



Department for Infrastructure (DfI)

A29 Cookstown Bypass

Non-Technical Summary





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Type of document (version) Public

Project no. 718314

Our Ref. No. 718314-3000-R-003

Date: January 2024

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Contents

1	Introduction	1
1.1	Overview	1
1.2	Purpose of this Non-Technical Summary	1
1.3	The Existing Environment and Surrounding Area	2
1.4	Description of the Proposed Scheme	3
1.5	Consultation	3
1.6	Construction of the Proposed Scheme	4
1.7	Consideration of Alternatives	4
1.8	Scheme Objectives	5
1.9	Scope of the Environmental Impact Assessment	5
2	Environmental Impacts, Mitigation and Significant Effects	6
2.1	Introduction	6
2.2	Air Quality	6
2.3	Climate Change	6
2.4	Cultural Heritage	8
2.5	Geology and Soils	9
2.6	Landscape and Visual Amenity	9
2.7	Material and Waste	11
2.8	Biodiversity	12
2.9	Noise and Vibration	13
2.10	Population and Human Health	14
2.11	Road Drainage and the Water Environment	16
2.12	Cumulative Effects	17
3	Construction Environmental Management	19
Appendix A – Figure 1 Proposed Scheme		

1 Introduction

1.1 Overview

- 1.1.1 The A29 road is a major north-south route through Northern Ireland, connecting Coleraine on the north coast to Cookstown, Dungannon and onwards to Armagh City. The existing A29 route acts as a spine road through the centre of the Cookstown, serving both strategic through movements and local traffic. There is currently conflict between the requirements of through traffic and a desire to improve accessibility in a safer and improved environmental setting for residents.
- 1.1.2 The A29 Cookstown Bypass scheme would be located to the east of Cookstown, linking the A29 Dungannon Road south of the town to the A29 Moneymore Road to the north of the town. There would also be highways improvements to Sandholes Road. Both scheme elements together are hereafter jointly referred to as the 'Proposed Scheme'.
- 1.1.3 Traffic modelling forecasts the Proposed Scheme would provide an alternative route to the traffic currently routeing through Cookstown town centre, more than halving the time taken to travel between Moneymore Road and Dungannon Road. The removal of strategic traffic from the town centre would assist in reducing conflict between strategic and local traffic and thus assist in the reduction of both congestion and the risk of accidents along the Main Street.
- 1.1.4 Traffic surveys undertaken in 2019 revealed a large variation in journey times along the A29 through Cookstown, ranging from around 7 minutes in uncongested conditions to over 20 minutes in the most congested observations. With the Proposed Scheme, delays through Cookstown are predicted to reduce, resulting in quicker and more reliable journeys, bringing the journey times between Tamlaghtmore Road and Loughry Roundabout routeing along the Main Street down to around 10-11 minutes on average. This would lead to an overall improved experience of residents and visitors to the historic town centre.
- 1.1.5 An Environmental Impact Assessment (EIA) has been undertaken to understand the likely significant environmental effects of the construction, operation and decommissioning of the Proposed Scheme. The findings of the EIA are reported in an Environmental Impact Assessment Report (EIAR), to inform the decision on whether to proceed with the Proposed Scheme.

1.2 Purpose of this Non-Technical Summary

- 1.2.1 This Non-Technical Summary (NTS) provides a summary of the information contained within the EIAR. The purpose of the NTS is to present a stand-alone summary of the findings of the EIAR in non-technical language. It presents how the Proposed Scheme design has evolved, what likely significant environmental effects are predicted and how these have been mitigated or compensated. An overview of the Proposed Scheme

elements in relation to planning and environmental features is provided in **Appendix A, Figure 1 Proposed Scheme**.

1.3 The Existing Environment and Surrounding Area

- 1.3.1 The boundary for the Proposed Scheme comprises an area of approximately 64.8 hectares (ha), located in the administrative area of Mid Ulster District Council.
- 1.3.2 The area largely consists of agricultural land use with some existing road infrastructure. Other smaller areas of land use associated with the area include commercial interests, residential development, occasional community open space and the Killymoon Golf Course. Several areas of land adjacent to the Proposed Scheme have been allocated for business and housing development.
- 1.3.3 The rural character of the area is dominated by drumlins, where ground levels vary between 55m to 85m above ordnance datum (AOD) north of Castle Road and 35m to 50m AOD south of Castle Road. Steep slopes are found on the banks of the Ballinderry River to the east of Cookstown, with flat, boggy ground in the inter-drumlin hollows and valleys of the Ballinderry River to the south-west of the Proposed Scheme, and Lissan Water to the north-east of the Proposed Scheme. These are interspersed by farmsteads, hedgerows, ancient and community woodland and watercourses. Woodland areas are principally associated with the Killymoon Castle Historic Park, Garden and Demesne and Killymoon Golf Course.
- 1.3.4 The improvements to the Sandholes Link Road element of the Proposed Scheme would take place in an urban area, adjacent to the Ballyreagh Business Park and Derryloran Industrial Estate.
- 1.3.5 The key environmental features identified within the Proposed Scheme boundary and the surrounding area are listed below:
 - Residential properties in proximity to the Proposed Scheme;
 - Residential properties in proximity to the existing A29 within Cookstown;
 - Users of public footpaths, cycleways and informal tracks;
 - Killymoon Castle Historic Park, Garden and Demesne;
 - Upper Ballinderry River Area of Special Scientific Interest (ASSI);
 - Upper Ballinderry River Special Area of Conservation (SAC);
 - Protected or notable species/ species groups;
 - Agricultural land;
 - Floodplain;
 - Killymoon Golf Course;
 - Drum Road Outdoor Play Area;
 - Mid Ulster Cycle Route;
 - Business premises with primary access within the Proposed Scheme Boundary, including Ballyreagh Business Park and Derryloran Industrial Estate;
 - Fairy Burn watercourse; and
 - The Ballinderry River.

1.4 Description of the Proposed Scheme

- 1.4.1 The Proposed Scheme comprises approximately 4km of carriageway extending from the A29 Dungannon Road roundabout to the south of Cookstown, to a proposed new roundabout on the A29 Moneymore Road to the north. There would also be highways improvements to Sandholes Road.
- 1.4.2 As part of the Proposed Scheme, a new shared footway/cycleway would be created along the length of the bypass, connecting to the existing pedestrian and cycle network. A new shared footway/cycleway is also proposed on Sandholes Link Road which would provide improved access to nearby residential and industrial estates.
- 1.4.3 The Proposed Scheme includes the following structures:
- Three underbridges, two footbridges, two agricultural underpasses and two underpass structures to future proof development of greenways;
 - One headwall, one flood wall and five retaining walls; and
 - Four watercourse culverts, with one existing culvert retained.
- 1.4.4 The Proposed Scheme earthworks include seven sections of embankment and six sections in cutting. In general, earthworks would be graded at 1 in 3 slopes. However, in some areas, particularly on embankments and cutting slopes associated with the proposed structures, they would be graded at 1 in 2. Excavated material has been integrated into the Proposed Scheme design, for example, to provide visual screening. However, to minimise transfer of any surplus material to landfill, seven potential soil deposition areas have also been identified.
- 1.4.5 Other components of the Proposed Scheme would include: diversion of four sections of existing watercourse, compensatory flood storage (3,166m³), provision of accommodation works, permanent road lighting at road junctions, boundary fencing to demarcate the highway boundary, landscaping and earthwork bunds, planting and environmental mitigation to enable habitat improvements, ponds and wetland habitat, fencing and passages to allow mammals to cross the Proposed Scheme, noise mitigation through low noise road surfacing and noise barriers.

1.5 Consultation

- 1.5.1 The consultation process involved identifying and engaging with a wide range of consultees, organisations and affected landowners. Consultees were identified through review of previous studies, input from the technical specialists and the consideration of communities and landowners within the influence of the Proposed Scheme.
- 1.5.2 Consultation has been carried out over several years and at various stages of the Proposed Scheme development, including:
- Consultation on route options;
 - A public exhibition at the Burnavon Arts and Cultural Centre in Cookstown on Tuesday 7 and Wednesday 8 December 2021;

- A virtual consultation room was set up with the provision of a public information leaflet and 3D visualisation model of the Preferred Route;
- Engagement with landowners directly affected by the Proposed Scheme as well as other interested parties; and
- Consultation on preparation of the EIAR as part of the EIA process with a range of consultees such as Department of Agriculture, Environment and Rural Affairs (DAERA), Mid Ulster District Council, Sustrans and many other organisations.

1.5.3 Where appropriate, comments and issues raised through the consultation process have been taken into consideration as part of the EIA. The Project Team will continue to liaise with stakeholders at appropriate times within the Proposed Scheme's timescales.

1.6 Construction of the Proposed Scheme

1.6.1 Construction work is expected to commence in 2026 and it is expected to be carried out over a 20 month period until road opening in 2027.

1.7 Consideration of Alternatives

- 1.7.1 There have been various alternative routes and iterations of the Proposed Scheme that have been considered since the initial concept for an eastern distributor route was identified in the 1970s. In the development of the current Proposed Scheme, the location and alternative alignments have been considered at three stages. These include:
- Evaluation of corridor routes to the east and west of Cookstown – an initial assessment completed in 2008 compared the suitability of corridors to the east and west of Cookstown. The assessment concluded that a corridor to the east of Cookstown would offer the best economic benefits in relation to construction cost, and for alternative Bypass routes that extend beyond existing and future development zones identified in the Cookstown Area Plan;
 - Evaluation and comparison of route options within the eastern corridor to identify the Preferred Route – further assessment was completed in 2010 and 2021 to compare route alignment options east of Cookstown. A Preferred Route was selected based on engineering, economic, traffic and environmental considerations; and
 - Refinement of the Preferred Route to be adopted as the Proposed Scheme – following the identification of the Preferred Route, the design and environment teams worked with the Department for Infrastructure and other statutory bodies to refine the design and layout, including consideration and development of various design alternatives for scheme elements.

1.8 Scheme Objectives

- 1.8.1 The project specific scheme objectives aim to achieve the following:
- To relieve traffic congestion within Cookstown;
 - To reduce journey times along the A29 corridor;
 - To improve the road network between the north and south of the Province;
 - To improve road safety;
 - To improve the quality of life for the majority of residents;
 - To improve the town centre environment;
 - To minimise the impact on the natural and built environment;
 - To enhance the economic growth of the area; and
 - To achieve value for money as demonstrated through a net positive return on investment.

1.9 Scope of the Environmental Impact Assessment

- 1.9.1 An EIA Scoping Report produced in October 2022 outlined the Proposed Scheme has the potential to result in likely significant effects associated with the following topic areas, which were scoped in to the EIA:
- Air quality;
 - Climate change;
 - Cultural heritage;
 - Geology and soils;
 - Landscape and visual amenity;
 - Materials assets and waste;
 - Biodiversity;
 - Noise and vibration;
 - Population and human health;
 - Road drainage and the water environment; and
 - Cumulative effects.
- 1.9.2 The topics major accidents and/or disasters and transboundary impacts were scoped out of the EIA.

2 Environmental Impacts, Mitigation and Significant Effects

2.1 Introduction

- 2.1.1 This section provides a summary of the identification of the impacts and likely significant effects on the environment associated with the Proposed Scheme and of the studies and assessments which have been undertaken to investigate them. It has been informed by the guidance provided in Volume 11 of the Design Manual for Roads and Bridges (DMRB) which specifically addresses environmental assessment.

2.2 Air Quality

- 2.2.1 The air quality assessment considered human and ecological receptors and focused on the likely impacts and effects to local air quality and regional pollutant emissions associated with the operational phase of the Proposed Scheme. The assessment also considered likely effects to local air quality and amenity associated with construction phase activities.
- 2.2.2 The assessment of impacts associated with dust-generating construction activities has demonstrated that, with appropriate mitigation measures focused on the control and suppression of dust, the Proposed Scheme would not have a significant effect on local air quality and amenity during construction. The assessment of impacts associated with emissions (nitrogen dioxide and particulate matter) arising from construction-related traffic using existing roads would result in temporary increases in concentrations of these pollutants, but not of an order or duration that would constitute a significant effect on local air quality.
- 2.2.3 The assessment of impacts associated with the operational phase of the Proposed Scheme has demonstrated that more people would experience improved air quality (i.e. benefit from reduced concentrations of key air pollutants – nitrogen dioxide and particulate matter) than would experience a worsening in air quality. This would largely be a result of traffic moving from the existing A29 through Cookstown to use the Proposed Scheme.
- 2.2.4 For ecological receptors, the operational phase assessment of the Proposed Scheme has considered the potential impacts of vehicle emissions on identified nitrogen-sensitive habitats within Upper Ballinderry River ASSI/SAC. It was determined that no significant effects are likely as a result of nitrogen deposition.

2.3 Climate Change

Climate Resilience

- 2.3.1 A climate resilience assessment considered the vulnerability of the Proposed Scheme to climate change, in particular, from extreme weather events and long-term climate change during the operational phase. The assessment focused on the impact of climate on the Proposed Scheme (rather than the impact of the Proposed Scheme on the environment).

- 2.3.2 Sensitive receptors that have been identified for the Proposed Scheme include:
- Road components (e.g. pavement, carriageway, drainage, embankment);
 - Structural components (bridges, underpass, flood and retaining walls) components;
 - Ancillary components (e.g. street furniture, vegetation); and
 - The end users of the Proposed Scheme.
- 2.3.3 The most recent UK Climate Projections (UKCP18) project that the location of the Proposed Scheme will experience wetter winters and drier summers with an increase in the frequency of:
- Extreme rainfall events;
 - Milder winters and hotter summers with an increase in the likelihood of heatwaves and hot spells;
 - Reduction in snow fall during winter;
 - Shifts in growing seasons; and
 - An increase in intense storms events.
- 2.3.4 The changes in the climate variables over time have the potential to pose significant threat to the lifetime of the Proposed Scheme. Based on the likelihood of the climate hazard occurring, impact of these events and taking into account embedded mitigation measures within the design. The assessment found that paved surface and structures remain at risk to:
- Extreme temperature events and hotter summers leading to deformation and melting of paved surfaces;
 - Heatwaves and hotter summers leading to thermal action and failure of expansion joints and bridge bearings on structures;
 - Heatwaves, hotter summers and warmer winters leading to structural integrity affected by shrinking / cracking of soils;
 - Drier summers leading to drying out, cracking and subsidence of foundations; and
 - The increased difference between wetter winters and drier summers may impact groundwater levels and thus earth pressure (horizontal pressure exerted by soil) exerted on structure foundations.
- 2.3.5 To reduce the potential significance of these impacts, mitigation has been identified:
- Designing above and beyond the current design standards to ensure that the Proposed Scheme will be resilient to future climate impacts; and
 - Incorporating an adaptive design approach into maintenance plans to ensure that the design life of the Proposed Scheme is met.
- 2.3.6 By incorporating the impact of future climate into the design and/or developing maintenance plans with adaptive design measures, the climate resilience effect would not be significant.

Greenhouse Gas

- 2.3.7 The greenhouse gas (GHG) assessment reports the outcome of likely significant effects arising from the Proposed Scheme upon GHG emissions and the climate. It assesses the potentially significant effects arising from GHG emissions from activities and traffic associated with both the construction and operational stages. To determine significance, GHG emissions were quantified over the project lifespan (60 years), and included emissions from sources during construction and operation of the Proposed Scheme.
- 2.3.8 The construction impact of the Proposed Scheme on GHG emissions arising from the embodied carbon within materials, transportation of materials to site, transport of waste from site and construction plant use are expected to be moderate adverse and therefore significant.
- 2.3.9 The operational impact of the Proposed Scheme is expected to be beneficial and significant due to a decrease in GHG emissions in comparison to a scenario where the road is not built. This GHG reduction is based on traffic modelling predicting reduced time spent by vehicles on the road and optimisation of vehicle speed (reducing fuel consumption) over the 60 year lifespan of the Proposed Scheme.
- 2.3.10 Further measures are recommended to reduce the GHG emissions associated with the Proposed Scheme:
- Design optimisation to reflect the carbon reduction hierarchy;
 - Substitute construction materials for lower-carbon alternatives;
 - Using more efficient construction plant and delivery vehicles;
 - Maximise the local sourcing of materials and use of local waste management facilities; and
 - Re-use of materials onsite rather than taking offsite as a waste.

2.4 Cultural Heritage

- 2.4.1 A desk-based assessment, walkover surveys, and consultation with the Department for Communities Historic Environment Division (HED) have been undertaken. The assessment considered potential impacts during the construction and operation of the Proposed Scheme.
- 2.4.2 A total of 100 heritage assets were included in baseline, ranging in date from prehistoric to modern. They include scheduled monuments, historic buildings, historic parks, gardens and demesne, Area of Archaeological Potential, Area of Significant Archaeological Interest, several undesignated heritage assets highlighted within the Northern Ireland Sites and Monuments Record, and several heritage assets highlighted by a map regression study and walkover survey.
- 2.4.3 The assessment determined there is the potential for 14 undesignated heritage assets to be adversely impacted upon during construction. The impact on a medium valued heritage asset, Bronze Age archaeological remains, would result in a significant effect prior to

mitigation. It is recommended that the impact on this and other heritage assets within the Proposed Scheme boundary are mitigated through a programme of archaeological investigations to ensure preservation by record. Following implementation of this mitigation, the residual effects on heritage assets are expected to be not significant.

- 2.4.4 During operation, there is potential for the setting of three designated and seven undesignated heritage assets to be impacted. The Killymoon Castle Historic Park, Garden and Demesne was highlighted as a sensitive receptor within the EIA Scoping Report, but the assessment demonstrates this will not receive a significant effect. The impacts on a further nine heritage assets during operation do not result in significant effects. Embedded mitigation to reduce the impact to the setting of heritage assets in the form of noise reduction measures and screening along the Proposed Scheme has been considered in the assessment.

2.5 Geology and Soils

- 2.5.1 During the scoping exercise, potential impacts to geology including contamination were scoped out of further assessment, as they are not considered to give rise to likely significant effects as a result of the Proposed Scheme. Therefore, the assessment has focused on potential impacts to agricultural soils.
- 2.5.2 The Proposed Scheme route is predominantly within a greenfield location, the soils in the study area are largely Cambisols which make good agricultural land and are intensively used. The Agricultural Land Classification and sensitivity (as outlined in the DMRB) of land within the Proposed Scheme Boundary includes Grade 2 (Very High Sensitivity), Grade 3B (Medium Sensitivity) and Grade 4A (Low Sensitivity).
- 2.5.3 Agricultural soils would be permanently lost due to the Proposed Scheme, which is considered a significant effect to Grade 2 and 3B agricultural land. Due to the nature of the Proposed Scheme, it is not possible to mitigate the loss of this agricultural land.

2.6 Landscape and Visual Amenity

- 2.6.1 The landscape and visual amenity assessments have focused on the likely impacts and effects to landscape character and the visual context in the vicinity of the Proposed Scheme, and were based on a combination of desk-based assessments and summer and winter site surveys.
- 2.6.2 The assessment of landscape character has identified that impacts on the following landscape settings would constitute significant effects on the baseline environment during construction:
- Settled farmland to the east of Cookstown (Local Landscape Character Area 4 (LLCA4));
 - The recreational landscape of the Killymoon Golf Course (LLCA5); and
 - The Ballinderry River valley to the south-east of Cookstown (LLCA6).

- 2.6.3 Mitigation measures to reduce impacts on the landscape include:
- Adjustment of the vertical profile of the road to reflect the existing landform where practicable;
 - Earthwork bunds to integrate and partially screen the road;
 - Restoration of the landscape pattern through replacement and additional hedgerow planting; and
 - An appropriate planting strategy that respects the local character of the landscape and helps to integrate the Proposed Scheme within the existing landscape framework, and replaces habitats removed to accommodate the road.
- 2.6.4 Following the implementation of the mitigation measures described above it is anticipated that no landscape settings are likely to be subject to a significant effect during the operation of the Proposed Scheme.
- 2.6.5 The assessment of impacts on views experienced from sensitive receptors (predominantly residential properties and public locations) identified significant effects on visual receptors throughout the southern and eastern residential fringes of Cookstown during construction. Receptors likely to experience a significant effect during construction include those on Tullywiggan Road, Castle Road, Golf View, Festival Park, Sandholes Road, Coolnafranky Park, Coagh Road, Old Coagh Road, A29 Moneymore Road and users of Cabin Wood walk.
- 2.6.6 Mitigation measures include:
- Screen planting, once matured, such as that proposed at Golf View, Festival Park and Coagh Road;
 - Earthwork bunds in proximity to Golf View, Festival Park, Cloghog Road, Coagh Road and Old Coagh Road; and
 - Environmental barriers proposed in proximity to Otter Lodge, Castle Road, Castle Villas, Golf View and Festival Park contribute to the mitigation of impacts on visual receptors.
- 2.6.7 During operation, maturation of mitigation planting would reduce the visual impacts of the Proposed Scheme, particularly in summer months. Those receptors where a significant effect would remain are distributed throughout the Proposed Scheme corridor to the east of Cookstown and where the existing views are typically rural in nature and likely to be subject to a substantial change in visual outlook that cannot be fully mitigated. Receptors subject to a significant visual effect after 15 years of operation are to be found on Tullywiggan Road, Otter Lodge, Castle Road, Castle Villas, Golf View, Coolnafranky Park, Old Coagh Road and the A29 Moneymore Road.
- 2.6.8 It has been concluded that visual impacts identified individually and collectively as moderate or large adverse would constitute a significant effect on the baseline environment.

2.7 Material and Waste

- 2.7.1 The current land use is predominantly agricultural land and requires minimal consumption of construction materials and minimal generation of waste for disposal to landfill.
- 2.7.2 Published information on the availability of the main construction materials required for the Proposed Scheme in Northern Ireland and the rest of the UK indicates that there are sufficient material resources available regionally and UK wide.
- 2.7.3 A review of waste recovery facilities to identify the availability of infrastructure and capacity for the transfer and recovery of Construction, Demolition and Excavation (CDE) wastes in Northern Ireland suggests that there is the potential to divert from landfill any site arisings generated by the Proposed Scheme.
- 2.7.4 The Proposed Scheme is anticipated to achieve a 63% overall material recovery rate of non-hazardous construction and demolition waste to substitute use of primary materials. In accordance with the significance criteria set out in DMRB LA 110 Material assets and waste standard, the effects from material resource use is considered moderate adverse and therefore significant prior to mitigation.
- 2.7.5 Additional mitigation measures include:
- The second iteration of the Environmental Management Plan (EMP) would include requirements to maximise recycled and secondary content of materials and the reuse of site won arisings to minimise the requirement for imported (primary) resources.
 - This would also include a 10% target for recycled aggregate content, where the use of recycled aggregate is feasible. This will be managed and monitored through the implementation of a Site Waste Management Plan (SWMP) and Materials Management Plan (MMP), or similar protocol, by the Principal Contractor.
 - At the detailed design stage, the Design Team and Principal Contractor will ensure the design and specification of materials maximises the use of recycled and secondary content of materials.
- 2.7.6 With additional measures implemented by the Principal Contractor through the second iteration EMP, SWMP and MMP it is considered that at least a 70% material reuse, recovery or recycling rate will be achieved which would result in a slight adverse effect for material assets which is not significant.
- 2.7.7 It is anticipated that 99% of the waste generated during the construction of the Proposed Scheme would be diverted from landfill and the total waste sent to landfill would result in a less than 1% reduction in regional landfill capacity which is not significant under the criteria set out in DMRB LA 110. The second iteration iEMP (as part of good practice) will set out the requirement for the Principal Contractor to develop and implement a MMP or similar protocol, to ensure site won arisings (earthworks) meet reuse criteria. This would seek to ensure any contaminated materials are either maximally reused as part of the cut and fill earthworks or disposed of to a suitably licensed facility.

- 2.7.8 The second iteration EMP will also detail that the Principal Contractor will make every effort to minimise the disposal of waste (including potentially contaminated earthworks) outside of the region. This may include (depending on the type of contamination present and subject to the successful deployment of any Remediation Strategy), treatment either on or off site for subsequent disposal as non-hazardous waste. The development and implementation of a SWMP by the Principal Contractor must set out the process to be used in the event that any contaminated earthworks are identified, and to ensure that appropriate treatment, transfer or disposal methods are implemented.

2.8 Biodiversity

- 2.8.1 The assessment of potential impacts on biodiversity (defined as plants and animals and the environment in which they live) is informed by DMRB LA 108 Biodiversity and the Chartered Institute of Ecology and Environmental Management (CIEEM) Ecological Impact Assessment guidelines. The assessment considered potential effects of the construction and operation of the Proposed Scheme on designated sites, habitats and species, including the following features:
- The Upper Ballinderry River SAC and ASSI – designated for its otter and freshwater pearl mussel populations and freshwater habitats;
 - Cabin Wood Woodland Trust Reserve;
 - Habitats including woodland, scrub, open water and boundary features;
 - Legally protected and notable species including badger, bats, birds, fish (salmon, brown trout, European eel and lampreys) and white-clawed crayfish; and
 - Invasive non-native species of plant (including giant hogweed).
- 2.8.2 The presence and extent of biodiversity receptors within the ecological survey area has been assessed by means of consultations, desk-based assessment and detailed surveys by qualified specialists, in accordance with standard survey guidance documents.
- 2.8.3 One of the key risks to biodiversity during the construction of the Proposed Scheme is silt-laden and polluted run-off entering the Ballinderry River from construction of a new bridge crossing and diversion of the Fairy Burn. Although the Proposed Scheme is downstream of the area designated as SAC and ASSI, the species and habitats which make the river important are at risk from downstream activity. However, the construction phase will be subject to control and management measures as set out in the first iteration EMP and during operation, control measures including sensitive road lighting design and Sustainable Drainage Systems (SuDS) will mitigate the risk of light spill and uncontrolled polluted runoff. A clear span bridge will avoid the need for construction within the river.
- 2.8.4 Vegetation clearance including woodland and boundary features during ground clearance and earthworks would result in loss or disturbance to woodland habitat and its nesting, roosting, resting and foraging habitat for a number of species. Habitat loss will be partly offset by provision of woodland planting and new grassland, hedgerow and wetland features.

2.8.5 Mitigation measures which will be implemented to reduce adverse impacts of the Proposed Scheme on species include:

- Fencing to guide species away from the carriageway;
- Mammal tunnels and culverts adapted for mammal passage to allow safe crossing;
- ‘Hop-over’ habitat planting and tunnels at two new disused railway structures to encourage safe crossings for bats;
- Replacement roosting habitat for bats and resting sites for otter and badger as appropriate (under licence);
- Timing of works to avoid sensitive periods for migratory and spawning fish;
- Avoidance and management of invasive species of plant, together with biosecurity measures to avoid their inadvertent spread; and
- Implementation of best practice measures as set out in a second iteration EMP.

2.8.6 Taking into account the nature and extent of habitat loss, potential for deterioration in habitat quality and mitigation measures focused on the protection of retained habitats and habitat creation, it has been concluded that impacts and effects relative to all but one habitat type would not constitute a significant effect on the environment.

2.9 Noise and Vibration

2.9.1 The assessment has focused on the likely impacts and associated with the construction and operation of the Proposed Scheme due to noise and vibration. The assessment has focused on dwelling receptors, non-dwelling buildings considered sensitive and other public amenity spaces.

2.9.2 The assessment is primarily informed by DMRB LA 111 Noise and vibration standard and also references the guidance given in British Standard 5228 parts 1 and 2 for construction noise and vibration.

2.9.3 Geographic Information Systems (GIS) tools and spreadsheets have been used to apply the BS 5228e calculation methods to predict construction noise and vibration levels for each work stage given an assumption of the likely plant which would be used and the distance from each work area to the nearest receptors. Specialist noise calculation modelling software has been used to assess the impacts and effects of changes in road traffic noise levels at sensitive receptors as a result of the operation of the Proposed Scheme.

2.9.4 The assessment of impacts and effects associated with construction noise has demonstrated that, with appropriate best working practice and mitigation measures to be incorporated into the second iteration EMP, the construction of the Proposed Scheme would not cause significant effects at the nearest receptors to the works.

2.9.5 The assessment of impacts and effects associated with construction vibration has found that temporary significant effects are likely to occur at two receptor locations close to the Otter Lodge and Ballinderry River piling works. It is recommended that test piling and investigation of alternative piling methods are undertaken by the appointed Principal

Contractor prior to the works and best practice and mitigation measures are included in the second iteration EMP to minimise adverse effects as far as practicable.

- 2.9.6 The assessment of impacts and effects associated with road traffic noise in the operational phase of the Proposed Scheme has found that there are predicted to be more significant beneficial effects than significant adverse effects due to the alleviation of traffic currently using the A29 through Cookstown rerouting onto the Proposed Scheme.
- 2.9.7 Where significant adverse operational noise effects are predicted, the implementation of mitigation through low noise surfacing and targeted noise barriers has been included within the Proposed Scheme design and assessed. These measures would reduce the number of significantly affected receptors as far as reasonably practicable.

2.10 Population and Human Health

Land Use and Accessibility

- 2.10.1 The assessment has focused on likely impacts and effects associated with land take, demolition of private property, agricultural land holdings, farms, land used by the community and development land.
- 2.10.2 During the construction phase, permanent land take from seven private properties and one housing allocation (H24) would have a significant effect. There is also likely to be a significant effect to the community asset, Killymoon Golf Course, due to permanent land take required for the Proposed Scheme, and a loss of amenity during construction. The Golf Club have entered discussions to acquire additional land and reconfigure the course prior to the start of construction in order to maintain a Par 70 course, equal and equivalent in standard to the existing course. Land and Property Services (LPS) will act on behalf of the Department to assess fair and equitable compensation.
- 2.10.3 The Proposed Scheme would also have a significant effect on 25 business premises accessed by Sandholes Road, and four other businesses, during the construction phase due to temporary disruption to access. Where practicable during construction, existing access to business premises would remain open or partially open. Alternative access would be provided if the current access is inhibited, through discussion and agreement with the business premises. Should alternative access be required during construction, access measures regarding temporary supervised traffic control to the business premises would be added to a Traffic Management Plan and appropriate signage provided.
- 2.10.4 The assessment of agricultural land holdings has demonstrated that 21 farms would be affected in total, with impacts ranging from slight to moderate adverse (significant) being assessed. Measures to mitigate the effects on individual farms have been embedded in the design of the Proposed Scheme to ensure continual agricultural access to land during construction and operation of the Proposed Scheme. Measures have been included for alternative access where the Proposed Scheme would sever existing fields or access to parts of a farm. Existing farm infrastructure such as water supply and drainage networks

would also be maintained as far as practicable during construction. Such works would be agreed with farm owners prior to the start of construction.

- 2.10.5 The assessment has considered the likely impacts and effects on journeys undertaken by pedestrians, cyclists and equestrians and users of local roads for recreation and to access facilities within Cookstown and the surrounding communities. The assessment has identified 12 locations where alternative routes would increase journey length. However, it has been concluded that none of these diversions would constitute a significant effect.
- 2.10.6 Pedestrian and cyclist provision as part of the Proposed Scheme includes a 3.0m wide shared footway/cycleway along the length of the bypass, 3.0m shared footway/cycleway on Sandholes Link Road connecting Sandholes Road to the A505 Drum Road, and a toucan crossing providing pedestrian access to Cabin Wood walk. Active travel crossings have been provided at five locations: Loughry Roundabout, Castle Road, Killymoon Roundabout Footbridge, Cloghog Road and the Moneymore Roundabout Footbridge. Two underpasses have also been provided along abandoned railway lines (between Moneymore Road and Old Coagh Road, and also south of Festival Park) for the potential future development of Greenways.

Human Health

- 2.10.7 The human health assessment focused on likely impacts and effects on the health outcomes within Cookstown and the surrounding communities associated with the Proposed Scheme, utilising information from other environmental topic chapters.
- 2.10.8 With respect to the construction of the Proposed Scheme, negative effects on health outcomes associated with physical activity, accessibility and social cohesion remains were identified where footways and cycleways would need to be temporarily closed. Negative health outcomes associated with the mental health of users of several of these routes were also identified, as construction works would create potentially unsightly views. However, both effects are likely to be temporary and limited to when construction is ongoing.
- 2.10.9 During construction, no effects were identified regarding health outcomes associated with respiratory, cardiovascular and other health outcomes relating to lower air quality or increased noise and vibration levels following the consideration of mitigation measures proposed by the air quality and noise and vibration sections.

- 2.10.10 Regarding the operation of the Proposed Scheme, positive and negative effects were identified for a number of health outcomes related to physical activity, accessibility and active travel. The Proposed Scheme would promote positive outcomes through the provision of underbridges, overbridges, crossings at new junctions, and new shared footways and cycleways. However, the Proposed Scheme may also decrease the tranquillity and sense of place east of Cookstown.
- 2.10.11 Using information gathered from the noise and vibration and air quality assessments, it was determined that there would be both positive and negative effects on their associated health outcomes during the operation of the Proposed Scheme. In many locations, overall air quality would improve, and noise and vibration levels would reduce during operation, however in a minority of locations air quality would decrease and noise levels would increase.
- 2.10.12 The landscape and visual amenity assessment identified locations where views may be negatively affected by the Proposed Scheme, resulting in negative effects on health outcomes associated with visual amenity and sense of place. However, the permanent changes on visual amenity are expected to reduce as landscaping matures and residents adapt to the changes.

2.11 Road Drainage and the Water Environment

- 2.11.1 The Proposed Scheme has one crossing at the Ballinderry River, four watercourse culverts and four sections of existing watercourses to be diverted. An area of existing floodplain would be affected by the Proposed Scheme. There are no surface or groundwater fed-supplies within the study area.
- 2.11.2 Surface water bodies within the study area comprise Lissan Water, the Ballinderry River (Derrygonnigan) and the Ballinderry River (Cookstown), and their tributaries. Two groundwater bodies are noted within the study area; Cookstown and Moneymore.
- 2.11.3 Embedded mitigation within the design of the Proposed Scheme includes three levels of treatment for the A29 mainline road drainage to remove pollutants and good practice principles applied to the design and construction of watercourse realignments to maintain flows and sediment processes within watercourses. Other measures include temporary construction drainage and sediment control measures to avoid deterioration in water quality and measures to protect private water supplies. Flood mitigation for the Ballinderry River consists of a flood wall to protect the property on the north bank of the Ballinderry River upstream of the proposed bridge crossing. There would also be 3,166m³ of compensatory flood storage created to offset the loss of floodplain due to the Proposed Scheme.
- 2.11.4 With the implementation of embedded and secondary mitigation, no significant impacts have been identified for almost all sensitive receptors, with the exception being fluvial geomorphological (river process and form) effects at a number of watercourses during the operational phase which would be significant.

- 2.11.5 With appropriately designed crossing structures to minimise in-channel works and application of good site environmental management practice the likelihood, magnitude and timeframe of any construction pollution incidents would be reduced.

2.12 Cumulative Effects

- 2.12.1 The assessment considers two types of cumulative effects:

- Intra-project cumulative effects: the combined impact of a number of different environmental factors-specific impacts from a single project on a single receptor/resource (referred to as intra-project effects); and/or
- Inter-project cumulative effects: the combined impact of a number of different projects within the vicinity (in combination with the environmental impact assessment project) on a single receptor/resource (referred to as inter-project effect).

Intra-Project Cumulative Effects

- 2.12.2 Adverse intra-project cumulative effects are expected to residential properties (residents) in proximity to Proposed Scheme both during construction and operation, and there are also likely to be adverse cumulative effects to users of walking, cycling and horse riding routes and the Killymoon Golf Club during construction. It is expected that there would be beneficial intra-project cumulative effects for residents in proximity to the existing A29 in Cookstown during operation.
- 2.12.3 For construction phase effects, mitigation through implementation of a Stakeholder Communications Plan that includes community engagement would be developed and implemented prior to work commencing on site. This would provide the local community with construction activity information and keep them informed on when construction will take place.
- 2.12.4 During operation, due to the nature of a new road within a non-urban environment, it is not considered that additional mitigation is practical above measures detailed within the individual environmental topic chapters.

Inter-Project Cumulative Effects

- 2.12.5 In total eight other projects have the potential for significant inter-project effects during construction. The majority of effects would be temporary during the construction phase and only occur if the construction phases of other projects overlapped with the construction of the Proposed Scheme. It is also expected that other committed developments would implement control and mitigation measures to manage environment effects during the construction phase, through planning conditions, gaining the required consents licences and EMPs that will contribute to managing and reducing any adverse effects.

- 2.12.6 Should construction phases of the Proposed Scheme overlap with any of the other projects that have the potential for construction phase significant effects, additional mitigation measures may be required to reduce significant adverse effects. If this is the case, effective communication with both the scheme developers and the local community should be developed through a Stakeholder Communications Plan.
- 2.12.7 During operation, there is the potential that three other projects would have inter-project significant effects with the Proposed Scheme. These are due to potential adverse effects to the setting of a medieval rath, and potential adverse noise effects due to additional traffic from two other projects. This is based on a worst-case assessment without considering any mitigation that other projects may implement if they are developed, as this information is currently unknown.

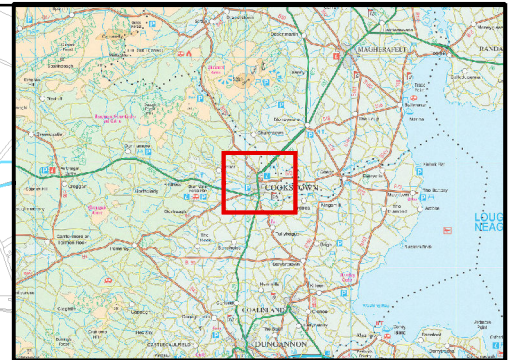
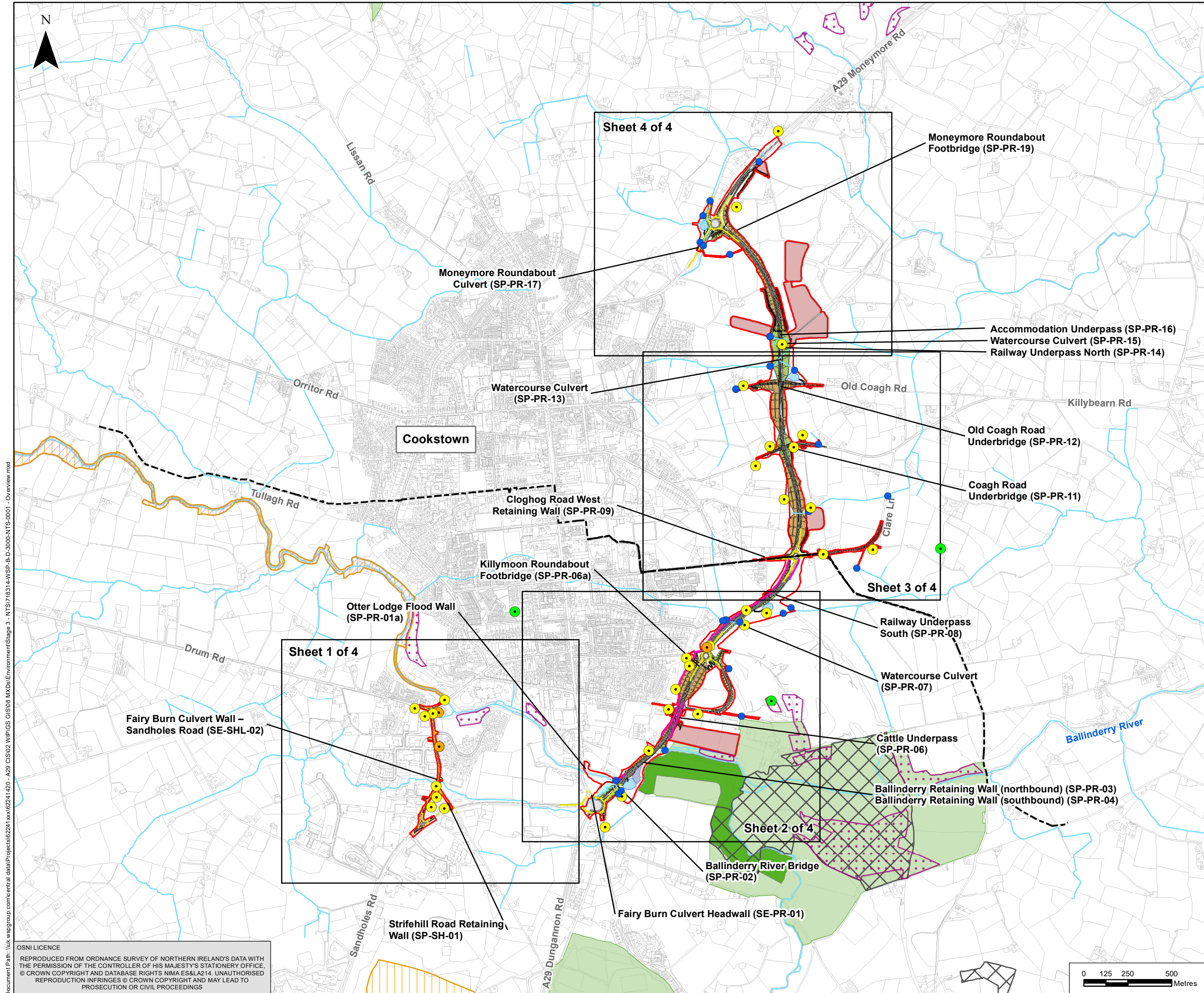
3 Construction Environmental Management

- 3.1.1 Construction related impacts will be managed through mitigation detailed in the first iteration EMP, and further developed by the Principal Contractor in development of their second iteration EMP. The first iteration EMP has incorporated construction mitigation measures suggested within the EIAR.
- 3.1.2 The Principal Contractor would be required to agree and incorporate detailed and enforceable measures to reduce construction related impacts. The deployment and effectiveness of the measures will be monitored through internal and independent auditing bodies.

Appendix A

Figure 1: Proposed Scheme

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Legend
Proposed Scheme Elements

- Scheme
- Scheme Boundary
- Notice of Intention to Make a Vesting Order (NIMVO)
- Flood Compensatory Storage
- Watercourse Diversion
- Drainage Pond
- Shared Footway/Cycleway
- Deposition Areas (DA)
- Noise Barrier Mitigation
- Lighting
- Outfall Location
- Cutting
- Embankment

Planning & Environmental Features

- Listed Buildings (within 50m of proposed scheme)
- Heritage Assets (within 50m of proposed scheme)
- Scheduled Monuments
- Mid-Ulster Cycle Route
- Watercourses
- Areas of Special Scientific Interest (ASSI)
- Special Areas of Conservation (SAC)
- Ancient Woodland
- Site of Local Nature Conservation Importance (SLNCI)
- Community Woodland (Cabin Wood)
- Area of Significant Archaeological Interest (ASAI)
- Historic Parks, Gardens & Demesnes

Notes:
Subject to approval to proceed, it is possible that modifications to the Proposed Scheme could be identified during detailed design. In this event, such modifications would be subject to approval by the Department, to ensure that such modifications would not detrimentally change the environmental impacts assessed in this EIA Report.

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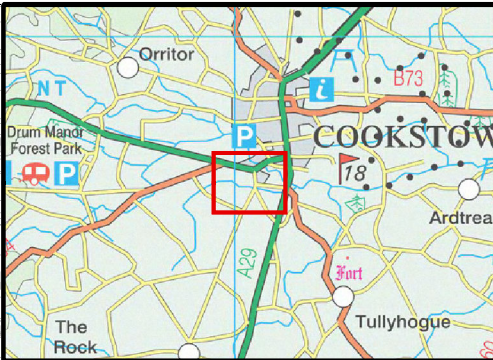
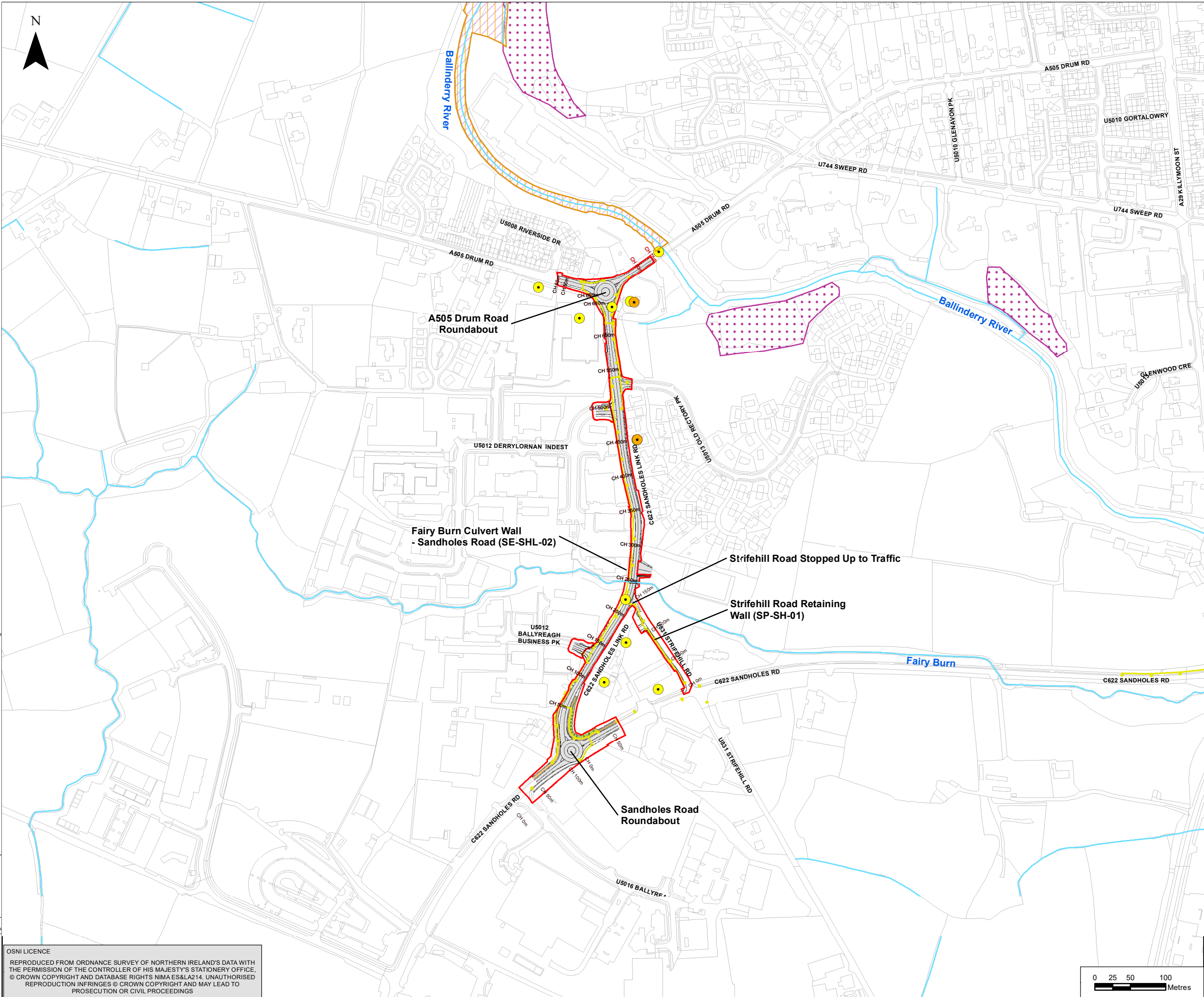
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SITE/PROJECT:
A29 COOKSTOWN BYPASS

TITLE:
**Figure 1:
Proposed Scheme
Overview**

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50m

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SITE/PROJECT: **A29 COOKSTOWN BYPASS**

TITLE: **Figure 1:
Proposed Scheme
Sheet 1 of 4**

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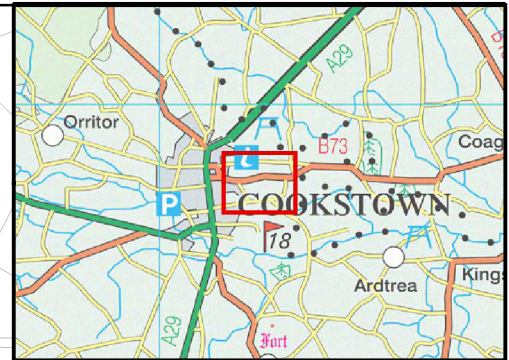
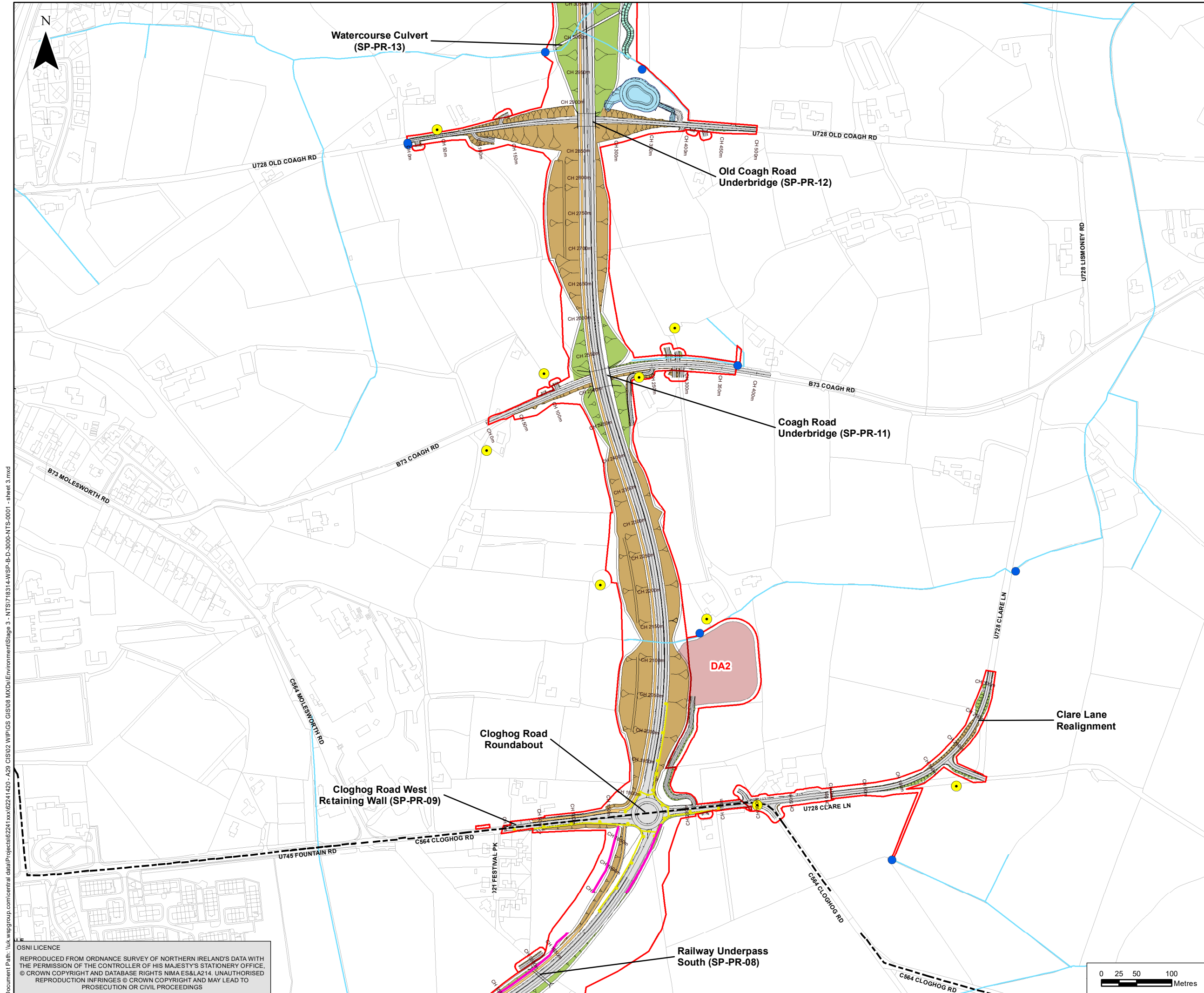
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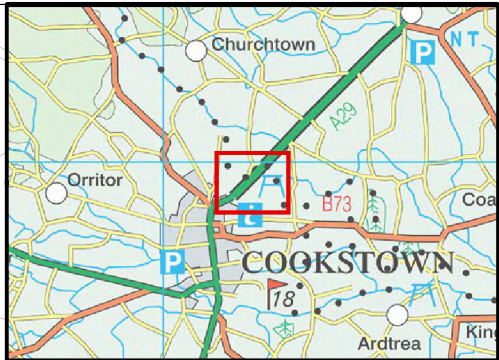
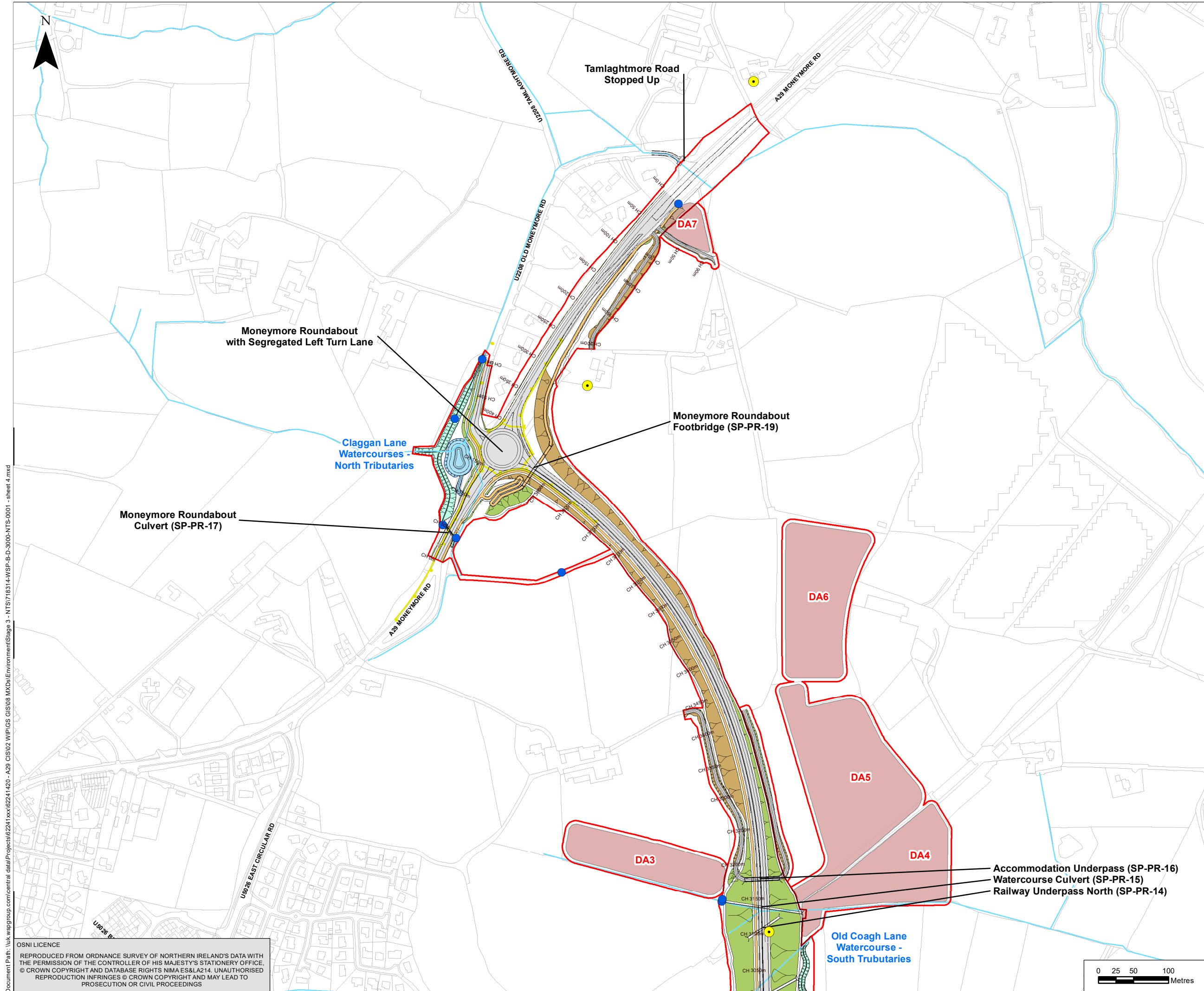
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TITLE: **Figure 1:
Proposed Scheme
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