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TRANSPORT SCOTLAND
CÒMHDHAIL ALBA

Environmental Impact Assessment Record of Determination

M90 Junction 2A to 2 Southbound

Contents

Project Details

Description

BEAR Scotland has been commissioned by Transport Scotland to carry out resurfacing works on the M90 southbound carriageway between Junction 2A and 2. The works will consist of inlays to depths of 40mm, 180mm and 260mm. The works will also involve the reinstatement of road markings and studs for a length of 1830m (approx. 2.01ha).

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.
- 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 2025/2026 financial year, with works expected to begin on 9th June 2025. Works are programmed to be completed over eight nights (20:00 – 06:00), with no works to be carried out on Saturdays or Sundays. TM will involve eight night-time full road closures of the M90 southbound carriageway with a signed diversion in place. Traffic will be diverted off the M90 at Junction 3 Halbeath and then onto local roads (Sanderling Way, Sandpiper Drive, Lapwing Drive and Carnegie Avenue), connecting to the A823 and A985 before rejoining the M90 at Junction 1C Admiralty Junction.

Location

The scheme lies on the M90 southbound carriageway east of the residential areas Masterton and Duloch (Figure 1) within the boundary of Fife Council. The extents are bordered by agricultural land to the east and agricultural land and urban developments to the west.

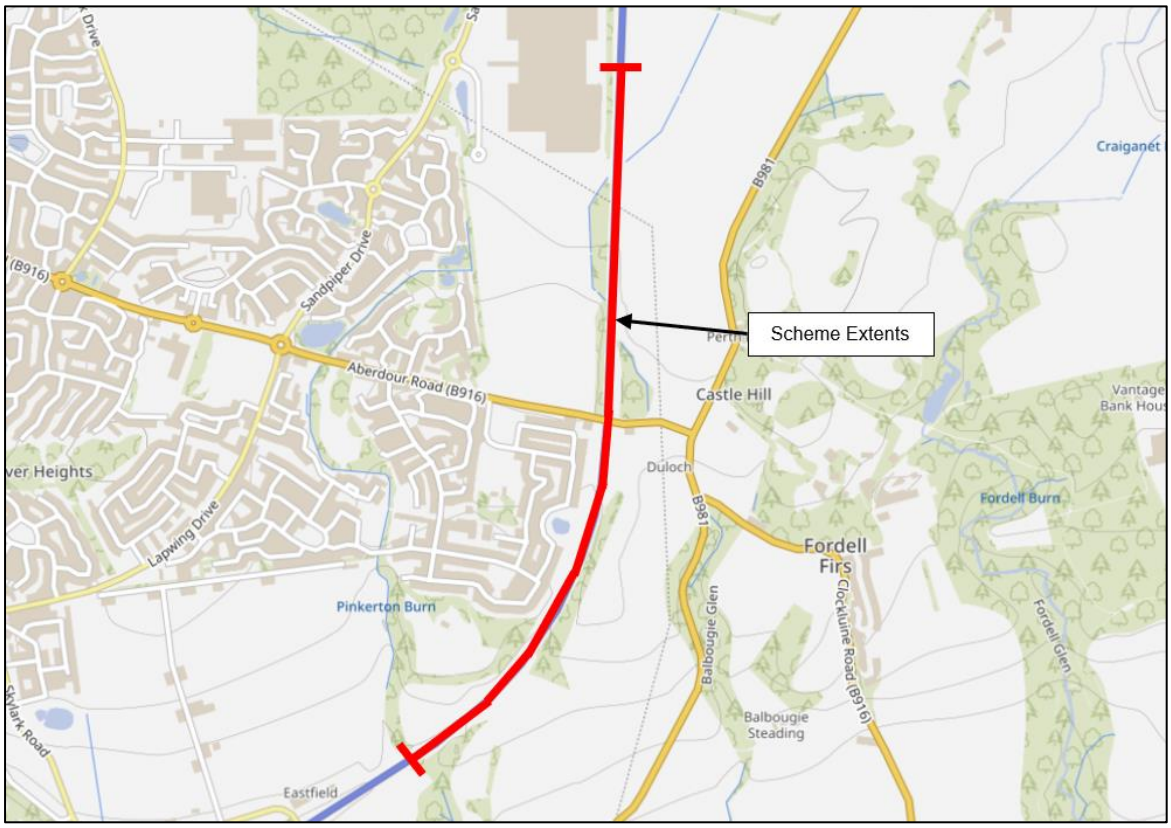

Figure 1: Extents of the works - Source: Asset Management Performance System (AMPS). © Europa Technologies Ltd. Contains Ordnance Survey data © Crown copyright and database right 2018.

Description of local environment

Air quality

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 Fife Council, which has no Air Quality Management Areas (AQMAs) within its administrative boundary. The nearest active AQMA lies within the boundary of the City of Edinburgh Council, 'Air Quality Management Area Glasgow Road 2013', located approx. 12.1km south of the scheme, declared for nitrogen dioxide (NO_2).

There are 13 sites registered on the Scottish Pollutant Release Inventory (SPRI) for pollutant releases to air within the last 10 years, within 10km of the scheme:

- Muir Dean Coal Site, Drumcooper Farm Crossgate – Mineral Industry, declared for carbon dioxide (CO_2) and methane, located approx. 1.6km northeast of the scheme.
- Elmbank Poultry Farm, Crossgates, Fife – Intensive Livestock Production and Aquaculture, declared for ammonia and methane, located approx. 2.4km northeast of the scheme.
- Mossbank Poultry Farm, Cowdenbeath, Fife – Intensive Livestock Production and Aquaculture, declared for ammonia, located approx. 4.1km northeast of the scheme.
- Rosyth Dockyard, Dunfermline – Other Activities, declared for non-methane volatile organic compounds (NMVOCs), located approx. 4.1km southwest of the scheme.
- Craigies Poultry Farm, Townhill, Dunfermline – Intensive Livestock Production and Aquaculture, declared for ammonia, located approx. 5.3km northwest of the scheme.
- Fife Ethylene Plant, Mossmorran – Chemical Industry, declared for benzene, butadiene, CO_2, carbon monoxide, ethylene, methane, nitrogen oxide (NO) as nitrogen dioxide (NO_2), NMVOCs, particulate matter (PM) and toluene, located approx. 5.8km northeast of the scheme.
- Fife Council, Lochead Landfill, By Wellwood, Fife – Waste and Waste-Water Management, declared for CO_2, chlorofluorocarbons (CFCs) and methane, located approx. 6.1km northwest of the scheme.
- Glendevon Poultry Farm, Wagon Road, Dunfermline – Intensive Livestock Production and Aquaculture, declared for ammonia, located approx. 6.3km west of the scheme.

- Fife Natural Gas Liquids (NGL) Plant, Cowdenbeath – Energy Sector, declared for CO_2, carbon monoxide, hydrochlorofluorocarbons (HCFCs), methane, NO_2, nitrous oxide, NMVOCs, sulphur monoxide, sulphur dioxide (SO_2), located approx. 6.4km northeast of the scheme.
- Greenhouse Poultry Farm, Kelty, Fife – Intensive Livestock Production and Aquaculture, declared for ammonia, located approx. 7km northwest of the scheme.
- Dalmeny Hound Point, South Queensferry – Energy Sector, declared for HCFCs, methane and NMVOCs, located approx. 4.1km southwest of the scheme.
- Units 10 and 12, Lochgelly Industrial Park, Lochgelly – Chemical Industry, declared for perfluorocarbons (PFCs), located approx. 9km northeast of the scheme.
- Saline Farms, (Saline and Dinmoss) – Intensive Livestock Production and Aquaculture, declared for ammonia, located approx. 9.8km northwest of the scheme.

Baseline air quality in the study area is mainly influenced by vehicles travelling along the M90 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 seven designated sites within 300m of the scheme extents, consisting of one Garden and Designed Landscape, one Scheduled Monument, one Battlefield and four Listed Buildings (three records of which pertain to the same Listed Building):

- Battle of Inverkeithing II (BTL23) lies within the southern extents of the scheme.
- Middlebank House, Souterrain 370m Ene of Scheduled Monument (SM8554) lies approx. 130m southwest of the scheme.
- Old Duloch House, Including Former Stables, Boundary Walls, Gatepiers and Walled Garden (LB9981) lies approx. 250m west of the scheme (three records).
- Fordell Castle Garden and Designed Landscapes (GDL00182) lies approx. 260m east of the scheme.
- Fordell Estate, North West Gate (Off B981) Listed Building (LB4963) lies approx. 290m east of the scheme.

Of lesser cultural heritage value, 19 undesignated cultural heritage assets (UCHAs) lie within 300m of the scheme extents, the closest of which lies approx. 33m west of the scheme:

- Middle Den Canmore (ID: 345584).

Construction of the M90 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.

Landscape and visual effects

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

The Landscape Character Type (LCT) within the study area is 'Lowland Hills and Valleys' (no. 186), the characteristics of which are:

- Variety and subtlety of landform.
- Generally dominated by open, regular farmland patterns of medium scale fields of arable and grasslands.
- Variable pattern of post and wire fences and mostly tall hedges with hedgerow trees.
- Extensive areas of forestry, shelter planting, roadside planting and policies linked to large estates.
- Regular, often linear, pattern of the distribution of steadings and larger settlements and towns, all of which are generally well related to the landscape. Towns in valleys enclosed by the landform of low hills which form a rural backdrop.
- Network of roads often well related to landform.
- Dominant linear and point features of forests and tree groups, individual trees or local buildings.
- A generally tended, safe, quiet, balanced and calm landscape, but also a busy, random, disturbed and noise one in the more urban, industrialised areas.
- Variety of interrelated middle- and long-distance views of, from and across the low hills.

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

- Motorway and major roads.
- Rectilinear fields and farms.
- Designed landscape.
- Recreation area.
- Urban area.
- Managed woodland.
- Rough grazing.
- Holdings.

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 six areas of woodland registered on the Native Woodland Survey of Scotland (NWSS) within 300m of the scheme extents, all of which are described as lowland mixed deciduous and located as follows:

- Approx. 0.9ha lies adjacent to the southbound carriageway within the scheme extents.
- Approx. 1.7ha lies adjacent to the southbound carriageway within the scheme extents.
- Approx. 3.7ha lies approx. 29m west of the scheme.
- Approx. 1.8ha lies approx. 237m northwest of the scheme.
- Approx. 1.4ha lies approx. 240m east of the scheme.
- Approx. 6.1ha lies approx. 260m east of the scheme.

Furthermore, there are three areas of woodland on the Ancient Woodland Inventory Scotland, all of which are assessed to be long-established of plantation origin, within 300m of the scheme extents:

- Unnamed site (4.03ha) lies approx. 58m southeast of the scheme.
- Unnamed site (5.7ha) lies approx. 209m east of the scheme.
- Fordell Castle Woods (19.27ha) lies approx. 260m east of the scheme.

In addition, two areas of broadleaved woodland lie within 300m of the scheme extents:

- Approx. 0.5ha lies approx. 192m west of the scheme.
- Approx. 0.9ha lies approx. 205m north of the scheme.

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 is not situated within 2km of, and does not share connectivity with, a 'European Site' designated for biodiversity features e.g., SAC, SPA, Ramsar site, etc.

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

A search of the NBN online mapping tool records the following plant species as listed within the Network Management Contract within 2km of the scheme extents (within the last 10-years):

Four Invasive Non-Native Species (INNS):

- Japanese knotweed (*Reynoutria japonica*).
- Giant hogweed (*Heracleum mantegazzianum*).
- Himalayan balsam (*Impatiens glandulifera*).
- Rhododendron (*Rhododendron ponticum*).

Five Injurious Weeds:

- Broadleaved dock (*Rumex obtusifolius*).
- Common ragwort (*Jacobaea vulgaris*).
- Spear thistle (*Cirsium vulgare*).
- Creeping thistle (*Cirsium arvense*).
- Curled dock (Rumex crispus).

One Invasive Native Perennial:

- Rosebay willowherb (*Chamaenerion angustifolium*).

The closest record pertains to injurious weeds broadleaved dock (recorded 2020) and common ragwort (recorded 2020) approx. 169m west of the scheme.

A search of the Asset Management Performance System (AMPS) records no INNS, injurious weeds or invasive native perennials within 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 therefore comprise a homogenous species-poor semi-improved grassland. Roadside vegetation generally offers low ecological habitat due to its limited scale, fragmented nature and high potential for disturbance owing to cyclic trunk road landscape maintenance, and the proximity of the trunk road (with its fast-flowing traffic). The presence of the trunk road also restricts continuity of, and connectivity between, habitats either side of the trunk road boundary.

Out with the trunk road boundary, agricultural land dominates areas to east of the scheme, forming a pattern of open and exposed fields containing both arable and pastoral land with urban developments located west of the scheme and a large warehouse to the northwest. Field boundaries consist of wooden fencing with linear features such as tree lines and roadside vegetation within the wider areas also having wildlife value, both as corridors in an intensively managed landscape, and as habitats for birds and other small animals.

Geology and soils

The M90 within the scheme extents is not located within 300m of 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 types beneath the scheme extents as the following:

- Brown soils.
- Mineral gleys.

The major soil groups beneath the scheme extents are:

- Brown soils.
- Gleys.

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

- Till, Devensian (Diamicton).

The bedrock geology in the scheme extents is recorded as:

- Lower Limestone Formation, Sedimentary Rocky Cycles (Clackmannan Group Type).
- Second Hosie 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.

Given that works are restricted to like-for-like replacement of the existing road surface within the carriageway boundary with no earthworks are required, there is no potential to impact upon geology and soils. Therefore, geology and soils has been scoped out of further environmental 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:

- TS2020 10mm Surface Course Site Class 1.
- AC20 Dense Binder (approx. 25% recycled).
- AC32 Dense Base (approx. 25% recycled).
- Tack/Bond Coat.
- Paving Grade Bitumen.
- Weather Line Road Markings.
- Embedded and Surface Mounted Road Studs.

As the value of the scheme is greater than £350,000, a Site Waste Management Plan (SWMP) will be produced for these works.

The 1,830m scheme involves removal of the surface course and localised base and binder. In total, approx. 3720 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 Noise Management Area (CNMA) or Candidate Quiet Areas (CQA).

The night-time modelled noise level (LNGT) ranges between 70 and 75 decibels (dB) within the scheme extents (Scotland's Noise), with levels dropping to between 65 and 70 dB at the nearest noise sensitive receptor (NSR) (i.e., residential property).

The baseline noise and vibration in the scheme extents is primarily influenced by vehicles travelling along the M90 trunk road. Secondary sources are derived from vehicles travelling along nearby local network roads and agricultural land management activities.

Population and human health

Numerous residential properties and a commercial property lie within 300m of the scheme extents, the closest of which lies approx. 36m west of the scheme (residential property) and are only partially screened from the scheme by roadside embankments. The remaining residential properties in the wider area are fully screened from the scheme by steep roadside embankments and intervening properties.

In addition, Little Bugs Outdoor Nursery at Fordell Firs lies approx. 250m east of the scheme and is fully screened from the scheme by roadside tree shelterbelt.

Core Path R649 lies within the scheme extents however, crossing the M90 via an overbridge on Aberdour Road (B916). There are no additional community facilities with connectivity to the scheme extents.

Street lighting is not present within the scheme extents.

The M90, within the scheme extents, is a motorway with the national speed limit applying throughout. The Annual Average Daily Traffic (AADT) flow is high (65,102 motor vehicles (ID: 30707, 2023)) (Road Traffic Statistics).

Road drainage and the water environment

The Scottish Environment Protection Agency (SEPA) River Basin Management Plan online mapping tool records no classified surface waterbodies within 300m of the scheme extents.

There are six unclassified waterbodies within 300m of the scheme extents:

- Pinkerton Burn is culverted beneath the scheme at the southern end of the scheme and is separated from the scheme by raised roadside embankment and tree shelterbelt.
- Drain1 is also culverted beneath the scheme extents within the northern extents of the scheme and is separated from the scheme by roadside verge and tree shelterbelt.
- Drain2 lies approx. 19m east of the scheme and is separated from the scheme by roadside verge.
- One balancing pond lies approx. 49m west of the scheme and is separated from the scheme by roadside verge.
- Drain3 lies approx. 213m east of the scheme.
- Balbougie Glen lies approx. 241m east of the scheme.

A search of the SEPA's Flood Map online mapping tool records that the southern extents of the scheme are at a medium risk of surface water flooding (i.e., each year this area has a 0.5% chance of flooding).

A search of Scotland's Environment (SE) online mapping tool determined that the trunk road lies on the 'Dunfermline and Kirkcaldy' 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 sets out the target and vision set by the Scottish Government for tackling and responding to climate change (Climate Change (Scotland) Act 2009). The Act includes a target of reducing CO_2 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). 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).

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.

Cultural heritage

The Battle of Inverkeithing II Battlefield (BTL23) lies within the southern extents of the scheme. As such, unmitigated there is potential for disturbance of this cultural heritage feature. However, given that the works are restricted to the existing M90 SB carriageway boundary and depth, and with the implementation of mitigation measures detailed below, the risk of impacting this feature is considered to be negligible.

Furthermore, construction of the M90 road corridor 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 has therefore been assessed to be low.

Considering the nature, duration, size, and scale of the scheme, and with the implementation of mitigation detailed below, the proposed works impact on cultural heritage are assessed to be low in magnitude.

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

Cultural heritage mitigation measures:

- Site operatives will be made aware of the location and sensitivity of cultural heritage features present within the scheme extents (Battle of Inverkeithing II Battlefield).
- People, ancillary plant, vehicles, NRMM and materials will be restricted to areas of made/engineered ground (as much as is reasonably practicable). No plant, machinery or equipment will be situated within the carriageway verge within the boundary of the Battle of Inverkeithing II Battlefield. Where access out with 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

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 is restricted to areas of made/engineered ground on the M90 SB carriageway, and works are programmed to be undertaken at night (eight 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 m 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

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 M90. 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.).
- Given the identification of protected species within 2km of the scheme extents, Toolbox Talk TTN-139 'Protected Species' will therefore be briefed to all site personnel prior to the works commencing.
- 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.
- 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 UK 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 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/20111007), the rules of which will be complied with.
- 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 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 to residential properties within the local area, the closest of which lies approx. 36m west of the scheme extents.

However, the works are not located within a CNMA or CQA, and while they will be completed over eight nights, the aim will be to complete the noisiest works by 23:00. In addition, the proximity of road space suggests that residents have a degree of tolerance to noise and disturbance.

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.
- 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.
- Wherever possible, careful consideration will be given to the siting and orientation of particularly noisy items of NRMM so that it is located away from surrounding properties. Activities which have the potential to produce excessive noise will be undertaken away from surrounding properties, if possible.
- 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

Given the proximity of residential properties there is potential for noise/vibration impacts and visual disturbance due to site and plant lighting along with delays due to traffic management for both local residents and road users. While TM will be in place for eight 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.

While Little Bugs Outdoor Nursery at Fordell Firs is found within 300m, all works will be restricted to nighttime hours when the nursery is not expected to be occupied and as such will not be impacted.

Furthermore, while Core Path R649 lies within the scheme extents, it crosses over the scheme extents via an overbridge on Aberdour Road (B916) and as such, will not be impacted by the works.

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 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.
- 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 caused by rain) during works have the could result in direct or indirect effect on surrounding waterbodies such as Pinkerton Burn, Drain1, Drain2 and the balancing pond all found within 50m of the scheme.

However, all works will be restricted to the M90 southbound carriageway and there will be no requirement to enter any watercourses, 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:

- Site operatives will be made aware of the proximity of Pinkerton Burn, Drain1, Drain2 and the balancing pond.
- 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, 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, 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:

- 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 M90 within the scheme extents upon completion of the works.

Works are restricted to areas of made ground on the M90 southbound carriageway surface, with access to the scheme gained via the M90 mainline. TM will employ eight nighttime full road closures with a signed diversion in place. 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.

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

Assessment 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 that no other road works are currently ongoing, or noted as being planned, on the M90 trunk road or surrounding roads in proximity to the scheme which will be undertaken at the same time.

In addition, a search using the Fife Council 'Simple Search' identified one planning application within 300m of the scheme within the last 10 years (Table 1).

Table 1: Planning Application (Within Last 10 Years)

Reference	Description	Status	Distance
23/02996/FULL	Erection of extension	Application permitted with conditions	Approx. 238m east

While it is not possible to gain an understanding on the timing or duration of the above planning application, it is considered that even in the event that 23/02996/FULL planning application was being progressed at the same time as the planned BEAR Scotland resurfacing works, given the small-scale nature of the erection of an extension, coupled with the short duration (eight nights) and minor nature of the scheme, no in-combination effects are expected.

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 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 M90 southbound 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 M90 southbound 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 is not situated within 2km of, and does not share connectivity with, a ‘European Site’ designated for biodiversity features e.g., SAC, SPA, Ramsar site, etc.
- The scheme will not impact the ‘Battle of Inverkeithing II’ Battlefield found within the southern extents.

- The scheme is not located within any designated 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 eight nights to complete, 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.

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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