



# A720 Sheriffhall Roundabout

## Environmental Statement

### Non-Technical Summary

Transport Scotland

December 2019

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## Preface

This document is the Non-Technical Summary (NTS) of the Environmental Statement for the A720 Sheriffhall Roundabout. The project is proposed by Transport Scotland, an agency of the Scottish Government.

Copies of the Environmental Statement and the draft Road Order are available to view during normal office hours at the following locations:

### Transport Scotland

Major Projects  
Buchanan House,  
58 Port Dundas Street,  
Glasgow  
G4 0HF

Telephone: 0141 272 7100

### Midlothian Council

Fairfield House  
8 Lothian Road  
Dalkeith  
EH22 3ZN

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### Dalkeith Library

2 White Heart Street,  
Dalkeith,  
EH22 1AE

Telephone: 0131 663 2083

### City of Edinburgh Council

Waverly Court,  
4 East Market Street,  
Edinburgh  
EH8 8BG

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The Environmental Statement (including this NTS) and draft Road Order may also be viewed online at [www.transport.gov.scot/projects/a720-sheriffhall-roundabout/a720-sheriffhall-roundabout/](http://www.transport.gov.scot/projects/a720-sheriffhall-roundabout/a720-sheriffhall-roundabout/).

Printed copies of the Environmental Statement (including the NTS) may be obtained at a charge of £150, or in DVD format at a cost of £10 by writing to Transport Scotland at the address above. Copies of the NTS are available free of charge from the same address or by email to: [a720sheriffhallroundabout@transport.gov.scot](mailto:a720sheriffhallroundabout@transport.gov.scot).

### Your Views

Any person wishing to express an opinion on the Environmental Statement should write to Transport Scotland at the address above. The statutory six-week period (excluding a two week Christmas break) to make comments following the publication of the Environmental Statement and draft Road Order will end on 31 January 2020.

# Introduction to the Project

## Background

Sheriffhall Roundabout is located on the A720 Edinburgh City Bypass in the south-east of Edinburgh and is the only at-grade junction on the A720. When the A720 was constructed in 1989 the decision to opt for a roundabout in preference to a grade separated junction was largely due to the complex ground conditions at this location. This included a geological fault and mine workings which were active at the time.

Underlying traffic volumes on the road network around Edinburgh are expected to increase by approximately 40% over the next 20 years. Due to a range of planned developments, congestion and delay on the A720 is expected to increase, especially around key junctions such as Sheriffhall.

The A720 Sheriffhall Roundabout scheme (referred to in this Non-Technical Summary (NTS) and the Environmental Statement (ES) as 'the Proposed Scheme') entails grade-separating the junction to allow the A720 Edinburgh City Bypass to be carried over the roundabout. The roundabout itself will be increased in size to

accommodate the current A7 and A6106 and new slip roads to/from the A720.

## Environmental Impact Assessment

An Environmental Impact Assessment (EIA) of the Proposed Scheme is required under European and Scottish legislation. The ES reports the findings of the EIA which has been undertaken in line with relevant guidance including the Design Manual for Roads and Bridges (DMRB); Volume 11 'Environmental Assessment'.

The purpose of the EIA is to investigate the likely effects of the Proposed Scheme on the environment, people, communities and businesses.

This NTS provides a description of the Proposed Scheme and how the design has developed. A summary of the ES is presented highlighting impacts considered to be of particular importance.

This NTS presents a summary of the ES including key aspects of the Proposed Scheme and the associated impacts of the scheme considered to be of importance.

The environmental assessment involves three key steps:



1. Assigning the **sensitivity of the receptor**.
2. Characterising the **magnitude of impact**.
3. Determining the **significance of the effect** the Proposed Scheme will have.

In other words, the significance of the effect is used to report the overall effect of the impact. The significance criteria referred to in the ES and this NTS are on a scale (very large, large, moderate, slight, neutral) can be positive (beneficial) or negative (adverse).

EIA is an important design tool, providing the opportunity to avoid or minimise potentially adverse environmental effects as the design develops and is refined. Information gathered through consultation, surveys and technical studies has informed the decision making throughout the design process. This has provided opportunities to lessen potentially significant effects where practicable, for example by incorporating measures to avoid or reduce potential adverse effects (called mitigation).

## The Proposed Scheme

### Need for the Scheme

The need for junction improvement at Sheriffhall was identified as part of the Strategic Transport

Projects Review (STPR) (Transport Scotland, 2008) and National Planning Framework 3 (NPF3) (Scottish Government, 2014).

NPF3 is the spatial expression of the Government's Economic Strategy and plans for infrastructure. NPF3 recognises the significant planned development and population growth across South East Scotland and states that Sheriffhall Roundabout has implications for future development and realising the regions' potential for growth.

Sheriffhall Roundabout is a key infrastructure project in the Edinburgh and South East Scotland City Region Deal. The City Region Deal, Accelerating Growth document (Scottish Government, 2018) states that the upgrade of Sheriffhall Roundabout, when complete, will allow the traffic on the bypass to flow freely, improving road safety and journey times for all road users and bringing improved economic benefits and inclusion across Edinburgh and South East Scotland. It will improve accessibility for all modes of transport including walking and cycling.

The South East Scotland Strategic Development Plan (SDP) (SESplan, 2013) identifies the grade-separation of Sheriffhall Roundabout as a key infrastructure project to support economic growth



Visualisation of the Proposed Scheme looking southeast from the A7 North

and support the needs of communities. The improvements at Sheriffhall are also supported by City of Edinburgh Council and Midlothian Council's Local Development Plans.

## Scheme Objectives

The following scheme objectives have been set by Transport Scotland to address the main issues encountered at Sheriffhall Roundabout:

- A. **Improve the movement of traffic on the A720** between Gilmerton and Old Craighall by providing grade-separation of the A720 at the existing Sheriffhall Roundabout.
- B. **Reduce the conflict** between strategic and local traffic.
- C. **Minimise traffic impact of local proposed developments** in Midlothian, East Lothian and City of Edinburgh on the A720 between Gilmerton Junction and Old Craighall Junction and approach roads.
- D. **Improve road safety** for all users on the A720 and approach roads between Gilmerton Junction and Dalkeith Northern Bypass.
- E. **Minimise intrusion of the new works** on the natural environment, cultural heritage and people whilst enhancing the local environment where opportunities arise.
- F. **Facilitate integration for different modes of transport** along and across the A720 corridor between Gilmerton Junction and

the Dalkeith Northern Bypass.

- G. **Reduce severance** by improving accessibility across the A720 for all users.

The EIA process facilitates achieving these objectives by avoiding and/or reducing environmental effects, enhancing the environment and improving sustainability where possible. This is done through the inclusion of measures 'embedded' into the design such as new segregated cycleways to improve connectivity, appropriate environmental mitigation, and adherence to best practice during construction.

## Alternatives Considered

Studies were undertaken to assess a range of options for improving the A720 Sheriffhall Junction. Initially eight junction options were assessed to consider the environmental, engineering, economic and traffic effects. Four were then taken forward for further assessment.

Further design development was then undertaken and the environmental, engineering, economic and traffic effects of each of the remaining options were considered (with one being discounted early due to not sufficiently meeting the scheme objectives). The remaining three options were then assessed in more detail and against the scheme objectives, environmental impact, safety, traffic operation, cost and ease of construction. The overall assessment concluded that the 'preferred option' (now the Proposed Scheme) provided the best balance of benefits across the full range of

View of the existing Sheriffhall Roundabout from the A720 looking east towards the A7 and A6106 North



objectives.

## Iterative Design Development

The design of the Proposed Scheme is the result of approximately 24 months of design development of the preferred option.

The EIA process has informed this design development process, providing opportunities to avoid or mitigate potential effects on the surrounding environment through the design of the scheme. The design has also been informed by a range of surveys (e.g. environmental, ground investigation and traffic) and consultations (e.g. workshops, meetings and written consultations).

As a result, a range of measures has been incorporated into the design of the Proposed Scheme to prevent, reduce or offset significant adverse environmental effects. These are summarised below:

- The design of the **non-motorised user (NMU) provision** (i.e. cyclists, pedestrians and equestrians) was developed through wider stakeholder workshops. Dedicated NMU facilities are incorporated in the scheme in the form of a shared footway/cycleway with dedicated grade-separated NMU subways under the new roundabout.
- The development of **enhanced ecological habitats** through the drainage and flood compensation storage design.
- Throughout the design efforts were made to keep the footprint of the Proposed Scheme to a minimum in order to **reduce the land take** requirements.
- The **design of the slopes** allows for landscape planting while still providing the required stability for the raised A720 flyover.
- **Open aspect structures** help to minimise the visual impact.
- Specific **low-noise surfacing** has been included to minimise local noise impacts.

## The Proposed Scheme

An outline road alignment and junction design have been developed for the Proposed Scheme,

which is referred to as the 'Stage 3 design'. This design will be used by the selected Contractor to prepare a detailed design for construction of the Proposed Scheme.

The Sheriffhall Roundabout will be enlarged to become an eight-arm roundabout retained at its existing location. The roundabout will connect to the existing A7 North, A7 South, A6106 North (Millerhill Road), A6106 South (Old Dalkeith Road) and four A720 slip-roads. The roundabout carriageway will consist of three lanes (with two lane exits provided for each arm of the roundabout), two lane entries provided for the slip-roads and three lane entries provided for the A6106 and A7. Traffic signals would be provided at the eastbound and westbound diverge slip road junctions with the roundabout.

The Proposed Scheme includes five dedicated NMU subways under the new roundabout providing segregated NMU routes connecting the A6106 North and South, and the A7 North and South. The scheme also includes parallel segregated NMU provision along sections of the A6106 and A7.

Two new bridges will carry the A720 over the enlarged Sheriffhall Roundabout. The existing bridge over the Borders Railway, approximately 250m to the east of the roundabout, will be extended at each end to allow for the construction of new slip roads.

The Proposed Scheme also involves widening and realigning the existing road infrastructure. Significant earthworks will be required, both cutting and embankment, to achieve this. Additionally, as the scheme is in an area of historic mining activity, treatment of shallow mine workings and existing mine entries is also required to ensure ground stability throughout the life of the Proposed Scheme.

Several residential properties are located in the area of the scheme. Following consultation with landowners and tenants, proposals for relocated/realigned accesses have been developed.

## Delivering the Proposed Scheme

The Proposed Scheme will be submitted for



View of the existing Sheriffhall Roundabout looking west along the A720

approval to the Scottish Ministers through the Roads (Scotland) Act 1984 [as amended]. If approved construction is anticipated to last approximately 28 months.

The final detailed design may be refined by the selected Contractor, although it must still meet the requirements of the ES. Should the Contractor refine the design which has been assessed by the EIA, then an environmental review of those refinements will be required to assess whether impacts are greater (or significantly different) than reported in the ES, and whether any additional measures to mitigate impacts are required.

### Consultation and Scoping

Since 2015, consultation has been ongoing with a wide range of stakeholders. A stakeholder workshop was held during DMRB Stage 2 (November 2016) with council representatives, Sustrans, SEStran and Transport Scotland to allow for their early influence on design development.

A series of wider NMU stakeholder workshops were also held following the publication of the DMRB Stage 2 Report (August 2017, October 2017 and August 2018) to influence the design of NMU provision included in the Proposed Scheme.

Consultations with landowners were undertaken as part of the DMRB Stage 3 process, to discuss

the scheme, accommodation works and any concerns they had.

The purpose of consultation was to:

- ensure that members of the public, statutory consultees, and other public bodies with an interest in the environment **were informed of the proposals and provided with an opportunity to comment;**
- **collate baseline information** regarding existing environmental site conditions;
- obtain input to the **identification of potential impacts** and the development of appropriate mitigation;
- **inform the scope of the assessments** being undertaken; and
- **seek consultee input** into the Proposed Scheme design.

The project team has worked closely with the key stakeholders to develop a Proposed Scheme that aims to reduce the overall environmental effects, by avoiding sensitive features and through careful design. Stakeholder feedback was reviewed by the project team and incorporated into the assessment and design process where appropriate.



## Environmental Impact Assessment Findings

### Landscape and Visual

The Proposed Scheme is located to the south of Edinburgh, along the existing A720 Edinburgh City Bypass corridor. The existing landscape of the area is characterised by a mix of settlements, urban fringe agriculture and woodland. The character is also influenced by a series of road corridors, including the A720 Edinburgh City Bypass, the Sheriffhall Roundabout, the A7 and the A6106 and by the associated traffic on these roads. Other infrastructure such as overhead power lines and the Borders Railway also influence the landscape character. There are a number of properties in close proximity to the Proposed Scheme.

Within 1km of the Proposed Scheme there are three designated Gardens and Designed Landscapes and two Special Landscape Areas. Existing urban settlements are mainly concentrated to the southeast and northwest and views out towards the surrounding countryside from these settlements are often restricted by a combination of topography and woodland, although some more open views are possible.

The assessment identified the potential for slight adverse or neutral effects on each of the landscape receptors. The assessment also identified the potential for slight adverse effects on several visual receptors including residential properties and recreational and transport routes; however moderate and large adverse effects have been identified for three receptors adjacent to the

Proposed Scheme.

A number of mitigation measures have been proposed to reduce identified impacts including retaining existing woodland and hedgerow as far as possible and implementing the landscape mitigation plan which includes additional screening planting to help integrate the Proposed Scheme in to the wider landscape. Over time, as mitigation planting matures, the impacts on landscape and visual receptors will reduce and as such the assessment has identified no long-term significant landscape effects. Significant long-term visual effects would be limited to one viewpoint location, with no long-term significant effects on the remaining visual receptors.

### Nature Conservation

There are no designated sites for nature conservation within the extents of the Proposed Scheme. Dalkeith Oakland Site of Special Scientific Interest (SSSI), designated for its ancient woodland and scarce and rare lichens, is located just over 1km from the Proposed Scheme. However, designated sites are either predicted to be unaffected by the Proposed Scheme, or adverse effects will be rendered neutral by implementation of pollution controls embedded in a Construction Environment Management Plan (CEMP) and an Invasive Non-Native Species Risk Assessment and Management Plan (INNS RAMP, primarily to manage locally abundant giant hogweed).

There are four locally important sites for nature



View from the embankment path at Millerhill southwest towards Sheriffhall Roundabout

LEGEND

EXISTING

- BUILDINGS
- VEGETATION
- HEDGEROW
- ROAD
- WATERCOURSE

PROPOSED

- WOODLAND
- GRASSLAND
- HEDGEROW
- TREES
- FLOOD COMPENSATION AREA
- SUDS POND
- EXTENSION TO POND
- REALIGNED DEAN BURN
- CARRIAGEWAY
- HARD STANDING / CENTRAL RESERVATION
- RETAINING WALL
- NON-MOTORISED USER ROUTE
- ACCESS TRACK
- MAINTENANCE LAYBYS

NOT TO SCALE





View over Lugton Bogs south of the A720



Stone bridge carrying the A6106 Old Dalkeith Road over the Dean Burn

conservation within 2km of the Proposed Scheme and a number of areas of ancient woodland.

The Proposed Scheme will result in very minor loss (0.16ha) of woodland identified in the Ancient Woodland Inventory as long-established woodland of plantation origin. Compensatory tree planting is proposed but a moderate adverse effect will remain because it is not possible to fully mitigate loss of ancient woodland. However, this small loss must be balanced against the ecological benefits of the more natural geomorphology of the realigned Dean Burn section (this realignment will have the greatest impact on ancient woodland land take), and ecological net gains achieved by the Landscape Mitigation Plan (as summarised in the next paragraph).

There will also be relatively small losses to hedges, woodland and lower quality grassland. However, the Landscape Mitigation Plan more than compensates for these losses such that, once

established, there will be net gains of 5.3ha native woodland and 14.7ha neutral grassland (sown with species-rich lowland meadow mix), as well as increased native species-richness and length of hedgerows, and new wetland habitat associated with four sustainable drainage system (SuDS) ponds designed to retain water and incorporating native plants. These measures result in several slight beneficial effects and in combination constitute a locally-significant net gain in biodiversity.

There is the potential for slight adverse effects on bats, breeding birds, invertebrates and fish, and potential moderate adverse effects on otter and barn owl relating to potential increased road mortality. However, all such effects are rendered neutral with implementation of pollution controls, INNS RAMP, the Landscape Mitigation Plan and SuDS ponds designed to retain water (which together provide breeding and foraging habitats for all the above species), and specific species mitigation, including provision of a continuous water commuting route for otter during the Dean Burn realignment.

## Cultural Heritage

Impacts on Scheduled Monuments, Listed Buildings (Category A), Gardens and Designed Landscapes, Historic Battlefields and Conservations Areas were assessed over a wide area (2km from Sheriffhall) due to the sensitivity of these historical receptors. A smaller study area (1km) has been assessed for Category B and C listed buildings and a 500m study area of non-designated assets. A total of 117 cultural heritage assets were identified within these study areas: 50 archaeological sites, 63 built heritage receptors and four Gardens and Designed Landscapes.

Slight adverse effects have been identified on seven non-designated heritage assets, an unlisted stone boundary wall and three listed buildings during construction. The Proposed Scheme will have a slight adverse effect on an unlisted stone bridge over the Dean Burn during operation due to its removal.

It is considered that the likely adverse effects



View from the A7 North looking southwest towards Sheriffhall Roundabout

arising from the construction of the Proposed Scheme can be mitigated through additional archaeological investigation within the Proposed Scheme Extents.

## Road Drainage and the Water Environment

The main water features identified in the road drainage and water environment assessment include the River North Esk, the Dean Burn, groundwater (including bedrock and superficial aquifers); and the Scottish Water Drainage Network. The Dean Burn is the only watercourse within the immediate study area, and includes a number of hydrological features such as Lugton Bogs (small standing waterbody adjacent to the A720) and a functional floodplain. Whilst the Dean Burn is not classified under the Water Framework Directive (WFD), it is within the catchment area for the reach of the River North Esk, which is classified as being of Poor overall status. There are no water dependent protected areas within the study area.

In the absence of mitigation, potential impacts from the Proposed Scheme during construction would include sediment release (i.e. sand, gravel, silt) and accidental spillage (fuel, oils, lubricants) causing a deterioration in surface water quality as a consequence of general site activities, such as stockpiles locations, refuelling, compounds, etc. There is also the risk that mobilisation and discharge of contaminated groundwater could also result in water quality issues during construction (i.e. during piling and grouting operations) and may also impact upon localised groundwater flow. Appropriate mitigation in line

with industry standard guidance will be provided during construction, as prescribed within a CEMP in order to eliminate and minimise risks to the water environment. Consequently, the potential residual effects will be neutral to slight adverse during construction.

During operation, the Proposed Scheme would provide neutral/slight to slight beneficial effects on the water quality and flow of the Dean Burn due to the inclusion of flood storage, filter drains to treat pollution, SuDS retention basins and proposed hydromorphological changes associated with the partial realignment of the Dean Burn. Compensatory storage is required as part of the design as functional floodplain storage would be lost adjacent to the Dean Burn as a result of SuDS allocation and encroachment of road embankments. This would be provided at a level similar to that lost to the Proposed Scheme, thus would not introduce flooding to adjacent land or properties.

## Noise and Vibration

Construction works are anticipated to take place over approximately 28 months, with the majority of the works being carried out during normal daytime working hours. Mitigation measures during the construction works will be implemented through a Noise and Vibration Management Plan. This would include details of control measures, proposed monitoring and surveys and the communication strategy for the works. The design of the Proposed Scheme incorporates low noise surfacing on the A720 mainline and slip roads.

Potentially significant daytime construction noise effects are anticipated for some periods during the works at the closest properties, although Midlothian Council's daytime construction noise criterion is not anticipated to be exceeded. Some works will be required to be carried out during the evening/weekend/night, such as installation of the new A720 bridges and tie-in works to the existing road network. Although the duration of the evening/weekend and night time works will be limited, as a precautionary approach, potentially significant evening/weekend effects have been identified at a nearby property, and at night for a limited number of properties in close proximity to the Proposed Scheme. A large adverse effect has therefore been identified generally for construction noise. Sheet piling at the railway bridge and for temporary works at the junction, and rotary bored piling at the new A720 bridges are anticipated to be required. However, based on the distance from the proposed piling works to the closest receptors, no risk of building damage effects is anticipated, and significant vibration annoyance effects are not anticipated.

The majority of residential properties are anticipated to experience a negligible increase in traffic noise due to the operation of the Proposed Scheme. Slight adverse traffic noise level increases on the A7 North (Old Dalkeith Road) and A6106 North (Millerhill Road) are anticipated as traffic flows and speeds on these roads increase. Slight beneficial decreases in traffic noise levels

are anticipated at the A772 Gilmerton Road junction to the west of the Proposed Scheme. This is due to a slight reduction in traffic on the A772 and the increase in speed on the eastbound A720 mainline, as congestion is reduced, which brings in the benefit of the low noise surfacing on the mainline.

## Air Quality

Local air quality impacts during the construction phase will be mainly associated with on-site vehicle and plant emissions and dust generation. Local and regional impacts during the operational phase will be associated with the change in vehicle emissions because of the operation of the Proposed Scheme.

There is the potential for earthworks and construction activities to generate dust and increase the rate of dust soiling at sensitive locations closest to the construction site boundary, however, through the introduction of mitigation measures to manage construction dust, the overall effect will be neutral.

The Proposed Scheme will cause a small/imperceptible worsening in local air quality at most locations, due to the increase in vehicle flows (and emissions) on the local road network. This effect is not considered significant as the change in air quality predicted does not cause an exceedance of the air quality objective values, nor does it occur at locations that are already above the air quality



View from the A6106 North looking south towards the A720 and the Borders Railway Underbridge

objectives.

The construction and operation of the Proposed Scheme does not contravene local or national air quality policy.

## People & Communities - Effects on All Travellers

During construction, there will be large adverse effects on the amenity of all NMU routes due to a variety of construction works activities. Due to diversions during construction, there will also be slight/moderate adverse effects on the journey lengths of NMUs using core paths and the segregated parallel paths on the A6106 South and the A7 North and slight adverse effects on the wider on-road cycling provision and pavements. During operation, there will be slight to substantial beneficial impacts on the NMU routes within the study area as the Proposed Scheme design incorporates segregated shared NMU provision. There are not expected to be any significant changes to NMU journey lengths during operation.

Impacts on vehicle travellers have been considered through assessment of impacts on driver stress and on changes to views from the road. There will be temporary adverse effects on views during construction due to a variety of construction works activities leading to slight/moderate adverse effects for vehicle travellers on the A7 and A6106 and moderate/large adverse effects for vehicle travellers on the A720. Due to the A720 being raised over the new roundabout, there will be moderate/large beneficial effects as views are opened from the A720 and slight/moderate adverse effects on views from the A6106 and A7 during operation.

Due to the current low speeds and high levels of traffic moving through the existing Sheriffhall Roundabout there will be a neutral effect on driver stress during construction. During operation, the A720 will see a moderate beneficial effect on the driver stress of vehicle travellers during peak periods. There will be a slight beneficial effect on the driver stress of vehicle travellers on the A6106 North and the A7 North during peak periods;



View to the east along the A772 Gilmerton Road



View of Shawfair Development at South Danderhall



View of the Dean Burn looking west to the south of Sheriffhall Roundabout



View north towards Gilmerton Junction

however, there will be a slight adverse effect on travellers on the A6106 South.

There will be minimal impacts on public transport users because of the Proposed Scheme as construction activities affecting the Borders Railway will be predominantly undertaken at night-time and all bus stops will be replaced with temporary stops during construction and new bus stops provided during operation.

## People & Communities - Community and Private Assets, and Human Health

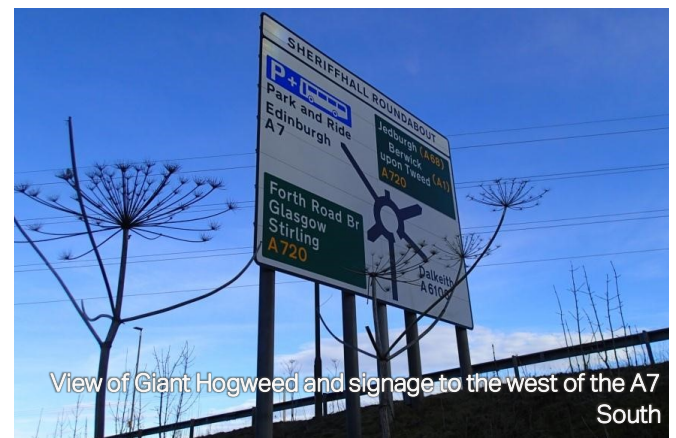
There are several residential properties, businesses and community facilities near the Proposed Scheme. There are also several Local Development Plan allocations for the future development of land. The immediate land use is predominately agricultural and consists of a mix of arable and grazing land. There are also a few swathes of woodland and the Borders Railway runs to the east of the Proposed Scheme.

There will be a slight adverse effect resulting from land take from one residential property; however, no demolition of property is required. Small areas of land currently designated for development will be required to construct the scheme resulting in slight to large adverse effects. Agricultural land take requirements will affect eight separate land owners with varying impacts from slight adverse to large adverse. Land take will also be required from community land (Network Rail land, the existing road and Midlothian Council owned woodland/scrubland); however, due to the nature of the development and the community land this will result in neutral effects.

The Proposed Scheme will result in the realignment of accesses to four residential properties and seven agricultural field accesses (affecting three separate landowners). Negligible permanent alterations to accesses at two residential properties will result in slight adverse effects. There will be slight adverse effects on five of the field accesses and a moderate adverse effect on access to one parcel of land which is being moved from the A6106 South to the A7 South. There will be a slight adverse effect on



Ground investigation being carried out in a field to the north of Sheriffhall Roadabout



View of Giant Hogweed and signage to the west of the A7 South

some agricultural field drainage.

With regards to human health, during construction there will be an adverse effect on air quality, noise and neighbourhood amenity for residents and NMUs. There will also be an adverse effect on accessibility and active travel due to possible diversions and disruption to accesses during construction. During operation the Proposed Scheme will have an overall beneficial effect on air quality, noise and neighbourhood amenity. The Proposed Scheme will also improve social cohesion and lifetime neighbourhoods due to the new segregated NMU routes.

## Geology and Soils

Superficial deposits are predominantly glacial till (unsorted material deposited by glacial ice) and glacial fluvial deposits (deposited by glacial meltwater). Made ground associated with man-made features (such as existing roads) is present and alluvium (material left by rivers) is found along the Dean Burn. The underlying bedrock (solid rock underlying loose deposits such as soil or alluvium)

comprises the Scottish Middle Coal Measures Formation and the Scottish Lower Coal Measures Formation, cycles of sandstone, mudstone, siltstone and coal seams. The effect of the Proposed Scheme on superficial (soils) and solid geology (bedrock) will be neutral/slight adverse.

The main mineral resource is coal, but this is now all extracted, and no other economically viable mineral resources will be sterilised by the scheme. Several coal seams have been worked at shallow depth beneath the scheme and mine entries are present across the site. The Proposed Scheme will have a neutral/slight adverse effect on mineral resources.

Soils are classed as being able to produce a moderate to a wide range of crops. The effect on agricultural soils has been assessed as large/very large adverse due to the loss of high-quality agricultural land.

A slight adverse effect was assessed for superficial and bedrock aquifer (underground water) flow and quality.

The land and groundwater contamination assessment indicates that the risk of harm to sensitive receptors from potential contamination sources is limited to localised sources in made ground, the water environment and ground gases. The impact on potentially contaminated land during construction was assessed as slight adverse and reduced to neutral/ slight adverse for the operation phase.

## Materials

The construction of the Proposed Scheme will require the use of materials and result in the

generation of waste. Design and mitigation measures have been proposed that will reduce the use of materials, reduce waste arising and enable the reuse, recycling and recovery of materials and waste, thereby reducing waste disposal to landfill.

This would be achieved by applying the principles of design for resource efficient construction, reusing earthworks and demolition materials onsite where technically and environmentally suitable, incorporating recycled content in the design and specification, and applying good practice for material and waste management on site. Prior to construction, the contractor will be required to prepare a CEMP (including a Materials and Waste Management Strategy and Site Waste Management Plan (SWMP)) that will set out the approach to delivery.

The assessment of effects on material assets during construction indicates that the residual impact could be slight adverse, which is not considered significant.

The assessment of the generation and management of waste during construction works indicates that the residual impact for inert and non-hazardous waste could be slight adverse, which is not considered significant. For special (hazardous) waste, the assessment indicates that the residual impact could be moderate, which is considered significant.

## Climate Change

Proposed mitigation measures will minimise greenhouse gas (GHG) emissions. These include sustainable reuse of soils and aggregate, reuse (where possible) of materials and waste generated



View from the Lasswade to Shawfair Shared Path looking south east towards Sheriffhall Roundabout



during construction, use of materials with lower embodied carbon (such as those with a higher recycled content), procuring locally sourced materials and careful consideration of material quantity requirements to avoid over-ordering and generation of waste materials, whilst also reducing transportation-related emissions. However, there will be unavoidable GHG emissions resulting from the construction of the Proposed Scheme. These effects are likely to be minor and not significant. There is expected to be a minor adverse impact at initial opening of the Proposed Scheme on the total GHG emissions however over the lifetime operation of the scheme there is expected to be a minor beneficial impact due to anticipated improvement in vehicle emissions technology .

The Proposed Scheme has the potential to be impacted by a changing climate during construction and operation; however, mitigation measures are in place to reduce these risks. Proposed mitigation measures include, for example, consideration of the dangers associated with working in more extreme weather conditions; the use of construction materials with superior properties; consideration of climate change projections within maintenance plans and drainage systems; inclusion of flood compensation areas to account for climate change; and the application of engineering design standards for safety of road users and structural stability.

The Proposed Scheme aligns with applicable legislation and national, regional and local planning policy to minimise GHG emissions and support the transition to a low carbon economy and to reduce the vulnerability of the Proposed Scheme to the impacts of climate change, such as flooding.

### Cumulative Impacts

The potential for a combined effect of different environmental impacts on a single receptor/resource was considered based on each of the environmental assessments carried out and reported in the ES. Following mitigation, it is anticipated that any potentially additional significant adverse construction impacts are unlikely to arise.

The assessment identified the potential for minor adverse cumulative impacts during operation on one residential property due to the identified visual and noise impacts as well as the direct land take and proposed alteration of the existing residential access. This minor adverse impact reflects an effect that is locally significant. A minor beneficial impact was identified for two core paths due to the new segregated NMU routes provided as part of the Proposed Scheme.

No significant cumulative impacts of the Proposed Scheme in combination with other developments are expected.



Visualisation of the Proposed Scheme looking east along the A720



View from the A720 Overbridge at Gilmerton Junction looking east towards Sheriffhall Roundabout

