



**TRANSPORT  
SCOTLAND**  
CÒMHDHAIL ALBA

# **Environmental Impact Assessment Record of Determination**

## **M9 Prior to Jct 4 NB**

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## Project Details

### Description

BEAR Scotland has been commissioned by Transport Scotland to carry out resurfacing works on the M9 northbound (NB) carriageway, approx. 1 km southeast of Grangemouth. The works will consist of carriageway resurfacing and reinstatement of road markings for a length of 1.78 km (approximately 1.6 ha).

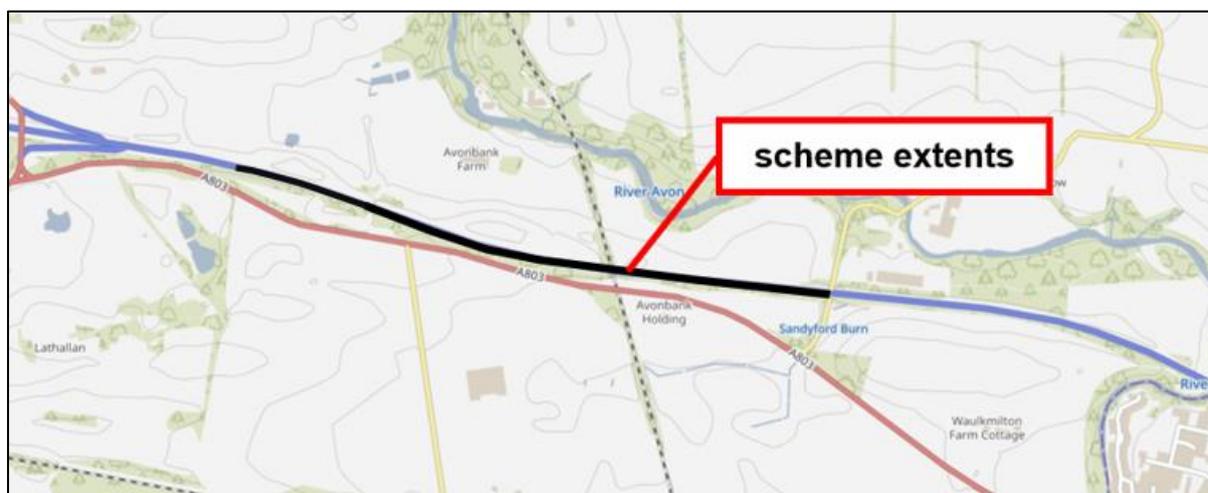
Construction activities for resurfacing include:

- set up traffic management (TM) and mark out site;
- milling of existing bituminous material by road planer;
- jackhammer and compressor for breaking up surfaces not accessible by planer (e.g., around gullies);
- loader/excavator used to collect and move excess material;
- sweeper to collect loose material and provide clean laying surface;
- milled out/excavated materials all taken off site;
- tack/bond coat laid;
- binder material laid and compressed by paver (where required);
- material compacted using a heavy roller;
- new bituminous surface course material laid by paver;
- material compacted using a heavy roller;
- mechanical sweeper to collect loose material;
- HGV for removal and replacement of material;
- road markings and studs applied where necessary (in accordance with Chapter 5);
- remove TM and open road.

The works are currently programmed to be completed within the 2023/2024 financial year (May 2023 – March 2024). However, works may be delayed into the 2024/2025 financial year (April 2024). Works are expected to be completed over 4 days (24-hour working). Traffic management (TM) is currently anticipated to consist of contraflow. As the scheme is located on a motorway, pedestrian routes will not be directly impacted by the scheme.

## Location

The scheme lies approx. 1 km southeast of Grangemouth in the Falkirk Council region, with agricultural land and a waste treatment facility surrounding the scheme (Figure 1).



**Figure 1. Extent of works.** Source: Asset Management Performance System (AMPS). © Europa Technologies Ltd. Contains Ordnance Survey data © Crown copyright and database right 2018.

## Description of local environment

### Air quality

The scheme lies within the boundary of Falkirk Council, which has three [Air Quality Management Areas](#) (AQMAs) within its administrative boundary. The nearest AQMA, 'Grangemouth', lies approx. 1.7 km northwest of the scheme and has been declared for sulphur dioxide (SO<sub>2</sub>).

There are three sites registered on the Scottish Pollutant Release Inventory ([SPRI](#)) which lie within 1 km of the scheme (all 20 m northwest). Details are as follows:

- Avondale Materials Recycling Facility, Falkirk (waste and waste-water management)
- Avondale Environmental, Polmont, Falkirk (waste and waste-water management)
- Avondale Non-Hazardous Landfill, Polmont (waste and waste-water management)

Baseline air quality in the study area is mainly influenced by vehicles travelling along the motorway. Secondary sources are likely derived from waste management and agricultural activities. The Bo'ness to Polmont railway line (with associated land) is spanned by the motorway within the scheme extents; occasional train movement will therefore also have an impact.

## Cultural heritage

The [PastMap](#) and [Historic Environment Scotland](#) (HES) online mapping tools record one World Heritage Site (WHS) buffer zone and one scheduled monument (SM) within 300 m of the scheme extents. The scheme extents lie 10 m south of the 'Antonine Wall' WHS Buffer Zone (an area surrounding the 'Antonine Wall' WHS that gives an added layer of protection to the WHS). The scheduled monument lies approx. 145 m south of the scheme extents.

Of lesser cultural heritage value, five undesignated cultural heritage assets (UCHAs) lie within 300 m of the scheme. There is no connectivity between the scheme and the UCHAs, e.g., the nearest lies outwith the motorway boundary, approx. 25 m north of scheme.

## Landscape and visual effects

The scheme is not situated within a 'sensitive area' designated for landscape features e.g., [National Park](#) (NP), [National Scenic Area](#) (NSA).

The Landscape Character Types (LCT) ([Scottish Landscape Character Types](#)) in the study area are:

- 'Coastal Farmland – Central' (no. 390), characterised by large scale, open, east-west rolling hill landforms, gently sloping down to the Forth to the north and the River Avon to the south.
- 'Lowland River Valleys – Central' (no. 152), characterised by well-defined corridors with flat valley floors, enclosed by commanding hills (it occurs in several areas in Central Scotland).

Land use within 2 km of the scheme extents is categorised into the following:

- industrial or commercial area,
- motorway and major roads,
- restored agricultural land,
- rough grazing,
- rectilinear fields and farms, and
- motorway and major roads.

The scheme approx. 1 km southeast of Grangemouth, with agricultural land and a waste treatment facility surrounding the scheme.

The [national scale land capability for agriculture](#) classifies land surrounding the scheme as being 'Class 2' – land capable of producing a wide range of crops. Agricultural land surrounding the scheme forms a pattern of open and exposed fields containing both arable land and pastoral grazing. Field patterns are an important landscape element, varying in size and shape to fit the local topography. Field boundaries, for example, highlight the landform by accentuating undulating land and flatter areas. Most field boundaries are post-and-wire fencing, with vegetative features further delineating field boundaries e.g., shrub hedgerow, rough grassland, ruderal herb stands, scrub and tree shelterbelt.

1.5 ha of mixed (mainly broadleaved) woodland borders an approx. 250 m stretch of the motorway within the scheme extents. Approx. 30 ha of nearly-native ancient broadleaved woodland lies 150 m north of the scheme extents, and 1.4 ha of broadleaved woodland lies within a disused quarry 150 m south of the scheme. There are no areas of ancient woodland registered on the [Ancient Woodland Inventory Scotland](#) or woodland recorded as native in the [Native Woodland Survey of Scotland](#) with connectivity to the scheme extents.

## Biodiversity

The [NatureScot Sitelink](#) online mapping tools identifies that the scheme is not situated within, and does not share connectivity with, a 'sensitive area' designated for biodiversity features e.g., Special Area of Conservation (SAC), Special Protection Area (SPA), Ramsar, Site of Special Scientific Interest (SSSI), etc.

The scheme is not situated within a Local Nature Conservation Site (LNCS) or Local Nature Reserve (LNR) designated for biodiversity features.

A search of NBN online mapping tool records the following within 2 km of the scheme:

- Japanese Knotweed (*Reynoutria japonica*) and Himalayan Balsam (*Impatiens glandulifera*) (invasive non-native species (INNS)),
- Common Ragwort (*Jacobaea vulgaris*), Broad-leaved Dock (*Rumex obtusifolius*), and Creeping Thistle (*Cirsium arvense*) (injurious weeds (as listed under the Weeds Act 1959)),
- Rosebay Willowherb (*Chamaenerion angustifolium*) (an invasive native perennial (as listed in the Trunk Road Inventory Manual)).

The nearest record pertains to Himalayan balsam recorded in 2015, approx. 0.7 km north of the scheme.

A search of the Asset Management Performance System (AMPS) records rosebay willowherb within the grassed verge adjacent to the scheme extents (2015). There

are no records of INNS or injurious weeds within the grassed verge adjacent to the scheme extents (within last 10-years).

## Geology and soils

The M9 within the scheme extents is not located within a [Geological Conservation Review Site](#) (GCRS), and there are no [Local Geodiversity Sites](#) (LGS) with connectivity to the scheme extents.

The [National Soil Map of Scotland](#) online mapping tool records the Generalised Soil Type and Major Soil Group in the study area as Brown soils.

The [British Geological Survey](#) online mapping tool records that the superficial geology underlying the scheme extents is comprised of:

- Glaciofluvial Sheet Deposits (gravel sand and silt),
- Glaciofluvial Ice Contact Deposits (silt, sand, and gravel), and
- Till, Devensian (diamicton).

The bedrock underlying the scheme extents is comprised of:

- Passage Formation (sedimentary rock cycles, clackmannan group type),
- Upper Limestone Formation (sedimentary rock cycles, clackmannan group type),
- Calmy Limestone (limestone).

There is no evidence of historical industrial processes or the storage of hazardous materials that could have given rise to significant land contamination.

## Material assets and waste

The proposed works are required to resurface the worn carriageway and reinstate road markings. Materials used will consist of:

- Asphaltic material
- Road-marking paint
- Bituminous emulsion bond coat
- Road studs
- Traffic Loop Cabling

The value of the scheme exceeds £350,000 therefore a Site Waste Management Plan (SWMP) is required.

The 1.78 km scheme involves removal of the surface course and localised areas of binder course. In total, 7,867 tonnes of bituminous material (European Waste

Catalogue Code: 17 03 02) will be removed from site, none of which is classified as hazardous ([Coal Tar Guidance](#)).

## Noise and vibration

Works are not located within a [Candidate Noise Management Area](#) (CNMA) or [Candidate Quiet Area](#) (CQA).

The daytime modelled noise level (Lden) within the scheme extents ranges between 75 and 80 decibels ([Scotland's Noise Scotland's Environment](#)), with levels dropping to between 65 and 70 decibels at the nearest Noise Sensitive Receptor (NSR) (residential property). The night-time modelled noise level (Lnight) for the scheme extents ranges between 70 and 75 decibels, with levels dropping to between 50 and 55 decibels at the nearest NSR.

Baseline noise levels in the study area are mainly influenced by vehicles travelling along the trunk road. Communication with the Design Engineer confirmed that the road surface is in a poor condition, with a series of defects, which have the potential to elevate ambient noise levels. Secondary sources are likely derived from waste management and agricultural activities. The Bo'ness to Polmont railway line (with associated land) is spanned by the motorway within the scheme extents; occasional train movement will therefore also have an impact.

## Population and human health

Five properties (including a farmstead, two industrial premises and Avondale Environmental Ltd. (a waste treatment facility)) lie within 300 m of the scheme extents. Avondale Environmental Ltd. lies approx. 20 m north of the scheme and has no screening from the motorway. Remaining properties within 60 m of the scheme are screened from the motorway by a roadside tree shelterbelt (15 m wide). All remaining properties are screened from the motorway by a raised roadside embankment and roadside tree shelterbelt (30 m wide). There are no sensitive receptors/land uses within 300 m of the scheme.

There are no non-motorised user (NMU) or community facilities with connectivity to the scheme. Street lighting is absent across the scheme extents.

The M9 at the scheme location is a two-lane motorway with a continuous hard shoulder and the national speed limit applying throughout. The Annual Average Daily Traffic (AADT) flow is 26,961 (ID: 74395) (2021 data) ([Road traffic statistics](#)) and is comprised of:

- 59 two wheeled motor vehicles,
- 19,264 cars and taxis,

- 66 bus and coaches,
- 5,404 Light Goods Vehicles (LGVs), and
- 2,168 Heavy Goods Vehicles (HGVs).

The AADT flow recorded for pedal cycles is 0 (2021 data).

There are no congestion issues noted on the M9 within the scheme extents.

## Road drainage and the water environment

A search of the Scotland's Environment Protection Agency ([SEPA](#)) River Basin Management Plan online mapping tool records no classified or unclassified surface waterbodies spanned by, culverted beneath or which share direct connectivity with the scheme extents.

A search of the Scotland's Environment (SE) online mapping tool determined that the works lie on the 'Kinneil' and 'Grangemouth' [groundwaters](#) which have been classified as 'Poor', and the 'Avon Sand and Gravel' groundwaters which has been classified as 'Good'. All three ground waters have also be classed as [Drinking Water Protected Areas](#).

The scheme is not located within a [Nitrate Vulnerable Zone](#).

The SEPA indicative surface water online [flood mapping](#) tool records two small sections of the motorway (< 50 m) within the scheme extents are at a medium to low risk of surface water flooding (0.5% to 0.1% Annual Exceedance Probability (AEP)).

Road drainage is provided by roadside gullies and filter drains.

## Climate

The Climate Change (Scotland) Act 2009 sets out the target and vision set by the Scottish Government for tackling and responding to climate change ([The Climate Change \(Scotland\) Act 2009](#)). The Act includes a target of reducing CO<sub>2</sub> emissions by 80% before 2050 (from the baseline year 1990). The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 amended the Climate Change (Scotland) Act 2009 to bring the target of reaching net-zero emissions in Scotland forward to 2045 ([Climate Change \(Emissions Reduction Targets\) \(Scotland\) Act 2019](#)).

The Scottish Government has since published its indicative Nationally Determined Contribution (iNDC) to set out how it will reach net-zero emissions by 2045, working to reduce emissions of all major greenhouse gases by at least 75% by 2030 ([Scotland's contribution to the Paris Agreement: indicative Nationally Determined Contribution - gov.scot \(www.gov.scot\)](#)). By 2040, the Scottish Government is

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

## **Policies and plans**

This Record of Determination has been undertaken in accordance with all relevant regulations, guidance, policies and plans, notably including the Environment and Sustainability Discipline of the Design Manual for Roads and Bridges ([Design Manual for Roads and Bridges \(DMRB\)](#)) and Transport Scotland's Environmental Impact Assessment Guidance ([Guidance - Environmental Impact Assessments for road projects \(transport.gov.scot\)](#)).

## Description of main environmental impacts and proposed mitigation

### Air quality

During the construction phase, activities undertaken on site could potentially have some minor localised and short-term air quality impacts in proximity to the works. The construction phase will, for example, require a range of ancillary plant, vehicles, and non-road mobile machinery (NRMM) which will contribute to local dust and air pollutants. The main sources are likely to be dust generated by cold milling in preparation of carriageway resurfacing, as well as exhaust emissions from ancillary plant and vehicles. As a result, there is potential for dust, particulate matter, and exhaust emissions (DPMEE) to be emitted to the atmosphere.

However, DPMEE associated with the construction phase will be localised to the works footprint and of a short duration. Moreover, considering the nature, duration, size, and scale of the scheme, and with implementation of mitigation detailed below, the proposed works' impacts on local air quality levels during the construction period are assessed to be temporary negligible adverse in magnitude.

Upon completion of the works, no residual air quality impacts are anticipated.

Proposed air quality mitigation measures:

- A water-assisted dust sweeper will sweep the carriageway after dust-generating activities, and waste will be contained and removed from site as soon as is practicable.
- Vehicles that remove cold-milled material from site will have sheeted covers.
- Ancillary plant, vehicles and NRMM will have been regularly maintained, paying attention to the integrity of exhaust systems.
- Ancillary plant, vehicles and NRMM will be switched off when stationary to prevent exhaust emissions (e.g., there will be no idling vehicles).
- Where practicable, if powered generators are required, the use of mains electricity or battery powered ancillary plant will be considered in place of diesel or petrol alternatives.
- Cutting, grinding, and sawing equipment (if required) will be fitted or used in conjunction with suitable dust suppression techniques e.g., local exhaust ventilation system that fits directly onto tools.
- Materials that have a potential to produce dust will be removed from site as soon as possible.
- Regular monitoring (e.g., by engineer or Clerk of Works) will take place when DPMEE generating activities are occurring. In the unlikely event that

unacceptable DPMEEs are emanating from the site, the operation will, where practicable, be modified and re-checked to verify that the corrective action has been effective. Actions to be considered include: (a) minimizing cutting and grinding on-site, (b) reducing the operating hours, (c) changing the method of working, etc.

## Cultural heritage

Construction of the M9 road corridor is likely to have removed any archaeological remains that may have been present within the boundaries of the trunk road. The potential for the presence of unknown archaeological remains in the study area has therefore been assessed to be low. Moreover, the works do not entail any earthworks or vegetation clearance, and people, ancillary plant, vehicles, NRMM and materials are restricted to areas of made/engineered ground within the boundary of the M9. As such, there is negligible risk of disturbing or damaging previously undiscovered or unrecorded items of cultural interest.

Moreover, no works will be completed within the WHS Buffer Zone.

With the implementation of mitigation detailed below, the proposed works impacts on cultural heritage during the construction period are assessed to be negligible in magnitude.

Upon completion of the works, no residual impacts on cultural heritage are anticipated.

Proposed cultural heritage mitigation measures:

- Site personnel will be made aware of the location of 'Antonine Wall' WHS Buffer Zone.
- Toolbox Talk TTN-046 Archaeology will be briefed prior to works commencing.
- All site personnel will be briefed on the importance of archaeological finds and will be instructed to inform the site supervisor where potential finds are made. If there are any unexpected archaeological finds, all works will temporarily stop, the area will be cordoned off and BEAR Scotland's Environmental Team contacted for advice.
- People, ancillary plant, vehicles, NRMM and materials will be restricted to areas of made/engineered ground (as much as is reasonably practicable). Where access outwith made/engineered ground is required for the safe and effective completion of the scheme, the area will be reduced as much as is reasonably practicable, and ideally will be accessed on foot.
- If a change to the construction programme onsite is required that necessitates earthworks or vegetation clearance, BEAR Scotland's Environmental Team will be contacted.

## Landscape and visual effects

There will be a short-term impact on the landscape character and visual amenity of the site as a result of the presence of construction plant, vehicles, and TM.

However, people, ancillary plant, vehicles, NRMM and materials are restricted to areas of made/engineered ground within the boundary of the M9, and works will be undertaken on a rolling programme. As such, the visual impact of the works will be somewhat reduced.

Considering the nature, duration, size, and scale of the scheme, and with implementation of mitigation detailed below, impacts on landscape are assessed as temporary negligible adverse in magnitude.

Upon completion of the works, no residual impacts are anticipated e.g., the works involve only like-for-like replacement of the road surface.

Proposed landscape and visual effects mitigation measures:

- Construction vehicles will not be left in places where soil or vegetation can be damaged. If damage to road verge occurs this will be lightly cultivated or graded (upon completion of the works) to allow natural recolonization by local species and promote integration with existing landscape character.
- The site will be monitored regularly for signs of litter and other potential contaminants and litter will be removed before and after works take place.
- The site will be left clean and tidy following construction.

## Biodiversity

The scheme is not situated within, and does not share connectivity with, a 'sensitive area' designated for biodiversity features e.g., SAC, SPA, Ramsar, SSSI, etc.

There is no requirement for earthworks, destruction or removal of vegetation, permanent (or temporary) land-take, accommodation works, site clearance or locally gained resources. As such, the works do not involve any physical altering or removal of habitat or result in habitat fragmentation.

A temporary short-term increase in noise levels may cause disturbance to local wildlife. The works will, for example, require a range of ancillary plant, vehicles and NRMM which will emit noise and create potential disturbance. The works will also require delivery of materials and the presence of personnel to facilitate the improvements to the carriageway surface. However, the number of construction vehicles and construction operatives required onsite is low given the scale and scope of works. In addition, any species in the area are likely to be accustomed to noise and visual disturbance pertaining to vehicle movements on the M9 and the scheme is of short duration (4 days/nights) and will be undertaken on a rolling

programme. The potential for significant species disturbance within the area of likely construction disturbance is therefore somewhat diminished.

Rosebay willowherb is recorded within the grassed verge adjacent to the scheme extents. However, all works are restricted to a 1.78 km stretch of made-ground on the M9 NB carriageway surface, with only 'like-for-like' replacement of road surface being undertaken. Moreover, if rosebay willowherb (and any other invasive or injurious flowering plant species) is found to be present within the trunk road corridor, it is controlled/treated by cultural methods and/or chemical weed control as per the SE Annual Landscape Management Plan. As such, there is limited potential to spread or introduce INNS, invasive native perennials, or injurious flowering plant species.

Considering the nature, duration, size, and scale of the scheme, and with implementation of mitigation detailed below, the proposed work impacts on biodiversity throughout the construction period are therefore assessed to be temporary minor adverse in magnitude.

Upon completion of the works, no residual impacts are anticipated in relation to biodiversity.

Proposed biodiversity mitigation measures:

- Toolbox talk Working with Injurious Weeds & Invasive Plants will be briefed prior to works commencing. Site personnel will be briefed on the rosebay willowherb that is recorded onsite and will remain vigilant for the presence of any other potentially unrecorded instances of invasive or injurious weeds in road verges throughout the works period.
- Toolbox Talk for protected species will be briefed prior to works commencing.
- Site personnel will remain vigilant for the presence of any protected species throughout the works period. Should a protected species be noted during construction, works will temporarily halt until the species has sufficiently moved on. Any sightings of protected species will be reported to the BEAR Scotland Environmental Team.
- The Contractor will employ 'soft-start' techniques for all noisy activity to avoid sudden and unexpected disturbance during works. Each time the activity is started up after a period of inactivity, the noise levels will be gradually increased over a period of 30 minutes to permit animals (including birds) to move away from the disturbance.
- Where possible, artificial lighting used during night works will be sufficiently screened and aligned so as to ensure that there is no direct illumination of neighbouring habitat (e.g., locations adjacent to tree shelterbelt, woodland, etc.) to ensure minimal impact on nocturnal species.
- All equipment stored onsite will be checked at the start of each workday to ensure mammal species are not present. Any storage containers/plant within the compound will also be secured overnight to prevent exploration by mammal

species. Any areas where an animal could become trapped (e.g., storage containers) will also be covered at the end of each working day, to avoid mammals falling in and becoming trapped.

- People, ancillary plant, vehicles, NRMM and materials will be restricted to areas of made/engineered ground (as much as is reasonably practicable). If during works unforeseen access to the surrounding environment is required, works will cease in this area and BEAR Scotland's Environmental Team will be contacted to allow consideration of potential environmental effects.
- BEAR Scotland's Environmental Team will be contacted to allow consideration of potential environmental effects if: (i) unforeseen site clearance is required, (ii) unplanned works must be undertaken outwith the carriageway boundary, (iii) there is any deviation from the agreed plan, programme and/or method of working, (iv) nesting birds are found onsite.
- BEAR Scotland's Control Room will be contracted if there is a pollution incident.

## Material assets and waste

Minimising impacts arising from construction materials are focussed upon making the most efficient use of materials onsite to reduce the need for imported primary materials and minimise the creation and disposal of waste through (i) reduction, (ii) re-use, and (iii) recycling. Potential impacts have been assessed for both the construction and operational phases of this scheme. It is anticipated that most material impacts are likely to arise during construction, though long-term residual impacts could occur post construction during the operational phase e.g., during the disposal of materials arising from routine maintenance operations.

However, the detailed design will reduce the requirements for primary materials e.g., the carriageway surfacing and subbase will be carefully considered to minimise the requirements for importing primary material. Materials will also be derived from recycled, secondary, or re-used origin as far as practicable within the design specifications to reduce natural resource depletion. Specifying TS2010 surface course allows a wider array of aggregate sources to be considered when compared to typical stone mastic asphalt (SMA). As a result, the use of TS2010 should reduce the usage of imported aggregates and increase the use of a wider range of sustainable aggregate sources. The design life for the TS2010 surfacing is also estimated to be 20 years. The enhanced durability of TS2010 therefore reduces reoccurring routine maintenance and associated levels of traffic disruption to this section of road over the period.

A SWMP template, which is available within BEAR SharePoint, will be partially completed by the Design Engineer (design section) and then the Design Engineer will supply the Contractor with the SWMP to complete the contract delivery section. The SWMP will provide details of the following:

- The quantity and type of waste that will be produced,

- How waste will be minimised, reused, recycled, recovered, or otherwise diverted from landfill,
- How materials that cannot be reused, recycled, or recovered will be removed from site and consigned, transported and disposed of in full accordance with all relevant UK legislation.

Considering the nature, duration, size and scale of the scheme, and with implementation of the mitigation detailed below, the proposed works impacts on material assets and waste throughout the construction period are therefore assessed to be temporary negligible adverse in magnitude.

Upon completion of the works, no residual impacts are anticipated on materials or waste.

Proposed material and waste mitigation measures:

- Good materials management methods (e.g., 'just-in-time' delivery) will be implemented wherever possible.
- The Contractor will comply with all 'Duty of Care' requirements, ensuring that any surplus materials or waste are stored, transported, treated, used, and disposed of safely without endangering human health or harming the environment. Material transfer notes and/or waste exemption certificates (if required) will also be completed and retained.
- The Contractor is responsible for the reuse / disposal of non-hazardous road planings, and this has been registered in accordance with a Paragraph 13(a) waste exemption issued by SEPA, as described in Schedule 3 of the Waste Management Licensing Regulations 2011 (exemption number WML/XS/2004533), the rules of which will be complied with.
- Designated areas will be identified within which all materials and personnel, including construction compounds, will be contained to limit environmental disturbance during construction works. This will include a designated area (if required) for segregation and reuse of waste materials.
- The selection of areas for materials stockpiling will avoid sensitive locations such as road drainage and surface waterbodies. Stockpiled materials with leachate potential, for example, will be stored away from road drainage to prevent cross-contamination with other materials, wastes, or groundwater.
- Materials will be stored with the appropriate security to prevent loss, theft, or vandalism.
- All temporary road signs and traffic cones will be removed from site on completion of works.
- Wastewater from welfare facilities (if required) will be subject to effluent treatment followed by tanker removal.
- If hazardous substances are used onsite, each substance will be subject to assessment under the Control of Substances Hazardous to Health (COSHH)

Regulations 2002. Hazardous substances will also be clearly labelled, and disposed of, in line with COSHH safety data sheets and the Special Waste Regulations 1996. Special waste will also not be mixed with general waste and/or other recyclables.

## Noise and vibration

Activities undertaken on site could potentially have some localised and short-term noise impacts in proximity to the works. The road works will, for example, require a range of ancillary plant, vehicles and NRMM for cold milling in preparation for carriageway resurfacing. Noise will also be generated by using breakers (jackhammers), chipping hammers, use of rollers, etc. As a result, there is potential for noise and vibration effects.

However, works will be completed on a rolling programme, with the aim being to complete the noisiest works between 07:00 and 23:00. In addition, considering the likely sources of noise and vibration, the distance from the point of generation to NSRs, the nature, duration, size and scale of the scheme, and with implementation of the mitigation detailed below, it is unlikely that noise and vibration associated with the works will lead to significant impacts, disruption and/or complaints. The proposed scheme is therefore anticipated to result in temporary minor adverse noise impacts. The road surface is in a poor condition, with a series of defects. Replacing the life-expired surface course with TS2010 road surfacing affords the benefits of a reduction in mid-to-high frequency traffic noise and a reduction in ground vibrations. As a result, upon completion of the work, noise associated with the movement of vehicles on the trunk road should decrease post construction.

Proposed noise mitigation measures:

- Where possible, the noisiest work operations (e.g., cold milling, using breakers (jackhammers), chipping hammers, use of rollers, etc.) will not commence until 07:00 and will be completed before 23:00.
- If unacceptable noise is emanating from the site the operation will, where possible, be modified and re-checked to verify that the corrective action has been effective. Actions to be considered include (a) minimizing cutting and grinding on-site, (b) reducing the operating hours, (c) repositioning equipment, (d) changing the method of working etc. Corrective actions will be actioned through the non-conformance reporting procedure, which ensures a root-cause analysis is carried out on each incident. The non-conformance procedure also ensures that appropriate corrective and preventative action measures are agreed and implemented in a timely fashion with all parties, and are recorded and actioned through to closeout, and fully auditable and traceable.
- Ancillary plant, vehicles and NRMM with directional noise characteristic will (where practical) be shut down in intervening periods between site operations.

- The use of paving breakers (jackhammers), chipping hammers, etc. will be avoided (except where there is an overriding justification), and if used will be fitted with mufflers or silencers of the type recommended by the manufacturer.
- Drop heights from vehicles and NRMM will be kept to a minimum to minimise noise when unloading.
- All ancillary plant, vehicles and NRMM used onsite will have been regularly maintained, paying attention to the integrity of silencers and acoustic enclosures.
- All compressors will be 'sound-reduced' models fitted with properly lined and sealed acoustic covers which will be kept closed when in use.
- HGV, site vehicles and NRMM will be switched to the minimum setting required by HSE and, where possible, will utilise 'broadband non-tonal' or 'directional sound reversing' alarms. Speed limits will also be reduced through the works.

## Population and human health

During construction, activities undertaken on site have the potential to have temporary adverse impacts on local residents, vehicle travellers, and NMUs.

However, no congestion issues are noted, and TM will only be in place for 4 days/nights. In addition, residential properties have a degree of screening from the scheme extents. Pedestrians and NMUs will also not be impacted. In addition, the proximity of road space suggests that residents will have a degree of tolerance to noise and disturbance.

Considering the nature, duration, size and scale of the scheme, and with implementation of the mitigation described below, impacts on population and human health are assessed as temporary minor adverse in magnitude.

Upon completion of the works, no residual impacts are anticipated in relation to population and human health:

Proposed population and human health mitigation measures:

- Construction lighting will take into account the need to avoid illuminating surrounding properties to avoid a nuisance at night, and non-essential lighting will be switched off at night.
- Where appropriate, a communication strategy (e.g., social media, consultation with local authority and other stakeholders, letter drop (for night-time works), etc.) will be initiated to keep local residents and/or businesses informed of the proposed working schedule, particularly the times and durations of noisy construction activities. The communication strategy will also provide a 24-hour contact number for the BEAR Scotland Control Room. Journey planning information will be available for drivers online at the [trafficscotland.org](http://trafficscotland.org) website. Journey planning information will also be available for drivers online through BEARs social media platforms.

- A Traffic Management Plan (TMP), which includes measures to avoid or reduce disruption to road traffic, will be produced in accordance with the Traffic Signs Manual (Department of Transport 2009). The TMP will ensure that there is no severance of community assets, access routes or residential development.

## Road drainage and the water environment

During resurfacing works, there is potential for temporary adverse impacts on the water environment. Potential changes in water quality e.g., from pollution events (either by accidental spillage of sediments, particulate matter, chemicals, fuels or by mobilisation of these in surface water caused by rain) during works have the potential to have a direct or indirect effect on surface waterbodies connected to the scheme via drainage systems.

However, there are no classified or unclassified surface waterbodies spanned by, culverted beneath or which share direct connectivity with the scheme extents. Moreover, no 'in-water works are required and there is no requirement for land take, site clearance or resources from a waterbody. There is also no requirement for the abstraction or transfers of water from, or discharges to, a waterbody. The potential for a direct pollution incident within a waterbody is also unlikely e.g., experience gained from BEAR maintenance schemes elsewhere on the network has shown that where standard best working practice is adopted (e.g., adherence to SEPA GPPs or PPGs, utilisation of drain covers or similar, etc.), water quality is protected.

Considering the nature, duration, size and scale of the scheme, and with implementation of the mitigation detailed below, the proposed works impacts on the road drainage and water environment are assessed as temporary negligible adverse in magnitude.

Upon completion of the works, no residual impacts are anticipated in relation to the road drainage and water environment.

Proposed road drainage and water environment mitigation measures:

- The Contractor will implement measures to minimise the risk of sediment or accidental spillages entering the road drainage system e.g., prior to works commencing any roadside gullies within 10 m of work activities will be bunded (e.g., utilisation of drain covers or similar) to ensure full segregation of the works from the road drainage system. The Contractor will inspect bunds periodically to ensure that they have not been removed, damaged, or interfered with and they will be cleaned of silt and debris as necessary. If it is identified that bunds are not up to standard, the works will not commence until they have been reinstated to the condition, they were originally in.
- All site personnel will be made aware of site spillage response procedures and in the event of a spill, all works associated with the spill will stop, and the incident reported to the Site Supervisor. Small spills that did not leave the site boundary

and are cleaned up without material environmental harm or residual environmental impact would most likely not be required to be notified to SEPA or other authorities. However, all such incidents must be recorded and reported to BEAR Scotland's Environmental Team. In the event of a 'serious incident', SEPA will be notified without delay. Such notification will include: (i) the time and duration of the incident, (ii) a description of the cause of the incident, (iii) any effect on the environment as a result of the incident, and (iv) any measures taken to minimise or mitigate the effect and prevent a recurrence.

- All waste, vehicles, ancillary plant, NRMM and fuels will be stored in the compound(s) or laydown area and will be secured and located, if space is available, at least 10 m from drainage entry points, in order to comply with GPP 5 'works and maintenance in or near water'. Refuelling will only be undertaken at designated refuelling areas (e.g., on hardstanding, with spill kits available, and >10 m from drainage entry points, where practicable). Spill kits will also be available within all site vehicles and spill kits will be replenished onsite when required. Only designated trained and competent operatives will be authorised to refuel plant. Generators, and other ancillary plant and NRMM, where there is a risk of leakage of oil or fuel, will have internal bunding or must have a secondary containment system placed beneath them that meets 110% capacity requirements. Containment systems will also be emptied regularly. All waste, vehicles, ancillary plant, NRMM and fuels will also be stored in a manner that ensures they are protected from damage by collision or extremes of weather.
- Regular visual pollution inspections of the designated laydown area and work site (particularly near road drainage entry points) will be conducted (e.g., site walkover by engineer or Site Supervisor), especially during periods of heavy rain.
- All vehicles and NRMM onsite will have been regularly maintained, paying attention to the integrity of oil tanks, coolant systems, gaskets etc. A checklist will be present to make sure that the checks have been carried out.

## Climate

BEAR Scotland, working on behalf of Transport Scotland, undertake carbon monitoring of major projects and operational activities. Emissions from activities are recorded using Transport Scotland's Carbon Management System. BEAR Scotland also undertakes resource efficiency activities to manage and reduce emissions contributing to climate change. The carriageway resurfacing works will also extend the maintenance intervals required for future works. In doing so, the service life of the trunk road is also extended.

During works there is potential for impacts as a result of the emission of greenhouse gases through the use of equipment, vehicles, and NRMM, material use and production, and transportation of material/waste. However, considering the nature, duration, size and scale of the scheme, and the mitigation detailed below, the risk of significant impacts to climate are considered to be negligible adverse in magnitude.

Upon completion of the proposed scheme no residual impacts are anticipated on the climate.

Proposed climate mitigation measures:

- Local contractors and suppliers will be used as far as practicable to reduce fuel use and greenhouse gas emitted as part of the works.
- BEAR Scotland will adhere to its Carbon Management Policy.
- Where possible, waste will be disposed of at local waste management facilities.

## **Vulnerability of the project to Major Accidents and Disasters**

There will be no change to the likelihood of flooding on the M9 within the scheme extents upon completion of the works.

Works are restricted to areas of made-ground on the M9 carriageway surface, with access to the scheme gained via the M9. TM will employ contraflow. There are no NMU facilities, or other community assets, with connectivity to the scheme extents. As such, the proposed works impacts on road traffic accidents is assessed to be of negligible magnitude.

A Site Environmental Management Plan (SEMP) will be produced by BEAR Scotland which sets out a framework to reduce the risk of adverse impacts from construction activities on sensitive environmental receptors. The Contractor will comply with all conditions of the SEMP during works and may be subject to audit throughout the contract.

Considering the above, the vulnerability of the project to risks of major accidents and disasters is considered to be low.

## **Assessment of cumulative effects**

The proposed works are not anticipated to result in significant environmental effects. Due to the nature of the proposed works, no cumulative effects are anticipated with any other developments in the vicinity:

- Works are not located within an AQMA, and no significant DPMEE will be introduced by the works.
- Noise and vibration are not considered to be defining features of the works and the scheme is not located within a CNMA or CQA.
- All works are also restricted to a 1.78 km stretch of made-ground on the M9 carriageway surface.

- Works are programmed to only take 4 days/nights to complete (split over 2 weekends) on a rolling programme therefore the risk associated with a pollution incident is intermittent, temporary and short-lived.

Any future BEAR Scotland schemes will be programmed to take into account already-programmed works and as such, any cumulative effect will be limited.

In addition, [Falkirk Council Simple search](#) identified no planning applications within 300 m of the scheme, therefore no cumulative impacts are anticipated from the works being undertaken at M9 motorway.

## Assessments of the environmental effects

As detailed in the Description of Main Environmental Impacts and Proposed Mitigation section, there are no significant effects anticipated on any environmental receptors as a result of the proposed works.

## 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 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 ha.

The project has been subject to screening using the Annex III criteria to determine whether a formal Environmental Impact Assessment (EIA) 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:

- Works are restricted to like-for-like replacement of worn road surface, with all works restricted to made-ground on the M9 carriageway surface.
- Works are programmed to only take 4 days/nights to complete (24-hour working), with the aim being to complete the noisiest works between 07:00 and 23:00.

- Works are not expected to result in significant disturbance to protected species that may be present in the wider area.
- No in-combination effects have been identified.
- The risk of major accidents or disasters is considered to be low.
- By removing the carriageway defects this will provide this part of the M9 carriageway with another life cycle, and significantly improve the ride quality, which will result in safer conditions for road users.

Location of the scheme:

- Works are limited to like-for-like replacement of worn road surface, therefore no impact upon the 'Antonine Wall' WHS Buffer Zone is anticipated.
- The scheme is not situated within, and does not share connectivity with, any 'sensitive area' designated for biodiversity features e.g., SAC, SPA, Ramsar, SSSI, etc.
- There are no surface waterbodies spanned by, culverted beneath or which share direct connectivity with the scheme extents.
- The scheme is not located within any areas designated for landscape interests.
- Land use will not change as a result of the works.
- The works do not require any private land acquisition.
- The scheme does not lie within any sites designated for geology or soils.

Characteristics of potential impacts of the scheme:

- Any potential impacts of the works are expected to be temporary, short-term, not significant, and limited to the construction phase.
- With good practice pollution prevention measures implemented onsite, there is a negligible risk of a pollution event e.g., compliance with the SEMP.
- As the works are restricted to the like-for-like replacement of worn road surface, 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 impacts on the environment are expected during the operational phase as a result of the works.

## 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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Published by Transport Scotland, May 2023

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