

The Nottingham Express Transit System Order

Environmental statement

Non - technical summary



Nottingham
City Council



Nottinghamshire
County Council



NOTTINGHAM EXPRESS TRANSIT



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1 Introduction

Nottingham City Council and The Nottinghamshire County Council (“the Promoters”) are applying to the Secretary of State for Transport for a Transport and Works Act Order to enable them to build and operate Nottingham Express Transit (NET) Phase Two. As part of this application process, the Promoters are required to provide the Secretary of State with an Environmental Statement (ES) setting out the environmental effects of the scheme.

The ES will assist the Secretary of State in making a decision about the NET Phase Two scheme, based on a full understanding of any effects, positive or negative, that it might have on the environment.

This document is the Non-Technical Summary (NTS) of the ES. Its purpose is to provide an overview, in non-technical language, of the main findings of the ES. It describes the proposed route for NET Phase Two, how the construction and operation of the scheme is expected to affect the environment and how any significant adverse effects on the environment will be mitigated. Residual impacts which are expected to persist after mitigation are also described.

2 Nottingham Express Transit

NET Line One, operating between Hucknall and Nottingham with a spur to Phoenix Park, opened in March 2004. It now carries over 10 million passengers per year. Line One has resulted in

significant shift to public transport with an estimated 30% of passengers having transferred from their cars or using the park and ride. The 3,000 plus park and ride spaces account for some 5,000 trips per day. Operating performance has been of a consistently high standard with reliability and punctuality figures in excess of 99%.

NET Phase Two is a central feature of the Greater Nottingham Local Transport Plan (LTP), building on the success of Line One. The route of NET Phase Two extends the tram system from the southern terminus of Line One, on Station Street immediately north of Nottingham Station. It passes over the Station and continues through the Southside Regeneration Zone. It then separates into two routes, to Clifton and to Beeston/Chilwell.

The Clifton route serves a number of densely populated residential areas including the Meadows, Wilford/Compton Acres and the town centre of Clifton, before terminating at a park and ride site, south of Clifton, serving the A453 and junction 24 of the M1.

The Beeston/Chilwell route serves major trip destinations along the route, which include the ng2 development site, Queens Medical Centre (QMC), the University of Nottingham, Nottingham Tennis Centre and Highfields Sports Club, Beeston Town Centre, Chilwell Road/High Road shopping area, Castle College (formerly Broxtowe College) and the park and ride site close to junction 25 of the M1. The route also serves the northern part of the Meadows and further residential areas at Abbey Street/ Gregory Street, Lenton, Beeston and Chilwell/Inham Nook.



3 The key aims of the scheme

NET Phase Two is a key element of the Greater Nottingham transport strategy. Nottingham is a regional capital and an important commercial centre whose influence is felt far beyond its administrative boundaries, drawing commuters, shoppers and visitors from a large area. The Greater Nottingham economy is worth around £10.7 billion and supports approximately 300,000 locally based jobs.

The proposals are fully consistent with strategies for land use, planning and economic development and with policies at national, regional, sub-regional and local level. In particular they are fully consistent with the Greater Nottingham Transport Plan, the Regional Spatial Strategy and City of Nottingham, Broxtowe and Rushcliffe Local Plans. The proposed routes were also recommended in the Government sponsored multi-modal studies for the M1 (section through the East Midlands) and A453 (M1 to Nottingham).

The key aims of the scheme are as follows:

3.1 To provide a sustainable alternative to the car for many journeys in order to tackle congestion, particularly on the strategic road network including the A453 and A52

In common with most other successful cities, Nottingham suffers from severe traffic congestion, particularly at peak periods on main routes into the city and along the ring road. In the light of ever increasing travel demand, with

forecasts predicting future significant growth, tackling congestion and providing alternatives to the car are crucial for continued economic prosperity.

As demonstrated through the success of NET Line One and through further expansion in park and ride provision on strategic traffic routes directly connecting the national motorway network, NET Phase Two has the ability to attract substantially more people out of their cars.

NET Phase Two will expand the capacity of the public transport network within the southern and western sectors of the conurbation. The system is of modern design, high quality, reliable, easy to use, fully accessible, safe and secure, it is attractive for people to use and represents a substantial enhancement in the quality of public transport provision.

3.2 To increase public transport capacity to accommodate growth in Greater Nottingham

Maintaining a flourishing economy requires continuous action to attract high levels of inward investment and achieve a step change in economic performance. Connectivity is one of the key factors differentiating locations for investment and a substantial increase in public transport capacity is essential if ambitious plans for employment, commercial and housing provision within the sub-region are to be accommodated in a sustainable manner.

The fixed nature of tram infrastructure helps to boost investor confidence and adds to



Nottingham's appeal as a destination for business, employment, house buyers and attracting visitors.

NET Phase Two is strongly supported by large sections of the local business community because it will allow staff to travel efficiently to employment sites, and it will improve the efficiency of supply chains, improve access to markets and thus support business competitiveness.

The city centre bus route (the 'loop') has over 250 buses per hour and bus stop provision in the city centre is already at capacity. Nottingham does not have a substantial inner ring road system for an urban area of its size and the city centre is compact with a lack of alternative routings for bus services and stop locations. The city centre is struggling to cope and NET Phase Two will use existing infrastructure, allowing valuable city centre road space and bus stop capacity to be released that can be reallocated to enhance bus frequencies and reliability to other parts of the city.

3.3 To improve accessibility and reduce social exclusion and realise further the investment in NET Line One

As well as directly serving the city centre and the town centres of Beeston and Clifton, NET Phase Two also connects regionally significant destinations including the University of Nottingham and Nottingham Trent University campuses, and the QMC hospital site. It also serves numerous local employment, commercial and education sites.

There is a strong link between improving transport provision, accessibility and reducing social exclusion, as reflected within local Community Strategies and Accessibility Strategies.

NET Phase Two serves a number of deprived areas, including the Meadows area, which is within the worst three percent of deprived wards in England, and parts of the Clifton estate, which are within the worst eight percent. These areas have high rates of economic inactivity and low levels of car ownership. Parts of west Chilwell are also relatively isolated. The system will improve opportunities to access work, learning, healthcare, retail, leisure and essential services.

Expansion of the NET system maximises the benefits arising from the investment in NET Line One through economies of scale and network effects and by opening up a range of new direct travel opportunities for some of the country's most deprived wards.

Level platforms, wide doors and entirely low floor trams make access easy. Expansion of the system will therefore significantly improve travel opportunities for disabled people and the mobility impaired including the elderly and parents with young children. A significant proportion of the population is over 65 in Clifton, Beeston and Chilwell.





For rural residents, where public transport is generally poor, accessibility to facilities and employment in the conurbation will be improved by the flexibility attained through park and ride, with two new sites at the southern termini of NET Phase Two.

3.4 To contribute to integrated public transport in Greater Nottingham and improved interchange

NET Phase Two provides improved linkages to Nottingham Railway Station and thus connectivity to the national rail network. Through the creation of a major transport hub at the station, easy interchange between tram, rail, bus and taxis will be achieved within easy walking distance of the city centre.

The development of further public transport hubs in the city centre, district centres and in the vicinity of the QMC will allow easy interchange with bus services.

There is also the opportunity to support the development of bus feeder networks to widen the areas served by NET. The further development of integrated and smart card ticketing systems will facilitate easy transfer between public transport services.

The introduction of NET Phase Two, together with improvements to the heavy rail network and enhanced park and ride, will enable a high quality integrated public transport network to be created to meet the existing and future needs of the conurbation.

3.5 To support land use policy, regeneration and neighbourhood transformation strategies in the City Centre, the district centres of Beeston and Clifton and other important employment and residential areas

The investment in fixed transport links provides a focus for development and the regeneration and renewal of surrounding areas.

The strong link between land use planning and transport in Greater Nottingham means that the identification of employment and housing development sites is being driven by locations well connected to the public transport network, ensuring sustainability and accessibility.

NET Phase Two supports major development in the City Centre Southside area, one of three identified regeneration zones in Nottingham. It also provides impetus to a number of significant developments, including Nottingham Station Masterplan, Broad Marsh Shopping Centre expansion, ng2 site (Queen's Drive), Highfields Science Park, Beeston town centre and a number of significant residential developments.

The investment in tram infrastructure also acts as a catalyst for improvements in the public realm and other environmental improvements. There will be opportunities, therefore, to transform a number of neighbourhoods along the route, such as within the Meadows area, Chilwell Road/ High Road and Clifton town centre.

3.6 To extend the use of an environmentally friendly mode of transport

Through encouraging increased use of public transport and corresponding reduction in private



car use, NET Phase Two will contribute to the achievement of national Climate Change objectives through a small reduction in overall carbon dioxide emissions.

Running on steel rails and carrying large numbers of passengers per vehicle, trams are a particularly energy efficient mode of transport and non-polluting at the point of use. This is beneficial in areas such as city centres where there may already be high concentrations of some pollutants. Operation of the tram may also give rise to reduced traffic flows and hence reduced emissions from road vehicles. Reduced pollution levels will contribute to improving public health.

Due to its excellent safety record and through encouraging further modal change from car, expansion of the NET system also contributes to reducing road casualty levels.

4 Choosing a route for the scheme

4.1 Approach

In developing the scheme, a number of alternative options were considered for both the type of transport mode and the route it would take.

4.2 Transport mode

Improvements to the rail network and low and medium cost bus based solutions were considered as alternatives to NET Phase Two.

The assessment of alternatives was based on existing tried and tested transport technologies and did not consider new technologies that are not able to match the broad performance of light rail in the NET Phase Two route corridors. The use of technology that would be compatible with NET Line One was also an important factor.

Rail improvements

Only limited opportunities exist for the rail network to contribute to improved public transport in Greater Nottingham. The strength of heavy rail is in serving regional and national travel demands and using the network for local travel demands would be an expensive and inefficient use of existing resources.

Low cost bus service improvements

Much has already been achieved in terms of improvements to bus service levels, priorities and infrastructure. Further improvements would be low cost, but the relatively modest benefits would be considerably less than that of NET Phase Two and would not address the key traffic, economic and social exclusion problems in the conurbation. The Local Transport Plan proposals to invest in bus priority measures and service support to maximise bus usage is considered to be complementary to the NET proposals.

High quality bus based system

A high quality bus based system was considered. The route alignment followed that of NET Phase Two, apart from in the city centre, where it operated around the bus 'loop' and did



not connect over Nottingham Station into Line One. An appraisal of the options suggested poorer performance in a number of areas compared to NET, including the benefit to cost ratio and practical delivery. Key practical difficulties were identified, including:

- The requirement to use the existing circuitous and congested bus 'loop' around the city centre with associated increased journey times.
- The difficulties associated with providing suitable bus stop facilities in the city centre which would result in poor provision or the need to reduce existing levels of bus services on other corridors, or relocate bus stops further out of the city.
- Serious reliability concerns in the city centre and crossing strategic roads.
- Inefficient use of city centre infrastructure and of the road network, with space at a premium; expansion of NET into other corridors requires no central area infrastructure.
- Missed opportunity to make the most of the successful NET Line One by the use of infrastructure with no increase in facilities in the City Centre, the loss of network benefits and quality interchange.
- Difficulty in justifying parts of the route, given that the benefits of the bus option are much lower and frequency impacts are greater. The sections where the impact is greatest are also the most essential parts of the NET

proposals where significant journey time and reliability benefits can be provided.

4.3 Route selection

Following the start of Line One construction in April 2000, a wide ranging study into a number of potential light rail routes within the conurbation was undertaken. The study identified route options to Beeston, Clifton and West Bridgford for more detailed assessment. In each of these corridors, a pair of route options was appraised:

- Beeston Options – Beeston South or Beeston North (which subsequently became Beeston via QMC);
- Clifton Options – via the Queens Drive park and ride site or Wilford; and
- West Bridgford Options – to Sharphill Wood or Gamston.

A fourth potential route, between Beeston and Chilwell, was also assessed.

The detailed investigation of each option looked at economic and operating performance, environmental and engineering impacts, regeneration impacts and public and stakeholder views.

The results of the assessment concluded that the routes to Beeston via QMC, and onto Chilwell, and the Clifton via Wilford route should be taken forward, in particular due to the clear economic performance advantage of the chosen routes. In environmental terms, the Beeston South and Clifton via Queens Drive options were



preferred, although this was marginal in both cases.

Subsequent to this appraisal, a number of local option studies were undertaken to “fine tune” the final alignment, in order to minimise the potential environmental impacts.

5 Consultation on the scheme

5.1 Public consultation

There has been extensive public consultation on the scheme, with five main stages of consultation, in addition to on-going dialogue with key stakeholders and affected parties, all of which has considerably assisted the

development work. Figure 2, below, highlights the main consultation stages.

Further consultation has been undertaken on a number of local issues, including Chilwell Road/High Road (Autumn 2004), Nottingham Emmanuel School proposals (Autumn 2004), and the alignment through open space in Chilwell (January 2007). A newsletter entitled ‘Express’ has been created to keep the general public informed about developments surrounding NET Phase Two.

Extensive consultation with stakeholders has taken place at each stage. This has included local interest and environmental groups and affected parties, and major third party and

Figure 2. Main consultation stages

Date	Summary of consultation
<i>A Tram Network for Nottingham</i> Summer 2001	Approximately 17,000 leaflets were distributed giving initial information about creating a network of light rail routes. A follow up leaflet was produced outlining possible route options, and was distributed to residents and businesses along each of the Clifton, Chilwell and West Bridgford route corridors.
<i>Have your say</i> Winter 2001 – Spring 2002	Over 70,000 brochures were delivered to households seeking views on route options in the Clifton, Chilwell and West Bridgford corridors. Consultation events were held at seven locations close to the routes. Detailed ‘consultation news’ leaflets were prepared for the Clifton and Chilwell corridors which addressed the main public concerns identified through this consultation.
<i>Route description leaflets</i> September 2002	Leaflets introducing the Clifton and Chilwell route options chosen for further development work were distributed to all residents and businesses along the route corridors.
<i>Network Updates</i> January and February 2003	Provided an update on the work being undertaken to develop the chosen routes and answered some of the more frequently asked questions. The leaflet was distributed along both route corridors.
<i>Design Consultation</i> Autumn 2003 – Spring 2004	This sought views on the detail of the proposed routes from local residents and other affected parties. In the region of 15,000 booklets were distributed to residents and businesses close to the routes. A number of key changes were made to the scheme as a result, and a number of issues were identified to be taken forward to the advanced design stage.



statutory consultees. Examples include Broxtowe and Rushcliffe Borough Councils, the Department for Transport, the Highways Agency, Network Rail and Train Operating Companies, PEDALS, Nottinghamshire Wildlife Trust, local bus operators and affected landowners including Housing 21 (owners of Neville Sadler Court), QMC, University of Nottingham, and Highfields Sports Club.

5.2 Statutory consultees

In accordance with the TWA Application Rules, consultation was undertaken to ensure that statutory organisations, such as Natural England, English Heritage and the Environment Agency, were given the opportunity to comment on the scheme and the scope and methodology of the environmental impact assessment reported in the ES. The issues raised were considered in the development work.

6 A description of the scheme and its operation

6.1 The routes

The route alignments, with stop locations, are shown in Figures 3 (Clifton via Wilford) and 4, (Chilwell via QMC and Beeston).

Common section

The common section of the proposed route of NET Phase Two starts at Trent Street/Station Street just north of Nottingham Station where it connects with NET Line One. The tramway

continues over Nottingham Station and Queen's Road on a high level viaduct, with a major interchange stop linking with the railway station, before ramping down to cross Crocus Street, Arkwright Street and travelling west along Meadows Way.

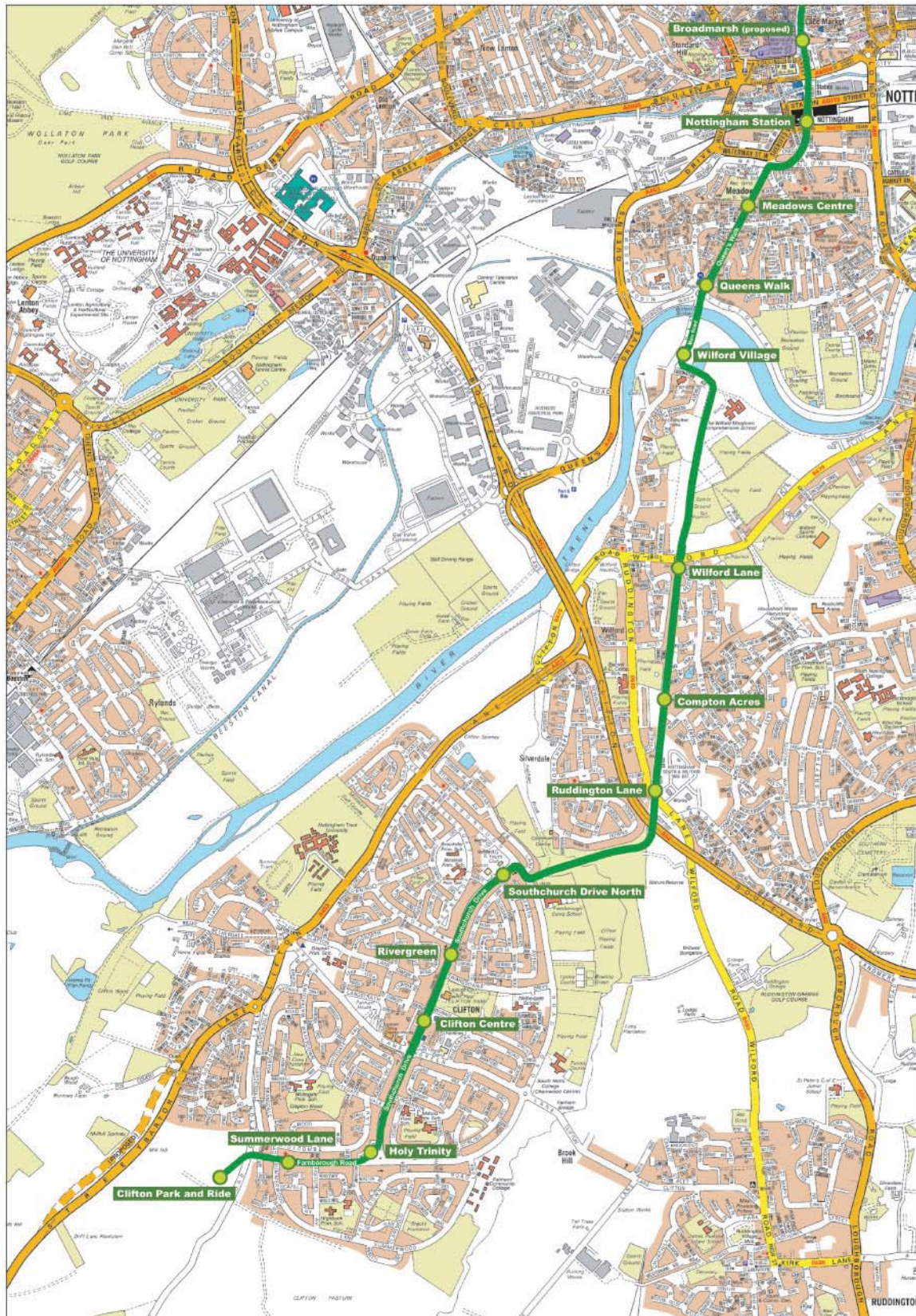
Clifton via Wilford

The Clifton via Wilford route turns south into the pedestrianised Queens Walk in the Meadows where it runs segregated as far as Wilford Toll Bridge, crossing Robin Hood Way and Riverside Way at new signalised junctions. Tramstops will be located at both ends of Queens Walk. The tramway continues over the River Trent on the existing Wilford Toll Bridge, which will be widened and strengthened. Approaching Wilford Village, the route continues along Main Road, where a tramstop will be located and turns south eastwards and runs to the north of Coronation Avenue. Main Road will be closed to vehicular traffic between Wilford Toll Bridge and Coronation Avenue.

At the Nottingham Emmanuel School, the tramway turns southwards and runs to the east of the dismantled railway embankment. Approaching Wilford Lane, the route moves onto the line of the embankment, as far as the existing bridge beneath Clifton Boulevard. It crosses Wilford Lane and Ruddington Lane on the level at new signalised junctions. Three tramstops will be located along this section.

After passing beneath Clifton Boulevard via an existing underbridge, the tramway turns westwards across fields as far as Farnborough Road, passing over the Fairham Brook on a new bridge.

Figure 3. Clifton via Wilford route



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Entering Clifton, the tramway runs on street with other road users, north west along Farnborough Road for a short distance and then south west along the full length of Southchurch Drive. The alignment then turns westwards and rejoins Farnborough Road, continuing on street as far as Nottingham Road. Five tramstops are located within Clifton, including at the main shopping area. After crossing Nottingham Road by a signalised junction, the route continues westwards into the proposed park and ride site. There will be a new link road from the park and ride site to the A453.

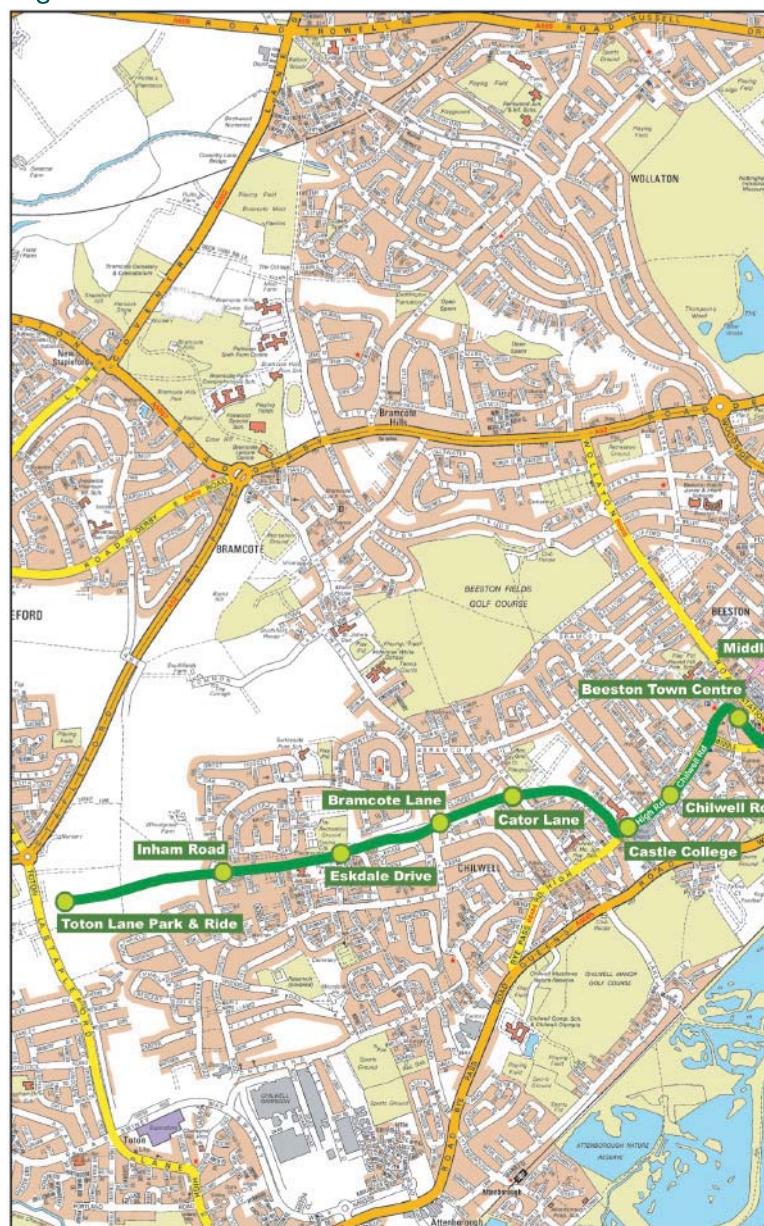
Chilwell via QMC and Beeston

The Chilwell route uses the common section from the station stop as far as Sheriffs Way. The route continues westwards and runs on street with other road users along Meadows Way with a tramstop located close to Kelso Gardens, and crosses Queen's Drive into the ng2 development site at the existing junction. Through the ng2 site, the tramway is segregated up to the roundabout, but runs on street beyond this, where a tramstop is provided. The tramway exits the site into the Kings Meadow area where it ramps up on a retained embankment, crossing over the mainline railway on a new bridge. The route then runs on street along Lenton Lane and Gregory Street (where a tramstop is located) through the White Hart junction and is segregated for a short distance along Abbey Street before crossing at a new signalised junction into an existing QMC car park east of the River Leen.

The tramway continues westwards across the

car park and ramps up onto a new viaduct to cross over the River Leen and turn south west to run adjacent to the QMC and new Treatment Centre at first floor level and where a tramstop is located. It then continues at high level on a viaduct through the QMC site, bridging over

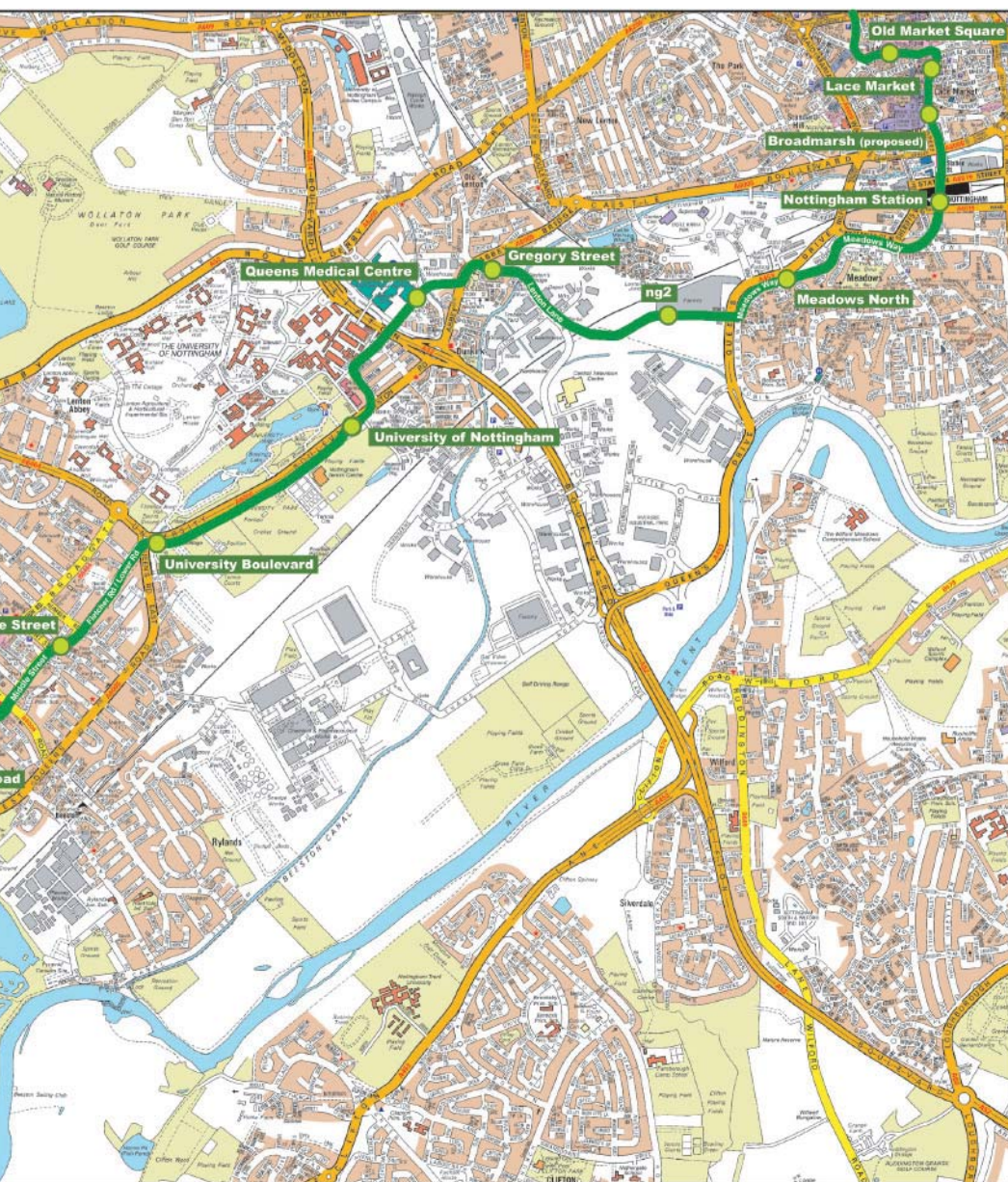
Figure 4. Chilwell via QMC and Beeston route





Clifton Boulevard (A52) before descending into the University of Nottingham alongside Science Road. The tram route then turns south east to run behind Greenfield Street and the University Arts Centre to the University tramstop and the junction with Beeston Road/University

Boulevard. On crossing University Boulevard the tramway continues along the southern side of the Boulevard, passing the Nottingham Tennis Centre, Highfields Sports Club and University sports fields as far as a tramstop and new traffic signalled junction at Queen's Road East.



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The tramway crosses Queen's Road East and runs on street along Lower Road and Fletcher Road. The route will require the demolition and rebuilding on site of part of Neville Sadler Court. The tramway continues on street along Middle Street where a tramstop is located, crossing Humber Road at a new signalised junction and enters Beeston Town Centre. The tramway runs on street along Middle Street and Styring Street, and requires the acquisition of a number of retail units in the town centre. This area is subject to redevelopment under a Draft Area Action Plan (produced by Broxtowe Borough Council).



From Beeston Town Centre, the tramway continues running shared on street along Chilwell Road and High Road as far as Castle (formerly known as Broxtowe) College. Two tramstops are located along this section. The tramway turns north west and runs segregated off street through the College grounds, past Richmond Court, Gwenbrook Avenue and Brookland Drive. The route passes close to Greenwood Court and crosses Cator Lane at a new signalised junction. From Cator Lane the tramway continues westwards through recreational land and Inham Nook Recreation Grounds, crossing Bramcote Lane and Inham Road at new signalised junctions, and passing to the south of Sandby

Court. Four tramstops are located along this section. Finally, the tramway continues westwards through agricultural land to the proposed park and ride site adjacent to Toton Lane.

6.2 Design standards

In order to ensure that the scheme is designed to the highest standards an Urban and Landscape Design Statement (ULDS) has been prepared, which lays down the design principles and minimum acceptable standards that the Contractor must adopt. A copy is provided in Volume 4 of the ES.



The NET Phase Two scheme will be fully compliant with the requirements of the Disability Discrimination Acts 1995 and 2005.

6.3 Power supply and vehicles

NET Phase Two will be procured to provide, with the existing trams, a joint Line One/ Phase Two fleet. These will have similar operating characteristics to the existing trams for NET Line One. Tram vehicles will travel at speeds of up to 50 mph off-street and will observe the existing speed limits on the highway. However, specific speed limits below these levels will be set where appropriate, for example tram speeds in pedestrian areas will be lower, and the drivers will be carefully trained to react to any encroachment onto the tramway.

Power will be transmitted to vehicles via overhead electric contact wires, supported by building fixings or poles and drawing current from a number of substations located adjacent to the alignment.

6.4 Stops

To retain the identity of the system, the stops will be similar to those on NET Line One. The platform length will be around 35 m to suit the length of the tram. The platform width is dependent on location but generally will be 3.15 m. However, where space is limited, it will be reduced to 2.5 m. All stops will include passenger shelters, real-time information displays, CCTV and passenger help buttons linked to the CCTV system. Low level boarding to the tram will allow easy access and facilitate integration into the existing streetscape.



6.5 Highway interaction

Approximately 40% of the proposed alignment will consist of a street running tramway, with trams sharing road space with other vehicles. The majority of this on-street running is on secondary or local roads, including residential streets and cul-de-sacs, with only a very short section on an 'A' Road. The NET Phase Two proposals have sought to provide replacement car parking and servicing bays where possible, and enhanced cycle and pedestrian facilities and interchange with bus services. Changes to junctions will be designed to minimise impacts on other road users.

6.6 Depot

The NET Phase Two scheme will be served by the existing NET depot located to the north of Wilkinson Street in Basford. Required modifications to the depot will include additional track for stabling and additional maintenance and staff facilities. Whilst existing services at the depot such as washing equipment and workshop facilities will remain the same, they will be used more intensively.



6.7 Indicative service characteristics

NET Phase Two is expected to operate seven days a week, running through onto Line One. The indicative service frequency for tram operations, on which the environmental assessment has been based, is presented in the table below (Figure 5).

The approximate estimated journey times from the Clifton and Toton Lane park and ride sites to Nottingham Station are 21 minutes and 28 minutes respectively.



Figure 5. Indicative service frequency

Day of the Week	Time of Day	Frequency of Tram Operations
Monday to Friday	Start of service to 0700	Every 20 minutes
	0700 - 1900	Every 7.5 minutes
	1900 - 2200	Every 15 minutes
	2200 to end of service	Every 20 minutes
Saturdays	Start of service to 0800	Every 20 minutes
	0800 - 1800	Every 7.5 minutes
	1800 - 2200	Every 15 minutes
	2200 to end of service	Every 20 minutes
Sundays	Start of service to 1000	Every 30 minutes
	1000 - 1800	Every 15 minutes
	1800 to end of service	Every 20 minutes



7 Construction of the scheme

7.1 Construction activities

A three year period will be required to construct, test and commission the NET Phase Two scheme. Construction works are expected to last for approximately two and a half years and will be followed by a six month period for testing and commissioning. At any one time activity will be ongoing at a number of locations but not along the entire route for the whole of the construction period.

Construction will involve the following activities:

- site clearance, including demolition of buildings and other structures;
- diversion of below ground utilities such as electricity, gas and telecommunications equipment;
- earthworks;
- track drainage and ducting including alterations to existing highway drainage;
- construction of structures including Nottingham Station bridge, Lenton Lane tram bridge, Clayton Canal bridge, QMC viaduct, Wilford Toll bridge and Fairham Brook bridge;
- track laying along the route;
- realignment and reinstatement of highways, footways and cycleways;
- modifications to highway signalling;
- modifications to street lighting;
- accommodation works (e.g. works required to boundary walls or frontages to accommodate the tramway);
- installation of overhead line equipment poles and building fixings;
- installation of tram signalling and electrical equipment;
- construction of stops, substations and equipment rooms;
- construction of park and ride facilities;
- modifications to the existing NET depot at Wilkinson Street;
- landscaping works; and
- testing and commissioning.

7.2 Working hours

Normal working hours during construction will be 0800 to 1800 hours Monday to Friday and 0800 to 1300 on Saturdays. There will be a half an hour start up and shut down period outside these hours. Quiet work (e.g. plant maintenance) may take place outside these hours including on Sundays, although this will be agreed with the local planning authorities prior to works taking place.



Where it is necessary to carry out works to the highway, especially at busy junctions, work may take place outside these hours in order to avoid peak period traffic. Where works are occasionally required during the night-time, these will in general only be of a short duration at any one location. This will be agreed with the local planning authorities prior to works taking place.

7.3 Code of Construction Practice

In order to minimise the impacts of construction, a draft Code of Construction Practice (CoCP) has been developed for the scheme. This will be advanced through discussion with the local planning authorities and other statutory bodies such as the Environment Agency.

The CoCP sets out the measures that will be required to be undertaken by the Contractor to ensure site safety and environmental best practice. These measures have been developed based upon experience of other major construction projects and comply with relevant statutory codes of practice, standards and laws



applicable to the regulation of construction practice and its effects on health and safety and the environment. The CoCP will be included in the contractual arrangements between the Promoters and their selected Contractor. It should be noted that compliance with the CoCP will not discharge the Contractor, or its agents, from complying with any statutory requirements in force at the time.

7.4 Temporary land requirements

During the construction of the scheme temporary worksites will be required for the construction of structures, storage of plant and materials, accommodation of the site offices and, where appropriate, the provision of parking for workers and visitors. On linear construction projects such as this several worksites are usually required to ensure that the entire route is serviced and to minimise the extent to which it is necessary to transport plant, materials and workers along the route.

The following potential worksites have been identified:

- Nottingham Station;
- South of Queens Road;
- South of Crocus Street;
- QMC car park (off Abbey Street);
- QMC car park (off South Road);
- Science Road;



- Chilwell Road adjacent to Methodist Church;
- Chilwell Road;
- Toton Lane park and ride site;
- Wilford Toll Bridge site (Main Road);
- South of Silverdale; and
- Clifton park and ride.

Working space is also required alongside the alignment to facilitate safe and effective construction activity. In most cases temporarily used land will be reinstated to its original use after the works are completed.

7.5 Construction workforce

The combined workforce will peak at around 450 people during highway works and track works and during overhead line equipment, stop and substation construction. This figure has been estimated based upon experience of similar projects which are now in operation. The workforce will be split between construction work sites. During testing and commissioning the number of personnel will reduce to around 50.

7.6 Construction traffic

Traffic will be generated by the construction workforce as they travel to the site and by lorries transporting plant, materials and waste. Some construction workers are likely to access the sites using public transport, although many are

likely to use private vehicles. Wherever possible, construction staff will be encouraged to travel to worksites by public transport.

The level of generated traffic represents only a small increase over existing flows on the roads providing the main access to work sites along the route.





8 Assessing the environmental effects of the scheme

8.1 Scoping

A ‘scoping exercise’, to identify relevant environmental issues, was undertaken at an early stage in the project in consultation with a range of stakeholder consultees including English Nature (now Natural England), English Heritage, Nottinghamshire Wildlife Trust and the Environment Agency. The following environmental issues were considered:

- planning policy;
- land use;
- socio-economics;
- traffic and transport;
- noise and vibration;
- air quality and dust;
- landscape / townscape and visual effects;
- ecology;
- aquatic environment;
- archaeology and cultural heritage;
- contaminated land;
- open space and recreation;
- non-hazardous waste;
- climate change;
- severance; and
- electromagnetic effects.

The results of scoping are highlighted in Figure 6 below.

Figure 6. results of ‘scoping exercise’

Environmental Issue	Construction/Short Term Effects	Operation/Long Term Effects
Planning	✓ -/+	✓ -/+
Land Use	✓ -	✓ -/+
Traffic and transport	✓ -	✓ +
Noise and vibration	✓ -	✓ -/+
Air Quality and Dust	✓ -	✓ +
Landscape/Townscape and Visual Impacts	✓ -	✓ -/+
Ecology	✓ -	✓ -
Aquatic Environment (water resources)	✓ -	✓ -
Archaeology and Cultural Heritage	✓ -/+	✓ -/+
Contaminated Land and Land Quality	✓ -	✓ +
Open Space and Recreation	✓ -	✓ -/+
Waste	✓ -	X
Climate Change	X	X
Severance	✓ -	✓ -/+
Electromagnetic effects	X	X
✓ Significant effect possible	- potential negative impact	
X Significant effect not anticipated (therefore scoped out of the assessment)	+ potential positive impact	



The following sections provide a summary of each of the assessments undertaken for the ES. A separate scoping exercise was also undertaken to consider the modifications to the existing NET depot at Wilkinson Street. This concluded that following topics should be assessed:

- Noise and vibration;
- Landscape/townscape and visual;
- Socio-economics;
- Traffic and transport; and
- Ecology.

8.2 Planning policy context

The planning assessment reviewed European, National, Regional and Local planning policy frameworks and assessed the degree to which the scheme both conforms and conflicts with the guidance, but with justification and mitigation measures identified. The assessment showed that the scheme is considered to be consistent with the intent and objectives of the latest European transport policies.

At the national level, the scheme assessment shows no conflict with policy. Of particular note was the assessment in relation to Green Belt policy ⁽¹⁾. There is a general presumption against development within the Green Belt unless, in the case of park and ride, no suitable alternative sites outside the Green Belt can be identified. A full evaluation of alternative park and ride sites at

Clifton and Toton Lane was carried out as part of the Environmental Impact Assessment and this established that no other suitable sites exist outside the Green Belt.

The scheme was also found to be in accordance with Regional Policy and at the strategic level, the expansion of Nottingham Express Transit beyond Line One is recognised and supported within the adapted Nottinghamshire Joint Structure Plan and the Greater Nottingham Local Transport Plan (LTP). In relation to local policy, the scheme will make a positive contribution to meeting the objectives of the policies for urban regeneration, employment, transport, town centres and retail development in the adopted development plans for Nottingham City, Rushcliffe and Broxtowe. The scheme will make a positive contribution to meeting the objectives of the policies for urban regeneration, employment, town centres and retail development in the adopted development plan.

8.3 Open space and recreation

An appraisal of the effects on public open space and recreation within 500 m of the proposed routes for NET Phase Two was undertaken. The appraisal identified the levels of provision and type of open space along the proposed routes. It took account of the amount, quality and type of use of each area of open space with the potential to be permanently or temporarily affected.

A number of locations where open space is lost have been identified and the total area of open space permanently lost to the scheme is approximately 6.45ha, 1.9% of the total open

(1) ODPM, Planning Policy Guidance 2: Green Belt, 199595



space within the Study Area. However, when the re-provision offered by two main areas of replacement open space is considered, together with recognition of improved access to other areas of open space provided by NET Phase Two, overall there will only be minor permanent open space impacts. Temporary impacts during construction will affect access and use of some parcels of open space. However, these impacts will be minimised by limited duration.

8.4 Noise and vibration

The potential noise and vibration impacts arising from the construction and operation of the scheme have been assessed in accordance with recognised national and international guidance. In order to provide reassurance to the public that noise impacts will be mitigated wherever practicable and to ensure that an equitable approach to noise issues is adopted, the NET

Promoters have formally approved a draft Noise and Vibration Policy. The policy addresses noise and vibration from the operation of NET Phase Two. It includes a commitment to apply suitable design standards to control noise and vibration, a commitment to provide mitigation as assessed in this ES, definition of the policy on offering noise insulation, and it describes the level of maintenance that will be undertaken to minimise the noise and vibration at noise sensitive receptors.

Measures have been incorporated into the scheme to mitigate impacts during construction and operation

Measures to minimise construction noise:

- A Code of Construction Practice (CoCP) and agreements (section 61 Control of Pollution Act 1974 consents) with the local authorities



will ensure suitable mitigation measures are enforced before the works begin;

- All contractors will be expected to adhere to the CoCP to ensure compliance with choice of plant and the appropriate hours of working;
- The type of plant selected, location of plant within construction sites and the on-going servicing of plant will be undertaken to minimise noise levels;
- Where these generic measures are not sufficient to control noise, fixed and mobile noise barriers (typically to a height of approximately 2.4 m) will be considered for use adjacent to areas of noisy ground level activity to limit noise to adjacent receptors;
- Where multi-storey receptors overlook the construction works acoustic enclosures to specifications outlined in BS5228 will be considered. Low noise construction plant may also be used to further reduce noise. In the area around the University of Nottingham scheduling of activities will be a key measure in minimising noise impacts. Noise and vibration monitoring during construction are also likely to be required in this area;
- Equipment will be located as far from noise sensitive receptors as possible. Electrical forklifts and cranes will be used in preference to other diesel powered machinery wherever possible;
- Site offices will be located so that they acoustically screen noisy activities; and

- Night-time work will be kept to a minimum.

Construction impacts

With the incorporation of the mitigation measures detailed above, noise levels should generally be reduced by up to 10 dB(A). Delivery of this level of noise mitigation will depend on the contractor and the enforcement and successful application of the CoCP.

This, however, leaves approximately 34 assessment locations representing areas where short-term noise impacts may still occur during enabling works. Most individual receptors are however unlikely to be affected for more than a few weeks.

Noise impacts are also likely at Castle College during construction of the Castle College tramstop.

Noise impacts during track laying works are expected at the Lakeside Arts Centre and Castle College. Noise impacts at the research buildings on Science Road are also likely.

Noise impacts due to the construction of support structures are predicted at 1-48 Cavell Court and 22 and 24 Highfield Road.





Demolition works are expected to result in relatively high noise levels. However, the impact is unlikely to be significant as noise will be experienced over a short period of time.

Night-time work is expected to result in significant noise impact, at two locations; at Station Street due to the construction of the viaduct over Nottingham Station, and at Highfield Road due to the new viaduct crossing the A52 between the QMC and the University of Nottingham.

Noise impacts are not predicted from construction compounds or construction of the park and ride sites except at the retail park, which is close to the northern boundary of the Toton Lane park and ride site. However, this noise impact will only result from works that take place within a few metres of the boundary, and over most of the construction period, noise impacts are not expected. Construction traffic is expected to increase traffic only on major routes resulting in noise changes that are not significant.

Vibration should not cause cosmetic or structural damage at any properties along the route.

Measures to minimise operational noise:

- Stringent noise performance requirements;
- Noise barriers will be incorporated into the scheme where it is appropriate. It is usually not feasible to construct noise barriers on street-running sections of the scheme due to conflicts with other road users and general safety requirements. In addition consideration must be given to the

visual impacts of barriers and associated security issues;

- To minimise wheel squeal, no bends with radii lower than 20 m are proposed for NET Phase Two, tram wheels will be fitted with acoustic dampers if appropriate and high standards of installation followed by good maintenance will be ensured;
- The best practicable type of Switches and Crossings (S&C) will be used at each location and the scheme will endeavour to ensure S&C are located away from noise sensitive properties; and
- Announcements using the Public Address (PA) system will not be made routinely, and will only take place when there are disruptions.

Operational impacts

Noise from trams is expected to result in moderate residual noise impacts at approximately 250 properties, and a substantial impact at up to 13 properties on the Clifton via Wilford route. Moderate residual noise impacts are expected at approximately 90 properties, and a substantial impact at 120 properties on the Chilwell via QMC and Beeston route. These impacts are defined as situations where the additional noise from the tram significantly increases existing noise levels e.g. road traffic noise in most cases. Whilst noise increases will be noticeable, tram noise is not predicted to be high enough to warrant noise insulation under the Noise Insulation Regulations, which are intended to avoid exposure to excessive noise levels.



Wheel squeal is not expected to result in significant residual impacts.

Switches and crossings have been located to avoid placing them adjacent to noise sensitive receptors where possible.

Park and ride operations are not likely to cause any significant noise impact at nearby sensitive receptors.

The use of bells on the trams is likely to result in some noticeable noise impact for the “bedding in” period of NET Phase Two. However, this effect is likely to reduce as drivers and other road users become familiar with the system. The use of PA systems will be limited to periods of disruption, and is not likely to result in a significant noise impact.

Vibration will be mitigated using vibration isolating track where necessary, and it is not expected that residual vibration impacts in terms of disturbance to people will occur.

The road traffic flow changes on the proposed tram route result in changes in ambient noise levels. In some cases the noise levels are increased as a result of the scheme, but at one location the reduction in traffic leads to an overall reduction, or slight noise benefit, with the scheme. No significant negative impacts from traffic noise increases are predicted on the wider road network. However, residences facing Sheriffs Way (between Meadows Way and Robin Hood Way) are expected to experience a substantial reduction in road traffic noise.

Junction remodelling at the Abbey Bridge/Abbey Street/Gregory Street junction could result in a significant noise increase at the Red Cross Society Nottinghamshire Headquarters, but only in a worst-case scenario in which the proposed filter lane dominates noise levels. Whilst this is a significant impact, this effect is likely to be limited to the eastern facing facades. Other facades face busy roads and it is unlikely that noise from the filter lane will be significant.

8.5 Air quality and dust

An assessment of impacts associated with air quality and dust was undertaken in accordance with national guidance.

During construction of the scheme there is potential for dust impacts. Mitigation measures are set out in the draft CoCP and include:

- water suppression or dust extraction will be fitted to drilling and grinding equipment;
- debris piles will be kept watered as necessary;
- suitable measures will be taken to prevent the deposition of mud and dirt on the public roads and to prevent the propagation of dust from the site;
- all containers will be totally enclosed or covered by suitable tarpaulins / nets to prevent escape of dust or waste materials during loading and transfer from site;
- shrouding and wind shielding will be used to minimise emissions of dust;



- spillages of cement will be cleaned up using wet handling methods; and
- deliveries of cement to batching plants will be by tanker and stored in silos prior to use.

Despite the incorporation of the above measures, construction dust is likely to cause a minor impact at sensitive receptors within 100 m of the source of the dust. The level of impact is dependent on a number of factors such as the actual construction activity occurring, the weather and existing dust levels.

The level of construction traffic associated with the scheme is not considered to have a significant impact on local air quality.

The majority of the population within the study area is predicted to experience an insignificant change in air quality as a result of NET Phase Two. Overall an improvement to air quality is predicted in the study area in terms of particulate matter. For nitrogen dioxide, NET Phase Two results in a degradation in air quality for a small proportion of the population but an improvement in air quality for a greater number of people. Of that proportion experiencing degradation, the vast majority will experience very small changes that are considered insignificant.

NET Phase Two is also not expected to result in significant changes to air quality within the existing AQMAs. The majority of residents within AQMAs will experience no change in nitrogen dioxide and particulate matter concentrations. Of the proportion that does experience a change, more will experience an improvement than

degradation. The bulk of the changes in air quality experienced within these AQMAs are small changes in concentration and can be considered insignificant.

8.6 Traffic and transport

The ES has utilised information provided by the draft Transport Assessment (TA) which is currently in preparation, to identify likely impacts and suitable mitigation measures on the local transport network.



Construction impacts

No significant traffic related noise and air quality impacts are expected to occur.

Impacts on highway operation due to additional volumes of construction traffic are not expected to be significant. Some disruption to existing traffic flows will be inevitable due to the traffic management measures required to construct the tramway. Similarly, access to residential and commercial properties will also be disrupted.

A construction traffic management strategy will be developed and submitted to the Highway Authorities for approval. Road and lane closures



will be kept to a minimum and great care will be taken to minimise disturbance when the works are taking place. Effort will be made to ensure that the impact on people living or working in the area of the works is mitigated by sensitive working methods, close public liaison, and intensive communication of information. These guiding principles will be reflected in the CoCP, which will set out how construction work can be undertaken and will also specify the routes to be used by construction traffic.

Operational impacts

Traffic modelling indicates that improvements in highway performance are expected to occur at the Abbey Bridge/Abbey Street/ Gregory Street junction. One junction, at Queens Drive/entrance to ng2 development site, is expected to operate marginally over its theoretical capacity as a result of the scheme.

The scheme will result in a positive impact on cycling through the introduction of additional segregated cycle routes along the proposed routes. Pedestrian and cycle crossing facilities will be upgraded at existing and new signalised junctions resulting in significant improvements for pedestrians and cyclists.

The scheme has been designed to minimise alterations to existing bus infrastructure and in this respect no significant impacts are expected to occur. Opportunities for interchange with buses have been included at a number of tramstops and this has the potential to benefit bus operators and NET. In addition, where there is co-operation between bus operators and NET,

as experienced on NET Line One, the ability to interchange between modes is expected to increase public transport patronage generally.

8.7 Ecology and nature conservation

The ES has undertaken an assessment of the impacts on ecological and nature conservation features along the route of the NET Phase Two scheme. As a result of the assessment a number of route wide mitigation measures have been integrated into the scheme. A number of site specific mitigation measures will also be undertaken to minimise ecological impacts:

- Habitat loss will be limited to the minimum needed for safe implementation of the works;
- Best site management practices will be adopted through the CoCP to minimise the risk of pollution incidents on site;
- Appropriate mitigation measures will be agreed with Natural England, and implemented if any protected species are identified during construction;
- Professional ecological advice will be taken by the contractor to implement the mitigation measures;
- Wherever possible, habitat removal (especially woodland and other trees) will take place outside the breeding bird season (mid March to the end of July). Where this is not possible, all woodland and scrub will be checked for nesting birds before removal. All bridges, other built structures, and mature



and dead trees will be checked for roosting bats and nesting birds prior to removal;

- Appropriate mitigation measures will be agreed with Natural England and implemented if bats, or nesting birds, are found;
- Impacts on adjacent wetland habitats and watercourses will be avoided by appropriate design of site drainage. Principles of Sustainable Drainage Systems (SUDS) will be adhered to and incorporated where possible;
- Care will be taken to avoid direct effects on any of the areas of nature conservation interest identified other than those intersected by the proposed route, including SINC, LNRs and Wildlife Corridors. Such areas will be fenced to prevent habitat damage; and
- Opportunities will be taken to enhance existing habitats of value within the site, through the implementation of appropriate landscaping proposals.

Overall it is recognised that there will be significant residual ecological and nature conservation impacts from the construction of NET Phase Two mostly associated with the Clifton via Wilford route. Of most note are the impacts on the Wilford Disused Railway SINC which cannot be fully mitigated due to the importance of existing habitats and the scale of habitat loss. However, areas of habitat creation adjacent to the tramway along the former railway corridor and in the replacement area south of

Silverdale have the potential to partly mitigate for loss of amenity and habitat in the long term. There are significant residual impacts arising from loss of species-rich semi-ruderal habitat and some locally rare species at Beeston Sidings which is to be used as a temporary overnight railway siding during works at Nottingham Station. This habitat is difficult to replicate and there are no opportunities for creation of replacement habitat. Other significant impacts are disparate, and in many cases borderline. They include small impacts on water vole habitats on watercourses, small losses from SINC, and temporary disturbance to amenity wildlife sites adjacent to the routes.

8.8 Land use

An assessment has been undertaken into the effects of the proposed routes on the various land uses. This included consideration of residential properties, existing commercial/retail properties, agricultural land and proposed future developments.

Whilst most of the tramway alignment is within the highway, a significant amount of other land will be required for the NET Phase Two. Residential, commercial and retail property will need to be acquired and some buildings demolished to facilitate the development of the scheme. Land will also be required on a temporary basis for construction worksites.

In the short term, the demolition of residential, commercial and other buildings is a significant adverse impact. In mitigation, the scheme includes the redevelopment of Neville Sadler Court to provide at least the same number of



units lost to an enhanced standard. In the longer term, following the construction of NET Phase Two, other land which is not required permanently may become available for high quality development, for example, in Beeston town centre, further mitigating the losses that result from demolition.

In total, some 16 hectares of agricultural land will be required, principally for the park and ride sites and to provide replacement open space, at Silverdale. This is a moderate adverse impact.

A number of key development and regeneration sites exist along the NET Phase Two routes. The scheme will generally improve accessibility to these sites and, in the longer term, encourage their development. Overall, the development of NET Phase Two will have a positive impact on regeneration.

Land and buildings which need to be acquired will either be acquired by the Promoters by private treaty or, where necessary, using compulsory purchase powers. Property owners and occupiers will be compensated for the loss of their property interests.

8.9 Archaeology and cultural heritage

The ES includes an assessment of the effect of NET Phase Two on archaeology and cultural heritage.

The archaeological assessment identified one site in the vicinity of Lenton Priory Scheduled Ancient Monument (SAM) where there is the potential for archaeological finds of national significance. There is also the potential for archaeological finds

of regional or local importance at other locations along NET Phase Two. This means that during the construction of the scheme, archaeological deposits may be encountered, both by ground works for the scheme itself, and also during the necessary diversion of services and equipment. However, a range of mitigation measures (including further archaeological investigation as scheme development progresses) have been developed to ensure that the archaeological impact is minimised.

There will be adverse residual impacts on archaeology, if significant remains are found and if engineering constraints prevent preservation on site. However, in such instances, the remains will be fully recorded and preserved elsewhere, in accordance with best practice.

The CoCP will include mitigation measures to minimise the impacts of construction on the setting of listed buildings and the setting, character and appearance of conservation areas. NET Phase Two has an impact on three listed buildings; the Grade II* listed Nottingham Station, Grade II listed Wilford Toll Bridge and Beeston police station will experience some permanent alteration due to the construction of the scheme. Careful detailed design, in consultation with the local planning authorities and English Heritage, within the terms of the Listed Building Consents, will ensure there is no significant adverse residual impact on these buildings.

The routes pass through several conservation areas and require the demolition of certain unlisted buildings. The proposals meet the



statutory test, in that they will, after reinstatement works, at least maintain the character and appearance of the conservation areas concerned. There will also be a permanent minor adverse impact on the setting of the listed Lenton Priory as a result of the demolition of a number of nearby properties at the junction of Abbey Street and Gregory Street. Sensitive reinstatement of the public realm will be undertaken in consultation with the local planning authority and English Heritage.

8.10 Townscape and visual impacts

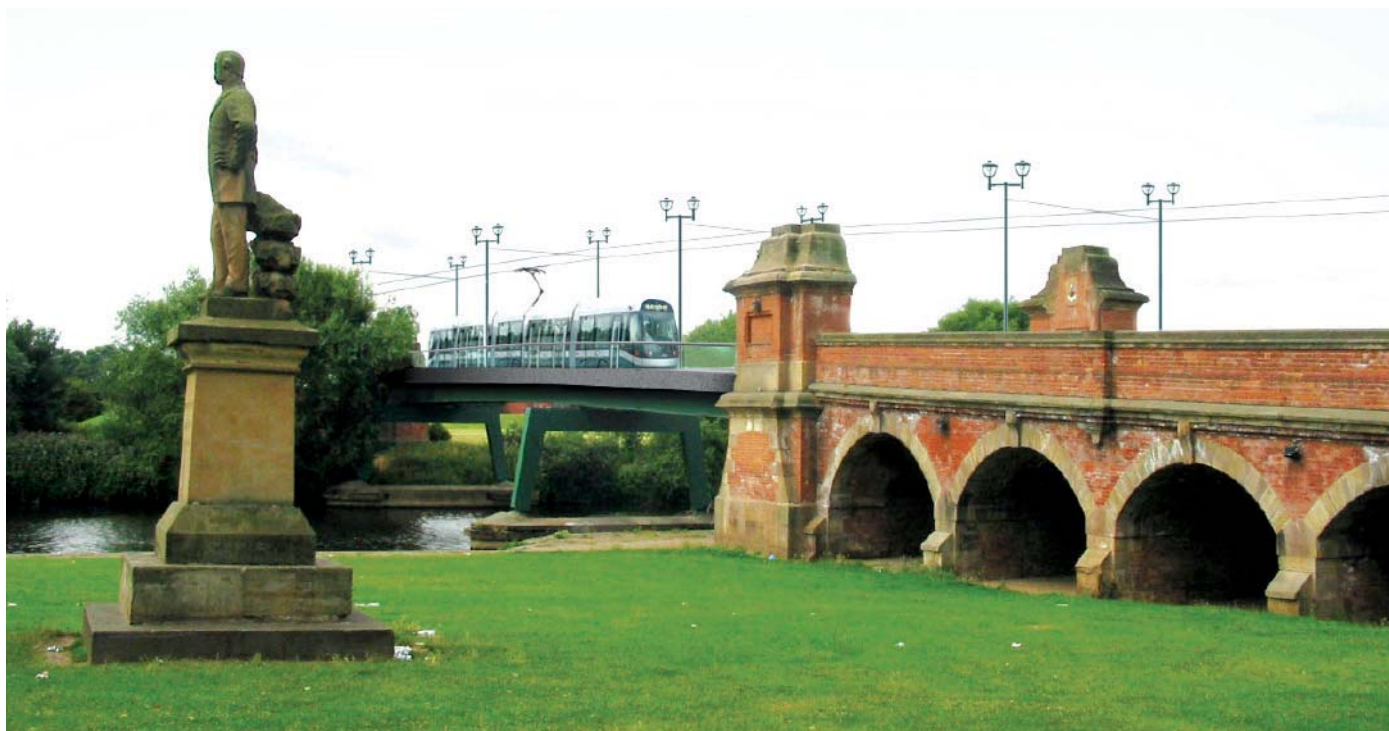
The ES includes an assessment of the effects that the proposals will have on the townscape and visual amenity of areas around the NET Phase Two scheme.

There will be temporary townscape and visual impacts during construction particularly where major structures are to be built e.g. at

Nottingham Station, the A52 crossing between the University and QMC, and Wilford Toll Bridge. Generally, working areas will be minimised and each section of the works completed as quickly as practicable. These working areas and the construction work sites will be tightly managed through the CoCP. Land occupied temporarily as part of the works will be reinstated or made available for development once construction is completed.

The scheme will introduce the following features into the townscape:

- rails;
- tramstops;
- overhead line equipment and substations;
- bridge structures; and
- highway alterations.





The scheme will also result in the removal of a large number of existing trees and existing planting.

An UDLS has been developed. This will ensure that replacement tree planting, landscaping and streetscape improvements are an integral part of the works. The design of NET Phase Two will include, but not be limited to the following mitigation measures:

- New and replacement street tree planting (individual trees, tree groups, lines and avenues);
- Other new and replacement planting, including woodland blocks, hedge planting and native or ornamental shrub planting;
- A distinctive, characteristic and high quality visual identity will be introduced for all tram related infrastructure. This will be modern, yet

in keeping with the historic elements of Nottingham and will follow the visual identity developed for Line One;

- New street furniture and other NET related infrastructure will be carefully located to retain important sight lines and vistas, and to avoid unnecessary intrusion into views from housing. All redundant signage, lighting poles and columns will be removed;
- Appropriate surfacing materials and design will be utilised to integrate NET Phase Two into its surroundings;
- Visual clutter, especially poles, wires, fixings and street furniture will be minimised;
- Proposals have sought to integrate landscapes designed for human amenity and use with areas for habitat enhancement and creation for wildlife;





- Where open space or habitat is lost as a result of the NET Phase Two scheme, alternative locations for open space/habitat provision, as close to the original area as practical, are proposed to compensate for this loss;
- Tram rails are to be flush with the surrounding surfaces in areas with pedestrian access, enabling the continued free passage of wheelchairs, prams, bikes etc. Unnecessary new kerbing will be avoided; and
- New hard and soft landscape treatment adjacent to the tramway will reflect the character of the townscape through which the scheme passes.

In terms of townscape, substantial positive impacts will occur where replacement open space and habitats are provided on each route. However, moderate to substantial adverse townscape impacts will remain at Lenton Priory and at the rear of Lime Grove Avenue, Gwenbrook Avenue and Brookland Drive in Chilwell.

There will be moderate to substantial long term negative visual impacts for visitors to Kings Meadow Nature Reserve, residents of Greenfield Street, Lower Road and Fletcher Road in Beeston, Lime Grove Avenue, Gwenbrook Avenue and Brookland Drive in Chilwell, and for users of the 'green corridor' between Cator Lane and Inham Nook. There will be substantial negative visual impacts in the vicinity of Lenton Priory and for the residents of Queens Walk. There will be moderate to substantial positive visual impacts for residents of Clifton.

Overall the integrated urban renewal and regeneration that the scheme will bring, together with tree planting and revitalisation of streetscapes, will help promote a positive change to the townscape and will add new interest and landmarks to the area. The proposed tramway passes through a few areas which would benefit from environmental and/or townscape improvements. There is an opportunity for landscape design, including both hard and soft elements to contribute positively to environmental regeneration, and for streetscape enhancements to lift the image of areas currently perceived as being of a low quality. The scheme and associated mitigation measures will have the potential to enhance the townscape in many places along the routes.

8.11 Contaminated land

The ES provides an assessment of the potential effects of soil and groundwater contamination in the area of the NET Phase Two scheme. This has identified that there is a potential risk of the remobilisation of existing contaminants and introduction of new contaminants through site works, in particular by groundwater drainage from new excavations.

This risk will be managed and contained through appropriate scheme design and construction management. Investigations will be undertaken in all areas where the environmental assessment suggests that contaminated material may be present. Should contamination be identified the investigation results will be used to create a management plan for handling and disposal of contaminated material and shall be used to



design measures for the control and prevention of re-mobilisation of contaminated material.

Construction methods employed will be designed to prevent significant short-term and residual impact to the groundmass and groundwater conditions. This may require the removal of contaminated material to a location where it can be safely treated, or on site treatment/remediation or capping. In the case of groundwater, the samples will be tested against the requirements of Environmental Quality Standards (EQS) for dangerous substances and/or guidelines for UK Drinking Water Quality. The use of appropriate mitigation measures will ensure the removal or separation of contaminated material and ensure that residual effects to the ground from construction activities are minimised.

8.12 Non-hazardous waste

The ES has identified that there is potential for non hazardous waste to be produced during the construction of the scheme. The CoCP will incorporate the requirement for a waste management plan to be established that will identify opportunities for waste reduction, reuse and recycling of material with disposal being the least favoured option. Where disposal is required it will be to a suitably licensed waste facility.

It is estimated that the construction of NET Phase Two will produce up to 300,000 tonnes of waste in each year of construction. This is a significant amount of waste produced, although providing appropriate mitigation measures are implemented through the adoption of the CoCP

and waste management plan, ensuring reduction and reuse where practicable, the quantity of this waste will be minimised.

8.13 Water Resources

The ES has identified the impacts of construction and operation of the scheme on the local water resources.

During construction the scheme will minimise its impacts on the local water resources and the CoCP will include best practice techniques including:

- Exposed ground and stockpiles will be minimised to reduce silt runoff;
- Concrete and cement will be prevented from entering any watercourses;
- Stockpiles will be kept away from waterways;
- Spill control packs will be available in the unlikely event of a spill, and site personnel will be trained in their use;
- Any lubricants and fuels to be used will be stored in bunded and lockable storage tanks, with hoses and gauges kept within the bund;
- All surface water from hard standings will be passed through trapped gullies and an oil interceptor suitable to drain the site; and
- Adequate provision for the collection, treatment and disposal of sewage from site offices and accommodation will be provided.



As a result of this mitigation, impacts to water resources will not be significant. Some aspects of the proposed works (piling and other ground works) in combination with the presence of a major aquifer and shallow groundwater have the potential for major impacts to water quality and flow. Mitigation measures will be implemented in order to minimise these impacts. There are not predicted to be any impacts on water resources during the operation phase of NET Phase Two.

The proposed Clifton via Wilford route will cross Fairham Brook, and the River Trent at Wilford Toll Bridge. Hydraulic modelling was undertaken which demonstrates that the scheme design at these locations will not cause adverse flooding impacts whilst satisfying the EA's flooding criteria. The Chilwell via QMC and Beeston route crosses the River Leen, where the bridge pier supports, which are proposed to be located within the River Leen flood protection bunds, have been designed to result in no impact on likely flood flows. Therefore, no significant impacts are expected.

8.14 Socio-economic assessment

The ES has examined the socio-economic impacts of the construction and operation of NET Phase Two. During construction, the most significant socio-economic impacts will relate to the employment generated. This comprises direct employment on site, plus indirect and induced employment effects. Other impacts may occur as a result of the effects on commercial interests along the route corridor, including as a result of demolitions. In view of the difficult conditions that local traders are likely to experience on Chilwell Road/ High Road,

Nottinghamshire County Council have proposed a financial assistance package for traders during the construction phase.

Once operational, the proposed scheme is anticipated to generate significant positive socio-economic impacts. The most significant anticipated regeneration effect will be through increased accessibility. In particular, the NET Phase Two scheme will enable residents of outlying areas to access jobs in the city centre, thus serving to further spread the economic benefits of recent growth in the city. In addition, the scheme will help mitigate the risk of economic stagnation, caused by increased congestion, by enabling businesses in the city centre and other areas to continue to grow without being constrained by labour shortages.

8.15 Electromagnetic effects

NET Phase Two will be an electrically-powered tramway conforming to British and European Standards in terms of traction voltage and design criteria. The tramway will operate on direct current (dc) at a nominal voltage of 750 V, which is derived from local high voltage electricity supply industry feeds into purpose-built traction substations. These substations are totally enclosed and secure, and have no external exposed electrical equipment.

NET Phase Two will meet legislative and legal requirements relating to electromagnetic currents and electromagnetic frequency in terms of emissions and immunity. In addition, an Electromagnetic Current Management Plan (EMCMP) will be produced. The scheme is not



expected to exceed guideline levels for maximum magnetic and electric field strength limits with respect to human exposure.

8.16 NET Line One depot site

The ES examines the predicted impacts on the existing depot on Wilkinson Street as a result of NET Phase Two due to the increased usage of the site arising from NET Phase Two.

It has been identified that operational noise changes will occur as a result of the increased number of trams accessing the depot at the beginning and end of the service. However, local receptors in the area are over 150 m from the site and noise from trams is generally only audible at receptors during tram movements, or as a consequence of the use of the bell. There will be no increase in the maximum noise levels from the trams as a result of the NET Phase Two proposals and there will be no change in the potential for sleep disturbance. The increased level of maintenance activity will mainly take place inside the depot buildings, which will be undertaken with procedures designed to avoid significant noise impacts off-site.

The scheme will involve minor construction works at the depot resulting in slight adverse townscape and visual impacts. Due to the lack of vegetation and suitable habitat, and the nature of the potential disturbances, the proposals are predicted to have no significant ecological impacts.

The increase in activity will result in an increase in staff at the depot during both construction and

operation. However, associated traffic movements are likely to be minor in the context of NET Phase Two and would not result in any significant impact at this location.

The scheme has the potential to give rise to waste at the depot during the construction phase. This is not expected to be a significant quantity and appropriate mitigation measures will be implemented through the adoption of the CoCP and waste management plan, resulting in the quantity of this waste being reduced.

8.17 Cumulative effects

NET Phase Two will provide significant regeneration benefits to the surrounding areas. These include some of the most deprived areas in England, which have higher than average unemployment. There will be a number of cumulative impacts that will occur during the construction period of the scheme although it is envisaged that they will only occur for short periods of time in any one location. Certain residential receptors will be subject to a coincidence of potential impacts during construction, in particular, dust, noise and visual impact. Mitigation measures identified within the ES will reduce the potential impacts and the





CoCP will be a useful tool in ensuring that the potential cumulative effects are minimised.

9 Summary

The ES sets out the environmental impacts of NET Phase Two and has identified appropriate mitigation measures to avoid or reduce any potentially significant adverse environmental impacts. The Promoters are committed to providing these, and the means by which each can be secured has been identified.



10 The Environmental Statement

The ES and this Non-Technical Summary have been prepared by Environmental Resources Management (ERM) on behalf of Nottingham City Council and Nottinghamshire County Council. ERM is an independent environmental consultancy with extensive experience of undertaking Environmental Impact Assessments of transport infrastructure schemes.

A copy of the Transport and Works Act Order (TWAO) application and all of the related applications, plans and other documents submitted with it, including the Environmental Statement, may be inspected free of charge from Thursday, 26 April 2007 until Thursday, 7 June 2007 at the locations shown in Figure 7.



Figure 7. TWAO application documents - Inspection locations

Venue	Address	Opening Hours
Lenton Library	Lenton Boulevard Nottingham NG7 2BY Tel 0115 9151790	Mon, Wed, Fri: 9.30am – 12.30pm and 1.30pm – 7.30 pm Sat: 9.00am – 1.00pm Tues, Thurs, Sun: Closed
Beeston Library	Foster Avenue Beeston Nottingham NG9 1AE Tel 0115 9255168	Mon to Fri: 9.30am – 7.30pm Sat: 9.00am – 4.00pm Sun: Closed
Broxtowe Borough Council	Council Offices Foster Avenue Beeston NG9 1AB Tel 0115 9177777	Mon to Thurs: 8.30am – 5.00pm Fri: 8.30am – 4.30pm Sat and Sun: Closed
Clifton Library	Southchurch Drive Clifton Nottingham NG11 8AB Tel 0115 9152945	Mon, Tues, Thurs and Fri: 9.00am – 7.30pm Sat: 9.00am – 1.00pm Wed and Sun: Closed
Meadows Library	Wilford Grove The Meadows Nottingham NG2 2DR Tel 0115 9159279	Mon: 10.00am – 1.00pm and 2.00pm – 6.30pm Wed: 10.00am – 1.00pm and 2.00pm – 5.00pm Fri: 10.00am – 1.00pm and 2.00pm – 6.30pm Sat: 9.30am – 1.00pm Tues, Thurs, Sun: Closed
Rushcliffe Borough Council	Civic Centre Pavilion Road West Bridgford Nottingham NG2 5FE Tel 0115 9819911	Mon to Fri: 8.30am – 5.00pm Sat and Sun: Closed
Nottingham Central Library	Angel Row Nottingham NG1 6HP Tel 0115 9152828	Mon to Fri: 9.00am to 7.00pm Sat: 9.00am – 1.00pm Sun: Closed
Nottinghamshire County Council	County Hall West Bridgford Nottingham NG2 7QP Tel 0115 9823823	Mon to Thurs: 8.00am – 5.00pm Fri: 8.00am – 4.30pm Sat and Sun: Closed
Nottingham City Council	2nd Floor Exchange Buildings North Nottingham NG1 2BS Tel 0115 9155356	Mon to Fri: 8:30am - 5:00pm Sat and Sun: closed
West Bridgford Library	Bridgford Road West Bridgford Nottingham NG2 6AT Tel 0115 9816506/ 9816780	Mon to Fri: 9:30am - 7:30pm Sat: 9:00 am – 4:00pm Sun: closed

The locations in Figure 7 will be opened at the times listed, except on Monday, 7 May 2007 and Monday, 28 May 2007 when they will all be

closed. Broxtowe Borough Council offices and Nottingham City Council offices will also be closed on Tuesday, 29 May 2007.

**For further information
please contact:**

NET Project Office

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0115 915 6600**

**tram@nottinghamcity.gov.uk
www.netphasetwo.com**

**If you require this information
in an alternative format please
call the NET project office on
0115 915 6600**



**Nottingham
City Council**

