Transport Scotland

Record of Determination A77 Bridgemill Relighting

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 Bridgemill Lighting

Location:

The scheme is located on a section of the A77 carriageway immediately north of Girvan, South Ayrshire. The works have the following National Grid References:

- Scheme start: NX 19000 98473
- Scheme end: NX 19279 99069

The length of the scheme is approximately 780m with an area of approximately 1.3ha.

Description of Project:

Works are required to replace a number of road and illuminated sign lighting columns along a stretch of the A77 on outskirts of Girvan.

The existing lighting apparatus consists of 35 galvanised steel road lighting columns featuring 250W High Pressure Sodium (HPS) lanterns within the outreach brackets. The columns appear to be in excess of 25 years old and are deemed beyond their design life, with some columns showing signs of fatigue at the welds. Steel lighting columns and signposts are to be replaced with new, passively safe units, featuring LEDs.

The installation of an underground cabling network to facilitate the replacement will also be undertaken, which will involve trenching, duct and road crossing chamber installation along with cabling and associated electrical works.

Anticipated construction activities will involve:

- Installation of passive safe lighting columns and signposts;
  - Breaking out of existing concrete foundations;
  - Pouring of concrete for new column foundations;
  - Erection of new LED lighting columns.
- Installation of trench, duct, cabling, distribution pillars;
  - Minor excavations within the verges for new cabling and foundations;
  - Pouring of concrete for new column foundations;

- Soils backfilled where possible;
- HIAB used to place pillars, lighting columns and signposts.

- Associated electrical works;
  - Use of MEWP.
- Reinstatement of grassed verge

The works area (including site storage and traffic management) is approx. 1.3Ha.

The package of works is set to take place in January 2021. Exact timings are yet to be confirmed, however will likely involve daytime working only (including some Sunday working), for the approx. duration of 25 days.

South Ayrshire Council's Environmental Health Team have been contacted regarding the required works.

Traffic management (TM) will involve single lane closures, facilitated by a combination of temporary traffic lights and stop and go boards. Single lane closures will also be implemented on the roundabout within the scheme extents.

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

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-residential stretch of the A77 carriageway, with the surrounding environment consisting of a combination of agricultural land, residential properties and industrial properties. The closest residential property is located approx. 15m from the southern scheme extent.

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

Girvan Community Hospital is located 15m west of the scheme.

Multiple accesses are present within the scheme extents, which lead to the local road network, Girvan Community Hospital, and Girvan Football Club. Girvan Community Hospital, and Girvan Football Club can only be accessed via the A77 within the scheme extents.

A bus stop is present by the northbound carriageway at the southern scheme extents.

Description of Local Environment:
A footway exists adjacent to the northbound carriageway for the full extent of the scheme. There are no Core Paths or cycle ways in proximity to the scheme extents[1][2]. The works do not fall within a Candidate Noise Management Areas (CNMA) as defined by the Transportation Noise Action Plan, Road Maps[3].
• Biodiversity The scheme is situated within a semi-residential area of South Ayrshire. Farmland flanks the A77 carriageway within the scheme extent, with areas of residential and industrial property in proximity. Water of Girvan flows below the A77 carriageway within the scheme extents. A desktop study using Nature Scot's Sitelink online interactive map[4] 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. Surrounding environment consists primarily of low-lying farmland. Thin vegetative strips flank the River Garnock which flows below the A77 carriageway within the scheme extents. Due to minimal vegetative cover within close proximity to the scheme, the area has been deemed unsuitable for protected species shelter. As such, a desktop assessment has been deemed sufficient, and a site survey has not been deemed necessary for these works.
2. Land The trunk road footprint consists of a rural single carriageway comprising one northbound and one southbound lane. Multiple accesses are present within the scheme extents, a bus stop is present on the NB carriageway at the southern scheme extents, and footway exists adjacent to the NB carriageway for the full extent of the scheme.
3. Soil The scheme is not located within, or within proximity to, any Local Geodiversity Sites (formerly known as RIGS)[5] or geologically designated SSSIs[6].

[1] https://www.south-ayrshire.gov.uk/outdooraccess/corepaths.aspx (Accessed 25/11/2020)
[2] https://www.sustrans.org.uk/national-cycle-network (Accessed 25/11/2020)
[3] https://noise.environment.gov.scot/action-planning-round-two.html (Accessed on 25/11/2020)
[4] https://sitelink.nature.scot/map (Accessed on 025/11/2020)
[5] https://www.google.com/maps/d/viewer?mid=1HfclRWcITRxXUZWNARManl-PUhE&ll=57.74680670722851%2C-5.313263556249922&z=6 (Accessed on 25/11/2020)
[6] https://sitelink.nature.scot/home (Accessed on 25/11/2020)

Description of Local Environment:
The National Soil Map of Scotland[7] identifies the local soil types within the scheme extents as brown earths and alluvial soils. A desktop study using the British Geological Survey Map[8] identifies local geology type as 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: Raised Marine Beach Deposits Of Holocene Age - Gravel, Sand And Silt. Superficial Deposits formed up to 2 million years ago in the Quaternary Period. Local environment previously dominated by shorelines (U).
4. Water A desktop study using SEPA's River Basin Management Plan Interactive Map[9] has identified Water of Girvan (ID: 10757), which flows below the A77 carriageway within the scheme extents. SEPA has given this waterbody an overall classification of 'Moderate' overall status, with 'Moderate' overall ecology and a chemical status of 'Pass'. Water of Girvan outflows into Girvan estuary (ID: 200014) approx. 500m south of the works area. SEPA has classified this waterbody with an overall status of 'Good ecological potential'; with 'moderate' overall ecology. No chemical status is available. The Indicative River & Coastal Flood Map[10] by SEPA has identified a risk of river/coastal water flooding along the course of Water of Girvan. The A77 carriageway is sufficiently elevated from this watercourse, which significantly reduces flood risk. Road drainage is provided by a combination of side and top entry gullies throughout the scheme.
5. Air The scheme is located along a semi-rural stretch of the A77 carriageway, immediately north of Girvan. An area of residential property is located at the southern scheme extent, and an area of industrial property is located at the north. 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 2019 for the A77 within the scheme extents was 8042 with a 12% heavy goods vehicle (HGV) traffic count. Local air quality is likely to be impacted primarily by road traffic, in addition to nearby rural and urban land use activities. South Ayrshire Council has not declared any Air Quality Management Areas[11].

[7] https://map.environment.gov.scot/Soil_maps/?layer=1 (Accessed on 25/11/2020)
[8] http://mapapps.bgs.ac.uk/geologyofbritain/home.html (Accessed on 25/11/2020)
[9] https://www.sepa.org.uk/data-visualisation/water-classification-hub/ (Accessed on 25/11/2020)
[10] https://map.sepa.org.uk/floodmap/map.htm (Accessed on 25/11/2020)
[11] http://www.scottishairquality.scot/laqm/aqma (Accessed on 25/11/2020)

Description of Local Environment:

6. 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.

7. Material Assets and Waste

Activity	Material Required	Origin/ Content
Site Construction	• Steel lighting columns • LED luminaries • Cables and fixings • Concrete	Metal components may contain a percentage of recycled material, with exact percentages dependent on supplier. LED luminaries contain no toxic materials (e.g. mercury, lead or heavy metals) and emit no UV radiation, therefore the lack of hazardous materials results in 100% of components becoming available for recovery at the end of their life. LED lighting units have an estimated 65% energy saving when compared to high pressure sodium lanterns, reducing the carbon footprint of the road lighting.

Key Waste Arising from Activities

Activity	Waste Arising	Disposal/ Regulation
Site Construction	• Old lighting columns • Removed HPS lanterns • Old cables • Soils	It is Amey policy to reuse or recycle as much waste material as possible. Where possible, materials will be sourced locally to reduce the carbon footprint associated with the transportation of materials. At end of life, metal components will be recycled, reducing waste to landfill. High

Description of Local Environment:		
		pressure sodium lanterns will also be partially recycled.

8. Cultural Heritage

A desktop study using PastMap[12] has identified the following features of cultural heritage within proximity of the works:

- Bridge Mill, a Category C Listed Building, located approx. 20m east of the carriageway at the northern scheme extents.
- Girvan Station (Including Signal Box), a Category B Listed Building, located approx. 90m south of the southern scheme extents.
- Girvan Mains (Roman Camps, Linear Cropmark and Enclosure), a Scheduled Monument, located approx. 25m north of the northern scheme extent.

9. Landscape

The works are located within a semi-residential area on the outskirts of Girvan by the A77, with the surrounding environment consisting of low-lying farmland and residential properties. Girvan Community Hospital, Water of Girvan, and a railway line all exist in proximity to the works location.

Historic Environment Scotland's HLAMap[13] has highlighted the surrounding landscape as Rectilinear Fields and Farms, and Urban Area.

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

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

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.

10. Population and Human Health

10.1 Impacts

- Traffic management (TM) will involve single lane closures facilitated by TTLs or Stop/Go boards.
  - TM may lead to delays and increased travel time for vehicular travellers.

[12] https://pastmap.org.uk/ (Accessed on 25/11/2020)
[13] https://map.hlamap.org.uk/ (Accessed on 25/11/2020)
[14] http://pastmap.org.uk/ (Accessed on 25/11/2020)
[15] https://sitelink.nature.scot/map (Accessed on 25/11/2020)

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

- Due to daytime programming, no disturbance to nearby residential properties is predicted.
- Access to Girvan Community Hospital, Girvan Football Club, and residential properties may be impacted during the works.
- Footways may be temporarily blocked by the works.
- Works may result in temporary obstruction of the footway.
- Bus stops may be impacted by presence of works/TM.
- Good and efficient lighting is essential to health, well-being and productivity. LED lighting casts even and directional light, which reduces light pollution and reduces sky glow. It also reduces the light entering into properties which may otherwise disturb sleep.
- LED lanterns provide excellent uniformity which is a critical requirement for road lighting. Lighting spill and obtrusive light is also kept to a minimum by utilising the correct optic setting.

10.2 Mitigation

- South Ayrshire Council have been notified in advance of the works.
- Advance notice of the works will be given to Girvan Community Hospital, detailing nature, duration and timings of the works.
- 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.
- If blocked by the works, operatives will grant entry to and from accesses when required. Priority will be given for emergency vehicles accessing Girvan Community Hospital.
- If bus-stops likely to be blocked by the works, temporary bus-stops will be placed out-with the works area and will be clearly signed and accessible for pedestrians of all abilities.

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

No significant direct or indirect effects to Population and Human Health is likely.

11. Biodiversity

11.1 Impacts

- As artificial lighting is already present within the scheme extents, the works are unlikely to impact upon nocturnal species. As LEDs are known to be more directional, this may result in less light spillage into the woodland area adjacent to the carriageway, and thus provide better habitat.

11.2 Mitigation

- 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 Environmental Manager will be contacted for guidance, and the control room will be contacted for environmental record.
  - If considered necessary Nature Scot may be notified in determining next steps.

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

Description of the main environmental impacts of the project and proposed mitigation:
12. Land 12.1 Impacts • Potential for damage to verges in proximity, due to presence of plant/materials. 12.2 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. It has been determined that the proposed project will not have direct or indirect significant effects to land.
13. Soil 13.1 Impacts • Works involve excavations in the grassed verge for installation of lighting columns and wiring. 13.2 Mitigation • Where possible excavated soils will be reused for backfilling purposes. • All excavated material will be given adequate protection from the elements i.e. wind, rain etc. prior to re-use on site/removal from site. • Spill/drip trays (or other appropriate forms of containment) will be used when excavating in order to prevent spillages of hazardous substances to the soil. It has been determined that the proposed project will not have direct or indirect significant effects to soil.
14. Water 14.1 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. • Adverse weather may result in unsuitable working conditions. In the event of flooding, works may be delayed. • Works will involve the use of concrete. The on-site mixing of mortar has potential to contaminate nearby watercourses through wash-off if not effectively managed. Concrete wash out is highly alkaline and contains chromium which can cause water pollution. 14.2 Mitigation • 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.

Description of the main environmental impacts of the project and proposed 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 will 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 in frequency, 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. • 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. • Any concrete transported to site will be sited on an impermeable designated area and stored/mixed over a bund or drip tray, to prevent run-off entering a watercourse. • All equipment/tools holding concrete will be washed out in a designated area that has been specially designed to contain wet concrete. No wash waters will be allowed to enter a drain/watercourse. It has been determined that the proposed project will not have direct or indirect significant effects to local water environment.
15. Air 15.1 Impacts • The use of vehicles and plants emitting carbon emissions may temporarily affect air quality and will require the use of finite resources. • On site construction activities carry a potential to produce airborne particulate matter that may have a slight impact on local air quality levels. 15.2 Mitigation • Excavation/cutting operations will be dampened where appropriate to reduce dust arising. • Surfaces will be swept where loose material remains following construction activities. • Best practice measures will to be adopted for the duration of the scheme. Best practice measures will include but not be limited to: o Vehicle and plant servicing/checks as per manufacturing and legal requirements; o Adoption of drive green techniques; o Route preparation and planning. o When not in use plant and vehicle will be switched off, with no idling vehicles. It has been determined that the proposed project will not have direct or indirect significant effects to air quality.
16. Climate 16.1 Impacts • Greenhouse gas emissions will be emitted through the use of machinery, vehicles and materials used (containing recycled and virgin materials).

Description of the main environmental impacts of the project and proposed mitigation:
16.2 Mitigation • Where possible local suppliers will be used as far as practicable to reduce travel time and greenhouse gas emitted as part of the works. • Vehicles / plant shall not be left on when not in use to minimise and prevent unnecessary emissions being emitted. • Further actions and considerations for this scheme are detailed in section 8 Material Assets. • New LED lighting will reduce electricity consumption and therefore carbon emissions associated with the energy mix of the supply. It has been determined that the proposed project will not have direct or indirect significant effects to climate.
17. Material Assets and Waste 17.1 Impacts • Contribution to resource depletion through use of virgin materials. • Greenhouse gas emissions generated by material production and transporting to and from site. • Transportation and recovery of materials/waste will require energy deriving from fossil fuel, a non-renewable source. 17.2 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. • Waste will be treated at a licenced facility to separate useful materials such as metal and HPS lanterns as far as reasonably practicable, recovering this waste and diverting it from landfill. • Where possible, materials will be obtained locally, and operatives deployed from the local depot where possible to reduce haulage and scheme associated journeys, reducing impact of associated GHG emissions on climate change. <u>Circular Economy</u> LED units have a design life of approximately 25 years and will reduce the number of maintenance visits required when compared with high pressure sodium lanterns. LED luminaries contain no toxic materials and are up to 100% recyclable upon reaching the end of the design life. LED lighting units have an estimated 65% energy saving when compared to high pressure sodium (HPS) lanterns, reducing the carbon footprint of the road lighting. The lighting control system will be managed by a CMS (central management system) that will utilise lighting timers, monitor lighting faults and report on energy usage, ensuring efficiency.

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 the consumption of material assets or disposal of waste.
18. 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.
19. 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 relatively like-for-like basis (similar street furniture will replace existing street furniture), 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.
20. Vulnerability of the Project to Risks As the works will be limited to the like-for-like replacement of the lighting columns, 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.

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Extent of EIA work undertaken and details of consultation:

- 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:

- Replacement of existing High Pressure Sodium lighting apparatus with steel lighting columns and signposts that are passively safe with LED lanterns.
- Modernisation of lanterns with LED will reflect a reduction in energy consumption.
- Construction activities are restricted to the 1.3 ha area of existing carriageway and verge.
- At end of life, components can be recycled, reducing waste to landfill;
    - Metal components can be fully recycled.
    - LED luminaries contain no toxic materials and are up to 100% recyclable upon reaching the end of the design life.
    - High pressure sodium lanterns will also be partially recycled.
- Materials will be derived from recycled, secondary or re-used origin as far as practicable within the design specifications.
    - Metal components will contain a percentage of recycled material, with exact percentages dependent on supplier.
- The design option (replacing HPS with LED) conveys sustainability benefits by significantly reducing the quantity of maintenance interventions required at the location over approximately 25 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.
- Works will be undertaken during daytime programming, with no disturbance (such as sleep disruption) predicted to residential properties in proximity.
- 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).

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Characteristics of potential impacts of the scheme:

- As the works will be limited to the relatively like-for-like replacement of the lighting columns, and installation of below-surface cabling, there is no change to the vulnerability of the road to the risk or severity of major accidents / disasters that would impact on the environment.
- No significant residual impacts are predicted. Disruption due to construction activities are not expected to be significant and will be mitigated as far as is reasonably practicable.
- The successful completion of the scheme will afford benefits to residential properties in proximity, due to better directional lighting reducing light spill into properties, and to carriageway users via road lighting uniformity.

File references of supporting documentation:

Appendix 1 – Scheme location and extent

APPENDIX 1: SCHEME LOCATION AND EXTENTS