Appendix A4.1: Construction Information

1 Introduction

1.1. This appendix provides an overview of a potential construction scenario for the construction of the proposed scheme. This information was prepared based on the Design Manual for Road and Bridges (DMRB) Stage 3 design to provide a set of assumptions for the purposes of assessing potential construction impacts as reported in this Environmental Impact Assessment Report (EIAR).

1.2. It should be noted that the detailed design of the proposed scheme, and the construction programme and methodology, would be determined by the appointed Design and Build (D&B) contractor, within the constraints of the contract and the requirements of this EIAR (i.e. to achieve the stated residual impacts).

1.3. Information is set out under the following headings:

- General Site Operations;
- Construction Programme and Phasing;
- Typical Construction Methods;
- Land Requirements; and
- Public Access, Site Access, and Traffic Management.

1.4. The construction of the proposed scheme is expected to use plant that are typical for infrastructure projects of this type. These include:

- excavators;
- piling rigs;
- tracked vehicles, bulldozers and dump trucks;
- Heavy Goods Vehicles (HGVs) and concrete wagons;
- hand-operated machinery including compacting plant;
- portable generators for temporary lighting, pumps and similar;
- cranes and other lifting equipment; and
- motorised graders and pavement (road surface) rollers.

2 General Site Operations

2.1 Site Layout

2.1.1 For construction purposes, it has been assumed that the site would be broken down into sections as follows:

- Inshes to Smithton – those sections of the works between the B9006 Culloden Road and the proposed Smithton Junction, to be constructed as part of the A96 Dualling Inverness to Nairn (including Nairn Bypass) scheme.
- PS02 Proposed Inshes Overbridge – the construction of PS02 Proposed Inshes Overbridge structure and the eastern earthworks adjacent to the existing B9006 Culloden Road and PS01 Existing Inshes Overbridge.
- A9 southbound lane gain / lane drop – the proposed additional lane and slip road works between the Raigmore Interchange and Inshes Junction along the dual carriageway A9 Perth - Inverness Trunk Road.

2.2 Safety and Security

2.2.1 Throughout the course of the works the contractor would manage the Health and Safety of the site in accordance with the requirements and principles of all current applicable Health and Safety legislation, including the Construction (Design and Management) Regulations 2015, the Health and Safety at Work etc. Act 1974, the Management of Health and Safety at Work Regulations 1999, and the Workplace (Health, Safety and Welfare) Regulations 1992. This would ensure the safety of the public, site personnel, site operators, and visitors.

2.3 Working Hours

2.3.1 Anticipated 'typical' working hours of the contractor would be agreed with Transport Scotland and the Environmental Health Officer (EHO) from The Highland Council, but for the purposes of assessment are assumed to be as set out below:

- 07:30 to 18:00 on weekdays (Monday to Friday);
- 08:00 to 13:00 on Saturdays; and
- no Sunday working.

2.3.2 The above range applies to summer hours, when it is expected to be necessary to maximise the available good weather conditions for carrying out earthworks activities (as poor weather can adversely affect the condition of the material being used and the condition of haul routes). Winter hours would generally be shorter, due to the seasonal restriction on activities that can be carried out efficiently and the length of daylight available.

2.3.3 It is anticipated that some work would be required outside the normal working hours for exceptional activities (such as those that can only take place when traffic flows are low), subject to agreement with Transport Scotland and The Highland Council, including:

- weekend work to complete critical phases of road construction and surfacing;
- overnight closures for placing of bridge beams over existing roads and railways; and
- implementing changes to temporary traffic management layouts.

2.4 Site Lighting

2.4.1 Temporary site lighting during construction would generally be required:

- at the contractor's compounds for security and safe movement of staff during winter mornings and evenings;
- along temporary access roads;
- at locations where there is currently no lighting, but lighting is required as a safety measure under temporary traffic management (e.g. at carriageway crossovers, contraflows); and
- for night time activities or winter afternoon activities.

2.4.2 Maintenance of road lighting at locations where the layout is to be changed would be provided by mobile lighting towers or by use of columns in temporary locations.

3 Construction Programme and Phasing

3.1 Construction Programme

3.1.1 It is anticipated that construction would not commence before 2021 (subject to completion of statutory procedures) and the overall construction period is expected to be between 18 to 24 months.

3.1.2 Following the advanced works, the indicative construction programme is broken down into five phases to reduce the impact on road users and neighbouring communities. The anticipated phasing of the construction works is as follows:

- Advance Works – Establish work area and set-up traffic management which may include temporary road closures and diversion of traffic. Undertake site clearance, demolition works and service diversions.
- Main Contracts Works Phase 1 – Reconfiguration of traffic management. Undertake service diversions. Construction of PS03 Cradlehall Railway Overbridge and PS02 Proposed Inshes Overbridge abutment structures and decks.
- Main Contracts Works Phase 2 – Construction of works north of the Highland Mainline, including the connection to the A96 dualling Smithton Junction southern roundabout, earthworks, culverts, and Sustainable Drainage Systems (SuDS) and outfalls. Reconfiguration of traffic management. Undertake service diversions.
- Main Contracts Works Phase 3 – Construction of works south of the Highland Main Line and along the existing A9 Perth - Inverness Trunk Road, including earthworks, culverts, and SuDS and outfalls. Reconfiguration of traffic management. Undertake service diversions.
- Main Contracts Works Phase 4 – Construction of works on the U1058 Caulfield Road North between the B9006 Culloden Road and the U5096 Castlehill Distributor Road. U1058 Caulfield Road North closed and traffic management reconfigured. Undertake service diversions. Pavement and finishes on PS02 Proposed Inshes Overbridge and the A9 southbound lane gain/lane drop.
- Main Contracts Works Phase 5 – Reconfiguration of traffic management. Pavement and finishes between Inshes and Smithton.

4 Typical Construction Methods

4.1 Establishment of Construction Compounds

4.1.1 Preliminary activities include the setting up of the site compounds and offices, cabins, stores, welfare facilities and car parking. The contractor would determine the location of the main site compound and seek all necessary approvals for its design and construction.

4.1.2 Preparatory works for the temporary site establishments may involve some site clearance work, minor earthworks operations to level the site, drainage and pavement works for the car park and services installation (e.g. electrical, communications, water and sewerage). The site compounds would be erected, maintained and subsequently removed in a manner to avoid or reduce impacts on the locality.

4.1.3 The initial activities would involve the construction of site access and egress points. Wherever practicable, haul routes would also be established to ensure that construction traffic is contained within the confines of the site, as far as possible. However, since the route intersects main roads, local roads and other obstructions, the limited use of other public roads is expected to be required and approval for this would be sought by the contractor with the relevant authorities.

4.2 Temporary and Permanent Fencing

4.2.1 The land area to be occupied by the construction works would be identified accurately on the ground, by surveying and installing appropriate pegs and posts, prior to the works commencing. This would include the land acquired for the permanent works and any other areas that the contractor has acquired by agreement to facilitate construction of the works.

4.2.2 Temporary fencing would be erected where it is not possible to install the permanent fence.

4.2.3 Any permanent fencing required to denote the permanent road boundary would generally be a timber post and rail fence and would be subject to agreement with the landowner. There may be sections of fencing designed to a higher specification for the exclusion of wildlife where required. Environmental fencing extends below ground level and therefore requires an element of excavation which would be undertaken using a small excavator or by hand digging.

4.2.4 Other specific fencing that may be required temporarily would include higher security fences at compounds or where additional security of the works is required.

4.3 Site Clearance and Demolition

4.3.1 Site clearance works typically include the following:

- general clearance;
- stripping of existing road surfaces where required to be grubbed up;
- demolition of walls and minor structures;
- removal of pipelines, public and privately owned services or supplies; and
- tree felling and removal of stumps, removal of fencing, hedges, bushes and undergrowth.

4.3.2 Any material to be reused in the permanent works would be stockpiled or taken to store. Burning of materials on site would not be permitted, except when specifically required for which approvals would be required.

4.3.3 Materials stored in stockpiles or for re-use off site would be transported in appropriate wagons along prescribed main road routes, which are expected to include the A96 Inverness – Nairn Trunk Road and A9 Perth – Inverness Trunk Road. Prescribed routes would be included in the main construction contract documents and the contractor would seek approval from the relevant authority if they need to use any other routes.

4.3.4 The contractor would be responsible for the timing of demolition and site clearance activities and would be required to take account of seasonal restrictions, such as bird breeding seasons and relocation of any species in the works programme. The detailed timetable for ecological constraints would comply with any requirements of this EIAR.

4.4 Contaminated Materials

4.4.1 The treatment of any hazardous materials encountered in site clearance would comply with specific contract requirements and would require an assessment in accordance with current health and safety regulations including the Control of Substances Hazardous to Health Regulations (COSHH) Regulations 2002. Contaminated materials may have to be disposed of at licensed sites.

4.5 Waste Management

4.5.1 The contractor will be required to develop and implement a Site Waste Management Plan (SWMP). The SWMP will take cognisance of following legislation and guidance:

- Waste Management Licensing (Scotland) Regulations 2011;
- Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (DEFRA 2009); and
- Land Remediation and Waste Management Guidelines (SEPA 2009a).

4.5.2 The procedures set out in the SWMP will cover the following, as appropriate:

- procedures for the classification of all waste;
- procedures for the recording of the types, quantities and locations of waste materials generated during construction;
- the measures to be implemented to reduce waste generation;
- the measures to be implemented for recycling and/or re-use of spoil material;
- the measures to be adopted for management of waste on site;
- the proposed storage, handling, treatment and disposal procedures for waste;
- the licensing arrangements for waste disposal;
- details of the waste carriers and off-site disposal sites to be used, including the terms of their respective licenses and details of waste permitted to be transported and received; and
- the procedures, such as use of consignment notes, to enable an appropriate audit trail of waste disposal activities to be identified.

4.5.3 The contractor will consult with relevant local authorities and Scottish Environmental Protection Agency (SEPA) regarding the development of the SWMP.

4.6 Temporary and Permanent Surface Water Outfalls

4.6.1 Temporary arrangements would be made to control surface water runoff during construction, where surface water could affect the works or the environmental performance of mitigation measures. Measures implemented may include temporary settlement ponds, which would allow sediment to settle before clean water is discharged via a temporary outfall pipe or ditch to receiving watercourses.

4.6.2 During the construction period, and particularly the earthworks construction phase, water would be directed to the temporary settlement ponds using temporary cut off ditches. Construction of the ponds would involve earthworks operations including excavation, placement of fill and compaction. Temporary ponds would be required to be maintained to remove sediment and silt for example, and ensure that the ponds operate as intended.

4.6.3 Other options for disposal of water include discharging to sewers if they have sufficient capacity, or taking water off-site in bowsers or tankers for disposal. It is expected that the permanent SuDS e.g. Basin and Pond (hereafter referred to as SuDS) would be constructed and used during construction. These would be cleaned and maintained following the main construction works for incorporation into the final drainage network.

4.6.4 Works would be undertaken following guidance provided within the SEPA publication Engineering in the Water Environment Good Practice Guide: Temporary Construction Methods (SEPA 2009b) and also in more detail within the Construction Industry Research and Information Association (CIRIA) publication Control of Water Pollution from Linear Construction Projects: Technical Guide C648 and Site Guide C649 (CIRIA 2006a and 2006b).

4.7 Service Diversions

4.7.1 It is possible that some service diversions would be undertaken in advance of the main construction works. However, other diversions are only likely to be possible once construction has reached a certain stage.

4.7.2 Existing services may require temporary diversions as a result of disruption to apparatus during the construction of the works. These temporary diversions would be in place to minimise any disruption to the services being affected by the proposed scheme.

4.8 Topsoil Stripping

4.8.1 Where appropriate, topsoil would be stripped from the full area occupied by the roads, cuttings, embankments and associated structures to depths defined for each particular location. It is assumed that all topsoil would be reused on site. Measures such as cut-off ditches may be required around stockpiles to transfer any contaminated runoff to temporary settlement ponds.

4.8.2 The plant potentially used for topsoil stripping includes rubber-tyred or tracked motorised scrapers and excavators; although more controlled procedures may be required in environmentally sensitive zones using smaller plant. Limits would be imposed on the maximum distance from the zone of excavation to the point of deposition of the topsoil to control invasive plant species and ensure that topsoil is reused close to the location it was stripped.

4.9 Pre-Earthworks Drainage

4.9.1 Pre-earthworks drainage generally comprises excavation of unlined or lined ditches, or filter drains constructed at the top of cutting slopes or at the toe of embankments where required by the design to prevent surface or groundwater entering the works. Surface water carried by the pre-earthworks drainage is considered to be suitable for direct discharge to a receiving watercourse and can be transferred directly to watercourses unless the rate of discharge has to be controlled first.

4.9.2 The material arising from the excavation of the pre-earthwork drainage would be transported for reuse within the works or off-site, or ultimately disposal off-site.

4.10 Earthworks

4.10.1 The principal earthworks process involves layered excavations of soils in cuttings and transportation of the excavated soil to neighbouring zones where embankments are required. Deposition in the fill areas would be built up by depositing the material and using bulldozers to place it in layers which are then compacted by rollers. This process is repeated until embankments are built to the road formation level.

4.10.2 Generally, it is preferred to achieve a cut/fill balance and have short haul distances to minimise transport of earthworks materials along the site between cuttings where they are excavated and embankments where they are placed. Indicative lorry loads are shown in Table 4.1.

Table 4.1: Indicative Lorry Loads - Earthworks

Lorry Loads for Earthworks	Volume/Number/Timescales
Potential import (m^3)	214,987
Potential disposal (m^3)	0
Potential total lorry loads	18,695
Potential duration of main earthworks activities (months)	10 to 14
Estimated weekly average lorry loads during main earthworks activities	389

4.10.3 The topography is primarily flat, low-lying, open ground to the east of Inverness, and rises across the site from north to south. The existing topography would change through the introduction of new road embankments and cuttings, roundabouts, local road re-alignments and structures. Structures include PS03 Cradlehall Railway Overbridge carrying the proposed carriageway over the Highland Mainline railway and a proposed bridge adjacent to the P01 Existing Inshes Overbridge over the A9. Landscape and visual impacts are assessed in greater detail in Chapter 9 (Landscape) and Chapter 10 (Visual) of the EIAR.

4.10.4 The landscape between Inverness and Culloden is a mixture of commercial and retail developments, and pastoral and arable farmland, with pockets of woodlands spread across the study area. Land Use is assessed in greater detail in Chapter 15 (People and Communities – Community and Private Assets) of the EIAR.

4.10.5 Excavations in cutting would include the removal of the top layers of material which are likely to be unacceptable for use in the main road embankments and transport of this material to stockpiles to be reused as landscaping earthworks mitigation at a later date. The lower layers of the cuttings are likely to comprise material that is more acceptable for use in the main road embankments and this would be transported and compacted as described above.

4.10.6 The likelihood of intercepting bedrock during excavations is predicated to be low/unlikely (see Chapter 8: Geology, Soils, Contaminated Land and Groundwater). If encountered, rock may be ripped using a bulldozer with a blade attached to the rear. Another option where ripping of rock material is not feasible includes using a hydraulic breaker (also known as a rock hammer or pecker). Blasting is not expected for the removal of rock.

4.11 Drainage, Service Ducts and Chambers

4.11.1 Construction of carriageway drainage would involve laying filter drains, carrier drains and outfalls to transport surface water run-off from side slopes, carriageways and other paved areas. Drainage products would include pipes, gully pots, cover gratings, graded gravel for pipe bedding, gravel filter material, and other stone pieces for balancing ponds and open channels. Manholes and chambers would be built with in-situ concrete bases, precast concrete ring or brickwork walls and iron cover on precast concrete caps.

4.11.2 Construction of carriageway drainage would involve excavation of the drain, with material being deposited adjacent to the drain in the road verge or transported for reuse or disposal. Gravel bedding and filter material (crushed rock) is delivered to the works from either a local quarry or a source on site if extracted rock quality is suitable. The bedding material is placed at the bottom of the excavated trench and the drainage pipes are placed on top before being covered with the filter material. Some filter drains may also have a geotextile surround to prevent sediment ingress into the filter material, and if the drainage pipe crosses the road carriageway, it may have a concrete surround which would be transported to the site and placed around the pipe in the trench.

4.11.3 SuDS would be constructed to provide permanent treatment and attenuation facilities. Some permanent drainage facilities could be used during construction to provide site drainage if suitably designed. Collection pipes would transfer flows from the carriageway drainage network to treatment systems, which would discharge to the receiving watercourse following attenuation and treatment.

4.11.4 Service ducts and chambers are constructed in a similar manner as carriageway drainage and catchpits/manholes. However, service chambers may be brick built involving transport of materials and on site manufacture and use of mortar.

4.12 Topsoiling and Seeding

4.12.1 Topsoiling and seeding would be undertaken as soon as possible after earthworks construction is completed. This would enable the subsoil to be sealed preventing sediment run-off. As described previously, topsoil would have been stripped and stored adjacent to the works. The topsoil would be transported from the topsoil storage locations to the works and would be placed by an excavator. Grass seeding may be by hand or by machine spreading, undertaken in the relevant areas specified in the landscape design.

4.13 Pavement Construction

4.13.1 Pavement construction involves building the pavement up in layers.

4.13.2 The bottom layer (sub-base) is a crushed rock aggregate which would be delivered to the site from local quarries, as previously described. Indicative lorry loads required for pavement construction are shown in Table 4.2. The material is deposited and then pushed into place and compacted.

4.13.3 The upper pavement layers would be specified in accordance with the requirements of the contract and would involve transport of material to the site either from local sources or from a batching plant on site.

Table 4.2: Pavement Construction

Lorry Loads for Earthworks	Volume/Number/Timescales
Estimated total lorry loads	3,266
Potential length of pavement construction activities (months)	4 to 6
Estimated weekly average lorry loads during pavement construction	163

4.15 Roadworks Finishes

4.15.1 Following pavement construction, safety barriers would be installed. Posts and barriers are delivered to the site and safety barrier installation then involves driving steel posts into the ground or excavating small footings and placing concrete into which the posts are set. The barriers are bolted to the posts and fixed to small concrete anchorages.

4.15.2 Street lighting and low voltage electricity network installation would involve the delivery of the lighting columns, ducting, foundations, and junction boxes to site. The placement of the ducting, junction boxes, and foundations within the footway (prior to the application of the pavement), and the pulling through of the low voltage electrical cables. The lighting columns would then be erected and secured.

4.15.3 Sign installation would involve excavation for the concrete foundations, and setting the posts. The sign faces are then fixed to the sign posts. Some signs may be lit and would require cabling to be passed through the service ducts installed as described previously.

4.15.4 Road markings would be applied to the road surface using specialist lorry-mounted equipment.

4.16 Accommodation Works

4.16.1 Accommodation works may include, access roads, fences and walls or other ancillary items agreed with landowners. Construction methods would be similar to those described for these items in this outline methodology.

4.17 Structures

4.17.1 Typical construction methods for bridges are described below and apply to the two principal structures, PS02 Proposed Inshes Overbridge and PS03 Cradlehall Railway Bridge to be constructed as part of the proposed scheme.

Overbridges and Underbridges

4.17.2 The Proposed Inshes Overbridge (PS02) carries the proposed S2 single carriageway over the A9 Perth - Inverness Trunk Road and incorporates a deck. The purpose of the proposed structure is to facilitate the widening of the B9006 Culloden Road at this location from two lanes to four lanes. Abutments support the ends of the bridge deck, whilst a pier supports the deck on multi span structures. These would be constructed from concrete cast on-site (in situ). The main deck elements can be steel or concrete or combinations of these. Concrete can be cast on-site (in situ) or the bridge can include precast units which are transported to the site. The exact form and materials used on the bridge for the proposed scheme would be dependent on the detailed design and is specific to individual locations depending on the nature of the bridge, the alignment of road it carries and span lengths.

4.17.3 The proposed overbridge, PS03 Cradlehall Railway Bridge, carries the proposed S2 single carriageway over the Highland Main Line railway. Abutments support the ends of the bridge deck on the single span structure. These would be constructed from concrete cast on-site (in situ). The main deck elements can be steel or concrete or combinations of these. Concrete can be cast on-site (in situ) or the bridge can include precast units which are transported to the site. The exact form and materials used on the bridge for the proposed scheme would be dependent on the detailed design and is specific to individual locations depending on the nature of the bridge, the alignment of road it carries and span lengths.

4.17.4 The road surface used on each bridge deck would normally be a bituminous bound pavement laid on a waterproofing coat. Bridge deck waterproofing can either be a spray applied or sheet membrane system, and a metal (steel or aluminium) parapet is fixed to each side of the bridge deck.

4.17.5 Typical bridge construction procedures are summarised below.

Bridge Foundations

4.17.6 Foundations are required to support the abutments and piers. Foundations can be either concrete pad or piled with a pile cap.

4.17.7 Pad footings require excavation to a suitable founding soil strata, and then laying a concrete layer reinforced with steel reinforcement. Once abutments or piers have been cast, excavations are backfilled with acceptable material.

4.17.8 Piled foundations require preliminary excavations at foundation locations, and then installing foundation piles to a suitable load bearing soil strata; this can either be by driving precast concrete/steel piles to the required depth with a pile driver, or by using a boring machine to create the void for the pile. Piles are then trimmed to the required level and a reinforced concrete pile cap is constructed to provide a base for piers or abutments.

Bridge Piers and Abutments

4.17.9 Bridge piers and abutments would be constructed of reinforced concrete. Exposed surfaces are treated and a waterproof membrane applied to buried surfaces.

6 Land Requirements

6.1 Land Required During Construction

6.1.1 Land required during construction may be in addition to that required for the footprint of the permanent works. The main requirements are described below.

Site Compounds for the Contractor and Others

6.1.2 Site compounds, which are determined by the contractor, may be located close to the proposed works where there is suitable access. They would be used to accommodate offices for the contractor as well as workshops, stores, welfare facilities, etc. and parking for cars and plant.

Additional Works Areas

6.1.3 Land may be required to allow the contractor to gain safe access to the permanent works. This is usually where access is very restricted or where the works are adjacent to a live carriageway, such as when carrying out online widening works.

Temporary Diversions

6.1.4 In order to maintain traffic flows when undertaking works on the existing road, such as a new bridge or carriageway tie-ins, it may be necessary to provide temporary diversions.

Other Works

6.1.5 Other works requiring a licence, off-site planting etc. would require temporary land and would be identified as the detailed design is developed.

Clearance of Site on Completion

6.1.6 Clearance of the site on completion of the works would normally involve small dumpers, excavator/loaders and lorries to gather up and dispose of surplus material and generally tidy up.

6.2 Permanent Land

6.2.1 The main requirements for permanent land are as follows:

- land associated with the footprint of the proposed scheme, including earthworks (i.e. land required to build embankments or excavate cuttings);
- land to allow adequate drainage of the road and the area through which it passes. This includes land required for diversion of watercourses, drainage outfalls and SuDS features and arrangements for maintenance access; and
- land required for other environmental mitigation, such as landscape and ecological planting.

7 Public Access, Site Access and Traffic Management

7.1 Access Routes for Construction Traffic

7.1.1 The proposed works are generally located on the existing local road network. Therefore, the contractor may be restricted as to the extent and purpose that they can use lengths of local road not directly affected by the proposed works for construction purposes. While it is desirable that all construction related access should be via the A9 and A96 Trunk Roads it would be necessary to provide some access from the local road network. Routes not available to the contractor would be as agreed with the relevant authority and stipulated in the contract.

7.2 Traffic Management Requirements

7.2.1 During construction, temporary traffic management would be required to undertake the works, whilst minimising disruption to users of the active road network.

7.2.2 Temporary traffic management would be put in place during construction at works close to or on existing roads, and at site access and egress points. Examples of measures include traffic cones, temporary signs and lighting, temporary speed restrictions, temporary diversions and contraflows.

Land Requirements

7.2.3 In general, construction phasing and temporary traffic management proposals have been prepared on the basis of keeping the existing A9 and A96 Trunk Roads and associated approach roads fully functioning at peak times except for specific short-term restrictions. Where considered appropriate, the contractor would be required to provide a vehicle recovery service to promptly remove any broken down vehicles within the temporary traffic management areas.

7.2.4 On the A9, it is envisaged that short lengths of the central reserve may be reconfigured as temporary running lanes or crossover locations and used in conjunction with narrow lanes to facilitate construction of the A9 southbound lane gain/lane drop.

7.2.5 The proposals in this appendix have been prepared on the basis of keeping all routes and accesses open throughout the works wherever feasible. In some cases it may be necessary to effect temporary road closures, during which time diversionary routes would be signposted.

Works Restrictions

7.2.6 It is generally proposed that the network connection works be constructed within the typical working hours as set out in Section 2.3 (Working Hours). Likely exceptions to this would be for activities such as utility diversions and critical works on the A9 and proposed A96 Smithton Junction. Traffic management or alternative diversion routes would be set up during such night time works, together with advance warning and publicity to help drivers to avoid these locations/dates if possible.

7.2.7 Road closures and diversions are likely to require a Temporary Traffic Order and be subject to approval by Transport Scotland, The Highland Council, Police Scotland, and the Maintaining Authority.

7.2.8 As sections of the proposed scheme are located close to some residential areas, methods of construction should be adopted that keep noise levels to a practicable minimum.

Temporary or Permanent Road Closures or Diversions

7.2.9 Temporary road closures and diversions would be arranged through the Overseeing Organisation following discussions with Transport Scotland, The Highland Council, Police Scotland and the Maintaining Authority. A Temporary Traffic Order giving the requisite notice would be prepared and a statutory notice placed in local newspapers.

7.2.10 Permanent road closures that occur as a consequence of the phasing for the construction of new alignments, supported by the appropriate legal Orders, would be implemented following discussions with relevant parties and agreement of any temporary traffic arrangements.

Temporary Carriageway

7.2.11 Under the traffic management proposals in this appendix, there may be a requirement to construct some sections of temporary carriageway. The need for these would be dependent on the contractor's detailed design and his construction and traffic management methodology. Appropriate geometric and pavement construction standards for the design of temporary diversions would be set out in the contract.

Approvals

7.2.12 The contractor's detailed proposals for traffic management would only be confirmed after discussions with Transport Scotland, The Highland Council, Police Scotland and the Maintaining Authority.

7.2.13 The contractor would be required to appoint a Traffic Safety Officer who be responsible for submitting traffic management layout drawings, method statements, etc. within the requisite notice period for discussion at regular traffic management meetings. The Traffic Safety Officer would be responsible for ensuring that temporary traffic management operations are monitored and maintained.

7.3 References

Reports and Documents

Construction Industry Research and Information Association (CIRIA) (2006a). Control of water pollution from linear construction projects: Technical Guide C648.

Construction Industry Research and Information Association (CIRIA) (2006b). Control of water pollution from linear construction projects: Technical Guide C649.

SEPA (2009a). Land Remediation and Waste Management Guidelines.SEPA (2009b) Engineering in the Water Environment Good Practice Guide: Temporary Construction Methods.

EU Directives and National Legislation

Construction (Design and Management) Regulations 2015

Health and Safety at Work etc. Act 1974 Management of Health and Safety at Work Regulations 1999

Workplace (Health, Safety and Welfare) Regulations 1992

Control of Substances Hazardous to Health Regulations (COSHH) Regulations 2002.

Waste Management Licensing (Scotland) Regulations 2011