



**TRANSPORT
SCOTLAND**
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Environmental Impact Assessment Record of Determination

M77 Aurs Road to Junction 3 Northbound

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Project Details

Description

Works are required to maintain the safety and integrity of an approx. 2.1km stretch of the M77 carriageway west of Newton Mearns. A visual survey identified chip loss throughout almost the entire scheme extents, with isolated areas of crazing, cracking (mostly longitudinal) and rutting also visible. Potholing also exists throughout, with small areas of historical patches.

Works will involve replacement of old and deteriorating surface course using TS2010 across the full length of the scheme to address the surface defects, with areas of localised deeper treatment undertaken where required. The total works area is approx. 22,000m² (2.2ha).

The proposed construction activities are likely to involve the following:

- Milling of existing bituminous material by road planer;
- Hand-held jackhammer and compressor for breaking up surfaces not accessible by planer;
- Loader/excavator used to collect and move excess material;
- Base/binder material laid and compressed (where required);
- New bituminous material laid by a paver;
- Material compacted using a heavy roller;
- Mechanical sweeper to collect loose material;
- HGV for removal and replacement of material; and
- Road markings replaced using an extrusion tool.

The works are programmed for August 2022. Exact dates and timings are yet to be confirmed; however, it is anticipated that the works will utilise overnight work patterns.

Traffic management (TM) for the works will involve closures of the northbound (NB) carriageway during night-time operations, facilitated by appropriate diversion routes which are yet to be determined.

Location

The works are located west of Newton Mearns, East Renfrewshire, and have the following National Grid References:

- Scheme Start: NS 52302 56400
- Scheme End: NS 53387 58147

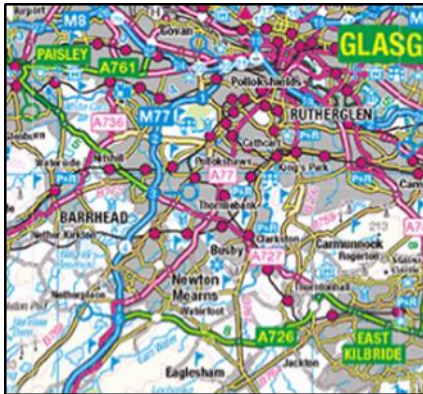


Figure 1 - Scheme Location

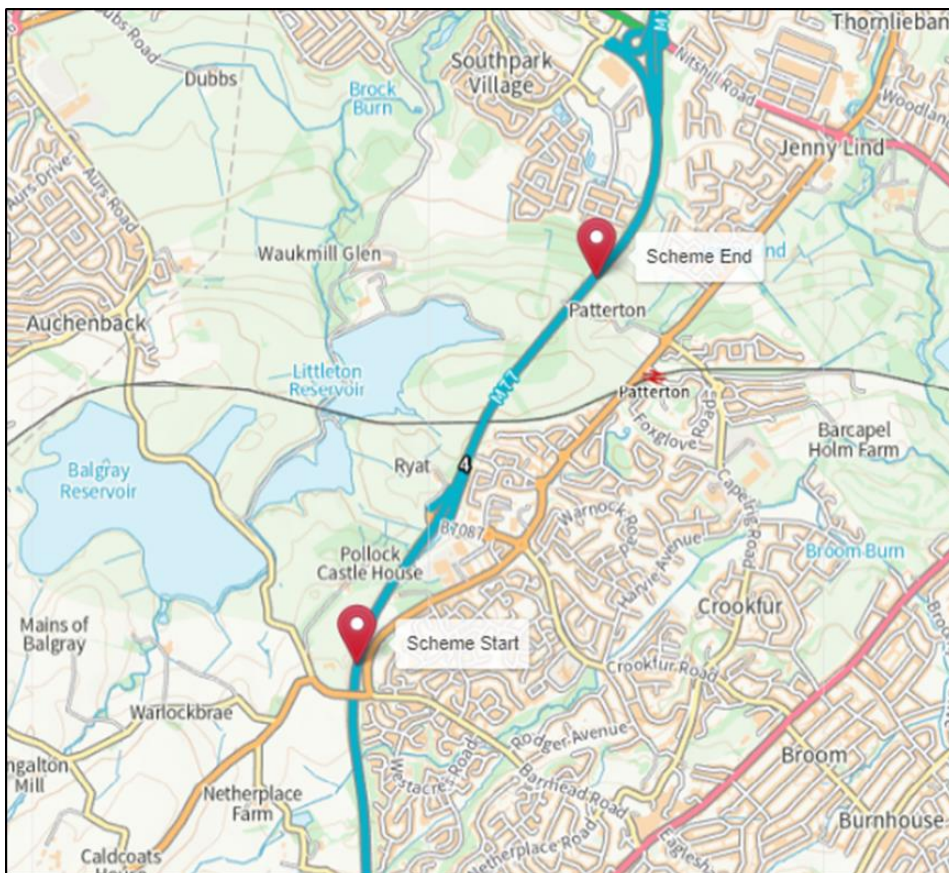


Figure 2 - Scheme Extents

Description of local environment

Air quality

The works are located within a semi-rural stretch of the M77 carriageway west of Newton Mearns, surrounded by areas of woodland, agricultural fields, and areas of residential property.

[Annual Average Daily Flow \(AADF\)](#) in 2020 for the M77 carriageway within the scheme accounted for 45,975 vehicles, with an average of 7.2% heavy goods vehicle (HGV).

East Renfrewshire Council has not declared any [Air Quality Management Areas](#) (AQMAs).

Cultural heritage

A desktop study using [PastMap](#) has not identified any features of cultural heritage within 300m of the works.

All works will be located within the existing carriageway boundaries and will not impact any areas of land that have not previously been subjected to engineering activity.

As a result of the lack of baseline features identified within proximity, it has been determined that the proposed project does not carry the potential to cause direct or indirect impact to cultural heritage. As such, impact has been assessed as being 'no change' and has been scoped out of requiring further assessment.

Landscape and visual effects

The M77 carriageway falls within the boundary of [Dams to Darnley Country Park](#).

A desktop study using [NatureScot Sitelink](#) and [PastMap](#) online interactive map has not highlighted any additional areas designated for landscape character within, or within proximity to, the works location.

Historic Environment Scotland's [HLAMap](#) has highlighted the surrounding landscape to consist of a combination of fields, farmland, designed landscape, and managed woodland.

Works will be restricted to the existing carriageway boundary and will not impact upon the surrounding landscape. Views of, and from, the road will be temporarily affected during construction due to the presence of works, traffic management and plant. As the works are operating on a like-for-like basis, no permanent changes to landscape features are predicted.

As such, impact to local landscape has been assessed as being 'no change' and has been scoped out of requiring further assessment.

Biodiversity

The scheme is located on a semi-rural section of the M77 carriageway within East Renfrewshire, surrounded by agricultural land and small wooded areas. Tree lined strips flank the carriageway within the scheme extents.

A desktop study using [Nature Scot's Sitelink online interactive map](#) has not identified any locally designated areas within a 300m radius of the scheme, nor has it identified any International or European designated areas within a 2km radius.

Amey's Invasive Non-native Species Database has not identified any invasive plant species within the scheme extents.

The [NBN Atlas](#) (2012 -2022) has record of the following protected mammal species confirmed sightings within 2km to the works location:

- Soprano pipistrelle *Pipistrellus pipistrellus*
- Common pipistrelle *Pipistrellus pipistrellus*

Geology and soils

The [National Soil Map of Scotland](#) has identified the local soil composition as noncalcareous gleys.

A desktop study using the [British Geological Survey Map](#) identifies the local geology type as the following:

- Bedrock Geology:
 - Moyne Moor Lava Member - Basaltic-rock, Plagioclase-macrophyric.
 - Moyne Moor Lava Member - Trachyte.
- Superficial Deposits:
 - Till, Devensian - Diamicton.
 - Alluvium - Clay, Silt, Sand and Gravel.

All works will operate on a like-for-like basis and remain restricted within the existing carriageway footprint. No excavations beyond the existing engineered footprint will be required as part of the works, and as such no soils will be impacted.

As such, impact to local soils and geology has been assessed as being 'no change' and has been scoped out of requiring further assessment.

It has been determined that the proposed project will not have direct or indirect significant effects to local soils or geological features.

Material assets and waste

Key Materials Required for Activities

The following materials will be required for the works:

- TS2010 surface course
- AC32 Base
- AC20 Binder
- Bitumen
- Road paint
- Road studs

A proportion of reclaimed asphalt pavement (RAP) is used in asphalt production. Typical RAP values for base and binder are 10% -15% with up to 10% in surface course.

TS2010 Surface Course allows a wider array of aggregate sources to be considered when compared to typical SMA. As a result the use of TS2010 will reduce the usage of imported aggregates, and increase the use of a wider range of sustainable aggregate source

Key Waste Arising from Activities

Waste road planings and studs will be produced as a result of the works.

Following on-site investigations, no tar-containing material was found within any pavement cores taken from within the scheme extent.

All road planings generated as a result of the required works, will be fully recycled in accordance with the criteria stipulated within SEPA document 'Guidance on the Production of Fully Recoverable Asphalt Road Planings.

Noise and vibration

The works are located on a semi-rural stretch of the two-lane M77 motorway west of Newton Mearns, East Renfrewshire.

Several residential properties are located in proximity of the scheme, the closest of which are located approx. 50m east of the NB carriageway on Falconer Drive.

Annual Average Daily Flow (AADF) in 2020 for the M77 carriageway within the scheme accounted for 45,975 vehicles, with an average of 7.2% heavy goods vehicle (HGV).

Baseline noise conditions are likely to be primarily influenced by traffic travelling along the M77, with secondary sources deriving from nearby agricultural and urban activities.

The works do not fall within a [Candidate Noise Management Area](#) (CNMA) as defined by the Transportation Noise Action Plan, Road Maps.

Population and human health

The M77 carriageway is the main route connecting Glasgow and Kilmarnock and providing further access to Ayr and Stranraer via the A77.

Due to the motorway status of the carriageway, no non-motorised provisions exist adjacent to the carriageway within the scheme extent.

The NB on-slip at Junction 4 of the M77 exists within the scheme.

Road drainage and the water environment

A desktop study using the Scottish Environment Protection Agency (SEPA) [River Basin Management Plan Interactive Map](#) has not identified any watercourses in proximity of the scheme.

Waulkmill Glen Reservoir (unclassified by SEPA) is located approx. 130m west of the M77 carriageway at its' closest point.

The [Indicative River & Coastal Flood Map](#) by SEPA has highlighted small areas of the M77 carriageway within the scheme extents at being at risk of flooding.

Climate

Carbon Goals

The Climate Change (Scotland) Act sets out the target and vision set by the Scottish Government for tackling and responding to climate change. The Act includes a target of reducing CO2 emissions by 80% before 2050 (from the baseline year 1990).

The Scottish Government has since published its indicative Nationally Determined Contribution (NDC) to set out how it will instead reach net-zero by 2045, working to reduce emissions of all major greenhouse gases by at least 75% by 2030. By 2040, the Scottish Government is committed to reduce emissions by 90%, with the aim of reaching net-zero by 2045 at the latest.

Transport Scotland is committed to reducing carbon across Scotland's transport network, this commitment is being enacted through the [Mission Zero for Transport](#). Transport is the largest contributor to harmful climate emissions in Scotland. In response to the climate emergency, TS are committed to reducing their emissions by 75% by 2030 and to a legally binding target of net-zero by 2045.

Amey's Company Wide Carbon Goal is to achieve Scope 1 and 2 net-zero carbon emissions, with a minimum of 80% absolute reduction on our emissions by 2035. Amey is aiming to be fully net-zero, including Scope 3 emissions, by 2040.

Amey are working towards a contractual commitment to have carbon neutral depots on the SW NMC network by 2028. Amey have set carbon goals for the SW NMC contract as a whole to be net-zero carbon by 2032.

Monitoring, Management and Opportunities

To support our journey towards carbon neutral and zero waste we include potential opportunities for enhancement utilising circular economy principals within assessment of material assets.

Amey (working on behalf of Transport Scotland) undertake carbon monitoring. Emissions from our activities are recorded using Transport Scotland's Carbon Management System.

Further information identifying how Amey will obtain the above Carbon Goals can be viewed within the Carbon Management and Sustainability Plan Roadmap to net-zero: STRNMC – South West.

Description of main environmental impacts and proposed mitigation

Air quality

Impacts

- TM will involve night-time closures of the NB M77 carriageway, facilitated by a local diversion route.
 - The implementation of a diversion route during the construction phase of this project may result in a temporary decrease to air quality along the diversion route.
 - Impacts are however expected to be relatively minor due to the temporary nature of the diversion route, and this only being implemented during periods where traffic flows are anticipated to be significantly lower (nights / weekends).
- The use of vehicles, plant and generators emitting carbon emissions may temporarily affect air quality and will require the use of finite resources.
- On site construction activities carry a potential to produce airborne particulate matter and generate emissions that may have a slight impact on local air quality levels.

Mitigation

All works shall operate in accordance with current best practice as outlined in the Guidance on the assessment of dust from demolition and construction (2014) published by the IAQM, which includes the following mitigation relevant to this scheme:

- When not in use plant and vehicles will be switched off; there will be no idling vehicles.
- All plant and fuel-requiring equipment utilised during construction shall be well maintained in order to minimise emissions, as per manufacturing and legal requirements.
- Green driving techniques will be adopted, and effective route preparation and planning shall be undertaken prior to works.
- Planing operations will be wetted to reduce dust arising.
- Drop heights to haulage vehicles and onto conveyors will be minimised.
- Lorries will be sheeted when carrying dry materials.
- Surfaces will be swept where loose material remains following planing.

- Works, including programming and TM, will be planned as efficiently as possible to reduce temporary impacts during construction, both within the scheme extents and along the diversion route.

Providing all works operate in accordance with current best practice, the residual impact for air is considered neutral.

It has been determined that the proposed project will not have direct or indirect significant effects to local air quality.

Biodiversity

Impacts

- There is potential for protected species to be active in proximity to the construction works.
- No carriageway lighting is present throughout the scheme extents. The addition of any temporary lighting for the works may affect the foraging or commuting routes of nocturnal protected species which may be active in the surrounding area.
- Any protected species active within the surrounding area may experience a slight degree of disturbance due to construction noise.

Mitigation

- Operatives will remain vigilant for the presence of protected species within or near the works. If an animal is spotted, all works shall temporarily halt until the animal has moved on, and any sightings shall be reported to the E&S Team.
- Artificial site lighting will be kept directional to the works area and switched off when not in use.
- Effects from noise will be kept to a minimum through the use of appropriate mufflers and silencers fitted to machinery. All exhaust silencers shall be checked at regular intervals to ensure efficiency.
- See additional noise mitigation measures in *Noise and Vibration*.

On the condition that best practice is adhered to, residual impact to local biodiversity is considered neutral as a result of the works.

It has been determined that the proposed project will not have direct or indirect significant effects to biodiversity.

Material assets and waste

Impacts

- The design life for the TS2010 surfacing proposed is estimated to be 20 years. This will reduce the requirement for maintenance to this section of road over the period.
- The works will result in contribution to resource depletion through use of virgin materials.
- Greenhouse gas (GHG) emissions will be generated by material production and transporting to and from site.
- Transportation and recovery of materials/waste will require energy deriving from fossil fuel, a non-renewable source.

Mitigation

- Materials will be derived from recycled, secondary or re-used origin as far as practicable within the design specifications to reduce natural resource depletion and associated emissions.
- Road planings generated will be recovered by a licenced contractor for reuse and/or recycling in accordance with the criteria stipulated within SEPA document 'Guidance on the Production of Fully Recoverable Asphalt Road Planings'.

It has been determined that the proposed project will not have direct or indirect significant effects to the consumption of material assets or creation of waste.

Noise and vibration

Impacts

- TS2010 road surfacing will be utilised, which should reduce mid to high frequencies of traffic noise levels. Nearby receptors may benefit from improved reduced noise as a result of the scheme.
- Works will be undertaken during night-time programming. As such, residential properties in proximity may experience a level of disturbance due to increase in baseline noise levels, including potential disruption to sleep.
- Use of a diversion route may increase vehicle associated noise levels in the surrounding road network.

Mitigation

- East Renfrewshire Council's Environmental Health Department will be notified in advance of the works by the E&S Team.
- Residential properties in proximity will be notified in advance of the works, providing details of timings, nature, and duration of the works.

- Effects from noise shall be kept to a minimum through the use of appropriate mufflers and silencers fitted to machinery. All exhaust silencers will be checked at regular intervals to ensure efficiency.
- Plant and machinery will be switched off when not in use to reduce noise disruptions to the surrounding environment.
- Engine exhaust and vent silencers shall be used where possible.
- The noisiest works will be scheduled for before 11:00pm where feasible.
- Operatives will avoid extraneous noise whilst onsite and will be briefed using Noise and Vibration environmental briefing.

Provided that best practice measures are followed, it is predicted that residual impact from noise will be neutral, with temporary slight adverse impact predicted during construction.

It has been determined that the proposed project will not have direct or indirect significant effects to local noise and vibration.

Population and human health

Impacts

- TM will likely involve night-time closures of the NB M77 carriageway, including closure of the M77 J4 NB on-slip.
 - Closure and diversion route may cause driver frustration and delays to road users of the M77 carriageway and could potentially increase traffic levels on surrounding local roads.
 - Given the high percentage of HGVs at this location, TM may disturb HGV movement along this route.
 - Increased number of HGVs may cause disturbance along the diversion routes, particularly during night-time hours.
- TS2010 road surfacing will be utilised. TS2010 can improve the skid resistance of the road.
- The use of TS2010 is shown to have superior durability to standard road mixes as such this will extend the life span of the carriageway preventing the need for reoccurring routine maintenance and associated levels of disruption.

Mitigation

- Advance traffic signs will be placed prior to works in an effort to minimise disturbance to vehicular travellers, and will inform road users of expected duration, timings, and any temporary traffic management arrangements/restrictions.

Provided that best practice measures are followed, it is predicted that residual impact to population and human health will be neutral, with temporary slight adverse impact predicted during construction.

It has been determined that the proposed project will not have direct or indirect significant effects to local population and human health.

Road drainage and the water environment

Impacts

- Potential for spills, leaks or seepage of fuels and oils associated with plant to escape and reach drainage systems and watercourses if not controlled, which may affect the water environment if not effectively controlled.
- If not appropriately controlled, debris, sediment and run off from the works has the potential to enter nearby drains and watercourses and could detrimentally impact water quality.
- In the event of a flooding incident, debris may be mobilised and could enter the road drainage having a detrimental effect on the surrounding local water environment.

Mitigation

- Best practice, as detailed by SEPA Guidance for Pollution Prevention (GPPs), will always be followed onsite. This will ensure that any potential sediments/spills are not allowed to enter road drainage unchecked.
- Appropriate measures shall be implemented onsite to prevent any potential pollution to the natural water environment (e.g. debris, dust and hazardous substances). This will include, but will not be limited to, spill kits being present onsite at all times, and the use of funnels and drip trays when transferring fuel, and utilisation of drain covers/shielding boards.
- Any pollution incidences will be reported to the Amey control room.
- Operatives will conduct regular checks of the surrounding ground/drains for any spillages/leakage regularly, especially in periods of heavy wind and rainfall.
- All debris which has the potential to be suspended in surface water and wash into the local water environment shall be cleaned from the site following the works.
- Weather reports shall be monitored prior to and during all construction activities. In the event of adverse weather/flooding events, all activities will temporarily stop, and only reconvene when deemed safe to do so, and when run-off/drainage can be adequately controlled to prevent pollution.

Providing all works operate in accordance with site control measures and SEPA Guidance for Pollution Prevention (GPP) the residual impact for water is considered neutral.

It has been determined that the proposed project will not have direct or indirect significant effects to the water environment.

Climate

Impacts

- GHG emissions will be emitted through the use of machinery, vehicles and materials used (containing recycled and virgin materials) and transporting to and from site.

Mitigation

- Local suppliers will be used as far as reasonably practicable to reduce travel time and greenhouse gas emitted as part of the works.
- Vehicles/plant shall not be left on when not in use to minimise and prevent unnecessary emissions being emitted.
- Further actions and considerations for this scheme are detailed in the above Material assets and waste section.

It has been determined that the proposed project will not have direct or indirect significant effects to climate.

Vulnerability of the project to risks

As the works will be limited to the like-for-like replacement of the carriageway structure, there will be no change in vulnerability of the road to risk, or in severity of major accidents/disasters that would impact on the environment.

It has been determined that the proposed project is not expected to alter the vulnerability of the existing trunk road infrastructure to risk of major accidents or disasters.

Assessment cumulative effects

The [Scottish Road Workers Commission](#) Interactive Map does not highlight any other works in the area at the time of construction.

[East Renfrewshire Council's Planning Portal](#) does not highlight any proposed developments or planning applications on the M77 carriageway within proximity to the scheme.

Amey's current programme of works does not feature any nearby schemes which may result in a combined effect on nearby receptors, such as vehicular travellers and residential/sensitive properties.

Any future schemes will be programmed to take into account already programmed works, and as such any effect (such as from TM arrangements and potential construction noise) will be limited.

Assessments of the environmental effects

Following assessment as detailed within this Record of Determination, and provided that mitigation measures are in place and best practice is followed, the residual impact is deemed neutral and there will be no significant effects on the environment.

The following environmental surveys/reviews have been undertaken:

- A design Initial Environmental Review of the scheme, undertaken by the Environment and Sustainability Team at Amey in June 2022.

Statement of case in support of a Determination that a statutory EIA is not required

This is a relevant project in terms of section 55A(16) of the Roads (Scotland) Act 1984 as it is a project for the improvement of a road and the completed works (together with any area occupied by apparatus, equipment, machinery, materials, plant, spoil heaps, or other such facilities or stores required during the period of construction) exceed 1 hectare in area.

The project has been subject to screening using the Annex III criteria to determine whether a formal Environmental Impact Assessment is required under the Roads (Scotland) Act 1984 (as amended by The Roads (Scotland) Act 1984 (Environmental Impact Assessment) Regulations 2017). Screening using Annex III criteria, reference to consultations undertaken and review of available information has not identified the need for a statutory EIA.

The project will not have significant effects on the environment by virtue of factors such as:

Characteristics of the scheme:

- Construction activities are restricted to the approximate 22,000m² (2.2ha) area of existing carriageway.
- At end of life, components can be recycled, reducing waste to landfill.
- Materials will be derived from recycled, secondary or re-used origin as far as practicable within the design specifications.
- The chosen material TS2010 Surface Course allows a wider array of aggregate sources to be considered when compared to typical SMA.

- Road planings will be fully recycled in accordance with Guidance on the Production for Fully Recovered Asphalt Road Planings.
- The design option conveys sustainability benefits by significantly reducing the quantity of maintenance interventions required at the location.

Location of the scheme:

- The scheme will be confined within the existing carriageway boundaries and as a result will not require any land take and will not alter any local land uses.
- The scheme is not situated in whole or in part in a “sensitive area” as listed under regulation 2 (1) of the Environmental Impact Assessment (Scotland) Regulations 1999 (as amended).

Characteristics of potential impacts of the scheme:

- As the works will be limited to the like-for-like replacement of the structural components, there is no change to the vulnerability of the road to the risk or severity of major accidents/disasters that would impact on the environment.
- No significant residual impacts are predicted. Disruption due to construction activities are not expected to be significant and will be mitigated as far as is reasonably practicable.
- The successful completion of the scheme will afford benefits to residential properties in proximity, due to improved condition and ride quality of the carriageway surface, and improved carriageway drainage.
- The use of TS2010 road surfacing affords the benefits of a reduction in mid to high frequencies of traffic noise and a reduction in ground vibrations. As a result, ambient noise levels should decrease post construction.

Annex A

“sensitive area” means any of the following:

- land notified under sections 3(1) or 5(1) (sites of special scientific interest) of the Nature Conservation (Scotland) Act 2004
- land in respect of which an order has been made under section 23 (nature conservation orders) of the Nature Conservation (Scotland) Act 2004
- a European site within the meaning of regulation 10 of the Conservation (Natural Habitats, &c.) Regulations 1994
- a property appearing in the World Heritage List kept under article 11(2) of the 1972 UNESCO Convention for the Protection of the World Cultural and Natural Heritage
- a scheduled monument within the meaning of the Ancient Monuments and Archaeological Areas Act 1979
- a National Scenic Area as designated by a direction made by the Scottish Ministers under section 263A of the Town and Country Planning (Scotland) Act 1997
- an area designated as a National Park by a designation order made by the Scottish Ministers under section 6(1) of the National Parks (Scotland) Act 2000.



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