access and Travel Strategy sets out the approach adopted, the analysis, assessment and justification for the access and movement framework. This will be supplemented in future by more details of traffic impact and mitigation.

The development of the strategy has involved on-going discussions and consultations with key stakeholders including officers of OCC, CDC and the Highways Agency.

2 Planning Policy

2.1 Eco-Town Standards

NW Bicester (NWB) is identified in the supplement to PPS1 entitled 'The Planning Policy Statement: Eco-Towns A Supplement to Planning Policy Statement 1' (July 2009) as one of four locations for an Eco Town. The principle of the development is supported by Cherwell District Council ('the Council') and the land to the north west of Bicester ('the Site') is identified in the emerging Local Plan as the area within which a development following eco-town principles and the standards in PPS1 Supplement could be developed.

The NW Bicester Eco Development is proposed in the Annex to Planning Policy Statement 1 on sustainable development. The supplement specifically sets out a range of minimum standards for Eco-towns, with NW Bicester identified as one of the four Eco-town locations.

Section ET11 – Transport sets out the standards to be achieved for transport:

ET11.1 Travel in eco-towns should support people's desire for mobility whilst achieving the goal of low carbon living. The town should be designed so that access to it and through it gives priority to options such as walking, cycling, public transport and other sustainable options, thereby reducing residents' reliance on private cars, including techniques such as filtered permeability. To achieve this, homes should be within ten minutes' walk of (a) frequent public transport and (b) neighbourhood services. The provision of services within the eco-town may be co-located to reduce the need for individuals to travel by private car and encourage the efficient use of the sustainable transport options available.

ET11.2 Planning applications should include travel plans which demonstrate:

- (a) How the town's design will enable at least 50 per cent of trips originating in eco-towns to be made by non-car means, with the potential for this to increase over time to at least 60 per cent*
- (b) Good design principles, drawing from Manual for Streets, Building for Life, and community travel planning principles*
- (c) How transport choice messages, infrastructure and services will be provided from 'day one' of residential occupation, and*

(d) *How the carbon impact of transport in the eco-town will be monitored, as part of embedding a long term low-carbon approach to travel within plans for community governance.*

ET11.3 Where an eco-town is close to an existing higher order settlement, planning applications should demonstrate:

(a) *Options for ensuring the key connections around the eco-town do not become congested as a result of the development, for example by extending some aspects of the travel plan beyond the immediate boundaries of the town, and*

(b) *Significantly more ambitious targets for modal share than the 50 per cent (increasing to 60 per cent over time) mentioned above and for the use of sustainable transport.*

ET11.4 Where eco-town plans intend to incorporate ultra-low carbon vehicle options, including electric car schemes to help achieve a sustainable transport system, planning applications should demonstrate that:

(a) *There will be sufficient energy headroom to meet the higher demand for electricity, and*

(b) *The scheme will not add so many additional private cars to the local road network that these will cause congestion.*

ET11.5 Eco-towns should be designed in a way that supports children walking or cycling to school safely and easily. There should be a maximum walking distance of 800m from homes to the nearest school for children aged less than 11, except where this is not a viable option due to natural water features or other physical landscape restrictions.

ET11.2 seeks for a maximum of 50% of total trips from the development to be by car means, rising to 60% over time. 'Car' modes are defined for NW Bicester as car drivers, passengers, electric vehicles and use of goods vehicles. 'Non-car' modes include walking, cycling, bus or coach, rail, taxi, and community transport.

It is anticipated that the current Government will cancel the current PPS Supplement in due course. Notwithstanding, the requirements of the Supplement to PPS1 will be carried over by Cherwell (subject to review and amendments as necessary) into the Local Plan. The Council has already set out its policy position in respect of NWB in the emerging Local Plan and granted planning permission for the Exemplar Phase of NWB for 393 new homes, local facilities and land for a primary school.

2.2 Bicester Policy Context

In developing the Access and Travel Strategy, reference has been made to the relevant documents that set out current policy for access for Bicester as a whole to inform the context for NW Bicester. These include:

- Oxfordshire County Council's Local Transport Plan 3 and Infrastructure Plan.
- The Cherwell District Council Local Plan Submission Version 2014;
- Bicester Masterplan Draft for Consultation – prepared to form Supplementary Planning Guidance, the document in draft sets out a movement strategy for the overall town; and
Bicester Peripheral Routes Study – prepared on behalf of the County Council, traffic modelling and appraisal work has been undertaken by White Young Green to identify transport improvements to facilitate growth of the town to 2031 and beyond. This forms part of the evidence base for the Local Plan.

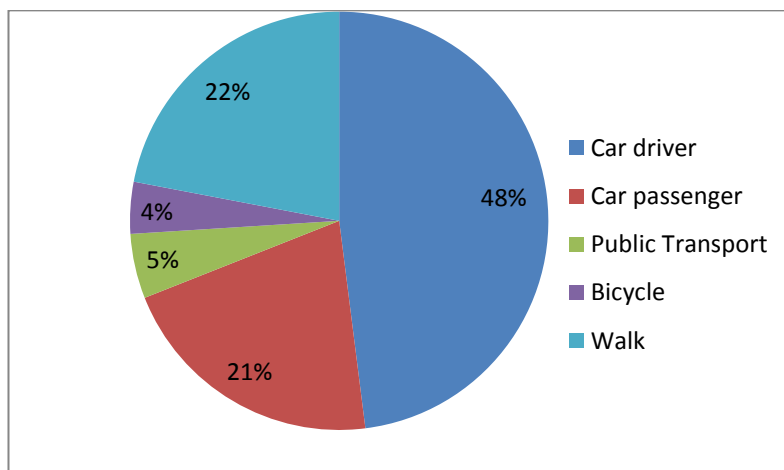
3 Targets

3.1 NW Bicester Mode Share and Containment of Trips

Existing Bicester Trips

Baseline information on mode share of trips is available from the Bicester Household Travel Diary Data (2007 and 2010). The share of trips by various modes for Bicester residents as a whole (2010 survey) is shown in **Figure 1**.

Figure 1: Percentage of Total Travel by Mode, Bicester Residents, 2010



Source: Travel Behaviour Survey, Summary of Results, Autumn/Winter 2010/11, OCC 2011

The figures indicate that at present **69% of total trips are made by car modes and 31% by non-car modes**. Mode share varies by distance, with **Table 1** showing share of each mode for different travel distances from the 2010 survey. It shows that the shortest journeys are already 78% non-car whereas the longer journeys of more than 3km are 86% by car (including car passengers). For the NW Bicester development, it is considered that trips of under 1km represent 'internal' trips, those of 1-3km are external trips within Bicester and those of more than 3km are external to Bicester.

Table 1: Existing Mode Share by Trip Length

	2010 Bicester Household Survey		2010 Modal Share INTERNAL TRIPS (under 1km)		2010 Modal Share EXTERNAL TRIPS WITHIN BICESTER (1-3km)		2010 Modal Share EXTERNAL TRIPS OUTSIDE BICESTER (>3km)	
	% by mode	Total Car/ Non Car	% by mode	Total Car/ Non Car	% by mode	Total Car/ Non Car	% by mode	Total Car/ Non Car
Car driver	48.00%	69.00%	12.00%	22.00%	39.00%	60.00%	65.00%	86.00%
Car passenger	21.00%		10.00%		21.00%		21.00%	
Bus passenger	5.00%	31.00%	1.00%	78.00%	2.00%	40.00%	6.00%	14.00%
Bicycle	4.00%		5.00%		8.00%		3.00%	
Walk	22.00%		72.00%		30.00%		5.00%	
Total	100%	100%	100%	100%	100%	100%	100%	100%

The key features of existing travel patterns for Bicester residents are:

- work related journeys account for 37% of all trips, with shopping and education the next most significant activities;
- some 52% of current trips are made by 'sustainable' modes, when including car passengers and electric vehicle users as 'sustainable';
- overall 56.4% of trips by Bicester residents are contained within Bicester and an estimated 25% of trips are contained within the mainly residential sectors of the town;
- the level of containment of trips within 3km of Bicester town centre varies substantially by trip purpose, with 62% of educational trips, 50% of shopping trips and 44% of leisure trips contained compared to only 20% of work trips; and
- 48% of car trips by Bicester residents are made within Bicester and 52% are to destinations outside of Bicester.

Target Containment of Trips and 'Non-car' Mode Share

The Masterplan seeks to achieve an increased level of containment of trips within the development and in Bicester than current local developments. The baseline information on modal share and containment of trips provides an indication of the travel patterns that would be expected from NW Bicester, if the development was a standard residential scheme similar to existing Bicester.

The NW Bicester Masterplan seeks to meet PPS1 Supplement criteria. The Masterplan seeks to provide a whole range of services and facilities together with jobs in close proximity to homes. **The target level of containment is for at least 35% of trips to be within NW Bicester and 60% to be within Bicester as a whole (i.e. 40% or less travelling outside of Bicester).** This compares to an estimated 25% at present within neighbourhoods and 56% within Bicester as a whole. This aims at some increase in containment but not a large increase, recognising the complexities and limited influence over people's choices about where they live, shop, work, and send their children to school.

The Masterplan seeks to achieve the overall modal share by 'non-car' modes set out in the PPS 1 targets. This will vary by length of trip. **Table 2** sets out target modal share for trips within NW Bicester (under 1km), within Bicester (1-3km) and outside of Bicester (more than 3km). This is based on setting targets for reduction in car use against the baseline for each of the different distances with the **aim of achieving an overall modal share of no more than 50% by car.** The overall mode share will be influenced by the proportion of trips of each length.

Table 2: Target Modal Share – Bicester Households

	2031 PPS Target All trips		2031 Internal Trips		2031 External Trips within Bicester		2031 External Trips Outside of Bicester	
	% by mode	Total Car/ Non Car	% by mode	Total Car/ Non Car	% by mode	Total Car/ Non Car	% by mode	Total Car/ Non Car
Car driver	40.00%	50.00%	7.00%	14.00%	35.00%	52.00%	57.00%	77.00%
Car passenger	10.00%		7.00%		17.00%		20.00%	
Bus passenger	10.00%	50.00%	1.00%	86.00%	5.00%	48.00%	11.00%	23.00%
Bicycle	10.00%		10.00%		10.00%		7.00%	
Walk	30.00%		75.00%		33.00%		5.00%	
Total	100%	100%	100%	100%	100%	100%	100%	100%

The targets suggest an overall increase in walking trips from 22% in Bicester at present to 30% for NW Bicester; in cycling trips from 4% to 10% and in bus passenger trips from 5% to 10%. It should be noted that walking, cycling and bus trips include journeys to the rail stations for longer distance travel by public transport. These targets are ambitious but possible given the proposals set out in the following section. It should also be noted that the targets assume a significant reduction in car passengers since these are 'car' based trips within PPS1 targets. However, there are clear sustainability advantages of continuing to encourage car sharing to minimise the impact of traffic although it is outside of the 50% target.

4 Achieving Sustainable Travel Targets

The strategy to achieve the objectives and targets for sustainable travel has four main strands:

- Limiting the need to travel
- Providing high quality walking and cycling linkages
- Providing high quality public transport and
- Promoting sustainable travel and vehicle choices

4.1 Limiting the Need to Travel

Importance of the Masterplan Land Use Mix

The baseline analysis demonstrates there is a strong relationship between the purpose of a trip, the distance travelled and the mode used. Education trips for example tend to take place locally and are mainly by sustainable travel modes. Work trips tend to be to destinations outside of Bicester and are more likely to be by car.

The implications for NW Bicester Masterplan have been taken into account in developing the land use proposals. The inclusion of education facilities and local shopping and services is crucial to achieving modal share targets. The development of housing without associated facilities would inevitably lead to longer distance trips and these would be more likely to be by car.

Moreover, travel to work is a significant element of car based travel, given that 80% of current work trips by Bicester residents are to destinations outside of the town. Providing employment opportunities within NW Bicester and Bicester as a whole, as well as home working opportunities, will be an important factor in limiting trip distances and achieving a larger proportion of travel by sustainable modes.

Land Use Containment

The mix and proximity of land uses in the Masterplan is designed to maximise the containment of trips within the NW Bicester Masterplan, thus limiting the need for vehicular travel.

Figure 2 shows the accessibility of key destinations with the proposed movement framework, showing that schools and facilities will be highly accessible, although it is acknowledged that some 30% of homes will be within walking distance of a single convenience shop rather than a range of facilities, which may be less likely to encourage sustainable travel. A range of other community, social, health and leisure facilities will be provided including access to a comprehensive provision of open space and recreation opportunities.

It is proposed that 4,600 jobs will be supported by NW Bicester, including around 2,000 jobs at the proposed business park, with further provision elsewhere within the local area, thus maximising potential for people to live and work within NW Bicester and the town.

Figure 2: Movement and Access Framework with Key Destinations

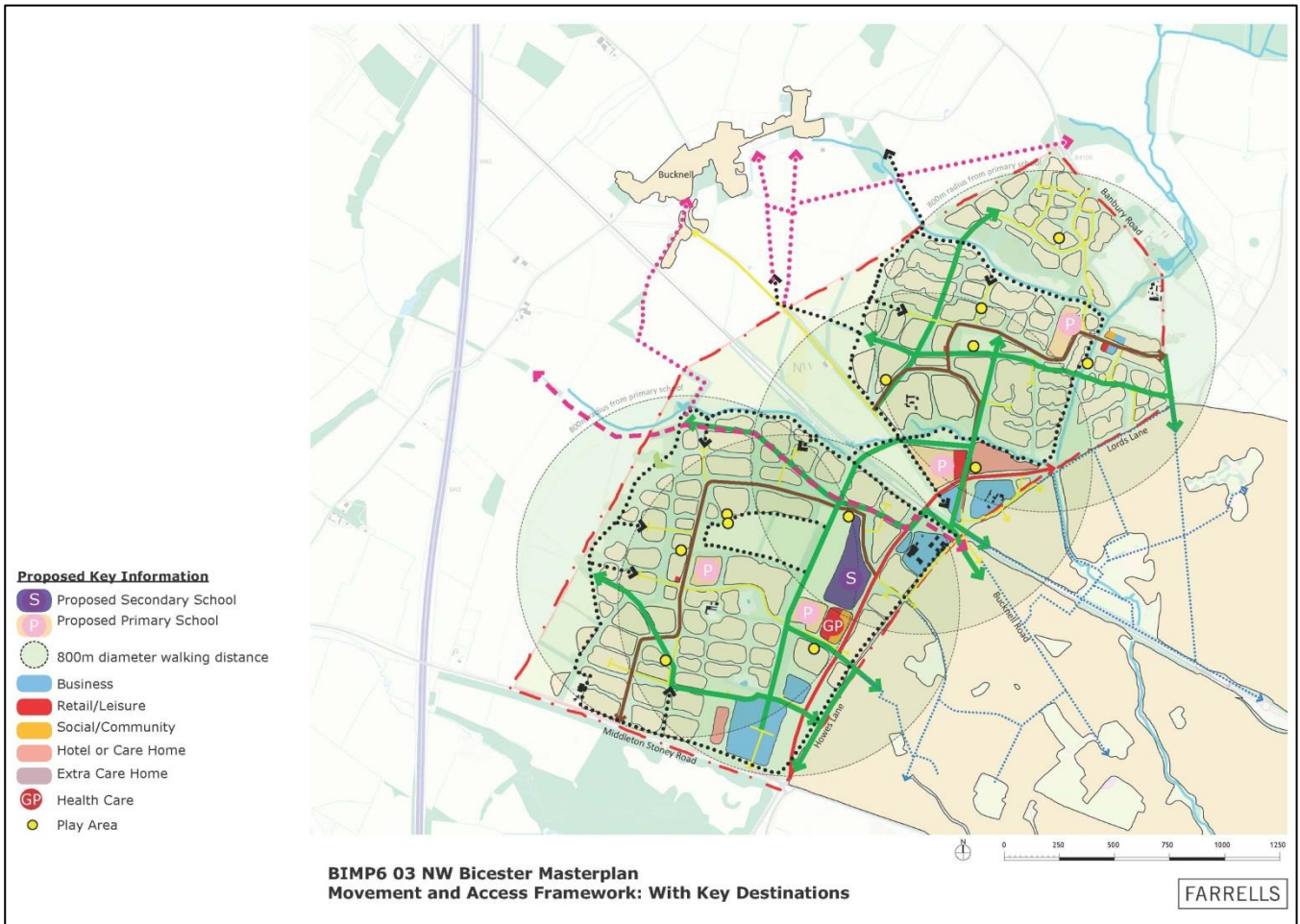


Table 3 shows the assumptions about what proportion of trips of each main purpose by NW Bicester residents will be made within the Masterplan, within Bicester and outside of Bicester. The baseline figures are discussed in detail in Appendix Four: Mode Share and Containment.

Table 3: Containment Assumptions of Resident Trips by Journey Purpose

Journey Purpose	% Internal Trips in NW Bicester	% Trips in Bicester	% Trips outside Bicester
Commuting	10	30	60
Business	10	30	60
Education	65	15	20
Shopping	30	30	40
Other services	50	20	30
Visiting friends and relatives	15	30	55

Home Working

The NW Bicester Economic Strategy estimates that from 6,000 homes, 1,075 people will work from home. This number is a conservative estimate, as the proportion working from home in the Eco Development should be above average, as the homes and provision of work hubs is intended to enable and encourage homeworking.

Homeworking will be strongly encouraged through the design of housing and infrastructure across the eco development. In particular, next generation broadband accessibly to all homes and free Wi-Fi available in public area. Facilities and services provided by the Eco Business Centre and its satellites will provide virtual office facilities for home workers and a marketing campaign will feature the attractions of, and facilities for, home working.

4.2 High Quality Walking and Cycling Linkages

In order to achieve the amount of trips by walking and cycling set out in the targets, the Masterplan has been developed to ensure a high level of accessibility within the site on foot and cycle and strong connections to off-site destinations. A Walking and Cycling Strategy has been formulated with regard to local and national policy. The ingredients of the ideal walking and cycling routes are illustrated in **Figure 3**.

Figure 3: Ingredients of High Quality Walking and Cycling routes

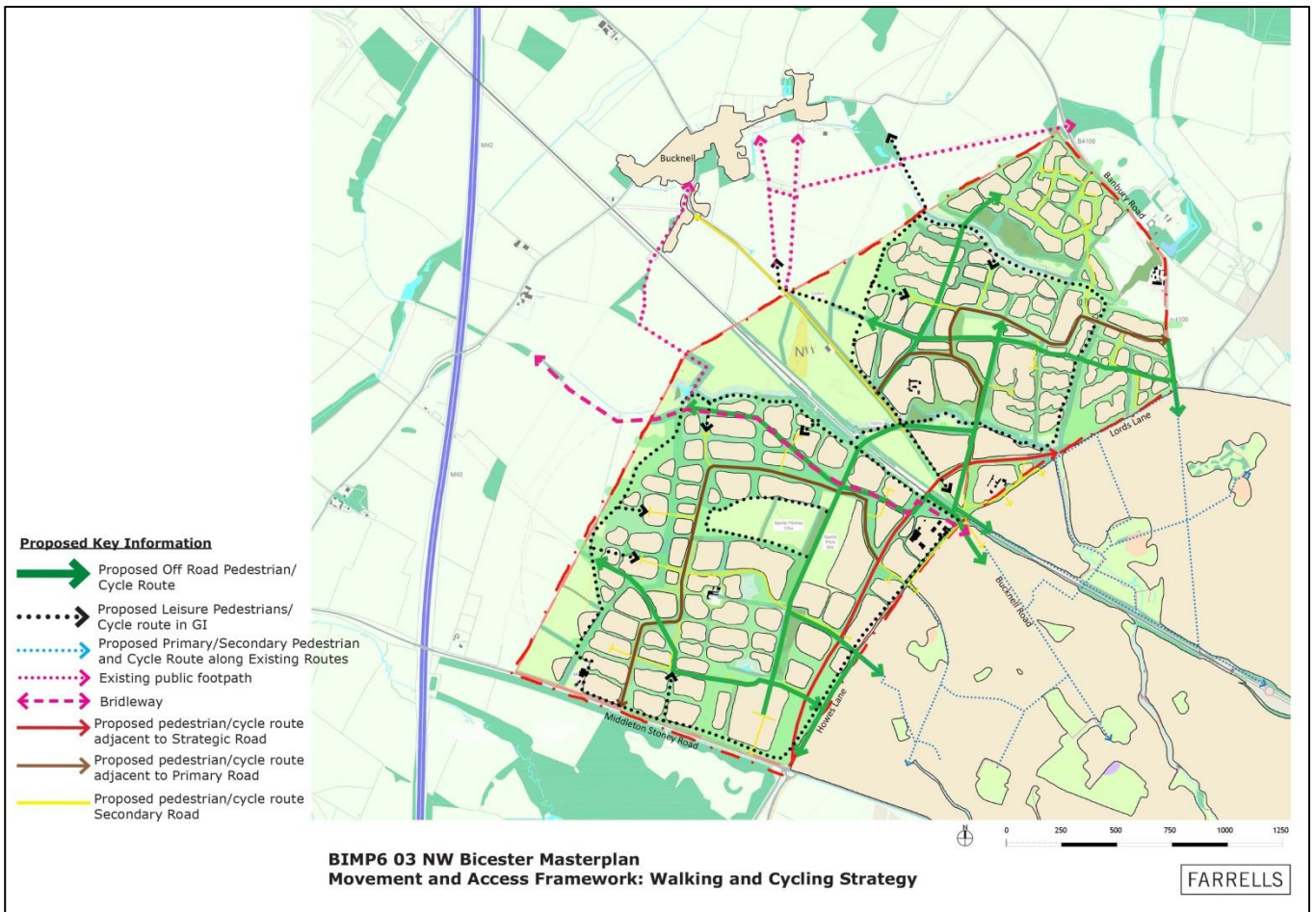


Internal Connections

It is proposed that the Masterplan internal walking and cycling routes will be of a high quality with all-weather surfacing, well-lit and easily maintained. The layout of home and routes will ensure natural surveillance to increase user safety. Where possible pedestrians and cyclists will be segregated to minimise potential conflicts, with walking and cycling routes segregated from vehicular routes. Safety of pedestrians and cyclists will be ensured by providing routes of adequate widths and with numerous crossing points.

To ensure cycle and walking routes are well used and fit for purpose, they will be split into two distinct categories. 'Direct routes' will act as commuting routes to allow direct and fast access to key local employment areas, schools, local centres and hubs. This allows for the provision of cyclists and walkers travelling to school and to work. As a contrast, a network of 'leisure routes' will be introduced, which allow more 'weekend' routes, longer meandering paths, these will tend to be more rural and will take in the arable farmland, the Bure stream and the hedgerows. The routes would not be lit.

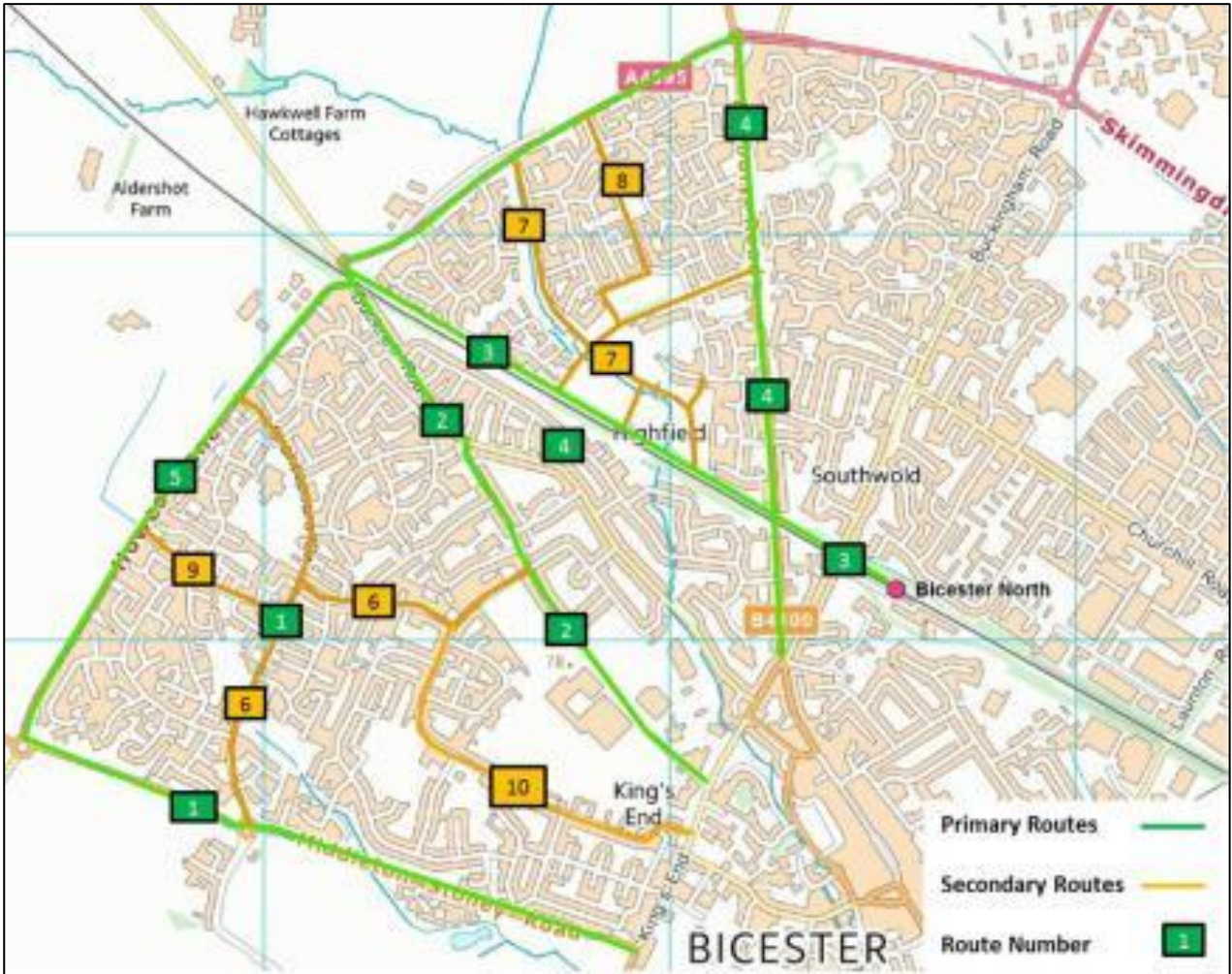
Figure 4 illustrates the proposed walking and cycling connections within the Masterplan.



External Connections

A detailed audit and review was undertaken of walking and cycling routes between the development and the rest of Bicester. From this, a number of primary routes were identified which are likely to be the main routes for residents of NW Bicester as well as secondary connections, also important but less direct. **Figure 5** shows the primary and secondary route connections. It is recognised that these connections are not all of the routes which will be used but these provide the best opportunity for direct routes which could be enhanced or upgraded and provide for both walkers and cyclists.

Figure 5: Primary and Secondary Connections from NW Bicester



Primary Connections

The primary connections between the development and Bicester, and east-west connecting the different parts of the development, in order to encouraging walking and cycling are considered to be:

- Middleton Stoney Road – connecting the SW corner of the development to the south of the town centre, Kingsmere development and Bicester Village (**Route 1**);
- Bucknell Road to Queens Avenue via George Street (past the College and St Mary’s Primary School) – connecting the central part of the site to the town centre (**Route 2**);
- Alongside the railway from Lord’s Lane to Bicester North Railway Station (**Route 3**);
- Adjacent to Banbury Road – connecting the east side of the development with the town centre (**Route 4**); and
- Alongside Lord’s Lane and Howes Lane – connecting the different parts of the development (**Route 5**).

In response to the principles for routes, primary connections should be:

- Segregated from traffic;
- All weather surface;
- Lit;
- The most direct routes.

Secondary Connections

The following connections are considered to be of secondary importance, but still of significance in linking the central areas on the east and west sides of the development into and through the residential areas:

- Shakespeare Drive – connecting the western part of the site south to Middleton Stoney Road and east via Blenheim Drive and Leach Road to George Street (**Route 6**);
- Routes through Bure Park nature reserve connecting to the railway route – connecting the central part of the east side of the development to the town centre (**Route 7**);
- From Lord's Lane to Lucerne Avenue through the Bure Park housing estate (as above) (**Route 8**);
- Connection from Howes Lane to Dryden Avenue and via Greenwood Drive to Shakespeare Drive (**Route 9**);
- Connection from Leach Road to Kings End via Kingsclere Road (**Route 10**).

In response to the principles for routes, secondary connections may be:

- Sharing quiet streets with traffic; and
- On gravelled surfaces and potentially unlit if in environmentally sensitive areas.

Other Routes

In addition to the primary and secondary connections there are certain routes in the wider town that will also be important for connections from NW Bicester, as well as for residents of the town as a whole. Key routes that may require consideration include:

- From Bicester North Station area to Launton Industrial Estate. This was not surveyed, but it is noted that there is an existing off road walking and cycling route running to the north of the railway line on Town Walk North and connecting via Town Walk East to the industrial estate;

- From the town centre/ Kings End to Bicester Town Station; and
- From North West Bicester to the Kingsmere development to the south.

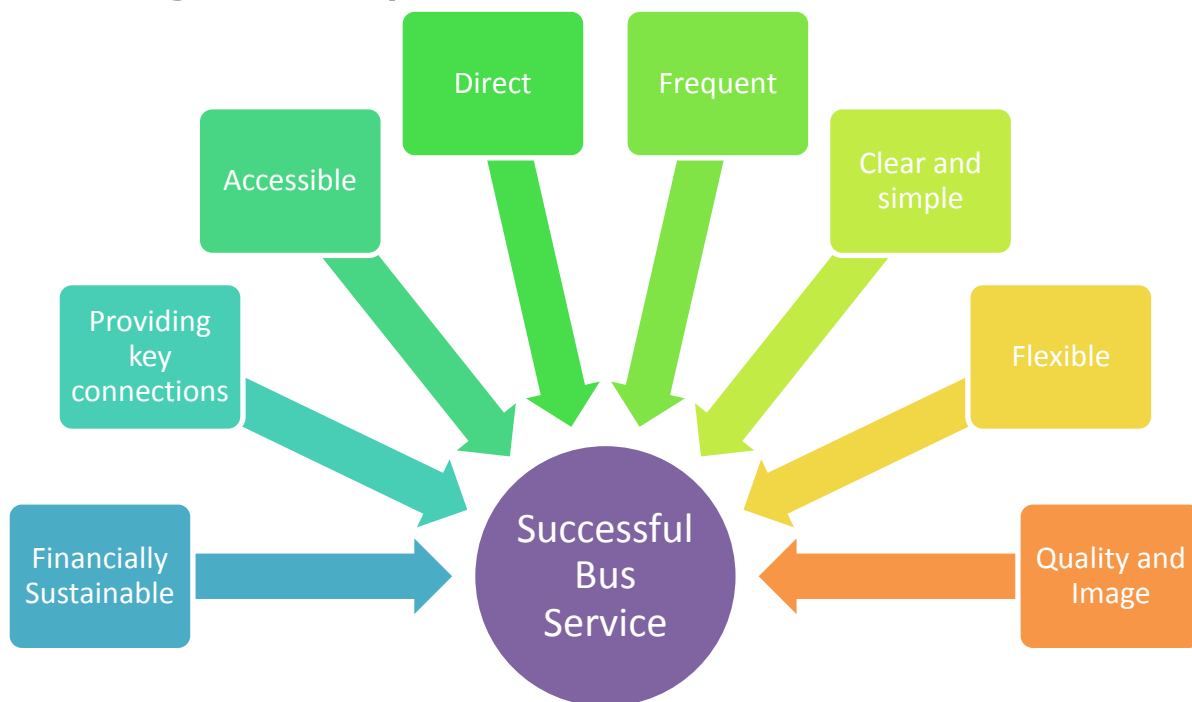
Improvements to routes will be further investigated in conjunction with Oxfordshire County Council and are likely to form part of contributions to off-site works as part of planning applications for the development phases.

4.3 High Quality Public Transport

Establishing a Successful Bus Service

PPS1 seeks for a minimum of 50% of travel to and from the site to be via non car means and the bus will have a significant role to play in providing a means of sustainable travel for journeys by residents of the site and those employed/ visiting NW Bicester. Moreover, the bus will provide accessibility to education, jobs, services and facilities for those who do not have a car, which in particular will benefit young people, elderly people and those on lower incomes. A service which does this effectively as part of the long term development of the site will be a 'successful' bus service. Discussions in the Transport Workstream, following consideration of what works elsewhere, has led to the following aims for a bus service for NW Bicester in order for it to be successful as shown in **Figure 6**.

Figure 6: Components of a Successful Bus Service



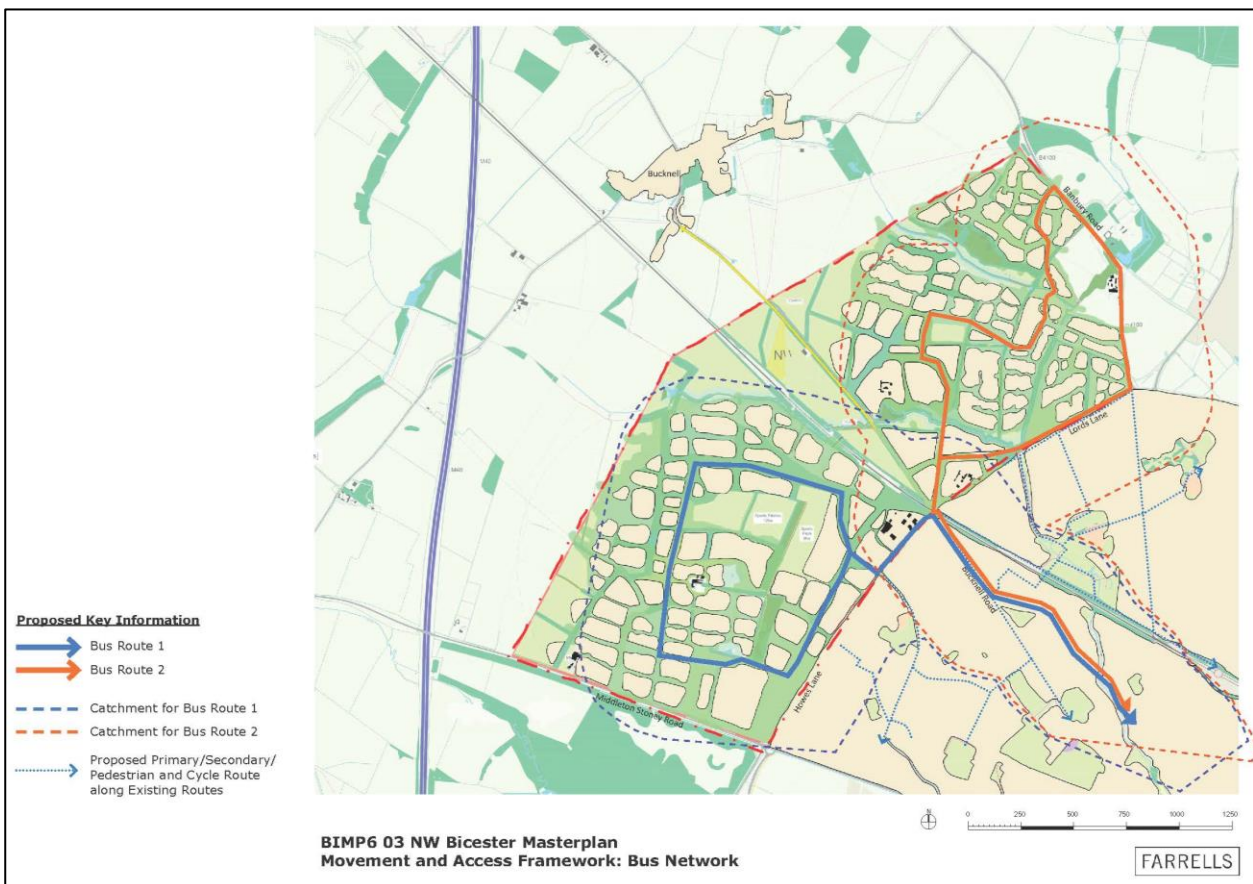
It is recognised that an effective bus strategy needs to balance the above aims, noting that there can be a conflict between aims, for example in providing a high degree of accessibility with directness and financial sustainability.

Proposed Bus Routes

The proposed bus routes at the full build out of the development will go to and from Bicester Town Station, through the town centre to Bucknell Road and then loop through the south and north sides of the site. A full loop would be established on both sides of the railway and all services would arrive and depart via Bucknell Road. On the south side the service would be most likely to operate clockwise through the development so that passengers from the town centre can alight at the employment site first, then residents can board services towards the town centre. The proposed routes are shown in **Figure 7**.

The routes each assume that two bus services operate – one to the north and one to the south of the railway line – as this provides the shortest journey time to and from the town centre and the station and reflects the phasing of the development (further detail on which can be found in the Phasing and Implementation Brief). On balance however, it is considered that the priority should be maximising the attractiveness of the routes for the largest number of people, who are more likely to be travelling to and from the town centre (and to the rail stations and connecting to other bus routes). The proposed bus routes respond to this brief.

Figure 7: Bus Routes from Phase 4 and Full Development of NW Bicester



Phasing of Bus Routes

The development will be phased and build out in different areas of the Masterplan (please refer to the Phasing and Implementation Brief for further information). There is therefore a need to phase bus services to reflect the development phasing.

Routes should serve each of the early phases of the development, in order to ensure that there are bus routes within 400 metres of homes as the site builds out. Initially the eastern route would go to Bicester North Station but over time both routes will directly connect to Bicester Town Station:

- **Phase 1** – this involves a northern loop (the route planned for the Exemplar) and a southern loop which would provide access to part of the northern site near Bucknell Road and run on the new Howes Lane. The northern loop gives access to Bicester North Station in the early years of the development prior to Evergreen3 and the increasing services from Bicester Town Station. The southern loop would use Middleton Stoney Road coming out of the town centre to minimise the loop length.
- **Phase 2 and 3** – involve the establishment of a full loop on the northern side. The bus would travel up Bucknell Road, along Lord's Lane and Banbury Road, then through the development from north to south. This direction would enable those living at the northern end of the site to use a bus to the centre of the site and walk to the secondary school for example. On the southern site the Phase 1 loop would be extended to provide a bus service to properties close to the Middleton Stoney Road/ site access junction.

Service Frequencies

It is proposed at present that there is a frequency of every 15 minutes on both loops from the occupation of an agreed number of units up to and including Phase 3. After this point providing the 15 minute service has become commercially viable, frequencies might be increased to every 10 minutes.

Patronage Assumptions

Potential patronage in each phase has been estimated is based on the forecast bus use for the development in each phase, assuming a modal share of 6.6% for buses with a service frequency of 4 per hour to all parts of the development. This can be compared to the current modal share for buses of 5% for Bicester Households (2010 survey). It is considered this is realistic given the level of accessibility, frequency and directness of the services and is compatible with the targets set out in the earlier section.

Bus Priority

The Masterplan layout includes the provision a bus only link from Bucknell Road to the north side of the development and from the new link to the west side of the development. The means of designing and enforcing the bus links is under discussion.

There is a need to afford greater priority to buses on Bucknell Road and in the town centre, and various measures are under discussion. The use of Bucknell Road as the main bus route in the long term gives advantages to buses in that other routes are expected to be more heavily trafficked.

Bus Infrastructure

A high standard of infrastructure will be provided on bus routes including shelters with seating, real time information and cycle parking.

Links to Other Services

The bus route strategy focusses on provision of links to the town centre and Bicester Town Station. This will also provide the opportunity to extend services to other areas of the town (such as the Launton Road employment area) or to interchange with longer distance bus services. Moreover, there may be the opportunity to develop existing services particularly on the south side of the development to minimise service provision costs.

Commentary

The bus routes suggested are an indication of how services may develop. Bus services will however evolve over time to meet passenger needs and there may be demand for additional / alternative services such as north to south on the new link and then westwards to wider destinations. In summary, this will be an evolving part of the Masterplan.

4.4 Promoting Sustainable Travel and Vehicle Choices

A comprehensive range of measures will be developed as part of each phase of the Masterplan to promote sustainable travel and vehicle choices. These will include:

Overarching initiatives

- A travel plan co-ordinator for the Masterplan responsible for co-ordinating sustainable travel initiatives across the development, reporting to a travel plan group made up of community and business representatives and for the long term monitoring of

measures to enable the TPG to be able to respond to travel behaviour and propose appropriate measures

- Work with every business and non-residential organisation to develop travel plans
- Branding and communication of sustainable travel as part of the Eco development including home screens, website, newsletters
- Promoting travel awareness campaigns such as Walk to School Week
- Providing personalised travel planning to all new households and employees

Promoting cycling

Recognising the potential to increase cycling journeys, a range of initiatives are proposed:

- Quality cycle storage at the homes and cycle parking facilities in the local centres and employment areas;
- Menu of freebies for all new residents to choose from including free bikes, free folding bikes, free bike servicing, free high visibility waterproofs, free bike lights or locks, free panniers;
- Promotion of electric bikes through link up with local bike shop offering supply and maintenance;
- Investigation of potential for a cycle rickshaw business;
- Adult/ family cycle training
- Governance body to set up a cycling club and a programme of events such as sponsored rides raising money for local Bicester charities, "Pimp my bike" sessions; and
- Best practice in cycle promotion through cycle to work schemes, cycle to school schemes, Bikeability programme, taking advantage of all the best practice learnt by Sustrans and the Cycling Demo Towns.

School travel

School travel represents a significant opportunity to achieve travel by sustainable modes and School Travel Plans will be implemented with specific measures such as:

- Walking buses
- Child-friendly route marking of safe routes to school;
- Cycle proficiency/ road safety training provided to all pupils;
- Provision of covered cycle and scooter storage and storage facilities for helmets/ reflective jackets etc.;
- Staff car share spaces and promotion of initiatives; and

- Engagement with national/ OCC initiatives such as 'Walk to School Week'

Travel to workplaces

It is recognised that there will be trips made to NW Bicester from elsewhere in Bicester or further afield to take up job opportunities. Workplace travel plans will be developed with initiatives including:

- Personalised travel plans for each new employee;
- Provision of secure cycle storage, showers and lockers;
- Promotion of car sharing – including provision of car sharing spaces and a guaranteed lift home scheme;
- Provision of 3 month bus taster tickets; and
- Timing of deliveries and use of electric vehicle fleets, or in the case of the local shops, using cycles for home deliveries.

More Sustainable Car Use

Recognising that residents will use cars, initiatives are also proposed to reduce the number of vehicles owned on site and to promote more environmentally friendly vehicles:

- Lower parking provision in the higher density residential areas and local hubs near to the bus route
- The establishment of a car club
- Promotion of lower emissions vehicles and electric vehicles including providing charging points, special deals with manufacturers, consideration of using hybrid or electric buses

5 Providing Vehicular Access and Parking

5.1 Vehicular Access Strategy

A vehicular access strategy has been developed with the following key considerations:

- The need to integrate NW Bicester into the town and thus to minimise the barrier presented by new road links to the development and ensure they can be easily crossed by walkers and cyclists
- Addressing the constraints presented by the existing Howes Lane/ Lord's Lane corridor and in particular the rural lane character of Howes Lane and the skewed underpass of the railway with the junctions on either side
- Minimise impacts of traffic in nearby existing residential areas and communities

A range of options were assessed to arrive at the best access strategy for the Masterplan when considering the whole range of factors. Each option assumed a single carriageway of lower speed than the existing route. A route was selected and developed and is incorporated into the Masterplan, including the following:

- a new road to replace Howes Lane and Lord's Lane from the Middleton Stoney Road roundabout to join Lord's Lane east of Peregrine Drive;
- a new underpass of the railway north of the existing Avonbury Business Park, passing to the north of Lord's Farm on the east side of the railway;
- keeping part of the old Howes Lane and Lord's Lane to provide access to and from the existing residential areas and Bucknell Road to the south;
- A bus only section south of the new link on the east side of the railway;
- Traffic travelling from Bucknell Road in the town centre will be diverted to the east on the Old Lord's Lane, then north through the masterplan, thus aiming to reduce the attractiveness of the route for through traffic.
- A roundabout junction of the old Howes Lane and Shakespeare Drive.

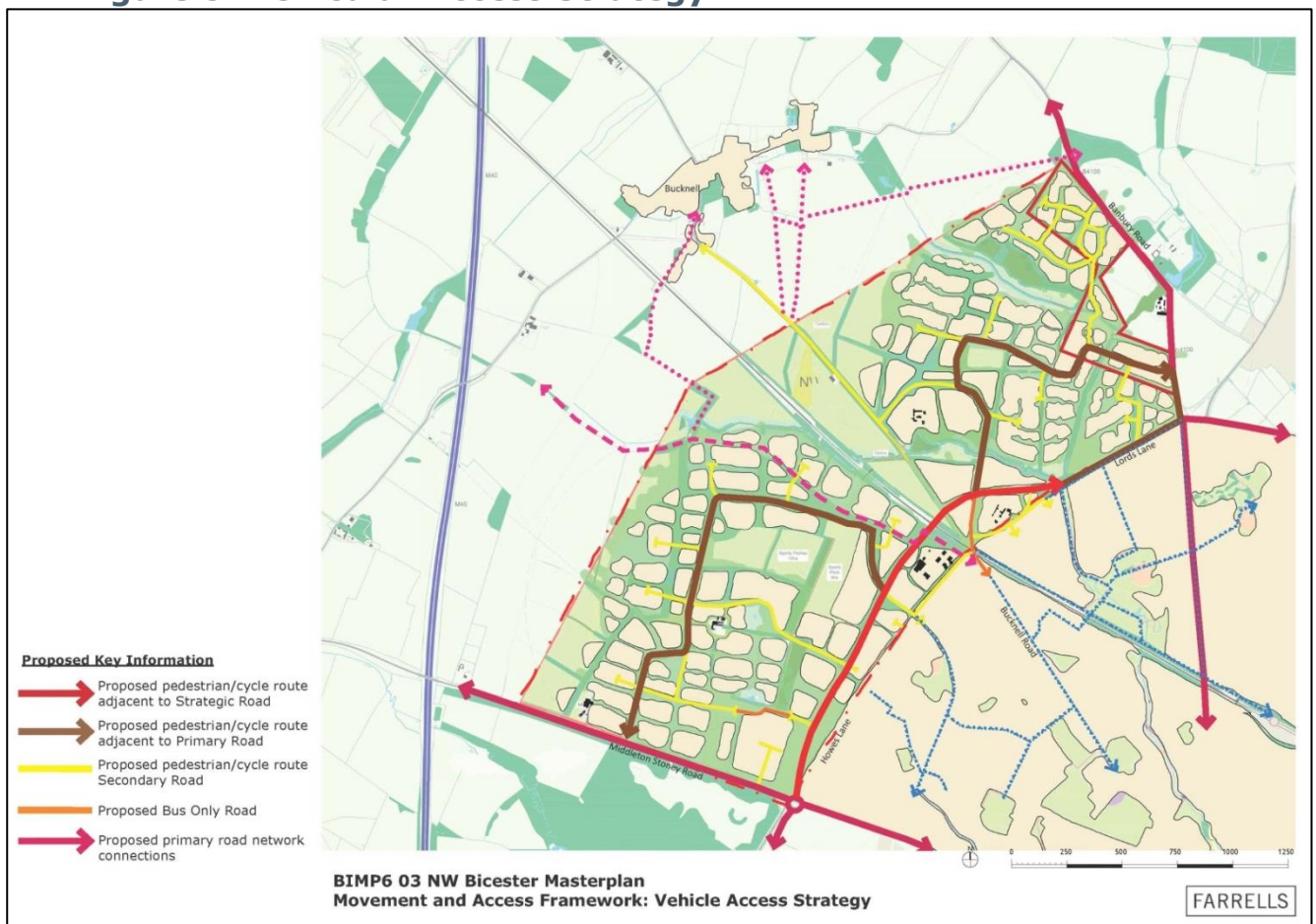
Access into the development is proposed from a number of junctions:

- Two priority junctions from Middleton Stoney Road – one to the primary road through the development and the other into the employment site;
- Three traffic signalised junctions on the new Howes Lane link, including a cross roads junction with an extended Shakespeare Drive serving the south side of the development;
- Three traffic signalised junctions on the new Lord’s Lane link and existing Lord’s Lane on the north side of the development;
- An access onto Bucknell Road on the east side of the railway;
- Two priority access junctions onto Banbury Road (from the Exemplar development).

The number and location of junctions aims to spread traffic movements on the road network rather than lead to a concentration in a small number of locations which minimises traffic routing through other parts of the development as well as adjacent residential areas and communities.

Figure 8 illustrates the Vehicular Access Strategy.

Figure 8: Vehicular Access Strategy



5.2 Parking Provision

Parking will be provided for homes following the Exemplar development in terms of overall provision. The provision will be part of a parking strategy which links to the Travel Plan for each part of the development.

6 Assessing Transport Impacts

The transport impacts of the NW Bicester Masterplan are being assessed and there is an ongoing discussion with Oxfordshire County Council and the Highways Agency with regard to the impacts and potential mitigation. In order to assess impacts a methodology has been followed in close discussion with the County Council.

Proposed Development

Table 4 sets out the overall quantum of development which has been assessed (dated 27th January 2014).

Table 4: Masterplan Development Quantum

Residential – Privately Owned (70%)	3,925 units
Residential – Affordable Housing (30%)	1,682 units
Children’s Nursery	200 children
Primary School	1,680 pupils
Secondary School	1,500 pupils
B1 Office Business Park / Eco Business Centre	9,954 sqm
B1 Office	15,120 sqm
B2/B8 Industrial Units/Storage and Distribution	40,384 sqm
Local Shops	3,700 sqm
Community Hall/Multi Faith Centre	3,450 sqm
Health Centre	1,320 sqm

Total Person Trip Rates

A forecast of total person trips from the development has been made using agreed trip rates from the TRICS database agreed with OCC. The traffic resulting from two different rates have been assessed (1) an 85th percentile rate as this was preferred by OCC as representing industry practice (although the particular set of data available gives a significantly higher rate than other consented developments in Bicester have used and higher than the trips made by Bicester households known from the 2010 household travel survey) and (2) an average trip rate which is in line with local consented developments and the surveyed trips of Bicester residents.

Mode Share and Containment

Assumptions about modal share and containment of trips, based on a detailed understanding of existing travel patterns in Bicester and what the Masterplan provides in terms of land uses and sustainable travel infrastructure and measures, have been applied to the total person trips generated by the Masterplan development. Applying these assumptions to each land use in each part of the development achieves 53% car use and 55% overall containment in Bicester in total for the Masterplan (although this is higher in the AM peak at

61% and lower in the PM peak at 51%). These figures have higher car use than the target modal share and lower containment than the target but this means the assumptions provide a robust approach to the assessment of traffic movements.

Trip Generation

The number of trips by each mode across defined zones of the Masterplan site has been estimated using the trip rates and mode share and containment assumptions. The total trips from the development excluding the Exemplar for the 85%ile and average trip rates are shown in the tables below, by each mode.

Table 5: Total Trip Generation by Mode – 85%ile Trip Rates

	AM peak (08:00 to 09:00)			PM Peak (17:00 to 18:00)			12 Hour (07:00 to 19:00)		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
Car driver	1292	1838	3129	1643	1408	3051	11550	13563	25113
Car passenger	540	820	1360	681	571	1252	4837	5698	10535
Bus passenger	229	323	552	293	253	545	2051	2408	4459
Bicycle	297	527	824	368	292	660	2676	3180	5856
Walk	1075	2397	3473	1301	940	2240	9856	11890	21745
Total	3433	5904	9338	4286	3463	7749	30969	36739	67708

	AM peak (08:00 to 09:00)			PM Peak (17:00 to 18:00)			12 Hour (07:00 to 19:00)		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
Car driver	14%	20%	34%	21%	18%	39%	17%	20%	37%
Car passenger	6%	9%	15%	9%	7%	16%	7%	8%	16%
Bus passenger	2%	3%	6%	4%	3%	7%	3%	4%	7%
Bicycle	3%	6%	9%	5%	4%	9%	4%	5%	9%
Walk	12%	26%	37%	17%	12%	29%	15%	18%	32%
Total	37%	63%	100%	55%	45%	100%	46%	54%	100%

Table 6: Total Trip Generation by Mode – Average Trip Rates

	AM peak (08:00 to 09:00)			PM Peak (17:00 to 18:00)			12 Hour (07:00 to 19:00)		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
Car driver	1058	1461	2519	1297	1112	2409	10198	10680	20878
Car passenger	435	650	1085	537	448	986	4258	4463	8721
Bus passenger	188	257	444	231	200	431	1812	1897	3709
Bicycle	227	415	643	289	225	515	2336	2456	4793
Walk	750	1873	2623	1019	698	1717	8486	8968	17453
Total	2659	4655	7314	3374	2683	6057	27090	28464	55554

	AM peak (08:00 to 09:00)			PM Peak (17:00 to 18:00)			12 Hour (07:00 to 19:00)		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
Car driver	14%	20%	34%	21%	18%	40%	18%	19%	38%
Car passenger	6%	9%	15%	9%	7%	16%	8%	8%	16%
Bus passenger	3%	4%	6%	4%	3%	7%	3%	3%	7%
Bicycle	3%	6%	9%	5%	4%	8%	4%	4%	9%
Walk	10%	26%	36%	17%	12%	28%	15%	16%	31%
Total	36%	64%	100%	56%	44%	100%	49%	51%	100%

To aid comparison of the level of traffic being tested to other development in the town, Table 7 shows the vehicle trip rates used for general developments in the Bicester Saturn Model, other consented residential developments of a large scale and the two different trip rates for Bicester. The resultant vehicle trips from housing that would result at NW Bicester using each rate is also shown. It can be seen that the 85%ile NW Bicester vehicle trip rate is higher than SW Bicester or Graven Hill in the AM peak hour and higher than Graven Hill in the PM peak hour. The average trip rates are lower than other developments and these rates are considered to be the best representation of the level of traffic that would result if the Eco development targets are achieved for NW Bicester. The Bicester Saturn Model uses a high trip rate for those developments where specific information is not available.

Table 7: Comparison of Trip Rates for Bicester Developments

Development	Trip Rates per Unit					
	AM Peak			PM Peak		
	In	Out	Total	In	Out	Total
Bicester Saturn Model	0.151	0.402	0.553	0.381	0.228	0.609
SW Bicester	0.076	0.317	0.393	0.332	0.145	0.477
Graven Hill	0.077	0.283	0.36	0.257	0.157	0.414
NWB 85%ile	0.109	0.300	0.409	0.278	0.184	0.462
NWB Average	0.067	0.233	0.300	0.216	0.132	0.347

Development	Vehicle Trips at NW Bicester using Trip Rates					
	AM Peak			PM Peak		
	In	Out	Total	In	Out	Total
Bicester Saturn Model	847	2254	3101	2136	1278	3415
SW Bicester	426	1777	2204	1862	813	2675
Graven Hill	432	1587	2019	1441	880	2321
NWB 85%ile	611	1683	2294	1556	1034	2590
NWB Average	377	1306	1683	1210	738	1948

Traffic Modelling

The traffic generation from the site is being modelled by White Young Green on behalf of A2Dominion using the County's Bicester Saturn Model. The model has recently been used to test various scenarios for the whole town's development on behalf of OCC as part of the Local Plan evidence base, and is considered to provide the best available tool for assessing the impact of NW Bicester. The following different scenarios have been assessed:

- 1) Base Year 2012
- 2) Reference Case 2031 – this includes full development of the town including developments beyond 2031 but not NW Bicester (with the exception of the consented Exemplar development). This gives visibility on predicted traffic patterns in the town with no Masterplan development for comparison.
- 3) Full Development 2031 - 85%ile Trip Rates with level crossing removed – this scenario includes the whole of NW Bicester as well as other developments in the town.
- 4) Full Development 2031 - 85%ile Trip Rates with level crossings removed and a SE Link Road – this scenario assesses whether a link road in the SE of Bicester influences the level and distribution of impacts of the NW Bicester Masterplan compared to not having a SE Link Road.
- 5) Full Development 2031 - Average Trip Rates with level crossing removed – this scenario uses the lower total person trip rates as the basis for the traffic generation for NW Bicester.

Initial results of the assessment are currently being analysed by Hyder Consulting and discussed with the County Council and Highways Agency. It is envisaged that additional modelling work will be undertaken following agreement on appropriate mitigation of traffic impacts to assess the benefits of various measures.

The use of the scenarios is under discussion but it is initially proposed to design the development highway network to accommodate the 85%ile higher traffic level but use the average trip rate scenario for the assessment of mitigation required on the strategic network (with monitoring to test achievement). The scenarios without the SE Link Road will be used given the planning uncertainties at present and in general this is worst case for assessment.

