

**EC DIRECTIVE 2011/92/EU (as amended)**

**ROADS (SCOTLAND) ACT 1984 (Environmental Impact Assessment)  
Regulations 2017 (as amended)**

**RECORD OF DETERMINATION**

**Name of Project:**

A77 Crossraguel Abbey to Maybole

**Location:**

The scheme is located on a section of the A77 carriageway approx. 600m southwest of Maybole, South Ayrshire. The works have the following National Grid References:

- Scheme start: NS 27723 08471
- Scheme end: NS 28665 09344

The length of the scheme is approximately 1,816m (1.8km) with an area of approximately 10,732m<sup>2</sup> (1.07ha).

**Description of Project:**

The works are required to repair damaged carriageway surfacing along a section of the A77 carriageway, on both northbound and southbound carriageways, to maintain safety and integrity. The main driver for this scheme is the numerous transverse and longitudinal cracks, which suggests structural failure of the carriageway. In addition, this section features an open central construction joint with long stretches of severe chip loss, and numerous temporary patches and potholes present throughout the scheme. These defects indicate the surface course is approaching the end of its serviceable life.

The works will consist of a 40mm inlay treatment of TS2010 road surfacing throughout the length of the scheme to repair the defective road surface. AC20 and AC32 binder will be utilised in areas of deeper treatment, to depths of either 200mm or 310mm dependent on requirement. This will prevent accelerating pavement deterioration and improve the overall ride quality of the carriageway within the scheme extents.

Construction activities will likely include:

- Milling of existing bituminous material by road planer;
- Hand-held jackhammer and compressor for breaking up surfaces not accessible by planer;
- Loader/excavator used to collect and move excess material;
- Base/binder material laid and compressed (where required);
- New bituminous material laid by a paver;

- Material compacted using a heavy roller;
- Mechanical sweeper to collect loose material;
- HGV for removal and replacement of material;
- Road markings replaced.

The package of works is set to take place continuously over one full weekend, commencing on 20:00 Friday 11th December 2020 until 06:00 Monday 14th December 2020. Works will involve both daytime and night-time working. South Ayrshire Council's Environmental Health Team have been contacted regarding the required works.

Traffic management (TM) for the works will involve a full closure along this section of carriageway, facilitated by an appropriate diversion route which is yet to be determined.

Please see Appendix 1 for a Location Plan and Scheme Extents drawing.

#### Description of Local Environment:

The following baseline descriptions have been numbered to follow the appropriate DMRB chapters for environmental assessment and do not reflect a ranking of sensitivity.

##### 1. Population and Human Health

The works area is located along a semi-rural stretch of the A77 carriageway with the surrounding environment predominantly consisting of agricultural land. Rural residential properties and farmsteads are found intermittently, adjacent to the A77 and within proximity to the works. The closest residential property, Balkenny, is located approx. 25m from the NB carriageway.

The ambient noise levels are primarily influenced by vehicle traffic from the A77 carriageway, with secondary sources from nearby agricultural land use activities.

Core Path SA32<sup>1</sup>, a paved footway, exists adjacent to the northbound carriageway for the full scheme extents.

Several access points exist within the scheme extents, providing access to farmland and residential properties, with some properties only accessible via the A77 within the scheme extents.

Two laybys exist within the scheme, adjacent to both the NB and SB carriageways.

The works do not fall within a Candidate Noise Management Areas (CNMA) as defined by the Transportation Noise Action Plan, Road Maps<sup>2</sup>.

##### 2. Biodiversity

The scheme is situated on a semi-rural section of the A77, surrounded by arable fields, with small areas of low-lying vegetation flanking the carriageway intermittently.

<sup>1</sup> <http://south-ayrshire.maps.arcgis.com/apps/Cascade/index.html?appid=d47c2f90b1314e98bca851a5cb348f3d> (Accessed on 03/11/2020)

<sup>2</sup> <https://noise.environment.gov.scot/action-planning-round-two.html> (Accessed on 03/11/2020)

**Description of Local Environment:**

A desktop study using Nature Scot's Sitelink online interactive map<sup>3</sup> has not identified any designated sites within proximity.

Amey's Invasive Non-native Species (INNS) Database does not highlight any INNS growth within, or within proximity to, the works location.

Given that the surrounding environment within proximity to the works consists of open, low-lying agricultural fields with minimal/no vegetation cover, the area has been deemed unsuitable for protected species shelter. As a result, a field survey has not been deemed necessary for these works.

No statutory consultation will be required.

**3. Land**

The trunk road footprint consists of a rural single carriageway comprising one northbound and one southbound lane.

A footpath runs adjacent to the northbound carriageway for the full extent of the works area, with footpath verges vegetated with low lying grass and intermittent minor vegetation. There are 3 laybys present within the extents; two adjacent to the northbound carriageway, and one southbound.

On site work activities will be confined within the A77 carriageway boundary and will not require access over any private or community land.

**4. Soil**

The scheme is not located within, or within proximity to, any Local Geodiversity Sites (formerly known as RIGS)<sup>4</sup> or geologically designated SSSIs<sup>5</sup>.

Scotland's Environment Scotland's Soils Map<sup>6</sup> has identified the local soil types within the scheme extents as brown earths.

A desktop study using the British Geological Survey Map<sup>7</sup> has identified local geology type as a combination of the following:

- **Bedrock Geology:**
  - Swanshaw Sandstone Formation - Sandstone. Sedimentary Bedrock formed approximately 393 to 427 million years ago in the Devonian and Silurian Periods. Local environment previously dominated by rivers.
- **Superficial Deposits:**
  - Alluvium - Clay, Silt, Sand And Gravel. Superficial Deposits formed up to 2 million years ago in the Quaternary Period. Local environment previously dominated by rivers (U).
  - Hummocky (moundy) Glacial Deposits - Diamicton, Clay, Sand And Gravel. Superficial Deposits formed up to 3 million years ago in the Quaternary Period. Local environment previously dominated by ice age conditions (U).

<sup>3</sup> <https://sitelink.nature.scot/map> (Accessed on 03/11/2020)

<sup>4</sup> <https://www.google.com/maps/d/viewer?mid=1HfclRWclTRxXUZWNARManI-PUhE&ll=57.74680670722851%2C-5.313263556249922&z=6> (Accessed on 03/11/2020)

<sup>5</sup> <https://sitelink.nature.scot/home> (Accessed on 03/11/2020)

<sup>6</sup> [http://map.environment.gov.scot/Soil\\_maps/?layer=1](http://map.environment.gov.scot/Soil_maps/?layer=1) (Accessed on 03/11/2020)

<sup>7</sup> <http://mapapps.bgs.ac.uk/geologyofbritain/home.html> (Accessed on 03/11/2020)

**Description of Local Environment:**

5. Water

SEPA's Water Classification Hub Map<sup>8</sup> has identified Barlewan Burn (10461), which flows below the A77 carriageway within the scheme extents. SEPA has given this watercourse an overall status of 'Moderate', with 'Moderate' overall ecology.

Abbeymill burn (unclassified by SEPA) flows adjacent to the southbound carriageway for the full scheme extent, at approx. 15m at its closest point. A tributary of Abbeymill burn flows below the A77 carriageway at the southern scheme extents, and a second issues flows below the carriageway approx. 55 north of the scheme.

The Indicative River & Coastal Flood Map<sup>9</sup> by SEPA highlights the carriageway to be at risk of surface water flooding.

Drainage is provided by a combination of side and top entry gullies along both sides of the carriageway.

6. Air

The A77 is a key route between Stranraer and Kilmarnock and provides further access to Glasgow via the M77. The average annual daily flow (AADF) in 2018 for the A77 within the scheme extents was 11,418 with a 19% heavy goods vehicle (HGV) traffic count.

Local air quality is likely to be impacted by road traffic and rural land use activities.

South Ayrshire Council has not declared any Air Quality Management Areas<sup>10</sup>.

7. Climate

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

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

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

8. Material Assets and Waste

Activity	Material Required	Origin/ Content
Site Construction	<ul style="list-style-type: none"> <li>• TS2010 Surface (bitumen and aggregate)</li> <li>• Road Paint / studs</li> <li>• AC20/AC32 Binder</li> </ul>	<p>A proportion of reclaimed asphalt pavement (RAP) is used in asphalt production. Typical RAP values for base and binder are 10% - 15% with up to 10% in surface course.</p> <p>TS2010 Surface Course allows a wider array of aggregate sources to be</p>

<sup>8</sup> <https://www.sepa.org.uk/data-visualisation/water-classification-hub/> (Accessed on 03/11/2020)

<sup>9</sup> <http://map.sepa.org.uk/floodmap/map.htm> (Accessed on 03/11/2020)

<sup>10</sup> <http://www.scottishairquality.scot/lqgm/aqma> (Accessed 03/11/2020)

**Description of Local Environment:**

		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 <sup>11</sup> .
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**Key Waste Arising from Activities**

Activity	Waste Arising	Disposal/ Regulation
Site Construction	<ul style="list-style-type: none"> <li>Road Planings</li> </ul>	<p>At the investigation stage, cores were undertaken to determine the structural integrity of the carriageway and the presence of tar bound macadam within the road surface.</p> <p>Twenty-seven road core samples throughout the length of the proposed works were screened and showed no indication of presence of Benzo(a)pyrene above 50 mg/kg (tar bound macadam).</p> <p>Therefore, road planings arising from the works may be recovered in accordance with the criteria stipulated within SEPA document 'Guidance on the Production for Fully Recovered Asphalt Road Planings'<sup>12</sup>.</p>

**9. Cultural Heritage**

A desktop study using PastMap<sup>13</sup> has identified the following features of cultural heritage within proximity of the works:

- Baltersan Castle, a Category A Listed Building, located approx. 75m east of the A77 carriageway at the works location.
- Crossraguel Abbey, a Scheduled Monument (SM90087) (comprising the remains of the stone structures together and the area likely to contain part of the outer precinct), located approx. 110m west of the works.

**10. Landscape**

The works are located within a semi-rural area of the A77, with the surrounding environment consisting of arable farmland with intermittent rural properties.

<sup>11</sup> Transport Scotland TS2010 Surface Course Specification and Guidance Issue 04, 2018 (as amended)

<sup>12</sup> SEPA Guidance on the Production of Fully Recovered Asphalt Road Planings

<sup>13</sup> <https://pastmap.org.uk/> (Accessed on 03/11/2020)

**Description of Local Environment:**

A desktop study using PastMap<sup>14</sup> and Nature Scot Sitelink<sup>15</sup> online interactive map has not highlighted any areas designated for landscape characteristics within the works location.

Historic Environment Scotland's HLaMap<sup>16</sup> has highlighted the surrounding landscape as Rectilinear Fields and Farms.

**Description of the main environmental impacts of the project and proposed mitigation:**

The following environmental impacts have been numbered to follow the appropriate DMRB chapters for environmental assessment and do not reflect a ranking of impact severity. Construction and operational impacts, including impact on Policies and Plans, are covered within each environmental topic heading where applicable.

1. Population and Human Health

1.1 Impacts

- Works will involve both daytime and night-time working hours;
  - Works will operate within close proximity to residential properties, with there being a potential for nuisance, including disruption to sleep;
- Works may result in temporary obstruction of the Core Path/footway.
- Laybys within the scheme extent will be inaccessible during the works.
- Access to residential properties may be temporarily restricted during the work.
- Traffic management will involve a full closure of the NB A77 for a full weekend. TM arrangements may cause increased journey times for road users and increase congestion on local roads.
- TS2010 road surfacing is shown to have superior durability and noise reducing features compared to standard road surfacing mixes; thus preventing the need for reoccurring routine maintenance and associated levels of disruption.
- Reduced reoccurring routine maintenance and associated levels of disruption due to TS2010 durability.
- TS2010 will afford benefits of a reduction in mid to high frequencies of traffic noise and a reduction in ground vibrations. As a result, ambient noise levels may decrease post construction<sup>17</sup>.

1.2 Mitigation

- Due to night-time working hours:
  - South Ayrshire Council have been notified in advance of the works, undertaken by the E&S Team;
  - Properties as highlighted in the pre-notification map shall be notified prior to the works starting, detailing the nature, timings and duration of works along with traffic management arrangements.

<sup>14</sup> <http://pastmap.org.uk/> (Accessed on 05/11/2020)

<sup>15</sup> <https://sitelink.nature.scot/map> (Accessed on 05/11/2020)

<sup>16</sup> <https://map.hlamap.org.uk/> (Accessed on 05/11/2020)

<sup>17</sup> Transport Scotland TS2010 Specification and Guidance Issue 03, October 2015 (as amended)

**Description of the main environmental impacts of the project and proposed mitigation:**

- The road closures/restrictions will be widely publicised within the local and wider area, in an effort to minimise disturbance to vehicular travellers.
- Appropriate measures will be implemented on site to ensure the safe passage of pedestrians of all abilities by the works location, if footways likely to be blocked.
- Where possible and practicable, noise heavy activities such as planing, breaking out, etc. shall be carried out before 11pm in proximity to residential properties.
- Effects from noise will be kept to a minimum through the use of appropriate mufflers and silencers fitted to machinery. All exhaust silencers will be checked at regular intervals to ensure efficiency;
- Access to residential properties shall be maintained at all times.
- Artificial site lighting will be directional and pointed away from residential properties.
- Operatives will be briefed with the Noise and Vibration toolbox talk before starting works.

It has been determined that the proposed project will have slight temporary impact to population and human health.

It has been determined that the proposed project will not have direct or indirect significant effects to Population and Human Health.

**2. Biodiversity**

**2.1 Impacts**

- Nocturnal species may experience slight disturbance due to the addition of lighting sources during night-time works.

**2.2 Mitigation**

- Site operatives will be made aware of the possibility of protected species in and around the works area, with site measures in place to reduce potential impact, including:
  - Any areas of open excavations will be ramped to prevent accidental entrapment of protected species;
  - All containers will be covered, and no hazardous materials will be stored on site.
- If a protected species, is seen on or near the scheme, all works will be stopped until the animal passes by. The area will be temporarily isolated (if possible) until the animal has moved on.
  - The E&S team will be contacted for guidance, and the control room will be contacted for environmental record.
- On site light sources will be kept to a minimum, and only used as required.
  - When in use, any artificial light shall be pointed and directed at the area of works as far as reasonably practicable, reducing any light spill into the wider surroundings, and potentially sensitive habitat (e.g. vegetation/woodland).
  - When not in use, light sources shall be switched off to reduce impact on nocturnal species.

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

**3. Land**

**3.1 Impacts**

- Potential for damage to verges in proximity, due to presence of plant/materials.

**Description of the main environmental impacts of the project and proposed mitigation:**

3.2 Mitigation

- The works will be kept to the existing A77 carriageway boundary and will not require or prevent access to private or community land out with the trunk road boundary.
- Plant, materials and any other temporary storage will be kept to the made carriageway boundary surface only.
  - Layby's within the scheme extent will be utilised for storage purposes where required, and where practicable.

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

4. Soil

The works will be kept to the existing carriageway and soils shall not be impacted.

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

5. Water

5.1 Impacts

- If not adequately controlled, debris and run off from the works could be suspended in the surface water. In the event of a flooding incident, this debris may be mobilised and could enter the road drainage having a detrimental effect on the surrounding local water environment.
- Potential for spills, leaks or seepage of fuels and oils associated with plant to escape and reach drainage systems and watercourses, if not controlled;
- Risk of flooding may impact the scheme extent delaying the works.

5.2 Mitigation

- Appropriate measures will be implemented onsite to prevent any potential pollution to the natural water environment (e.g. debris, dust and hazardous substances). This will include spill kits being present onsite, and the use of funnels and drip trays when transferring fuel.
- Debris and dust generated as a result of the works must be prevented from entering the drainage system. This can be via the use of drain covers or similar;
- Visual pollution inspections of the working area will be conducted frequently, especially during heavy rainfall and wind.
- Weather reports will be monitored prior to and during all construction activities. In the event of an adverse weather/flooding event, all activities will temporarily stop, and will only reconvene when deemed safe to do so, and run-off/drainage can be adequately controlled to prevent pollution.
- Oil, fuels and other potential pollutants or poisonous materials will be stored safely on site;
- Best practice, as detailed by SEPA's Guidance for Pollution Prevention (GPPs), will always be followed onsite. This will ensure that any potential sediments / spills are not allowed to enter road drainage unchecked.
- All debris which has the potential to be suspended in surface water and wash into the local water environment will be cleaned from the site following the works.



Description of the main environmental impacts of the project and proposed mitigation:	
It has been determined that the proposed project will not have direct or indirect significant effects to local water environment.	
6. Air	
6.1 Impacts	<ul style="list-style-type: none"> <li>The use of vehicles and plants emitting carbon emissions may temporarily affect air quality and will require the use of finite resources.</li> <li>On site construction activities carry a potential to produce airborne particulate matter that may have a slight impact on local air quality levels.</li> <li>Diversion route will increase vehicle traffic (and associated emissions) in the nearby local road network.</li> </ul>
6.2 Mitigation	<ul style="list-style-type: none"> <li>Planing operations will be dampened to reduce dust arising.</li> <li>Drop heights to haulage vehicles and onto conveyors will be minimised.</li> <li>Lorries will be sheeted when carrying dry materials.</li> <li>Surfaces will be swept where loose material remains following planning.</li> <li>Best practice measures will to be adopted for the duration of the scheme. Best practice measures will include but not be limited to: <ul style="list-style-type: none"> <li>Vehicle and plant servicing/checks as per manufacturing and legal requirements;</li> <li>Adoption of drive green techniques;</li> <li>Route preparation and planning.</li> <li>When not in use plant and vehicle will be switched off.</li> </ul> </li> </ul> <p>It has been determined that the proposed project will not have direct or indirect significant effects to air quality.</p>
7. Climate	
7.1 Impacts	<ul style="list-style-type: none"> <li>Greenhouse gas emissions will be emitted through the use of machinery, vehicles and materials used (containing recycled and virgin materials).</li> </ul>
7.2 Mitigation	<ul style="list-style-type: none"> <li>Where possible local suppliers will be used as far as practicable to reduce travel time and greenhouse gas emitted as part of the works.</li> <li>Vehicles / plant shall not be left on when not in use to minimise and prevent unnecessary emissions being emitted.</li> <li>Further actions and considerations for this scheme are detailed in section 8 Material Assets.</li> </ul> <p>It has been determined that the proposed project will not have direct or indirect significant effects to climate.</p>
8. Material Assets and Waste	
8.1 Impacts	<ul style="list-style-type: none"> <li>Contribution to resource depletion through use of virgin materials.</li> <li>Greenhouse gas emissions generated by material production and transporting to and from site.</li> </ul>

**Description of the main environmental impacts of the project and proposed mitigation:**

- Transportation and recovery of planings will require energy deriving from fossil fuel, a non-renewable source.
- Limited quantity of waste from sweeping will arise requiring disposal.

**8.2 Mitigation**

- Materials will be derived from recycled, secondary or re-used origin as far as practicable within the design specifications to reduce natural resource depletion.
- Road planings generated will be recovered by a licenced contractor for reuse and / or recycling in accordance with the criteria stipulated within SEPA document 'Guidance on the Production of Fully Recoverable Asphalt Road Planings'.
- The chosen material TS2010 Surface Course allows a wider array of aggregate sources to be considered when compared to typical stone mastic asphalt (SMA). As a result, the use of TS2010 should reduce the usage of imported aggregates and increase the use of a wider range of sustainable aggregate sources.
- Road sweeping waste will be treated at a licenced facility to separate useful materials such as stone/aggregate as far as reasonably practicable, recovering this waste and diverting it from landfill.

Circular Economy

The design life for TS2010 surfacing is estimated to be 20 years. This will reduce the requirement for maintenance to this section of road over the period.

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

**9. Cultural Heritage**

The works will be kept to the existing footprint of the carriageway and will not impact upon the features of cultural heritage highlighted in proximity.

It has been determined that the proposed project will not have direct or indirect significant effects to features of undiscovered cultural heritage.

**10. Landscape**

The A77 within the scheme extents does not fall within any designation for landscape quality or character.

Views of, and from, the road will be temporarily affected during construction due to the presence of works, traffic management and plant. As the works are operating on a like-for-like basis, no permanent changes to landscape features are predicted.

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

**11. Vulnerability of the Project to Risks**

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

**Extent of EIA work undertaken and details of consultation:**

The following environmental parameters have been considered within this Record of Determination:

- Population and Human Health
- Biodiversity
- Land
- Soil
- Water
- Air
- Climate
- Material Assets
- Cultural Heritage
- Landscape

The following statutory organisations have been consulted:

- South Ayrshire Council's Environmental Health Team have been notified of the proposed works.

The following environmental surveys / reviews have been undertaken:

- A design Initial Environmental Review of the scheme, undertaken by the Environmental and Sustainability Team at Amey in November 2020.

**Statement of case in support of a Determination that a formal EIA and Environmental Impact Assessment Report is not required:**

The works are considered to constitute a relevant project falling within Annex II as referred to in the Environmental Impact Assessment (Scotland) Regulations 1999 (as amended), since they 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). Screening using Annex III criteria, reference to consultations undertaken and review of available information has identified there is no need for a full EIA.

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

*Characteristics of the scheme:*

- Construction activities are restricted to the 10,732m<sup>2</sup> / 1.07 ha area of existing carriageway.
- Materials will be derived from recycled, secondary or re-used origin as far as practicable within the design specifications.
- The chosen material TS2010 Surface Course allows a wider array of aggregate sources to be considered when compared to typical SMA.
- Road planings will be fully recycled in accordance with Guidance on the Production for Fully Recovered Asphalt Road Planings.

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- The design option (replacing the defective surfacing) conveys sustainability benefits by significantly reducing the quantity of maintenance interventions required at the location over approximately 20 years.

### *Location of the scheme:*

- The scheme will be confined within the existing carriageway boundaries and as a result will not require any land take and will not alter any local land uses.
- A slight adverse impact is predicted with regards to noise and vibrations during construction due to the close proximity to residential properties, this will be mitigated as far as is reasonably practicable on site and residents informed of upcoming works.
- The scheme is not situated in whole or in part in a “sensitive areas” as listed under regulation 2 (1) of the Environmental Impact Assessment (Scotland) Regulations 1999 (as amended).

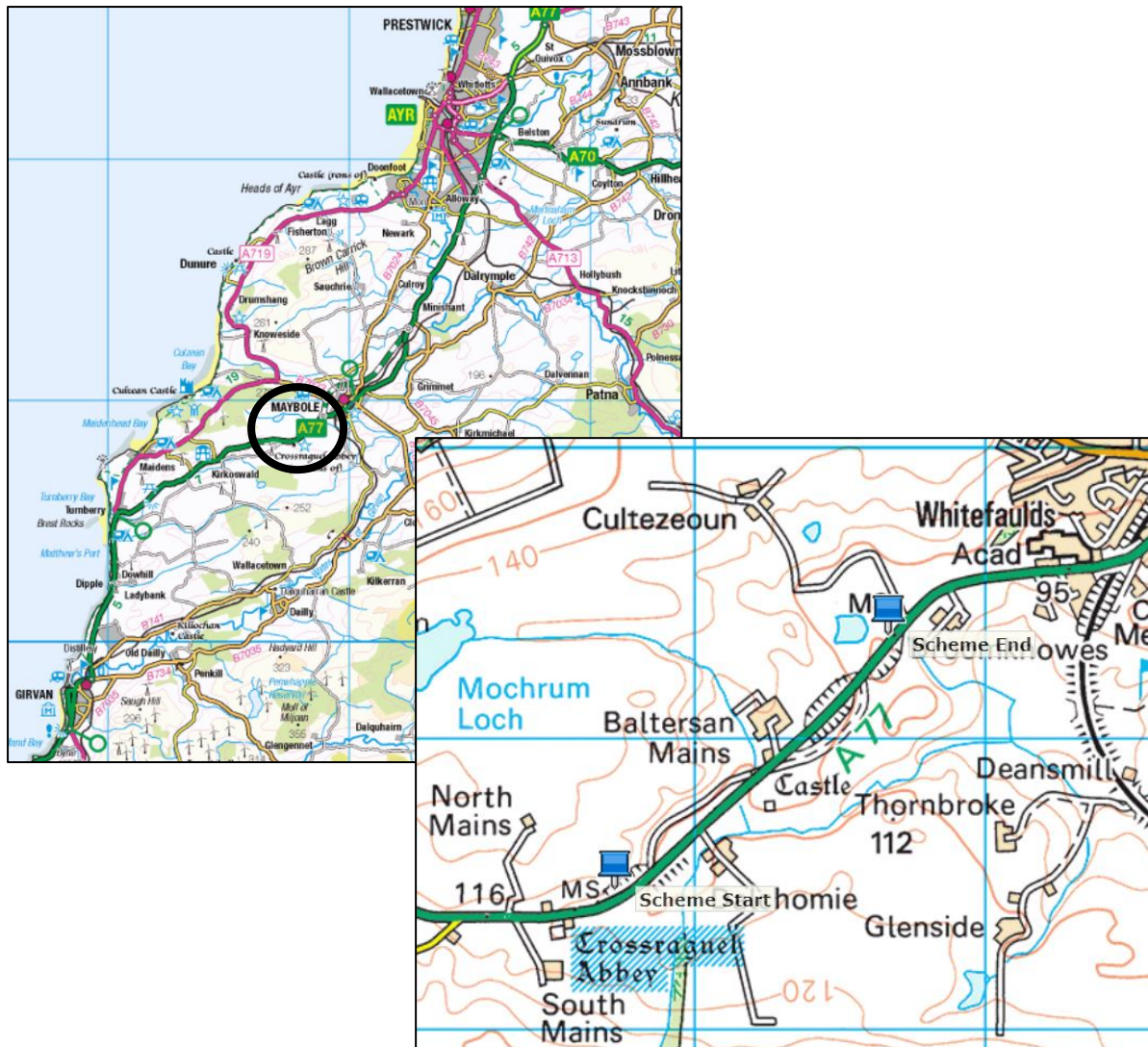
### *Characteristics of potential impacts of the scheme:*

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

### **File references of supporting documentation:**

Appendix 1 – Scheme location and extent

## APPENDIX 1: SCHEME LOCATION AND EXTENTS



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