



NTC Local Plan Public Transport Sensitivity Test September 2016



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1. Background

1.1 North Tyneside Local Plan

North Tyneside Council (NTC) are progressing the preparation of their Local Plan for the 15 year period between 2017 and 2032. As part of this process, an Infrastructure Development Plan (IDP) is being prepared to identify the major infrastructure improvements that are necessary to accommodate the Local Plan proposals.

As part of the Local Plan, NTC has earmarked two strategic sites for residential development at Murton Gap and Killingworth Moor that equate to half of the total Local Plan housing allocation that is yet to be consented. Fully occupied, the sites will be resident to nearly 12,000 people representing 5% of the projected borough resident population by 2032.

Capita has developed a strategic SATURN model covering the entire North Tyneside Borough to test the Council's emerging Local Plan for the 15 year period. The SATURN model has been used to quantify the impacts of the preferred Local Plan options, to test the overall impact on the highway network of the proposed strategic sites at Murton Gap and Killingworth Moor, and test the proposed highway mitigation and phasing of mitigation required to deliver the two strategic sites.

1.2 Sustainable Travel at the Strategic Sites

Capita has developed the North Tyneside Local Plan Strategic Sites Public Transport Demand Scoping Study in May 2016 as part of the emerging Local Plan. This has examined the feasibility of various options for public transport provision at the two strategic sites for residential development identified as part of the emerging Local Plan. This includes the viability of proposed new Metro stations, a review of existing bus services, and appraisal of new routes to link the strategic sites with key destinations in Tyne and Wear.

The age profiling estimates shown in the Public Transport Demand Scoping Study demonstrate that a high proportion of the residents anticipated to reside at the two strategic sites will be of working age and will therefore, require appropriate and desirable public transport links that can realistically transport them to employment hubs in North Tyneside, such as the Cobalt and Quorum Business Parks, as well as other employment destinations like Newcastle city centre and Sunderland.

Therefore, one of the fundamental transport objectives of the strategic sites is to maximise travel by public transport. It is a core policy aim of the Local Plan that NTC would seek to provide a high quality level of service for active travel and public transport at key strategic sites in the borough, where the opportunity to influence travel behaviour is greatest.

Capita has developed the North Tyneside Local Plan Strategic Sites Pedestrian & Cycling Study in April 2016 as part of the emerging Local Plan. This has assessed the pedestrian and cycling infrastructure in and surrounding the Murton Gap and Killingworth Moor strategic sites, and identification of key trip attractors surrounding the sites to determine infrastructure improvements required to link the sites to destinations by foot and bike.

1.3 Purpose & Structure of the Report

This report builds upon the initial work undertaken around the Public Transport opportunities for the two Strategic Housing Sites in NTC's proposed Local Plan. The study aims to identify a "without Metro" option for public transport provision for the two sites that fulfils the objectives of North Tyneside Council and Nexus to promote sustainable travel.

The study includes cost estimates for the proposed new/diverted services, including consideration toward when they may become commercially viable and taken over by a local bus operator. The study also includes a comparison between the with/without Metro options in terms of Value for Money (VfM) over the lifetime of the respective development delivery period.

The report is structured into the following sections:

- Section 2- Assessment Methodology;
- Section 3- Review of Existing Bus Provision at Killingworth Moor;
- Section 4- Review of Existing Bus Provision at Murton Gap;
- Section 5- Review of Existing Public Transport Interchange Provision;
- Section 6- Killingworth Moor Proposed Bus Provision;
- Section 7- Murton Gap Proposed Bus Provision;
- Section 8 – Highway Network Impacts
- Section 9- Value for Money Assessment; and
- Section 10- Conclusions.

2. Assessment Methodology

2.1 Background

The Killingworth Moor site is located to the west of the A19 corridor between Killingworth and Holystone Village. The site is bounded to the north east by the A19, Killingworth Village to the west, Palmersville to the south and Holystone Village to the south east. The Metro line extends along the southern boundary with the nearest Metro stations being Palmersville to the west and Northumberland Park to the east. The site is allocated predominantly for housing to a capacity of approximately 2,000 houses, with the potential for some office/business employment uses to support local job creation, to be accommodated in the south of the site. Also incorporated within the proposals for the site is a combined primary and secondary school.

The Murton Gap site is located to the east of the A19 corridor surrounding Murton Village. The site is bounded by Shiremoor to the west, Wellfield to the north, Monkseaton to the east and New York to the south. The Metro line extends along the northern boundary of the site, with the nearest Metro stations being at Shiremoor to the west and West Monkseaton to the east. The site is allocated for housing to a capacity of approximately 3,000 houses and proposals incorporate the provision of a primary school initially proposed in the south of the site adjacent to New York.

2.2 Proposed Methodology

This assessment of a “No Metro” public transport provision option will consider;

- The level of bus provision necessary to achieve NTC’s Local Plan sustainability ambitions and Nexus’ minimum accessibility requirements.
- The associated direct operating costs/subsidy of the bus only proposals.
- If there is any consequential additional off-site highway mitigation required.
- How buses will serve the site during each construction phase such that Nexus’ and NTC’s accessibility objectives remain satisfied.
- Value for Money (VfM) of a “No Metro” option.

The following section details Nexus’ and North Tyneside’s accessibility criteria that will be applicable to all new planning applications within the Local Plan period. Failure to satisfy these requirements may result in an application being refused by North Tyneside’s own officers and objected to by Nexus as a statutory consultee.

The routes devised within this assessment seek to satisfy these criteria with a minimum number of new services and limited diversions such that existing provision is not unduly compromised. Nexus have provided comments on each of the proposals and alterations made accordingly to ensure that the assessment represent an acceptable solution.

Nexus have provided patronage forecasts that demonstrate when existing subsidised services have become commercially viable. This has been used in conjunction with Capita’s own demand forecasting work (previously undertaken) to prepare robust cost estimates for the bus provision on each site.

A review of 21 “New” (completed in 2011) housing developments across Tyne & Wear and Northumberland has been undertaken and a summary is included in Appendix A. 2011 Census modal split data at Output Area (OA) level for commuting trips has been obtained for each and analysis on Metro and Bus mode choice uptake cross referenced with proximity to stations/levels of provision undertaken. The grading of metro access and bus provision is summarised in table 2.1 below.

Table 2.1 – Public Transport Accessibility Grading

Metro Access		Bus Provision	
Distance	Access	Service Levels	Provision
Within 500m	High	Multiple services with 15 minute frequency	High*
500m – 1200m	Medium	Multiple services with 30 minute frequency	Medium
More than 1200m	Poor	Single service with 30 minute frequency or less	Poor

*Provision in line with Nexus’ current accessibility criteria

As all of the sites selected for analysis are located within the same Census Travel to Work Area (TWA) the respective trip distributions and transport mode choice options will be comparable.

2.2.1 Baseline Modal Split

Baseline reference sites adjacent each of the strategic sites were also identified to highlight existing public transport modal shift in the area. The sites were Wellfield (East boundary) and New York Village (Southern boundary) for the Murton Gap site and Killingworth Village (Western boundary), Clousden Grange (Southern boundary), and Holystone Grange (Eastern boundary) for Killingworth Moor.

The Murton Gap baseline sites achieved between a 13% and 22% combined public transport modal shift with metro representing between 2% and 16% subject to proximity to a station. The “New” Earsdon View (Shiremoor) site achieved a modal split of 21% for public transport of which 15% was by Metro. This is due to the poor bus provision along Earsdon Road and that all properties are within 950m of Shiremoor station. It should be noted that car ownership in the New York area is lower and as such the public transport uptake was higher.

The Killingworth Moor baseline sites achieved between a 10% and 14% combined public transport modal split with metro representing between 1% and 7% subject to proximity to a station. The “New” Forest Gate site achieved a modal split of 25% for public transport of which all was by Metro. This is due to the poor bus provision along the adjacent section of Great Lime Road and that all properties are within 500m of Palmersville station.

An analysis of “New” housing sites without access to the Tyne & Wear metro system but with medium/high bus provision highlighted that on average 11% of trips were by public transport. Consequently these sites had by far the highest car modal splits with an average of 70% and a highest of 85%. Tables 2.2 and 2.3 below summarise the variation in modal split relative to Metro/Bus provision.

Table 2.2 – Metro Modal Split Ranges

Metro Access	Max Modal Split	Associated Distance (m)	Min Modal Split	Associated Distance (m)
High	28%	369	15%	500
Medium	15%	505	7%	1005
Poor	6%	1400	2%	2117

Table 2.3 – Bus Modal Split Ranges

Bus Access	Max Modal Split	Min Modal Split
High	24%	7%
Medium	7%	1%
Poor	3%	0%

The above tables illustrate that medium/high Metro access achieves far greater modal split than the equivalent bus provision. In exceptional cases where the adjacent bus provision is excellent the modal split achieved is comparable. On further analysis of those sites with high bus mode shares it was identified that the developments had a high proportion of 2 bedroom units, lower car ownership, and in the case of the highest (24%) was 50 metres from a bus interchange (Killingworth Centre). Unfortunately neither of the strategic sites is within close proximity to a major bus interchange. However the Murton Gap site is bound by the A191 Rake Lane to the South which is a high frequency corridor linking to North Tyneside General Hospital (NTGH).

The summary table below shows how total public transport modal split for new housing sites varies dependent on access to Metro stations and bus service provision. The exemplar sites within Tyne & Wear that achieve both High Metro and Bus access are in locations where the two modes are in competition with one another. For example two sites within Gateshead (St James' Village/Felling) achieved almost 45% mode share for public transport resulting in a car modal split of 40% also. This was in part due to the high frequency/short commuting times to local major centres and employment areas, something that both strategic sites in North Tyneside could offer with regard to Quorum and Cobalt.

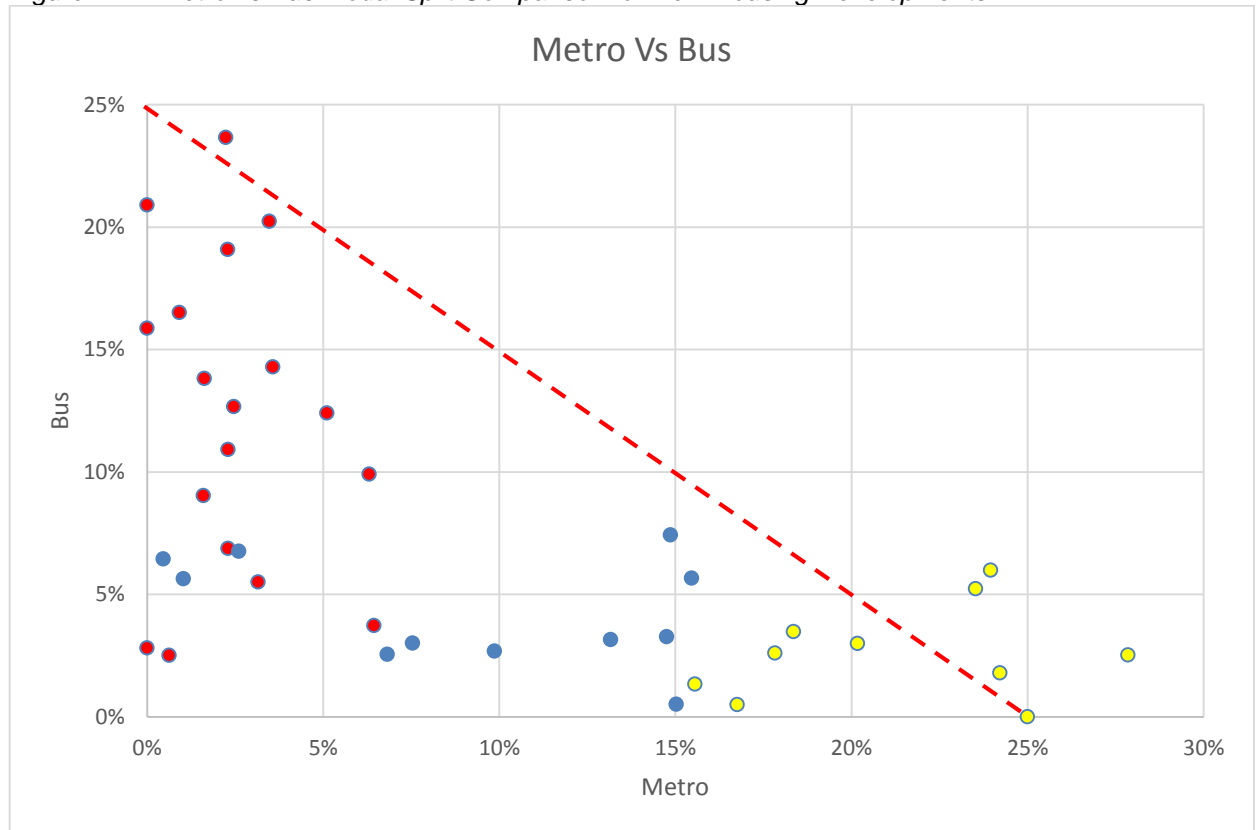
Table 2.4 – Public Transport Modal Split Variations with Metro and Bus Access

Public Transport Modal Split %	Metro Access	Bus Provision
35%	High	High
22%	Medium	High
15%	Poor	High
26%	High	Medium
16%	Medium	Medium
8%	Poor	Medium
21%	High	Poor

16%	Medium	Poor
5%	Poor	Poor

The table above highlights that the variation between sites with for example high bus provision but with and without access to a Metro is significant. There is a 20% drop between high and poor Metro access when bus provision is high and an 18% drop when bus provision is medium. Figure 2.1 below plots the various sites with High bus provision sites in red and High Metro access sites in yellow. It can be seen that sites with Metro access are far more likely to achieve a total public transport modal split of 25% which is the NTC target. It also highlights the risk that despite some sites having a High bus provision they achieve poor modal shift figures.

Figure 2.1 – Metro vs Bus Modal Split Comparison for New Housing Developments



Without an additional metro station provided at Murton Gap and Killingworth Moor, a proportion of both sites would be within 1,200m (medium accessibility) of an existing metro station at either Palmersville, Northumberland Park, Shiremoor or West Monkseaton. Accessibility from the site itself to each of these nearest stations is limited and would require significant mitigation to provide an attractive route and choice for new residents of the sites. Consequently it is concluded that accessibility to existing metro stations for Murton Gap and Killingworth Moor should be assessed as poor.

The difference between sites with high Metro access plus medium bus provision (NTC’s preferred “With” Metro option) and the alternative poor Metro plus high bus (“No Metro” option) is 11%. The

11% drop effectively represents the reduced attractiveness of bus compared to metro when both options are available. As the sites would still both be partially served by existing Metro stations the work around bus routes will focus upon providing access to the areas with no alternative.

The 11% drop therefore also represents the potential increase in car trips generated by the developments and as such should be applied to the base trip rates used in the previous transport modelling. Whilst this method is a little crude it will give an understanding toward any off site highway impacts beyond those already identified in the "With Metro" preferred option. It should be noted that NTC does not anticipate any new highway mitigations will be necessary. However, NTC would continue to review potential impacts were a "No metro" option taken forward to ensure proposed mitigations would remain appropriate in terms of operational capacity and timescales for delivery.

If developers are confident that a bus only option could achieve the sustainable public transport modal split targets that NTC and Nexus have identified then this could be addressed through a Travel Plan Bond. A Travel Plan Bond could be set at a level such that if targets are not met and consequently highway impacts are exacerbated at one of the more sensitive junctions/locations on the local network that the bond could be utilised to provide mitigation. The level of the bond is therefore likely to be significantly higher for a "No Metro" option as NTC are far less confident this can achieve the 25% public transport modal split expected.

2.3 Nexus Bus Accessibility

Tyne & Wears Public Transport Executive Nexus are jointly responsible with local authorities for ensuring all new development is adequately served by public transport. This role includes applying service standards that represent a minimum level of acceptable provision such that new residents receive a comparable service to other parts of Tyne & Wear. NTC met with Nexus to discuss these requirements in detail and the key criteria applicable to new developments is summarised below:-

- All residents should have access to a bus stop within 400m walking distance of their home, and the bus stop should be served by a 15 minute frequency bus service;
- All residents must be served by a service linking to a local centre (Killingworth and Whitely Bay for Killingworth Moor and Murton Gap respectively)
- All residents must be served by a service linking to a major centre (Newcastle)
- All residents should have access to a local centre, a major centre and a local hospital (North Tyneside General Hospital) within a 30 minute journey time door to door where possible;
- A maximum of one interchange is considered acceptable but direct provision is preferable for all journeys to local and major centres.
- Full/part subsidy of any new/existing service is paid up to two years post completion of the development subject to the service becoming commercially viable. Furthermore

operators are assumed to enter into a profit share to offset annual revenues against service subsidy costs.

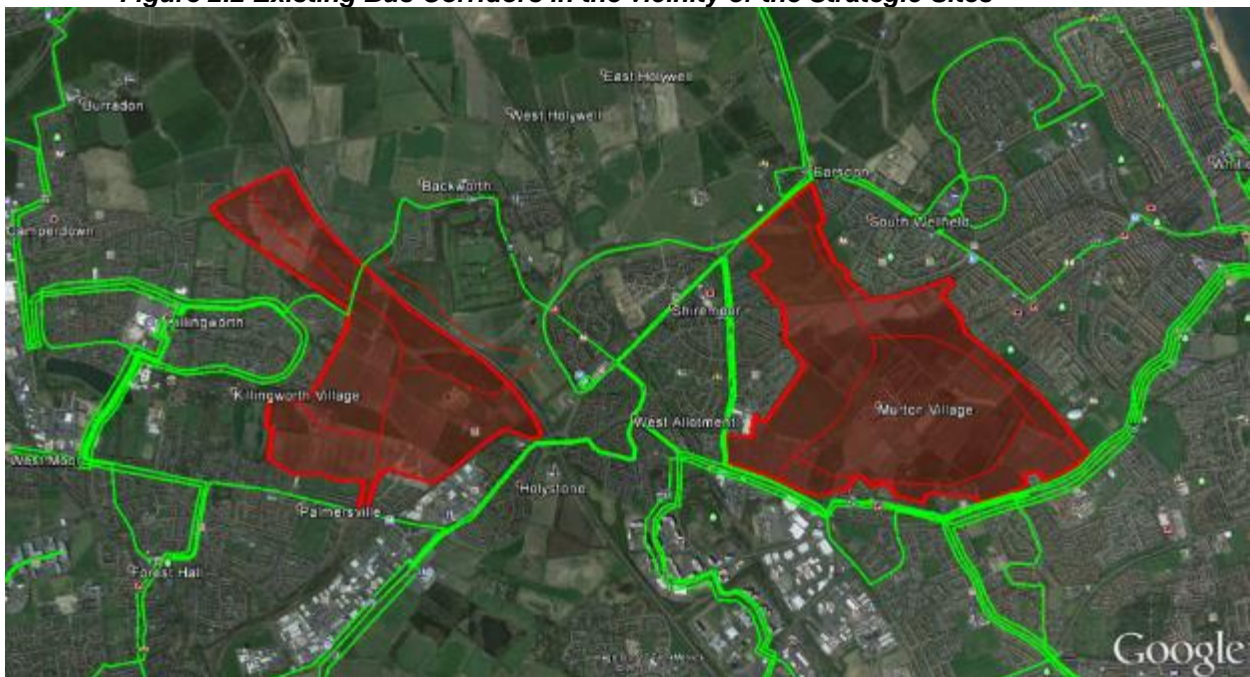
North Tyneside are supportive of these criteria and would assess any planning application against them. The Transport & Highway Supplementary Planning Document Local Development Document (LLD12) specifically stipulates some of the same criteria. For example distance targets for accessibility to public transport nodes and infrastructure from a development is 400m in which routes are direct, convenient and safe.

Therefore, for the purposes of reviewing the existing bus services that operate surrounding the strategic sites, bus nodes within 400m of the site boundary have been included in this study to demonstrate current bus service provision.

North Tyneside has a large network of bus services run by major operators. In many areas, routes or sections of routes, duplicate those of other services and operators, resulting in a number of heavily-trafficked bus corridors. In relation to the strategic sites, one such corridor is the A191 running along the southern boundary of the Murton strategic site.

As the strategic sites are earmarked for newly developed land, there are no permeable services through either site; existing services operate around and adjacent to the sites. To the south of the Murton site, the A191 is a major bus corridor with connections to Newcastle, Whitley Bay, North Shields, Wallsend, Killingworth, Blyth, and Cramlington. The map in Figure 2.2 below highlights the lack of permeable routes through the strategic sites.

Figure 2.2 Existing Bus Corridors in the vicinity of the Strategic Sites



When considering diverting/extending existing services into the strategic sites the following needs to be assessed:-

- Does the service diversion leave any existing residents without an acceptable level of service?
- Does the additional distance impact the journey time significantly and could this cause a drop in patronage?
- Does the service require additional buses to maintain the current frequency of the service?

The above criteria have been considered in detail for each of the proposals made for the strategic sites.

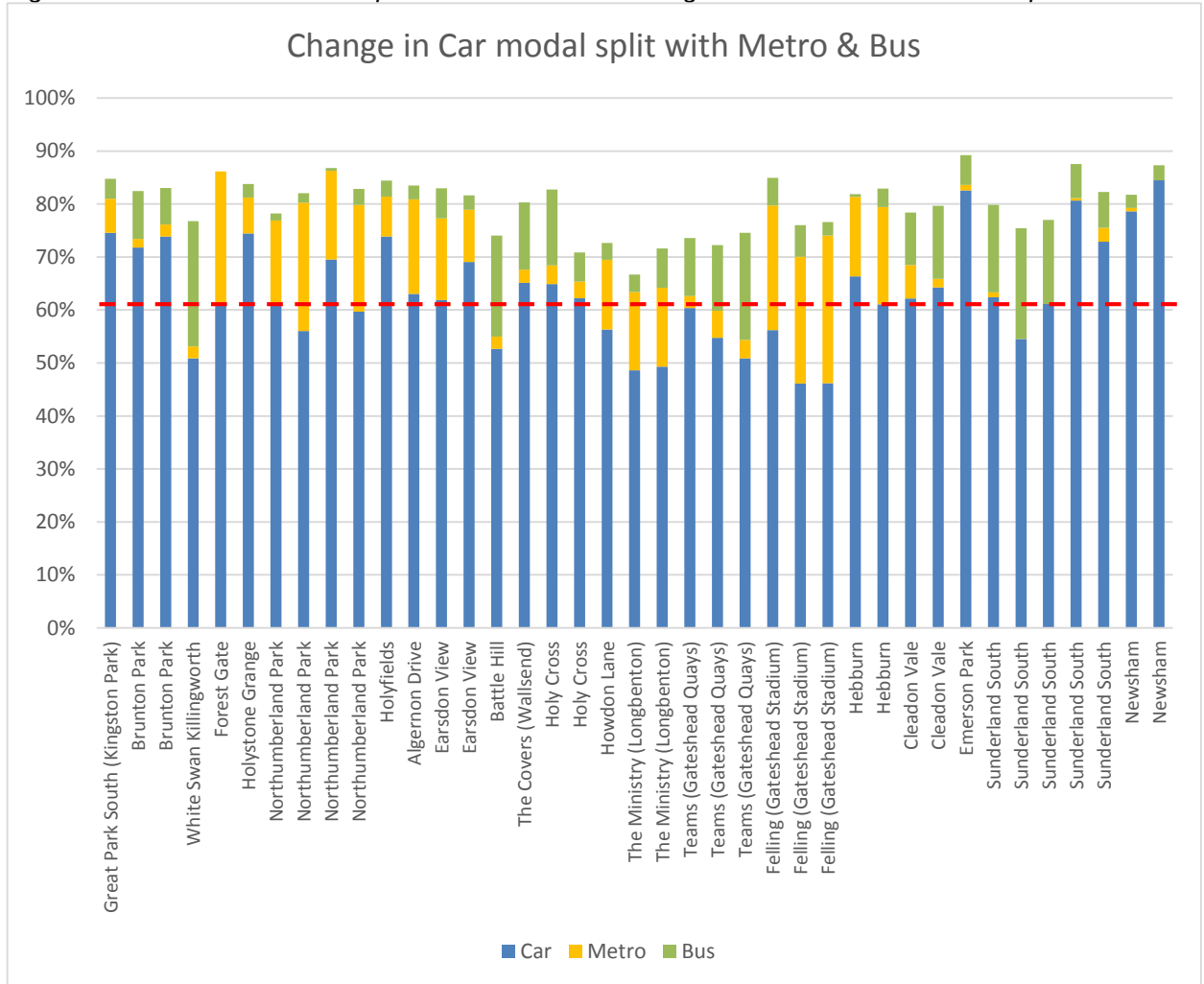
2.4 Local Plan Sustainability Policy

NTC's Local Plan aims to significantly promote sustainable travel across the borough. To achieve this NTC seeks to ensure that all major new developments strive for a public transport modal split of around 25% for all journey purposes. The public transport modal split contributes towards an overall aspiration as supported in the emerging NTC Transport Strategy of reducing single occupancy car trips to 55% from a current average of around 65%. New development and the strategic sites in particular provide a major opportunity to demonstrate best practice and have the greatest potential to influence behavioural change through modal shift due to the quantum/scale of the development and supplementary amenities provided on site.

Figure 2.3 below illustrates how sites with a high proportion of public transport modal share can achieve car modal splits of 55% or lower. The chart only plots Car, Metro and Bus modal splits therefore the remaining un-plotted proportions represent all other modes including, walking, cycling, car share, train etc. It should be noted that sites such as The Ministry and White Swan (Killingworth) achieve low car modal splits in part due to excellent public transport uptake but also very high walking modal splits as many residents are locally employed. The Ministry in particular houses a lot of employees of the DWP site adjacent resulting in 20% of commuting trips by foot.

In the Holystone, Palmersville and Shiremoor area a range of sites highlight the importance of proximity to the metro. Forest Gate and Northumberland Park sites each identify a high proportion of metro trips and car trips at or below 60%. Meanwhile adjacent sites at Holystone Grange and Holyfields, with less readily accessibility to metro and additional barriers such as road infrastructure are far less successful with metro trips below 10% and car trips over 70%.

Figure 2.3 – Car Modal Split achieved with changes in Metro and Bus uptake



The design of the Murton Gap and Killingworth Moor strategic sites has evolved with sustainability in mind as both sites will provide local amenities including schools, local retail, and, at Killingworth Moor employment land to help reduce the need to travel beyond the site boundary. The internal access arrangements are also designed in a way to encourage sustainable travel for trips to adjacent workplaces, secondary schools, and local food stores. Walking and cycling trips are anticipated to replace short car journeys to destinations such as local schools, and the Cobalt Business Park which is the largest employment site within the borough.

For trips to wider parts of the borough and local major centres such as Newcastle public transport options will be promoted where at all possible. To this end access to Tyne & Wear Metro system either directly or via an interchange are key. Both sites are bounded by the Metro northern loop from which adjacent stations would allow access to Newcastle within 30 minutes. Whilst existing access to adjacent Metro stations from large parts of both strategic sites is hampered and indirect there will be some properties with satisfactory access.

The southern boundary of the Murton Gap site has a high level of bus provision routing along it, with services to local centres (Whitley Bay), employment sites (Cobalt), and major centres (Newcastle).

3. Killingworth Moor - Existing Provision

3.1 Review of Existing Bus Provision

The bus services operational from bus stops located within 400m of the Killingworth Moor site boundary are shown in Table 3.1 below.

Table 3.1 Bus Services surrounding Killingworth Moor Strategic Site

Bus Service	Operator	Service Termini	Service Frequency (Mon –Sat daytime)	Key Service Stops
19*	Go North East	North Shields - Ashington	15 minutes (Tyne Tunnel Trading Est. to Northumberland Park only), else 30 mins	North Shields, Royal Quays, Tyne Tunnel Trading Estate, Silverlink, Cobalt, Cramlington, Bedlington, Ashington
51	Arriva	Whitley Bay to Newcastle via Shiremoor	Hourly	Whitley Bay, Earsdon, Shiremoor, Benton, Hadrian Lodge, Wallsend, Heaton, Newcastle
53	Arriva	North Shields – Cramlington via Killingworth	30 minutes	North Shields, Shiremoor, Benton, Killingworth, Cramlington
54	Arriva	Whitley Bay – Newcastle via Killingworth	30 minutes	Whitley Bay, North Tyneside Hospital, Cobalt, Killingworth, Quorum, Gosforth, Newcastle city centre
55	Arriva	Newcastle – Forest Hall - Newcastle	15 minutes	Newcastle City Centre, Four Lane Ends, Forest Hall, Great Lime Road, and return
63	Stagecoach	Killingworth to Newcastle via Forest Hall	15 minutes	Killingworth East Bailey, Forest Hall, Four Lane Ends, Chillingham Road
X63	Stagecoach	Killingworth – Newcastle via Quorum	15 minutes	Killingworth, West Moor, Quorum, Gosforth Park Way, Newcastle

*This assumes delivery of the upgraded A19 underpass to allow access to services at Northumberland Park.

Whilst the level of service and frequency along routes adjacent to the Killingworth Moor site is relatively good, the high frequency services currently only serve the western and southern fringe of the site. The northern and central areas of the site are not served from any existing bus stops or services.

3.2 Analysis

Most services provide links to the Killingworth Centre where passengers can interchange onto direct bus services to Newcastle. There are two services that provide a 30 minute service to Newcastle accessible from existing stops on Simonside Way, and Great Lime Road. The services along Great Lime Road to Newcastle are not as appealing as using Palmersville Metro station which is reflected in the local census data for the new Forest Gate estate which has a 0% modal split for bus use for commuting purposes.

The equivalent journey time to Newcastle from bus stops adjacent Killingworth Moor is 10 minutes longer than trips via the Metro. Therefore residents within a reasonable walking distance of Palmersville Metro are likely to choose this mode instead. The existing residential areas adjacent Killingworth Village currently achieve a bus modal split of between 7% and 9% and both can access the two high frequency services to Newcastle (54 and 55).

On more thorough review of the distribution of commuters from the Forest Gate site it was identified that the vast majority of public transport users travelled to Gosforth, Newcastle, and Gateshead, all via Metro. Therefore any bus service to Newcastle should be as direct as possible to compete with the Metro and car users. Where residents are beyond reasonable distance of a Metro the bus provision needs to be high frequency (15 min) to be comparatively convenient as travelling by car. The need to keep the journey times short limits the opportunity to divert/extend the existing 54/55 services as the total journey times would increase significantly which may reduce appeal and patronage from existing residential areas served. Therefore it may be necessary to provide a whole new service to Newcastle instead.

Bus provision serving Forest Gate estate only provides for trips to North Shields, Cramlington and Newcastle and as discussed Newcastle journey times are not comparable to current Metro provision. 53 service serves North Shields and Cramlington via Killingworth Centre which should provide for retail trips as it serves multiple food stores and local retail centres. Unfortunately it does not directly serve any significant employment areas thus commuters have chosen to use Metro or private car (61%).

Providing services that route directly through the sites is essential to provide a comparably attractive public transport offer. Analysis of Census modal split data and distance to nearest bus/metro stations suggest that the average "willing" distance users are prepared to walk is 400m for a bus and 1,200m for a Metro. However the maximum distances increased to 600m for bus and 2,000m for Metro. As part of this assessment consideration has been given to the location of new bus stops within the sites to ensure the average acceptable distances are achieved to all areas of the site.

3.3 Summary

The existing service provision adjacent Killingworth Moor cannot easily be diverted given the constraints on total journey times to the end destinations (Newcastle). Some local services such as the 53 and 19 have the opportunity to be diverted/extended subject to the impact upon existing journey times and patronage levels being acceptable to the bus operators.

4. Murton Gap Existing Provision

4.1 Review of Existing Bus Provision

The bus services operational from bus stops located within 400m of the Murton Gap site boundary, and the key service destinations and service frequencies are shown in Table 4.1 below.

Table 4.1 Bus Services surrounding Murton Gap Strategic Site

Bus Service	Operator	Service Termini	Service Frequency (Mon –Sat daytime)	Key Service Stops
19	Go North East	North Shields – Ashington	15 minutes (Tyne Tunnel Trading Est. to Northumberland Park only), else 30 mins	North Shields, Royal Quays, Tyne Tunnel Trading Estate, Silverlink, Cobalt, Cramlington, Bedlington, Ashington
42	Go North East	North Shields – Cramlington via Cobalt and Killingworth -	30 minutes	North Shields, North Tyneside Hospital, Cobalt, Wallsend, Benton, Killingworth, Cramlington
51	Arriva	Whitley Bay to Newcastle via Shiremoor	Hourly	Whitley Bay, Earsdon, Park Lane, Benton, Hadrian Lodge, Wallsend, Heaton, Newcastle
53	Arriva	North Shields – Cramlington via Killingworth	30 minutes	North Shields, Shiremoor, Benton, Killingworth, Cramlington
54	Arriva	Whitley Bay – Newcastle via Killingworth	30 minutes	Whitley Bay, North Tyneside Hospital, Shiremoor, Killingworth, Quorum, Gosforth, Newcastle city centre
57/57A	Arriva	Whitley Bay - Ashington	30 minutes	Whitley Bay, West Monkseaton, Earsdon Road, Seaton Delaval, Annitsford, Cramlington, Ashington
59	Phoenix Coaches	Whitley Bay - Backworth	Hourly	Whitley Bay, North Tyneside Hospital, Murton Village, Shiremoor, Northumberland Park

308	Arriva	Blyth – Newcastle via Whitley Bay	15 minutes	Blyth, Whitley Bay, North Tyneside Hospital, Wallsend, Heaton, Newcastle
309	Go North East	Blyth – Newcastle via Cobalt	15 minutes	Blyth, Whitley Bay, North Tyneside Hospital, Cobalt, Battle Hill, Coast Road, Newcastle
359	Phoenix Coaches	Marden - Backworth	Hourly	Preston Grange, North Tyneside Hospital, Murton Village, Northumberland Park
W1/W1A	Phoenix Coaches	Whitley Bay to Earsdon Grange	Hourly	Whitley Bay, Monkseaton, West Monkseaton, Earsdon Road, South Wellfield, Earsdon Grange
W3	Phoenix Coaches	Whitley Bay – West Chirton	Hourly	Whitley Bay, Monkseaton, North Tyneside Hospital, New York, Norham Road, Wallsend Road, West Chirton

Areas adjacent to the southern boundary of the Murton Gap site are served well by existing bus services operated by Arriva and Go North East, providing links to various key destinations in Newcastle, North Tyneside and south east Northumberland. These services provide direct routes to local centres including Whitley Bay and North Shields, major employment sites (Cobalt), and retail and leisure uses. However whilst the Murton Gap site is well served along its southern boundary with Rake Lane, once beyond 400m of the existing bus stops there is no provision.

4.2 Analysis

Almost all services adjacent the Murton Gap site provide access to North Tyneside General Hospital (NTGH). Therefore any diversions of existing routes should consider if residents from further afield are effectively cut-off from accessing the Hospital.

Nexus have suggested that any diverted service along Rake Lane should still tie back in to Rake Lane prior to the NTGH stops. This restricts the extent to which existing services can be diverted into the strategic site. As discussed in more detail in section 7 of this report the proposed bus stops within the site adjacent NTGH would be 300 metres from the entrance to the Hospital. This extends the existing distances by around 150 metres and further discussion with Nexus would need to be required to determine if this would be appropriate.

If the impact upon accessibility to NTGH, of diverting services at the proposed new access to Murton strategic site from Rake Lane, was considered unacceptable an alternate bus only access could be provided via the existing sub-station service road located 500 metres west of NTGH. This access is within the boundary of the site and within the control of the Murton Gap consortium. There would be potential additional costs to the developers to bring the highway up to adoptable standards appropriate for a bus to utilise this access.

Some of the areas adjacent the Murton Gap site such as New York are served by several high frequency services and as a result achieve a modal split for bus of up to 19%. However other adjacent areas such as Wellfield and Earsdon View achieve only around 3%. This is due to Wellfield and Earsdon View being within reasonable distance of a Metro and thus public transport trips to Newcastle are made by Metro instead. This highlights the need for a direct high frequency service to Newcastle that serves major employment sites in the area. Approximately half of the site is within reasonable walking/cycling distance to Cobalt and this mode choice should be strongly promoted. However for those beyond 2km of Cobalt, public transport should be the next alternative.

4.3 Summary

The level of existing service along the southern boundary is an excellent opportunity for encouraging bus travel to residents of the site within 400m of Rake Lane. Local diversions to any of these services must maintain access to NTGH. Areas of the site within reasonable distance of the Shiremoor and West Monkseaton Metro stations are likely to choose Metro over Bus for trips beyond North Tyneside due to journey times being shorter.

5. Review of Existing Public Transport Interchange Provision

There are local bus interchanges/hubs within the vicinity of the Local Plan sites at Killingworth Centre Bus Station, Northumberland Park Metro Interchange and North Tyneside General Hospital. These facilities provide high frequency direct services to local and regional key destinations. It is therefore important that services from the strategic sites link into these facilities. The following chapter identifies the services that can be accessed from each of these interchange/hub facilities.

5.1 Killingworth Bus Station at the Killingworth Centre

The Killingworth Centre is an undercover shopping mall with an integrated bus station located in the centre of Killingworth. The bus station is approximately 1,500m from the closest point within the Killingworth Moor site and therefore access is likely to be via a connecting local bus service. A summary of connecting bus services that are available from Killingworth Bus Station at the Killingworth Centre is shown in Table 5.1 below. The quickest service to Newcastle takes approximately 30 minutes (service 52).

Table 5.1 Bus Services at Killingworth Bus Station at the Killingworth Centre

Bus Service	Operator	Service Termini	Service Frequency (Mon –Sat daytime)	Key Service Stops
42	Go North East	North Shields – Cramlington via Cobalt and Killingworth -	30 minutes	North Shields, North Tyneside Hospital, Cobalt, Wallsend, Benton, Killingworth, Cramlington
52	Arriva	Newcastle – Cramlington via Killingworth	30 minutes	Haymarket, Four Lane Ends, Quorum, Killingworth, Cramlington
53	Arriva	North Shields – Cramlington via Killingworth	30 minutes	North Shields, Shiremoor, Benton, Killingworth, Cramlington
54	Arriva	Whitley Bay – Newcastle via Killingworth	30 minutes	Whitley Bay, North Tyneside Hospital, Cobalt, Killingworth, Quorum, Gosforth, Newcastle city centre

62	Stagecoach	Killingworth to Newcastle via Quorum	15 minutes	Killingworth West Bailey, Quorum, Gosforth Park Way, Longbenton, Four Lane Ends, Chillingham Road
63	Stagecoach	Killingworth to Newcastle via Forest Hall	15 minutes	Killingworth East Bailey, Forest Hall, Four Lane Ends, Chillingham Road
353	Go North East	Kingston Park – Four Lane Ends via Killingworth	Hourly	Kingston Park, Newcastle Airport, Dudley, Killingworth, Forest Hall, Tyneview Park, Four Lane Ends
K2	Pheonix Coaches	Greenhills – Four Lane Ends	Hourly	Greenhills, Killingworth, East Bailey, West Moor, Quorum, Four Lane Ends

5.2 Northumberland Park Metro Interchange

A summary of connecting bus services that are available from Northumberland Park Metro station are shown in Table 5.2 below.

Table 5.2 Bus Services at Northumberland Park Metro Interchange

Bus Service	Operator	Service Termini	Service Frequency (Mon –Sat daytime)	Key Service Stops
19	Go North East	North Shields - Ashington	15 minutes	North Shields, Royal Quays, Tyne Tunnel Trading Estate, Silverlink, Cobalt, Cramlington, Bedlington, Ashington
59	Pheonix Coaches	Whitley Bay - Backworth	Hourly	Whitley Bay, North Tyneside Hospital, Murton Village, Shiremoor, Northumberland Park

53	Arriva	North Shields – Cramlington via Killingworth	30 minutes	North Shields, Shiremoor, Benton, Killingworth, Cramlington
54	Arriva	Whitley Bay – Newcastle via Killingworth	30 minutes	Whitley Bay, North Tyneside Hospital, Cobalt, Killingworth, Quorum, Gosforth, Newcastle city centre

Access to Northumberland Park Interchange from the Killingworth Moor site is currently difficult as the A19 represents a major severance barrier for potential users. There is currently an agricultural underpass on route to the interchange but this is unsurfaced, unlit, and prone to flood. Therefore the existing pedestrian and cycle access to the station from the Killingworth Moor area is likely to be via the A19 Holystone junction.

From the Interchange the metro service to Newcastle takes approximately 21 minutes which is comparable to the equivalent car journey. The facility also provides a Park & Ride function which could be attractive to Killingworth Moor residents if vehicular access to the Interchange was convenient. As part of the Killingworth Moor proposals a new underpass of the A19 is proposed which will provide access to/from the Interchange for new bus services, pedestrians, cyclists, and cars. The timing of delivering this new underpass should therefore be considered when assessing the accessibility of the site as prior its completion the site can only be accessed from the West where public transport provision is poor.

5.3 North Tyneside General Hospital

A summary of services that are available at North Tyneside General Hospital which is the only hospital located in North Tyneside is shown in Table 5.3 below. The quickest service to Newcastle takes approx. 30 minutes (service 308) & to Whitley Bay takes approx. 6 minutes (service 308).

Table 5.3 Bus Services at North Tyneside General Lane Hospital

Bus Service	Operator	Service Termini	Service Frequency (Mon –Sat daytime)	Key Service Stops
11	Go North East	Whitley Bay – Metro Centre via North Shields	30 minutes	Whitley Bay, North Tyneside Hospital, North Shields, Royal Quays, Percy Main, Byker, Monument, Gateshead, Metro Centre

42	Go North East	North Shields – Cramlington via Cobalt and Killingworth -	30 minutes	North Shields, North Tyneside Hospital, Cobalt, Wallsend, Benton, Killingworth, Cramlington
54	Arriva	Whitley Bay – Newcastle via Killingworth	30 minutes	Whitley Bay, North Tyneside Hospital, Cobalt, Killingworth, Quorum, Gosforth, Newcastle city centre
57A	Arriva	North Shields – Cramlington	Hourly	North Shields, North Tyneside General Hospital, Whitley Bay, Cramlington
59	Pheonix Coaches	Whitley Bay - Backworth	Hourly	Whitley Bay, North Tyneside Hospital, Murton Village, Shiremoor, Northumberland Park
308	Arriva	Blyth – Newcastle via Whitley Bay	15 minutes	Blyth, Whitley Bay, North Tyneside Hospital, Wallsend, Heaton, Newcastle
309	Go North East	Blyth – Newcastle via Cobalt	15 minutes	Blyth, Whitley Bay, North Tyneside Hospital, Cobalt, Battle Hill, Coast Road, Newcastle
359	Pheonix Coaches	Marden - Backworth	Hourly	Preston Grange, North Tyneside Hospital, Murton Village, Northumberland Park
W3	Pheonix Coaches	Whitley Bay – West Chirton	Hourly	Whitley Bay, Monkseaton, North Tyneside Hospital, New York, Norham Road, Wallsend Road, West Chirton

5.4 Summary

The proximity to existing Interchange facilities is a positive opportunity if direct convenient access to them can be established. Whilst the Murton Gap site is not close to an existing interchange

facility it is readily accessible to North Tyneside General Hospital which is served by a large number of local services from which to connect to. The Killingworth Moor site has Interchange facilities to its East and West but direct access is currently difficult and potentially off-putting to users.

When assessing the connectivity to services via an interchange a factor for waiting time must be considered for each interchange. Nexus' own criteria recommends that a single interchange during a journey is acceptable as multiple transfers deter users and can increase total journey times considerably.

6. Killingworth Moor Proposed Bus Provision

6.1 Proposed New Services

6.1.1 *KM1 – Local Centre Service and Employment Service*

A new circular service (both directions) is proposed to route around the whole Killingworth Moor site linking into the Killingworth Centre and Northumberland Park Interchange. The proposed highway layout of the site does not easily allow for all areas of the site to be served from a single service. This is compounded by the lack of adjacent high frequency services thus resulting in the need for a circular service that briefly leaves the site.

The proposed route intentionally serves the Scaffold Hill development site as this would allow for the cost of subsidies to be shared whilst allowing both to link into key local facilities. The service would link into both nearest Metro stations allowing residents to interchange within 5-10 minutes in either direction which, when combined with the travel time on the Metro, achieves a possible journey time of around 35 minutes to Newcastle.

The service would provide an excellent link to both local retail sites, including Northumberland Park (and its expansion), and Killingworth Centre. The service would also provide access from the more isolated parts of the site to the proposed new secondary school.

The frequency of the service would be 15 minutes. As the total route length is only approximately 11.8km a total journey time of 35 minutes can be achieved. This would therefore require 6 buses (3 in each direction) to deliver a 15 minute frequency service and allow 10 minutes of contingency in the timetable for future flexibility.

The service relies upon the delivery of the A19 underpass access and the northern section of the link road which would necessitate the need for a diversion during the early years of phase 1. This should be possible via Backworth Lane/Killingworth Lane but this would make the service less attractive in the early phase of construction.

Figure 6.1 Proposed Bus Service KM1

6.1.2 *KM2 – Major Centre Service and Employment Service*

A new direct service to Newcastle is necessary to provide for residents in the centre and northern areas of the development site. There are currently no existing services to Newcastle adjacent these parts of the development that could be diverted instead and thus a new provision is necessary. This service provides the only direct opportunity for travelling to Newcastle for those residents whom a located beyond reasonable distance of an existing Metro. To increase the chance of the service becoming commercially viable the route also serves Killingworth Centre, Quorum Business Park, and Four Lane Ends Interchange.

The site layout makes it difficult to serve all residents efficiently with a single route therefore this service would omit residents in the eastern most part of the site whom are within 1km of the existing Metro stations. As shown with the Forest Gate site users are more inclined to choose to travel by Metro to Newcastle when available but the site will have many residents beyond reasonable distance of the existing Metro offer.

The frequency of the service would need to be 15 minutes to compete with private car and Metro convenience and satisfy Nexus' criteria. The approximate length of the route is 15.5km. The service would need to become an Express service to reduce the number of stops and reduce the total journey time to around 45 minutes (between 35 and 40 minutes for Killingworth Moor).

The service would require 6 buses to satisfy the frequency required. Nexus have advised that this service overlaps significantly with other existing services between West Moor and Newcastle and therefore would be competing for the same demand. This would make achieving

a commercially viable service more difficult, although if the timetable is offset appropriately it could provide corridors along the route with 7/8 minute frequency which may attract more patrons.

Route variations for this service would be necessary during the earlier phases of the development as the full link road is not proposed to be completed until early phase 2 (2023-2025). As the northern part of the site is proposed to develop during phase 1 it would still be necessary to provide direct access to Newcastle for these residents. A variation could send the service along Killingworth Way adjacent the northern boundary of the site and then into the centre of the site via Backworth Lane/Killingworth Lane.

Figure 6.2 Proposed Bus Service KM2



6.2 Existing Service Opportunities

6.2.1 19 Extension – Employment Service Link to Cobalt Business Park

A proposed extension to the 19 bus service could be delivered in conjunction with splitting the service from High Flatworth - Cobalt – Ashington and High Flatworth – Cobalt – Northumberland Park - Killingworth. This would see services that begin/terminate at Northumberland Park extended to serve Killingworth Centre via Killingworth Moor.

The proposed frequency is 30 minutes in the peaks and the approximate length of the extension is 5km extending the journey time for the service by 15 minutes. The extension could therefore be provided with only a single additional bus.

This service provides direct links to major North Tyneside employment sites including Cobalt Business Park, Silverlink Retail Park, Tyne Tunnel Trading Estate and North Bank of the Tyne. Furthermore the service serves local retail facilities at Northumberland Park and Silverlink Retail Park.

Figure 6.3 Proposed Bus Service 19 Extension



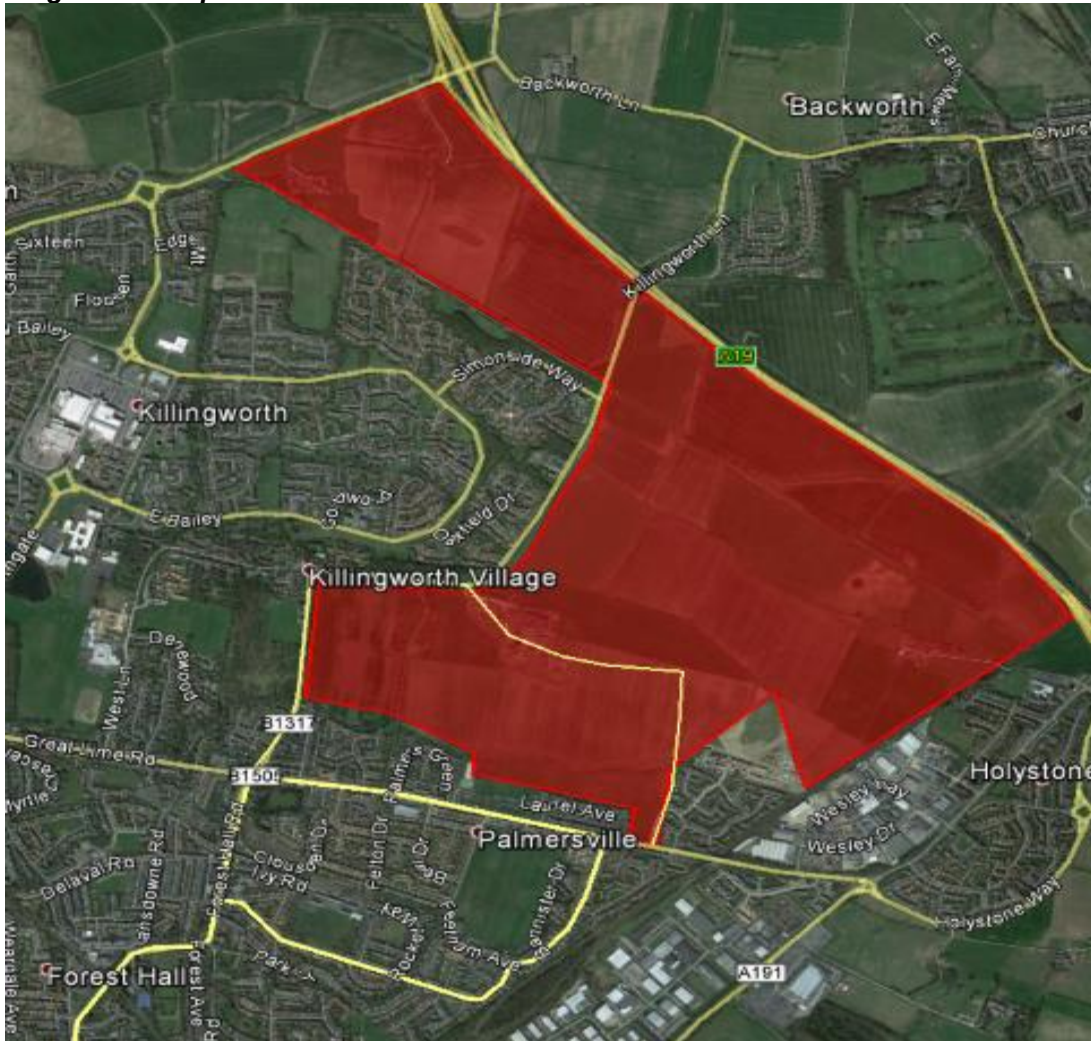
6.2.2 55 Diversion

The existing 55 services provides a direct high frequency service to Newcastle but the nearest stop available to residents of the Killingworth Moor sites is on Great Lime Road. If the service was diverted into the site via Forest Gate and back out via Killingworth Lane it would serve around a third of the site as opposed to just the several households located within 400m of Great Lime Road.

The diversion is approximately a net additional 1.2km (4 minutes) which only require a single additional bus to maintain the current 15 minutes service frequency. As a result of the diversion this would leave a short section of Great Lime Road beyond 400 metres of the service. Discussions with operators can clarify if this would be a potentially acceptable loss of patronage/or net increase.

This proposal represents the first opportunity to serve the site during its early construction phases. The service serves Newcastle centre directly via the DWP site in Longbenton.

Figure 6.4 Proposed Bus Service 55 Diversion



6.3 Summary

The combination of a single proposed new service supported with diverted/extended existing services represents a high level of service provision whilst reducing the level of subsidy to a minimum. All services would be expected to operate at peak frequency between 07:00 and 19:00 Monday to Saturday. A reduced frequency service off-peak and Sundays would need to be agreed upon with Nexus and the operators. In comparable areas off-peak services normally operate a 30 minute frequency up to 11pm.

7. Murton Gap Proposed Bus Provision

7.1 Proposed New Services

7.1.1 MG1 – Local Centre, Employment Sites, and School Service

This new service would serve Whitley Bay, Monkseaton, South Wellfield, Earsdon, Murton Gap, New York, Cobalt, West Allotment, Northumberland Park, Killingworth Moor (School), Palmersville, West Moor and Quorum.

This route links Murton Gap to the proposed Primary School within the development site as well as the proposed Secondary School on Killingworth Moor. The primary function of this route is to provide direct access to the two largest employment sites within the borough (Cobalt and Quorum) and link up to local metro provision for trips to Newcastle.

The service has an approximate length of 19.5km would take approximately 55 minutes to undertake. The service would therefore require 6 buses to fulfil the 15 minute frequency criteria stipulated by Nexus. The service would have a 5 minute contingency in the timetable to allow for future flexibility.

Figure 8.1 Proposed Bus Service MG1



This service requires the completion of the full link road to carry out the route as proposed but variations would be possible in advance via Park Lane (Shiremoor) and entering exiting via the new access junctions on New York Road and at Murton Lane. There would be potential to delay the roll-out of this service until later in phase 1 (2018-2022) subject to the diverted services sufficiently covering the properties constructed early in phase 1.

Following initial comments from Nexus consideration should be given to extending the service to Four Lane Ends Interchange to ensure sufficient demand is encouraged during off-peak periods thus further reducing the level of subsidy required and increasing the likelihood of commercial viability.

7.2 Existing Service Opportunities

On considering service provision to the nearest Major Centre (Newcastle) it was considered that diverting two existing services represented a more efficient and sustainable solution. The provision of another overlapping service to Newcastle would potentially undermine the commercial operation of these existing services. Therefore implementing a local diversion would have minimal impact upon the timetable and incur a minimum cost for an additional bus compared to a whole new service. Both the 308 and 309 services operate a 15 minute frequency and reach Newcastle within approximately 30 minutes.

However local bus operators would have to advise on the potential loss of patronage incurred by the diversion from the stops no longer served. The diversion proposals have attempted to keep this to a minimum and where possible enable existing residents to still access the service from within the Murton Gap site with stops within 400m.

7.2.1 308 Diversion – Major Centre and Employment Site Service

This existing service would be diverted into the Murton Gap site via Murton Lane and the proposed new access off Rake Lane. As a result the service would no longer serve some stops on Rake Lane.

The service already has a 15 minute frequency in keeping with Nexus' criteria and the approximate length of the diversion is 2.25km. This would equate to a net additional 3 minutes in each direction for the route which the existing service cannot accommodate. Therefore an additional bus would be required to maintain current service frequency.

This proposal represents the first opportunity to serve some of the site during its early construction phases. When combined with the proposed diversion of the 309 service this provides direct high frequency services to the local major centre of Newcastle and local centre of Whitley Bay for all residents along the southern boundary. Furthermore the diversion route would still be within 400 metres of these properties at the top of Rake Lane no longer served by the stops adjacent them.

Figure 8.2 Proposed Bus Service 308 Div

7.2.2 309 Diversion - Major Centre and Employment Site Service

This existing service would be diverted into the Murton Gap site via the new A191 Link Road Access junction and the proposed new access off Rake Lane. As a result the service would no longer serve New York Village however these residents would be picked up by the proposed 308 diversion instead. This would still allow existing New York residents access to a 15 min frequency service travelling to Newcastle and Whitely Bay.

The service already has a 15 minute frequency in keeping with Nexus' criteria and the approximate length of the diversion is 3.1km. This would equate to a net additional 8 minutes in each direction which would necessitate an additional bus to maintain the service frequency. This route diversion would maintain its service of the existing bus stops outside NTGH.

Figure 8.3 Proposed Bus Service 309 Div

7.2.3 19 Diversion - Employment Site Service Link to Cobalt Business Park

The existing 19 service serves Northumberland Park Interchange at which point the Ashington bound service travels along the A186 Shiremoor bypass and leave North Tyneside close to the northern boundary of the Murton Gap site. It is therefore proposed to split the service from Cobalt to travel via the Murton Link Road which would allow the service to more directly serve Cobalt whilst also serving the strategic site. The service splitting is proposed in conjunction with an extension of the service into Killingworth Moor maintaining links to Northumberland Park Interchange.

The proposed diversion represent a net additional 1.2km which the existing timetable is likely to be able to accommodate without the need for an additional bus to operate. The existing frequency of the service at this point is 30 minutes, and the service provides direct links to major North Tyneside employment sites including Cobalt Business Park, Silverlink Retail Park, Tyne Tunnel Trading Estate and the North Bank of the Tyne. Furthermore the service serves local retail facilities at Northumberland Park and Silverlink Retail Park.

Figure 8.4 Proposed Bus Service 19 Div

7.3 Summary

The combination of a single proposed new service supported with diverted/extended existing services represents a high level of service provision whilst reducing the level of subsidy to a minimum. All services would be expected to operate at peak frequency between 07:00 and 19:00 Monday to Saturday. A reduced frequency service off-peak and Sundays would need to be agreed upon with Nexus and the operators. In comparable areas off-peak services normally operate a 30 minute frequency up to 11pm.

8. Highway Network Impacts

8.1 Trip Rate Adjustment

As demonstrated in section 2 of this report the attractiveness of bus only provision compared to Metro provision is reduced by approximately 11%. Therefore the potential for car trips generated by the site is likely to increase also by 11%. This figure is based on the assumption that the bus only provision achieves at least a 15% modal split. If this was not achieved there would be a further increase in the scale of the off-site impacts. To determine if this has any additional impacts upon the local highway network a sensitivity test has been undertaken using the NTC Strategic Traffic Model (Saturn).

The NTC Strategic Model has been used previously to identify the approximate scale and location of any cumulative highway capacity impacts as a consequence of the NTC Local Plan. This assessment applied a global trip rate to all Local Plan sites and factored down those at the strategic sites in consideration of linked trips with school and employment land use proposals.

The trip rates applied represented a highly sustainable site provision with presumed excellent walking/cycling and public transport facilities provided. The NTC preferred option included the provision of a new Metro station at both strategic sites which consequentially reduced the car modal split to an assumed level of around 55% in line with the Local Plan aspirations.

The trip rates applied were:-

Table 8.1 – Strategic Model Trip Rates

Peak	Arrivals	Departures
AM	0.156	0.397
PM	0.351	0.209

These trip rates originated from the Station Road East application in 2014 but have subsequently been shown to be low in comparison to actual observed trip rates generated by sites within North Tyneside.

NTC have carried out some further analysis of observed trip rates at recently completed residential sites within the borough to better understand the relationship between access to public transport / sustainable transport links and the generation of car based trips. Table 2 below summarises the observed AM outbound car trip rates at several residential sites in North Tyneside with notes on factors that have likely affected these rates.

Table 8.2 - Residential Trip rates for Housing Developments in North Tyneside

Location	Households	Trips (AM Outbound)	Trip Rate	PT Access
Greenhills (Killingworth)	177	123	0.695	Poor
Forest Gate (Killingworth Moor)	210	107	0.510	Poor Bus (1%), Good Metro (20%)

Hastings Drive (Earsdon View)	416*	245	0.589	Poor Bus, Good Metro
Algernon Drive (Northumberland Park)	384	142	0.370	Good Metro (27%)

*completed and occupied homes at time of traffic survey

Further analysis of new housing site trip rates is ongoing with traffic surveys being commissioned at several major new housing developments to calculate “real-life” observed rates and compare these to estimates from TRICS.

The sites being surveyed include:-

- Earsdon View (Bellway)
- Algernon Drive (Miller)
- Northumberland Park (Bellway)
- Five Mile Park (Bellway)
- West Park (Taylor Wimpey)
- Holystone Grange
- Lime Gardens (Taylor Wimpey)
- Holy Cross (Bellway)
- Wheatridge Park (Bellway)
- Forest Gate (Betts)
- Brunton Park (Persimmon)
- Great Park (Persimmon)
- Greenhills

The majority of these sites are included in the detailed Census Modal Split analysis discussed in section 2 of the report and it will be a useful exercise to compare this to recorded car trips rates. Surveys are proposed to be carried out in early October with the outcomes presented as an addendum to the Transport Impacts Report already submitted as part of the transport evidence.

8.2 Strategic Modelling Outcomes

Following the re-running of the strategic model with the increased trip rates for the strategic sites there were no new highway impacts identified for which further mitigation would be necessary. However the impacts upon some of the junctions already identified were increased in particular at the site access junctions. The impacts relative to each development are discussed below.

8.2.1 Killingworth Moor

The significant highway impacts associated with the Killingworth Moor strategic site are summarised in table 8.3 below.

Table 8.3 – Killingworth Moor Local Highway Impacts

Junction	Operational Capacity	
	With Metro	Without Metro
Forest Gate / Great Lime Road	89%	92%
Killingworth Way / New Link Road Rbt	43%	50%

Killingworth Interchange	85%	88%
B1322 Backworth Lane	89%	92%
A191 Wheatsheaf Rbt	93%	94%

The sensitivity test highlights that the operational capacity of junctions close to the site access points are most effected but the wider network operates within 1% or 2% of the previous without Metro option. The increased number of car trips exiting the site puts more pressure upon the A19 Killingworth Interchange sooner which may bring forward the need for the mitigation works but this should be confirmed by Highways England (HE). HE’s representations have always stressed their concern toward the low trip rates applied and any subsequent increase in trips on the Strategic Road Network (SRN). Should the no metro option be pursued then HE would likely challenge any forthcoming application accordingly to demonstrate that the increased impact upon the SRN is acceptable. The mitigation schemes associated with the Killingworth Moor site at the A191 Wheatsheaf roundabout and B1505 Great Lime Road / Forest Gate remain acceptable.

Therefore if the bus only option delivers a public transport modal split of 15% there would be no additional off site highway contributions. The effectiveness of the site travel plan would be monitored annually to provide assurances to NTC and Highways England that the uptake of sustainable transport was in line with the levels advocated in the planning application. NTC would therefore set appropriate targets with a robust Travel Plan Bond held to cover any additional mitigation works necessary if the targets are not are achieved.

NTC take the view that if a developer is confident in achieving a 25% public transport modal split without a new Metro station provided then the Travel Plan Bond should be set sufficiently high that NTC could deliver significant additional mitigation works offsite.

8.2.2 *Murton Gap*

The significant highway impacts associated with the Murton Gap strategic site are summarised in table 8.3 below.

Table 8.3 – Murton Gap Local Highway Impacts

Junction	Operational Capacity	
	With Metro	Without Metro
A191 New York Road / Link Road Rbt	86%	91%
A186 / Link Road Rbt	84%	85%
A191 / A192 Foxhunters Rbt	102%	102%
A192 / A1058 Beach Road Rbt	107%	107%
Norham Road / Westminster Ave	61%	62%

Again the sensitivity test highlights that the operational capacity of junctions close to the site access points are most effected but the wider network operates within 1% or 2% of the previous without Metro option. The mitigation schemes associated with the Murton Gap site at the A191 Norham Road / Park Lane junctions remain acceptable.

Therefore if the bus only option delivers a public transport modal split of 15% there would be no additional off site highway contributions. Again the effectiveness of the site travel plan would be monitored annually to provide assurances to NTC and Highways England that the uptake of

sustainable transport was in line with the levels advocated in the planning application. NTC would therefore set appropriate targets with a Travel Plan Bond held until they are achieved.

8.3 Summary

The No Metro assessment has highlighted the increased impact upon the local highway network which takes the level of operation up to the maximum acceptable from NTC before we would consider the impacts severe. This analysis demonstrates that with a no metro option the maximum acceptable development quantum is 2,000 units at Killingworth Moor and 3,000 at Murton Gap. As the “with Metro” option reduces the number of vehicle trips by around 11% this would allow some flexibility in the quantum of development in terms of the impact on the local highway network.

9. Value for Money

9.1 Bus Operational Costs

The likely operational cost of the proposed bus services for each of the strategic sites have been forecast based on current known costs to operators. The cost forecast factors in the decreasing subsidy payable to Nexus/operators as patronage increases and thus revenue. The cost for each bus per service per annum is £120,000 and the number of buses required to service a route has been established based on total length and frequency as described in detail for each route in sections 6 and 7.

A subsidy profile has been calculated based on the rate of uptake for similar services (R19 and Q3) which serve Northumberland Park and Great Park respectively. The subsidy profile assumes that additional patronage is generated from residential/employment areas along the route but beyond the specific strategic site. This brings forward the break-even point significantly, however operators with competing services may see some associated reductions in patronage. Therefore agreement on the best way to deliver the proposed services would be established through a tendering exercise between Nexus and the operators. This process may also further reduce the levels of subsidy required if additional existing services could be diverted/extended instead.

Nexus policy states where new bus services, diversions or extensions to existing bus services, or service enhancements are proposed, the service level provided should be commensurate with the scale of development once built out, and pump-primed for a period of at least five years or two years following final completion of the site (whichever is greater) or until they become commercially sustainable, to ensure that public transport use is encouraged from the early stages of occupation.

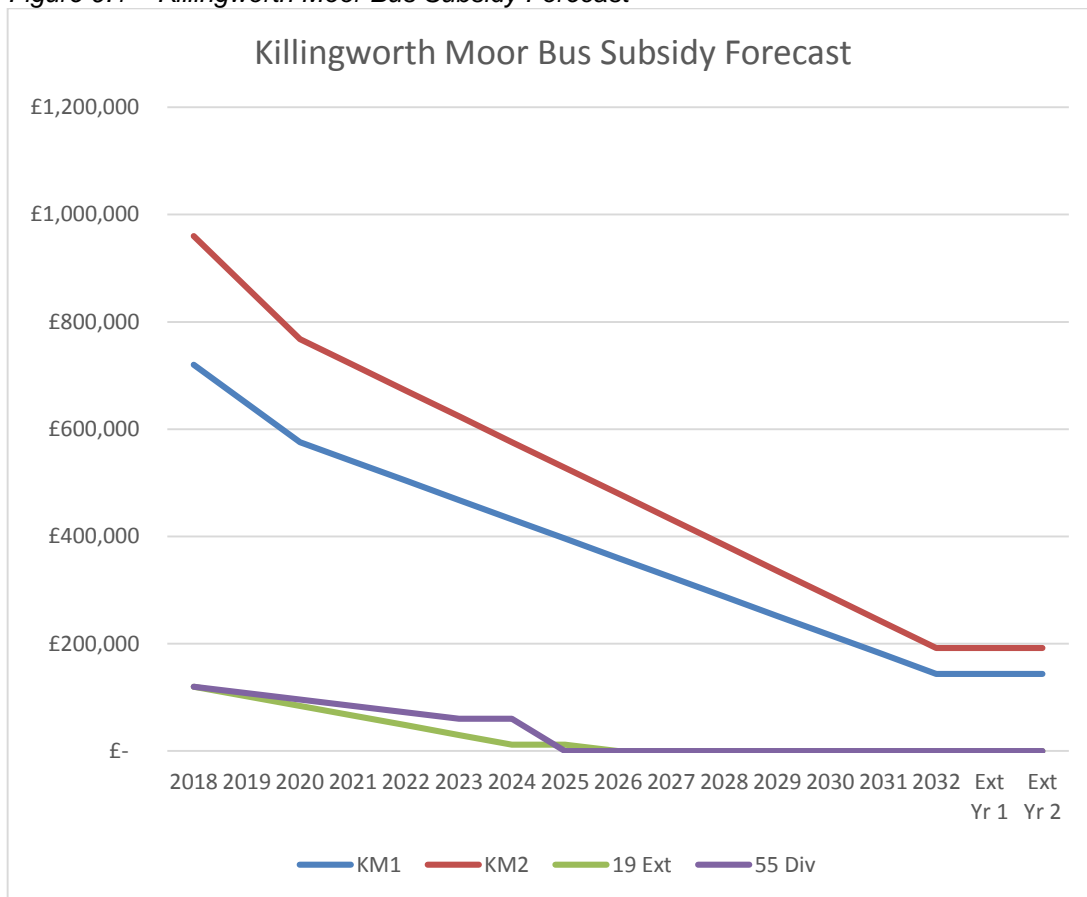
9.1.1 *Killingworth Moor*

For each of the proposed new/diverted/extended services a subsidy profile has been estimated based upon the performance of comparable services (R19 & Q3) and forecast patronage linked to the development build-out rates and predicted mode share. The cost of each new service is derived from the number of buses necessary to fulfil the service at a cost of £120,000 per annum per bus. The level of subsidy would be ever decreasing over the construction period of the site but some services may never become commercially viable.

The subsidy profiles assumes that the service 55 diversion is temporary until the full service KM2 can be route through the site and thus would no longer be funded beyond year 7 of the development. The service 19 diversion is predicted to become fully subsidised by year 8 of the development and the level of subsidy drops quickly as it is expected to pick up patronage from Killingworth Centre to Cobalt which helps generate revenue beyond the site demand.

The assessment period for costs is between 2018 and 2034, 2 years post completion in accordance with Nexus policy. The total lifetime cost for the cumulative bus subsidy of the site is estimated at £15,858,000. Due to services KM1 and KM2 not quite becoming commercially viable there remains an annual subsidy obligation of £336,000 at the end of the construction period. Following the 2 year period post completion this cost would need to be met by Nexus/NTC or the service level is likely to reduce and subsequently modal split for bus reduce.

Figure 9.1 – Killingworth Moor Bus Subsidy Forecast



9.1.2 Murton Gap

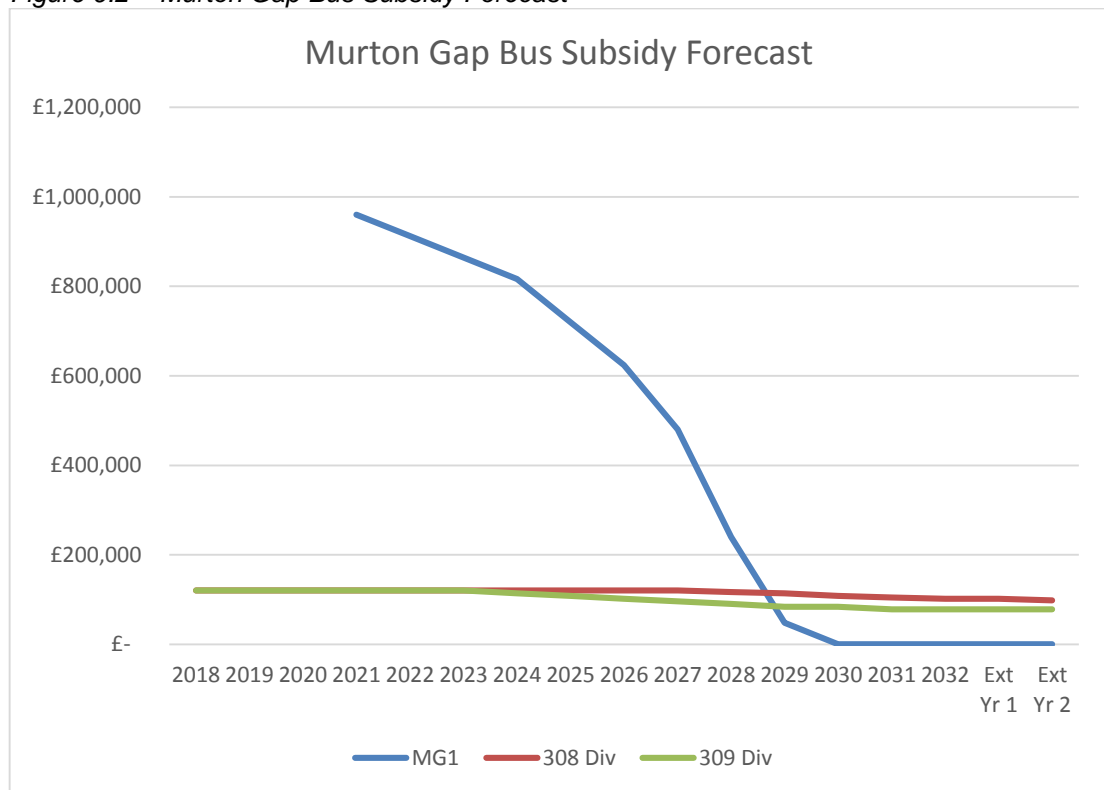
The location of the Murton Gap site and proposed internal highway network arrangement provide good opportunities to divert existing high frequency services into the site at relatively low cost. The multiple access points along the southern boundary allow services to drop in and out of the site as necessary which provides flexibility during the construction period of the site.

For each of the proposed new/diverted/extended services a subsidy profile has been estimated based upon the performance of comparable services (R19 & Q3) and forecast patronage linked to the development build-out rates and predicted mode share. The cost of each new service is derived from the number of buses necessary to fulfil the service at a cost of £120,000 per annum per bus.

The only new service proposed (MG1) links into several trip attractors to improve the commercial viability of the service such that it is predicted to become free of subsidy in year 13 despite the high operating costs associated with 8 buses. The 308 and 309 diversions are fully subsidised for the 17 year assessment period as a new bus is required for each whilst increased patronage along the route is unlikely to cover this cost.

The assessment period for costs is between 2018 and 2034, 2 years post completion in accordance with Nexus policy. The total lifetime cost for the cumulative bus subsidy of the site is estimated at £9,744,000. Due to the service diversion of the 308 and 309 not quite becoming commercially viable there remains an annual subsidy obligation of £240,000 at the end of the construction period. Following the 2 year period post completion this cost would need to be met by Nexus/NTC or the service could return back to its existing route and subsequently modal split on site for the bus reduce.

Figure 9.2 – Murton Gap Bus Subsidy Forecast



10. Conclusions

10.1 Risks

This report identifies that the long term effectiveness of a bus only solution is a risk as once the subsidy period ends and service levels drop the impacts on the highway network will increase. Unfortunately at that point in time the developer no longer has an obligation to mitigate the impacts of their development and the cost of mitigation would be the responsibility of the local authority.

The level of bus subsidy required to provide a high level of service to the two strategic sites is substantial as existing provision is poor. This level of subsidy would increase the overall cost of transport infrastructure previously identified. The potential impact of that impact upon viability would potentially jeopardise the delivery of major infrastructure requirements already identified. Furthermore the level of subsidy predicted is an estimate based on comparable services but there would remain a risk that period of subsidy could be further prolonged if the commercial viability of the service is slower than forecast.

Bus travel throughout Tyne and Wear is more expensive than its Metro equivalent and therefore there is an added risk that potential public transport users are deterred by the additional prohibitive cost.

Proposed new services for each strategic site would be in competition with existing bus provision off-site. The commercial viability of these existing services may become challenging which may make operators object to delivering the proposed routes.

The locations of the strategic site locations both necessitate the need for a costly new direct service to Newcastle. There would however still be areas on the site that Metro travel would already be a more attractive alternative. The need to provide the new direct service to those residents beyond the reach of the Metro would remain but patronage levels may be subdued in competition with the adjacent Metro provision. This increases the risk to the service not becoming commercially viable and potentially prolongs the subsidy period.

10.2 Outcomes

The assessment of Modal Split achieved by Bus compared to Metro has highlighted there is an 11% drop in uptake when there is a bus only provision. This reduction makes it difficult to deliver a reduction in car trips and increases the impacts upon the local highway network. The assessment clearly demonstrates that a bus only solution is less effective at encouraging modal shift.

A bus only solution would present an increased risk of failure to meet NTC's Transport Strategy targets. Analysis of existing new services subsidised by housing developments shows that when the subsidy ends the level of provision invariably drops. Further analysis of patronage levels compared to levels of frequency shows that there is a substantial drop in patronage between a 15 minute and 30 minute frequency service.

The level of Travel Plan Bond demanded with a “no Metro” option would be significantly increased due to the increased risk of failure to meet NTC targets.

The previous “With Metro” study demonstrated that the new station would comfortably cover its ongoing maintenance obligations from the increased revenue generated from the new stations. This report indicates that the one-off cost of providing a Metro station would represent a lower lifetime cost/risk to the proposed bus only solution.

At this time the authors of this report are aware of no examples where funding support is available to assist in the subsidising of commercial bus services. This would consequently be a cost that developers would need to meet entirely themselves where as there are opportunities for funding support (currently being explored) for a Metro station.

The assessment of Census modal split for sites across the region identified that the effectiveness of access to Metro is ongoing whereas bus uptake is subject to service provision and frequency. Greater flexibility therefore exists in the delivery of new Metro stations later in the Local Plan period than has been identified as preferred as it would still have the potential to achieve the desired modal shift for the site. The level of service for the Metro is consistently high with journey times and peak period frequencies that make it more convenient than the equivalent car based trip.

Appendices

Appendix A - Plans

Census OA	Site	Housebuilder?	Car	Car Share	Train	Metro	Bus	Cycle	Walk	Home	Other	Total	Metro Distance	Metro Access
E00042147	Great Park South (Kingston Park)	Persimmon	75%	4%	1%	6%	4%	1%	3%	4%	2%	295	1400	Poor
E00175573	Brunton Park	Persimmon	72%	4%	2%	2%	9%	3%	1%	5%	3%	188	1917	Poor
E00175567	Brunton Park	Persimmon	74%	3%	1%	2%	7%	2%	4%	6%	1%	218	1917	Poor
E00043142	White Swan Killingworth		51%	8%	1%	2%	24%	0%	11%	2%	1%	224	2542	Poor
E00166164	Forest Gate	Bett Homes	61%	7%	0%	25%	0%	0%	0%	5%	1%	152	285	High
E00043137	Holystone Grange		74%	5%	0%	7%	3%	1%	5%	3%	1%	352	1005	Medium
E00166130	Northumberland Park	Bellway	61%	6%	2%	16%	1%	1%	4%	7%	2%	225	450	High
E00166131	Northumberland Park	Bellway	56%	5%	1%	24%	2%	2%	3%	4%	2%	223	350	High
E00166162	Northumberland Park	Bellway	70%	4%	2%	17%	1%	2%	2%	2%	2%	197	500	High
E00166127	Northumberland Park	Bellway	60%	5%	3%	20%	3%	1%	2%	5%	1%	233	150	High
E00166166	Holyfields	Bellway	74%	5%	1%	8%	3%	3%	4%	2%	2%	199	781	Medium
E00166128	Algernon Drive	Miller	63%	5%	2%	18%	3%	0%	3%	5%	1%	230	293	High
E00166159	Earsdon View	Bellway	62%	4%	2%	15%	6%	2%	4%	4%	2%	194	890	Medium
E00166157	Earsdon View	Bellway	69%	4%	3%	10%	3%	1%	4%	4%	3%	223	890	Medium
E00042933	Battle Hill		53%	14%	0%	2%	19%	1%	8%	1%	3%	131	1835	Poor
E00043512	The Covers (Wallsend)	Bellway	65%	6%	1%	2%	13%	4%	3%	4%	2%	284	1416	Poor
E00166151	Holy Cross		65%	9%	2%	4%	14%	2%	2%	1%	1%	168	1638	Poor
E00166149	Holy Cross		62%	10%	2%	3%	6%	2%	7%	6%	2%	127	1638	Poor
E00043368	Howdon Lane	Bellway	56%	5%	3%	13%	3%	5%	8%	3%	2%	190	691	Medium
E00042207	The Ministry (Longbenton)		49%	6%	2%	15%	3%	3%	20%	3%	0%	183	505	Medium
E00042199	The Ministry (Longbenton)		49%	5%	0%	15%	7%	3%	18%	1%	1%	148	505	Medium
E00166222	Teams (Gateshead Quays)		60%	5%	1%	2%	11%	7%	11%	2%	1%	174	2117	Poor
E00166221	Teams (Gateshead Quays)		55%	1%	1%	5%	12%	3%	15%	6%	2%	137	2117	Poor
E00166224	Teams (Gateshead Quays)		51%	3%	0%	3%	20%	4%	14%	1%	2%	173	2117	Poor
E00166172	Felling (Gateshead Stadium)		56%	3%	1%	24%	5%	1%	5%	3%	1%	153	369	High
E00166187	Felling (Gateshead Stadium)		46%	7%	4%	24%	6%	2%	6%	5%	1%	167	369	High
E00166175	Felling (Gateshead Stadium)		46%	3%	2%	28%	3%	4%	12%	1%	1%	158	369	High
E00043877	Hebburn	Persimmon / Barratts	66%	4%	3%	15%	1%	4%	3%	3%	3%	193	400	High
E00043854	Hebburn	Persimmon / Barratts	61%	4%	3%	18%	3%	1%	5%	4%	1%	316	400	High
E00043797	Cleadon Vale		62%	9%	1%	6%	10%	4%	5%	0%	3%	111	3592	Poor
E00170197	Cleadon Vale		64%	6%	2%	2%	14%	2%	5%	3%	3%	123	3592	Poor
E00044999	Emerson Park		83%	4%	1%	1%	6%	1%	3%	3%	1%	195	7500	Poor
E00044511	Sunderland South		62%	12%	3%	1%	17%	0%	4%	1%	1%	109	5000	Poor
E00044512	Sunderland South		55%	6%	1%	0%	21%	5%	8%	1%	4%	110	5000	Poor
E00044515	Sunderland South		61%	8%	0%	0%	16%	2%	11%	2%	1%	126	5000	Poor
E00044539	Sunderland South		81%	5%	0%	0%	6%	0%	2%	2%	2%	217	5000	Poor
E00044541	Sunderland South		73%	7%	1%	3%	7%	2%	2%	3%	3%	192	5000	Poor
E00176340	Newsham		79%	3%	3%	1%	3%	1%	6%	4%	2%	159	8500	Poor
E00176364	Newsham		85%	6%	0%	0%	3%	1%	4%	1%	1%	142	8500	Poor

PT	Bus Frequency	Primary School	Local Retail	Local Jobs	Bus Freq
12%	High			No	10 min
12%	High			No	15 min
10%	High			No	15 min
27%	High	Yes	Yes	No	15 min
25%	Medium			No	30 min
10%	Medium			No	30 min
19%	Medium		Yes	No	30 min
27%	Medium		Yes	No	30 min
19%	Medium		Yes	No	30 min
27%	Medium		Yes	No	30 min
12%	Poor			No	30 min
22%	Medium		Yes	No	30 min
23%	Medium			No	30 min
16%	Medium			No	30 min
21%	High		Yes	No	15 min
16%	High			No	15 min
20%	High			No	15 min
11%	High			No	15 min
19%	Poor			No	30 min
20%	High			Yes	15 min
22%	High			Yes	15 min
14%	High			Yes	8 min
19%	High			Yes	8 min
24%	High			Yes	8 min
29%	Medium			No	15 min
34%	Medium			No	15 min
32%	Medium			No	15 min
18%	Poor			No	30 min
25%	Poor			No	30 min
17%	High			No	10 min
17%	High			No	10 min
7%	Medium			No	30 min
20%	High			No	20 min
22%	High			No	20 min
16%	High			No	20 min
7%	Medium			No	20 min
10%	Medium			No	20 min
6%	High			No	15 min
3%	High			No	15 min

Capita Property and Infrastructure Ltd

North Tyneside Council

The Quadrant

The Silverlink North

Cobalt Business Park

North Tyneside NE27 0BY