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Environmental Impact Assessment Record of Determination

M9 After Junction 8 Northbound

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Project Details

Description

BEAR Scotland has been commissioned by Transport Scotland to carry out resurfacing works on the M9 After Junction 8 northbound. The works on the carriageway will involve surface course treatment to an inlay of 40mm and mixed depth inlays of 110mm and 155mm. The works will involve the reinstatement of road markings and studs for a length of 1293m (1.42ha) on the M9 northbound carriageway.

The construction activities for the resurfacing procedure are as follows:

- 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.
- Base / 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.
- Heavy Goods Vehicle (HGV) for removal and replacement of material.
- Road markings and studs applied where necessary (in accordance with the Traffic Signs Manual, Chapter 5).
- Remove TM and open road.

The works are currently programmed to be completed within the 2026 / 2027 financial year, with works due to commence in November 2026 for a duration of seven nights. TM will involve full nighttime road closures with a signed diversion in place directing M9 northbound motorists towards the M876 Junction 2 to rejoin the M9 at Junction 9 via the A9 and A91. This diversion will add an additional eight minutes and 2.3 miles to affected motorists.

Location

The scheme lies on the M9 northbound carriageway after Junction 8, northwest of Stenhousemuir (Figure 1), within the administrative boundary of Stirling Council and Falkirk Council and is predominantly bordered by tree shelterbelt and agricultural land.



Figure 1: M9 After Junction 8 Northbound Scheme Extents (Highlighted Red) - 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

Receptors – refer to 'Population and Human Health'.

A search of the Air Quality in Scotland online mapping records that air quality monitoring sites in the wider area record bandings in the 'green zone' (Low Index 1-3).

The scheme lies within the boundary of Stirling Council and Falkirk Council. Stirling Council has no active Air Quality Management Areas (AQMAs) within its administrative boundary, while Falkirk Council has one active AQMA within its administrative boundary. As such, the closest AQMA lies within the boundary of Falkirk Council, 'Falkirk Town Centre', approx. 5.7km southeast of the scheme and has been declared for nitrogen dioxide (NO_2) and particulate matter (PM_{10}).

There are 19 sites registered on the Scottish Pollutant Release Inventory (SPRI) for pollutant releases to air within 10km of the scheme within the last 10 years, the closest of which lies approx. 2.7km northwest of the scheme:

- Bakelite Synthetics UK Limited, Cowie – Chemical Industry, declared for formaldehyde.

Baseline air quality in the study area is mainly influenced by vehicles travelling along the M9 trunk road. Secondary sources are derived from vehicles travelling along nearby local network roads and day-to-day woodland and agricultural land management activities.

Cultural heritage

The PastMap and Historic Environment Scotland (HES) online mapping tools records no designated sites within 300m of the scheme extents.

Of lesser cultural heritage value, one undesignated cultural heritage asset (UCHAs) lies within 300m of the scheme extents, approx. 300m southwest of the scheme:

- Kersebrock (Enclosure) National Record of the Historic Environment (NRHE).

Construction of the M9 carriageway is likely to have removed any archaeological remains that may have been present within the trunk road boundary. The potential

for the presence of unknown archaeological remains in the study area is therefore assessed to be low.

While one UCHA is located within 300m of the scheme extents, the works will be restricted to the existing M9 northbound carriageway and as such, will not be at risk of impacting these features. Therefore, there is no potential for impacts to cultural heritage from the proposed works and this topic has been scoped out of further environmental assessment.

Landscape and visual effects

The scheme is not situated within a National Scenic Area or National Park (NP).

The Landscape Character Types (LCTs) within the study area are 'Lowland Hill Fringes – Central' (no. 150) and 'Lowland River Valleys – Central' (no. 152). The characteristics of 'Lowland Hill Fringes – Central' are:

- Undulating, rolling topography rising to larger scale hill landforms.
- Gradation of topography creates transitional landscape linking the open hills of more pronounced relief and the neighbouring settled valley landscapes.
- Diverse landcover of arable and open improved and unimproved pastureland, interlocks with woodland and forestry, with some estate landscapes with frequent beech hedgerows and shelterbelts.
- High proportion of woodland cover including large coniferous blocks, mixed shelterbelts and broadleaf tree clumps.
- Scattered residential development and small settlements on slopes, with recent expansion in some areas.
- Minor roads.
- Concentration of small water bodies, reservoirs and small watercourses.
- Strong interrelationship between stepped escarpment and lower foot slopes in Gargunnock/Fintry and East Touch Fringe.
- Estate and designed landscapes give distinctive character to East Touch Fringe area.
- Hill fringes offer important panoramic views to neighbouring hills, valleys and straths, as well as large settlements such as Glasgow and Falkirk.
- A sense of remoteness and isolation in some areas despite proximity to settlement and relatively limited geographic extent.

The characteristics of 'Lowland River Valleys – Central' are:

- Well-defined river corridors, most with flat valley floor enclosed by often commanding hills.
- Strong topographic and visual identity, with varying scale and character.
- Glacial terrain and deposits located on valley margins, often subject to mineral extraction.
- Relatively high proportion of tree cover, with roadside and hedgerow trees and semi natural woodland.
- Dense areas of coniferous forest cover the slopes surrounding the reservoir in the Upper Carron Valley.
- Road corridors often running parallel to river corridor form key linear features.
- Settlement often closely linked to the river corridor and parallel road corridors.
- Intensive settlement and urban development on margins of valleys south and north of Firth of Forth.
- Predominance of traditionally managed estate, policy and designed landscapes.
- Nature conservation importance of river and associated habitats.
- Frequently enclosed and focussed views along the river valley.
- Visibility of remnant derelict land, motorway and road corridors, power lines, wind farms and industrial sites from the urban fringe of Falkirk/Denny.

Land use within 300m of the scheme is categorised into the following:

- Motorway and major roads.
- Rectilinear fields and farms.
- Manged woodland.

The national scale land capability for agriculture classifies land surrounding the scheme as being:

- ‘Class 3.2’ - Land capable of average production though high yields of barley, oats and grass can be obtained. Grass leys are common.

There are four areas of woodland on the Native Woodland Survey of Scotland (NWSS) within 300m of the scheme extents:

- Lowland mixed deciduous woodland (approx. 1.4ha) lies adjacent to the northbound carriageway within the scheme extents.
- Lowland mixed deciduous woodland (approx. 3.7ha) lies approx. 73m northwest of the scheme.
- Lowland mixed deciduous woodland (approx. 3.7ha) lies approx. 132m southwest of the scheme.

- Hawthorn scrub (approx. 0.6ha) lies approx. 270m north of the scheme.

Four areas of Long-Established of Plantation Origin woodland on the Ancient Woodland Inventory Scotland lie within 300m of the scheme extents:

- Pows Wood (approx. 5.6ha total) lies approx. 108m northwest of the scheme at its closest point.
- Approx. 4.6ha lies approx. 132m southwest of the scheme.
- Approx. 2.3ha lies approx. 200m northwest of the scheme.

In addition, the following woodland lies within 300m of the scheme extents:

- Assumed woodland (a search on Google Maps Street View shows the area to pertain to deciduous woodland) (approx. 1.4ha) lies adjacent to the northbound carriageway within the scheme extents.
- Mixed mainly conifer woodland (approx. 1.6ha) lies approx. 18m northeast of the scheme (adjacent to the southbound carriageway).

There are no trees covered by a Tree Preservation Order (TPO) with connectivity to the scheme extents.

The existing trunk road is a prominent linear landscape feature. The trunk road corridor, for example, has a distinct character shaped by fast-flowing traffic, road markings, safety barriers, signage, landscaping etc. The scale of the trunk road detracts from the quality and character of the wider landscape.

Biodiversity

The NatureScot Sitelink online mapping tool identifies that the scheme lies within the buffer zone of several of the qualifying species of the Firth of Forth Special Protection Area (SPA) and Ramsar Site and Slamannan Plateau SPA. The Firth of Forth SPA and Ramsar Site lies approx. 5km northeast of the scheme extents and Slamannan Plateau SPA lies approx. 8.9km southwest of the scheme.

One Local Nature Conservation Site (LNCS) lies within 300m of the scheme extents:

- Carbrook LNCS lies approx. 132m southwest of the scheme.

There are no Sites of Special Scientific Interest (SSSI) or Local Nature Reserves (LNRs) designated for biodiversity features within 300m of the scheme extents.

While not within 300m, the Firth of Forth SSSI underpins the SPA.

In addition, Slamannan Plateau SSSI underpins Slamannan Plateau SPA.

In addition, the NBN atlas holds records of numerous bird species within 2km over a ten-year period. Under the Wildlife and Countryside Act 1981 (as amended), all wild birds and their active nests (typically active March to August inclusive) are protected. Only records with open-use attributions (OGL, CC0, CC-BY) were included in the search criteria.

A search of the NBN online mapping tool records no plant species as listed within the Network Management Contract (NMC) lie within 2km of the scheme extents (within the last 10-years).

A search of the Asset Management Performance System (AMPS) online mapping tool records invasive native perennial rosebay willowherb *(Chamaenerion angustifolium)* (recorded 2021) intermittently throughout the verge within the scheme extents. In addition, invasive non-native species (INNS) giant hogweed (*Heracleum mantegazzianum*) is present along the southbound carriageway opposite the scheme extents.

Habitat immediately bordering the trunk road tends to be of low intrinsic value because the existing road verge is subject to cyclic maintenance e.g., grass cutting, weed control, tree, and shrub cut-back etc. The roadside verges within the scheme extents are comprised of strips of managed grassland bordered by broadleaved tree and shrub shelterbelt and woodland areas. The presence of the trunk road is likely to restrict continuity of, and connectivity between, habitats either side of the trunk road boundary.

Outwith the trunk road boundary, agricultural land surrounds the scheme. The areas of agricultural land management restrict the occurrence of semi-natural and natural vegetation types. Most field boundaries are comprised of wooden fencing and vegetative features further delineating field boundaries e.g., woodland, shrub, hedgerow, rough grassland, ruderal herb stands and scrub. Linear features at field boundaries have wildlife value, both as corridors in an intensively managed landscape, and as habitats for birds and small animals. In addition, Torn Burn / Pow Burn is culverted below the M9 within the scheme extents and continues along the edges of these field boundaries also providing suitable habitats as well as foraging and commuting routes for a number of species.

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) within 300m of the scheme extents.

The National Soil Map of Scotland online mapping tool records the generalised soil type beneath the scheme extents as the following:

- Brown Soils.
- Mineral Gleys.
- Alluvial Soils.

The major soil groups beneath the scheme extents are:

- Brown Soils.
- Gleys.
- Alluvial Soils.

The British Geological Survey online mapping tool records that the superficial geology within the scheme extents is comprised of:

- Superficial deposits, Sediment.
- Raised Marine Deposits, Devensian (Clay, Silt and Sand).
- Raised Tidal Flat Deposits of Holocene Age (Silt and Clay).

The bedrock geology within the scheme extents is recorded as:

- Passage Formation, Sedimentary Rock Cycles (Clackmannan Group Type).
- Scottish Lower Coal Measures Formation, Sedimentary Rock Cycles (Coal Measure Type).

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

The works will be limited to the like-for-like replacement of the existing M9 carriageway boundary and depth. There are no geological designated features within or in close proximity to the scheme extents. Therefore, it is considered that there is no potential for impacts to geology and soils and this topic has been scoped out of further assessment.

Material assets and waste

The proposed works are required to replace the worn carriageway surface and reinstate road markings.

Materials used will consist of:

- TS2010 Surface Course, 10mm aggregate Site Class 1.
- EME2 14 Binder.
- Stress Absorbing Membrane Interlayer (SAMI) layer.
- Weatherline Road Markings.
- Surface Embedded Road Studs.

As the value of the scheme is greater than £350,000, a Site Waste Management Plan (SWMP) is required for this scheme.

The 1293m scheme involves removal of surface course and localised areas of binder. In total, approx. 3328 tonnes of bituminous material (European Waste Catalogue Code: 17 03 02) will be removed from site, none of which is classified as hazardous material containing coal tar.

Noise and vibration

Receptors – refer to 'Population and Human Health'.

Works are not located within a Candidate Quiet Area (CQA).

The night-time modelled noise level (Lngt) ranges between 65 and 75 decibels (dB) within the scheme extents (Scotland's Noise), with levels decreasing to between 50 and 55 decibels at the nearest noise sensitive receptor (NSR) (i.e., residential property).

The baseline noise and vibration within the scheme extents is primarily influenced by vehicles travelling along the M9 trunk road. Secondary sources most likely arise from day-to-day agricultural activities and from motor vehicles travelling along nearby roads.

Population and human health

Two residential properties, a farmstead and a hotel (Aite – Fuirich) lie within 300m of the scheme extents, the closest of which (residential property in the form of a static caravan) lies approx. 35m southwest of the scheme and is not screened from the scheme.

Core Path 9078PI/38 lies below the M9 within the scheme extents.

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

Street lighting is not present within the scheme extents.

The M9, within the scheme extents, is a motorway with the national speed limit applying throughout. The Average Daily Traffic (AADT) flow is moderate (21,478 motor vehicles) (ID: JTC00487, 2026).

Road drainage and the water environment

The Scottish Environment Protection Agency (SEPA) River Basin Management Plan online mapping tool records one classified surface waterbody within 300m of the scheme extents:

- Pow Burn / Tor Burn from source to confluence with Sauchinford Burn is a river, in the Forth Estuary (South) Coastal catchment of the Scotland river basin district (ID: 3206). The main stem is approximately 7.6km in length, lies below the M9 within the scheme extents and has been classified as being in 'Moderate' condition.

Nine unclassified waterbodies lie within 300m of the scheme extents:

- Drain1 (a tributary of Pow Burn / Tor Burn) lies below the M9 within the scheme extents and is separated from the scheme by roadside verge.
- Drain 2 (a tributary of Pow Burn / Tor Burn) lies below the M9 within the scheme extents and is separated from the scheme by roadside verge.
- Issue1 (a tributary of Pow Burn / Tor Burn) lies approx. 25m south of the scheme and is separated from the scheme by roadside verge.
- Drain3 (a tributary of Plean Burn) lies approx. 26m south of the scheme.
- Drain4 lies approx. 95m east of the scheme, below the M9.
- Issue2 lies approx. 179m north / northeast of the scheme.
- Sink1 lies approx. 146m northwest of the scheme.
- Issue3 (a tributary of Plean Burn) lies approx. 221m south of the scheme.
- Plean Burn lies approx. 246m south of the scheme.

A search of the SEPA's Flood Map online mapping tool records that sections of the M9 within the scheme extents are at a low – medium risk of surface water flooding (i.e., each year this area has a 0.1 – 0.5% chance of flooding). One area of the M9 within the scheme extents is at a high risk of surface water flooding (i.e., each year this area has a 10% chance of flooding). In addition, Tor Burn and Drain2 below the scheme extents are at a high risk of surface water flooding.

A search of Scotland's Environment (SE) online mapping tool determined that the trunk road lies on the 'Castle Cary' and 'Pow Burn and Stenhousemuir Sand and Gravel' groundwaters, both of which have been classified as being in 'Good'

condition. In addition, the trunk road lies on the 'Stenhousemuir' groundwater, which has been classified as being in 'Poor' condition.

The scheme extents do not lie within a Nitrate Vulnerable Zone (NVZ).

Climate

The Climate Change (Scotland) Act 2009 ('The Act'), and its subsequent amendment under the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019, sets the framework for the Scottish Government to address climate change. The Act has an ambitious target to reach Net Zero greenhouse gas emissions by 2045, with any residual emissions balanced by removing carbon dioxide from the atmosphere. This is five years earlier than the rest of the UK due to the greater potential for carbon sequestration in Scotland.

The Act was amended to replace interim targets with carbon budgets. Carbon budgets are legally binding caps on greenhouse gas emissions in Scotland over five-year periods. In line with the Act, the Climate Change Committee (CCC) published advice on the level of Scotland's four carbon budgets, covering the period 2026 to 2045, recommending what the Scottish Government sets its carbon budgets at for annual average levels of emissions. These recommendations are based on an ambitious but credible route to Net Zero for Scotland by 2045.

Emissions reductions from surface transport are the largest contribution to meeting the first two carbon budgets. The pathway for surface transport emission reduction is primarily driven by the uptake of electric vehicles, in addition to measures to enable a shift from car use to public transport and active travel, which all play a role in reducing emissions from fossil fuel cars. Ensuring efficiency of existing transport infrastructure and improving/providing new active travel facilities is therefore important to support these carbon reduction budgets.

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 the above noted legally binding target of net-zero by 2045. 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).

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).

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 impacts to local air quality.

However, considering the nature and duration of the scheme, along 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.

- 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.
- Materials that have a potential to produce dust will be removed from site as soon as possible, and 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).
- 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.
- Regular monitoring (e.g., by engineer or Clerk of Works) will take place when activities that have the potential to impact local air quality are occurring. In the unlikely event that unacceptable dust or exhaust emissions 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.

Landscape and visual effects

During construction there will be a short-term impact on the landscape character and visual amenity of the local area due to the presence of construction plant, vehicles, and TM. However, all construction work will be restricted to areas of made / engineered ground on the M9 carriageway, and works are programmed to be undertaken at night for seven nights. 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 and visual effects are assessed as temporary, negligible adverse in magnitude.

Upon completion of the works, no residual impacts on landscape and visual effects are anticipated e.g., when complete the visual appearance will remain largely unaffected, with a renewed road surface being the only discernible change.

Landscape and visual effects mitigation measures:

- 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.
- Where possible, construction vehicles will not be left in places where soil or vegetation can be damaged. If damage to road verge occurs this must be lightly cultivated or graded (upon completion of the works) to allow natural recolonization by local species and promote integration with existing landscape character.

Biodiversity

Given that there is potentially connectivity due to the scheme being located within the buffer zone of a small number of qualifying features of designated sites, a Habitats Regulations Appraisal (HRA) screening has been undertaken. The HRA concluded that there would be no Likely Significant Effects (LSE) on the identified qualifying features of the Firth of Forth SPA and Ramsar Site and Slamannan Plateau SPA due to the restriction of the works to the existing M9 carriageway, along with the distance, intervening habitats and urban areas separating the works from the designated sites.

Carbrook LNCS lies approx. 132m southwest of the scheme however, the works will be restricted to the M9 trunk road carriageway and will be undertaken over a short duration (seven nights). Therefore, the works are not expected to result in any significant impacts to the LNCS.

Invasive native perennial rosebay willowherb is recorded along the verge of the M9 within the scheme extents. However, given that the works are restricted to the M9, consist of like-for-like replacement of the road surface and mitigation measures below are implemented, the potential to impact upon this is species is considered to be negligible. While INNS giant hogweed has been identified within proximity to the scheme it is located along the southbound verge with all works restricted to the northbound carriageway. As such there will be no potential for interaction with the INNS.

A temporary short-term increase in noise levels may cause disturbance to local wildlife if present in the vicinity of the works. 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 road 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. The potential for significant species disturbance within the area of construction is therefore somewhat diminished.

Considering the nature, duration, size, and scale of the scheme, and with implementation of mitigation detailed above, the proposed works 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.

Biodiversity mitigation measures:

- 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.).
- The works are not permitted to disturb or destroy any active birds nests. If an active birds nest is identified onsite that will be impacted by works, BEAR Scotland's Environmental Team will be contacted.
- Given the records of protected species in proximity to the scheme extents Toolbox Talk TTN-139 'Protected Species', will be briefed to all staff prior to the commencement of works.
- Given the presence of invasive native perennial rosebay willowherb within the verge of the scheme extents, Toolbox Talk TTN-009 'Working with Injurious Weeds and Invasive Plants', will be briefed to all staff prior to the commencement of works.

- Site personnel will remain vigilant for protected species and will not approach or touch any animals seen on site. Any sightings of protected species will be reported to BEARs Environmental Team. Should a protected species be encountered or move within 50m of the active works (including compounds), works will be temporarily halted until the animal(s) move at least 50m away from the construction site, or until BEAR's Environmental Team can provide advice.
- 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.
- All equipment stored onsite, if necessary, will be checked at the start of each shift to ensure no animals are 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.
- 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:
  - unforeseen site clearance is required,
  - unplanned works must be undertaken out with the carriageway boundary,
  - there is any deviation from the agreed plan, programme and/or method of working,
  - nesting birds are found onsite.
- BEAR Scotland's Control Room will be contacted 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 also 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.

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.

Material assets and waste mitigation measures:

- A SWMP will be completed by the Designer and Contractor as required. 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 legislation.
- 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. Waste transfer notes and/or waste exemption certificates (if required) will also be completed and retained.
- The Contractor is responsible for the recycling / disposal of non-hazardous road planings and will operate in line with the SEPA’s EASR Regulatory Position Statement - Low Risk Waste Activities WAS-PS-07.
- Designated areas will be identified within which all materials and personnel, including construction compounds, where necessary, 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. 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 relevant waste regulations. Special waste will 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 to residential properties within the local area, the closest of which lies approx. 35m southwest of the scheme and are not screened from the scheme.

In addition, the works are not located within a CQA, and while they will be completed over seven nights, the aim will be to complete the noisiest works by 23:00.

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 the 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.

Considering the likely sources of noise and vibration, with 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 local authority environmental health department will be notified of nighttime working by BEAR Scotland's design engineer.
- Given the proximity of residential properties to the scheme, Toolbox Talk TTN-042 'Being a Good Neighbour', will be briefed to all staff prior to the commencement of works.
- Where possible, the noisiest work operations (e.g., cold milling, using breakers (jackhammers), chipping hammers, use of rollers, etc.) 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 characteristics 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 and road users. While TM will be in place for seven nights, it will be restricted to nighttime hours when traffic flows will be at a minimum, as such no congestion issues are expected during the proposed construction hours.

As noted above, the closest residential property is located 35m from the works and therefore, there is potential for visual and noise disturbance to these residents.

However, given the proximity of the carriageway they are likely habituated to some level of existing noise. Nevertheless, mitigation measures detailed below and within the 'Noise and Vibration' Section will reduce the potential for impacts.

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

Upon completion of the works, there will be a positive impact in relation to population and human health due to the improvement of usability and safety provided by the new carriageway surface.

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 must 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 other 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.
- Advanced signage will be strategically placed on the trunk road to notify stakeholders of the road closure and diversion at least seven days in advance.
- 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.
- Journey planning information will be available for drivers online at the trafficscotland.org website. Journey planning information will also be available for drivers online through BEARs social media platforms.

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 cause by rain) during works have the potential to have direct or indirect effect on surrounding waterbodies such as classified waterbody Pow Burn / Tor Burn and unclassified waterbodies Drain1, Drain2, Issue1 and Drain3.

However, all works will be restricted to the M9 carriageway and there will be no requirement to enter any watercourse as such there is limited risk for direct impacts. Furthermore, the potential for direct or indirect pollution incident to a waterbody is considered 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, 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 resurfacing works, no residual impacts are anticipated in relation to the road drainage and water environment.

Road drainage and the water environment mitigation measures:

- All site operatives will be made aware of the proximity of Pow Burn / Tor Burn, Drain1, Drain2, Issue1 and Drain3.
- If any works are identified that would require entering a waterbody, BEAR Scotland's Environmental Team will be contacted (before works commence) to allow consideration of potential environmental effects.
- The abstraction or transfers of water from, discharges to, or the washing of tools in surface waterbodies identified is not permitted.
- Appropriate measures will be implemented during resurfacing operations to limit the potential for wastes (i.e. road planings) and materials (i.e. new asphalt) to enter any gullies present on site. On completion of resurfacing operations, any gullies present on site will be visually checked to ensure they have not become blocked as a result of the scheme.
- 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 will 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 10m from drainage entry points and waterbodies (Pow Burn /

Tor Burn, Drain1, Drain2, Issue1 and Drain3), 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 >10m from drainage entry points and waterbodies (Pow Burn / Tor Burn, Drain1, Drain2, Issue1 and Drain3), 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 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 and adverse in magnitude.

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

Climate mitigation measures:

- Use of warm mix asphalt as standard.
- Local contractors and suppliers will be used as far as practicable to reduce fuel use and greenhouse gases emitted as part of the works.
- BEAR Scotland will adhere to its Carbon Management Policy.

- Where possible, waste will be removed to local waste management facilities.

Vulnerability of the project to risks

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 mainline. TM will employ seven nighttime full road closures with a signed diversion. As such, the proposed works' impacts on road traffic accidents are 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 by the Performance Audit Group (PAG).

Considering the above, the vulnerability of the project to 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.

A search of the Scottish Road Works Commissioner's website (map search) has identified additional road works planned within 300m of the M9 scheme extents that will coincide with the planned BEAR Scotland works.

In addition, a search using Stirling Council and Falkirk Council 'Simple Planning' Search identified two planning applications within 300m of the scheme extents in the last two years (Table 1).

Table 1: Planning Applications Within Last Two Years

Reference	Description	Decision	Distance From Works
23/00379/FUL	Change of use of land to include residential caravan, associated cartilage	Awaiting Decision	Approx. 25m southwest

Reference	Description	Decision	Distance From Works
	buildings and hard landscape (retrospective)		
25/00419/NPA	Works to railway bridge	Prior Approval Granted	Approx. 231m southwest

While it is not possible to gain an understanding on the timing or duration of the above planning applications, it is considered that even in the event that the above planning applications were being progressed at the same time as the planned BEAR Scotland works, due to them relating to a retrospective application with works already completed and a railway bridge 230m from the works there would be no potential for in-combination effects. Furthermore, given the short duration (seven nights) and minor nature of the scheme, no cumulative effects are expected.

Assessments of the environmental effects

The M9 After Junction 8 Northbound scheme has connectivity to two European Sites due to lying within the buffer zone of several of the qualifying species of the Firth of Forth SPA and Ramsar Site and Slamannan Plateau SPA and as such, an HRA has been undertaken. The HRA concluded that there will be no Likely Significant Effects (LSE) on the designated sites, and as such an Appropriate Assessment (AA) is not required.

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 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:

- Works are restricted to like-for-like replacement of worn / damaged road surface, with all works restricted to made ground on the M9 carriageway surface.
- Works are not expected to result in significant disturbance to protected species that may be present in the wider area.
- The risk of major accidents or disasters is considered to be low.
- By removing the carriageway defects, this will provide this section 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:

- The scheme lies within the buffer zone of the qualifying features of the Firth of Forth SPA and Slamannan Plateau SPA however, a HRA has been undertaken, which confirmed that the works will not result in LSE on the designated sites.
- The scheme does not lie within any sites of historical, cultural or archaeological significance.
- The scheme is not located within any areas designated for landscape areas.
- Land use will not change as a result of the works.
- The works do not require any private land acquisition.
- The scheme is not located within a densely populated area.

Characteristics of potential impacts of the scheme:

- The waste hierarchy will be followed to reduce waste to landfill.
- Works are programmed to take seven nights with the aim being to complete the noisiest works by 23:00.
- With good practice pollution prevention measures implemented onsite, there is a negligible risk of a pollution event e.g., compliance with the SEMP.

References of supporting documentation

M9 after Junction 8 – Habitats Regulations Appraisal

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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