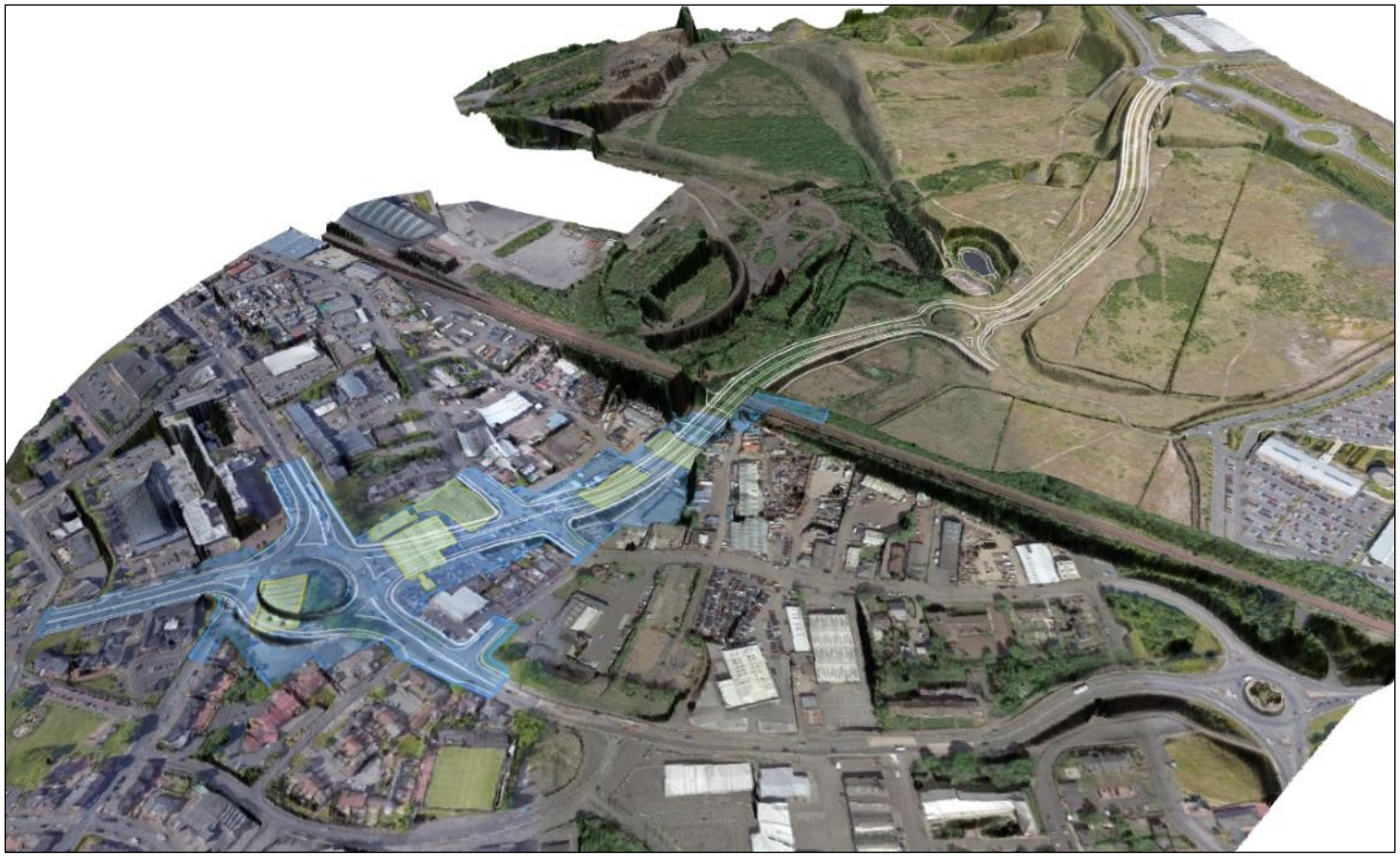


Ravenscraig Infrastructure Access – South

Design & Access Statement

RIAS-AMEY-HAC-SWI-RP-ZZ-000001

Contents

1 Introduction

1.1 Purpose

This Design and Access Statement ("*DAS*") has been prepared by North Lanarkshire Council, specifically by the Council's Enterprise Projects Team, responsible for projects under the Glasgow City Region City Deal ("*City Deal*") Infrastructure Fund, in support of a planning application for the construction of new dual carriageway access road, with associated walking and cycling links and junctions at Ravenscraig.

The proposed development is for a new vehicular, pedestrian and cycling route connecting the heart of Ravenscraig to Motherwell.

The aim of the proposed development is to deliver strategic road transport infrastructure to support and enable development at Ravenscraig, a national priority for development.

This development forms a part of a wider package of proposed works under the City Deal Ravenscraig Infrastructure Access and Pan Lanarkshire Orbital Transport Corridor projects[1].

This DAS explains how the proposed infrastructure supports the development and regeneration of Ravenscraig individually and as part of the wider project and sets out and illustrates the design principles and concept of the proposed development.

The DAS has been prepared in accordance with Town and Country Planning (Scotland) Act 1997, as amended by the Planning etc. (Scotland) Act 2006 and the Town and Country Planning (Development Management Procedure) (Scotland) Regulations 2013 and provides supporting information to the planning application.

[1] See www.northlanarkshire.gov.uk/ravenscraig-citydeal

In addition to drawings, this planning application is accompanied by a number of supporting technical documents, namely:

- A Design & Access Statement;
- A Planning Statement;
- An Environmental Management Plan;
- An Ecology Appraisal Report;
- A Noise Assessment Report;
- An Air Quality Impact Assessment;
- A Site Investigations Report and Coal Mining Risk Assessment;
- A Tree Survey;
- Landscaping Proposals;
- A Drainage Impact and Flood Risk Assessment Report;
- An Outline Construction Method Statement; and
- A Summary of Pre-Application Public Engagement.

1.2 Applicant and Agent Details Section

This planning application is being made by North Lanarkshire Council (NLC), specifically by the Council's Enterprise Projects Team, responsible for projects under the City Deal Infrastructure Fund.

This DAS and the application have been prepared by the project team comprising officers of the Council's Enterprise Projects Team, and members of the professional consultant team including:

- Amey Consulting – civil engineering, landscape design and transport;
- Sweco – environmental assessment, geotechnical and geo-environmental assessment; and
- Ryden – planning assessment.

With additional contribution from Network Rail's project team, including BAM Nuttall and Arup.

2 Policy

A detailed Planning Statement has been prepared and submitted as a part of this application. A summary of the key relevant principles and policies and the fit of the Proposed Scheme with these is noted below.

2.1 National Policy

In respect of Scottish Government Policy in relation to planning, as set out in the Scottish Planning Policy (SPP) document of June 2014, the development of Ravenscraig, and the infrastructure required to support it, fits strongly with the principles of sustainable economic growth particularly in respect of making efficient use of existing capacities of land, buildings and infrastructure; and supporting delivery of employment generating development. In relation to transport the SPP confirms that the planning system should provide safe and convenient opportunities for active travel and travel by public transport; and enable the integration of transport modes.

Separate from the SPP, the third National Planning Framework (NPF3) provides a long-term strategy for planning in Scotland. It provides the spatial expression of the Government's economic strategy and its plans for delivery of development and investment in infrastructure. Ravenscraig is one of 14 National Developments identified in NPF3 and is one of the largest areas of vacant and derelict land in Europe.

2.2 Regional and Local Policy

The Statutory Development Plan (SDP) for the current application site consists of the approved strategic development plan 'Clydeplan' (2017) and the adopted North Lanarkshire Local Plan (2012). The latter is in the process of being replaced by the emerging new North Lanarkshire Local Development Plan (LDP). This document was published for consultation in January 2017 and is currently the subject of an LDP Examination.

The 'Clydeplan' SDP and the spatial development strategy (SDS) for the city region extends up to 2029. This strategy supports a presumption in favour of sustainable development leading to economic growth. Maximising the use/reuse of development land and existing infrastructure is seen as fundamental to the success of the SDS. Ravenscraig is one of four priorities within the SDS, and in line with NPF3 is noted as a national priority project having a strategic role in delivery of the long-term regeneration and restructuring of the southern part of North Lanarkshire.

Clydeplan incorporates provisions in relation to the 'City Deal Programme' and supports implementation of a number of City Deal projects including the improvement of what is known as the 'Pan Lanarkshire Orbital Transport Corridor'. The aim of this project is to provide 'improved strategic connectivity'. Ravenscraig sits at the heart of this and the links to/from the M74 and the M8 Motorways form part of the council's City Deal programme. The proposed works covered by the current planning application are a key part of this wider transport project.

The 'Clydeplan' SDP identifies a number of Strategic Economic Investment Locations (SEILs), including Ravenscraig. These are noted as the city region's strategic response to delivering long-term sustainable economic growth.

While the precise terminology within the adopted Local Plan regarding safeguarding of the strategic employment sites and the town centre has been superseded by Clydeplan, the policy principle remains the same. The recent planning permission in principle for Ravenscraig (granted 2020) is based on the revised masterplan reaffirming the strategic importance of the employment land and the town centre. The general alignment and nature of the proposed spine road extension accords fully with the adopted Local Plan and the revised masterplan.

Similarly, the current application can be seen to comply with the DSP Policies of the adopted Local Plan in relation to the amount, location, impact and quality

of development. The proposed new road is necessary in order for development to proceed in line with the revised Ravenscraig masterplan. The location of the road is in line with the masterplan and the incorporation of an underpass at the West Coast Main Line (WCML) railway instead of the previously proposed overbridge represents a substantial improvement in visual and environmental terms.

As already noted, the emerging LDP contains similar policy provisions in relation to Ravenscraig as contained within the adopted Local Plan. In particular, it continues to identify Ravenscraig as a priority for investment led by the revised masterplan. The current application site would still lie within a strategically important employment location under the LDP and would serve the proposed new town centre, and it is considered that without the new road the vision for the new town centre cannot be realised.

3 Site and Context Appraisal

3.1 The Masterplan

The first masterplan for the regeneration and development of Ravenscraig following the closure of the steelworks in 1992, was approved in 2005. This masterplan provided for a new mixed-use development, comprising residential areas, primary schools/community uses, business and employment uses, open space, a new town centre including retail, leisure, business housing and hotel and associated transport infrastructure.

The strategic objective of redeveloping the former Ravenscraig steelworks site is to transform up to 200Ha of vacant and derelict land into a national economic asset. As one of the largest regeneration opportunities in western Europe the redevelopment of Ravenscraig is recognised by the Scottish Government as one of two national development priorities, to be taken forward under its strategy to create a “successful, sustainable place”, with the potential to deliver over four thousand high quality homes, create employment and education opportunities and provide a range of community, retail and leisure facilities for the benefit of new and existing communities, including those around Ravenscraig which have some of the highest levels of deprivation in Scotland.

Following the initial phases of development and subsequent changes in the economic climate and in the viability of the large retail and leisure uses initially proposed, a revised masterplan was prepared by Ravenscraig Limited and submitted for planning permission in 2018. This Ravenscraig Masterplan was granted planning permission in principle in 2020 following completion of the Section 75 agreement and earlier approval by Council in 2019.

The newly approved masterplan includes residential areas, education and community facilities, business and employment areas, open space including a town park, hotels, a new town centre with retail, leisure, business, housing and associated transport infrastructure.

Extract from Ravenscraig Masterplan, September 2018, Preferred Masterplan Indicative Vision

The proposals contained within this Masterplan are intended to create a robust framework for development. As is the case for the current 2005 consent, detailed design will follow in the form of Area Planning Briefs. This framework has been developed however, to support the potential for a number of important design considerations, as follows:

1. Overbridge linking to Motherwell/Airbles Road designed to meet the requirements of Network Rail; vehicle/pedestrian/cycle linkage.

2. Wide Boulevard with formal structure planting and segregated cycleway. Planting does not prevent good visibility of roadside retail which has high quality open frontages and external display (i.e. car showrooms) addressing boulevard. Cylindrical buildings could be designed to echo former Ravenscraig 'blue drum' and become landmarks on Pan Lanarkshire Route.

3. College Square: strong landscape/footway link to college, activated by hotel with ground floor leisure and other leisure/retail forming an arrival point on the new high street in place of former roundabout.

4. High Street: high quality urban place lined with leisure and retail plus Class 4 office space with amenities & public functions at street level. Focus for high quality public transport; bus stances, cycle share, taxis.

5. Ravenscraig Green Space: as proposed by CSGN but reduced in size. This park provides a central focus and additional sports and fitness facilities associated with the RSF.

6. Regional Sports Facility: extended to provide additional sports facilities, outdoor pitches and parking

7. Existing Slopes: utilised and enhanced to provide strong north/south green link between Carfin, Green Space and Craigneuk, starting with temporary enhancements to coincide with park construction. Where possible existing concrete bridges and other artefacts retained to enhance pedestrian/cycle use.

8. Density of residential on top of slope is increased to form prominent landmark blocks with good visibility/overlooking of public greenspace.

9. Ravenscraig Square: traffic calmed urban place wrapped with higher density residential & neighbourhood amenity; retail etc.

10. Johnston Square: traffic calmed urban place wrapped with higher density residential, neighbourhood amenity and second school frontage. Incorporates community/school shared outdoor space.

11. Ravenscraig Plantation Place: key arrival point with distinctive urban form created by careful grouping of residential frontages around shared amenity space. Clear links to Community Nature Park.

12. Meadowhead Wood Place: key arrival point with distinctive urban form created by careful grouping of residential frontages around shared amenity space. Clear links from here to Community Nature Park.

13. Residential Areas: well designed and distinctive residential quarters provided with local amenity space and safe shared streets designed in accordance with 'Designing Streets' and Creating Places' design standards.

14. Community Nature Park: Masterplan creates links to existing path network which links well through mature ex-Victorian garden landscape to former Wishaw House ruins, former Ravenscraig Plantation, excellent views of the Calder Gorge and links to Craigneuk via former House drive.

15. Landscape interlocks with residential development to create well-overlooked green fingers of amenity space connected to the housing development and park. No units should back onto park.

16. First Primary School with Nursery: currently due to be constructed on 1,000th house completion. Timing subject to discussion with NLC given depth of response on schools provision from local community.

17. Second Primary School with Nursery: timing to be confirmed and to tie in with adjacent phasing (see phasing diagrams).

18. Town Centre Uses: continuously active ground floor frontage comprising leisure, retail, office entrances, hotel functions, civic uses etc. wraps around south and east frontages. Office, leisure, hotel and residential uses above. Through this frontage is access to larger retail units, plus servicing and parking at grade.

19. College Quarter: uses opposite the College provide much needed amenity for c.20,000 students and staff; leisure, retail, office and residential accommodation. Adjacent, an employment area is proposed which will offer space for small businesses displaced by the link to Motherwell, but also have synergy with the many vocational courses within the College.

20. Road through employment area has generous landscape margin with segregated cycle/footpath for link to Motherwell.

21. Pedestrian/cycle link to Motherwell as early in phasing as possible.

22. Bus only link to Motherwell as early in phasing as possible.

23. Pedestrian/cycle link to Craigneuk early in phasing.

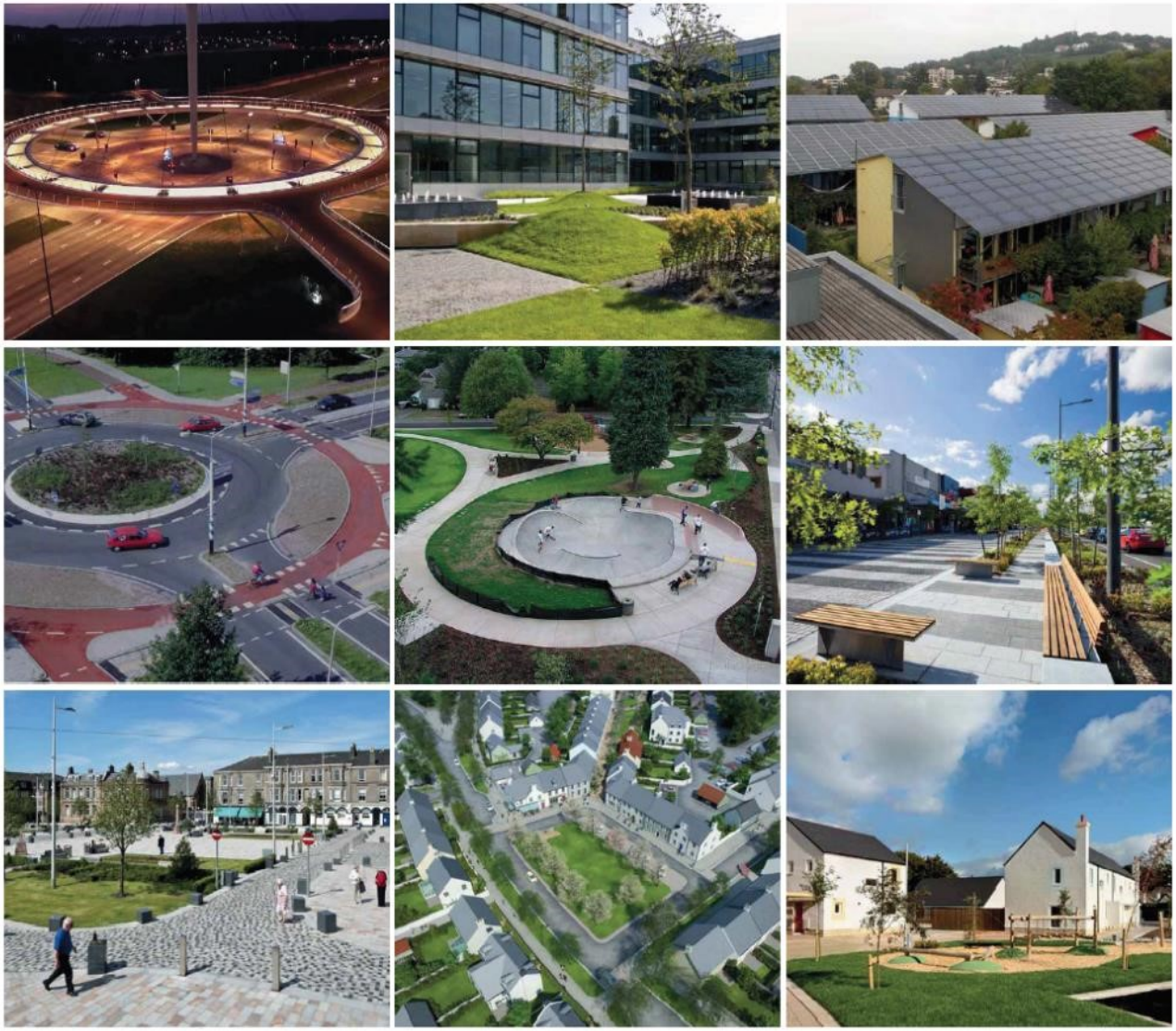
24. Possible Meadowhead Road pedestrian/cycle/bus link via railway bridge.

25. Pedestrian/cycle link to Carfin early in phasing.

26. Carfin Neighbourhood Amenity.

27. Early Structure Planting reinforces green link between east and west sides of gorge.

28. Retained and 'Urbanised' roundabout, also to improve pedestrian and cycle links.



3.2 Existing site description

The core purpose of the new link is to create a new connection between Ravenscraig and Motherwell, the proposed development will be located on land extending between the site of the former Ravenscraig steelworks and within Motherwell, and comprises (moving from east to west):

- Vacant land within the site of the former Ravenscraig steelworks;
- Land at the edge of, and within the extents of, the Liberty Steel Dalzell steelworks;
- Land forming the West Coast Main Line railway including embankment, track and line equipment;
- Land within the Orbiston Street industrial area including existing adopted roads and footways and land occupied by existing commercial and industrial premises; and
- Land around the existing Windmillhill Street / Airbles Road roundabout including existing adopted roads and footways and land occupied by existing commercial premises.

The Ravenscraig planning boundary for the proposal is shown in Figure 1.

The existing uses and ownerships of land is described further below.

Figure 1: Ravenscraig development planning boundary (in red) with proposed transport infrastructure (in green)

Aerial view southwest from existing roundabout at Ravenscraig Regional Sports Facility across Ravenscraig and the line of the proposed development to Motherwell.

3.3 Existing site, buildings, landscape, uses and ownership

The existing uses of the site of the proposed development are mixed, and their character similarly. The site includes vacant and derelict land, existing roads and footways, existing commercial and industrial land and premises and an urban/civic environment at Windmillhill Street. The ownership is similarly mixed with some areas adopted and/or owned by the Council (Figure 2) alongside occupied commercial and industrial premises owned by third parties and in some cases under lease to others.

Where the Council does not own the land required for the proposed development, the Council will seek in the first instance to acquire the land, and any interests, through negotiation and voluntary agreement. However, it is necessary to ensure that the Council is able to secure all land required for the proposed development, and to remove all interests in that land, as it is not possible to construct and operate the development in part only. Consequently, the Council will seek to make a Compulsory Purchase Order.

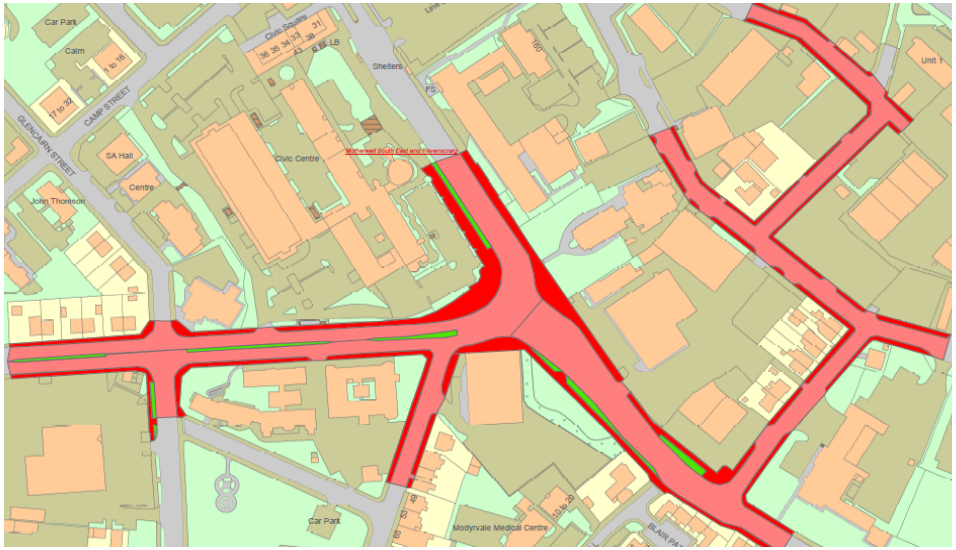


Figure 2: Extent of existing adopted carriageway, footway and verge

Land within the site of the former Ravenscraig steelworks

The land within the bounds of the former Ravenscraig steelworks is currently largely vacant, with a variety of vegetation and is formally identified in the Vacant and Derelict Land Survey 2019 as within:

- Former Lanarkshire Steelworks Site - NL008500191;
- Ravenscraig West - NL008500622.

This land is owned by Ravenscraig Limited and is held for the purposes of the masterplan including the proposed development. The development falls largely within the bounds of area identified within Area Planning Brief 5 prepared following the first masterplan for Ravenscraig. The land has been subject to earlier preliminary platforming works and is clear of buildings or structures with the exception of some utilities, most significantly SUDS infrastructure installed in first phase of site preparation and development at Ravenscraig which took place following the approval of the first masterplan.

View from the previously developed spur, at the existing roundabout at the Ravenscraig Regional Sports Facility, to which the proposed scheme will connect

View across land within Ravenscraig on route of proposed development

Land at the edge of, and within the extents of, the Liberty Steel Dalzell steelworks

A small extent of land is required at the edge of, and within the extents of, the currently operating Liberty Steel Dalzell steelworks. The land is at the periphery of the site and is largely vacant, covered by vegetation and a disused road leading to a former bridge under the railway. The operations of the steelworks, the main access being off Park Street, would not be further affected as a result of the land required.

View of land within Dalzell steelworks.

View of existing boundary between Ravenscraig and Dalzell steelworks.

Land forming the West Coast Main Line railway

The land required within the bounds of the WCML railway lies substantially upon a raised embankment. The land within the rail corridor is presently owned by Network Rail and the future bridge structure over the new link road will also be owned and maintained by Network Rail.

View of existing railway embankment from Ravenscraig

Land within the Orbiston Street industrial area

The land required to the west of the railway falls within the Orbiston Street industrial area and comprises a number of existing occupied and operating commercial and industrial premises along with predominantly hard landscaped adopted roads and footways. Immediately alongside the railway corridor the land falls primarily within the Dellburn Trading Park, off Rose Street. The Council has recently acquired the Trading Park and will work to relocate businesses to allow the development. Additional yards are owned and operated as part of the Evans Halshaw Ford dealership (the main frontage being on Windmillhill Street). A parcel of the land required is held by Ravenscraig Limited for the purposes of the masterplan including the proposed development.

View north east along Rose Street, across Dellburn Trading Park

View south west from Orbiston Street across rear of Evans Halshaw

Land around the existing Windmillhill Street / Airbles Road roundabout

The land required comprises existing adopted roads and footways and a mix of hard and soft landscaped areas, in addition to land on the north east, south and south west of the existing junction which is currently occupied by a number of commercial premises.

On the north east of the existing junction the land required comprises: an existing commercial property, operated as a hair salon which is held by Ravenscraig Limited for the purposes of the proposed development; and the Evans Halshaw Ford Dealership.

View looking from Windmillhill Street of existing commercial premises

View looking from Windmillhill Street of existing Evans Halshaw Fiord dealership

The proposed development passes to the rear of a number of homes on Dellburn Street and also to the B-listed South Dalziel Historic Building and its grounds, and although outside the scheme boundary are directly adjacent to it.

View from Windmillhill Street of the existing South Dalziel Historic Building

The proposed scheme extends south on Windmillhill Street to include minor amendments to the entrance/exit of Dellburn Street which encroach beyond the adopted footway on to land to within the grounds of the Fire Station.

View looking to Windmillhill Street from Dellburn Street with the Fire Station grounds on the left.

To the south of the proposed junction, the land required is currently occupied by commercial premises, home to a restaurant/buffet (not currently trading) and an electrical retailer along with the external parking and yard to the rear. Along with a part of the front garden area of an existing hair salon.

The western exit of the proposed junction, onto Airbles Road and the new foot/cycle way encroaches into the external areas of the NHS Lanarkshire CAMHS Centre at the corner of Manse Road/Airbles Road.

View looking south east from Windmillhill Street toward the existing junction and the restaurant and electrical retailers.

View looking west from east side of Windmillhill Street towards the existing hair salon affected by the proposed scheme

View to rear of restaurant and electrical retailers.

View looking north west from Windmillhill Street toward the existing junction

Existing Buildings and Landscape

A plan identifying the site clearance required is provided as a part of the planning application (Figure 3) along with an ecological report, an environmental management plan and detailed site investigations report.

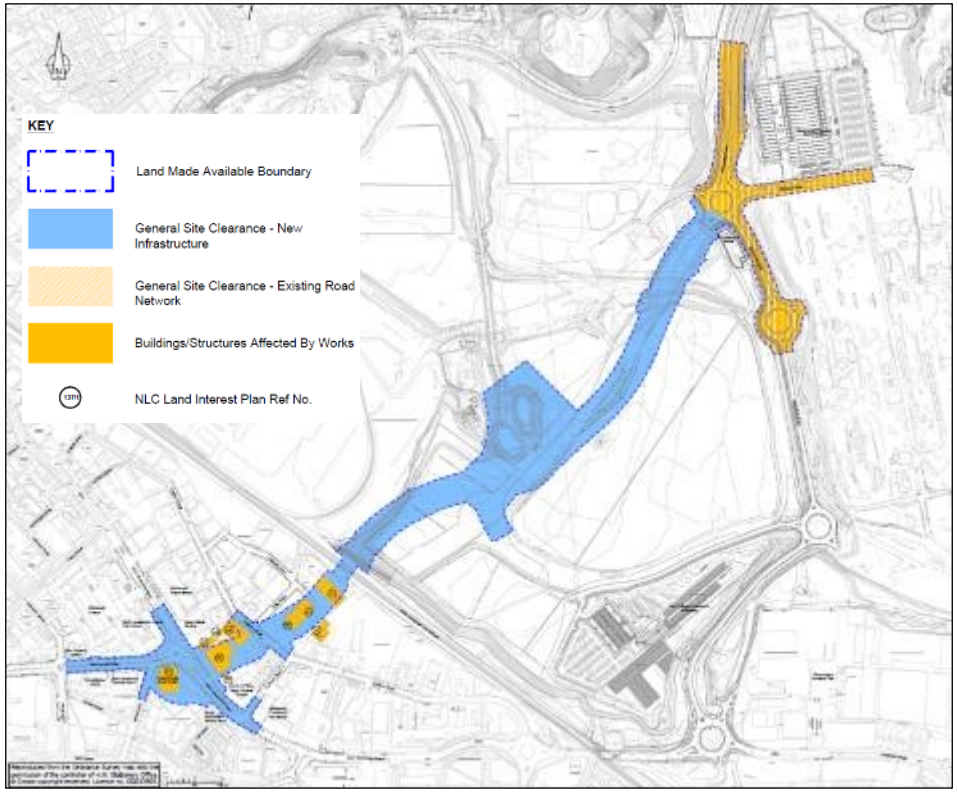


Figure 3 General site clearance

A number of buildings require to be demolished in the Orbiston Street industrial area (Figure 4), which will require NLC to purchase them.

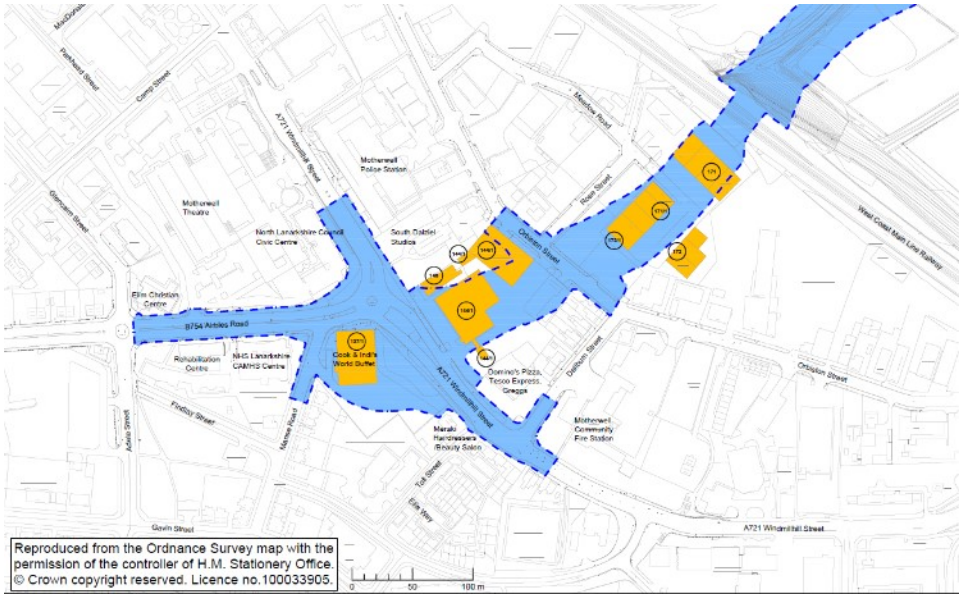


Figure 4 Buildings/structures affected by works

3.4 Constraints

The design and layout of the proposals have been developed with consideration of existing physical constraints and proposals for future development in the area. The constraints include:

- Ravenscraig revised Masterplan 2018, which requires new road infrastructure to service the development areas;
- Embanked WCML which is passed through in a new underpath structure;
- Utilities and extensive contaminated ground;
- Current SuDS basin which requires NDC drainage to tie into;
- Demolition of buildings to south of WCML; and
- Presence of sensitive areas.

3.5 Existing Transport Infrastructure & Connections

Motorised Users

The existing route (Figure 5) between the Ravenscraig development area and Motherwell town centre (south east) is via the single carriageway Robberhall Road spine Road, Robberhall roundabout, Shields Road roundabout (A721) and Windmillhill roundabout (A721). This is also the route for those travelling between the Ravenscraig development area and Hamilton and the M74. There is an alternative route to Motherwell town centre via the dual-carriageway New Craig Road spine road, Ravenscraig roundabout and Merry Street.

The WCML railway is a barrier between the Ravenscraig development area and Motherwell town centre. The A721 passes under the WCML railway between Robberhall and Shields Road roundabouts and this railway bridge has a height restriction of 4.6m which makes it a low bridge which is unsuitable for taller goods vehicles.

The 2017 average weekday traffic (in vehicles per day) at key locations was:

- 29,800vpd on Airbles Road;
- 13,300vpd on Windmillhill Street (north);
- 31,400vpd on Windmillhill Street (south);
- 22,100vpd on Shields Road;
- 23,400vpd on Craigneuk Street (east of Robberhall Road roundabout);
- 13,800vpd on Robberhall Road.

As a result of these substantial traffic volumes, Robberhall roundabout, Shields Road roundabout and Windmillhill roundabout all currently experience peak period queuing.

The Ravenscraig Transport Assessment (Jacobs 2019) shows that, in the absence of any mitigation measures, the build-out of the Ravenscraig development will result in increased traffic on Robberhall Road, Craigneuk Street, Windmillhill Street and Airbles Road. It identifies construction of the Ravenscraig link road from the Regional Sports Facility roundabout to Windmillhill roundabout, and improvements to Windmillhill roundabout as being essential to mitigate the impact of the additional development traffic.

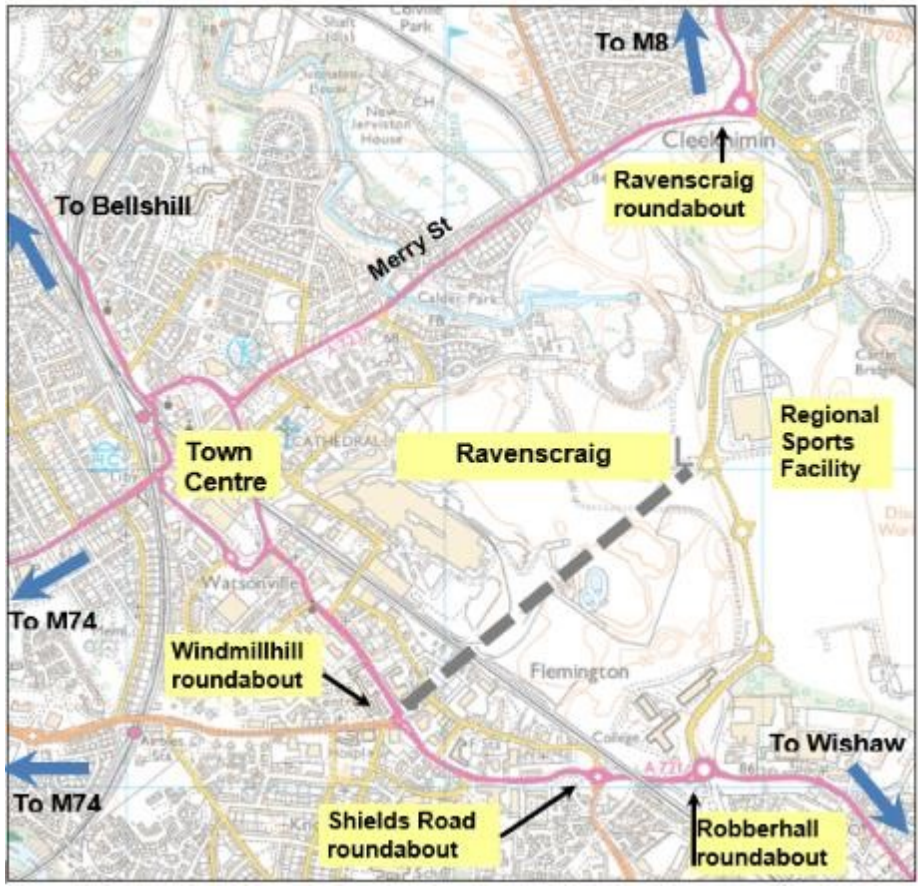


Figure 5 Existing transport infrastructure

Parking

Car parking is provided area wide via a mixture of on-road provision and off-road car parks serving shops, offices or commercial areas. On street parking is typically free though it is time restricted in places.

Public Transport

There are a number of frequent, public bus services that travel along the A721 corridor through Windmillhill roundabout to locations such as Motherwell town centre, Holytown, Bellshill, Hamilton, Wishaw, Lanark, Shotts and Glasgow with bus stops conveniently situated for users. Two bus services (service no. 366 and 367) link Harthill with Wishaw, Craigneuk and Ravenscraig Sports Centre. There are also regular bus services along Airbles Road with services linking Airbles Road to Hamilton, Forgewood and North Lodge. The bus stops are typically situated within a layby on both Airbles Road and Windmillhill Street.

The Windmillhill Street area is located approximately 0.7 miles away (10 minute walk) from Airbles Rail Station with Motherwell Rail Station located approximately 1 mile (18 mins) walk to the north. Ravenscraig Sports Centre is located almost equidistantly from Airbles and Motherwell Rail Station; a distance of around 2miles (45minute walk), whilst Carfin Rail station is located a little closer 1.5 miles (32min walk) away.

Non-Motorised Users

Within Ravenscraig, there is a 5 m wide shared facility located on the eastern edge of the Robberhall Road and New Craig Road spine road with a white line delineating between users. This route is shared by walkers, wheelers and cyclists and has dropped kerbs and tactile paving in places to formalise crossing points. A 2 m wide footway is present on the western edge of the spine road providing access for pedestrians along its length. Both NMU routes have street lighting present and a grassed 2 m margin separating users from the carriageway. The WCML railway is a barrier for walkers and cyclists between Ravenscraig and Motherwell Town centre and the existing route via Robberhall roundabout, Craigneuk Street and Windmillhill Street is indirect.

There is generally good provision of footways along both sides of Craigneuk Street, Windmillhill Street and Airbles Road (at least as far as Tinker's Lane) typical of a mature town setting (Figure 6). There are also footways around all sides of Windmillhill roundabout. However, the footways between Craigneuk

Street and Windmillhill roundabout are interrupted by frequent side roads and accesses.

Windmillhill roundabout has signal-controlled pedestrian crossings on the south and west arms. However, the nearest signalised crossing on the north arm is north of Motherwell Civic Centre, 200m to the north. These signal-controlled crossings have dropped kerbs and tactile surfaces. There is a continuous footway round the east side of the roundabout.

Figure 6: Existing footway provision around Windmillhill roundabout

There are no formal cycle facilities along Craigneuk Street, Windmillhill Street, Airbles Road or around Windmillhill roundabout. Cyclists share the road space with motorised vehicles. However, North Lanarkshire Council's Greenlink cycle route runs from Strathclyde Park via the south of Bellshill to follow the west side of the South Calder Water then past the east side of Cathedral Primary School to the north side of Motherwell town centre.

Motherwell's core path network (Figure 7) is accessed from the south west side of Windmillhill roundabout. Path 318 runs along the footways of Manse Road and connects to Dalzell Park and the Clyde Walkway. The Clyde Walkway is a 65km route that starts from Partick in Glasgow running via the west side of Strathclyde Park and then along the east bank of the River Clyde on the edge of Motherwell and Wishaw, passing through Baron's Haugh nature reserve. It continues south to Lanark and the village of New Lanark in South Lanarkshire.

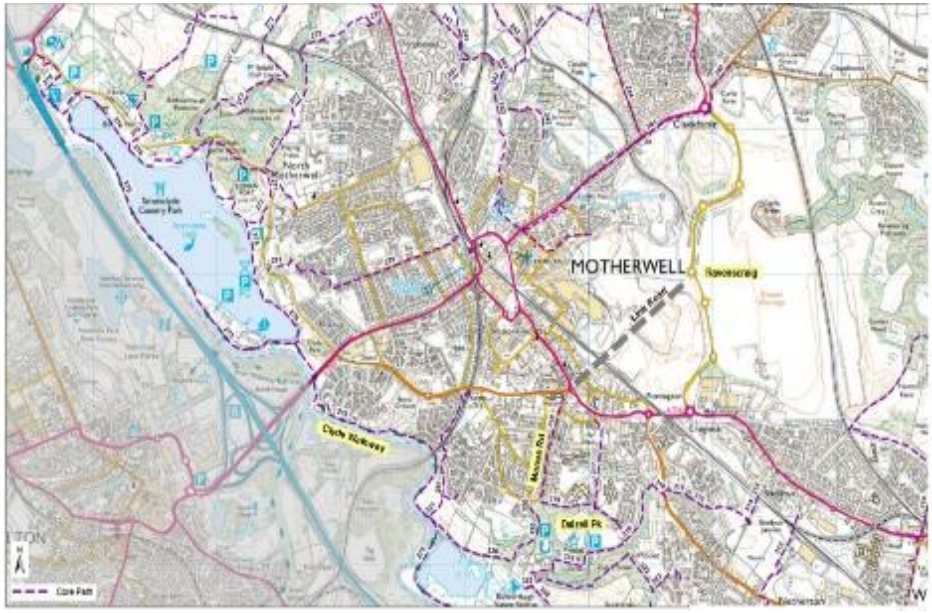


Figure 7: Core path network

3.6 Designations and Sensitive Land Use

Within the vicinity of the of the red line boundary (Figure 8), exists:

- An air quality management area;
- Two Category B listed buildings;
- Ravenscraig Masterplan area;
- Several Sites of Importance for nature Conservation; and
- South Calder Water, which eventually receives the NDC drainage water.

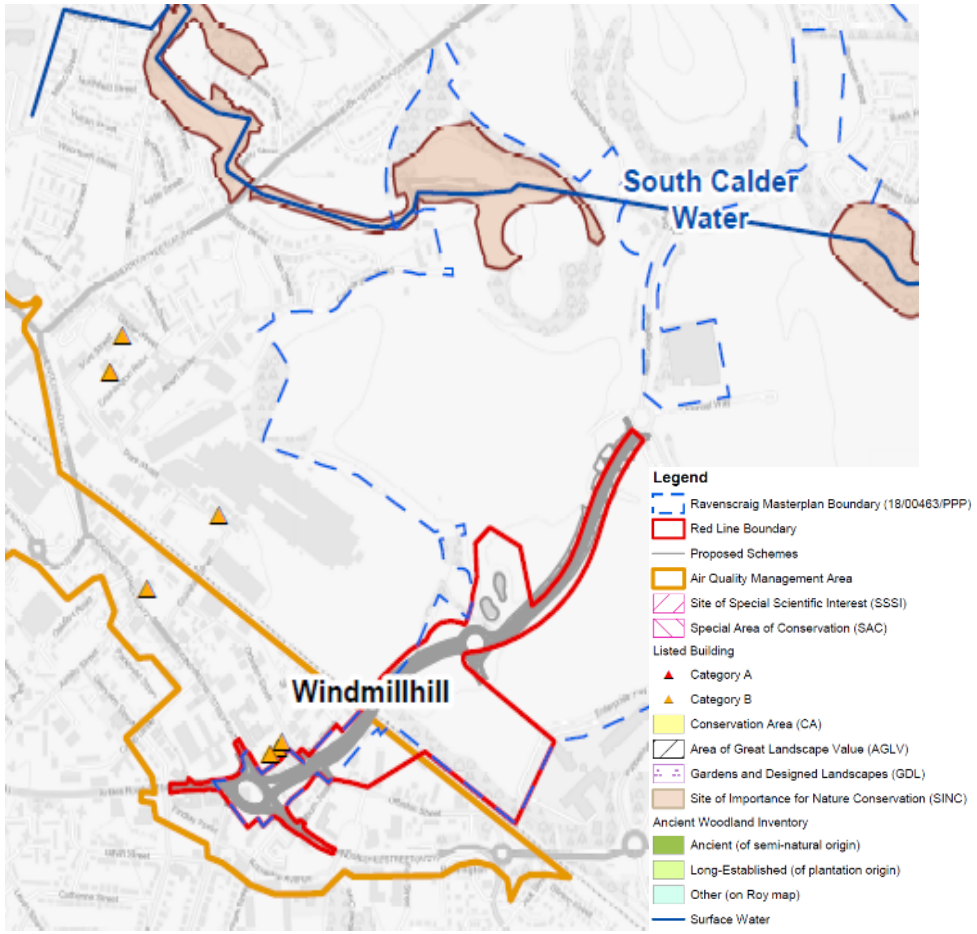


Figure 8 Designations and environmental constraints

4 Transport Infrastructure and Development

4.1 Releasing development potential

This first masterplan (2005) identified new transport infrastructure as essential to enable the development of the site and produced the first iterations of proposals for the development described in this DAS. The revised masterplan (2018) continued to identify the constraints to development and reaffirmed the important role of transport infrastructure in the site's development.

The Ravenscraig Transport Assessment ("*Ravenscraig TA*") and the accompanying updated Ravenscraig Strategic Transport Appraisal Guidance (STAG) Part 1 appraisal ("*Ravenscraig STAG*"), prepared in development of the Revised Masterplan, considered and tested a wide range of interventions. These included increases in road capacity and new connections for vehicular traffic, new public transport modes, routes and service levels, and provision for active travel.

The Ravenscraig STAG identified that the Revised Masterplan should provide integrated bus infrastructure and enhancement of active travel within Ravenscraig. Options to improve rail-bus links and broader enhancement of active travel were considered in the Ravenscraig TA and through discussions between Ravenscraig Ltd, the Council, and SPT.

The accompanying Ravenscraig TA and the transport strategy, is based around the principle of Fostering Green Movement. The Movement Strategy for Ravenscraig 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;
- Integrating the development within the Motherwell and Wishaw urban areas, taking advantage of and reinforcing local transport links;
- Using 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, developing 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.

4.2 Transport interventions required to release development

The Ravenscraig Masterplan aims to promote sustainable travel for Ravenscraig residents, employees and visitors while accommodating journeys that are necessary by car. This recognises the need to provide people with travel choices to meet their differing needs.

The Ravenscraig Travel Plan Framework has set the following targets for changing mode share by 2045 from their 2011 census baseline values:

- Car driver reduce from 69% to 48%;
- Car passengers increase from 10% to 12% by encouraging car sharing;
- Bus or rail use increase from 7% to 18%;
- Walking or cycling increase from 2% to 10%.

Key to achieving these aspirations is the provision of improved public transport, walking and cycling links between Ravenscraig and Motherwell town centre and the local train stations at Motherwell, Airbles and Carfin. It is important to provide a route that is shorter and more attractive than is currently available. A more direct road link is also required to provide opportunities for improved bus services between Ravenscraig and Motherwell town centre and to avoid negative impacts on the existing road network and the buses that use it.

4.3 Sustainable Modes – New Link Road

A key objective of the RIAS project is to create new high-quality active travel routes with widths that match or exceed design standards. Between the roundabout at Ravenscraig Regional Sports Facility and the roundabout that links to New College Lanarkshire there will be a 3.5 m wide shared path for pedestrians and cyclists on both sides of the new link road. As the speed limit on this section of the link road is 40 mph there will be a 1.0 m hard separation between the footway-cycleway and the edge of the road.

Between the New College roundabout and Windmillhill roundabout, where a 30 mph speed limit applies, there will be a 3.0 m wide shared path for pedestrians and cyclists on both sides of the proposed new link road. There will be a 0.5 m hard separation between the footway-cycleway and the road (Figure 9).

The proposed link road between Ravenscraig and Windmillhill roundabout includes a crossing of the WCML railway that takes the road under the railway.

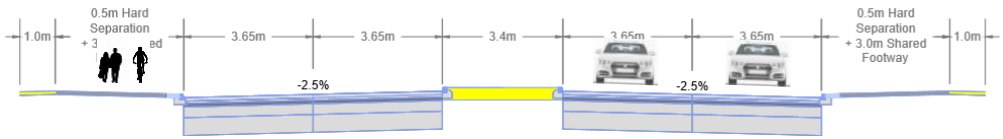


Figure 9 Typical section between Windmillhill roundabout and the WCML railway

There will be uncontrolled pedestrian and cyclist crossing points provided at strategic parts of the link road, namely on the two arms of Orbiston Street and a staggered uncontrolled pedestrian and cyclist crossing point on the new link road to the north of Orbiston Street and at the new roundabout north of the WCML and also at the sports centre.

The shared pedestrian and cyclist paths provide a high-quality lit link under the WCML railway creating a direct link between the heart of the Ravenscraig development and Windmillhill roundabout (figure 10). This will reduce the distance to Motherwell town centre by about 800 m, resulting in a walking time of about 25 minutes and a cycling time of about 7 minutes.

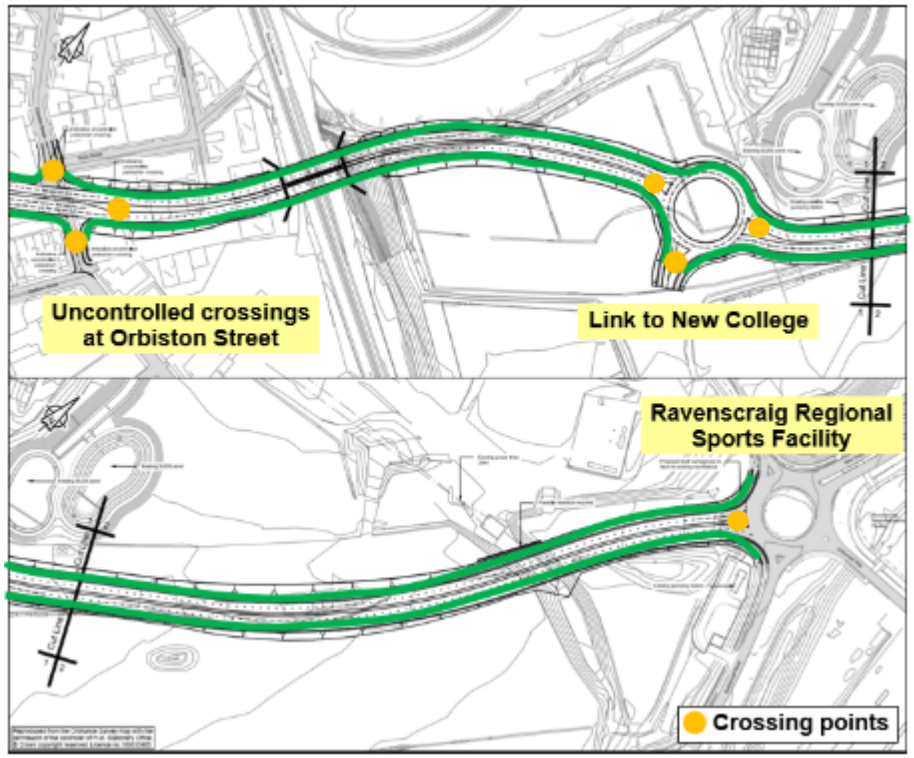


Figure 10 Pathways and crossings between Orbiston St and Sports Facility

4.3.1 Sustainable Modes - Windmillhill Roundabout

Recognising the more constrained urban streetscape at Windmillhill Roundabout it is planned that cyclist re-join the carriageway and continue their journey within the existing road network. Where possible, footways have been provided at a 3 m width to add to pedestrian comfort and allow the footways to be redetermined in the future to allow cyclist movement. The new footway network will tie into the existing footways on Windmillhill Street and Airbles Road with staggered traffic signal-controlled crossing points for pedestrians and cyclists on all four arms of the roundabout (Figure 11). Although Manse Road is to be stopped up to motorised traffic it will retain a core path status linking it to the new footway and crossings at Windmillhill roundabout.

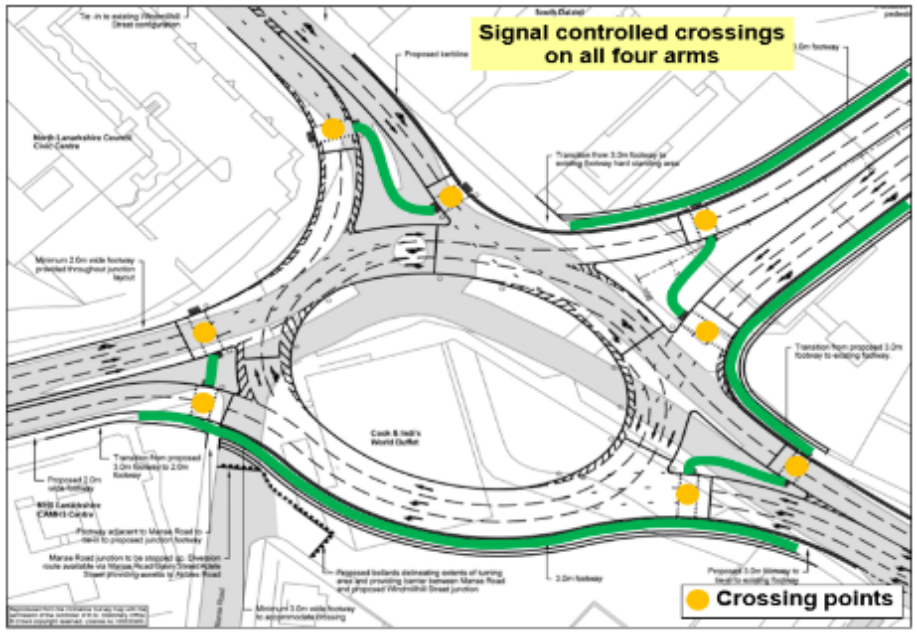


Figure 11 Windmillhill pathways and crossings

4.4 Accessibility

Proposed Development Aspirations

The Ravenscraig Infrastructure South (RIAS) active travel routes have been designed in accordance with Transport Scotland's "Roads for All Good Practice Guide for Roads" and "Cycling by Design".

A shared use pedestrian/cycleway at least 3.0 m wide will be provided along the length of the RIAS route. This width of the shared facility accommodates the passage of two bicycles or two wheelchairs with a buffer zone for pedestrians. The proposed RIAS project also incorporates the following features:

- Controlled (audible signalised) crossings and with dropped kerbs and tactile paving at crossings of the new link road at Windmillhill Roundabout;
- Dropped kerbs to provide ease of access at uncontrolled crossings notably at the new roundabout junction connections.

These improvements will play a key part in making Ravenscraig accessible to everyone, including those with mobility or visual impairments.

4.5 Public Transport

As part of the planning conditions for the Ravenscraig Masterplan the developers must provide a high-quality bus interchange in Ravenscraig town centre and funding for a circular bus service between Ravenscraig and Motherwell railway station. The new link road will improve bus journey times to Motherwell town centre and the railway station and mitigate traffic impacts on the existing bus routes on Craigneuk Street and Windmillhill Street and via Windmillhill roundabout.

The new link road will also reduce the distance to both Motherwell railway station and Airbles railway station by about 800 m resulting in a cycling time of 9 minutes to Motherwell station and 7 minutes to Airbles station. This will improve both active travel access to both stations. Car and taxi journey times to these stations will also be reduced.

4.6 Motorised Users

The predicted impact of the scheme on motorised users has been tested using North Lanarkshire Council's S-Paramics traffic microsimulation model of Motherwell and Wishaw. This features a 2017 base year model and 2035 design year model. The 2035 design year model includes:

- All of the elements of the RIAS proposal
- A new road connecting the link road to New College Lanarkshire
- The completion of the dualling of Airbles Road with improved traffic signal timings at the Hamilton Road junction
- The dualling of the A723 between Ravenscraig and the M8.

The predicted traffic changes between the 2017 base year and the 2035 design year, including the traffic generated by the Ravenscraig development in 2035 are shown in Table 1.

Traffic volume in vehicles per day	2017 Base	2035 Scheme	Difference
New Link Road	0	16,100	NA
A721 Windmillhill Street (north)	13,300	18,200	+37%
B754 Airbles Road	29,800	36,000	+21%
A721 Windmillhill Street (south)	31,400	36,000	+15%
B754 Shields Road	22,100	25,500	+15%
Orbiston Street (south)	7,500	3,900	−48%
A721 Craigneuk St (under WCML)	25,700	23,700	−8%
Robberhall Road	13,800	15,500	+12%
A721 east of Robberhall roundabout	23,400	26,800	+15%
A723 Merry Street	18,800	20,200	+7%
A723 Hamilton Road	17,800	19,700	+11%
A723 Hamilton Road (near M74)	52,500	60,900	+16%

Table 1: Predicted traffic changes

The impact that this increased traffic has at key locations around Motherwell has been assessed using the S-Paramics model (Figure 12). A LinSig model has also been created for the operation of Windmillhill roundabout to inform the design process and ensure lane lengths and widths are appropriate. The average delay to vehicles passing through each junction has been measured by comparing with the corresponding journey times in non-peak hours in the 2017 base model.

Windmillhill roundabout

- During the AM peak hour of 08:00 to 09:00 the average delay per vehicle reduces by 14 seconds;
- During the PM peak hour of 17:00 to 18:00 the average delay per vehicle reduces by 4 seconds.

Robberhall roundabout

- During the AM peak hour of 08:00 to 09:00 the average delay per vehicle increases by 11 seconds;
- During the PM peak hour of 17:00 to 18:00 the average delay per vehicle reduces by 7 seconds.

Shields Road roundabout

- During the AM peak hour of 08:00 to 09:00 the average delay per vehicle increases by 23 seconds;
- During the PM peak hour of 17:00 to 18:00 the average delay per vehicle increases by 22 seconds.

Modelling results show that there is a small reduction in the average delay per vehicle at Windmillhill roundabout due to the significant roundabout alterations. This occurs even though traffic through the roundabout increases by 55% in the AM peak hour and by 50% in the PM peak hour. The average delay per vehicle at Robberhall and Shields Road roundabouts will increase by no more than 23 seconds as a large volume of traffic is able to avoid these roundabouts by using the new link road.

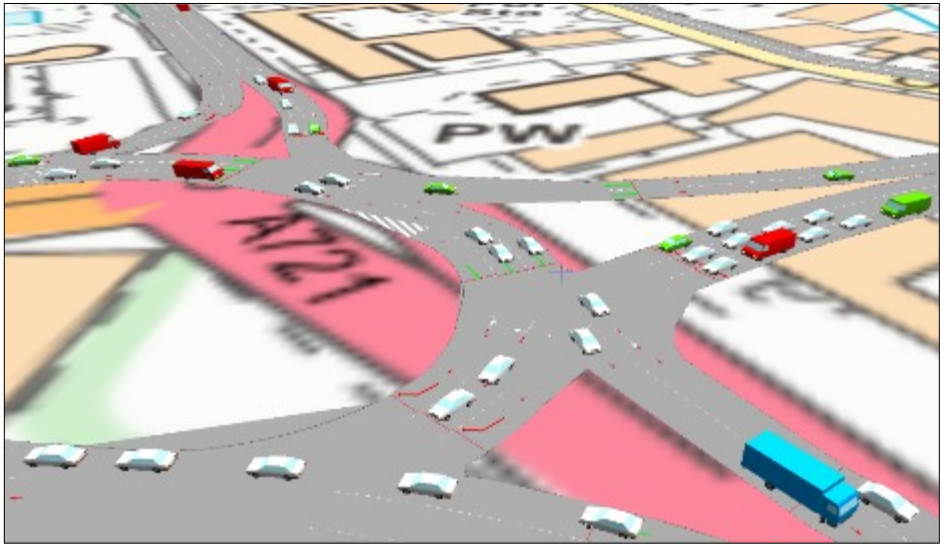


Figure 12: Screenshot of S-Paramics model of Windmillhill roundabout

Car Parking

It can be advised that the provision of the new link road and roundabout junction will result in a loss of 39 formal car parking spaces in total comprising 24 spaces in Orbiston Street and 15 spaces within Rose Street. Currently it is free to park within each space, with time restrictions in place only and therefore no revenue will be lost. There may be an opportunity to replace some of these spaces with new land use changes following the completion of the road.The provision of the new link road and roundabout junction will results in a loss of all existing formal car parking spaces located within the red line boundary on Orbiston Street. This amounts to 24 formal spaces. Outside the red line boundary 15 formal parking spaces are likely to be lost within Rose Street, as it changes from one-way to two-way operation as part of the land use changes to the Orbiston Street Industrial area. Currently it is free to park within each space, with time restrictions in place only and therefore no revenue will be lost. There are no plans to provide additional formal parking spaces as part of this application as it would be expected that the parking need will change following the completion of the road.

Motherwell town centre

A similar journey time assessment has been carried out for Motherwell town Centre by considering traffic entering or exiting via Hamilton Road, Muir Street, Merry Street and Windmillhill Street and passing through the town centre with the new link road in place.

- During the AM peak hour of 08:00 to 09:00 the average delay per vehicle reduces by 6 seconds;
- During the PM peak hour of 17:00 to 18:00 the average delay per vehicle increases by 10 seconds;
- This shows that there is no significant detriment to journey times through Motherwell town centre with the full build out of the Ravenscraig development and new link road in place.

Modelling predict that the new link road will result in significantly improved journey times between Ravenscraig and Motherwell town centre.

- During the AM peak hour of 08:00 to 09:00 journey times to the town centre reduce by 1:45 and journey times from the town centre reduce by 2:45;
- During the PM peak hour of 17:00 to 18:00 journey times to the town centre reduce by 4:00 and journey times from the town centre reduce by 2:00;
- At non-peak times journey times in both directions reduce by about 90 seconds.

The proposed link road effectively provides a bypass between Ravenscraig regional Sports Facility and Windmillhill roundabout. This avoids the Robberhall and Shields Road roundabouts. The alterations to Windmillhill roundabout improve its ability to accommodate a larger volume of traffic. Therefore, these infrastructure improvements will mitigate the impact of the additional traffic that the Ravenscraig development will generate. This scheme fundamentally addresses the needs of current and future motorised users.

To determine how close to capacity Windmillhill roundabout will be in 2035 if traffic flow increases as predicted it was modelled in detail using the LinSig

modelling software. This shows that during the AM peak hour of 08:00 to 09:00 the roundabout will have a Degree of Saturation of 88.9%, while during the PM peak hour of 17:00 to 18:00 the Degree of Saturation only increases to 89.5%. Hence modelling show that the Windmillhill roundabout is predicted to operate within capacity in 2035.

As part of the new link road proposal both sides of Orbiston Street will be split with access to the link road. This will be limited to left in and left out movements only. However, Windmillhill roundabout and the New College roundabout are nearby to allow vehicles to turn or use as an alternative. This gives Orbiston Street traffic an alternative access to the A721 via Windmillhill roundabout rather than Shields Road roundabout.

Manse Road will be stopped up to vehicular traffic, so traffic will instead access Airbles Road via Adele Street. Vehicles will reroute from Manse Road to Adele Street via Findlay Street, Gavin Street, George Street and Hamilton Drive. Modelling does not predict any increase in queuing at the Airbles Road-Adele Street junction. Traffic from Knowetop Avenue is able to use the junction with Craigneuk Street.

5 Design Principles, Analysis and Evolution of Solutions

5.1 Design concepts provided by PPP

Conceptual designs were produced for the initial planning phases prior to 2020. Work in late 2019 and into 2020 was to further develop the designs of:

- A New Dual Carriageway (NDC) road within Ravenscraig, south-west from New Craig Road/Robberhall Road roundabout, including a new 3-arm roundabout near New College Lanarkshire, and leading to a new bridge across the West Coast Main Line railway;
- A new bridge crossing of the West Coast Main Line railway (the "WCML", "WCML Crossing"); and
- A significantly revised junction at Airbles Road/ Windmillhill Street with a new eastern arm and a new dual carriageway road leading to the WCML Crossing incorporating a new junction with Orbiston Street.

5.2 Design standards for conceptual layouts

The overarching design guidance for the initial conceptual layouts was the Design Manual for Roads and Bridges (DMRB). This technical guidance has been produced by the trunk road authorities in the United Kingdom and is therefore aimed at trunk roads. Whilst the projects roads are not trunk roads, the DMRB was an appropriate, consistent and comprehensive available design standard for the initial conceptual designs and was therefore used in the absence of a specific NLC design guide document.

5.3 Revised standards for design development

The initial conceptual designs for the roads were reviewed with representatives of NLC as roads' authority in early 2020. The need to refine the designs to be more proportionate and in keeping with the local road environment was recognised and this initiated deviation away from wholly DMRB standards and establishment of a revised suite and hierarchy of standards and guidance. The standards for further development of designs were incorporated in a bespoke "Basis of Design" document and comprised:

- Designing Streets by the Scottish Government - March 2010;
- National Roads Development Guide by SCOTS (Scottish Local Authorities) June 2017;
- DMRB;
- Roads for All: Good Practice Guide for Roads by Transport Scotland - July 2013); and
- Other national and local guidance as appropriate.

5.4 Initial Review with NLC Roads

The review sessions with NLC crystallised the general value engineering principle towards more proportionate intervention and re-use of existing asset and established the following parameters for design development:

- Design speeds were agreed as 70kph for the dual carriageway and 60kph for urban streets;
- The design year was agreed as 2035, deemed a viable future date for credible traffic forecasting;
- The target for capacity was agreed as "no net detriment" at 2035 i.e. improvements in capacity would match increases in flow at 2035;
- The cross-section for the new dual-carriageway from Windmillhill Street roundabout through the WCML structure to Ravenscraig was agreed;
- The design for Windmillhill Street roundabout was scaled down to reduce its footprint whilst maintaining minimum capacity; and
- Whilst designs were to be more compact, the design vehicle was maintained as a 16.5m articulated vehicle in recognition of the project objective to facilitate economic activity at the Ravenscraig site.

The value engineering principles described above generate designs more proportionate to the existing semi-urban road environment. Inherent in this are relaxations and departures from standard that require the approval of the

overseeing organisation and this process will be on-going throughout design development. NLC have indicated approval in principle to the designs described in this DAS.

5.5 Earthworks

The vertical alignment for Windmillhill Street roundabout (WMHR) is dictated by tie in, to the adjoining arms, and this requires relatively minor earth working over the northern portion of the roundabout. Embankment fill is required in the southern portion of the roundabout between Windmillhill Street and Manse Road where the land around the current buffet restaurant will need to be raised.

The vertical alignment for the dual carriageway from WMHR to the Ravenscraig Regional Sports Facility roundabout on Robberhall Road/New Craig Road is generally at or above existing ground level with no major sections in cutting. This is dictated by the need to tie into existing roads between WMHR and the WCML, and the required clearance beneath the WCML. There is a need to remain above previous platforming and remediation levels throughout the Ravenscraig site. Forming this section of the NDC on embankment minimises excavation in potentially contaminated land, and ensures sufficient longitudinal gradient can be provided (allowing drainage pipes to achieve minimum velocity for self-cleansing), and that the proposed drainage network can tie in with the existing destination SuDS basin.

Earthworks will therefore generally consist of imported material to construct the embankments. Maximum embankment height will be circa 2.5m above existing ground level. Side slopes will be no steeper than 1 in 2 and will be formed at shallower grades where practicable to aid maintenance and soften visual aspect. Existing areas of soft or unacceptable material will be removed and replaced and/or improved with a geotechnical solution. Disposal of material off site will be minimised by appropriate reuse of materials including forming landscape areas. However significant amounts of import will still be required to be brought into the site.

5.6 Drainage and flood risk

The flood risk assessment carried out for this development considered the impact of a 0.5% annual exceedance probability (1 in 200 year) flood event, and the impact of climate change to account for future climate scenarios. All interventions are designed to ensure that under extreme conditions excess surface water is managed and appropriately channelled via the road system and the previously constructed flood route to the South Calder Water (Figure 13). Implementation of Sustainable Drainage Systems (SuDS) provide an improvement to existing road drainage and future water quality through treatment of runoff, as well as providing amenity improvements to public greenspace.

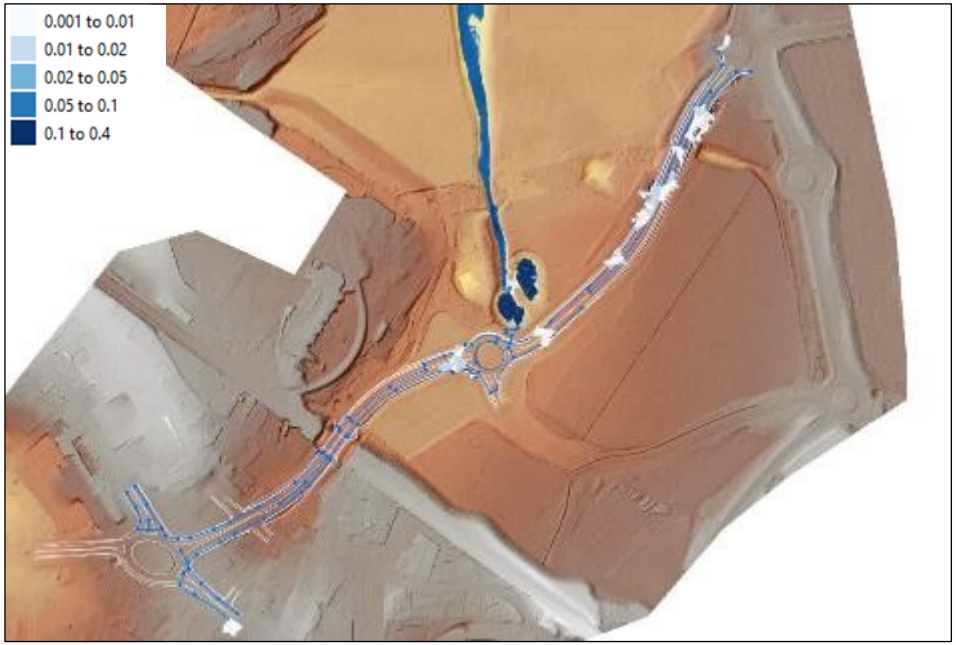


Figure 13: Predicted flooding depth during M200-30 min summer storm event

The drainage design principles adopted follow the value engineering philosophy optimising reuse of asset as far as practicable. Drainage of the new dual carriageway through the Ravenscraig site is designed to utilise the SuDS basins and outfall systems to the South Calder Water previously constructed. Much of the discharge from the new larger Windmillhill Roundabout is directed to the Ravenscraig SuDS. The remainder of the Windmillhill runoff will be attenuated and discharged to the existing Airbles Road drainage systems at a rate of flow no greater than from the existing road drainage. The drainage impact assessment carried out for this development identifies the positive impact that this design would have on the Scottish water combined system. Consultation and approval from SEPA will be required for the drainage proposals.

5.7 Services

The primary existing services affected are concentrated around the existing roads at WMHR and between this and the WCML including at the existing commercial and industrial properties. Services across the Ravenscraig site are fewer and more distinct.

Whilst the impacts on utilities will be worked through with the utility companies to minimise the diversionary and protection works required, these will be considerable and complex for WMHR and from there to WCML. There are no known existing services crossing the WCML at the location of the structure. It is likely that the waste-water line to Coursington WwTW will require minor diversions within the Ravenscraig site. The potential to implement advance works to reduce the impact on the project and the public will be investigated. This process of consultation will be ongoing following appointment of the Contractor to manage the impact of utilities on the project.

5.8 Lighting

Street lighting provision has been designed to provide sufficient visual information to allow all users to safely negotiate hazards, obstacles, changes in road geometry, and to provide a feeling of safety. By careful selection and placement of road lighting columns, this has been designed to provide a positive visual guidance particularly at junctions, roundabouts and bends. There are several lighting documents and standards to support road lighting design, and BS 5489-1: 2020 Design of road lighting has been referenced within the design.

In terms of the new dual carriageway link road 10 m high Annapura columns with Signify Milewide luminaire in an opposite arrangement has been used to be consistent with the existing New Craig Road spine road that is currently in place. Lighting levels distribution can be designed and controlled with the selection of various optic lenses within LED luminaire technology. Additionally, future maintenance including temporary traffic management was considered where it would be more practical of installing nearside lane closures rather than two outside lane closures to access the central reservation when accessing any luminaires or lighting columns. To maintain clear and unhindered access to NMUs lighting columns will be positioned back from the shared pedestrian / cycleway surface and within the grass verge. Additionally, co-ordination with landscaping and street furniture such as road signs and crossings has been undertaken to eliminate clashes or conflicts of tree planting. Luminous intensity is designed to meet requirements of BS EN 13201-2: 2015 lighting class M3.

At the Ravenscraig Roundabout the lighting infrastructure has been positioned in a location that can be accessed safely for maintenance purposes and in a location that reduces the risk of any errant vehicles striking it resulting in complete power loss to the lighting. Lighting columns are positioned on the outside of the roundabout with luminous intensity designed to meet the requirements of BS EN 13201-2: 2015 lighting class C2.

At the WCML underpass the street lighting will be provided by affixing integral lanterns to the bridge. Luminous intensity has been designed to meet the requirements of BS EN 13201-2: 2015 lighting class M3.

As part of the overall development of Ravenscraig, NLC have advised that there is a masterplan theme which should be maintained regarding the aesthetics of the road lighting. Therefore, lighting columns and luminaires have been selected

from the same family of lighting apparatus previously specified within other developments. Typical cross section arrangement of lighting columns within the dual carriageway is shown in Figure 14.

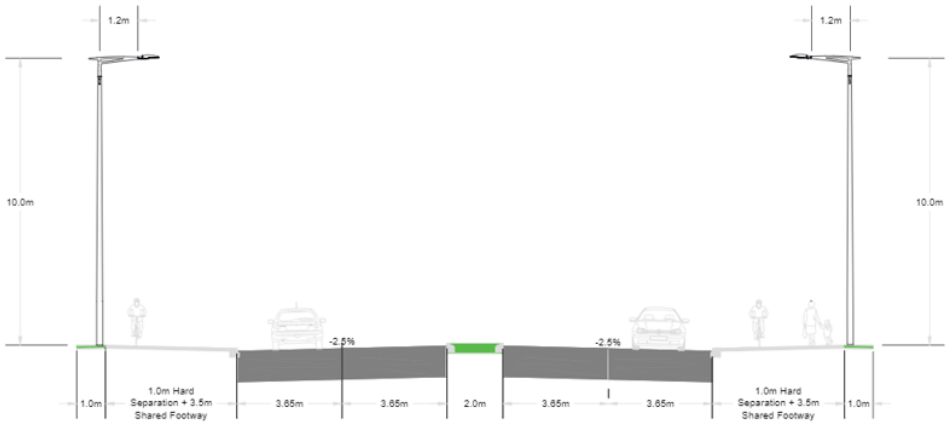


Figure 14: NDC standard cross-section (40 mph) and typical lighting columns

At Windmillhill Street roundabout, similar to the roundabout on the new dual carriageway, the most economical and safe solution was to design the lighting with columns around the circumference, with the same aesthetic solution as that with the existing road lighting apparatus. The street lighting feeder pillar has been positioned in a maintainable location, adequately setback from the carriageway and out with the gyratory of the roundabout, reducing the risk of any errant vehicles coming into contact with this, resulting in complete power loss to the lighting.

NLC have advised that within the previous five years, a LED luminaire conversion has already been undertaken in this area, therefore lighting columns and luminaires have been selected from the same family of lighting apparatus in this area. Lighting levels have been designed to meet the requirements of BS EN 13201-2: 2015 lighting class M3.

Road Signs

As part of the new link road design, road signs have been provided to allow users to travel around the road network in an informed, safe manner. The road signs have been designed in accordance with the Traffic Signs, Regulations, Directions (TSRGD) document together with the Traffic Signs Manual. The signs comprise signs that give orders, signs that warn drivers and signs that provide information such as advanced directional signs.

Around the Windmillhill roundabout, the advance direction signs will be located on the footway within the existing road boundary and will be a like for like replacement of existing signs.

Traffic signals controlling traffic at Windmillhill Street roundabout, together with their controllers and power supplies will be located within the existing road boundary to control traffic, including pedestrians, as it navigates through the improved junction.

Within the new link road, road signage is provided which will be located within the proposed road boundary either on the footway or the verge. Following advice within TSRGD, the provision of road signs has been carefully considered to ensure street clutter is managed yet provision is given as necessary. Signage aimed at pedestrian and cyclists only are also provided within the shared surfaces to raise awareness of the presence of the two different modes.

5.9 Landscaping

The aim is to achieve a final established landscape scheme which integrates within the existing landscape. The approach taken is to achieve a landscape design solution that integrates seamlessly with the receiving environment and has design and construction considerations on earthworks, SuDS and vegetation planting. These 3 core areas will help integrate the road improvements from Windmillhill roundabout/Airbles Road and the new access road through the Ravenscraig development. Integration is achieved by:

Earthworks

- Minimising the use of embankments within open areas;
- Mounding earth with wide convex slopes or false cuttings to help visually screen vehicles;
- Tying new earthworks slope profiles into existing topography improving integration with the wider landscape as per proposed design for the Ravenscraig access road.

SuDS

- Integrating SuDS sensitively within the landscape, locating them at naturally low areas where water would be expected to collect;
- Designing waterbodies to have a natural/irregular shape;
- Creating a diversity of vegetation including fully aquatic/marginal mixtures;
- Keeping fences to a minimum to enable features to appear natural, if fence must be used utilise temporary fence until natural boundaries have established.

Vegetation Planting

- Designing and incorporating new planting which relates to the landscape and visual characteristics of the area;
- Selecting tree or woodland species that relate and enhance the exiting trees and woodland within the scheme boundary and adjacent lands as well as contributing to ecological value;
- Replanting standard trees/avenues where tree removal is required, which will offer filtered views across the surrounding landscape and compensate for any lost vegetation;
- Planting new woodland trees at toe of proposed slopes along the Ravenscraig development;
- Selecting tree/woodland species which will thrive over the long term and be resilient to predicted climate change;
- Selecting mixes of tree species with native provenance which will help to protect biosecurity and future proof planting stock;
- Establishing grass areas with species suited to the ground conditions and predicted maintenance, including species rich grassland and meadow mixes;
- Planting new specimen trees in clusters, lines, avenues, or rows to relate to and reinforce the landscape characteristics and account for lost vegetation.

Green Infrastructure Opportunities

Possible opportunities for the proposed development site are to:

- Strengthen the road corridors, ensuring tree lines are well connected and sensitively managed;
- Create wildlife highways with appropriately sited and selected planting;
- Use low nutrient grassland mixes that will provide more habitats for insets, required no importing topsoil to establish and require less maintenance than amenity grass verges;
- Incorporate SuDS through the implementation of rain gardens;
- Retention of existing boundary vegetation where practical;
- Stripping the soil, storing and reusing as part of the landscape proposals;
- Visually screen the proposed development from residential properties along Airbles Road;
- Protect retained trees during the construction process (guided by a Tree Survey, Arboricultural Impact Assessment and Arboricultural Method Statement);
- Use of new native woodland planting along the proposed boundaries to strengthen existing ecological structure, aid screening of the proposed development and secure the visual envelope;
- Use plants with year-round architectural interest within the internal setting of the proposed development site;
- Use biodegradable tree supports and tree guards;
- Use wildflower grasslands with scalloped edges at the top of the embankments adjacent to the proposed grass verge to give pollinators more feeding opportunities;

- Introduce grass filter strips between proposed footway and carriageway with species tolerant of specific road conditions;
- Ensure all surface water run-off, spillages, mud and debris, stored fuel and other potential pollutants are filtered and managed within the proposed development, through detailed considerate designs and management, and are not allowed to enter any adjacent watercourses;
- Construct the central reservation with permeable paving or alternatively to introduce low maintenance flowering grassland with species tolerant to salt spray and site-specific road conditions.

Enhancing the landscape through local community contributions

We have identified opportunities for the local community schools and community groups to contribute to landscaping design through engagement with local artists. These will contribute to integrated landscaping with appropriate art / sculptures to reflect the rich history of Ravenscraig Steel works.

5.10 WCML Structure

A bridge is required to allow the new highway to pass beneath the WCML and associated railway infrastructure, which run along on an embankment approximately 8 m above surrounding ground. Railway operations on the WCML may not be disrupted for any significant period of time, exceptionally a 9-day blockade is planned to allow the bridge to be constructed. Options for design of the bridge are constrained to a large extent by this timeframe.

The main design considerations include:

- Suitability of structure type to be constructed offline and then transported into place;
- Tolerance of structure type to backfilling and construction loads during the blockade;
- Limited future maintenance requirements. For example, no bearings or movement joints;
- Choice of fill materials to minimise excavation extents, both to reduce time required to excavate and backfill the structure and to avoid disturbing nearby railway infrastructure.

An analysis of these design considerations led to selection of an integral concrete portal structure.

Evolution of design

During the preliminary design phase, the size of structural elements was confirmed and the width of the bridge set at 30m. Spans have increased slightly to accommodate the finalised highway alignment. Ground investigations have been undertaken which have allowed construction sequencing to be further developed and which informed a change in proposed wing wall type from piled walls to gravity structures.

The options for, and the design of, the bridge have been developed through Network Rail's Governance for Railway Investment Projects ("GRIP") process. A preliminary design of the bridge has been completed, equivalent to RIBA stage 3, allowing for a detailed planning application to be made. This design will be developed into the detailed design for construction.

6 Design Proposal

6.1 Overview

The Proposed Scheme is an upgrade of the existing road infrastructure and to develop a NDC link road, located between the former Ravenscraig site and the Windmillhill junction, including a WCML underbridge crossing.

This scheme has been linked to the Ravenscraig Masterplan site since its inception along with other developments. The Ravenscraig Masterplan site has been the basis of several planning applications over the years, which extends back to 2001, and there is a current planning permission that partially covers the proposed scheme area and the premise of the proposed scheme has been established as part of that wider Ravenscraig Masterplanning Permission in Principle. However, the redesign of the Proposed Scheme has increased the Windmillhill Gyratory due to requirements and this now means the proposed Scheme is larger than the current consented redline boundary area. To adopt a simple and straightforward approach it has been decided that a new application will be submitted that will include all elements of the proposed Scheme. This application will be submitted to NLC Planning Authority for consideration.

This chapter sets out the design proposals and how it has finally evolved through the project considering the project objectives, comments on the feedback from the public consultation, physical constraints related to utilities, crossing of structures, earthworks and sustainability issues.

6.2 Consultation

The proposed work to create a new connection from Ravenscraig to Motherwell are updates to, and developments of, those proposed and permitted most recently in the Planning Permission in Principle for the masterplan. The masterplan determines the location and principles of the road scheme and these have been tested in the assessment of, and consultation on, the masterplan.

The application falls below the threshold requiring submission of a Proposal of Application Notice and a pre-application consultation process. However given the potential impact of the proposed infrastructure it was decided that pre application public engagement would be undertaken on a voluntary basis in order that those potentially affected by the proposed developments are given information on the proposals as it is developed and a greater opportunity to understand the proposals, ask questions of, and provide comments to the Project Team.

Prior to the most recent engagement described in Summary of Pre-Application Public Engagement, the Council has maintained an ongoing public profile for the project through:

- Dedicated pages on the Council's website for the City Deal programme and project, with the ability for visitors to sign up to receive updates;
- Press releases and social media post (Facebook and twitter) at key project milestones including at the approval of the strategic and outline business cases and approval of the masterplan for Ravenscraig;
- Public reports to the Council's Enterprise and Growth Committee (and its predecessor the Enterprise and Housing Committee); and
- Briefings for elected members including most recently prior to the pre-panning public engagement.

The most recent report to the Council's Enterprise and Growth Committee prior to this engagement was made in August 2020 and set out the key points for the business case for the project and provided the details of the concept schemes being developed. The publication of this report was accompanied by an additional

notification by letter of the forthcoming Committee report to 555 residential and commercial properties in the immediate vicinity of the proposed development. The engagement undertaken in late 2020, aimed to provide information on:

- our proposals, as we develop the detailed designs and ahead of submission for approval and formal public consultation;
- the overall proposed timing of the project; and
- our next steps.

Owing to restrictions in place as a result of COVID19 during the autumn 2020 and the uncertainty over when restrictions might lift or indeed greater restrictions be put in place, it was determined that online engagement was appropriate.

The core of the information was provided by a project specific webpage to which links were provided from a number of other Council sites. The publication of the webpage was supported by press notices, social media releases by the Council's Facebook and twitter feeds. In order that those with limited access to the internet or digital media were notified, a flyer was distributed to residential and commercial properties in the surrounding area. The flyer provided a short introduction to the proposals, a location plan and links to the webpage and contact details for the Project Team.

Acknowledging that the particular geography and location of development means that its impacts a wide area was selected. In total some 6,178 flyers were posted. Hard copies of plans were also posted to those contacting the Project Team after receiving the flyer. All responses were logged and queries were responded to wherever possible.

All works in the Ravenscraig Infrastructure Access - South project which includes the Proposed Scheme along with proposals to complete the dualling of Airbles Road are funded through a single programme, the Glasgow City Region City Deal and work towards the same objectives of enabling the development and regeneration of Ravenscraig. In view of the proposed works being related and forming part of a single project, the pre-application public engagement was undertaken as a single exercise with information on all works proposed being made available in one forum. This took the form of a GIS storymap (Ravenscraig Infrastructure Access (arcgis.com)) which allowed information to be presented in a logical manner, giving background and context and detail of the proposals.

A key aim in the materials were allowing users to identify the location of the proposed development in a wider geographical context as the works have an impact on wider movement. Another key aim is to be able to see the location of the scheme at a very local scale, particularly for those living in close proximity to the proposed development.

The Summary Report for consultation provides a summary of the responses received by theme and subject where concerns were noted and issues raised regarding the proposals (Table 2) and the Project Team response. Overall, given the nature of the proposed scheme, the number of responses received were relatively low. However, in view of the prior notification of the project through the masterplan process and through the project specific channels, this is not considered to be representative of the level of awareness of the project.

In total 57 responses were received from members of the public, of which 6 related solely to a proposal for a rail freight terminal, which is being made by a third party. These responses were forward to the case office dealing with the potential application and are not discussed further in this report. A further 2 responses were received from organisations – Sustrans and Go Bike. In general, the response from members of the public was mixed with some 17 of the 51 responses being opposed to the scheme, whether wholly or in part, and with 10 responses in support of the proposals and the objectives.

It is important to note the context of the engagement undertaken i.e. that the proposed scheme to create a new connection from Ravenscraig to Motherwell are updates to, and developments of, those proposed and permitted most recently in the Planning Permission in Principle for the masterplan. The

masterplan determines the location and principles of the road scheme and these have been tested in the assessment of, and consultation on, the masterplan. Indeed, the principle of the new road connection was established in the first masterplan, approved in 2005.

Theme	Total	Supportive			Comments	Query
		Yes	No	-		
Proposals generally	26	6	11	9	16	10
Details of Airbles Road dualling scheme	15	1	5	9	4	11
Details of Windmillhill Roundabout and new dual carriageway scheme	7	2	1	4	1	6
Other	3	1	-	2	2	1
Total	**51**	**10**	**17**	**24**	**23**	**28**

Table 2: Summary of the public responses

In considering the issues raised, some will be addressed through, for example, the assessment of the impact on noise and air quality and through the design of measures to mitigate these impacts and assessed through the planning stage. There are a small number of comments from individuals regarding very local specific details of the scheme and we will continue to maintain a direct dialogue as we develop the detail and reflecting their concerns, whether for example in the detail of boundary treatments or landscape proposals.

6.3 Design Proposal

The design proposals have been developed in consultation with NLC Roads as described in Section 5 of this DAS. The scheme is described in the following sections from south to north, WMHR to the Ravenscraig Regional Sports Facility roundabout.

6.3.1 Windmillhill Street Roundabout

The proposed signalised roundabout is positioned at the location of the existing three arm roundabout. The proposal (Figure 15) is larger than the existing roundabout and has four arms for connection to/from Airbles Road, Windmillhill Street north to the town centre, the NDC and Windmillhill Street south to Wishaw. The WMHR is asymmetrical with the four arms more to the northeast side and a large part of the circulatory carriageway between Windmillhill Street south and Manse Road with no connecting arms. This asymmetry is a contributory factor dictating the increased size of the roundabout. The circulatory carriageway has three lanes orientated/marked for spiral operation and internal signals and stop lines.

The shape of the roundabout, number of lanes, spiral markings, signal design, lightening, lane widths (Figures 16 & 17) and lack of active travel routing via the central island are a balanced solution taking cognisance of the desire to minimise the size of the roundabout whilst maintaining the necessary capacity for 2035 forecast traffic and requisite space for larger commercial vehicles.

Provision for active travel and NMUs is around the circumference of the roundabout and across the arms controlled by the signalisation. The footways are 3m shared surfaces separated from carriageway by a 0.5m buffer strip. There is no NMU route via the central island.

It is proposed to incorporate softer landscaping and artwork indicative of Ravenscraig's steel manufacturing heritage in the WMHR central island (Figure 18). Existing view and visualisation of the WMHR is shown in Figure 19 & 20.

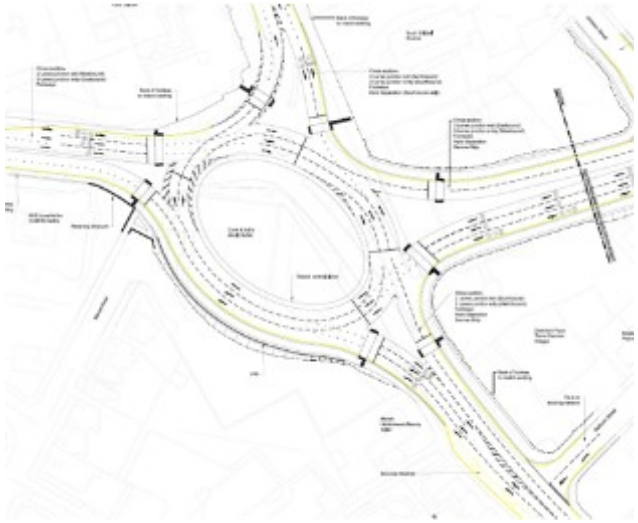


Figure 15: General arrangement of the WMHR

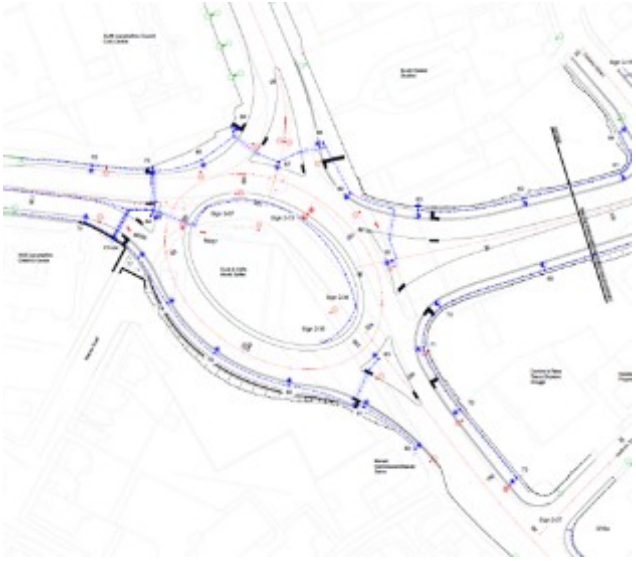


Figure 16: Street lighting layout of the WMHR

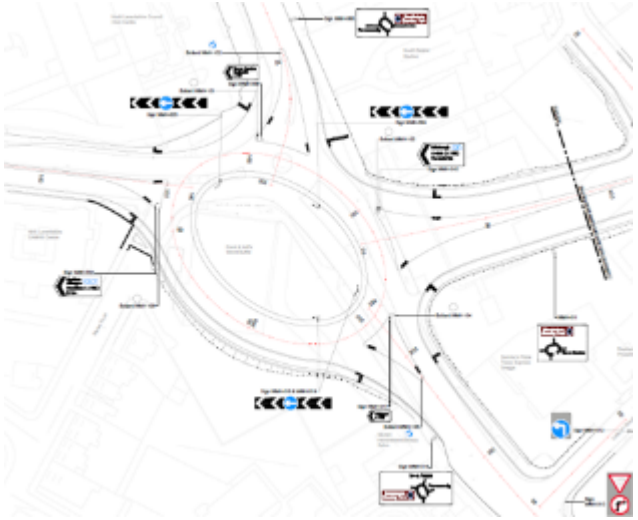


Figure 17: Road sign layout of the WMHR

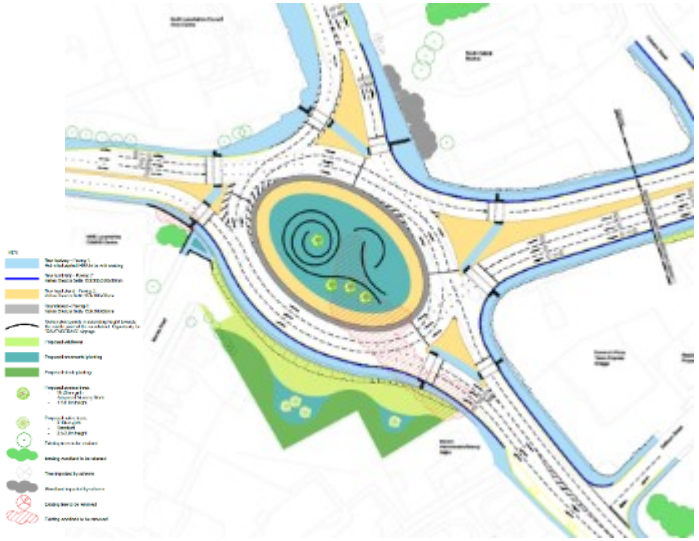


Figure 18: Landscape design of the WMHR

Figure 19: Existing view looking south-east from Windmillhill Street

Figure 20: Visualisation looking south-east from Windmillhill Street

6.3.2 New Dual Carriageway from WMHR to WCML

The NDC is connected to the WMHR on the east side between the two Windmillhill Street arms and is aligned on a left hand curve from the WMHR through the existing Evans Halshaw site, across Orbiston Street, through the existing commercial and industrial properties and to the WCML. A third lane is developed on the southbound approach to WMHR to aid efficient throughput at the roundabout (Figure 21).

Orbiston Street is severed by the NDC with no provision for traffic crossing the central reserve. Left-in/left-out junctions are formed on both sides of the NDC. Rose Street is stopped-up at its southern end so future access to this street and Meadow Road will require revision to two-way working and turning provision at the dead-ends. Carriageway widths are sufficient to allow two-way working.

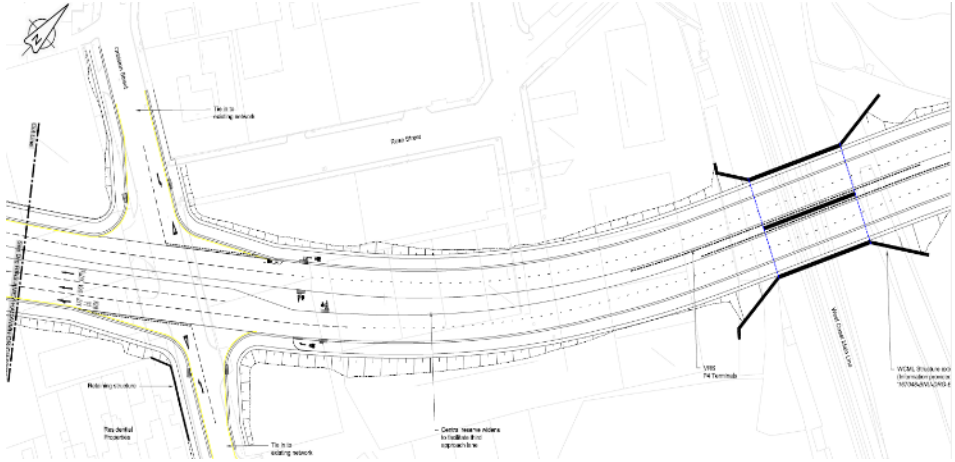


Figure 21: NDC with third lane on southbound approach to WMHR

A 3 m wide shared-use footway is provided on both sides of the NDC and through the WCML structure. Crossing the NDC by NMUs is possible through an uncontrolled crossing via the widened central reserve to the north of the Orbiston Street junctions. This section of the NDC from WMHR to WCML and to the three-arm roundabout serving access to Enterprise Way and New College Lanarkshire is expected to be 30mph speed limit. Landscape designs for the WMHR to WCML are shown in Figure 22.

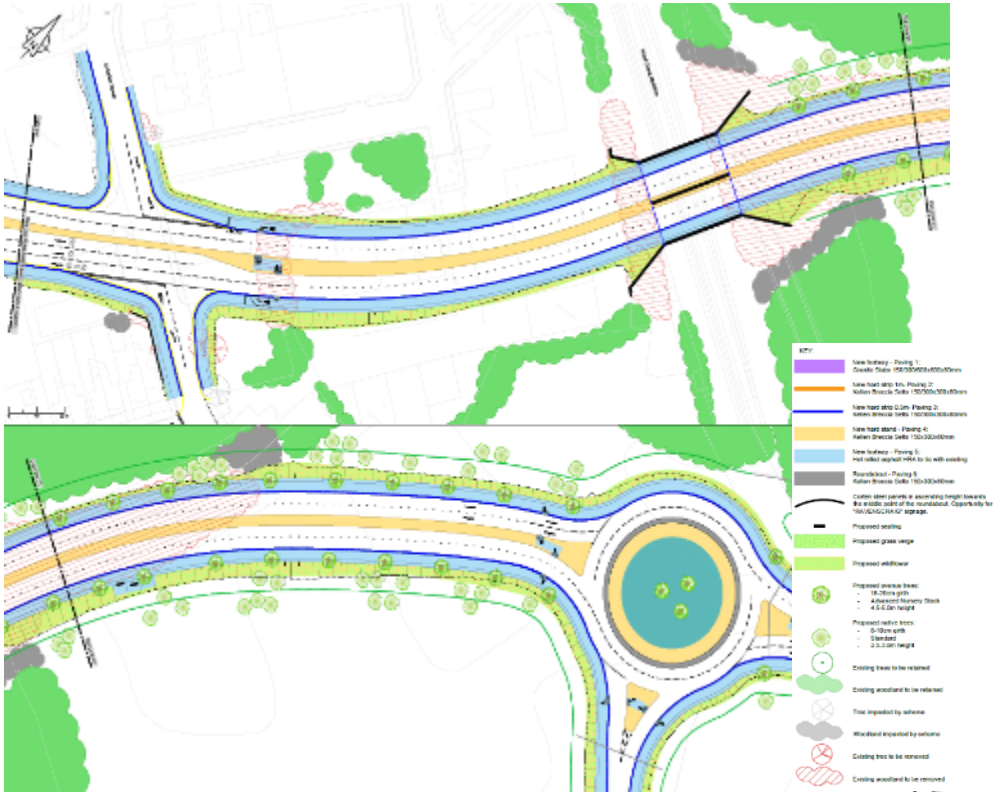


Figure 22: Landscape design for WMHR to WCML

6.3.3 West Coast Main Line Structure

The new structure (Figure 23) is to be constructed through the existing rail embankment under two tracks of the existing WCML, a goods loop and a siding for Dalzell steel. It will be a double reinforced concrete portal, symmetrical, 30 m long and 29 m wide, with each clear span 13 m wide to allow for a two-lane carriageway and a minimum 3 m wide cycle and pathway. The vertical clearance will be a minimum of 5.5 m above carriageway.

The structure will be constructed offline to the north of its final location and transported into position in a single piece using Self Propelled Modular Transporter (SPMT) during a blockade of the railway.

In addition to the railway lines the bridge supports an overhead line equipment gantry, railway signalling and communication cables and private fibre optic cables. Concrete parapets to either face of the bridge will form robust kerbs to contain rail traffic in event of derailment. GRP handrails will be provided above each parapet.

Reinforced concrete wing walls will be pre-cast in segments separate to the main portal and will be gravity retaining structures. They will be orientated at 30 degrees to the road. On the south side of the embankment they will tie into existing masonry and reinforced concrete retaining walls at the back of the industrial estate. A brick facing and concrete cope will be applied to the wing walls. As part of the bridge works the slopes of the embankment which currently vary will be re-graded to fall at a uniform 1V:2H.

A visualisation of the WCML from the NDC to the east of the structure is shown in Figure 24.

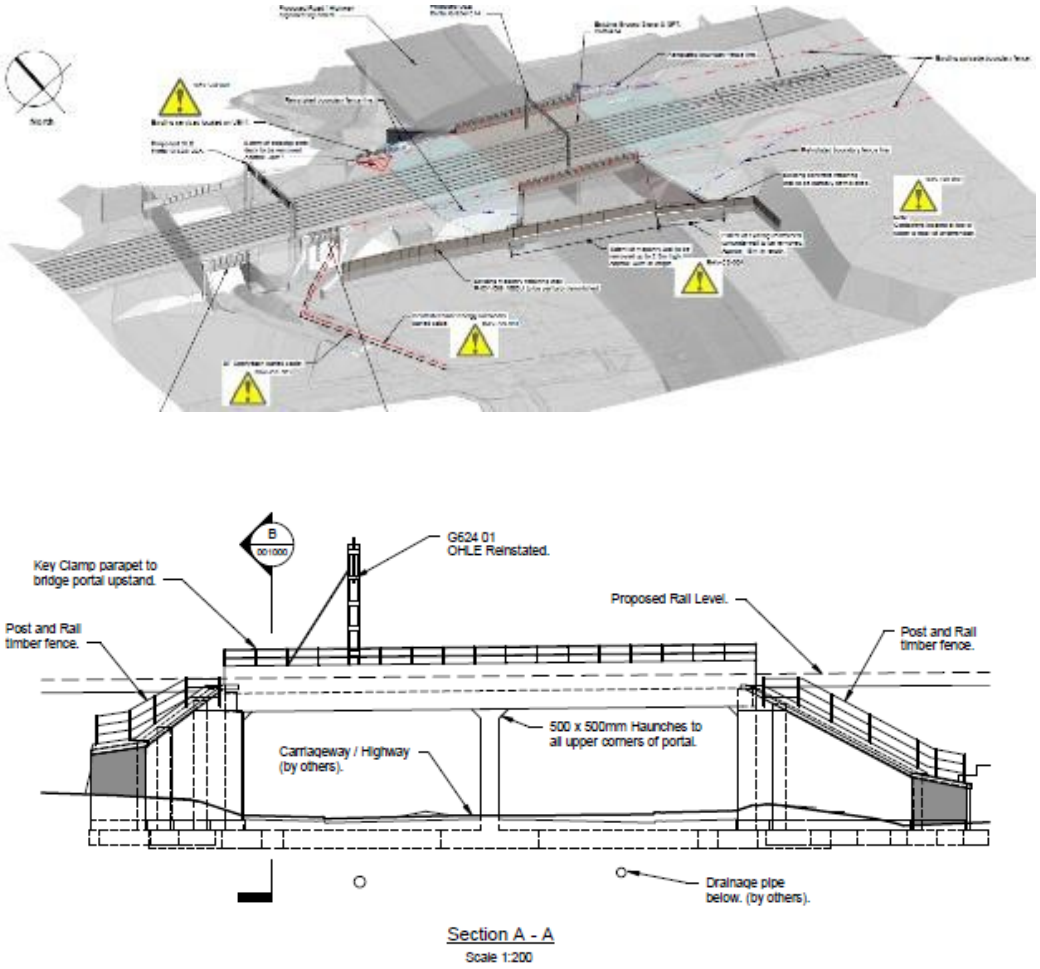


Figure 23: WCML overview and NDC cross-section

Figure 24: Visualisation of the WCML looking south-west from the Ravenscraig NDC

6.3.4 WCML to Three-arm Roundabout

This section of the NDC from WCML to the three-arm roundabout serving access to Enterprise Way and New College Lanarkshire is aligned on a right-hand curve situated on the west edge of the Ravenscraig site adjacent to the Liberty Steel property. This alignment is due to the position of the WCML structure that was moved slightly west to avoid a transition section of rail. The proposed three-arm roundabout is not signalised, or spiral marked and has a two-lane circulatory carriageway (Figure 25).

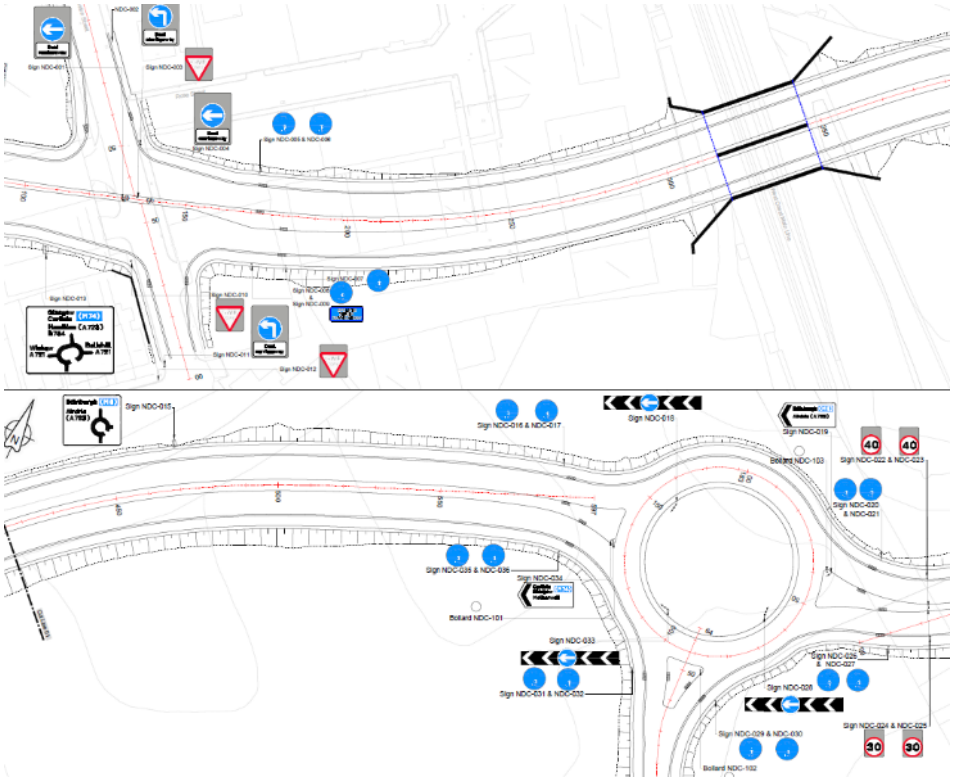


Figure 25: Road sign layout of the WCML to three-arm roundabout

Provision for NMUs is around the circumference of the roundabout and across the arms at uncontrolled crossing points. The footways are 3 m shared surfaces separated from carriageway by a 0.5 m buffer strip. There is no NMU route via the central island. It is proposed to incorporate softer landscaping and artwork indicative of Ravenscraig's steel manufacturing heritage in the WMHR central island (Figure 22).

6.3.5 Three-arm Roundabout to Ravenscraig Regional Sports Facility Roundabout

This section of the NDC is aligned initially generally on a left-hand curve and then on a right-hand curve as it approaches the Regional Sports Facility roundabout. This is partly to align with the existing stub provision at the roundabout. The speed limit on this section of the NDC is expected to be 40 mph.

The NDC passes to the east of the existing SuDS ponds after the three-arm roundabout. The ponds are utilised for outfall of the NDC drainage network as described earlier in this DAS and in Section 5.6.

A short section of the west side of the proposed embankment will incorporate a retaining wall since space is limited where the NDC passes close to an existing power installation around 150 m from the Regional Sports Facility roundabout. Shared-use footways on both sides of the NDC are increased in width to 3.4 m commensurate with NLC standards for higher speed roads.

The existing Ravenscraig Regional Sports Facility roundabout on Robberhall Road/New Craig Road will require to be amended in terms of markings for lane provision to accord with its change from an existing three-arm to a five-arm roundabout. The roundabout is not signalised but may be spiral marked and has a two-lane circulatory carriageway.

Provision for NMUs around the circumference of the roundabout and across the arms at uncontrolled crossing points as per existing arrangements. The NDC footways will tie in locally to existing footways. There is no NMU route via the central island.

It is proposed to retain softer landscaping as existing on the central island. Landscape designs for the WCML to the Sports facility roundabout are shown in Figure 26.

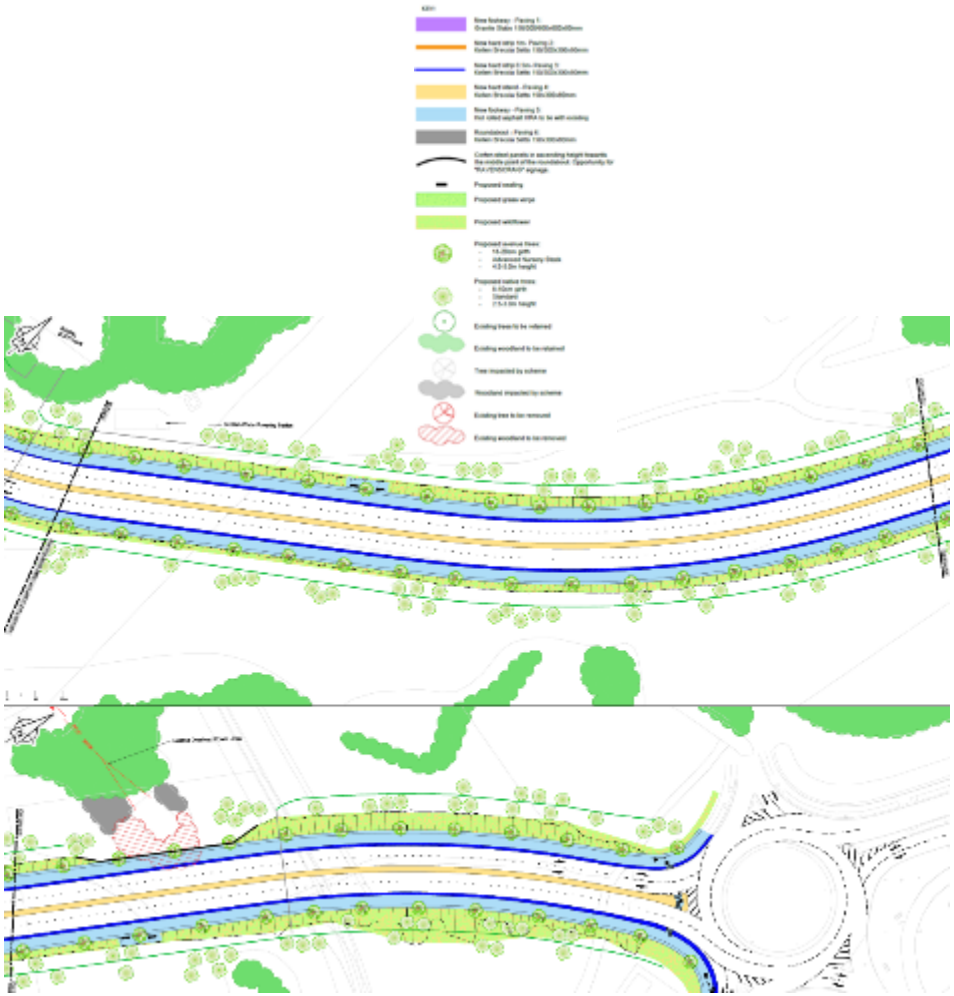


Figure 26 Landscape design for broad boulevard to Sports facility roundabout

6.3.6 Drainage Arrangements for WMHR and NDC

Surface water from the WMHR and southern section of the NDC will be collected by top-entry gullies, generally placed in the nearside carriageway channels. A network of carrier pipes and filter drains in the footways and central reserve will convey the collected surface water north-eastwards, through or around the proposed WCML underpass towards the proposed roundabout serving New College Lanarkshire. The section of Airbles Road to be upgraded - between the Windmillhill Street gyratory and Adele Street - falls from east to west and, consequently, will utilise existing drainage infrastructure for surface water runoff.

Drainage of the northern section of the NDC will be catered for by top-entry gullies connected to filter drains placed in the nearside or offside channels, as determined by the carriageway super-elevation. The drainage systems for the southern and northern NDC sections will converge near the proposed roundabout west of the College and will flow through an open, grass ditch before out-falling to the existing SUDS feature “Basin no. 2” utilising the existing headwall outfall to the sediment forebay.

An outlet headwall at the northern end of Basin no. 2 carries treated surface water northwards utilising carrier pipes installed at an earlier stage of the Ravenscraig site redevelopment. The drainage proposals include provision of a vortex flow control immediately downstream of Basin no. 2 to attenuate flow to the greenfield runoff rate. The existing carrier pipe conveys surface water from Basin no. 2 and other downstream SUDS features to an existing point of outfall discharging into South Calder Water. Rainfall more extreme than the 1 in 30 year storms will cause the SuDS basin to flow over the basin side wall weir into an overflow channel, which carries flood water safely to the South Calder, as shown in the Flood Risk Assessment report (section 5.6).

7 Climate Impacts

7.1 Designer's carbon reduction processes

Designer leadership is emphasised to ensure systems are in place to enable collaboration with constructors and product/material suppliers to examine the feasibility of low carbon solutions (including material and product supply options, design solutions, and construction techniques).

The Designer's Environmental Management System (EMS) sets out processes and controls for service delivery. The EMS's effectiveness is continually reviewed and monitored in line with our ISO 14001:2015 certification while developing action plans for continuous improvement on carbon footprint output.

A compulsory risk control (CRC) document helps to identify and action improvements to minimise carbon footprint. Through identifying sources of excess carbon, managers are asked to take actions to reduce carbon through effective logistics and implementing schemes aimed at encouraging public transport and recycling.

7.2 Future carbon reduction processes

A carbon accounting calculator tool will be employed as design development progresses. Consideration of the capital carbon (Greenhouse Gas emissions associated with the creation, refurbishment and end of life treatment of an asset at the initial design and construction stages) is necessary in order to achieve required reductions. Capital Carbon assessment is the framework employed by the Designer in which data surrounding carbon outputs is collected and analysed.

From Q4 2020 onwards greater clarity has been provided as to what projects are required to produce a Capital Carbon assessment for their clients. The current guidance states that all projects valued over £1 million (and best practice for those under threshold) shall:

- estimate the capital carbon associated with the proposals;
- include carbon comparison as part of feasibility products;
- use the information from the carbon assessment to influence decisions on low carbon design and carbon efficient construction methods/logistics.

The assessments exclude emissions from design stage and are expected to be more detailed as the project progresses. The preferred databases for the Designer's capital carbon calculations are: Environmental Product Declarations (EPDs); ICE database; and Proprietary databases. Other carbon accounting calculator tools may be used providing that a commentary is provided as to the rationale behind selecting the chosen tool.

Recognising the role that designers can have in projects from the outset is key in reducing carbon footprint. During the detailed design stage of work, further opportunities for carbon reduction are considered as the relevant construction activities are planned.

Key actions in the design work stage to maximise carbon reduction opportunities are to:

- Optimise resource use and energy efficiency of the preferred design option through low carbon materials (cement substitutes such as PFA and sustainably sourced timber), leaner design methods, smart communication (Instrumentation Control and Automation, ICA) systems for operational efficiency;
- Select reused or higher recycled content products and materials (locally recycled aggregates) offering lower carbon intensities;
- Select materials with lower transport-related carbon emissions (e.g. locally sourced aggregates);
- Select materials with high levels of durability and low through-life maintenance (e.g. fixing components which last as long as structures) thus considering total end of life carbon;
- Design for disassembly and material re-use at end of life.

7.3 Design development on the project within the last 12 months

Legacy conceptual designs were developed in early 2020 as a collaboration between the Designer and North Lanarkshire Council's representatives as the local roads' authority. The updated conceptual designs were developed throughout 2020 to date including further topographical surveys and 3-dimensional road alignment and junction/roundabout design. The following design decisions have contributed to unquantified carbon reduction compared to the initial pre-2020 conceptual designs:

- The standards for design were amended to align more to the local road environment (reduced focus on national design standards more intended for trunk roads) producing more compact designs reducing the design footprint and generally the amount of materials required;
- Horizontal alignments and carriageway cross-sections were better aligned to existing carriageways improving reuse of existing asset as far as practicable;
- Vertical alignments were optimised reducing pavement overlay quantities and embankment fill requirements;
- Pavement designs focussed on minimum overlay requirements reducing excavation of existing pavement materials and improving reuse of assets;
- Windmillhill roundabout was significantly reduced in size;
- Drainage designs focussed on utilisation of existing drainage systems including SuDS basins in the Ravenscraig site improving reuse of existing asset as far as practicable;
- Amendments to Hamilton Road junction were scoped out reducing the design footprint and generally the amount of materials required;
- Reduced carriageway footprints have reduced the need for service diversions and thereby reduced work required to implement the scheme;
- Enhanced provision for non-motorised users has been incorporated in designs improving opportunities for increased active travel and lower vehicular travel for journeys around Motherwell and Ravenscraig.

7.4 Carbon reduction intentions going forward on the project

A carbon accounting calculator tool will be employed to quantify carbon reduction opportunities and decisions as design development progresses. During the detailed design stage of work, further opportunities for carbon reduction will be assessed as the specifications for alternative materials are considered and the relevant construction activities are planned. The consideration of reduced maintenance burden during design will contribute to longer term carbon reduction.

Landscape design will play a role in maintenance reduction and this will be balanced with the role that planting will have in improving air quality.

Carbon impacts will also be a factor when considering alternative procurement strategies for the construction contract(s). Opportunities to reduce construction traffic requirements and distances will be explored.

8 Conclusions

Overall, the Proposed Development (Figure 27) represents a scheme that that is appropriate to the setting of the site, with the intention to provide a proposal with a sympathetic scale, form and massing. It takes account of the local environment whilst providing infrastructure, including much improved active travel options, which will open-up existing areas of derelict/ underused land.

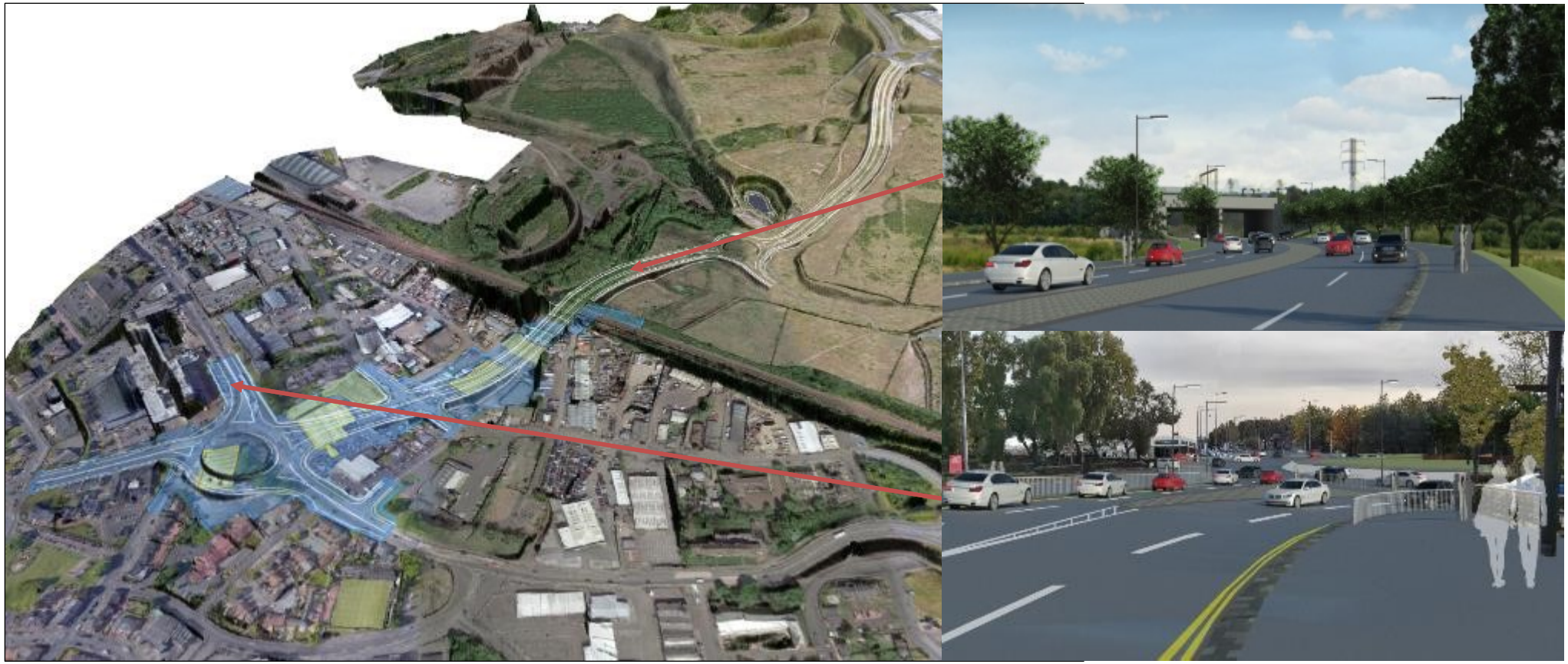


Figure 27 Overall design for NDC from WMHR to the Sports Facility roundabout