Ravenscraig Masterplan

Ravenscraig Limited

Transport Assessment

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Ravenscraig Masterplan

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Contents

Executive Summary

Located in North Lanarkshire on the site of the former Steel Works, the Ravenscraig site covers 450 hectares and will be redeveloped to provide a mixed-use development comprising residential areas, schools, employment uses, community facilities and a new town centre including retail, leisure, business and housing. The previous Ravenscraig Masterplan was granted outline planning permission in 2005 and since then the site has been developed through a series of Area Planning Briefs (APBs).

Jacobs has prepared this Transport Assessment (TA) as part of the supporting documentation relating to the submission for Planning Permission in Principle (PPiP) of the revised Masterplan. This sits alongside an accompanying and complementary STAG 1 Appraisal of sustainable transport options and a Travel Plan Framework, both of which should be read in conjunction with this document.

A key element of the 2001 masterplan was the development of a major new leisure-based town centre. Changes in market conditions and lifestyles meant that this scale and nature of a new town centre as originally envisaged is no longer deliverable. Challenges in relation to other aspects of the approved development led Ravenscraig Ltd to the conclusion that a revised masterplan was required if progress with redevelopment of the site was to continue.

During the summer of 2016 Ravenscraig Ltd commenced with masterplan review work and revisions. This included a public consultation exercise organised by NLC which was undertaken in November and December 2016. The findings of this exercise were used to inform the options for the revision of the original masterplan.

This TA has been developed in very close association with the revised Masterplan and has taken a clean sheet approach to help ensure a fully deliverable Masterplan that is in accordance with the latest policy and guidance principles. It does though comment, where appropriate, on any transportation conclusions and commitments from the earlier Masterplan and associated transport work including in respect of offsite road improvements and public transport provision.

STAG Appraisal

A STAG 1 appraisal (Scottish Transport Appraisal Guidance) assessment of public transport options including the feasibility of a railway station on the Wishaw Deviation line has been undertaken which concluded that a rail station would detrimentally impact upon the current rail service provision to and from Lanark and the imminent timetable improvements to Holytown and Carfin following the electrification of the Shotts Line in 2019. The STAG process has included consultation with Transport Scotland, North Lanarkshire Council, Network Rail, SPT and Scotrail Abellio. The conclusions of the STAG 1 Appraisal is to take forward the bus-based options which are described further below.

Ravenscraig Travel Plan Framework

The Ravenscraig Travel Plan Framework (RTPF) has been developed as a standalone document. It is a key document for the implementation of many of the transport initiatives in this TA. It sets the framework for the creation of a sustainable community at Ravenscraig and sets high level mode share targets on which future site-specific travel plans should be based. It provides the overarching framework for all Travel Plans prepared for developments at Ravenscraig. It details the governance of the Travel Plan through the appointment of a Travel Plan Coordinator for Ravenscraig (RPTC) which was included within the conditions and Section 75 agreement of the extant permission. The RTPF includes marketing and travel information measures; initiatives to promote walking, cycling and public transport; the promotion of journey sharing scheme; consideration of a Car Club and electric car charging points and smarter working.

The Ravenscraig Transport Strategy (RTS) has been developed to support local and national transport planning policy, and best practice in sustainable travel by promoting a hierarchy of personal movement which prioritises sustainable travel over private vehicle travel.

The Transport Strategy is guided by the following core principles:

- minimising the use of the car by ‘designing in’ the best possible access for sustainable travel modes;

- proactive intervention to encourage & support sustainable travel behaviour;
- integrating the development within the urban fabric of the Motherwell and Wishaw areas, taking advantage of and reinforcing local transport links;
- using the mixed-use nature of the development to encourage an interaction between adjacent uses and linked trips by sustainable modes;
- encouraging walking and cycling for trips within the site and short trips to adjacent areas in the form of a footpath/cycle access strategy plan;
- maximising public transport accessibility by designing the development around key public transport routes, entering into partnerships with bus operators to provide high quality services and links to the surrounding rail stations in co-operation with the relevant authorities;
- providing for improved road access to and within the site; and
- supporting innovative initiatives to reduce environmental pollution.
- Active Travel Linkages

Walking and Cycling

The existing transport conditions are discussed and it can be seen that the site is fairly flat with virtually all of the development within a 20 minute walk and 6 minute cycle of the proposed town centre. The surrounding rail stations are generally within a 20 to 30 minute walk or 10 minute cycle of Ravenscraig as is Motherwell town centre.

A number of strategic green links which cater for pedestrians and cyclists are also proposed and these should be delivered as soon as practicable to cater for the build in demand as the development is implemented. These are as follows: the main east/west pedestrian and cycle route from Merry Street into the development site to the park space and eastwards to the residential area at the east of the site; a green link providing a key north to south link through the full length of the site; connections from all residential areas to the park and high street; a recreational route through the South Calder Water valley running east/west through the site; links under/over the Wishaw Deviation railway line and the West Coast Main Line (WCML); footways to the Country Park to the east; and good accessibility to all principal pedestrian destinations in the surrounding area.

A number of segregated and traffic-free links and routes are proposed for pedestrians and cyclists who will also be encouraged to cycle on-street within the development where appropriate in line with Designing Streets policy. Cycle parking provisions will exceed minimum standards, where possible, and the anticipated provisions based on Cycling by Design Parking Standards are outlined as a guide to developers.

Public Transport Provision

An assessment of bus services has been carried out. This found that there is a good existing bus network in the wider area with frequent bus services to Motherwell and neighbouring towns. Express bus routes also operate to Glasgow. Limited commercial bus services currently operate within Ravenscraig at present; however, there have been very constructive discussions with SPT who are very supportive of improving public transport access and facilities to Ravenscraig as it is developed. In conjunction with SPT, consultation has taken place with all the principle bus companies in the area about the opportunities for extended, re-routed or additional services. The STAG 1 appraisal has identified the importance of bus service and infrastructure improvements within and outwith the site and also the potential real benefit of a Rail-bus service operating between the rail stations and Ravenscraig. This also highlights that some bus services will require subsidy in the early stages of the site's development. An on-street bus interchange will be provided within the High Street with high quality facilities and bus stops will also be located throughout the development in line with national policy to encourage public transport use.

The nearest railway stations are at Motherwell, Shieldmuir and Carfin which are all located within a 20 to 30minute walk of the centre of the Ravenscraig site. These stations provide a range of destinations and good frequencies from Motherwell in particular which is served by the West Coast Main Line services. The permission and Section 75 Agreement for the original masterplan set out that either a railway link or a bus infrastructure

strategy should be provided. While the conclusions of the STAG 1 Appraisal for this revised masterplan has sifted out the delivery of a Ravenscraig rail station on the WDL, it has recommended that a site should be safeguarded for a station for any long term changes in circumstance that would change the current STAG conclusions.

Roads and Streets

The spine road through Ravenscraig provides a key link from the M8 to the north and the M74 to the south. A shared cycleway is provided along the spine road. The internal road network will be designed in accordance with Designing Streets to influence driver speeds while remaining appropriate to the local context. Good strategic road linkages are essential and two key improvements are proposed. The new West Coast Main Line (WCML) linkage to Airbles Road, including the Airbles Road/Windmillhill Street and Airbles Road/Hamilton Road junction, is to be upgraded to provide a high capacity link to the M74.

The A723 Carfin to Holytown road was previously proposed to be dualled to link into the M8 to the north. This scheme is also earmarked as part of the Pan Lanarkshire Orbital Route (PLOR) which will provide a dual carriageway from the M74 to the M8 via Ravenscraig. The funding and programme for this scheme is yet to be determined, however, for the purposes of the Paramics modelling it is assumed that the A723 dualling will be completed between 2028 and 2045.

It is proposed that a parking strategy is implemented for the site which will consider shared parking between land uses. This has potential within Ravenscraig given that employment and leisure activities have a degree of staggered peak use e.g. weekday v weekend use. The parking objectives for Ravenscraig are to manage parking to contribute to the aim of becoming a '*Sustainable Community*' while taking account of the economic vitality of the proposed development.

Mode Shares

Through discussions with NLC the mode share targets for 2028 are based on the current mode shares (2011 Census) for travel to work for North Lanarkshire. For the proposed full build-out year of 2045 two mode share scenarios have been tested. The first reflects a pessimistic approach with no further mode shift between 2028 and 2045. The second sees a mode shift of 9% from private vehicle travel to sustainable modes to reflect the conclusions of the STAG 1 appraisal. This assumes that an extensive commercial bus network is available for travel within the site, to the neighbouring rail stations and settlements and is accompanied by Active Travel infrastructure and promotion through the RTP.

Traffic Modelling and Assessment

The impact of the Ravenscraig development has been modelled using PARAMICS microsimulation and supported through traditional junction modelling packages. A base report and future year report are provided as appendices to this TA, outlining the proposed roads mitigation to work with the sustainable mitigation to ensure the effective delivery of the Ravenscraig masterplan.

The modelling of Ravenscraig has been based on the development in 2028 and the completion of the full development content at 2045 with the pessimistic mode share applied. As a consequence, it represents the current likely maximum development envisaged, and in terms of development impacts, a worst case scenario at each development stage.

The proposed WCML Link Road and Windmillhill Street roundabout improvement are proposed to be introduced by 2028 as will mitigation to the Shields Road and Robberhall Road roundabouts on the A721 Craigneuk Street. These interventions will provide significant relief to existing congestion on the Craigneuk Street corridor.

Improvements to the Hamilton Road / Airbles Road junction are proposed after 2028, dependant on the level of development build out, and includes the provision of an additional right turn lane from Hamilton Road to Airbles Road. These significant junction improvements will help mitigate queuing at Hamilton Road northbound in the morning peak. As a result, the potential for queues to back up towards the M74 is minimised, even with the full Ravenscraig development.

The NLC proposals to dual the A723 between the site and the M8 will encourage more traffic to access the development from the north.

Comparing the base model journey times against the with Ravenscraig traffic there is only a slight increase in 2028, post construction of the WCML Link Road. By 2045, after the implementation of the proposed A723 dualling scheme and mitigation at Hamilton Road and Airbles Road junction, results indicate an improvement in journey times, compared with the base journey times, across the majority of the assessed routes.. As indicated previously the above analysis has been based on the pessimistic mode share in 2045. Therefore, journey times are predicted to be bettered on the basis of the realistic mode share being achieved at 2045 and beyond.

The mode share targets in the medium term reflect the development coming in line with the current travel behaviour of North Lanarkshire. In the long term, at full development and beyond, the mode share targets reflect the continual growth and adaption of sustainable travel with the aim of Ravenscraig becoming a 'Sustainable Community'.

The sustainable travel measures proposed in this document are also discussed in both the STAG 1 and the RTPF. The measures within the RTPF are vitally important to achieving the creation of a Sustainable Community at Ravenscraig and achieving the mode share targets in the future which better those currently of North Lanarkshire as a whole.

Understanding people's behaviour and encouraging behavioural change can be a challenging task. At Ravenscraig there is an opportunity to promote sustainable travel behaviour to those currently travelling to Ravenscraig as well as those that will travel from and to here in the future through the development of the revised masterplan. This can be achieved through effective planning, design, information, incentives and promotion.

1. Introduction

1.1 Context

The Ravenscraig site is located in North Lanarkshire on the site of the former British Steel Works, between Motherwell and Wishaw. The site covers 450 hectares and will be redeveloped to provide a mixed use development comprising residential areas, schools, employment uses, community facilities and a new town centre including retail, leisure, business and housing.

Intrinsic to such a large scale development will be the creation of a network of shared cycleways and footpaths, public transport infrastructure and roads to serve the development and cater for the current and future access requirements for the next 25 years and beyond. Additionally, the mechanisms to support and encourage a culture of sustainable travel will be fundamental to the success of the wider Ravenscraig Masterplan site.

Jacobs has prepared this Transport Assessment (TA) on behalf of the consortium Ravenscraig Ltd as part of the supporting documentation relating to the submission of the Ravenscraig Masterplan Planning Permission in Principle (PPiP) which is a revision of the development content which was consented in 2005.

1.2 Site Location

The Ravenscraig site is strategically located between the urban areas of Motherwell, Craigneuk and Wishaw. Industrial and residential areas of Motherwell and Craigneuk bound the site to the west and south respectively. The eastern extents are bound by the Calder Water and recreational land and green space to the west of Wishaw. The northern extents are bound by existing housing developments within Ravenscraig and Carfin beyond. The development site is accessible to the south from the A721 Craigneuk Street and from the north via the A723 Merry Street. The West Coast Main Line (WCML) railway passes to the south adjacent to the site, and the Wishaw Deviation Line (WDL) passes through the site from north to south at the eastern portion of the site.

Figure 1.1 illustrates the strategic and local location of the Ravenscraig Masterplan site.

Figure 1.1: Ravenscraig Site Location

1.3 Ravenscraig Planning and Masterplan History

In 2001 an outline planning application was submitted to North Lanarkshire Council (NLC) by Ravenscraig Ltd supported by a TA prepared by Colin Buchanan and Partners (CBP). A supplementary TA was also produced in 2004 and the Ravenscraig Masterplan was granted outline planning permission in 2005.

Transportation conditions relevant to the 2005 outline permission (and 2014 modifications) included: an operational railway station at Ravenscraig or an appropriate bus infrastructure strategy; bus interchange points to the east and west of the town centre; junction and infrastructure improvements, and a site wide Green Travel Plan (GTP) supported by GTPs for each non-residential development. Ravenscraig Ltd recognises that to support a 'Sustainable Community', residents must also be considered within the Travel Plan. Therefore, all site users will be targets of the Travel Plan.

Existing Ravenscraig Development

Following the 2005 consent the following has been developed at Ravenscraig.

The residential areas of Phoenix Park and Ravenscliff at the north east corner of the site comprises approximately 500 occupied dwellings rising to circa 600 houses by the end of 2018. During 2018 a 40 bed hotel to accompany the adjacent Ravenscliff has opened.

At present the road infrastructure within the site comprises the Ravenscraig spine road which is made up of Robberhall Road and New Craig Road with associated access to the Motherwell Campus of New College Lanarkshire and the RSF on O'Donnell Way.

In 2009 Motherwell College (now a campus of New College Lanarkshire) relocated to the south west corner of the Ravenscraig site. This includes residential accommodation for students and a crèche.

NLC and Ravenscraig Ltd have developed the Ravenscraig Regional Sports Facility (RSF) which is centrally located within the Ravenscraig site which has been successfully operating since 2010.

Revised Ravenscraig Masterplan

A key element of the 2001 masterplan was the development of a major new leisure based town centre. Changes in market conditions and lifestyles meant that this scale and nature of a new town centre as originally envisaged is no longer deliverable. Challenges in relation to other aspects of the approved development led Ravenscraig Ltd to the conclusion that a revised masterplan was required if progress with redevelopment of the site was to continue.

During the summer of 2016 Ravenscraig Ltd commenced with masterplan review work and revisions. This included a public consultation exercise organised by NLC which was undertaken in November and December 2016. The findings of this exercise were used to inform the options for the revision of the original masterplan.

Throughout the review process Ravenscraig Ltd has worked closely with NLC and other stakeholders. The parties agreed that the revised masterplan should form the basis of a new application for Planning Permission in Principle that would effectively update the 2005 Outline Planning Permission.

In October 2017 progress was such that a Proposal of Application Notice (PAN) was issued. The PAN resulted in additional consultation exercises being undertaken within the local community where members of the public and stakeholders were given the opportunity to comment on, and influence, the evolving new masterplan.

1.4 Ravenscraig Development Proposals and Phasing

The phasing of the Masterplan is indicative, and the actual build out will be subject to market demand and other factors, however, for the purposes of the PPiP the Masterplan is proposed to be developed out up to 2045. The Masterplan phasing illustrates a gradual build out of development, infrastructure and services with each phase indicatively proposed to be built out over a few years e.g. 2025 to 2028. The infrastructure implementation is important in terms of considering key phasing points to assess the development impact upon the local road network within the TA. The proposed phasing plans are illustrated in Appendix A.

Sustainable infrastructure

As detailed within this TA the implementation of sustainable infrastructure is imperative to the sustainability of Ravenscraig. Walking, cycling and public transport infrastructure will be implemented as soon as practicable to provide measures that will cater for demand and encourage sustainable links for residents, employees and visitors throughout the site and beyond to the wider urban areas. Further detail is provided within Chapter 4 but in summary these include:

- Active travel links bisecting the Ravenscraig site providing continuous traffic free routes to new links into the surrounding urban areas and open spaces
- Active travel links south and east to Craigneuk via Shieldmuir Street and Glencairn Avenue;
- Active travel links west to Motherwell via Coursington Road; and
- A network of cycleways and footways providing linkages to and from all developments within the Masterplan

Bus infrastructure and services will be very important as identified from the STAG 1 appraisal, providing linkages to the strategic routes, settlements and rail stations surrounding Ravenscraig. This will include for permeability west towards the A723 Merry Street via Allan Street and south to Craigneuk via Glencairn Avenue.

Roads Infrastructure

The main roads infrastructure identified in previous TAs and conditioned within the extant consent are the bridge crossing of the WCML and the dualling of the Airbles Road corridor. The dualling of the A723, from the northern roundabout of Ravenscraig at Merry Street northwards to the M8 motorway at Junction 6A was to be taken forward separately by NLC.

Within this revised masterplan and TA, the WCML crossing is programmed in tandem with Airbles Road major junction improvements which comprises part of the route for the City Deal project for the Pan Lanarkshire Orbital Route (PLOR). The PLOR will effectively link the M80 in the north with the M74 in south, bypassing Airdrie to the east, transecting the Ravenscraig masterplan site and linking into Junction 6 of the M74 to the south of Motherwell.

The PLOR also includes the dualling of the A723, however, funding and the programme for this has yet to be confirmed.

The scenarios to be assessed were agreed in consultation with NLC. The key infrastructure which will serve the development and therefore encourage tenants to the commercial and employment areas is the dualled link from Airbles Road which includes the WCML overbridge into the Ravenscraig road network. Based on a robust programme for implementation, the WCML overbridge infrastructure is predicted to be completed and open in 2025. In order to model the impact of the development build out at the time of the opening of the WCML overbridge, the phasing stage that occurs between 2025 and 2028 has been used with 2028 the assumed assessment year. All development within that phase, and all previous phases, are assumed to have been constructed by 2028 which by this point the WCML overbridge will have been constructed.

The successful development of the key town centre elements of the masterplan are deemed to be reliant on the construction of the WCML overbridge and therefore to assess the potential risk of the WCML overbridge being delayed a robust assessment was undertaken with no town centre elements of the development being built out without the WCML overbridge infrastructure. Therefore, the following two scenarios were assessed for 2028:

- 2028 with reduced development content (i.e. no town centre element) without the WCML overbridge infrastructure; and
- 2028 development content with the WCML overbridge infrastructure

It is assumed that the A723 dualling scheme will be delivered between 2028 and 2045. Therefore, the modelled TA future assessment scenarios are as summarised below:

- 2028 development (no town centre) without the WCML;
- 2028 full development with the WCML;
- 2045 development with the A723 dualling

There have also been additional scenarios undertaken to assess differing mode share levels in 2045.

An overview of Ravenscraig development content phasing, in terms of assessment scenarios for the TA, is provided below:

Proposed Development content 2019 to 2028 inclusive

Development of additional residential area, employment area, and educational facilities to be completed by 2028:

- Approximately 1,100 residential units (incl. consented units);
- 1,500 sqm primary school;
- 9,300 sqm Anchor retail unit*;
- 5,575 sqm supermarket*;
- 4,645 sqm industrial/commercial;
- 10,405 sqm car show rooms;
- Expansion of existing RSF;
- Up to 15,483 sqm of Class 4 Office/Industrial*; and a
- 7 hectare Park

* Not included in 'without WCML' scenarios

Proposed Development Content 2029 to 2045 inclusive

Completion of all developments by 2045 including:

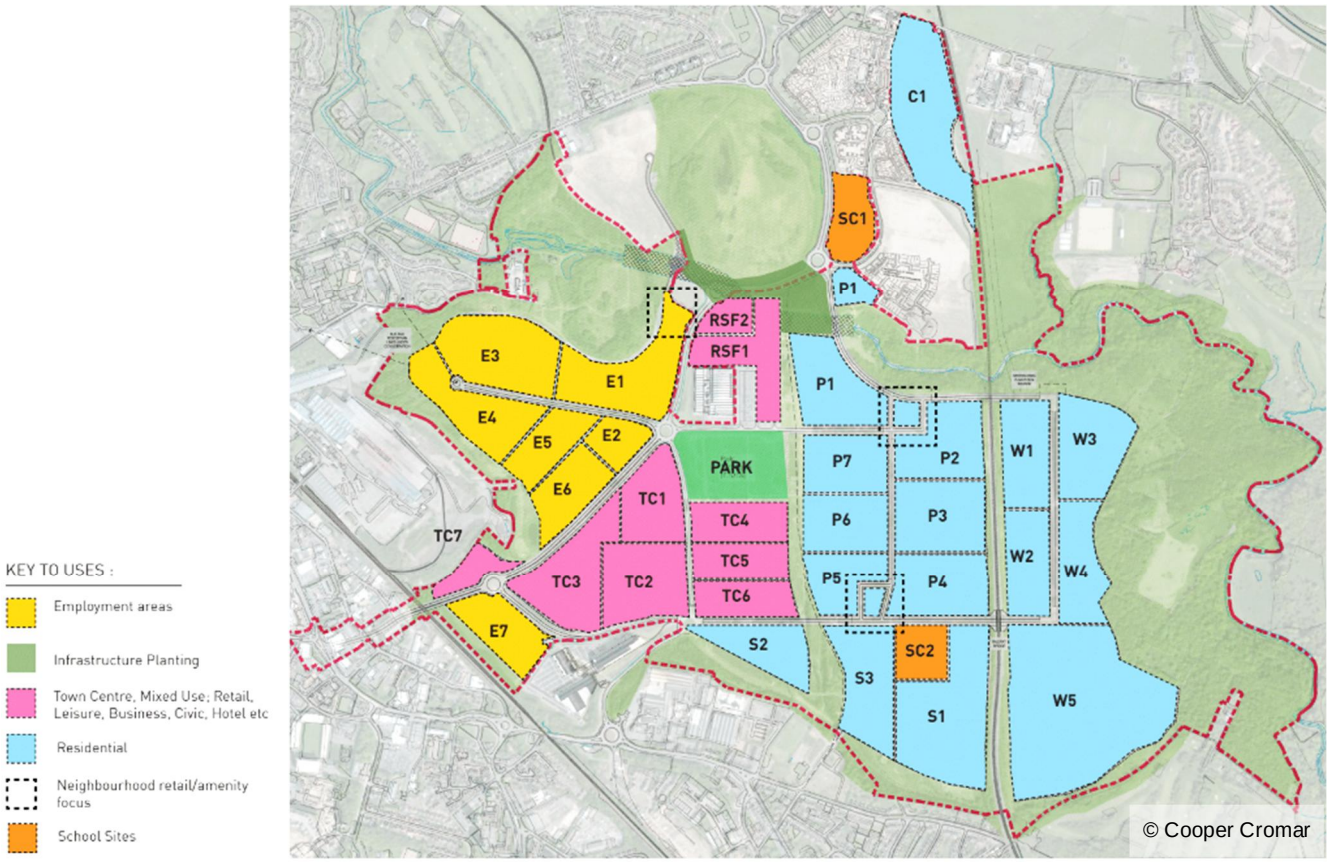
- Approximately 2,800 residential units;
- An additional primary school of circa 2,500 sqm;
- 18,600 sqm of commercial warehouses;
- 7,989 sqm industrial unit;
- Petrol filling station;
- Drive through restaurant;
- 7,060 sqm of hotels;
- 11,621 sqm of offices;
- 743 sqm restaurant;
- 14,864 sqm retail;
- 14,864 sqm leisure above retail;
- 14,440 sqm business park; and
- Up to 28,423 sqm of Class 4 Office/Industrial

For the purposes of this TA all development sizes (where stated) are assumed to be the Gross Floor Area (GFA) for each proposed land use. GFA is used to apply a land use trip rate, typically per 100 sqm to calculate the predicted people trip generation and appropriate parking provision. The residential development parameters are based on a rate per dwelling.

The proposed development content and quantums are indicative at present, however they have been developed in close co-operation with all key stakeholders and the masterplan design team, thus providing an accurate and robust assessment as possible.

The remaining areas of the development have been assessed based upon the land uses shown in Figure 1.2. It is important that the overall transportation infrastructure for Ravenscraig is assessed to take account of the completion of the development in 2045 even though this is potentially 27 years in the future.

Figure 1.2: Ravenscraig Masterplan Layout



1.5 Consultation

A number of key transport related stakeholders were consulted in the preparation of the TA and the accompanying STAG 1 Appraisal including:

- North Lanarkshire Council (NLC);
- Transport Scotland;
- Network Rail;
- Scotrail Abellio.;
- Strathclyde Partnership for Transport (SPT); and
- All main local bus operators.

Further consultation will be required as the Ravenscraig development evolves and the wider site develops. Details on appropriate consultation outcomes to date is provided within the TA and also the STAG 1 document.

1.6 Content and Structure

The purpose of this TA is to provide the required traffic and transportation analysis to achieve PPiP for the revised Masterplan for the remaining Ravenscraig site. It is recognised that transport must take cognisance of the development site as a whole to provide a robust and comprehensive assessment.

This TA has been developed in very close association with the revised Masterplan and has taken a clean sheet approach to help ensure a fully deliverable Masterplan that is in accordance with the latest policy and guidance

principles. It does though comment, where appropriate, on any transportation conclusions and commitments from the earlier Masterplan and associated transport work including in respect of offsite road improvements and public transport provision. The TA has considered the revisions in the proposed development content as well as changes to other key parameters e.g. the local and trunk road network and policy guidance.

The structure of the TA is as follows:

- Chapter 2 details relevant current policy and guidance.
- Chapter 3 details the baseline transport conditions for each transport mode.
- Chapter 4 sets out the Transport Strategy, which has been developed in close conjunction with a STAG Pre-Appraisal and STAG 1 Appraisal for this revised masterplan and details the high level approach taken for each mode as well as the mode share targets for the developments. Chapter 5 provides mode shift evidence from active travel schemes throughout the UK.
- Chapter 6 explains how the Ravenscraig Transport Strategy will be delivered.
- Chapter 7 estimates likely person and vehicle travel demands associated with the Ravenscraig site. These travel demands and their impacts on the operation of the road network have been assessed using a PARAMICS micro-simulation transport model. The results of the PARAMICS modelling are provided in Appendix D.
- Chapter 8 summarises the key findings of the TA and the conclusions and recommendations arising to support the development of the Ravenscraig site.

2. Policy Context

2.1 Introduction

The following policy and guidance documents were considered from the outset when designing development layouts and large scale infrastructure improvements relative to the Ravenscraig Masterplan. All of these policy/guidance documents encourage developments to be designed to a standard which is safe, attractive and sustainable, promoting a much greater emphasis on walking, cycling and public transport use. The current policy at all levels also increasingly places more emphasis on 'place before movement', an ethos that is fitting to the overall development philosophy of Ravenscraig which intends to lead the way in sustainable design and person movement.

2.2 Scottish National Planning Framework (2014)

The National Planning Framework sets out a vision for Scotland as a successful, sustainable place, a low carbon place, a natural resilient place and a connected place. Active travel is mentioned in several of these main policy sections. Ravenscraig is designated a National Development in the Framework, which establishes the critical need for the redevelopment of the site. Walking and cycling are referenced many times in the document.

In terms of quality of life and enhancing natural and cultural assets, the Framework states that:

- Remediation of derelict land, prioritised action in disadvantaged communities and active travel (walking and cycling) should be the priorities for the [Central Scotland Green Network] Trust and others during the lifetime of NPF3 (45) [emphasis added].

The framework further sets out a vision:

- …for pedestrian and cyclist friendly settlements and neighbourhoods, to be connected by a coherent national walking and cycling network, making active travel a much more attractive and practical option for both everyday use and recreation. A planned approach will be essential if we are to achieve our vision for 10% of all journeys by cycle safely and effectively (45).

On Connected Places, the Framework intent is to

- …significantly increase levels of everyday cycling and walking within and between our settlements (53).

2.3 Scottish Planning Policy (SPP)

SPP is the statement of the Scottish Government's policy on nationally important land use planning matters. To contribute to achieving Scottish Government greenhouse gas emission targets, a shift to more sustainable modes of transport is required. For people this involves a shift from car-based travel to walking, cycling and public transport. The planning system should support a pattern of development which:

- reduces the need to travel;
- facilitates travel by public transport; and
- provides safe and convenient opportunities for walking and cycling.

Improvements to active travel networks such as paths and cycle routes in urban and rural areas will support sustainable travel choices.

Paragraph 279 of SPP indicates that Travel Plans should be encouraged for all significant travel generating developments. A Travel Plan is a package of measures aimed at promoting more sustainable travel choices and reducing the reliance on the private car. Personal travel should be prioritised by mode in the following order - walking, cycling, public transport, car and other motorised vehicles. This prioritisation defines the Ravenscraig Transport & Movement Strategies as set out in Chapter 4.

Paragraph 168 indicates the requirement for a TA for a change of use or significant traffic impact development. Planning permission should not be granted for significant travel generating locations which would encourage reliance on private car where:

- direct links to walking and cycling networks are not available or cannot be made available;
- access to public transport networks would involve walking more than 400m;
- it would have a detrimental impact on the capacity of the strategic road network; and
- the TA does not identify satisfactory mechanisms for meeting sustainable transport movements.

2.4 Designing Streets (DS)

Designing Streets is the first policy statement in Scotland for street design. The document is based upon the premise that good street design '*should derive from an intelligent response to location, rather than the rigid application of standards, regardless of context*'.

The overarching policy of Designing Streets is the consideration of place before movement. The six qualities of successful places are:

- Distinctive: Street design should respond to local context to deliver places that are distinctive;
- Safe & Pleasant: Streets should be designed to be safe and attractive places;
- Easy to Move Around: Streets should be easy to move around for all users and connect well to existing movement networks;
- Welcoming: Street layout and detail should encourage positive interaction for all members of the community;
- Adaptable: Street networks should be designed to accommodate future adaptation; and
- Resource Efficient: Street design should consider orientation, the integration of sustainable drainage and use attractive durable materials that can be easily maintained.

Designing streets indicates that the street user hierarchy should consider pedestrians first and private motor vehicles last, this in order to promote sustainable modes of travel more than private car journeys. It also indicated that the streets should be designed to actively encourage walking, this can be achieved through not only the distance travelled but by the quality of walking experience.

2.5 SCOTS, National Roads Development Guide, updated 2017

The document embraces the guidance and strategy of Designing Streets which puts an emphasis on place before movement but aims to provide more detailed technical guidance. The guide also provides for roads in the urban context that provide a movement purpose e.g. distributor roads.

It is noted that NLC are currently in the process of developing their own parking standards so the parking guidelines within this document have not been adopted by NLC.

2.6 Clydeplan

The Clydeplan sets out the spatial development strategy for city region of Glasgow up to the year 2029, included within this area is Ravenscraig. Ravenscraig is noted as being design led, the masterplan aiming to create a new sustainable community based around a range of uses including a new town centre, regional education and sports facilities, employment opportunities, new housing and related community facilities along with sustainable transport connections. It is envisaged that sustainable infrastructure will be an inherent element of the overall design.

One of the key policies within the document is 'Promoting Sustainable Transport' (Policy 17), it is noted that the ability to move people and goods effectively is vital to growing and sustaining the city region's economy. To achieve this, there should be a strong focus from developments to:

- maximise the use of existing transport infrastructure recognising the important role of bus services as the principal public transport mode across the city region in order to reduce carbon emissions and urban air pollution;
- improve the level and quality of public transport provision particularly in terms of frequency and reliability;

- supporting measures such as integrating ticketing which will support the public transport offer across the city region;
- increasing the levels of active travel through the provision of safe and convenient opportunities for walking and cycling; and
- supporting the provision of a network of electric vehicle charging points.

2.7 North Lanarkshire Local Plan

The aim of the North Lanarkshire Local Plan is 'to promote regeneration and sustainable growth for our communities'. The Local Plan follows national planning guidance and promotes new development on brownfield sites and in areas that are well served by public transport, cycling and walking links.

It identifies a number of locations for new housing and economic development, the largest of which is Ravenscraig. At the core of the development is the creation of a sustainable, integrated urban community, complete with jobs, housing, schools, shopping, leisure and community facilities, as well as parks and wildlife corridors, all linked by an integrated transport system.

Planning consent for the development at Ravenscraig was dependent on the appointment of a Travel Plan Coordinator and the production of a site-wide Travel Plan Framework which will set the standard for Travel Plans for individual developments.

2.8 Designing North Lanarkshire

Designing North Lanarkshire is part of a series of design initiatives which aim to raise the standard of urban design and development within North Lanarkshire.

Designing North Lanarkshire seeks to promote an integrated approach to design, encouraging innovative design solutions and recognising the need to conserve and enhance the historic environment. Designing North Lanarkshire also states that 'Good design can contribute towards supporting better access by foot, cycle and public transport.

Designing North Lanarkshire highlights that successful places are created through a variety of factors: Identity, Safe and pleasant spaces, Ease of movement, Sense of Welcome, Adaptability. Ease of Movement highlights the potential transport opportunities for new developments such as Ravenscraig to contribute to successful places, this can be achieved through the following:

- **Identity**
  - Distinctive landscapes
  - Locally distinctive buildings and streets
  - Integrated spaces
  - Skylines and roofscapes
  - Building forms, practices and quality materials
  - Variety of architectural forms
  - High quality public realm
- **Safe and pleasant spaces**
  - Lively streets; well used rooms overlook streets
  - Attractive space for users especially pedestrians
  - Distinction between public and private spaces
  - Sense of enclosure & continuity using urban spaces
  - Legible places

- **Ease of Movement**
  - High density development with good public transport
  - Convenient well-lit bus stops and railway stations
  - Rail stations accessible by foot
  - Well connected roads and footpaths
  - Linked public places
  - Direct routes, access for all
  - Opportunities for cycling
- **Sense of Welcome**
  - Landmarks
  - Gateways
  - Lighting
  - Distinctive works, art, craft
  - Interpretation and signage
- **Adaptability**
  - Diverse locations: mix of compatible uses and tenures
  - Flexible uses and adaptable buildings
  - Reuse of existing buildings
- **Good use of resources**
  - Minimise the use of energy in new and existing buildings
  - Conserve and enhance the built heritage
  - Conserve, protect and emphasise natural features
  - Development and management of open space

2.9 National Transport Strategy 2016

Building on the Scottish Government's National Strategic Objectives: a wealthier, fairer, healthier, safer and stronger, smarter, greener Scotland and its commitment to sustainable development, the National Transport Strategy aims to deliver the following strategic outcomes:

- Improved journey times and connections, to tackle congestion and lack of integration and connections in transport;
- Reduced emissions, to tackle climate change, air quality, health improvement; and
- Improved quality, accessibility and affordability, to give choice of public transport, better quality services and value for money, or alternative to car

The Strategy also promotes the development and implementation of Travel Plans to encourage more sustainable travel.

2.10 Regional Transport Strategy

SPT's Regional Transport Strategy objectives for the West of Scotland contribute towards the National Transport Strategy Objectives and National Strategic Outcomes. They are listed below:

- improve safety and personal security on the transport system;
- increase the proportion of trips undertaken by walking, cycling and public transport;

- enhance the attractiveness, reliability and integration of the transport network;
- ensure the provision of effective and efficient transport infrastructure and services to improve connectivity for people and freight;
- promote and facilitate access that recognises the transport requirements of all;
- improve health and protect the environment by minimising emissions and consumption of resources and energy by the transport system; and
- support land-use planning strategies, regeneration and development by integrating transport provision.

2.11 North Lanarkshire Local Transport Strategy 2010

North Lanarkshire Council published its Local Transport Strategy in 2010. The transport strategy has four objectives:

1. To stimulate business and the economy and develop North Lanarkshire as an attractive place to invest, work and do business.

2. To provide equal opportunities and enhance the choice, accessibility and availability of transport, particularly for those in deprived areas and those with limited access to the transport network.

3. To promote safety in the community and enhance actual and perceived safety when travelling on the transport network.

4. To protect North Lanarkshire's natural and built environment and to improve the health of its population.

It recognises the importance of the development at Ravenscraig and states that the aim is “to reduce the dependency on car-borne travel to and from the site, and to try to instil a practice of sustainable travel choices from the outset”.

2.12 Climate Change (Scotland) Act, 2009

A principal challenge of sustainable economic growth is the need to tackle climate change in particular reducing greenhouse gas emissions. The Act sets a target of 80% reduction in emissions by 2050, with an interim target of a 42% reduction by 2020. Travel Plans can go some way to tackling this target reduction.

2.13 Let’s Make Scotland More Active, 2003

This Strategy for physical activity sets out a Vision that “people in Scotland will enjoy the benefits of having a physically active life”. The Strategy’s goal is to achieve a target whereby 50% of all adults over 16 and 80% of all children under 16 meet the minimum recommended level of physical activity by 2022. This level of activity is at least 30 minutes of moderate activity on most days of the week for adults. Active Travel is promoted within the Ravenscraig Travel Plan Framework (RTPF) and will be the priority travel mode for Ravenscraig.

2.14 Cycling Action Plan for Scotland, 2013

The Cycling Action Plan for Scotland sets out a vision for achieving 10% of all journeys by bike by 2020. It provides a framework to help create an environment which is attractive, accessible and safe for cycling. The actions in the framework will increase cycling across Scotland and will also directly contribute to the targets set out in the National Physical Activity Strategy (Let’s Make Scotland More Active).

Currently only 1% of all journeys nationally are made by bike, however, around half the short journeys made (less than two miles) are made by car and it is believed that many of these could be switched to bike.

2.15 Cycling by Design (2010)

The 2010 version of Cycling by Design published by Transport Scotland takes in to consideration responses from the previous publications of the document, it seeks to provide sound technical advice for practitioners who are developing cycling infrastructure in Scotland.

Cycling by Design has five core principle that should be considered when planning cycling infrastructure, they are as follows:

- Safety: Design should minimise the potential for actual and perceived accident risk. Perceived risk is a key barrier to cycle use and users should feel safe as well as being safe. It is important to provide consistency of design and avoid ambiguity.
- Coherence: Cycling infrastructure should form a coherent network which links origins and destinations. Coherence is about giving people the opportunity to access places by bicycle and to integrate cycling with other modes of travel. Routes should be continuous from an origin to a destination easy to navigate and of consistently high quality.
- Directness: Cyclists should be offered as direct a route as possible based on existing and latent trip desire lines, minimising detours and delays. It should be recognised that directness has both geographical and time elements, and delays at junctions and crossings as well as physical detours will affect use.
- Comfort: Non-sports cyclists prefer sheltered, smooth, uninterrupted, well-maintained surfaces with gentle gradients. Routes should minimise the mental and physical stress required. Routes should meet surface width, quality and gradient standards and be convenient, avoiding complex manoeuvres.
- Attractiveness: The perception of a route is important, particularly in attracting new users. Infrastructure should be designed in harmony with its surroundings in such a way that the whole experience makes cycling and attractive option. A route should complement and where possible, enhance the area through which it passes. The treatment of sensitive issues including lighting, personal security, aesthetics, environmental quality and noise are important considerations.

Cycling by design highlights that cyclists of different skill levels and trip purpose will have different requirements from the infrastructure in place, for example experienced cyclists will be confident sharing the road with traffic, whereas younger children travelling to school would be more suited to off carriageway routes. Therefore, it highlights the need to understand and recognise different target groups exist and provide infrastructure suitable to the relevant target groups.

2.16 Let's Get Scotland Walking - The National Walking Strategy (2014)

The vision of Scotland's National Walking Strategy is:

"A Scotland where everyone benefits from walking as part of their everyday journeys, enjoys walking in the outdoors and where places are well designed to encourage walking."

To achieve this the national walking strategy lays out the following strategic aims:

- Create a culture of walking where everyone walks more often as part of their everyday travel and for recreation and well-being
- Better quality walking environments with attractive, well designed and managed built and natural spaces for everyone
- Enable easy, convenient and safe independent mobility for everyone

2.17 North Lanarkshire Walking and Cycling Strategy (2005)

The North Lanarkshire walking and cycling strategy sets out the existing walking and cycling facilities and initiatives in North Lanarkshire. The strategy also sets out North Lanarkshire Councils objectives and targets as well as the measures that will be used to deliver them.

North Lanarkshire Councils walking and cycling strategy has the following three objectives:

- To increase the role of walking and cycling as a transport mode, particularly for short trips within town centres and around urban fringes.
- To encourage and facilitate walking and cycling as a leisure and tourist activity in order to realise the benefits gained to health, environment and the local economy.
- To develop a safe, convenient, efficient and attractive transport infrastructure, which encourages and facilitates the use of walking, cycling and public transport.
- The North Lanarkshire walking and cycling strategy states that targets should be **SMART** therefore they should be Specific, Measurable, Achievable, Realistic, and Timely.

2.18 Ravenscraig Policy Assessment

The Ravenscraig Masterplan supports these policy objectives through the creation of a network of shared cycleways and footpaths, public transport infrastructure and roads to ensure a high level of accessibility across the area and to support & foster the use of sustainable travel.

More specifically, the Ravenscraig development will:

- Aim to meet national walking and cycling catchment thresholds for access and interchange to public transport and local amenities;
- reduce the need to travel through the development of facilities such as schools, shops and community spaces;
- incorporate the principles of Designing Streets so that place making can be nurtured at Ravenscraig;
- create new walking, cycling and public transport infrastructure and services for the benefit of the Ravenscraig area and the wider Motherwell and Wishaw communities;
- develop a site wide Travel Plan especially designed to encourage sustainable travel behaviour through promotion of the benefits of sustainable travel; and
- tackle climate change through good design and innovation.

3. Baseline Transport Conditions

3.1 Introduction

This Chapter outlines the existing transport conditions at Ravenscraig for all travel modes.

3.2 Walking and Cycling

The Ravenscraig site is fairly flat and compact and virtually all of the development is within a 20 minute walk of the proposed town centre High Street. This is in keeping with national walking catchment guidance. Pedestrian and cycle links are also provided between Ravenscraig and Motherwell, Wishaw and Carfin, thus ensuring that the site is appropriately linked with adjacent urban areas.

Developed areas of the site are currently within manageable walking distance to the surrounding rail stations e.g. the NCL campus is less than a 20 minute walk from Shieldmuir station. Similarly, the existing residential areas at the north of the site are within a 20 minute walk from Carfin station.

The whole of the Ravenscraig site is within a 6 minute cycle of the proposed town centre. The site is also within cycling distance of Motherwell, Wishaw and Hamilton. The surrounding rail stations are all within a 10 minute cycle of the site. There are currently no National Cycle Routes in the Motherwell/Wishaw urban area; however, there is a local route The Greenlink which routes between Strathclyde Country Park and Motherwell town centre. Off-road shared cycleway routes, running alongside the Ravenscraig spine road facilitate cycling within the site. These routes are 3m wide, well-lit and signed. A short cycle route is also provided to the south of the A721 Craigneuk Street / Robberhall Road roundabout to provide a bypass of the junction.

3.3 Bus

Motherwell and the surrounding urban areas are served by frequent bus services. The main bus operator is First Glasgow, along with a small number of independent operators including United Coaches, GD Coaches, A & J Ballantyne, JMB Travel, MacKenzie Bus, Whitelaws Coaches and Stuart's Coaches.

These operators compete with First along several corridors and also operate services under contract to SPT. Fares offered by all operators are relatively cheap compared to comparable urban areas.

Frequent bus services serve the centre of Motherwell and provide links to key neighbouring regional centres such as Hamilton, Bellshill and Wishaw. These services also operate into all major residential areas surrounding the town centres. There are also routes which operate to Glasgow City Centre, providing direct connections to/from residential areas.

Bus routes in and around Ravenscraig and existing rail stations are illustrated in Appendix B.

There are bus stops on Robberhall Road adjacent to the NCL campus, however, no commercial services currently operate from the stops.

The commercial service 367 is operated by Stuart's Coaches on behalf of SPT. The service runs from Harthill to Wishaw General Hospital throughout the day, whilst Ravenscraig Sports Facility is timetabled in during the evening services.

A summary of the main bus services serving the centre of Motherwell is shown in Table 3.1.

Table 3.1 - Existing Bus Services in Motherwell (April 2017)

Service	Operator	Route	Monday - Friday	Saturday	Sunday
1	United Coaches	Motherwell - Newarthill	20	20	-
2	GD Coaches	Holytown - Motherwell	60	60	-
5	A & J Ballantyne	Bellshill Clay Crescent – Motherwell	30	30	-
41	JMB Travel	Lanark to Hamilton	15	15	-
56	JMB Travel	Shotts - Motherwell	15	15	-
107	MacKenzie Bus	Hamilton + Bellshill – Motherwell (Circular)	20	30	-
109	MacKenzie Bus	Hamilton + Bellshill – Motherwell (Circular)	20	30	-
201	First	Hairmyres – Petersburn	10	10	30
209	First	North Motherwell – Bellshill via Motherwell, New Stevenston	60*	60*	60*
240	First	CarlukePather/Overtown/Motherwell - Glasgow	10	10	15
241	First	Cleland – North Motherwell, Watling St.	10	8	30
242	First	Overtown – Holytown – Maxim (Eurocentral)	20	20 - 30	-
244	First	Forgewood – North Lodge Circular	60	60	-
253	Whitelaws Coaches	Wishaw General Hospital or Hamilton - Coalburn	60	60	-
254	First	Newarthill - Motherwell	10	12	60
266	First	Newmains / Shotts - Hamilton	8	10	20 – 30
355	First	Newhouse – Motherwell – North Lodge	60*	60*	60
367	Stuart's Coaches	Harthill Services - Ravenscraig Sports Centre	60*	60*	60*
823	First	Blantyre, Glasgow Rd - Motherwell	Single AM service	Single AM service	-
824	First	Blantyre, Glasgow Rd - Motherwell	Few services each way	Few services each way	30
825	First	Blantyre, Glasgow Rd – Newarthill	Few services each way	Few services each way	Single AM service
826	First	Blantyre, Glasgow Rd - Cleland	Few services each way	Single PM service	-
828	First	Blantyre, Glasgow Rd - Motherwell	-	Two AM services	-
829	First	Cleland – Glasgow Rd, Blantyre	-	Single AM Service	Single AM Service
830	First	Blantyre, Glasgow Rd – Motherwell / North Motherwell	-	Single PM Service	Few services each way
831	First	Blantyre, Glasgow Rd - Cleland	-	-	1 service each way
862	First	Overtown – North Motherwell	20 - 60	15 - 60	-
870	First	Overtown – North Motherwell	25*	-	-
X11	First	Newmains, West Crindledyke – Glasgow (Buchanan Bus Stn)	30	30	60

*Evening services only

Table 3.1 demonstrates that there is a wide choice of bus services with good frequencies offered during the daytime in the Motherwell area. During the evening (* denotes evening only) and on Sundays the level of service is lower with a small number of routes continuing to operate at good frequencies.

There are proposals through the City Deal fund to provide a Park and Ride facility at Eurocentral/Maxim Park to the north of Ravenscraig. There are currently express buses routing on the M8 between Glasgow and Edinburgh/Edinburgh Airport which call at Eurocentral. The 242 First service which routes through Motherwell calls at Eurocentral thus providing interchange potential to the express services.

Whilst there is a fairly comprehensive network of bus services in the surrounding area, the only service currently operating within Ravenscraig is the evening service to the Regional Sports Facility.

3.4 Rail

Rail services from Motherwell provide frequent connections to key regional centres, Glasgow City Centre and suburban Glasgow stations including Hamilton, Whifflet and Cumbernauld. Motherwell is also on the West Coast Main Line offering intercity connections to London Euston and to London Kings Cross via Edinburgh on the East Coast Mainline.

Motherwell station is approximately 2.5km west of the centre of the Ravenscraig site and existing bus services provide an interchange opportunity for rail travel. It is a staffed station seven days a week and is equipped with real-time travel information and CCTV. Park and Ride facilities are provided through the provision of cycle parking spaces and car parking spaces. Rail frequencies from Motherwell are excellent with a train departing every 3 minutes during the peak hours. The peak services to and from Glasgow Central are shown below in Table 3.2 to illustrate the services available from Motherwell station between 0800 and 0900 on a weekday.

Table 3.2 – Morning peak rail services between Glasgow and Motherwell

Departure Time	Destination	Time between Motherwell and Glasgow Central (mins)	Direction of Travel (Inbound to Glasgow, Outbound from Glasgow)
08:00	Glasgow Central High (Trans Pennine)	17	Inbound
08:16	Dalmuir	36	Inbound
08:17	Glasgow Central High	24	Inbound
08:20	Lanark	28	Outbound
08:23	Dalmuir	35	Inbound
08:34	Glasgow Central High (Virgin Trains)	21	Inbound
08:42	Cumbernauld via Coatbridge	38	Outbound
08:46	Dalmuir	36	Inbound
08:47	Lanark	27	Outbound
08:47	Glasgow Central High	27	Inbound

Motherwell station is currently subject to a number of improvements which are being implemented through City Deal funding. This includes additional park & ride spaces, improved cycle infrastructure and rationalisation of the bus stops on Muir Street outside the station.

There are a further five rail stations in close proximity to the site which provide further destinations on the rail network. The service frequency from these stations is provided in Table 3.3.

Through consultation with Scotrail Abellio and Network Rail there are further network improvements proposed that will add benefit to the rail services in close proximity to Ravenscraig;

- The proposed Shotts Line electrification in 2019 will bring timetable changes and journey time benefits to both Holytown and Carfin stations; and
- Proposed extension of Glasgow to Whifflet services extending to Shotts which would allow additional stops at Holytown and/or Carfin.

Table 3.3 - Rail Stations in close proximity to the Ravenscraig Site

Station	Distance from centre of Ravenscraig site	Destination	Mon-Fri	Saturday	Sunday
Shieldmuir	1.3km	Glasgow	every 30 minutes	every 30 minutes	Every hour
		Lanark	every 30 minutes	every 30 minutes	Every hour
Holytown	3km	Glasgow	Every hour	Every hour	Every 2 hours
		Edinburgh	Every hour	Every hour	No Service
Carfin	2.1km	Glasgow	Every hour	Every hour	Every hour
		Edinburgh	Every hour	Every hour	No Service
Airbles	2.5km	Hamilton	every 30 minutes	every 30 minutes	every 30 minutes
		Glasgow	every 30 minutes	every 30 minutes	every 30 minutes
Wishaw	2.6km	Glasgow	every 30 minutes	every 30 minutes	Every hour
		Lanark	every 30 minutes	every 30 minutes	Every hour

3.5 Local Road Network

The current road infrastructure within the site comprises the Ravenscraig spine road which is made up of Robberhall Road, a single carriageway road between Craigneuk Street and the roundabout at O'Donnell Way which provides access to the RSF. New Craig Road is dual carriageway and runs north from the RSF roundabout to the A723 at Merry Street. The roads have roundabouts along their lengths with a speed limit of 40 mph. The spine road provides a high capacity link to Ravenscraig from the M8 to the north via the A723 and the M74 south via Airbles Road and the A721. An off-road shared cycleway route is provided alongside the spine road. Figure 3.1 illustrates the characteristics of the spine road and adjacent cycleway.

Figure 3.1: New Craig Road dual carriageway and shared cycleway with the Ravenscliff Pub and Hotel in the background

3.6 Car Parking

Ravenscraig currently has two significant established developments in addition to the residential development at the north of the site.

At the Motherwell campus of the NCL approximately 500 parking spaces are provided for staff, students and visitors. On-site observations at the campus indicate that parking demand exceeds supply with the access road also used for parking.

There are approximately 440 car parking spaces provided at the RSF with management indicating that there are overspill issues when the RSF is hosting sporting competitions particularly at weekend events

The Ravenscliff pub and hotel has associated car parking.

4. Ravenscraig Transport Strategy

4.1 Introduction

The Ravenscraig Transport Strategy (RTS) supports local and national transport planning policy, best practice in sustainable travel by promoting a hierarchy of personal movement, which prioritises sustainable travel over private vehicle travel. This has been developed further from the previous masterplan and has been informed by the STAG 1 appraisal of sustainable transport measures undertaken for this masterplan.

The RTS outlines how people and vehicles are anticipated to move within the site and within the surrounding area. Consideration is given to existing, planned, proposed and best practice in transport infrastructure and services, all of which are intended to play an important part in creating a '*Sustainable Community*' on the whole Ravenscraig site.

4.2 Fostering a Green Movement

At Ravenscraig there is an opportunity to foster sustainable travel behaviour from the outset. This can be achieved through effective planning, design, information and communication.

The long term aspiration of development at Ravenscraig is to create a sustainable development where residents will be provided with real opportunities for work and leisure within Ravenscraig itself and in neighbouring areas, thereby reducing the need to travel long distances. This is conducive to encouraging shorter trips on foot and by cycle.

The Movement Strategy for Ravenscraig is, therefore, guided by the following core principles:

- minimising the use of the car by 'designing in' the best possible access for sustainable travel modes;
- proactive intervention to encourage & support sustainable travel behaviour;
- integrating the development within the urban fabric of the Motherwell and Wishaw areas, taking advantage of and reinforcing local transport links;
- using the mixed use nature of the development to encourage an interaction between adjacent uses and linked trips by sustainable modes;
- encouraging walking and cycling for trips within the development and short trips to adjacent areas in the form of a walking and cycling access strategy plan which will comprise traffic free links and routes throughout the masterplan site;
- maximising public transport accessibility by designing the development around key public transport routes, entering into partnerships with bus operators to provide high quality services with links to existing rail stations in co-operation with the relevant authorities in the form of a public transport strategy plan;
- providing for improved road access to and within the site; and
- supporting innovative initiatives to reduce environmental pollution.

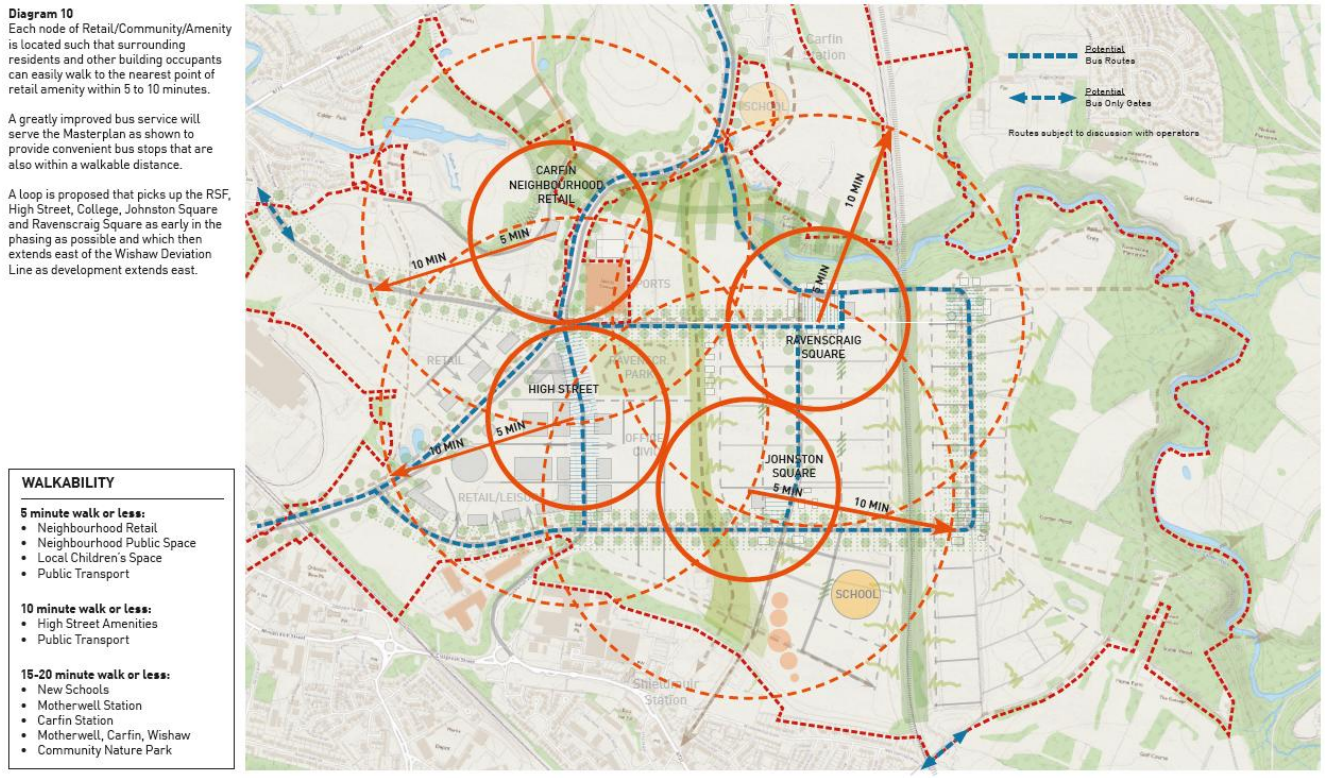
It is essential to provide people with travel choices to meet their differing needs, therefore, in addition to good public transport, walking and cycling infrastructure, travel options such as car clubs, car sharing, and public cycle hire schemes as well as smarter working options aimed at reducing the need to travel will be promoted through the Ravenscraig Travel Plan (RTP). Please refer to the accompanying Ravenscraig Travel Plan Framework that provides more detail on this.

Good practice and innovation are essential to ensure sustainable movement is achieved and promoted during the design process, for example, by designing buildings which offer shared car parking, showers or tele-conferencing facilities.

The revised masterplan has been designed to deliver a flexible framework for the organic and sustainable development of a mixed use community on the Ravenscraig site. Indeed, the proposed development is already consistent with approved development plan policy and benefits from express support in both local and national planning policy.

However, the site is very substantial and, as such, it's development is envisaged to continue over the next 25 year period. Accordingly, the masterplan creates the framework for the overall development and sets out how it will be brought forward in phases over time. Principles are established for the overall development and the masterplan clearly indicates how facilities are to be provided within sensible walking and cycling catchment areas of the proposed residential areas. This is illustrated in Figure 4.1 below.

Figure 4.1: Ravenscraig internal walking catchments



Walking, cycling and public transport routes are defined and are shown as clear principles within the masterplan. Moreover, key green links are also defined in order to assist in the connectivity and accessibility throughout the site and into the wider areas beyond the site's boundaries.

Phasing of the development is covered (in some detail) within the masterplan, and this also enables clear links to be established between the delivery of infrastructure and the emerging development parcels, but it will be for the Area Planning Briefs (a process established as part of the existing permission for the Ravenscraig site) in which the specifics and details of infrastructure provision, linked to each phase, will be established and controlled.

However, the principles of securing a sustainable, well-connected place are embedded in the masterplan and are therefore an integral part of the scheme currently being considered.

Walking

Walking is the most sustainable form of transport, thus streets and developments should be designed to facilitate and support walking. Perceptions of the ease of walking are as important as the infrastructure that is in place to enable people to walk.

Key factors in determining the propensity to walk are:

- distance;
- sightlines and visibility towards destinations and landmarks;
- quality of the walking experience; and
- safety.

By understanding these factors, the necessary consideration can be given to allow pedestrian movement to take precedence at Ravenscraig. The following objectives tie in with the six Designing Streets qualities relevant to pedestrians and underpin the revised Ravenscraig Masterplan:

- street hierarchy should consider pedestrians first;
- street design should be inclusive for all;
- signs and street furniture should be kept to a minimum;
- street lighting should be discreet;
- street design should provide good connectivity for all;
- pedestrians should be considered at junctions first and foremost;
- street layouts should be configured to allow walkable access for all street users; and
- streets should encourage social interaction.

The following examples of design measures as highlighted in Designing Streets can have important roles to play in achieving successful places:

- walkable neighbourhoods have a range of facilities and services within a 5 minute walk (400m) where amenities cannot be provided in this catchment good public transport links should be provided.;
- connecting layouts to their surroundings, a development with poor links to the surrounding area encourages movement by car;
- ensure, as appropriate, pedestrian routes are straight and level; and
- avoidance of footbridges and subways.

Cycling

Sustainable links will be provided within the site with cycle and walking infrastructure bisecting the development site to link internal areas and to link to the wider urban areas around Ravenscraig.

Designing Streets notes that in general cyclists should be accommodated on the carriageway, however, where vehicle speeds and traffic volumes are high, a cycle lane can be considered. Key factors in determining the propensity to cycle are:

- need for continuous movement;
- priority over side street traffic;
- direct routes; and
- safety.

Most of the principles relevant to pedestrians also apply to the propensity for cycle use including connecting layouts and designing for cyclists at junctions. When designing street layouts, pedestrian and cycle routes remote from motor traffic should be considered as a last resort.

Cycle routes will be designed and built in accordance with the Sustrans guidance in the National Cycle Network *'Guidelines and Practical Details – Issue 2'*, and the relevant parts of *Appendix V1 NCN Design and Construction Checklist* and will be safe and overlooked, where appropriate.

Sustrans will be consulted to consider any opportunities for designating a National Cycle Route through the site to further support cycling in the area.

Cycle parking spaces will be located at key facilities, including places of employment, community, leisure facilities and public transport interchanges. Flats and homes should be equipped with space to accommodate cycle parking.

Public Transport

A high quality on-street bus interchange comprising of lay-bys for terminating and through services will be provided in the new high street of the town centre. This will be a high quality facility with waiting facilities, room for buses to stand, an information point and associated pedestrian crossing facilities.

The STAG (Scottish Transport Appraisal Guidance) appraisal work that has been undertaken in tandem with the TA has identified the provision of key bus infrastructure and services within the development instead of providing a new rail station on the Wishaw Deviation Line to serve Ravenscraig The bus based options which emerge well from the appraisal include the provision of high quality bus linkages and infrastructure within the site, potential wider bus network priority measures and a circular Rail-Bus service which would serve the key rail stations around Ravenscraig.

The consultation exercise with Scotrail Abellio and Network Rail has identified that with current services and capacity on the West Coast Main Line, calling at Motherwell and Shieldmuir, and the Shotts Line, calling at Holytown and Carfin, there is no scope to introduce a Ravenscraig service without significant detriment to the current service frequency and passenger journey times on the above lines. There is an improvement programme scheduled for 2019 on the Shotts Line which will increase the frequency of services calling at Holytown and Carfin which would make these stations more attractive to commuters residing in Ravenscraig. Consultation with Transport Scotland, SPT and the rail industry during the STAG appraisal, has concluded that there is currently no justification for currently providing the necessary infrastructure required for a station at Ravenscraig. The STAG appraisal does, however, recommend that the potential site for a rail station on the deviation line should be safeguarded within the masterplan for the future in case there are significant changes to current rail and demand constraints.

The revised Masterplan and this accompanying TA and the STAG 1 Appraisal have sought to address the key recommendations of the Designing Streets policy on planning for public transport which highlights good practice as follows:

- principal development streets should be where public transport operates;
- public transport operators should be involved to identify operational routes;
- bus routes and stops should form key elements of the walkable neighbourhood;
- development densities should be high enough to ensure an efficient service is provided without excessive long term developer contributions;
- bus stop locations should be along pedestrian desire lines;
- buses should generally stop on street and not in a lay-by;
- bus stops should be of a high quality; and
- consideration should be given to raised and wider footways at bus stops.

4.3 Roads Hierarchy Principles

In order to develop the Ravenscraig development it is important that an appropriate road hierarchy is established which defines the function and proposed use of streets. The principles for the road hierarchy will take account of Designing Streets where the overarching policy is the consideration of place before movement. In keeping with Scottish Planning Policy and Designing Streets, the street hierarchy places walking first taking precedence over the private vehicle.

Reference is made to the SCOTS National Roads Development Guide, which provides more detailed technical guidance on implementing the principles in Designing Streets.

The safe, effective and efficient movement of motor vehicles remains absolutely critical but should be balanced against the requirement of other transport and non-motorised users such as cyclists, pedestrians and buses. An effective road and street hierarchy should be set out such that it forms the foundation for managing the road network in the most efficient and safest way while providing benefits for all users.

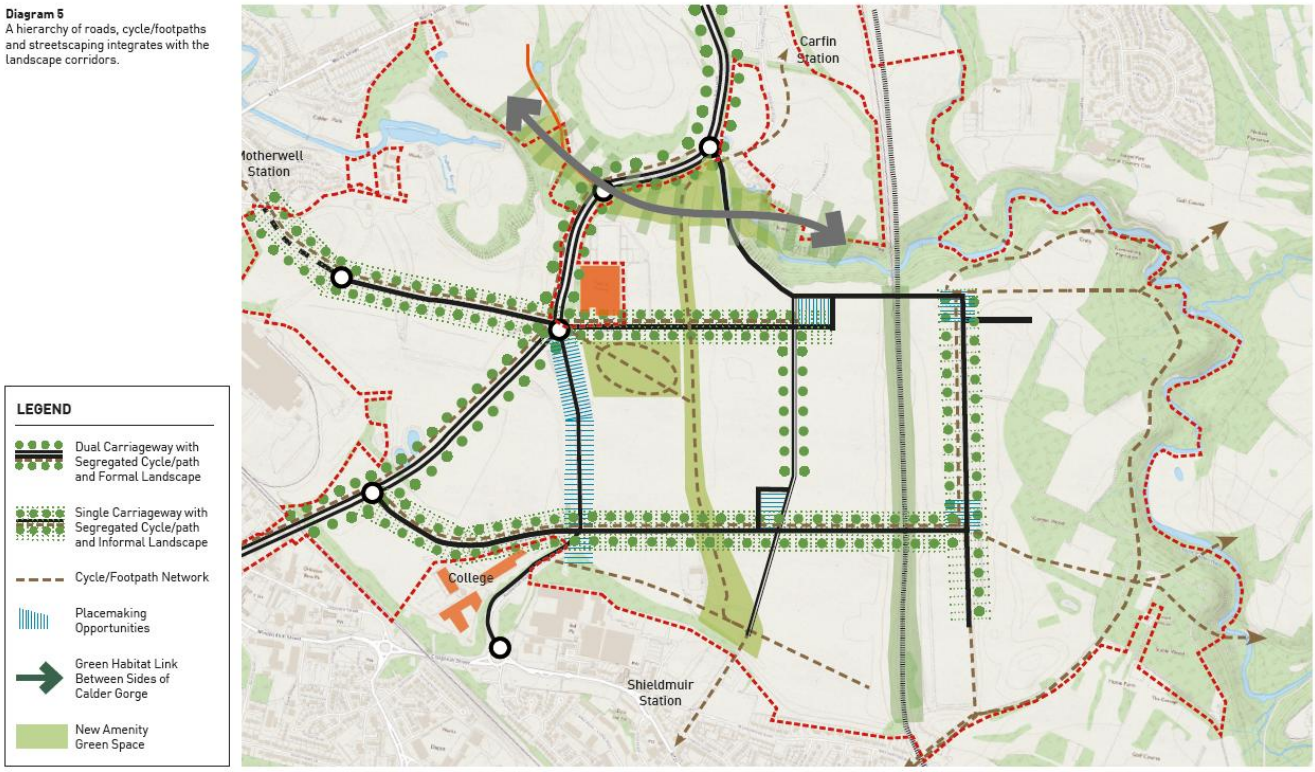
Judging what is acceptable involves a balance between traffic capacity, the environment, speed, safety and road user needs. When a road or street cannot accommodate these needs, conflict typically arises in the form

of 'rat running', congestion, a proliferation of junctions on main routes, road safety issues, environmental degradation, social exclusion and loss of amenity.

The road and street hierarchy within the Ravenscraig development aims to ensure that bus penetration will be at a level to support the policy guidance of a bus stop located within 400m of the majority of dwellings and all non-residential development.

Details of the primary and secondary routes are illustrated in Figure 4.2 below. The primary route through the site will be the dual carriageway extending from Airbles Road via the WCML overbridge to the northern extents of the site. In line with the current section of dualled carriageway this is proposed to be subject to a 40mph speed limit. The secondary routes within the site will be single carriageway and subject to 30mph or 20mph speed limits where appropriate.

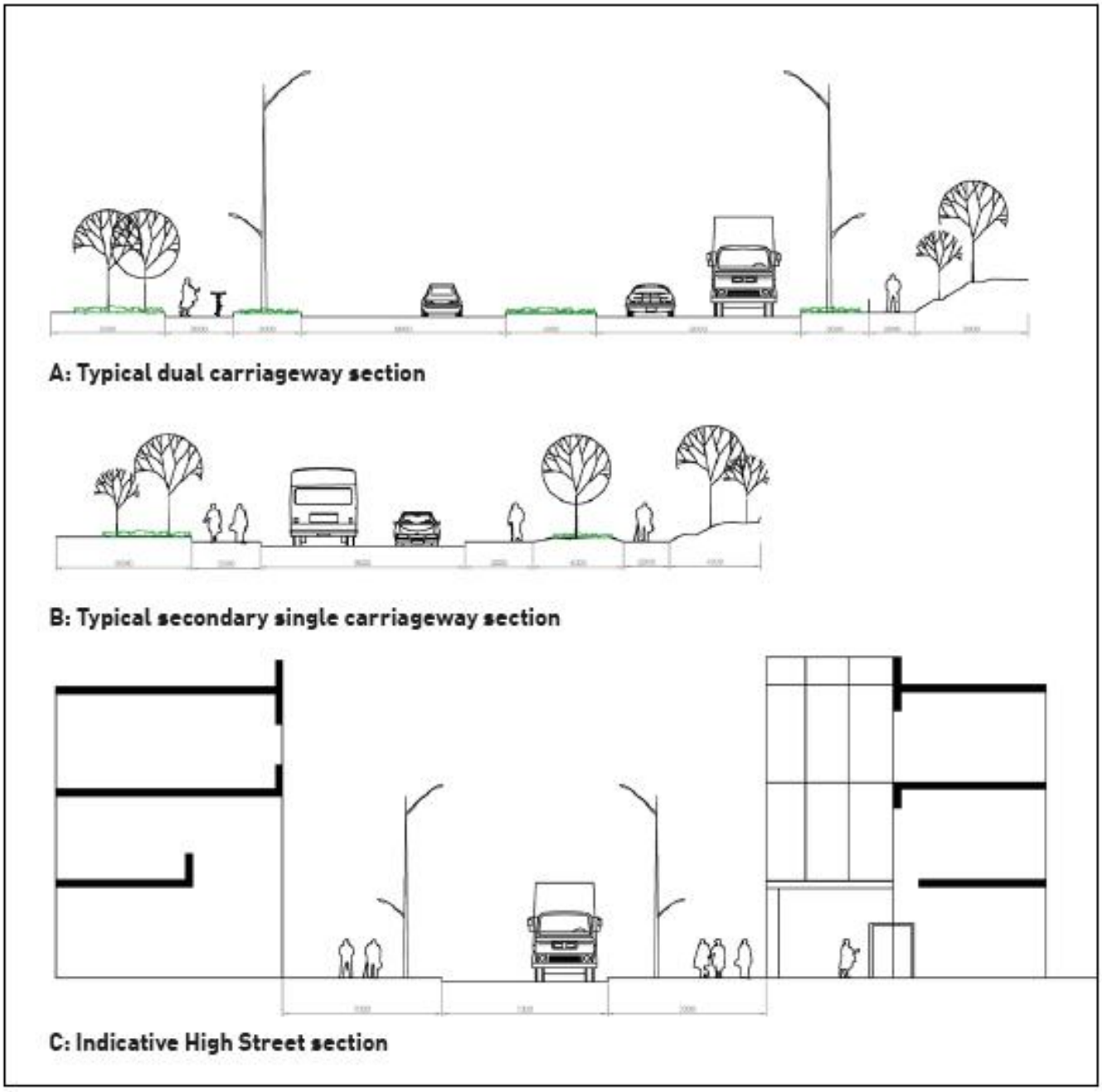
Figure 4.2 Proposed Primary and Secondary routes in Masterplan



The tertiary residential streets will be designed in accordance with Designing Streets which sets a streetscape that prioritises pedestrian and cycle movements over motor vehicles. It is possible to configure the streetscape and associated residential blocks to create distinctive places where the spaces between the buildings are safe and pleasant to use and are well linked to local amenities and public transport nodes in such a way that sustainable travel is naturally encouraged. Where applicable the street design will be such that 20mph speeds will be self-enforcing.

The proposed cross sections of the primary and secondary routes are illustrated in Figure 4.3.

Figure 4.3 Cross-sections of proposed Masterplan roads



4.4 Car Parking

Due consideration must also be given to parking. By providing a plentiful supply of free parking it is likely there will be a heavy reliability on the private car and single occupancy vehicles, while under supplying the number of car parking spaces could lead to reduced commercial viability, increased circulatory traffic, congestion and driver frustration.

It is proposed that a parking strategy is implemented for the site which will be a departure from the rigid 'predict and provide' standards, and will instead consider shared parking between land uses. This has potential within Ravenscraig given that employment and leisure activities have a degree of staggered peaks use i.e. daytime and night time use respectively. Similarly, for the same land uses there is also a propensity for weekday v

weekend use. A holistic approach will be required as changing trends in work and leisure activity means that overlapping of demand is likely to occur at certain locations.

Parking objectives for Ravenscraig are to:

- manage parking to contribute to the aim of becoming a '*Sustainable Community'*;
- prioritise the movement of pedestrians, cyclists and public transport users within and through car parks;
- help to achieve a more effective and efficient transport system;
- take into account the economic vitality of the proposed development;
- consider those with specialised parking needs; and
- be sensitive to the differences in the parking needs of the variety of Ravenscraig site users.

During consultation with NLC it was indicated that the council are intending to implement decriminalised parking within North Lanarkshire during 2018. Therefore, this will be applicable throughout Ravenscraig where Traffic Regulation Orders (TROs) are provided. The current absence of parking enforcement is evident on the access road to the NCL campus and on O'Donnell Way at the RSF. This parking strategy will allow the Council to meet their aims of promoting the vitality of town centres and minimising the current practice of commuters using the parking capacity for long stay parking.

Further details on parking rates are provided in section 6.8 of the TA.

4.5 Ravenscraig Travel Plan Framework

The Ravenscraig Travel Plan Framework (RTPF) has been developed as the plan for delivery of much of the RTS and is issued as a separate document accompanying this TA. In summary, the RTPF establishes the overall framework for the production of Travel Plans by all development. It also identifies measures aimed at raising the awareness of sustainable travel of the travel options that are in place. Fundamental to the success of the RTPF will be the early appointment of a Ravenscraig Travel Plan Coordinator (RTPC).

There will be two new Primary School sites in Ravenscraig and it is intended that Travel Plans for these will be developed by the schools and consider measures and promotions specific to schools e.g. walking bus.

The scale of development at Ravenscraig creates an opportunity to establish a place that supports sustainable travel and minimises the need to travel by car, wherever possible, creating streets for people to use and a place in which people want to live and work.

The RTPF is consistent with North Lanarkshire's Local Transport Strategy which recognises the importance of Ravenscraig and states that the aim is "to reduce the dependency on car-borne travel to and from the site, and to try to instil practice of sustainable travel choices from the outset". Furthermore, North Lanarkshire Council's Local Plan promotes sustainable growth and at Ravenscraig, it wants the creation of a sustainable, integrated urban community that is linked by an integrated transport system.

Organisation-specific targets will be derived for each non-residential development once the occupier is known and an organisation-specific TP has been produced.

Individual organisational TPs should be in the same format as the overall RTPF. They should address the same issues and be consistent with the aim and objectives of the overall RTPF. It is possible that a number of developments may produce a joint TP, where appropriate, and this will be considered by the RTPC.

4.6 Mode Share Targets

The application of mode share percentages has been discussed and agreed with NLC. A robust approach has been undertaken where in 2028 the applicable mode share will generally match the current mode share for travel to work within the surrounding settlements and North Lanarkshire as a whole. This is valid as during the peak hours the majority of trips will either be residents travelling outbound to work or employees within Ravenscraig travelling inbound to work and vice versa in the evening.

The current mode share within Ravenscraig and the surrounding settlements are shown below in Table 4.1.

Table 4.1: Mode Share Census 2011 Travel to Work

Area	Work from Home	Car Driver	Car Passenger	Bus or Rail	Walk or Cycle	Other
Ravenscraig	11	69	10	7	2	1
Motherwell	9	58	7	17	8	1
Airbles/Craigneuk/Shieldmuir	9	59	8	16	8	1
Wishaw	8	60	7	14	9	1
North Lanarkshire	9	59	9	15	7	2

It is recognised that a number of land uses have mode shares that differ from the travel to work data e.g. industrial, leisure and retail units. In order to demonstrate that the above approach is robust, analysis has been undertaken within TRICS to illustrate the difference in mode share between the variety of land uses, and that the resultant trip generation does not result in additional trips over those generated when using the mode shares presented in Table 4.1.

The table below illustrates the mode share for other land uses and the relevant area of the land use proposed within the masterplan. The TRICS data demonstrates that three of the land uses that aren't employment focused, in terms of trip generation, have a higher car mode share i.e. car showrooms, commercial warehouses and industrial units. The resultant increases in trips with the TRICS mode share applied shows a small increase in trips over both weekday peak periods. Similarly, a number of land uses have a lower mode share of car drivers than that used within the TA i.e. leisure centre, hotels and food superstore,

While the leisure and food superstore land uses show significant differences, a degree of correction has been applied within the assessment through applying pass-by percentages to these land use trips as described later in section 7.3. Notwithstanding this would still result in a net reduction in trip generation if the TRICS mode share is used in lieu of the census data for car drivers. Therefore, it can be concluded that the approach within the TA is robust in terms of the trip generation.

Table 4.2: Land Use Mode Share from TRICS

Land Use	TRICS Car Driver (%)	Ravenscraig 2028 Car Driver (%)	Difference (%)	Proposed Trips (AM and PM peak)	Difference in Trips with TRICS mode share %
Car Showroom	64	57	+7	429	+30
Commercial Warehouse	74	57	+17	248	+41
Industrial Unit	78	57	+21	238	+50
Leisure Centre	32	57	-25	1799	-453
Hotel	34	57	-23	241	-59
Food Superstore	43	57	-14	2356	-542

Note: Trips shown do not have any pass-by reductions applied

The mode share from the existing residential area at the north of Ravenscraig was established from census data in 2011. The observed vehicle movements from ATC survey data was used to establish the current people trip generation from this residential area within the morning, evening and Saturday peak periods. Given that the number of occupied houses is currently known (circa 500) a residential trip rate for Ravenscraig was established. The current housing is deemed to be reasonably representative of the proposed residential build out of the development as it comprises flats, terraced housing, semi-detached and detached housing with varying numbers of bedrooms.

The people trip rates for non-residential developments have been derived from TRICS database and the agreed target mode share applied to generate trips by each mode. For the proposed full build-out year of 2045 two mode share scenarios have been tested. The first reflects a pessimistic approach with no further mode shift between 2028 and 2045. The second sees a shift of 9% from private vehicle travel to sustainable modes to reflect the conclusions of the STAG 1 appraisal that an extensive commercial bus network would be available

for travel within the site, to the neighbouring rail stations and settlements which is accompanied by Active Travel infrastructure and promotion through the RTP. This is detailed further in Chapter 6.

Table 4.3: Ravenscraig Mode Share Targets (%)

Ravenscraig Mode Share Target	Work from Home	Car Driver	Car Passenger	Bus or Rail	Walk or Cycle	Other
Ravenscraig 2011 Census	11	69	10	7	2	1
2028 Target	11	57	10	14	7	1
2045 Target	11	48	12	18	10	1

The 12% mode shift in car driver, from 2011 to 2028, comprises of the following:

- 5% shift to walk or cycling to 7%, in line with 2011 levels in North Lanarkshire
- 7% shift to bus or rail to 14%, 1% below 2011 levels in North Lanarkshire and 3% below Motherwell 2011 levels

The 9% mode shift, from 2028 to 2045, comprises of the following:

- 3% shift to walk or cycling to 10%, 3% above 2011 levels in North Lanarkshire
- 4% shift to bus or rail to 18%, 3% above 2011 levels in North Lanarkshire and 1% above Motherwell 2011 levels
- 2% shift to car passenger to 12%, 3% above 2011 levels in North Lanarkshire

The target mode share in 2045 provides quantitative goals to assess whether the objectives of the RTPF have been met. They have been developed within the context of the overall Transport Strategy and seek to create a '*Sustainable Community*' that offers genuine travel choices.

For robust modelling the pessimistic mode share has been applied to the 2045 scenarios i.e. there is no modal shift improvements between 2028 and 2045. Further details on the mode share targets relative to the junction modelling and impact assessments are detailed in Chapter 7.

5. Sustainable Transport Evidence

5.1 Introduction

Ongoing consultation with NLC has identified the importance of evidence to support the agreed mode shares to be applied to the modelling assessment. As such, a portfolio of evidence has been formed in order to provide comfort that the active and sustainable travel elements of the development modal splits are achievable and based on real life precedent.

While the mode share targets considered for Ravenscraig will be realistic, it is fundamentally important that the targets and associated measures to achieve them are also ambitious in order to achieve meaningful changes in behaviour and achieving this balance is important. It is also clear from the examples below and from Jacobs extensive experience in developing transport strategies and travel plans, that there is an important relationship between the provision of active travel infrastructure and effective promotion of it – both are complementary to each other which is important in terms of developing positive behaviours. Any development must be realistic in the measures it promotes. Altering travel behaviour is more subjective than merely providing a bus stop and insisting people use it. A package of measures is therefore required which could include: providing a bus stop shelter, ensuring the timetable and frequency is appropriate, ensuring users can access the bus stop safely and that it fits the needs of those with mobility concerns, providing individuals with bus information including routes, timetable and cost and considering bus interchange. The work undertaken on the STAG and in consultation with Strathclyde Partnership for Transport (SPT), in tandem with the TA, to identify appropriate bus services and subsidy levels is a key element of the strategy to ensure appropriate infrastructure and services are implemented within Ravenscraig.

The following section seeks to identify measures that have been effective in supporting a modal shift from a dependency on car journeys to sustainable and active travel options. This section highlights measures that various Local Authorities have implemented, which have been successful in achieving modal shift to sustainable modes, in addition to softer measures, all of which provide clear examples of potential opportunities relevant to Ravenscraig, which can in turn encourage positive and sustainable behaviours within the development.

5.2 Dundee Travel Active

Dundee Travel Active (2009 – 2012) was a campaign created by Dundee City Council and funded as part of the Smarter Choices, Smarter Places programme, delivering a package of infrastructure, information and behavioural change measures designed to promote walking and cycling and as such encourage residents of and visitors to central Dundee to adopt healthier lifestyle by reducing the reliance on the car. The measures developed as part of the scheme included:

- Cycle training aimed at raising awareness of the health benefits associated with cycling and encouraging greater cycling mode share;
- Personalised Travel Planning (PTP);
- Increased availability of information and resources to encourage more use of local facilities that reduces the need for car journeys;
- Bike Library to enable medium-term subsidised hire of bicycles to residents and students;
- Public transport ticketing incentives and service improvements;
- Identifying physical barriers such as poor surfacing and drainage, narrow pathways or poor lighting that would discourage walking / cycling; and
- Public realm enhancements and small scale infrastructure improvements.

Results highlight that throughout the course of the programme, 3,400 residents have participated in the scheme, of which 40% expressed a desire to alter behaviour going forward. To help demonstrate the effectiveness of the measures contained within the programme, Jacobs have compared 2011 Travel to Work Census data for the relevant Dundee postcodes covered by the scheme, against 2001 data. Whilst it is not possible to isolate the specific impacts of the DTA scheme from wider transportation and demographic changes in the city, the comparison highlights that the travel to work by car mode share has reduced by 7% between 2001 and 2011,

with the active travel mode share increasing by 3%. There was also a recognisable increase (7%) in the percentage of people that work from home.

5.3 Glasgow South West City Way

As part of Glasgow City Council's vision 'to create a vibrant Cycling City where cycling is accessible, safe and attractive to all', a series of cycle ways were proposed in the south side of the city. As part of the proposals, the South West City Way was developed and is a route that connects Pollokshields to Glasgow City Centre via 2km of segregated cycleway. Furthermore, the South West City Way also serves to link existing cycling infrastructure in order to provide an integrated cycle network. This is particularly relevant to Ravenscraig, where there is a desire to provide measures on the site which effectively tie into measures implemented by North Lanarkshire Council, particularly relating to access to Motherwell Station and the routeing of the Central Scotland Green Network, in order to develop a joined up offering. More details on the existing and proposed infrastructure improvements, coupled with the opportunities that the Ravenscraig development will seek to build on, are detailed later in the report.

According to the Cycling Action Plan for Scotland (2014 – 2016) it is estimated that that from 2014 to 2016, the number of cycle trips on the South West City Way route has increased by 70%, with 115,450 cycle trips undertaken in 2014, increasing to 195,800 in 2016. Furthermore, according to the report, cycling constituted 22% of total estimated trips on the route in 2016, with an estimated 43.5% of journeys made on the South West City Way in 2016 travel to work trips.

In 2016 a survey of users of the South West City Way was undertaken, with 70.5% of respondents confirming that the implementation of the route helped them to be more active.

Finally, based on the evidence outlined within the report, the Cycling Action Plan estimates the economic health benefits associated with the scheme over a 30 year appraisal window will amount to £1,644,000.

5.4 Clickimin Path Upgrade Project – Lerwick

Clickimin Path Upgrade project constitutes a 1.5k upgrade to a series of off road cycle and footpaths funded by SUSTRAN's, connecting residential areas with a leisure complex and a new High School. The existing path around Clickimin loch to the leisure centre was upgraded and widened, with new sections added to connect the upgraded path around the loch to the site of the new high school, providing off-road access to the high school from residential areas and from Lerwick harbour and the town centre.

Following implementation of the scheme, the estimated annual number of trips by all users on the route has increased by 25% since 2014, from 77,765 to 97,046 (in 2015). Pedestrian use has increased by 24%, from 68,962 in 2014 to 85,586 in 2015, whilst cycling has observed a 111% increase, from 1,574 (2014) to 3,317 (2015).

5.5 Stirling Cycle Hub

The Scottish Government, in partnership with Scotrail, has funded the Stirling Cycle Hub since May 2013 in order to increase the levels of cycling and active travel in and around Stirling. In that period over 16,000 people have participated; there has been 312 Events/Led Rides; and over 13, 000 journeys made by the Nextbike hire scheme in two years, averaging 64 a day in October 2016.

Importantly, in the period that the Stirling Cycle Hub has been open, the average number of bicycles parked at Stirling Train Station per day has increased by 112% and continues to grow.

5.6 Middlefield / Northfield Place-Making and Active Travel Project

Aberdeen City Council and Sustrans have approved a joint funding venture to enhance active travel routes in, and around the Heathryfold Park, Middlefield and Northfield in order to make them more accessible for pedestrians and cyclists.

The project aims to:

- increase the accessibility and usage of the paths that cross Heathryfold Park, and routes which link to the Park;

- improve the night time accessibility of these paths; and
- increase the number of journeys made by bicycle, and on foot, within Middlefield and Northfield by providing improved active travel routes.

This project is designed to complement a number of regeneration projects that have been taken forward in the area and the active travel interventions will assist in enhancing accessibility between local facilities and importantly reduce the reliance on the car in order to access key local facilities.

Aberdeen City Council have also highlighted the importance of the project in addressing local health and inequality issues, with the Middlefield and Northfield areas rank in the 2nd most deprived decile of the 'Scottish Index of Multiple Deprivation Data Zones (2016)'. According to the council, the project is expected to reduce the cost of transport; reduce isolation through enhanced accessibility; improve access to public services and employment; and encourage healthier lifestyles. Importantly, the council have highlighted the correlation between walking and cycling to school and performance as being particularly important given the evidence presented by a number of studies that have demonstrated that children who walk and cycle to school are more alert and are better able to absorb information. It is anticipated, therefore that this project will contribute to improved school attainment and, therefore, improved employment prospects.

There are a number of comparisons that can be drawn between Middlefield / Northfield and Craigneuk, located to the south of the site, in terms of levels of deprivation. According to the 'Scottish Index of Multiple Deprivation Data Zones (2016)', the data zones that comprise Craigneuk rank in the 1st and 3rd most deprived deciles which is comparable with the above areas in Aberdeen and as such it can be expected that any active travel benefits are applicable to both locations.

5.7 'Soft Measures – Hard Facts' The Value for Money of Transport Measures which Change Travel Behaviour, A Review of the Evidence

A number of key stakeholders, including Highways Agency and NHS South West have developed the paper 'Soft measures – hard facts' The value for money of transport measures which change travel behaviour A Review of the Evidence' to present a review of the evidence around the effectiveness of active travel and travel planning interventions given that these is a need for robust evidence in order to assist transport planners and local authorities identify and select the measures which are most effective for their own situations. The paper critically appraised 16 travel behaviour change measures that have been evaluated, from schemes which encourage walking and cycling, to more complex programmes in workplaces and across whole towns and cities. A summary of the key projects relevant to Ravenscraig are outlined below in order to present a clear evidence of the benefits that active travel interventions at Ravenscraig can have on factors such as modal shift, health, equality and environment.

Personalised Travel Plans

Personalised Travel Planning (PTP) can be delivered in a variety of development types, including residential, schools and employment, and is an established approach which enables people to think about their current travel behaviours and arms them with the information, advice and motivation to change their behaviour and encourage them to walk, cycle and use public transport more often.

There is a wealth of research highlighting that many journeys, especially shorter ones, can be made on foot, bicycle, or by public transport, and importantly without any infrastructure or service improvements. It is suggested that people often travel by car out of habit or are not aware of the alternative options available. PTP is about breaking down the barriers to travelling sustainably by providing reliable information on the potential alternatives.

Evidence presented in 'Soft measures – hard facts' The value for money of transport measures which change travel behaviour A Review of the Evidence' suggests that most schemes achieve between a 2 and 7% reduction in car miles, an increase in walking of up to 5% and an increase in cycling by up to 1%. Furthermore, according to the report, the cost of reducing 1000 car kms ranges from £20 for large scale projects engaging with up to 25,000 households, to up to £130 for smaller projects reaching around 1,500 households'.

The report suggests that PTP is most effective when targeted at people in a transitional point in their lives, such as going to university, moving house or changing job, given that these people tend to be more receptive to

changing behaviour. This is important in the context of Ravenscraig where it will be important to facilitate a process where positive behaviours have the chance to take root, through a combination of physical infrastructure interventions and active promotion, through a range of measures such as residential travel packs for new residents.

Walking Information Packs

Packs of information on local walks designed for inactive people, and carefully targeted via GP surgeries and libraries. In terms of facilitating a change in behaviour, the study notes that 41% of people said they walked more as a result of using the packs. The packs represent excellent value for money, given that they are cheap to produce and can yield positive behaviour changes and a subsequent reduction in car trips over shorter distances.

Active Travel to School

A measure, led by local authorities or individual schools, to encourage school pupils, living within a realistic walking distance of their school, to walk or cycle instead of being dropped off or driving.

Evidence suggests that a typical local authority can achieve a benefit to cost ratio of 4.6:1 with very little in the way of costs, other than the management of the initiative and can yield positive behaviour changes and a subsequent reduction in car trips over shorter distances.

'Bike It'

Also relating to schools, 'Bike It' is an effective schools-based programme that aims to increase the levels of cycling to school by arming pupils with cycling skills and the confidence necessary to consider cycling as a travel choice.

In terms of changing travel behaviour, according to the document, the 2009/10 'Bike It' programme achieved a more than doubling of the proportion of young people cycling every day from 3.7% to 8.7% of those surveyed. There was also a near doubling of the proportion of young people cycling to school once or twice a week from 10.6% to 18.2%.

According to the case study, a low existing cycling mode share presents the potential for significant modal shift to cycling given the right culture and environmental conditions and while there will likely be a shift from walking to cycling, there is likely to be a significant shift from car to bicycle. Importantly, 'Bike It' can also influence parents, people's leisure cycling habits and promote long term behaviour changes towards sustainable travel.

5.8 Brighton & Hove – One of Cycling England's 'Cycle Demonstration Towns'

Brighton & Hove is one of Cycling England's 'Cycle Demonstration Towns' and have developed a programme to combine cycle infrastructure (cycle lanes, cycle parking, advance stop lines, signage strategy) with Personal Travel Planning and Travel Plans for schools and large employers in order to achieve a significant modal shift to cycling. Between 2006 and 2012, the improvements have resulted in an overall cycling rate increase of 27% which represents a significant step change and demonstrates that investment in active travel improvements will lead to significant modal shift.

In order to further emphasise the success of this scheme, as with 'Dundee Active Travel', we have compared 2001 Travel to Work Census data (pre-scheme) with 2011 data (post-scheme) in order to identify modal shift to walking and cycling.

The table below details the differences in modal shift across both censuses and illustrates a healthy 2.24% increase in cycling to work and an associated 3.41% increase in walking to work. . Whilst it is not possible to isolate the specific impacts of this programme from wider transportation and demographic changes, it does indicate a positive impact in terms of modal shift.

Table 5.1: Brighton – Method of Travel to Work

Method of Travel to Work	All Categories: Method of Travel to Work	Work Mainly at or from Home	Underground, Metro, Light Rail, Tram	Train	Bus, Minibus or Coach	Taxi	Motorcycle, Scooter or Moped	Driving a Car or Van	Passenger in a Car or Van	Bicycle	On Foot	Other Method of Travel to Work
2011 Census Data	100%	7.6%	0.3%	10.4%	13.6%	0.39%	0.8%	37.2%	3.5%	4.9%	20.6%	0.8%
2001 Census Data	100%	9.3%	0.2%	8.4%	12.5%	0.8%	4.9%	43.2%	0.5%	2.7%	17.2%	0.5%
% Difference	0%	-1.7%	0.1%	2.0%	1.10%	-0.4%	-4.1%	-5.9%	3.0%	2.2%	3.4%	0.2%

6. Delivery of the Transport Strategy

6.1 Introduction

This Chapter sets out how the RTS will be delivered. The Strategy is centred on existing policy and guidance and is intended to provide a proactive, site specific, 'place' led hierarchy which is balanced and considerate to the multitude of development opportunities at Ravenscraig.

One of the key tools for the implementation of the RTS is the RTPF which is included as an accompanying document to this TA. This is an active, dynamic document that requires to be updated on a regular basis. The implementation of the RTPF will be led by the Ravenscraig Travel Plan Coordinator (RTPC), however, the successful implementation of the RTPF will require active participation from all tenants of the site and key stakeholders.

6.2 Walking

Walking provides a healthy alternative to the car for short journeys up to 20 to 30 minute walk and typically also forms a component of many journeys made by public transport or car. A high quality pedestrian environment is fundamentally important in enabling and encouraging people to walk.

The Ravenscraig site is fairly flat with virtually all of the development within a 20 minute walk. This means that trips between residential, business, retail and leisure areas will be easily achievable on foot. The surrounding rail stations are generally within a 20 to 30 minute walk or 10 minute cycle of Ravenscraig as is Motherwell town centre. The density of mixed facilities will play an important part in minimising short car trips.

As the proposed development at Ravenscraig progresses more detailed discussions with existing site users, future tenants and key stakeholders will begin in order to develop an Action Plan for Walking at Ravenscraig.

A number of infrastructure measures are proposed within the RTS that will benefit both pedestrians and cyclists. The following new links will encourage walking to adjacent areas:

- Green Links - A network of quality shared use paths running north to south and east to west on desire lines to the settlements surrounding the development site;
- Localised shared footpaths through the various areas of development which will link into adjacent areas; the green links and the park space;
- Links west to Merry Street via Allan Street/Coursington Road
- Airbles Road via the Spine Road overbridge link to the south-west of the site;
- to the Shieldmuir and Craigneuk areas via the re-established link to Shieldmuir Street at the south of the site; and
- via the link to Glencairn Avenue in Craigneuk.

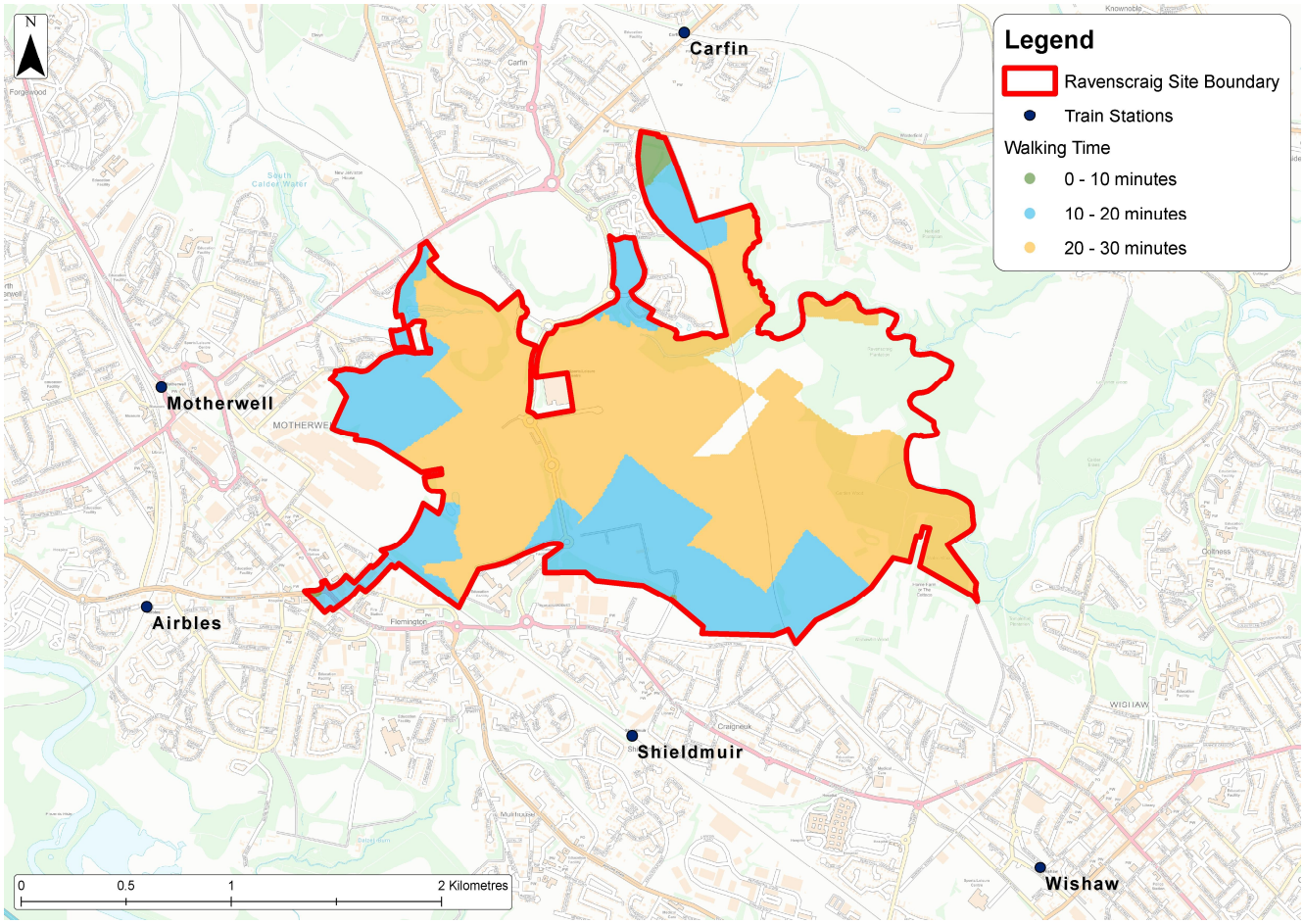
In addition, a number of strategic pedestrian linkages are proposed. The delivery of these will be phased as the development is implemented and will be dependent on achieving the necessary approvals. These are as follows:

- connections from all residential areas to the town centre;
- a recreational route through the South Calder Water valley running east/west through the site;
- links under/over the Wishaw Deviation railway line and the West Coast Main Line (WCML);
- footways to the Country Park to the east; and
- good accessibility to all principal pedestrian destinations in the surrounding area.

Other safe pedestrian routes and facilities, including at-grade crossings, will be developed to complete and expand the network, including links to local facilities and public transport. To establish the walking and cycling patterns from an early stage of the development it is possible that temporary routes are established, primarily through use of existing internal paths and metalled roads of the former works. Suitable signage and wayfinding would complement these routes.

Figure 6.1 illustrates walking catchment thresholds from the following rail stations: Motherwell, Shieldmuir, Carfin, Airbles and Wishaw demonstrating that the majority of the site is within a 20 to 30 minute walk of a rail station. The catchments are based on the proposed main links into the site and the main internal routes.

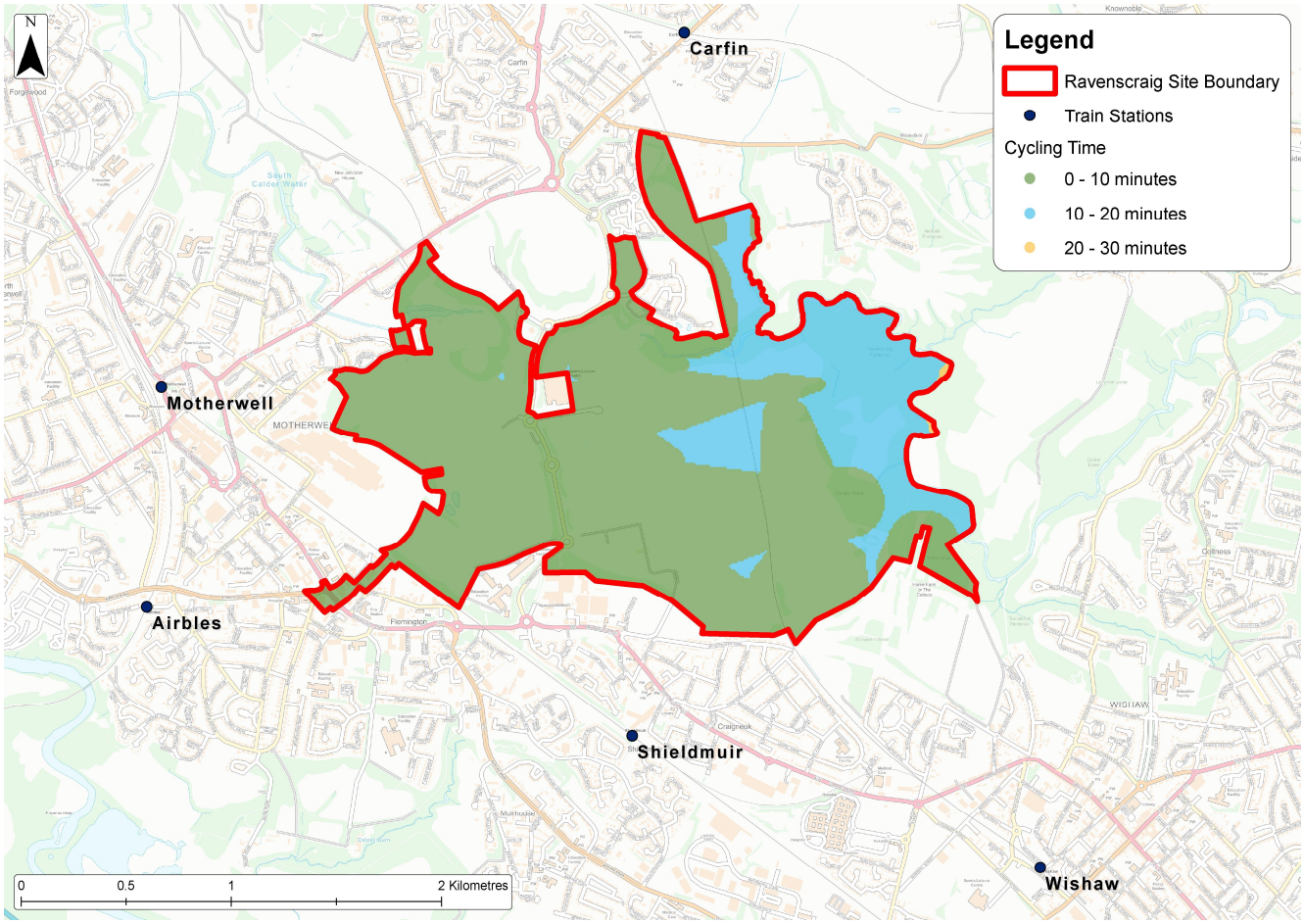
Figure 6.1: Walking catchments from adjacent rail stations



6.3 Cycling

Cycling is a realistic alternative to the private car for journeys up to 8 km (30-minute cycle) as it is cheap, offers reliable journey times, is environmentally friendly and promotes improved health through regular exercise. The whole of the site is within easy cycling distance of the town centre and the site is within cycling distance of Motherwell, Wishaw and Hamilton. The majority of the developed Ravenscraig site is within a ten minute or less cycle of at least one of the surrounding rail stations as illustrated in Figure 6.2.

Figure 6.2: Cycling catchments from adjacent rail stations



As the development site evolves, relevant stakeholders will be consulted to develop an Action Plan for Cycling. This will take account of stakeholder initiatives and project opportunities.

As discussed under walking infrastructure, a number of dedicated traffic free links and routes are proposed within the development for cyclists. In addition to these routes, cyclists will be encouraged to cycle on street within the residential areas and the proposed town centre area of Ravenscraig. On-street cycling on appropriate streets where speeds are lower is in line with Designing Streets and related guidance. On well-designed streets it can cater well for cyclists whilst helping reduce vehicular speeds and improve the appeal of the urban environment. Cyclists will be considered through streets infrastructure design in the form of contra-flow routes, appropriate signing, dedicated at-grade crossing facilities and signal phasing where relevant.

Cycle parking should also be considered within the early design process to ensure the quantity and quality of spaces meets demand, especially pertinent in a mixed use development such as Ravenscraig. Carefully planned cycle parking facilities that are well located and secure helps promote cycling as a mode of transport.

Table 6.1 illustrates *Cycling by Design 2010* parking standards and the anticipated provision required for Ravenscraig developments. These parking standards and provisions are indicative at present and will be guided by future development in consultation with NLC while taking cognisance of the changing transport characteristics of Ravenscraig in the long term.

Table 6.1: Recommended Ravenscraig Cycle Parking Provisions

Category	Minimum Cycle Parking Provision Cycling by Design	Ravenscraig Development	Cycling by Design Provision	Anticipated Provision
Business Services	Staff 1 space per 400 sqm GFA Visitors 1 space + 1 space per 1000 sqm GFA	29,147 sqm GFA (Offices, and Business Park)	Staff: 73 Visitors: 30	Total provision: 103
General Industry	Staff 1 space per 1000 sqm GFA Visitors 1 space	28,148 sqm GFA (Car show rooms and Industry)	Staff: 28 Visitors: 1	Total Provision: 29
Warehouses	Staff: 1 Space per 1600m2 GFA Visitors: 1 Space + 1 Space per 6000 m2	18,600 Sqm GFA (Commerical Warehouses)	Staff: 12 Visitors: 4	Total Provision: 16
Shopping Town Centre	Staff 1 space + 1 space per 10 staff Customers 1 space + 1 space per 250 sqm GFA	29,738 sqm GFA (retail/leisure, supermarket and town centre retail)	Staff: Data unavailable Visitors: 119	Total Provision: 160
Primary School	Staff: 1 Space per 10 staff Pupils: 1 Space per 10 pupils aged 4 or over Visitors: 2 Spaces at main entrance	6,600 sqm GFA	Staff: Data Unavailable Pupils: Data unavailable Visitors: 2	Total Provision: 20
Residential Flats	1 space per dwelling Visitors 1 space per 10 flats at main entrance	220 units	242	Total Provision: 242
Hotels	Staff 1 Space + 1 Space per 20 staff Customers 1 Space per 10 bed spaces	7060 sqm GFA	Data unavailable	Total Provision: 12
Restaurants, Cafes, pubs, etc	Staff 1 Space + 1 Space per 20 staff Customers: 1 Space + 1 Space per 100m2 PFA	1486 sqm GFA[1] (Restaurant and Fast food restaurant)	Staff: Data unavailable Customers: 10	14
Transport Bus/Rail Stations	5 per 100 peak hour passengers	Bus interchange	Data unavailable at present	Total Provision: TBC

[1] Public floor area assumed to be 1,000 sqm

Other cycling measures

Several other measures designed to support cycling are included in the RTPF as follows:

- consideration will be given to potential demand for a public cycle rental scheme, which NLC are currently investigating the feasibility of such a scheme at key locations within the Council area including Strathclyde Park and rail stations. This would facilitate the aim of one stop parking whereby those people who choose to drive to the site would use a central car park and thereafter walk or cycle to other destinations on the site.
- provision of shower, drying & changing facilities and lockers will be provided by employers for use by their employees. It may not be feasible for every development to have its own showers and lockers, and in this case, it may be prudent for developments to share such facilities.
- events and Dr Bike Visits.
- Cycle to Work Scheme offered to employees.
- pool bikes available to employees.

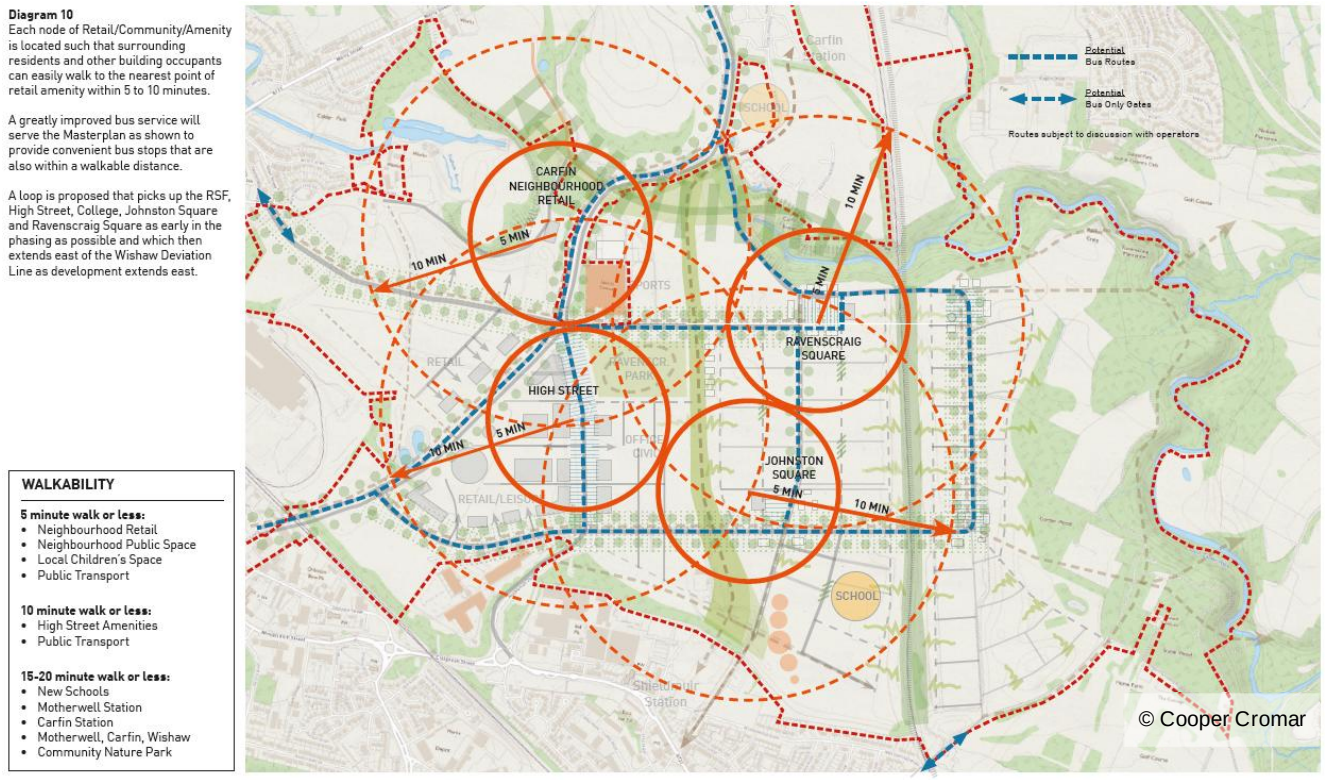
6.4 Bus

Providing access to bus services is a key element of the overall transport strategy for the development and emerged very strongly from the STAG appraisal. In order to address bus service provision to the site and how this could be developed and supported, a comprehensive further area of technical work has been undertaken recently. This has included detailed discussions with SPT and NLC as well as sessions with local bus operators and analysis of information on existing bus services (timetable; routes; fares; etc). From this a range of assumptions were developed to generate a series of costs and revenue for a number of potential demand and route options. These options provide a clear basis for discussions around issues such as the trigger point for introducing services, the phasing of introduction of multiple services, appropriate frequencies and hours of operations and potential subsidy levels through an appropriate Section 75 agreement.

The aforementioned bus operators were in the main enthusiastic about the level of potential development at Ravenscraig in the medium and longer term. In the short term there was a general consensus that the level of development at 2018 didn't provide a clear level of commercial viability for a route through Ravenscraig, however, the established NCL campus and the RSF are substantial trip generators that contain a level of latent bus patronage. As part of the consultation with SPT, Jacobs analysed student postcode data to ascertain origin and destination information of students attending all the campuses of the NCL.

Key bus only routes are proposed to provide greater bus permeability into Ravenscraig. In the west this would be via Allan Street to access the A723 Merry Street. In the east, the bus route onto Glencairn Avenue via the existing rail bridge would be utilised. Both these bus gates would include routing for pedestrians and cyclists.

Figure 6.3 Indicative public transport routes and bus gate locations



As current bus services already operate along logical routes, it is likely that the development would in the longer term be served by a mixture of extending, diverting or new commercial routes operating into the development. However, in the shorter term a totally new circular service has emerged as the most promising option from the detailed work referred to above, requiring some initial subsidy support. There are a number of advantages of the new circular service being a self-standing service independent of existing operations and specifically targeting

rail interchange options at Motherwell and in particular where this is introduced with subsidy at an early stage in the development build out. This type of option also emerged strongly from the STAG 1 Appraisal and provides key links to the rail network by calling at the rail stations in the vicinity. As with other services this would develop and expand in tandem with the build out of Ravenscraig with a three stage approach has been proposed that would be subject to S75 contributions.

The initial stage would see a one-way circular service with a 30 minute frequency being introduced, serving Ravenscraig and Motherwell Railway Station where interchange can occur to provide onward travel, The onward destinations served by rail are key for residents commuting and for Ravenscraig employees travelling to the development. As development expands and this circular service attains a level of commercial viability and subject to a first review of the Public Transport Action Plan (which will consider the take-up and nature of the actual development of the Ravenscraig site and all other relevant public transport provisions at the time), it is envisaged that the service could be enhanced to increase the operation to a two-way service with the introduction of an additional vehicle. This two-way operation could allow extension of the circular route to provide a link to Wishaw Hospital (and Wishaw) thus providing links to the local hospital. The potential for linkages to Carfin could also be explored, providing additional rail connections to those provided at Motherwell. From circa 2028 (and subject to the scale of the actual development and the second review of the Public Transport Action Plan) an additional, third vehicle is proposed that would complement the circular service by providing a route via Ravenscraig linking Motherwell to Coatbridge via Holytown, and Eurocentral and Maxim. This route option would provide enhanced connections to employment and educational opportunities.

A high quality on-street bus interchange comprising of lay-bys for terminating and through services will be provided in the new high street of the town centre. This will be a high-quality facility with appropriate waiting facilities, room for buses to stand, an information point and associated pedestrian crossing facilities.

At the proposed bus interchange located within the high street, travel planning measures should be provided, ideally in the form of notice boards within areas of high footfall demonstrating how to access the interchange, the benefits of travel by public transport, a map illustrating the linkages to the local rail stations and maps for onward travel. All relevant information on websites, social media sites and Apps will also be provided.

In addition to the interchange, bus stop facilities will be located within 400m of all main trip attractors and in areas that encourage footfall with good walking routes to/from the main development areas. The bus shelters, where appropriate, will be attractive, well-lit and contain seating, key information, timetables and the capability to retro fit real-time information.

As mentioned, a Public Transport Action Plan will be developed and regularly reviewed to take forward the detailed implementation of the services, infrastructure and supporting measures detailed above. This will build on the strong communication and collaboration that has already taken place with SPT, NLC and the local bus operators on this key element of the overall transport strategy and potentially widen this to wider stakeholders.

6.5 Rail

The 2005 planning consent included a condition for the provision of a new railway station on the Wishaw Deviation Line (WDL), however, this was amended in 2014 such that a comprehensive bus strategy would be provided if a railway station was not delivered. Following extensive consultation with relevant stakeholders and undertaking a STAG pre-appraisal and STAG 1 studies in conjunction with this Masterplan TA the conclusion is that a rail station is not currently feasible for a number of reasons:

- Impact to timetable and other services
- passenger journey time impact as existing services calling at Motherwell, with its considerable interchange opportunities, would be diverted via a new Ravenscraig station
- The EGIP (Edinburgh to Glasgow Improvement Programme) will enhance services at Holytown and Carfin from 2019, however, any benefit would be reduced or cancelled out completely due to a Ravenscraig service on the WDL

6.6 Strategic Road Infrastructure

The proposed strategic road infrastructure comprises of the following:

- The upgrading of the Hamilton Road/Airbles Road junction

- The formation of a new signalised roundabout at Airbles Road/Windmillhill Street to provide the dualled link to Ravenscraig
- The WCML overbridge and link road to the existing roundabout at the Regional Sports Facility.

Further detail on the assessment scenarios are provide in Chapter 7.

6.7 Internal Road Infrastructure

The internal road infrastructure is as detailed within the Masterplan layout with access roads provided from Robberhall Road and New Craig Road linking into the main development areas. As identified in Chapter 4 the hierarchy of road and streets will maximise bus penetration throughout the site.

The residential areas (W1 to W5 on the phasing plan) are located to the east side of the WDL. For all vehicular access it is proposed that there will be two access points. The access to the north of these residential areas will require the formation of road and footway infrastructure below the railway viaduct as illustrated below in Figure 6.4. There will be necessary engineering works to accommodate a new carriageway, however, the available width of approximately 13m between the viaduct pier and the concrete abutment will accommodate as a minimum a carriageway of 7.3m and a 2m footway to either side. The vertical clearance is approximately 4.5m to 5m. This might allow for future access by double decker, if this is appropriate but this would require further detailed investigations and design work. For example, there could be the potential to increase the clearance height to the viaduct by reducing the current ground level although additional engineering works would be required.

Figure 6.4: Wishaw Deviation Line Viaduct within Ravenscraig site

The second access to the east side of the WDL will be formed approximately half way between the northern access road and the southern link through to Glencairn Avenue. This will be formed by creating an underpass of the WDL line. This will be engineered accordingly to provide appropriate carriageway and footway widths as well as the required vertical clearance. These access points were established following high level site investigation work which had considered the feasibility of the current pedestrian access from Glencairn Avenue being used as a vehicular access. This was rejected as being unsuitable for two way vehicular traffic without

considerable engineering works, however, it is proposed as a potential bus link albeit the bridge height of 4.1m would preclude double deck bus operation using this access point to Ravenscraig.

The internal road network of the Masterplan will also provide an additional access to the RSF. By extending O'Donnell Way eastwards it will open up the RSF to the residential areas to the east as well as alleviating exiting traffic following regional and national events at the RSF.

6.8 Car Parking

As outlined in section 4.8 It is proposed that a parking strategy is implemented for the site which will be a departure from the rigid 'predict and provide' standards, and will instead consider shared parking between land uses. A holistic approach will be required as changing trends in work and leisure activity means that overlapping of demand is likely to occur at certain locations. Notwithstanding, the following section outlines the appropriate parking standards that should currently be considered for land uses within the development. It should be noted that for non-residential land uses the Scottish Planning Policy maximum parking standards have been used, and North Lanarkshire Council minimum parking standards have been used for residential land uses. It should be recognised that by providing a plentiful free supply of car parking, the car is likely to remain the dominant travel mode share which reduce the effectiveness of the RTPF to changes travel behaviour.

As parking rates are expected to change over the life of the Masterplan it is predicted that parking provision will be determined and agreed as part of detailed planning applications.

Town Centre Parking

Table 5.4 illustrates parking standards and the maximum Ravenscraig parking provision for the respective areas of the development.

Table 6.2: Town Centre Parking

Land Use	National Maximum Standard	National Maximum Provision	Disabled Parking Standard	Disabled Parking Provision
Class 4 Offices (30,744 sqm)	1 space per 30m^2	1,025	5% of Maximum Standard	51
Hotel (150 beds)	1 space per 2.5 bed spaces (+ 1 space per 3 staff*)	50	6% of Maximum Standard	3
Flats (220 units)	Flats 1.5 spaces per unit (assume 1-2 beds)	330		
Food Retail (5574 sqm)	1 space per 14 m^2	398	4 spaces plus 4% of Maximum	20
Non-Food Retail (24,164 sqm)	1 space per 20m^2	1,208	4 spaces plus 4% of maximum	52
Business including Business Park and Restaurant (15,143 sqm)	1 space per 30m^2	505	5% of maximum standard	25
Total		**3,516**		**151**

*assume 30 staff on site at any one time

Disabled and parent & child parking will be provided within the town centre to NLC standards. The RTP details the consideration of the provision of electric charging points and car sharing spaces.

Employment Zones

Table 6.3 illustrates the employment zones parking standards and proposed maximum provision.

Table 6.3: Employment Zones Parking

Land Use	National Maximum Standard	National Maximum Provision	Disabled Parking Standard	Disabled Parking Provision
Industrial Units Including Bakery, and Commercial Warehouses (36,343 sqm)	1 space per 30 sqm GFA	1,211	6 spaces plus 2% of Maximum Standard	30
Car show rooms and roadside amenities (11,891 sqm)	2 spaces per 100 sqm GFA	238	4 spaces plus 4% of Maximum Standard	14
Hotel assumed 100 beds and 30 staff	1 space per 2.5 bed spaces (+ 1 space per 3 staff*)	50	6% of maximum Standard	3
Offices (9300 sqm)	1 space per 30m^2	310	6 spaces plus 2% of Maximum Standard	12
Fast Food Restaurant (743 sqm)	1 space per 30m^2	25	6% of Maximum Standard	3
Total		**1,834**		**62**

*assume 25 staff on site at any one time

As is the case with the Town Centre, parking for the employment zone is indicative and subject to final development layouts, however, an initial assessment indicates a maximum provision of 1856 spaces with an additional 63 disabled spaces.

Residential Parking

Table 6.4 illustrates North Lanarkshire Councils parking standards for residential land uses. While much of this parking is provided within the curtilage of the home owner there is the relevant provision for visitors in unallocated spaces and also flatted dwellings.

Table 6.4: Residential Parking Standards

Type	Minimum Level of Provision	Form
Detached	1-2 Bedroom = 2 Spaces 3-4 Bedroom = 3 Spaces 5 + Bedroom = 4 Spaces	In-curtilage Parking Double Width Driveways in Front of Garage
Semi-Detached	1-2 Bedroom = 2 Spaces 3-4 Bedroom = 3 Spaces 5 + Bedroom = 4 Spaces	In-curtilage Parking Double Width Driveways in Front of Garage
End of Terrace	1-2 Bedroom = 2 Spaces 3-4 Bedroom = 3 Spaces 5 + Bedroom = 4 Spaces	Parking courts considered if spaces are allocated relative to houses
Mid Terrace	2 Spaces	Parking courts considered if spaces are allocated relative to houses
Flats	1-2 Bedroom = 2 Spaces 3-4 Bedroom = 3 Spaces	Spaces in parking courts / areas to be located relative to flats
Un-allocated Parking	0.3 0.5	Lay-by format, desirable in pairs (minimum) Shared Surfaces (right angle format)

Car Park Management Systems

The provision of car park management systems will be considered. The Ravenscraig land uses which could feature parking systems are typically employment sites such as the industrial units within the employment zones. This could also be introduced at hotels and community facilities, should segregated staff/visitor parking be provided.

Car park demand is often unregulated, and the allocation of car park spaces can be seen as unfair. A needs-based permit system is considered an equitable way to allocate parking and the following criteria would normally feature in such a system:

- personal mobility difficulties;
- car sharing;
- out-of-hours work responsibilities;
- caring responsibilities that necessitate a car; and
- home address out with a feasible walking/ cycling distance or an address poorly served by public transport.

Should a permit system be required at any facility within Ravenscraig, it is essential that it is consistent with the objectives of the RTPF. Should a permit system be required, a personalised travel planning programme should be considered to extend to employers and employees, managed by the RTPC. Personalised travel planning involves individuals being provided with the information they need to be able to undertake their daily travel requirements using sustainable modes. Further details are provided within the RTPF.

7. Travel Demands & Transport Impacts

7.1 Introduction

This TA has been prepared with reference to Transport Scotland's "Transport Assessment Guidance". This methodology requires the total number of person trips generated by a development to be determined, rather than considering solely vehicle trips. Modal split characteristics are then used to determine the number of private car trips, public transport trips and walking and cycling trips likely to be generated by the development. The approach to mode share targets has been discussed and agreed and is set out in section 4.6.

7.2 People Trips

To determine the total number of person trips generated by the proposed development and subsequently the numbers by each mode the following methodology was used.

Residential Land Use

The observed vehicle movements were used to establish the current vehicular trip generation from this residential area within the peak periods. Given that the number of occupied houses is currently known (circa 500) a residential vehicular trip rate for Ravenscraig was established. The people trip generation was calculated using this trip rate with the mode share established from census data in 2011.

The future overall housing mix on the wider site is expected to be broadly consistent with what has been built-out to date. Parts of the site will however be developed at higher densities than others as envisaged in the masterplan, and the development will clearly respond to market demand over its lifetime and other factors e.g. available grant aid and NLC's housing department requirements.

The approximate percentage mix of house types currently built out is as follows:

- 2 bed units (including small number of flatted units) = 23% - This, in part, reflected NLC Housing Dept involvement in the first housing development on the site from 2009 onwards.
- 3 bed units = 32%
- 4 bed units = 45%

It is envisaged that the Cleekhimin part of the site, will comprise of a higher percentage of three and four bed units. Whereas, in contrast, the Keepmoat development, which has been recently consented, has 95% of its units as smaller two and three bed units, with only 5% as four bed units.

In addition, there is a conditional requirement on the currently consented Ravenscraig permission for a minimum affordable / rented / social housing provision on the site of 10%.

Other Land Use

Version 7.4.2 of the TRICS database was used to calculate the total number of person trips to and from the proposed development non-residential land uses. People trips were derived from a number of development sites and the agreed modal split applied to the total number of people trips to determine the numbers of trips generated by each mode.

Table 7.1 indicates the land uses and floor areas for all developments considered within the traffic impact assessment. These have been defined by which zone they relate to.

Base and future year mode split targets are given in Table 7.2. These have been used to estimate the number of trips generated by each masterplan zone.

From the 2011 census, Car Driver trips make up 69% of total travel demand; a target mode share of 57% is assumed in 2028.

Base 2045 Car Driver mode share is forecast to also be 57%, with a target mode share of 48%.

Table 7.1: Ravenscraig Masterplan Zones (includes built out and consented housing numbers)

Zone	Land Use	Area / No.
A1	Residential	555 Houses – partial build out
A2	Residential	203 Houses – consented
A3	Residential	109 Houses - consented
C1*	Residential	202 Houses
P1	Residential	206 Houses
P2	Residential	151 Houses
P3	Residential	209 Houses
P4	Residential	207 Houses
P5	Residential	173 Flats
P6	Residential	106 Houses
P7	Residential	100 Houses
S1	Residential	436 Houses
S2	Residential	101 Houses
S3	Residential	106 Houses
W1	Residential	69 Houses
W2	Residential	138 Houses
W3	Residential	207 Houses
W4	Residential	206 Houses
W5	Residential	620 Houses
SCH 1	Primary School	1500m^2
SCH 2	Primary School	2500m^2
E1 and E3	Bakery, Car show rooms, Roadside retail and an Industrial Unit	4645m^2, 3160m^2, 1486m^2 and 5109m^2
E2, E4, E5 and E6	Car show rooms, commercial warehouses and an industrial Unit	7245m^2, 18600m^2 and 7989m^2
E3 (pass-by) **	Petrol Fillings Station and Drive through Restaurant	1115m^2 and 743m^2
E7	Hotel and Offices	2415m^2 and 9300m^2
TC 1	Anchor, Supermarket, Transport Hub	9300m^2, 5574m^2 and 325m^2
TC 2-3	Residential, Leisure/Retail, Restaurant, Offices, Hotel	220 flats, 14864m^2, 743m^2, 2321m^2 and 4645m^2
TC 4 and TC 5	Class 4, Business Park,	5037m^2, 7200m^2, 5740m^2, 10446m^2, 14400m^2,
Tennis Centre	Sports Scotland	5200m^2
Aqua Centre	Sports Scotland	7800m^2
College	NCL Motherwell Campus	As built
Sports Centre	Sports Scotland	As built
Marstons	Pub and Hotel	As built

Notes: * Development of Plot C1 subject to resolution of acoustic issues relative to the adjacent BOC Plant

** - E3 (Pass By) excluded due to Petrol Filling Stations and Drive through restaurants considered as pass-by trips

Table 7.2: Ravenscraig Modal Splits

Mode	2011 Census	Target 2028	Base 2045	Target 2045
Work from Home	11%	11%	11%	11%
Car Driver	69%	57%	57%	48%
Car Passenger	10%	10%	10%	12%
Bus or Rail	7%	14%	14%	18%
Walk or Cycle	2%	7%	7%	10%
Other	1%	1%	1%	1%

7.3 Trip Generation

As described previously, two assessment years have been considered within the Paramics modelling, 2028 and 2045. The "2028 with development" models represent a future year when the phased build out, as predicted at 2028, has been constructed. The "2045 with development" models represents a future year when the full masterplan has been completed.

For the purposes of this assessment it has been assumed that Ravenscraig would account for all local development growth in order for the direct traffic impacts of the Ravenscraig Masterplan on the road network to be assessed. Notwithstanding, a to consider background growth and committed developments 1% growth per annum between 2018 and 2028 has been applied. Further growth has not been applied beyond 2028 due to uncertainties in the scale of other development beyond this point.

Base 2045 mode share levels assume that there will be no further reduction in car mode share from 2028. National and local policy interventions, proposed sustainable infrastructure improvements, enhancements to the wider rail network i.e. the Shotts Line and changing public attitudes to the environment, there is an expectation that there will be a shift in mode share, away for the car, over the 27 year phased build out. Maintaining the 2028 mode share through to 2045, ensures a robust assessment of future travel demand and helps capture any potential for induced traffic following full completion of the full Pan Lanarkshire Orbital Route.

2028 Target and 2045 Base/Pessimistic Mode Share

Table 7.3 provides a summary of the total number of anticipated vehicles associated with the Ravenscraig Masterplan. It is these generations which were utilised in the traffic impact assessment using the Paramics model. Appendix C contains the full person and vehicle trip generations for each land use.

Total two-way (3 hour) trip generation is:

- 2028 AM 07:00-10:00 3,331
- 2028 PM 16:00-19:00 4,317
- 2045 AM 07:00-10:00 8,422
- 2045 PM 16:00-19:00 10,807

2045 Realistic Mode Share Target

This scenario reflects the 9% mode shift between 2028 and 2045 due to the sustainable infrastructure, RTP promotion and local and national policy.

Total two-way (3 hour) trip generation with this scenario is:

- 2045 AM 0700-1000 7,040
- 2045 PM 1600-1900 9,201
- Pass-by and Internal Trips

As agreed with North Lanarkshire Council, at each school, 25% of trips have been assumed to be external to the site. Other pass-by / internal to Ravenscraig trip assumptions are as follows:

- Site E1 - all trips to the roadside retail would be pass-by

- Site TC1 – 50% of supermarket trips are pass-by; 25% of non-food retail trips are pass-by
- Site TC2 – 50% of leisure trips are pass-by

The use of 50% pass-by for supermarket trips can be justified by the following:

- A significant number of peak hour supermarket trips on a weekday are predicted to coincide with either a trip to/from home or work and therefore a significant number of these trips will be accounted for in the trip generation for the housing and employment development proposed on the site.
- Peak hour trips will also be made up of existing through traffic movements diverting via the supermarket.

  The use of the census data to calculate the mode share, as shown in Table 4.2, shows that supermarket trips have a car driver mode share considerably lower (-14%) than that assumed within the assessment.

Table 7.3: Ravenscraig Masterplan Vehicle Trip Generation

		2028				2045 (Base / Pessimistic)			
	Model Zone	07:00-10:00		16:00-19:00		07:00-10:00		16:00-19:00	
Development		Arrive	Depart	Arrive	Depart	Arrive	Depart	Arrive	Depart
Phoenix Park	434	41	94	112	75	41	94	112	75
Phoenix Park	600	111	255	304	203	111	255	304	203
Taylor Wimpey Phase 1	601	37	84	100	67	37	84	100	67
A1	602	61	141	168	112	61	141	168	112
A2	603	84	189	221	148	84	189	221	148
SCH 1	604	43	16	3	9	43	16	3	9
C1	605	76	174	208	139	76	174	208	139
Tennis Centre	606	17	8	72	52	17	8	72	52
Park	607	0	1	2	1	0	1	2	1
P1	608	39	89	106	71	39	89	106	71
P1	609	39	89	106	71	39	89	106	71
E1	610	38	12	14	38	38	12	14	38
E2	611	48	24	42	66	48	24	42	66
E3	612	38	12	14	38	38	12	14	38
TC1	613	352	346	485	453	352	346	485	453
TC4	614	514	84	99	474	514	84	99	474
P2	615	57	130	155	104	57	130	155	104
P7	616	38	86	103	69	38	86	103	69
Aqua Centre	617					25	13	112	78
E4	618					27	17	8	23
TC2	619					174	158	276	313
TC5	620					776	135	155	702
P5	621					65	149	178	119
P3	622					79	180	215	144
SCH 2	623					72	26	5	15
E5	624					13	9	4	11
E7	625					322	76	84	302
P6	626					40	91	109	73
P4	627					78	179	213	142
E6	628					44	12	8	38
TC3	629					25	50	46	33
S2	630					38	87	104	69
S3	631					40	91	109	73
S1	632					164	376	449	299
W1	633					26	60	71	47
W3	634					78	179	213	142
W2	635					52	119	142	95
W4	636					78	179	212	141
W5	638					180	511	565	353
Total		**1,592**	**1,738**	**2,204**	**2,113**	**3,989**	**4,433**	**5,482**	**5,325**

Notes: * Development of Plot C1 subject to resolution of acoustic issues relative to the adjacent BOC Plant

** - E3 (Pass By) excluded due to Petrol Filling Stations and Drive through restaurants considered as pass-by trips

7.4 Travel Demand Conclusions

Travel demands illustrated in this Chapter are indicative and robust as:

- the revised Ravenscraig Masterplan is an evolving process and, while assumptions have been made on development content, not all developers are known or what type of facilities will be developed;
- development GFAs are therefore also indicative;
- robust trip rates have been used where possible, for example office trip rates have been used for Class 4 use which may be office or industrial;
- In 2045 a robust mode share, where it remains at 2028 levels has been assessed in addition to a more realistic scenario with a 9% mode shift from car travel to sustainable modes between 2028 and 2045.

It is important to stress that the anticipated number of person and vehicle trips presented in this Chapter recognises the long-term aspiration of the site to become a *'Sustainable Community'*.

7.5 Trip Distribution - Gravity Model

The distribution of development trips has been calculated using a spreadsheet gravity model; three levels of detail apply.

1. External to the Paramics model, trip distribution is based on LATIS employment data by zone.
2. Zones in North and South Lanarkshire have analysed in more detail with each assigned to an appropriate external Paramics zone.
3. An internal distribution within the Paramics model has also developed.

Based on the above methodology, 39% of development trips have an origin or destination within the Paramics model. Approximately 50% and 14% of trips are between Ravenscraig and North and South Lanarkshire respectively. A further 16% of trips have an origin or destination in Glasgow. The distribution of these trips to Glasgow has been assumed to vary depending on the completion of the A723 dualling, as given in Table 7.4. Trips to destinations to the west of Glasgow are maintained as routing via Airbles Road and the M74.

Table 7.4: Distribution of Ravenscraig trips to Glasgow via Airbles Road / M74 and A723 / M8

	Via Airbles Road / M74	Via A723 / M8
No A723 dualling	70	30
With A723 dualling	50	50

A summary of the final trip distribution by local authority is given in Table 7.5.

Table 7.5: Ravenscraig Trip Distribution

Local Authority	% Distribution	Local Authority	% Distribution
Dumfries & Galloway	0.27%	Renfrewshire	2.02%
Scottish Borders	0.25%	Inverclyde	0.37%
East Lothian	0.18%	West Dunbartonshire	0.74%
Midlothian	0.30%	Stirling	0.90%
City of Edinburgh	3.67%	Clackmannan	0.33%
West Lothian	2.30%	Fife	1.39%
South Lanarkshire	13.69%	Perth & Kinross	0.34%
East Ayrshire	0.90%	Dundee City	0.23%
South Ayrshire	0.52%	Angus	0.08%
North Ayrshire	0.61%	Aberdeenshire	0.07%
East Renfrewshire	0.78%	Aberdeen	0.13%
Glasgow	16.44%	Moray	0.03%
North Lanarkshire	**50.18%**	Argyll & Bute	0.25%
Falkirk	1.78%	Highland	0.10%
East Dunbartonshire	1.15%	Rest of UK	0.00%

7.6 Transport Study Impact

Introduction

This section summarises the key findings of the transport impact study. Transport impacts have been assessed using S-Paramics 2010.0 microsimulation software, LINSIG and ARCADY.

A total of seven scenarios have been considered as summarised in Table 7.6.

Table 7.6: Modelled Scenarios

No.	Scenario Description	Development Content	WCML Overbridge (incl. Airbles Road works)	A723 Dualling (Spine Road to M8)
1	Base 2018	As 2017 but with A1 housing and Marstons Hotel completed	No	No
2	2028 (Pre WCML)	A2, A3 Housing, Primary School, Park, Potentially C1 Housing, Sports centre expansion, P1, P2, P7 Housing, E1, E2, E3 **Excludes town centre (TC1 and TC4)**	No	No
3	Not reported as scenarios 2 and 4 were considered robust			
4	2028 (With WCML, No A723 dualling)	A2, A3 Housing, Primary School, Park, Potentially C1 Housing, Sports centre expansion, P1, P2, P7 Housing, E1, E2, E3, TC1 and TC4	Yes	No
5	2028 (With WCML and A723 dualling) – not reported as it was considered that A723 will not be constructed by 2028			
6	2045 (No A723 dualling) not reported			
7	2045 (With A723 dualling)	Full development with Hamilton Rd/Airbles Rd mitigation	Yes	Yes

A summary of the Paramics base model calibration is provided in Appendix D, inclusive of traffic survey methodologies. The appendix also summarises the future year Paramics scenario testing inclusive of trip distribution assumptions. The following sections provide a summary of this report.

2018 Base Scenario

From onsite observations there are currently a number of pressure points on the road network around Ravenscraig. The A721 Craigneuk Street roundabout junction with Shields Road is a constraint in both peak periods. The Shields Road approach has a dedicated left turn lane into Windmillhill Street and traffic using this has to merge with traffic from Craigneuk Street and Orbiston Street exiting the roundabout. The merge is unable to cope with peak hour volumes and the proximity of a bus layby and pedestrian crossing exacerbates the issue. The result is that merging traffic blocks back to Shields Road and Craigneuk Street, resulting in slow moving traffic and queues on all approaches to the roundabout. Given the merging lanes and the infrastructure downstream, significant additional traffic along this route, a significant proportion of which will be background traffic, will worsen existing congestion.

2028 Without and With the WCML Link Road

Forecast 2028 development traffic has been tested both without and with the link road. Background growth of 1% per annum has been applied to the strategic road network up to and including 2028. No further background growth has been applied between 2028 and 2045 in agreement with NLC and their consultants.

Without the WCML link road, it has been assumed that the feasibility of the proposed town centre development content will be limited. Therefore, it is assumed that no town centre development will be constructed in the absence of the WCML link road.

Model results indicate that proposed additional masterplan traffic can be accommodated on the existing road network, with only minor mitigation required at the A721 / Shields Road and A721 / Robberhall Roundabouts. This is discussed in more detail in Section 7.7 below. Most new development in the early phases of construction is located to the north of the site and so traffic impacts on Craigneuk Street and Airbles Road are relatively limited.

In order to attract and accommodate further development, including the town centre development, the WCML link is required to be constructed by 2028. This missing link is an important section of the Pan-Lanarkshire Orbital Route. It completes a bypass of Motherwell town centre and provides substantial relief to the A721 corridor from Airbles Road through to Robberhall Road.

Figures 7.1 and 7.2 illustrate morning peak traffic conditions in the vicinity of Craigneuk Street at approximately 08:30, without and with the new link road respectively. The new road effectively provides a bypass between Airbles Road / Windmillhill Street and the A723, forming a key link of the Pan-Lanarkshire Orbital Route.

Figure 7.1: 2028 Without WCML Link Road

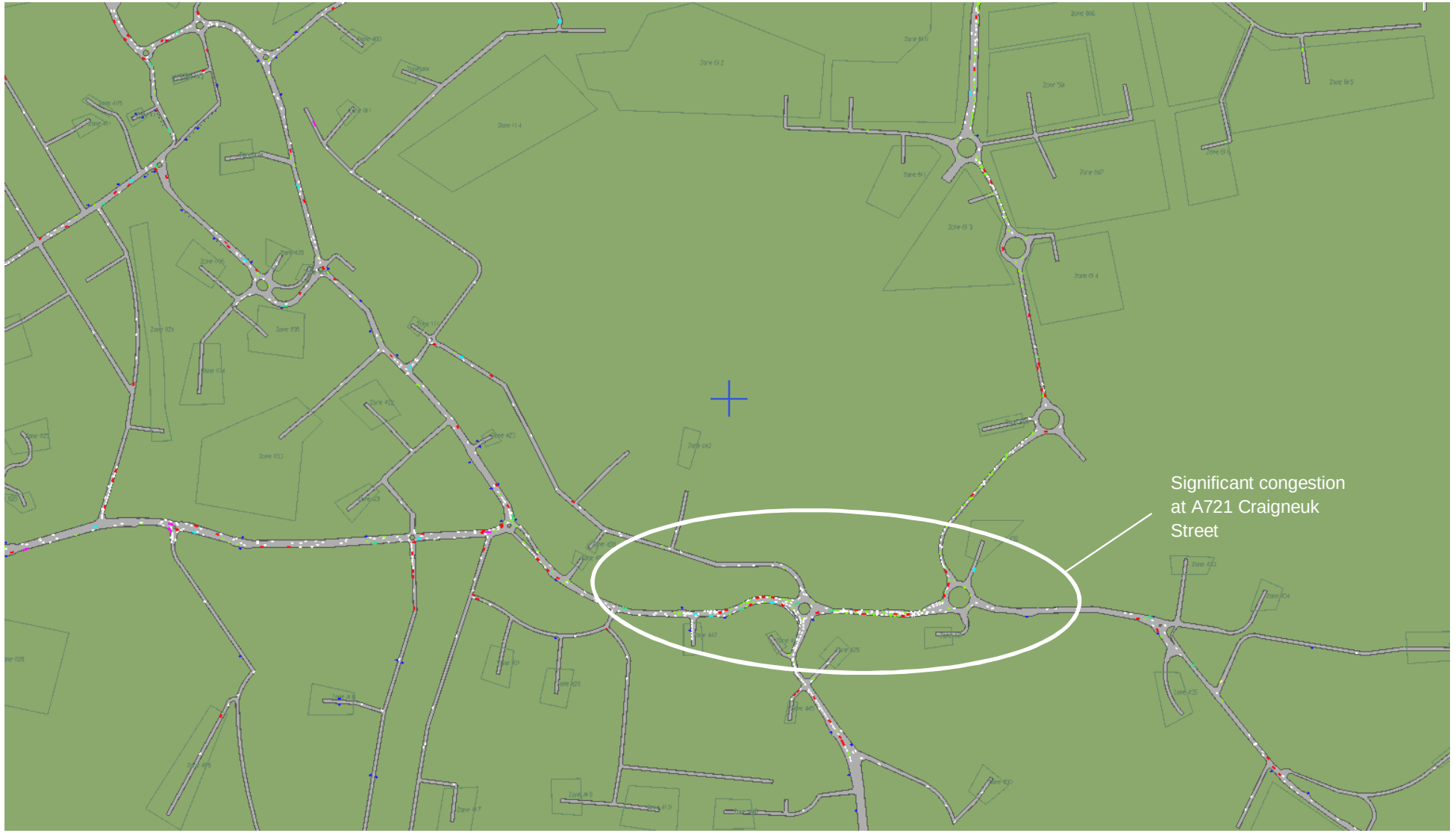
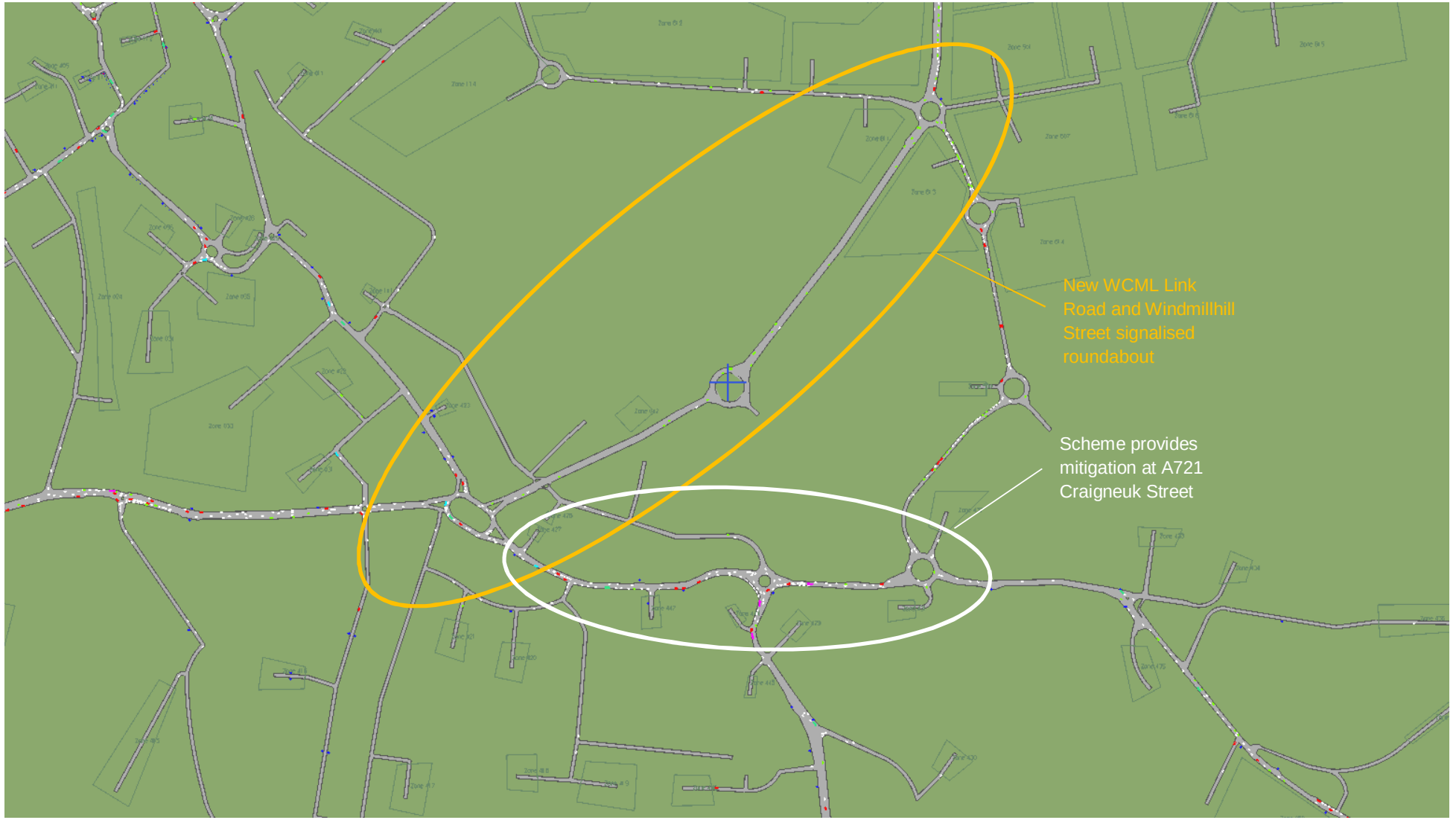


Figure 7.2: 2028 With WCML Link Road



The link road would connect with Airbles Road / Windmillhill Street / Craigneuk Street at a new signalised roundabout. An indicative layout, from Paramics, is illustrated in Figure 7.3. The proposed cycle time is 50 seconds and pedestrian facilities are provided close to the junction on each arm. An indicative proposed layout is also illustrated in drawing B2316000-A8 in Appendix F. Through consultation with NLC this layout was devised as an alternative to B2316000-A4, which is also included in Appendix F, as it removes pedestrians routing via the central island of the roundabout.

Figure 7.3: Windmillhill St Roundabout

2045 Development Impacts

By 2045, the Ravenscraig development will generate significant additional traffic, as detailed in Table 7.3. Additional development has been tested with the A723 dualling. With the dualling scheme, a slightly different trip distribution is assumed with additional traffic towards Glasgow forecast to use the dualled A723 to route via the M8 (Table 7.4).

All mitigation has been targeted at improving the operation of the Pan Lanarkshire Orbital Route. The WCML Link Road and Airbles Road Windmillhill Street roundabout are included in all 2045 scenarios.

Modelling indicates that by 2045, significant queueing occurs at the Hamilton Road / Airbles Road junction, especially in the morning peak.

A number of mitigation options have been modelled in Paramics including:

- grade separation
- a signalised roundabout, and
- and an additional right turn lane

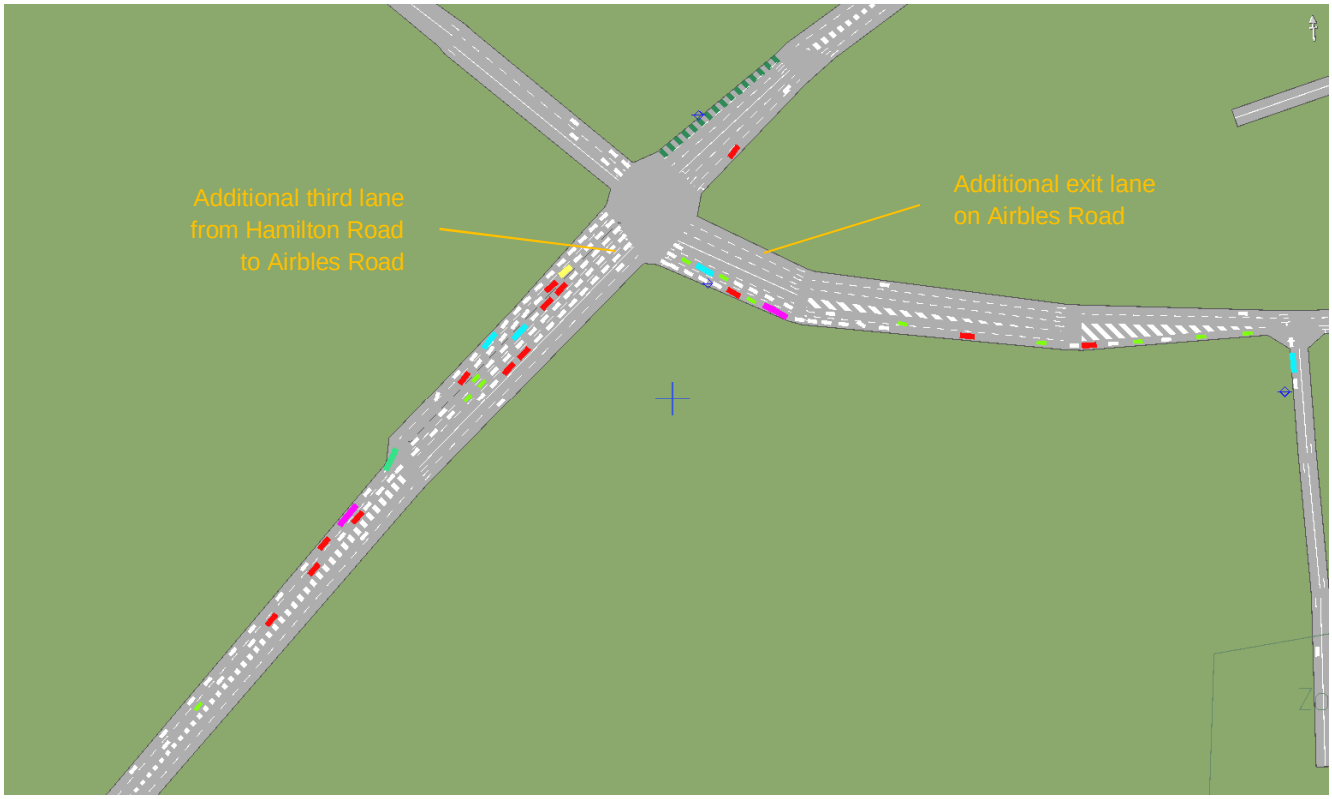
Grade separation has been ruled out due to the environmental impact of the proposal. The visual impact would be significant; similarly, noise impacts would be difficult to mitigate against.

A signalised gyratory is also problematic from an environmental perspective. Significant land take is required, potentially impacting on Strathclyde Country Park. The road alignment would result in traffic being closer to neighbouring residential properties resulting in additional noise, visual and air quality impacts.

Construction of both these options would be extremely challenging.

The recommended option, shown in Figure 7.4, is to provide an additional right turn lane from Hamilton Road to Airbles Road, with an additional flare to the east along Airbles Road. Adequate additional junction capacity is provided while minimising land take and environmental impacts. Junction staging would be unchanged from the existing with a cycle time of 120 seconds assumed. The indicative layout, provided in Appendix F, has been subject to a Stage 1 Road Safety Audit, as has the Windmillhill Street signalised roundabout, which will be submitted as part of the PPiP.

Figure 7.4: Hamilton Road / Airbles Road Proposed Mitigation



A full summary of all the supporting Paramics modelling is given in Appendix D of the Transport Assessment. Individual junction modelling has also been undertaken to validate each junction design; a summary of this analysis and the indicative layouts of the new junction layouts is provided in Appendix F.

Figure 7.5 highlights the proposed strategic mitigation along the route of the Pan Lanarkshire Orbital Route. Further localised mitigation may be required as the construction of the masterplan proceeds. Additional individual improvement schemes will be progressed as part of the detailed planning application for each new development site.

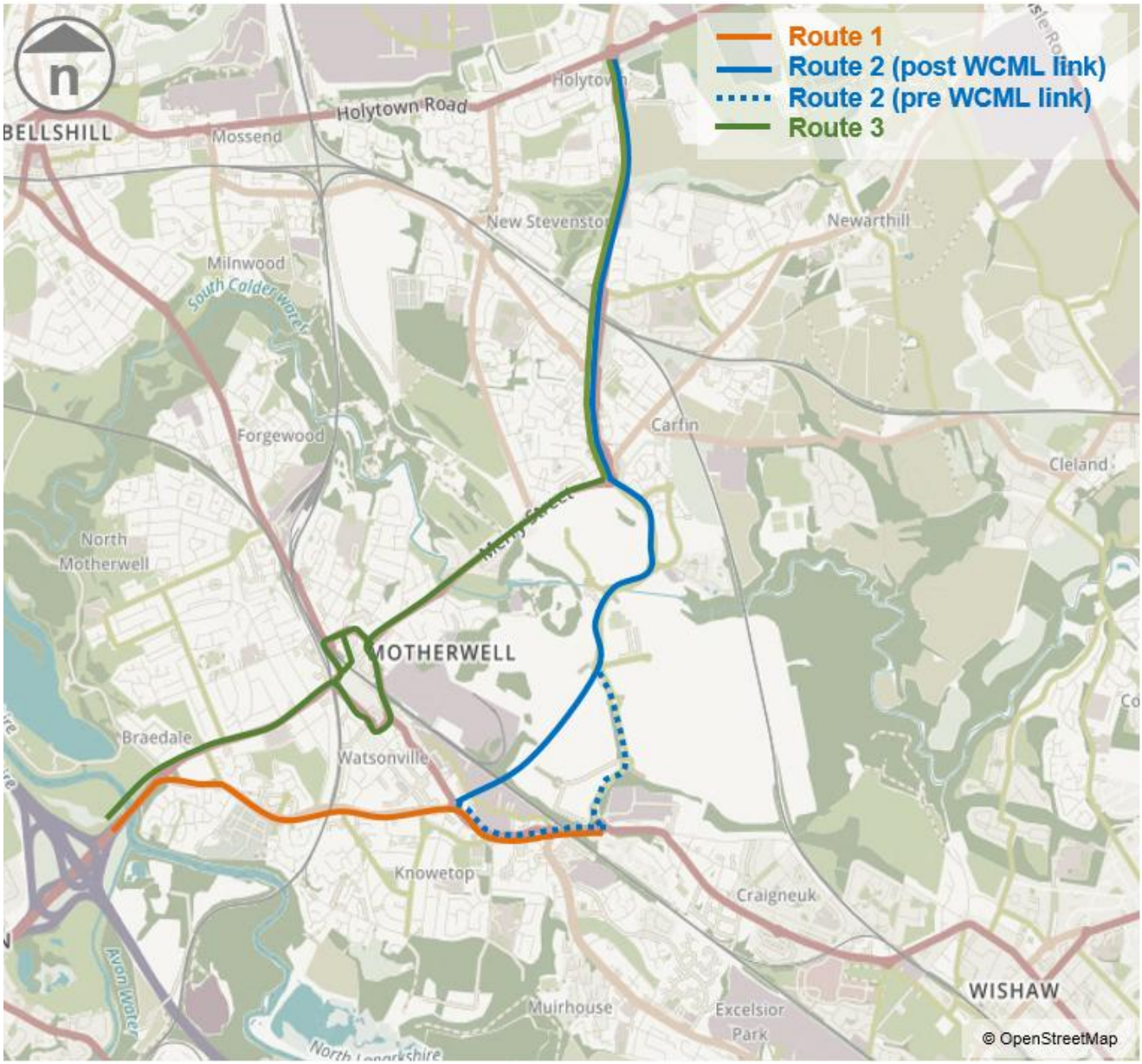
The focus of these interventions will be along the Orbital Route in order to minimise and discourage traffic growth through Motherwell. Potential improvement proposals in the town centre will allow NLC to focus on enhancing walking, cycling and public transport connectivity.

Figure 7.5: 2045 Mitigation – Targeted on the Pan Lanarkshire Orbital Route

Journey Times

Journey times for three key routes have been extracted from the base and the future year models to provide an indication of the likely changes between scenarios. The three journey time routes used for this analysis are outlined in Figure 7.6 below.

Figure 7.6: Journey Time Routes



Route 1 provides an indication of journey times for all vehicles travelling between Hamilton Rd and Wishaw via Craigneuk St.

Route 2 provides an indication of journey times travelling from Hamilton Road via Airbles Road and New Craig Rd onto the A723. This journey time route varies between the current route through Ravenscraig and via the proposed WCML Link Road.

Route 3 provides an indication of journey times for all vehicles travelling via Hamilton Rd, Merry St and the A723 including vehicles travelling around the periphery of Motherwell town centre.

Journey times for each route have been calculated by direction. To ensure that a high number of records are collected for each model, routes have been divided into sections. The sum of the average journey time on each section provides a journey time for the full route.

Results have been obtained for each model year and scenario. The 2045 scenarios are based on the pessimistic mode share for robustness. All times are a weighted average of five model runs for each of the following:

- Base 2028 Model (+1% growth)
- 2028 S2 (Without WCML Link Rd)
- 2028 S4 (With WCML Link Rd)
- 2045 S7 V2_2 (With A723 Dualling with additional lanes and improvements to Hamilton Rd/ Airbles Rd Junction

Summary times by scenario are provided in Table 7.6 for each of the three routes shown in Figure 7.6 above.

Table 7.6: Journey Times by Route (2045 Scenarios include Pessimistic Mode Share)

	Route	Via	2028 Base	2028 S2	2028 S4	2045 S7
	08:00-09:00					
1 EB	Hamilton Rd to Wishaw	Craigneuk St	09:48	10:00	09:28	08:42
1 WB	Wishaw to Hamilton Rd		06:33	07:14	07:31	08:13
2 NB	Hamilton Rd to A723	New Craig Rd	17:40	18:03	17:20	15:19
2 SB	A723 to Hamilton Rd		13:19	13:54	12:17	13:42
3 NB	Hamilton Rd to A723	Merry St	15:23	16:17	17:40	13:49
3 SB	A723 to Hamilton Rd		09:43	10:26	11:36	13:13
	17:00-18:00					
1 EB	Hamilton Rd to Wishaw	Craigneuk St	07:13	09:26	07:32	08:40
1 WB	Wishaw to Hamilton Rd		06:14	06:48	06:39	07:48
2 NB	Hamilton Rd to A723	New Craig Rd	14:21	16:33	13:05	14:34
2 SB	A723 to Hamilton Rd		15:01	18:04	13:15	13:11
3 NB	Hamilton Rd to A723	Merry St	13:18	19:26	13:51	14:38
3 SB	A723 to Hamilton Rd		09:23	13:15	12:11	12:50

In both the morning and evening peak hours, journey times increase in 2028 Scenario 2, where no mitigation is provided. The effect on journey times resulting from the introduction of the proposed new WCML Link Road and subsequent junction improvements at the Airbles Road / Windmillhill Street junction are clearly identified when comparing both 2028 modelled scenarios (S4 against S2), especially in the evening peak hour.

Journey times in the 2045 modelled scenarios include the A723 dualling which has an additional positive effect on each route. Proposed mitigation at the Hamilton Rd / Airbles Road junction also results in an improvement in journeys times compared with the existing layout. Journey times along the route of the A723 are largely consistent with the 2028 base scenario. Southbound journey times through Motherwell are increased, largely as a result of the Hamilton Road / Airbles Road junction. Active traffic signal optimisation (e.g. MOVA) could help reduce delays at this location. Nevertheless, the Pan-Lanarkshire Orbital Route provides a bypass of Motherwell and there is a significant opportunity to reduce through traffic in the town centre once the WCML link is complete.

Conditions Relating to the 2005 Traffic Consent

The journey times above illustrate, that with all targeted mitigation, and including dualling of the A723, journey times generally in line with 2028 base levels can be achieved at the Pan-Lanarkshire corridor level with the full development build out by 2045. This is with the pessimistic mode share levels applied.

A focus on investment in major mitigation proposals and a significant reduction in total development traffic means that a number of junctions, where previous conditions were applied, no longer require improvement. Table 7.7 summarises junctions where a condition was attached to the 2005 consented Ravenscraig proposal.

Table 7.7: 2005 Ravenscraig Planning Consent, Junction Locations with Conditioned Improvements

2005 Junction Locations with Conditioned Improvements	Mitigation Still Required
1 Airbles Rd / Hamilton Rd, Motherwell	Y
2 Airbles Road, Motherwell between Airbles Farm Road and Hamilton Road	N
3 Airbles Road / Leven Street, Motherwell	N
4 Signalisation of Airbles Road / Glencairn St / Adele St, Motherwell	N
5 Merry St / Jerviston Road	N
6 Brandon St / Crosshill St, Windmillhill St, Motherwell	N
7 Glasgow Road / Heathery Road / Alexander St / Netherton St, Wishaw	N

The Paramics modelling indicates that of the above locations, only Airbles Road / Hamilton Road requires improvement. Other locations operate satisfactorily, as illustrated by the journey time results, summarised in Table 7.6 above.

Westbound widening of Airbles Road to two lanes was previously proposed between Airbles Farm Road and Hamilton Road. The earlier Ravenscraig masterplan included a large regional shopping centre; this was forecast to have a wide catchment area, generating significant vehicle movements, particularly in the evening peak and at the weekend.

Paramics modelling shows that the reduced level of development generated with the revised Masterplan does not require the dualling of Airbles Road, even in the 2045 forecast year. Capacity is controlled by the Hamilton Road / Airbles Road junction rather than the link capacity directly.

Forecast 2045 peak hour flows on Airbles Road, east of Hamilton Road are:

- Eastbound AM 1,766 PM 1,809
- Westbound AM 2,000 PM 1,789

DMRB TA79/99 Table 2 summarises urban road capacities by road type – this is shown in Table 7.8. Airbles Road could be categorised as Road Type UAP2 'Good standard single / dual carriageway road with frontage access and more than two side roads per km'. This would give a capacity of 1,700 vehicles per hour. Nevertheless, with limited frontage access over this section, capacity is arguably higher – towards UAP1 standard 'High standard single / dual carriageway road carrying predominantly through traffic with limited access. A capacity of 1,900 vehicles per hour is typical for urban roads, similar to Airbles Road, and this is justified based on the Paramics modelling above.

Table 7.8: DMRB TA79/99 Table 2

		Two-Way Single Carriageway – Busiest Direction Flow Assumes a 60/40 Directional Split									Dual Carriageway			
		Total Number of Lanes									Number of Lanes by Direction			
		2				2-3	3	3-4	4	4+	2		3	4
Carriageway Width (m)		6.1	6.75	7.3	9.0	10.0	12.3	13.5	14.6	18.0	6.75	7.3	11.0	14.6
Road type	UM	Not Applicable										4000	5600	7200
	UAP1	1020	1320	1590	1860	2010	2550	2800	3050	3300	3350	3600	5200	
	UAP2	1020	1260	1470	1550	1650	1700	1900	2100	2700	2950	3200	4800	
	UAP3	900	1110	1300	1530	1620					2300	2600	3300	
	UAP4	750	900	1140	1320	1410								

While there could be wider strategic benefits to be gained from dualling Airbles Road, it is not a requirement for the progression of the development site. Possible dualling of this section of Airbles Road could be taken forward separately as part of a consistent strategy for the Pan-Lanarkshire Orbital Route.

Right turn into Greenacres

The proposed redesign of the Hamilton Road / Airbles results in an eastbound lane drop on Airbles Road from three to two lanes (see Figure 7.4). There is the potential for waiting traffic, turning right into Greenacres, to cause a queue of traffic behind. Paramics modelling illustrates that while this can occur, even in 2045, no significant capacity issues result.

Should it prove necessary, this right turn movement could be banned in the future, with traffic required to use the dedicated right turn lane at Airbles Farm Road. The need for any additional restriction would be considered as part of a refreshed Transport Assessment to be undertaken following completion of the WCML link road.

Paramics Modelling Conclusions

The modelling of Ravenscraig has been based on the development in 2028 and the completion of the full development content at 2045 with pessimistic mode share applied. As a consequence, it represents the current likely maximum development envisaged, and in terms of development impacts, a worst case scenario at each development stage.

The proposed WCML Link Road and Windmillhill Street roundabout improvement are proposed by 2028. These interventions will provide significant relief to existing congestion on Craigneuk Street.

Improvements to the Hamilton Road / Airbles Road junction are proposed between 2028 and 2045 and includes the provision of an additional right turn lane from Hamilton Road to Airbles Road and local widening on both these arms to accommodate the right turning traffic onto Airbles Road. These measures help mitigate queuing at Hamilton Road northbound in the morning peak. As a result, the potential for queues to back up towards the M74 is minimised, even with the full Ravenscraig development.

Additional NLC proposals to dual the A723 between the site and the M8 will encourage more traffic to access the development from the north.

Comparing the base model journey times against the with Ravenscraig traffic there is only a slight increase in 2028, post construction of the WCML Link Road. By 2045, after the implementation of the proposed A723 dualling scheme and mitigation at Hamilton Road and Airbles Road junction, Paramics modelling results indicate similar journey times, compared with base 2028 journey times, across the majority of the assessed routes. As indicated previously, the above analysis has been based on the pessimistic mode share in 2045. Therefore, journey times are predicted to be bettered on the basis of the realistic mode share being achieved at 2045 and beyond.

7.7 Stand Alone Junction Analysis

In addition to the Paramics model of the road network in and around Ravenscraig, traditional junction analysis has been undertaken at key junctions on the road network.

Traffic volumes have been extracted from the Paramics model for each forecast year / scenario. As per standard practice for individual junction analysis the peak hour flows of 0800 to 0900 and 1700 to 1800 have been assessed as opposed to the three hour periods that are modelled within Paramics. Buses and HGV volumes have been adjusted from vehicles to PCUs using a conversion factor of 2.3.

Note that as the junctions have been modelled independently there is no effect of any interaction with upstream junctions or pedestrian crossings therefore the stand alone analysis has limitations in reflecting the overall network performance which is provided by the respective Paramics model scenarios.

The junctions assessed are either subject to infrastructure improvements due to the development or have been identified as key junctions from the Paramics modelling and current operational issues. Therefore, the following junctions have been assessed as stand-alone junctions.

Table 7.9: Junctions analysed using stand-alone proprietary software

Junctions assessed using ARCADY/LINSIG
1 Airbles Rd / Hamilton Rd Signals
2 Airbles Road/Windmillhill Street Roundabout*
3 Regional Sports Facility/Airbles Link Road Roundabout
4 A721 Craigneuk Street/Shields Road/Windmillhill Street Roundabout
5 A721 Craigneuk Street/Robberhall Road
6 A723 Merry Street/New Craig Road Roundabout
7 A723 Merry Street / Menteith Road

*becomes signalised roundabout with development of Airbles Road link

The signalised junctions have been modelled using the JCT Consultancy software LINSIG where the main modelling outputs used to analyse junction performance are Degree of Saturation (DoS) which is expressed as a percentage and mean maximum queue (MMQ).

The roundabout junctions have been modelled using the TRL software ARCADY 6. The main modelling outputs to analyse junction performance are Ratio of Flow to Capacity (RFC) and maximum queue. The flow data has been entered using the Direct Entry method, which is representative of flows throughout the peak hour. Where required, intercept corrections have been applied on approach arms to account for unequal lane usage and to provide a level of calibration against observed queues.

The junctions have been assessed for the scenarios identified previously in section 7.6 for the pessimistic mode share levels in 2045.

Hamilton Road / Airbles Road Signals

This is a four-armed signalised junction which will be subject to capacity improvements to accommodate the full development content. The proposed mitigation comprises of additional capacity on Hamilton Road and Airbles Road, primarily for the right turn movement to Airbles Road.

The base 2018 scenario is based on the observed signal timings at the junction with all other scenarios being optimised to generate revised timings. The phasing and staging is generally maintained as per the base situation junction with improvements made to the current pedestrian infrastructure at the junction.

The development scenarios with the existing junction layout are predicted to operate marginally over capacity. The proposed mitigation results in the junction operating within capacity for all development scenarios. The mitigation proposals are illustrated in Figure A2 in Appendix F.

Windmillhill Street / Airbles Road Signalised Roundabout

This junction is currently a three-armed roundabout which is proposed to be significantly upgraded to provide a main access from Airbles Road into the Ravenscraig site by means of a bridge crossing the WCML. The proposals are for a four-arm signalised gyratory as illustrated in Figure A8 in Appendix F.

Three circulating lanes are proposed with pedestrian crossings offset from the junction and provided close to the junction. The left in and left out layout at Airbles Road/Manse Road junction will be retained.

The proposed gyratory is predicted to generally operate within capacity for all scenarios. In the evening peak of 2045 the WCML link arm operates with a Degree of Saturation of 94%.

Regional Sports Facility / Airbles Link Road Roundabout

This roundabout is key to the development and currently comprises of the New Craig Road and Robberhall Road approaches as well as the arm to the Regional Sports Facility. The northern extents of the dual carriageway link road from Airbles Road will connect to the roundabout on completion of the WCML bridge. A fifth arm will be added as part of the development to serve the main industrial zone of the development.

The roundabout is predicted to operate within capacity for all 2045 scenarios.

A721 Craigneuk Street / Shields Road/Windmillhill Street Roundabout

As detailed in section 7.7 and the Paramics base model this roundabout is currently constrained during the peak periods by the dedicated left turn from Shields Road to Windmillhill Street. Merging traffic from the two lanes is also influenced by the nearby bus stop and pedestrian crossing. This downstream interaction is fully represented within the Paramics model scenarios and is exacerbated with additional traffic on the road network therefore the results of the ARCADY analysis should also be considered with cognisance of this downstream issue on Windmillhill Street.

With additional background traffic growth in 2028 the junction is predicted to operate over capacity in both peak periods. With the addition of development traffic generated in advance of the introduction of the WCML bridge the junction performance is exacerbated. The construction of the WCML bridge and link improves the operation of this junction within Scenario 4, which considers all proposed development up to 2028, however, the residual impact results in some of the arms remaining over capacity in this scenario and therefore also in 2045.

Due to this, potential mitigation measures have been considered to generate a junction performance that is comparable to that of the base 2028 scenario. The mitigation considered at the roundabout comprises of additional capacity through minor improvements in the form of widening approaches and lane marking amendments. The junction layout with the mitigation measures are illustrated in Figure A9. The junction analysis with the mitigation included indicates that the junction performance in Scenario 4 will be improved in comparison to the base 2028 scenario.

As indicated previously the stand alone analysis does not consider the interactions with adjacent junctions or downstream traffic behaviour. These are detailed more accurately through the Paramics modelling (see Appendix D) and the resultant predicted journey times which demonstrate similar journey times to the base scenario.

A721 Craigneuk Street / Robberhall Road Roundabout

This roundabout is the southern access to the current Ravenscraig site from Craigneuk Street. Minor arms provide access to an industrial estate via Laberge Gardens and a residential estate at Vesuvius Drive.

With additional traffic in 2028 the Robberhall Road and bothA721 approaches operate over capacity in the evening peak, however, the level of queuing improves with the introduction of the WCML bridge, albeit the same arms are still predicted to operate over capacity. In the 2045 evening peak scenario the main approach arms remain over capacity with excessive queues predicted in ARCADY, however, when stand-alone models exceed capacity the queue levels increase exponentially which can be mis-representative of the actual junction performance. With the exception of the A721 Craigneuk Street approaches the morning peak operates satisfactorily.

Notwithstanding, mitigation has also been considered and analysed at this junction at the request of NLC. In order to minimise the required widening on the Robberhall Road arm an option to signalise the current roundabout has been analysed which also provides an opportunity to enhance pedestrian infrastructure at the junction. Due to the low level of traffic flow from Laberge Gardens and Vesuvius Drive these arms have been retained as standard roundabout entry arms. The indicative mitigation at the junction is illustrated in Figure A10. The junction analysis indicates that the mitigated junction will operate within capacity in all modelled scenarios.

A723 Merry Street / New Craig Road Roundabout

This roundabout provides access north from Ravenscraig onto the local road network. This junction has been modelled to take account of the A723 dualling scenarios where relevant i.e. lane markings and behaviour from drivers will change if the A723 (N) is dualled northbound from this junction. The roundabout is predicted to operate within capacity for the 2028 scenarios. In 2045 the New Craig Road approach is predicted to operate over capacity in both peaks, however, to take account of the A723 dualling i.e. two exit lanes onto the A723 (N) additional capacity is available through adjusting the current road markings and hatching on the New Craig Road approach. With this minor mitigation the junction is predicted to operate within capacity.

A723 Merry Street / Menteith Road

This roundabout provides access from the north via Merry Street into Motherwell town centre. There is no mitigation proposed at this junction as part of the development, however, it is considered a key junction in Motherwell town centre.

The roundabout is predicted to operate within capacity for the 2028 and 2045 scenarios.

Summary of Stand Alone Junction Analysis

The stand-alone junction analysis indicates that the main mitigation on Airbles Road, at the Hamilton Road and Windmillhill Street signalised junctions, will operate within capacity.

The two roundabout junctions on the A721 Craigneuk Street are predicted to operate over capacity at various stages of the development build out. However, the proposed strategic mitigation will result in journey times comparable to the base 2028 journey times along the Hamilton to Wishaw corridor as illustrated in the conclusions of the Paramics modelling in section 7.6. Notwithstanding junction improvements have been identified which would mitigate the development impact in the absence of the WCML link and also counter any residual impact further to the completion of this key infrastructure. As these junctions are predicted to operate over capacity in the base 2028 scenario the funding for the mitigation measures should not solely be met by Ravenscraig Ltd.

As noted previously the stand alone analysis and identified mitigation should be considered alongside the Paramics modelling given that the stand alone analysis does not consider the interaction with adjacent junctions and downstream behaviour.

The tabulated results for all the above junctions comprising of predicted RFC or Degree of Saturation values and queuing levels are included within Appendix E.

7.8 Summary of Mitigation

Through close discussion with NLC an equivalence table (Table 7.10) has been produced which relates the level of development content to the required infrastructure. While the assessment has been based on development build out by a particular year there is a degree of uncertainty that these will be achieved as per the proposed Masterplan phasing due to a number of factors such as market demand and societal trends.

While the table showing the infrastructure, interventions are clear to 2028, the build out and actual infrastructure triggers in the following years are less clear due to this uncertainty.

Therefore, it is considered that there would be clear benefits to undertake a refresh of this Transport Assessment following completion of the WCML infrastructure. It is envisaged that this report would be completed a year after opening of the WCML link and would assess how traffic movements and mode shares have changed and how this impacts upon the timescales for the other key interventions including the Hamilton Road junction and the NLC scheme for the dualling of the A723.

In respect of the mitigation prior to completion of the WCML, Ravenscraig Ltd and North Lanarkshire Council will need to consider this jointly, given that mitigation would be required with background and other development, even without Ravenscraig.

Table 7.10: Equivalence Table with Ravenscraig Infrastructure Interventions

Model	Predicted Level of Development	WCML Bridge and Link Road	Hamilton Rd/Airbles Rd Junction Mitigation	A723 Dualling	Mitigation at Shields Road	Mitigation at Robberhall Road	Notes
2018 Base Model	As per 2018	No	No	No	No	No	
2028 Scenario 2	All proposed Ravenscraig development phases to 2028 **excluding TC1 and TC4**	No	No	No	Yes	Yes	Potential mitigation proposals identified at Shields Road and Robberhall Road roundabouts to improve the performance of these junctions in advance of the completion of the WCML infrastructure. NLC to consider approach within wider context given that mitigation is required without Ravenscraig development
2028 Scenario 4	All proposed Ravenscraig development phases to 2028	Yes	No	No	Yes	Yes	
Post 2028 development build out to 2045	Ravenscraig development phases between 2028 and 2045	Built	Yes	Yes	Yes	Yes	A723 Dualling forms part of NLC Pan Lan Route

8. Conclusions & Recommendations

8.1 Background

The aspiration is for Ravenscraig to become a *'Sustainable Community'* and this TA explains how transport can make a contribution to achieving this aim.

The Ravenscraig Transport Strategy (RTS) has been developed to support local and national transport planning policy, and best practice in sustainable travel by promoting a hierarchy of personal movement which prioritises sustainable travel over private vehicle travel in keeping with national and local government policies. Mode share targets have been set for the development and these will be reviewed as the site is occupied and site-specific targets can be set. These targets encompass the aim of creating a sustainable community and are in line with local and national policy aspirations.

8.2 Proposed Transport Improvements

The Ravenscraig site is well located to offer good accessibility on foot, by cycle and public transport. Various transport infrastructure and service improvements are proposed to enhance the accessibility of the site and to support the forecast travel demands.

Walking and Cycling

A number of infrastructure measures are proposed within the RTS that will benefit both pedestrians and cyclists. The following new links will encourage walking and cycling to adjacent areas and infrastructure:

- Green Links - A network of quality shared use paths running north to south and east to west on desire lines to the settlements surrounding the development site;
- Localised shared footpaths through the various areas of development which will link into adjacent areas; the green links and the park space;
- Links west to Merry Street via Allan Street/Coursington Road
- Airbles Road via the Spine Road overbridge link to the south-west of the site;
- to the Shieldmuir and Craigneuk areas via the re-established link to Shieldmuir Street at the south of the site; and
- via the link to Glencairn Avenue in Craigneuk.

Cycle parking provision to exceed the minimum standards where possible.

Public Transport

The STAG 1 appraisal work that has been undertaken in tandem with the TA has identified the provision of key bus infrastructure and services within the development instead of providing a new rail station on the Wishaw Deviation Line to serve Ravenscraig The bus based options which emerge well from the appraisal include the provision of high quality bus linkages and infrastructure within the site, potential wider bus network priority measures and a circular Rail-Bus service which would link the development site with Motherwell and the key rail stations.. A detailed bus services study followed and from this a three-stage approach to a supported bus service package designed to pump-prime commercial services has subsequently been proposed, commencing with a circular service providing links to Motherwell Rail Station with subsequent expansion to include Wishaw Hospital and other rail connections and finally additional services potentially to Coatbridge and Eurocentral via Holytown. An on-street bus interchange will be provided within the High Street with high quality facilities and bus stops will also be located throughout the development in line with national policy to encourage public transport use.

The nearest railway stations are at Motherwell, Shieldmuir and Carfin which are all located within a 20 to 30 minute walk of the centre of the Ravenscraig site. These stations provide a range of destinations and good frequencies from Motherwell in particular which is served by the West Coast Main Line services. The permission and Section 75 Agreement for the original masterplan set out that either a railway link or a bus infrastructure strategy should be provided. While the conclusions of the STAG 1 Appraisal for this revised masterplan has

sifted out the delivery of a Ravenscraig rail station on the WDL, it has recommended that the revised masterplan should not preclude a station and rail service being introduced at a future date. It recognises however that this would require a significant event or events such as a wholesale revision to rail operations in Lanarkshire and beyond.

Road

The spine road provides a high capacity link to Ravenscraig from the M8 to the north and the M74 to the south. The following road improvements are proposed in addition to the NLC scheme for dualling the A723:

- The upgrading of the Hamilton Road/Airbles Road junction;
- The formation of a new signalised roundabout at Airbles Road/Windmillhill Street to provide the dualled link to Ravenscraig;
- Mitigation measures to the Shields Road and Robberhall Road roundabouts on the A721 Craigneuk Street
- The WCML overbridge and dualled link; and
- the internal road network will be designed in accordance with Designing Streets to influence driver speeds while remaining appropriate to the local context

Journey time analysis indicates that, with all targeted mitigation, and including dualling of the A723, similar journey times will be achieved, when compared to base 2028 journey times, across the majority of assessed routes.

Car Parking

It is proposed that a parking strategy is implemented for the site which will be a departure from the rigid 'predict and provide' standards and will instead consider shared parking between land uses. This has potential within Ravenscraig given that employment and leisure activities have a degree of staggered peaks use i.e. daytime and night time use respectively. Similarly, for the same land uses there is also a propensity for weekday v weekend use. A holistic approach will be required as changing trends in work and leisure activity means that overlapping of demand is likely to occur at certain locations.

Ravenscraig Travel Plan Framework

The Ravenscraig Travel Plan Framework (RTPF) has been developed as a standalone document. It is a key document for the implementation of many of the transport initiatives in this TA. It provides the framework for the creation of a sustainable community at Ravenscraig and sets priorities on which future site-specific travel plans should be based. It provides the overarching framework for all Travel Plans prepared for developments at Ravenscraig. It details the governance of the Travel Plan through the appointment of a Travel Plan Coordinator for Ravenscraig (RPTC). The RTPF includes marketing and travel information measures; initiatives to promote walking, cycling and public transport; the promotion of journey sharing scheme; consideration of a Car Club and electric car charging points and smarter working.

Summary

At Ravenscraig there is an opportunity to foster sustainable travel behaviour from the outset of this revised masterplan. The development of Ravenscraig creates an ideal opportunity to deliver a town where the need for car travel is minimised. This can be achieved through effective planning, design, information, incentives and promotion. The proposed transport infrastructure in this TA and the package of measures outlined in the RTPF are designed to encourage employees, visitors and residents of Ravenscraig into using sustainable travel modes.

Appendix A. Masterplan Phasing Plans

Appendix B. Existing Bus Routes

Appendix C. Trip Generation Calculations

Appendix D. Paramics Modelling Report

Appendix E. LINSIG and ARCADY Junction Analysis

Appendix F. Indicative Junction Layout Proposals