

Department for Infrastructure – Roads - Environmental Noise Directive Round Three - Noise Action Plan 2019-2023

Environmental Noise Directive

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Department for

Infrastructure

An Roinn

Bonneagair

www.infrastructure-ni.gov.uk

Executive Summary

This Roads Noise Action Plan has been produced for compliance with Round 3 of the Environmental Noise Regulations (Northern Ireland) 2006, referred to hereafter as the Regulations. Annex V of the European Directive for Assessment and Management of Environmental Noise 2002/49/EC, referred to as the Environmental Noise Directive (END), requires that Action Plans must include as a minimum detail under the headings below.

A description of the Major Road and any other noise source taken into account

The thresholds which noise mapping and action planning should be prepared and reported for Round 3 are as follows:

- All Major Roads with more than 3 million vehicle passages per year; and
- All Agglomerations with more than 100,000 inhabitants.

The only Agglomeration considered in Round 3 was the Belfast Agglomeration, which reached the population threshold outlined above and defined in the Regulations. All Roads within the Belfast Agglomeration were modelled in Round 3 with an approximate area of 209km² which represented an 11km² increase on Round 2. This reflected both changes in the definition of the Agglomeration following the 2011 census and creation of new housing developments on the edge of Belfast since 2011.

The Belfast Agglomeration comprises the urban areas of Belfast, Castlereagh, Carrickfergus, Lisburn, Newtownabbey and North Down Local Government Districts.

The data capture for Round 3 resulted in a capture area of 618km² which represented a 3.7% increase from Round 2.

The extent of Major Roads was based on an assessment of roads which were likely to exceed the threshold as set out in the Regulations. Major Roads to be included in Round 3 noise mapping were trunk roads, motorways and classified roads with more than 3 million vehicle passages per year.

Northern Ireland's network of Major Roads is generally focussed on Belfast, including the main radial corridors along the M1, M2, A1 and A6. It also includes the main strategic routes within the Belfast Metropolitan and Derry Urban Areas in addition to short heavily trafficked stretches of the strategic road network in and around several towns across Northern Ireland.

The Authority Responsible

The Regulations set out responsibilities charged to various Competent Authorities with the production of Noise Action Plans, and The Department for Agriculture, Environment and Rural Affairs (DAERA) as the Designated Authority overseeing the implementation. The Regulations state that the Competent Authority for drawing up Action Plans for roads is The Department for Infrastructure (DfI).

The Legal Context

The END was implemented in Northern Ireland by the Environmental Noise Regulations (NI) 2006, which outline the stages to manage and, where necessary, improve environmental noise conditions.

Limit Values

Currently there are no noise limit values set under the END for the UK. DAERA has recommended that the most appropriate approach is that of The Department for Environment, Food and Rural Affairs (DEFRA) and the Welsh Assembly Government in investigating Important Areas for potential action in relation to noise from roads by determining:

- Where the 1% of the population that are affected by the highest noise levels are located; and

- Where the analysis has revealed that for Northern Ireland these locations are where the $L_{A10,18h}$ indicator is at least 75dB.

Summary of Results

Noise maps were generated from Round 3 data and then investigated using a series of analytical tools needed to sift and manipulate through the data. The Major Roads total population was based on 437,852 people (180,149 dwellings) in Northern Ireland above 50dB for $L_{A10,18h}$. 1% is therefore around 4378 people (1801 dwellings).

The number of people and dwellings affected in the area defined as above 75dB $L_{A10,18h}$ is 6,357 people and 2,382 dwellings, therefore the 1% of the population most affected by road noise equates approximately to those dwellings which are affected by noise ≥ 75 dB $L_{A10,18h}$.

A list of Candidate Noise Management Areas (CNMAs) was prepared based on the number of people exposed to different noise levels and the number of buildings affected.

Estimate of the Number of People Exposed to Noise and Identify Problems for Improvement

This Roads Noise Action Plan provides an overview of the results of the Round 3 END dwelling and population analysis for Major Roads across Northern Ireland and outside of the Belfast Agglomeration, and All Roads within the Belfast Agglomeration.

The DfI Divisions have identified Candidate Noise Management Areas (CNMAs) across Northern Ireland based on the Noise map data for Round 3.

Within the Belfast Agglomeration, there are a total of 25 CNMAs. Outside of the Belfast Agglomeration there are a total of 28 CNMAs located in the towns and cities of Armagh, Banbridge, Ballynahinch, Crossgar, Lurgan, Newry, Newtownards, Fivemiletown, Clogher, Lisnaskea, Londonderry, Moneymore, Moy, Maguiresbridge, Ballymagorry, Omagh, Ballymena, Broughshane, Coleraine and Dungiven.

Public Consultation

The Competent Authority is required to undertake a formal consultation exercise with various stakeholders.. In addition, hard copies of this Roads Noise Action Plan are to be made available at all DfI Roads divisional headquarters.

Existing Noise Reduction Measures

On a strategic and local scale, DfI Roads currently considers ways to manage and mitigate road noise in accordance with the following guidance documents:

- Transport Analysis Guidance (TAG) published by the Department for Transport;
- Design Manual for Roads and Bridges (DMRB) Volume 11, Environmental Assessment;
- Roads Service Policy and Procedure Guide: RSPPG_E030 Major Works Schemes – Inception to Construction; and
- Noise Insulation Regulations (NI) 1995.

Actions which the Competent Authority intends to take in the next 5 years

The potential mitigation measures identified in the Noise Action Plan have been reviewed in detail with consideration of timescale of implementation, funding availability and powers available through DfI. As a result, the CNMAs have been grouped on the following basis:

- Potential mitigation to be implemented by DfI within the next five years (2019 to 2023), subject to the necessary funding being made available; and
- Potential mitigation outside the control of DfI.

In addition to the above review, this Action Plan provides an outline programme and high level cost estimate of implementation of the recommended mitigation, where possible. All mitigation requires the necessary studies and consultation to be successfully undertaken, along with the required funding.

Long Term Strategy

This Plan is over a five-year period between 2018 and 2023 up to the next round of noise mapping and action planning. However, environmental noise needs to be managed in a cost-effective manner as part of a long-term strategy which runs beyond each five-year Action Plan.

For all the CNMA's DfI will monitor, alongside the planning departments of local councils, and if developments are proposed within these designated areas, any mitigation measures will be assessed as part of the design and planning process for implementation. To ensure that the overall aims of the END and this Action Plan are fully realised, noise issues need to be carefully considered through the planning system for specific development proposals and at a more strategic scale through the production of development plans. There needs to be a transparent relationship between the planning system and the END, allowing local planning policy to reflect this.

<https://apps.daira-ni.gov.uk/noisemapviewer/index.html>

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Glossary

Agglomeration	Major Continuous Urban Area as set out in the Regulations
CNMA	Candidate Noise Management Area
CRTN	Calculation of Road Traffic Noise
dB	Decibel
dB(A) / L_{A10, 18h}	The arithmetic mean of the A-weighted noise levels exceeded for 10% of the time in each of the eighteen 1-hour periods between 06:00 and 24:00
dB L_{Aeq,16h}	The equivalent outdoor sound pressure level associated with a particular type of noise source during daytime outside an exposed window façade for 16 hours, calculated over a period of a year
dB L_{den}	Annual Average Day-Evening-Night Noise Rating Level over 24hrs
dB L_{day}	Annual Average 12-hr daytime noise level between 07:00 and 19:00
dB L_{eve}	Annual Average 4-hr evening noise level between 19:00 and 23:00
dB L_{night}	Annual Average 8-hr night noise level between 23:00 and 07:00
Defra	Department for Environment, Food and Rural Affairs
DAERA	Department of Agriculture, Environment and Rural Affairs
Dfi	Department for Infrastructure
DMRB	Design Manual for Roads and Bridges

EC	European Commission
END	Environmental Noise Directive (2002/49/EC)
EU	European Union
First Round	First Round noise modelling for the Environmental Noise Regulations (NI) - 2006
NIENDSG	Northern Ireland Environmental Noise Directive Steering Group
NISRA	Northern Ireland Statistics and Research Agency
NPPF	National Planning Policy Framework
PPG	Planning Policy Guidance
PPS	Planning Policy Statement
RSPPG	Roads Service Policy and Procedure Guide
Second Round	Second Round noise modelling for the Environmental Noise Regulations (NI) - 2006
Third Round	Third Round noise modelling for the Environmental Noise Regulations (NI) - 2006
TAG	Department for Transport's 'Transport Analysis Guidance'
Translink	The main public transport service provider for Northern Ireland
WHO	World Health Organisation

1. Introduction

1.1. Purpose

- 1.1.1 This document presents the Noise Action Plan for Round 3 which details how the Department of Agriculture, Environment and Rural Affairs (DAERA), in conjunction with the Department for Infrastructure (DfI), propose to deliver their obligations under the European Directive for Assessment and Management of Environmental Noise 2002/49/EC¹. This Roads Noise Action Plan deals with noise from both Major Roads² across Northern Ireland and All Roads within Agglomerations of greater than 100,000 inhabitants³.
- 1.1.2 The European Directive for Assessment and Management of Environmental Noise 2002/49/EC, more commonly referred to as the Environmental Noise Directive (END), was transposed into Northern Ireland (NI) regulations through the Environmental Noise Regulations (NI) 2006⁴.
- 1.1.3 The END requires Competent Authorities to review (and revise, if necessary) Noise Action Plans every 5 years and whenever a 'major development' that affects the current noise situation occurs. This Round 3 Action Plan constitutes the 5-year review and covers the period from 2019 to 2023. The thresholds set by the END remain unchanged between Round 2 and Round 3. The Round 3 Action Plan principally deals with the identification of noise impacts and Candidate Noise Management Areas, along with proposals for treating these.
- 1.1.4 This document is one of a set of five Action Plans, the others being:
- The Railways Noise Action Plan;
 - The Industrial Noise Action Plan;
 - The George Best City Airport Noise Action Plan; and
 - The Belfast International Airport Noise Action Plan.

1.2. Objectives of the Environmental Noise Directive

- 1.2.1 The END emerged from the recognition that, although there had been European-wide controls on noise generated by individual vehicles for many years, the increasing number of vehicles being used meant that there was no reduction in the resulting noise exposure.
- 1.2.2 The END relies on computer modelling technology to support the development of noise maps and Action Plans, and as this technology has developed the process of data collection has evolved. The Directive does require a strategic approach to assessment and therefore the use of common noise indicators (L_{den} and L_{night}) and common methodology.
- 1.2.3 The three main objectives of the END are:
- To determine exposure to environmental noise through noise mapping;

¹ Official Journal of the European Communities. *Directive 2002/49/EC of the European Parliament and of the Council of 25 June 2002 relating to the assessment and management of environmental noise*. Available from: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2002:189:0012:0025:EN:PDF> Accessed 5 April 2018.

² Trunk Roads, Motorways and Classified Roads with more than 3 million vehicle passages per year as set out within Regulation 3 of The Environmental Noise Regulations (NI) 2006.

³ Major continuous Urban Area having a population in excess of 100,000 persons as set out within Regulation 3 of The Environmental Noise Regulations (NI) 2006.

⁴ Environmental Noise Regulations (Northern Ireland) 2006, No. 387. Northern Ireland: Stationary Office; 2006.

- To ensure information on environmental noise and its effects is made available to the public; and
 - To adopt Action Plans based upon the mapping results, to prevent and reduce environmental noise where necessary, where exposure levels can induce harmful effects on human health and to preserve good environmental noise quality.
- 1.2.4 As outlined, the END was published and translated into NI regulations in 2006, through the Environmental Noise Regulations (the 'Regulations'). The Regulations apply to noise from roads, railways, airports and industrial sources. The Regulations do not apply to noise that is caused personally by the exposed person, noise from domestic or work activities or noise created by neighbours.
- 1.2.5 In line with the Regulations, the following organisations and key partners will be involved in action planning for roads:
- Department for Infrastructure (DfI);
 - Department of Agriculture, Environment and Rural Affairs (DAERA);
 - Northern Ireland Environment Agency (NIEA); and
 - District Councils.
- 1.2.6 In 2005, DAERA (under its previous incarnation as the Department of the Environment DoE), set up the Northern Ireland Environmental Noise Directive Steering Group (NIENDSG), which is made up of individuals from DAERA, DfI Roads, and Northern Ireland Environment Agency (NIEA). The Group was set up to enable DAERA to develop strategic noise maps, Action Plans and a methodology with robust criteria. Any guidance from the Group should be considered by DAERA and the competent authorities in the formulation of the action plans.

1.3. Role and Responsibilities of Designated Bodies

- 1.3.1 In 2013 DAERA published technical guidance⁵ to help Competent Authorities in the interpretation of each round of noise maps and the preparation of subsequent action plans. The technical guidance sets out the proposed mechanisms and arrangements for the implementation of Action Plans and aims to inform the public, guide Competent Authorities, and provide a framework for all organisations involved in noise mapping and action planning.
- 1.3.2 The Regulations require the Designated Authority (DAERA) and the Competent Authorities to undertake noise mapping of roads, railways, airports and industry every five years, or in the interim, if a major development⁶ affecting the current noise situation occurs. The work commenced with the First Round of Mapping, which was completed by 31 March 2007, and continued with the Second Round of Mapping, which was completed on 30 April 2013.
- 1.3.3 The Competent Authorities are DfI (roads), Northern Ireland Transport Holding Company / Translink (rail), Belfast International Airport and George Best Belfast City Airport (air), and DAERA (industry). The Designated Authority, in this case DAERA, is responsible for ensuring that the Action Plan is developed. However, the necessary powers to implement the actions may rest with other bodies, such as DfI for the Roads Noise Action Plan.

1.4. Programme of Implementation

- 1.4.1 **Table 1** outlines the programme of implementation relating to noise mapping and action planning. Round 1 and Round 2 noise maps have been completed and are published on the Northern Ireland Noise Map

⁵ Department of the Environment. Noise Mapping and Action Planning Technical Guidance Noise from Roads. Belfast; 2013.

⁶ For more information on what constitutes a major development, please see the Technical Guidance document.

website⁷. All Round 1 and Round 2 Action Plans (roads, railways, industries, Belfast International Airport and Belfast City Airport) have been agreed and adopted by the Minister following public consultation.

Table 1: Programme of Implementation

Stage	Detail	Status
1	Produce the First Round of strategic noise maps for Major Roads, rail, airports and Agglomerations	Completed
2	Competent Authorities to draw up First Round Action Plans to manage noise	Completed
3	Produce the Second Round of strategic noise maps for Major Roads, rail, airports and Agglomerations	Completed
4	Competent Authorities to draw up Second Round Action Plans to manage noise	Completed
5	Produce the Third Round of strategic noise maps for Major Roads, rail, airports and Agglomerations	Completed
6	Competent Authorities to draw up Third Round Action Plans to manage noise	Ongoing

1.4.2 Round 3 noise maps have been published⁸ and this document constitutes the Round 3 Action Plan. Based on the results of the noise mapping exercise, Competent Authorities are required to develop Action Plans which prioritise how they will deal with areas where noise levels are considered high. Action Plans must comply with Annex V of the Directive and be drawn up and submitted to DAERA as Designated Authority in Northern Ireland with overall responsibility for monitoring compliance with the Regulations. This includes a full Consultation process undertaken by each of the Competent Authorities.

1.4.3 DAERA, along with the other Competent Authorities, have developed a methodology to determine:

- Noise map assessment criteria;
- Candidate Noise Management Areas; and
- An assessment of previously identified Quiet Areas.

1.4.4 The requirement to examine quiet areas within Agglomerations is primarily managed by DAERA.

1.4.5 The Regulations place a duty on DAERA to review, approve, adopt and submit summaries of the Competent Authorities' Action Plans and produce a consolidated noise map and Action Plan for multiple noise sources across Northern Ireland. For Round 3 this needs to be submitted to the European Commission no later than 18 January 2019.

1.4.6 Once adopted the Competent Authority should treat this Action Plan as policy under the Regulations and the content of the Action Plan should be a material consideration for other decision-making bodies, such as the Planning Service.

1.5. Layout of Roads Noise Action Plan

1.5.1 The Action Plan should meet the requirements of Schedule 4 of the Regulations and Annex V of the END, and must include as a minimum the tasks listed in **Table 2**.

⁷ Available from <https://www.daera-ni.gov.uk/services/noise-maps>. Accessed 5 April 2018.

⁸ Available from: <https://www.daera-ni.gov.uk/publications/round-3-noise-maps-and-noise-mapping-technical-reports>. Accessed 24 April 2018.

Table 2: Layout of the Roads Noise Action Plan - Round 3

Task	Location in Action Plan*
A description of the major road and any other noise sources considered.	Section 4.1
The authority responsible.	Section 3.1
The legal context.	Section 3.2
Any limit values in place.	Section 3.5
A summary of the results of the noise mapping.	Section 5
An estimate of the number of people exposed to noise and identify problems and situations that need to be improved.	Section 5.4
A record of public consultations organised in accordance with END Article 8(7).	Section 7
Any noise reduction measures already in force and any projects in preparation.	Section 6
Actions which the Competent Authority intends to take in the next 5 years, including measures to preserve quiet areas.	Section 6
Long term strategy	Section 8
Financial information (if available): budgets, cost-effectiveness assessment, cost-benefit assessment; and.	Section 8, 6.2 and Table 15
Provisions envisaged for evaluating the implementation and the results of the Action Plan.	Section 8

* It is noted that the completion of some tasks will be after consultation and on development of the Final Roads Noise Action Plan.

2. Noise Reduction Measures

2.1. Measures

2.1.1 **Table 3** shows details of the noise reduction measures including schemes that have contributed to the reduction of noise since Round 2.

Table 3: Noise reduction measures undertaken since Round 2

Measure	Comment
Shannaragh Improvement Scheme	Road realignment scheme between Dromore and Omagh (County Tyrone) which opened in 2013. Noise mitigation in the form of low noise surfacing was provided throughout the scheme which was 2.1 kilometres in total. In addition, an acoustic barrier was provided at 1 property as part of the accommodation works agreement. This was in the form of a 2m high timber reflective type acoustic barrier which was 50m in length.
A31 Magherafelt Bypass	The A31 Magherafelt Bypass was completed in October 2016. The Environmental Statement Non-Technical Summary (NTS) for the scheme states that relatively large number of residents living near the existing A31 would benefit from a reduction in traffic noise levels because of the Magherafelt Bypass moving the traffic noise away from the town.
Promoting active travel	Active travel is promoted by the Public Health Agency and other government bodies to promote cycling and walking. An Active Travel Plan ⁹ is in place with a vision to put walking and cycling at the heart of local transport, public health and well-being and wider government strategies for the benefit of society, the environment and the economy.
Cycleways	Various cycleway schemes have been built, including the Comber Greenway widening scheme which was opened in March 2018. Shared bus and cycle lanes as well as city centre cycle lanes have been introduced since Round 2 to provide quieter alternatives to travel.
Belfast Bike Hire scheme	DfI provided funding to the bike hire scheme which began operation in April 2015. Cycling is one of the most sustainable modes of transport, helping to reduce car usage and congestion and therefore improving the environment.
Electric vehicles	Since Round 2, DfI has increased the number of electric car charging points throughout Northern Ireland which follows on from the UK Government's 'Road to Zero' Strategy which includes an ambition to see at least half of new cars to be ultra-low emission by 2030.
Belfast Rapid Transit (BRT)	DfI has identified that the development of the BRT system has the potential to reduce traffic noise levels by encouraging a shift away from the private car. At the time of writing (July 2018) construction of the BRT scheme is nearing completion and the scheme is formally due to open in September 2018. It is hoped that BRT would make a meaningful contribution to reducing traffic volumes. The BRT bus lanes will also move general traffic further away from properties during the operational hours (7am – 7pm). The service will be operated using Glider vehicles which will use the latest diesel-electric hybrid engine technology delivering a smoother take off from halts, lower noise, reduced vibration and lower emissions.

2.1.2 **Table 4** shows details of the proposed noise reduction measures with a planned implementation date identified during the next 5 years, i.e. between 2018 and 2023.

⁹ Department for Regional Development. Building an active travel future for Northern Ireland. Belfast: DRD; 2013

Table 4: Noise reduction measures identified during next 5 years

Improvement	Comment
York Street Interchange	The proposed York Street Interchange is currently in planning and its implementation depends on the availability of finance. The purpose of the scheme is to provide direct links between the Westlink and the M2 and M3 motorways by creating new underpasses below the existing Lagan Road and Dargan Rail bridges and a new overbridge at York Street. This scheme is expected to address noise issues associated with the new road alignment and at CNMA properties with the construction of a noise barrier.
A5 Western Transport Corridor Dual Carriageway	Construction of the proposed upgrade of the A5 in the west of Northern Ireland from the Irish border near Aghnacloy, via Omagh and Strabane to New Buildings is scheduled to be built in a phased delivery programme leading to scheme completion in 2028. Noise mitigation for the Proposed Scheme includes 2m high acoustic fencing to reduce traffic-related noise at 9 locations along the Proposed Scheme corridor and the use of low-noise surfacing on the main carriageways.
Black's Road 'Park & Ride'	Construction of the extension to the existing 'Park & Ride' facility at Black's Road is taking place (July 2018) to cope with additional demand, and new facilities are planned for Tillysburn. These two schemes are expected to contribute to reducing traffic volumes and hence traffic noise levels.
Cycleways	New off-road cycling infrastructure is currently (July 2018) being constructed to link Sprucefield Park & Ride to Lisburn and on to Belfast.
A6 Randalstown to Castledawson Dualling	The purpose of this scheme is to dual around 15km of the A6 from the M22 at Randalstown to the start of the Toome Bypass, and from the end of the Toome Bypass as far as the Castledawson Roundabout. The Randalstown to Toome section opened to traffic in August 2019 and the Toome to Castledawson section opened to traffic in November 2020 with the full scheme due to be completed in spring 2021.
A6 Derry to Dungiven	The Regional Strategic Transport Network Transport Plan (RSTN TP) 2015 endorsed the provision of a 30 km dual carriageway from Derry to Dungiven, including a dual carriageway bypass of Dungiven. The scheme complements the Ilex Regeneration Plan for Derry and the wider North West. The scheme will reroute through traffic away from the Dungiven CNMA, therefore reducing traffic volume and percentage of heavy goods vehicles. The scheme will also be constructed using low noise surfacing material. Construction of the 25.5km section from Dungiven to Drumahoe commenced in September 2018 and is scheduled for completion in 2022.
Movilla Road to Donaghadee Road and Bangor Road Link, Newtownards	The scheme to construct a link road connecting the Movilla Road to Donaghadee Road, and on to the A21 Bangor Road, round the north-east of Newtownards commenced in 2016. Although a section of the scheme has commenced construction, it is expected to take up to 10 years for the full scheme to be built. Once complete the scheme is expected to address noise levels in the Newtownards CNMA.
Ballykelly Bypass	The preferred route for the Ballykelly bypass scheme, announced on 6 March 2010, provides for a 4.2km dual carriageway bypass south of the village. The bypass begins at a new roundabout on the Ballykelly Road east of the village, skirting around the south of the village before re-joining the Clooney Road at a new roundabout west of the village. Once funding becomes available, work will resume to complete the design and assessment of the bypass and publication of Draft Statutory Orders and Environmental Statement.
Ballymena North and West Distributor Road	There are proposals for the Ballymena North and West Distributor Road which will redistribute traffic and allow alternative route options for accessing the town centre. Currently these proposals are contained in the Sub-Regional Transport Plan (SRTP) 2015. The implementation of measures proposed in the SRTP is subject to appropriate economic appraisal, any relevant statutory procedures such as environmental assessment, planning and land acquisition and the availability of funding.
Armagh North and West Link Road	The Armagh North and West Link Road is for the provision of a single carriageway road, approximately 6.9 km long, extending around the northern and western outskirts of the City of Armagh, linking between the A3 Portadown Road and the A3

	Monaghan Road. Consideration of options for a preferred line and junction strategy based on the 'out of town' corridor, published in July 2008, is continuing. However, an update from 2016 states that 'it would not be appropriate to decide on the preferred route at this time, pending confirmation of proposals for the Mullinure shared education campus highlighted in the draft Armagh City Centre Masterplan 2030'.
Armagh East Link Road	The proposal is for the provision of a 2.25km long single carriageway Armagh East Link Road from A3 Portadown Road to A28 Markethill Road. The selection of the preferred alignment and junction options has been completed.

2.1.3 As for all the schemes requiring further assessment and development of Draft Statutory Orders, a complete appraisal will be undertaken in line with the Department for Transport's Transport Analysis Guidance and the Design Manual for Roads and Bridges. This will include appraisal in terms of environment, economy, engineering, traffic and social objectives.

2.2. Quiet Areas

2.2.1 In 2016 DAERA published guidance on the identification, designation and management of Quiet Areas¹⁰. Action plans should protect areas that are already quiet against an increase in noise. A quiet area is defined in the END as: an area which is not exposed to an L_{den} noise level greater than a certain value. The selection criteria are like those adopted by the other parts of the UK and Republic of Ireland. The criterion are:

- Land type filter - publicly available parks and open space within an agglomeration;
- Noise level filter - Noise levels less than 55 dB L_{den} ; and
- Minimum area filter - Minimum area of 5 hectares.

2.2.2 Once quiet areas have been formally designated, district councils should manage the noise environment either by monitoring the noise levels or by reviewing the Round 3 noise maps. Councils should undertake any necessary mitigation measures (e.g. acoustic barriers) and take enforcement action in situations where noise levels have become unacceptable i.e. above 55 dB L_{den} .

2.2.3 Councils can protect Quiet Areas by:

- Bringing forward bespoke policy in their local development plans; and
- Managing development through determining planning applications and taking cognisance of the third aim of NPSE i.e. to contribute to the improvement of health and quality of life.

2.2.4 In addition to the protection through the planning system, competent authorities may adopt measures such as noise limits or traffic management systems, to prevent noise increases having an adverse effect on quiet areas. Competent authorities may also need to review their Action Plans following the designation of Quiet Areas to ensure that there is no conflict and that they are taking sufficient action to prevent an increase in noise from the sources for which they have responsibility.

2.2.5 Three quiet areas were designated by the Minister on 20 September 2016 which are:

- Conor Park/Stricklands Glen, Bangor West, North Down - 5.37 hectares
- Bashfordlands, Carrickfergus - 10.93 hectares; and
- Carnmoney Hill - Upper Newtownabbey - 16.70 hectares

2.2.6 The location of the three quiet areas are shown on Drawing Number RNAP-001 in Appendix A.

2.2.7 A review has been undertaken of the three designated quiet areas using the noise maps for Round 3 and they remain below 55 L_{den} . Therefore, for this Round the three quiet areas are to remain as designated.

¹⁰ DAERA. *Policy Guidance on the Identification, Designation and Management of Quiet Areas*. Belfast: DAERA; 2016

2.2.8 The Department has also consulted the public on the designation of Lagan Meadows as a quiet area and the consultation is now closed. However, at the time of writing (July 2018) Lagan Meadows has not been formally designated as a quiet area.

3. Regulatory and Policy Framework

3.1. The Authority Responsible

- 3.1.1 The Regulations set out responsibilities charged to various Competent Authorities with the production of Noise Action Plans, and DAERA as Designated Authority overseeing the implementation. The Regulations state that the Competent Authority for drawing up Actions Plans for roads is DfI.

3.2. European Policy

- 3.2.1 Environmental noise is one of the main environmental problems in Europe and the source of increasing complaints by the public. Previously, action to reduce environmental noise has had a lower priority than other environmental problems such as water and air pollution. However, the 1993 Fifth Action Programme¹¹ started to remedy this and included several basic targets for noise exposure to be reached by the year 2000.
- 3.2.2 The 1996 European Union (EU) Green Paper on Future Noise and Policy¹² was the first step in the development of such a programme and confirmed that environmental noise caused by traffic, industry and recreation is one of the main local environmental problems across Europe. The Paper was the start of development of noise policy with the aim that no person should be exposed to noise which endangers health and quality of life.
- 3.2.3 As more information on the health impacts of noise emerged, it became clear that global measures would be the most cost-effective way to address them, and the need for a higher level of protection of EU citizens through EU-wide measures became more imminent. Following this the EU Commission adopted a proposal in 2000 which led to the European Parliament and Council adopting Directive 2002/49/EC, relating to the assessment and management of environmental noise on 25 June 2002, known as the Environmental Noise Directive. The END became one of the main instruments to identify noise pollution levels and initiate the necessary action both at Member and at EU level.
- 3.2.4 The END aims to 'define a common approach intended to avoid, prevent or reduce on a prioritised basis the harmful effects, including annoyance, due to the exposure to environmental noise'. Furthermore, it aims at providing a basis for developing EU measures to reduce noise emitted by major sources, in particular road and rail vehicles and infrastructure, aircraft, outdoor and industrial equipment and mobile machinery.
- 3.2.5 The END places the requirement on Member States to produce strategic noise maps for the main sources of environmental noise, i.e. major roads, major railways and major airports. For the First Round in 2007, the END required strategic maps to be produced for agglomerations with a population of more than 250,000 persons and a certain population density. The second and subsequent rounds requires Member States to produce strategic maps for agglomerations of more than 100,000 persons and a certain population density¹³. Action Plans must be produced based on the noise mapping.
- 3.2.6 Article 3 of Directive 85/337/EEC (as amended) on the assessment of the effects of certain public and private projects on the environment, requires Member States to assess the effect of noise, among other aspects, from specific projects including new roads¹⁴. It provides the basis of the assessment process in terms of Environmental Impact Assessments for specific road schemes.

¹¹ European Union. *Fifth European Community environment programme: towards sustainability*. Available from: <http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=LEGISSUM:l28062>. Accessed 9 April 2018.

¹² European Union. *Future Noise Policy. European Commission Green Paper*. Available from <http://www.nonoise.org/library/eunoise/greenpr.htm>. Accessed 9 April 2018.

¹³ The population density, specified within the NI Regulations, is equal to or greater than 500 people per km².

¹⁴ For more information see <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31985L0337>. Accessed 9 April 2018.

- 3.2.7 The World Health Organisation (WHO) has published day and night time guidelines for the protection of the public and their health from environmental noise. The health-based guidelines are widely used and are a basis for deriving noise standards within a framework of noise management. The WHO states that 'growth in noise pollution is unsustainable because it involves direct, as well as cumulative, adverse health effects.'¹⁵ The WHO's Night Noise Guidelines for Europe¹⁶ recommends a target of 40 dB $L_{\text{night, outside}}$ to protect the public, including the most vulnerable groups such as children and the elderly. Where this target cannot be reached the level of 55 dB $L_{\text{night, outside}}$ is recommended as an Interim Target.
- 3.2.8 Research from 2014 has shown that exposure to noise particularly at night can lead to disrupted sleep which can lead to cardiovascular health problems. For example, exposure to environmental noise can prevent blood vessels from relaxing to restore themselves overnight which can lead to hardening of the arteries and cardiovascular diseases such as heart attacks and strokes¹⁷. A report from 2013 suggested that exposure to noise levels above recommended levels (55dB $L_{\text{Aeq, 16h}}$) resulted in an additional 1169 cases of dementia, 788 cases of stroke and 542 cases of heart attack in the UK over the course of a single year¹⁸.
- 3.2.9 A study from 2013 suggested that vulnerable groups including children, the elderly and children with autism, asthma and attention deficit hyperactivity disorder may be more at risk from exposure to environmental noise than healthy adults¹⁹. Another study investigated the impact of road traffic noise on 10-year-old children's mental health and behaviour and found that children living close to busy roads displayed an increased risk of hyperactivity and inattention²⁰. Sleep disturbance is thought to have the greatest effect on health and a recent study suggested that exposure to high noise levels at night may have a greater impact on long-term health than noise exposure during the day²¹.

3.3. UK Policy

- 3.3.1 The UK Government Sustainable Development Strategy²² refers to the components of sustainable communities as embodying the principles of sustainable development. The communities would be, in addition to other aims of the Strategy, environmentally sensitive allowing residents to live a lifestyle that minimises negative environmental impact and enhances positive impacts, for example, through the reduction in noise pollution and dependence on cars.

¹⁵ World Health Organisation. *Guidelines for Community Noise*. Geneva: World Health Organisation; 1999.

¹⁶ World Health Organisation. *Night Noise Guidelines for Europe*. Copenhagen: World Health Organisation; 2009.

¹⁷ Münzel, T., Gori, T., Babisch, W. and Basner, M. *Cardiovascular effects of environmental noise exposure*. *European Heart Journal*. DOI:10.1093/eurheartj/ehu030. 2014

¹⁸ Harding, A-H, Frost, G. A., Tan, E. & Tsuchiya, A. *The cost of hypertension-related ill-health attributable to environmental noise*. DOI: 10.4103/1463-1741.121253 *Noise & Health*. 2013; 67 (15): 437-445.

¹⁹ van Kamp, I. and Davies, H. *Noise and health in vulnerable groups: A review*. DOI: 10.4103/1463-1741.112361 *Noise and Health*. 2013; 15(64): 153-159.

²⁰ Tiesler, C.M.T., Birk, M., Thiering, E. et al. *Exposure to road traffic noise and children's behavioural problems and sleep disturbance: Results from the GINIplus and LISAplus studies*. DOI: 10.1016/j.envres.2013.01.009 *Environmental Research*. 2013; 123: 1–8.

²¹ Basner, M., Babisch, W., Davis, A. et al. *Auditory and non-auditory effects of noise on health*. DOI: 10.1016/S0140-6736(13)61613-X. *The Lancet*. 2014; 383: 1325-1332.

²² HM Government. *Securing the Future - Delivering the UK Sustainable Development Strategy*. Norwich: The Stationary Office; 2005.

- 3.3.2 The National Planning Policy Framework²³ (NPPF) was revised in July 2018 and promotes sustainable development, stating that 'transport issues should be considered from the earliest stages of plan-making and development proposals' to ensure that 'the environmental impacts of traffic and transport infrastructure can be identified, assessed and considered – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains.
- 3.3.3 In terms of noise the NPPF is specific about new development and the control of the impact on the existing noise environment, and states that planning policies and decisions should aim to:
- mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development - and avoid noise giving rise to significant adverse impacts on health and quality of life; and
 - identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.
- 3.3.4 In 2010, Department for Environment, Food and Rural Affairs (Defra) released the Noise Policy Statement for England²⁴ (NPSE) whose aims for the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development are:
- to avoid significant adverse impacts on health and quality of life;
 - to mitigate and minimise adverse impacts on health and quality of life; and
 - where possible, contribute to improvement of health and quality of life.
- 3.3.5 In 2014 DAERA published the Noise Policy Statement for Northern Ireland²⁵ (NPSNI) which is in line with the aims of the NPSE.
- 3.3.6 Defra has an important research programme which looks at how people subjectively assess noise and what they regard as nuisance, as well as various technical aspects of noise management. Research such as National Noise Attitude Surveys and reports on Noise and Health in the UK. The 2001 UK-wide National Noise Attitude Survey revealed that noise was ranked as the fourth highest pollutant of concern to residents in Northern Ireland²⁶.

3.4. Local Policy

- 3.4.1 The Environmental Noise Regulations (NI) 2006 apply to environmental noise in built-up areas, public parks or other quiet areas in agglomerations and other noise-sensitive buildings and areas. The Regulations apply to noise from road, railway and airport sources, as well as industrial noise, and require the Competent Authorities to produce an Action Plan in 2008, 2013 and every five years thereafter, based on the results of the noise mapping. In between this time, the Regulations require the noise maps to be reviewed and revised whenever a major development occurs affecting the noise situation. When assessing what constitutes a major development, competent authorities should consider the extent to which the development alters the

²³ Department for Communities and Local Government. *National Planning Policy Framework*. London: Department for Communities and Local Government; 2018.

²⁴ Department for Environment, Food and Rural Affairs. *Noise Policy Statement for England*. London: DEFRA; 2010. Available from <https://www.gov.uk/government/publications/noise-policy-statement-for-england> <https://www.daera-ni.gov.uk/consultations/noise-policy-statement-northern-ireland-npsni>. Accessed 11 April 2018.

²⁵ Department for the Environment. *Noise Policy Statement for Northern Ireland* Available from <https://www.daerani.gov.uk/sites/default/files/publications/doe/noise-policy-statement-ni.PDF> Accessed 11 April 2018. Belfast: DoE; 2014.

²⁶ For more information see www.defra.gov.uk. Accessed 11/04/2018.

conclusions of the overall noise impact from road traffic. Examples of major developments include the opening of a new bypass, national road, motorway, mineral workings or waste facilities; or the opening of a large new residential area.

- 3.4.2 The Environmental Noise Regulations do not apply to noise caused by the person exposed to noise from domestic activities, noise created by neighbours, noise at work places, noise inside means of transport or due to military activities in military areas. Noise from domestic activities or noise created by neighbours or construction sites are dealt with under the Pollution Control and Local Government (NI) Order 1978²⁷, and Noise at work is governed by the Control of Noise at Work Regulations (NI) 2006²⁸.
- 3.4.3 If a proposed development is likely to be a source of noise or result in a change of noise level, the threshold and timing of any noise emissions may be controlled through the planning system. Existing sources of noise such as rail or road traffic are not subject to planning control, however they would generally be considered in the context of proposed development which may be affected by such sources.
- 3.4.4 Part II of the Land Acquisition and Compensation Order (NI) 1973²⁹ makes provision for the payment of compensation for property depreciation caused by certain physical factors. One such factor is noise whereby a property's exposure to noise may increase following the completion of a nearby road scheme. The Order provides a right for homeowners to claim compensation where the value of an interest in land is depreciated by noise caused using public works. The compensation must relate to the depreciation in value caused by the noise and other physical factors associated with the traffic using the road and not to the physical existence of the road.
- 3.4.5 The power to provide insulation is given in the Noise Insulation Regulations (NI) 1995³⁰, made under Article 22 of the Order. The aim of the Regulations is to enable residents subjected to increased traffic noise at or above a specified level arising directly from using the new road, to benefit from grants for provision of noise insulation. Insulation may also be installed against increased traffic noise arising directly from certain altered roads and against construction noise.
- 3.4.6 Industrial noise due to Part A process as defined within the Pollution Prevention and Control (NI) Regulations 2003³¹ is controlled under those Regulations by the NIEA. The NIEA is an Executive Agency within DAERA. As part of its role as a regulator, the NIEA has produced guidance for use in controlling industrial noise, which is used when considering applications for Environmental Permits and inspections of installations.
- 3.4.7 The Regional Development Strategy (RDS) 2035³² sets out to guide the future development of Northern Ireland until 2035, when the population is expected to surpass 2 million. The overarching vision for Northern Ireland contained within the RDS is for 'an outward-looking, dynamic and liveable region with a strong sense of its place in the wider world; a region of opportunity where people enjoy living and working in a healthy

²⁷ Pollution Control and Local Government (Northern Ireland) Order 1978, No. 1049 (NI 19). Belfast: Stationary Office; 1978. Available from <http://www.legislation.gov.uk/nisi/1978/1049/contents>. Accessed 11 April 2018.

²⁸ The Control of Noise at Work Regulations (Northern Ireland) 2006, No. 1. Belfast: Stationary Office; 2006. Available from <http://www.legislation.gov.uk/nisr/2006/1/contents/made>. Accessed 11 April 2018.

²⁹ Land Acquisition and Compensation Order (Northern Ireland) 1973, No. 1896 (NI 21). Belfast: Stationary Office; 1973. Available from <http://www.legislation.gov.uk/nisi/1973/1896/content.s> Accessed 11 April 2018.

³⁰ Noise Insulation Regulations (Northern Ireland) 1995, No. 409. Belfast: Stationary Office; 1995. Available from <http://www.legislation.gov.uk/nisr/1995/409/contents/made>. Accessed 11 April 2018.

³¹ Pollution Prevention and Control (NI) Regulations 2003, No. 46. Belfast: Stationary Office; 2003. Available from <http://www.legislation.gov.uk/nisr/2003/46/contents/made>. Accessed 11 April 2018.

³² Department for Regional Development. Regional Development Strategy (RDS) 2035. Available from <https://www.infrastructure-ni.gov.uk/publications/regional-development-strategy-2035>. Accessed 11 April 2018.

environment which enhances the quality of their lives and where diversity is a source of strength rather than division’.

- 3.4.8 An aim of the RDS is to reduce noise pollution, stating that noise levels caused by transport which are above comfort levels can aggravate serious direct and indirect health effects. Furthermore, it states that when new developments or plans are being prepared cognisance should be taken of the END which aims to avoid, prevent or reduce, on a prioritised basis, the harmful effects of noise. Mitigation measures relating to transport noise pollution include the need to adapt the existing transport network to facilitate the modal shift away from the car towards modes of transport that allow the reduction of Northern Ireland’s carbon footprint.
- 3.4.9 The RDS is supported by a document entitled Ensuring a Sustainable Transport Future: A New Approach to Regional Transportation³³ which builds on the previous ten-year Regional Transportation Strategy 2002 – 2012³⁴. The vision of the ‘New Approach’ document is: ‘to have a modern, sustainable, safe transportation system which benefits society, the economy and the environment and which actively contributes to social inclusion and everyone’s quality of life’. Unlike the 2002 Strategy, the ‘New Approach’ does not include details of schemes or projects. Rather, the Department has set three high level aims centred on sustainability along with twelve strategic objectives, one of which is to reduce water, noise and air pollution.
- 3.4.10 The Design Manual for Roads and Bridges (DMRB) provides a comprehensive manual system which includes current Standards, Advice Notes and other published documents relating to trunk road works. DMRB Volume 11, Section 3, Part 7, HD 213/11: Noise and Vibration³⁵ provides guidance on the assessment of impacts that road projects may have on noise and vibration levels. It enables assessments to be undertaken in a consistent manner in line with the relevant legislation.
- 3.4.11 The Department for Transport’s Transport Analysis Guidance³⁶ (TAG) provides guidance on the appraisal of major transport schemes, through setting objectives, identifying problems, developing solutions and creating a transport model. The assessment of the potential noise impacts of a scheme is undertaken within the environmental impact appraisal TAG Unit A3³⁷ which calculates the monetary valuation of changes in noise impact to assess the importance of noise relative to other impacts.
- 3.4.12 As and when the detailed noise management measures have been agreed and areas confirmed as Noise Management Areas, these will be assessed in the Final Noise Action Plan in the context of current plans, policies and strategies to establish synergies or conflicts. DAERA will take cognisance of the legislation and guidance referred to here and listed in Appendix B when considering the implementation of any new noise management measure.

³³ Department for Regional Development. Ensuring a Sustainable Transport Future: A New Approach to Regional Transportation. Belfast: DRD; 2011. Available from <https://www.infrastructure-ni.gov.uk/publications/ensuring-sustainable-transport-future-new-approach-regional-transportation>. Accessed 11 April 2018.

³⁴ Regional Transportation Strategy 2002 – 2012. Belfast: DRD; 2002. Available from <https://www.infrastructure-ni.gov.uk/publications/regional-transportation-strategy-2002-2012>. Accessed 11 April 2018.

³⁵ Design Manual for Roads and Bridges Volume 11 Environmental Assessment. Section 3 Environmental Assessment Techniques. Part 7 HD 213/11 Noise and Vibration. Highways Agency et al; 2011. Available from <http://www.standardsforhighways.co.uk/ha/standards/dmrb/vol11/section3/hd21311.pdf>. Accessed 11 April 2018.

³⁶ For more information see <http://www.dft.gov.uk/webtag/documents/project-manager/unit2.7.2.php>. Accessed 11 April 2018.

³⁷ For more information see <https://www.gov.uk/government/publications/webtag-tag-unit-a3-environmental-impact-appraisal-december-2015>. Accessed 22 May 2018.

3.5. Noise Assessment Criteria

- 3.5.1 Currently there are no noise limit values set under the END for the UK with regards to major roads in terms of L_{den} , L_{night} , $L_{evening}$ and L_{day} . However, regulations exist, namely, the Noise Insulation Regulations (NI) 1995 that define a threshold level as part of the eligibility criteria.
- 3.5.2 DAERA has recommended that the most appropriate approach is that of Defra and the Welsh Assembly Government in investigating Important Areas for potential action in relation to noise from roads by determining:
- Where the 1% of the population that are affected by the highest noise levels are located, and
 - Where the analysis has revealed that for Northern Ireland these locations are where the $L_{A10,18h}$ indicator is at least 75dB.
- 3.5.3 Thereby CNMAs were initially identified where the $L_{A10,18h}$ indicator is at least 75dB. The $L_{A10,18h}$ parameter is used in the DMRB and other UK methodologies, therefore it is unlikely that the analysis of results would be different than using another parameter. This Noise Assessment Criteria was approved by DfI Roads on 28 October 2009.

4. Description of the Study Area

4.1. Extent

- 4.1.1 The END requires that Action Plans be designed to manage noise issues and effects at places near Major Roads and at places near All Roads within Agglomerations.
- 4.1.2 Within Agglomerations, the Regulations require the mapping of all road, railway, industry and airport noise regardless of the thresholds. The thresholds for Round 3 are the same as for Round 2 for which noise mapping and action planning should be prepared and reported:
- All Major Roads with more than 3 million vehicle passages per year; and
 - All Agglomerations with more than 100,000 inhabitants.
- 4.1.3 The only Agglomeration considered in Round 3 is the Belfast Agglomeration, which reaches the population threshold outlined above and defined in the Regulations. The roads modelled in the Belfast Agglomeration for Round 3 are presented in Drawing Number RNAP-002 Appendix C and comprise the urban areas of Belfast, Castlereagh, Carrickfergus, Lisburn, Newtownabbey and North Down Local Government Districts. Data obtained from the Northern Ireland Statistics and Research Agency (NISRA) for 2015 shows that the Belfast agglomeration has a population of 597,419, which met the population threshold for Round 3. The data capture for Round 3 resulted in a capture area of 618km² by applying a 3km corridor to the boundary of the Belfast Agglomeration. This represents a 3.7% increase from Round 2³⁸.
- 4.1.4 The second largest urban area is the Derry Urban Area, with data from NISRA showing a population of 91,602 in 2015 and therefore falls below the Round 3 threshold.
- 4.1.5 The extent of Major Roads is based on an assessment of roads which are likely to exceed the threshold as set out in the Regulations. Major Roads to be included in the Third-Round noise mapping are trunk roads, motorways and classified roads with more than 3 million vehicle passages per year and are presented on Drawing Number RNAP-003 in Appendix C.
- 4.1.6 **Table 5** and **Table 6** shows the extent of the data capture areas and length of roads mapped in the three END mapping rounds. **Table 6** shows that there was a 7% increase in the length of roads modelled in Northern Ireland between Round 2 and Round 3. However, it should be stated that this is mainly due to either improved representation of dual carriageways within the model or the inclusion of additional road segments which now meet the requirement of the END.

Table 5: Agglomeration and Major Roads - 3km data capture area extent

Noise source	Round One (km ²)	Round Two (km ²)	Round Three (km ²)	Percentage increase from Round Two (%)
All Roads within the Belfast Agglomeration	596	596	618	3.7
Major Roads (outside the Belfast Agglomeration)	1,582	4,460	4,574	2.6
Total Area	2,178	5,056	5,192	2.7

³⁸ Amec Foster Wheeler Environment & Infrastructure UK Limited. *Noise Mapping and Action Planning Contract Round 3 - 2016/2017 Road Modelling Report - Final*. Shrewsbury: DAERA, 2017.

Table 6: Agglomeration and Major Roads - Length of Roads mapped in data capture areas (km)

Noise source	Round One (km)	Round Two (km)	Round Three (km)	Percentage increase from Round Two (%)
All Roads within the Belfast Agglomeration	937	1,020	1,050	3
Major Roads (outside the Belfast Agglomeration)	442	1,291	1,431	11 ³⁹
Total Area	1,379	2,311	2,481	7

4.2. Current Environmental Noise Management

4.2.1 On a strategic and local scale, DfI currently considers ways to manage and mitigate road noise in accordance with the following guidance documents:

- Transport Analysis Guidance (TAG) published by the Department for Transport;
- Design Manual for Roads and Bridges (DMRB) Volume 11, Environmental Assessment;
- Roads Service Policy and Procedure Guide: RSPPG_E030 Major Works Schemes – Inception to Construction⁴⁰;
- Noise Insulation Regulations (NIR) Northern Ireland (NI) 1995;
- Director of Engineering Memorandum (DEM) 164/17: NIR (NI) - guidance on DfI approach to the Calculation of Road Traffic Noise (CRTN)⁴¹; and
- Roads Service Policy and Procedure Guide: RSPPG_SO22 Article 22 of the Land Acquisition and Compensation (NI) Order 1973 Noise (NIR)⁴².

4.2.2 At various stages throughout the design process DfI requires the environmental impact to be assessed of schemes in line with their current procedural guidelines. The extent of the assessment depends on the design stage, the size of the scheme, its location and environmental sensitivity of the surrounds.

4.2.3 Wherever possible, the environmental assessment of road schemes aims to avoid or minimise adverse noise impacts. At an early stage in the design process noise and vibration mitigation measures should be considered which include:

- Realigning the route away from residential areas or other sensitive areas;

³⁹ Please note that all dual-carriageway roads are now represented in the GIS source layer as two separate digital lines. The overall increase in actual road length is therefore estimated to be nearer to 3-4% when this is taken into account.

⁴⁰ Roads Service Policy and Procedure Guide: RSPPG_E030 Major Works Schemes – Inception to Construction. Available from <https://www.infrastructure-ni.gov.uk/sites/default/files/publications/drd/major-works-schemes-inception-to-construction-rsppg-e030.pdf>. Accessed 25 April 2018.

⁴¹ Director of Engineering Memorandum 164/17: Noise Insulation Regulations (NI) - guidance on DfI approach to the Calculation of Road Traffic Noise (CRTN). 2017.

⁴² Available from <https://www.infrastructure-ni.gov.uk/sites/default/files/publications/drd/article-22-of-the-land-acquisition-and-compensation-ni-order-1973-noise-the-noise-regulations-rsppg-so22.pdf>. Accessed 10 July 2018.

- Keeping the route low within the natural topography to exploit any natural screening;
- Providing environmental barriers, such as earth mounding or acoustic fencing;
- Using low noise surfacing to reduce noise of vehicle tyres interacting with the road surface.

4.2.4 In addition to the internal procedures that DfI has drawn up, the planning system plays an important role in supporting the overall management of noise. Noise is a key consideration in the determination of planning applications, which means that noise effects are taken into account when considering development proposals. Existing local planning policy emphasises the need to carefully consider noise in the design of new development as well as development plans which include planning policies tailored to the control of noise.

4.2.5 Noise from individual vehicles is controlled under mandatory EU noise emission standard legislation which apply to all new road vehicles. This legislation is implemented through the Road Traffic (NI) Order 1995⁴³, where all new vehicles must meet the requirements before starting service and once in operation must be maintained in good condition.

4.2.6 The Roads (NI) Order 1993⁴⁴ also implement European legislation that controls the noise emitted from the contact of tyres to the road surface. The Order mandates noise limits on new tyres fitted to newly manufactured vehicles and through a phased introduction, since 2011, on all replacement tyres.

⁴³ Road Traffic (NI) Order 1995. Available from <http://www.legislation.gov.uk/nisi/1993/3160/contents>. Accessed 25 April 2018.

⁴⁴ Roads (NI) Order 1993. Available from <http://www.legislation.gov.uk/nisi/1993/3160/contents>. Accessed 25 April 2018.

5. Summary of the results of noise mapping

5.1. First Round Mapping

- 5.1.1 Strategic noise maps were produced as a result of the First Round mapping⁴⁵ undertaken in 2007, which consisted of road noise contours around Major Roads and Roads within the Belfast Agglomeration. The maps were reported to the European Commission in accordance with the END and were made available to the public through the production of the First Round Roads Noise Action Plan.
- 5.1.2 For the First Round mapping in 2007, the Regulations required the preparation of noise maps for the following:
- All Major Roads with more than 6 million vehicle passages per year; and
 - All Agglomerations with more than 250,000 inhabitants.
- 5.1.3 The Roads Noise Action Plan was approved and adopted by the Minister on 5 March 2010, and provided a preliminary analysis of:
- Where the environmental noise is located;
 - The approximate magnitude of noise levels within the assessment area; and
 - The approximate numbers of people exposed to differing levels of environmental noise.
- 5.1.4 The First Round Roads Noise Action Plan confirmed that further analysis was needed to identify and prioritise CNMAs and Candidate Quiet Areas (CQAs). Following the development of noise assessment criteria by the NIENDSG, the criteria and any limit values was to consider whether the current traffic noise levels at a certain location are acceptable. At locations where the First Round noise maps identified noise levels which are not acceptable, further action was required, which led the assessment to the Second Round and the identification of CNMAs.

5.2. Second Round Mapping

- 5.2.1 For the Second Round of mapping the Regulations reduced the thresholds for which noise mapping and action planning should be prepared to:
- All Major Roads with more than 3 million vehicle passages per year; and
 - All Agglomerations with more than 100,000 inhabitants.
- 5.2.2 Noise maps were generated from the Second Round data and then investigated using a series of analytical tools. At that stage an understanding of the number of people exposed to different noise levels and the number of buildings affected was reached, thus enabling an initial list of CNMAs to be prepared.
- 5.2.3 The main bulk of the CNMAs were located within the Belfast Agglomeration, twenty-three out of a total thirty-two. Nine of them were in proximity to a motorway. The other fourteen CNMAs within the Belfast Agglomeration were located along main routes within the urban areas of Belfast, Lisburn, Bangor and Holywood. Outside of the Belfast Agglomeration there were a total of nine CNMAs located in the towns and cities of Londonderry, Ballymena, Dungiven, Ballykelly, Moy, Newtownards and Armagh.

5.3. Third Round Mapping

- 5.3.1 The regulations state that Competent Authorities should review (and revise if necessary) Noise Action Plans every 5 years and whenever a major development that affects the noise environment occurs. This Third Round document constitutes the 5 year review and the thresholds remain the same as Round 2.

5.4. Population Exposure and Analysis

⁴⁵ Available from www.daera-ni.gov.uk/services/noise-maps. Accessed 29 May 2018.

- 5.4.1 Annex VI of the END states that the estimated number of people living in dwellings that are exposed to noise are to be calculated for the various parameters mapped. Annex VI also states that the population exposure assessment is to be reported back to the European Commission.
- 5.4.2 The methodology behind this exposure assessment is provided in chapter 10 of the Amec Foster Wheeler Environment and Infrastructure UK Ltd 2017 report⁴⁶, and the results of this analysis are presented in the following tables.
- 5.4.3 Table 7 and Table 8 provide an overview of the results of the Round 3 END analysis for the Belfast Agglomeration. Table 7 shows results for the number of dwellings while Table 8 shows results for the population. Table 8 shows that within the Belfast Agglomeration around 3,299 people are shown to be exposed to Major Road noise levels greater than 75dB LA10,18hr. This compares to around 3,235 people in Round 2. For the L_{night} parameter around 404 people within the Belfast agglomeration are exposed to noise levels of more than 70dB L_{night}. This compares to 248 people in Round 2.

Table 7: All Roads - Number of dwellings within the Belfast Agglomeration

Noise Level dB	LAeq,16h	LA10,18h	Lden	Lday	Leve	Noise Level dB	Lnight
50-54	40,811	59,177	57,439	46,977	21,662	45-49	35,430
55-59	20,600	26,748	27,370	22,002	18,685	50-54	22,172
60-64	18,132	18,521	19,209	18,188	16,460	55-59	18,112
65-69	16,111	17,380	17,618	17,208	5,573	60-64	9,737
70-74	4,590	9,672	7,783	6,290	347	65-69	1,867
≥75	124	981	814	343	-	≥70	143
Total	100,368	132,479	130,233	111,008	62,727	Total	87,461

Table 8: All Roads - Population Exposure within the Belfast Agglomeration

Noise Level dB	LAeq,16h	LA10,18h	Lden	Lday	Leve	Noise Level dB	Lnight
50-54	95,997	137,976	134,485	110,367	52,056	45-49	84,461
55-59	50,179	64,111	65,687	53,162	47,134	50-54	54,529
60-64	45,807	45,754	47,618	45,202	43,358	55-59	46,256
65-69	42,781	45,715	46,103	45,985	17,621	60-64	27,382
70-74	15,019	28,149	23,242	19,298	1,273	65-69	7,245
≥75	468	3,299	3,090	1,140	-	≥70	404
Total	250,250	325,004	320,225	275,153	161,441	Total	220,276

- 5.4.4 Table 9 and Table 10 show, respectively, an estimate of the number of dwellings and population exposed to road traffic noise sources for major roads across Northern Ireland, including the Belfast Agglomeration.
- 5.4.5 Table 10 shows that approximately 6,357 of the population living close to Major Roads are exposed to noise levels greater than 75dB LA10,18hr. This compares to 4,172 people for Round 2. Furthermore, for the L_{night} noise parameter, Table 10 shows that approximately 1,207 people living close to Major Roads are exposed to night noise levels of greater than 70dB. This compares to 289 people for Round 2.

⁴⁶ Noise Mapping and Action Planning Contract Round 3 - 2016/2017 Road Modelling Report – Final. Available from <https://www.daera-ni.gov.uk/publications/round-3-noise-maps-and-noise-mapping-technical-reports>. Accessed 29 May 2018.

Table 9: Major Roads - Number of dwellings

Noise Level dB	L _{Aeq,16h}	L _{A10,18h}	L _{den}	L _{day}	L _{eve}	Noise Level dB	L _{night}
50-54	59,807	85,599	85,978	67,923	30,245	45-49	50,966
55-59	26,697	37,177	38,245	30,099	19,958	50-54	25,794
60-64	19,772	20,466	21,238	19,804	20,046	55-59	21,325
65-69	20,024	20,913	21,063	20,721	10,072	60-64	14,325
70-74	7,892	13,612	12,229	9,947	1,426	64-69	4,293
≥75	650	2,382	2,387	1,138	79	≥70	497
Total	134,842	180,149	181,140	149,632	81,826	Total	117,201

Table 10: Major Roads - Population Exposure

Noise Level dB	L _{Aeq,16h}	L _{A10,18h}	L _{den}	L _{day}	L _{eve}	Noise Level dB	L _{night}
50-54	142,643	201,846	203,733	161,792	73,595	45-49	122,376
55-59	64,808	89,886	92,478	72,935	49,056	50-54	63,148
60-64	48,544	50,433	52,235	48,368	50,120	55-59	52,367
65-69	51,456	52,455	52,909	53,084	28,310	60-64	37,881
70-74	22,050	36,875	32,994	27,177	3,702	64-69	12,983
≥75	1,659	6,357	6,680	2,897	216	≥70	1,207
Total	331,162	437,852	441,028	366,255	205,089	Total	289,963

5.5. Accounting for the differences between Round 2 and Round 3

5.5.1 The numbers of people exposed to noise levels above 75dB L_{A10,18h} have remained quite steady for Belfast between Round 2 and Round 3 whereas outside the Belfast Agglomeration the numbers exposed to noise levels above 75dB L_{A10,18h} have increased by around 50%. This is reflected in the increasing numbers of CNMAs outside the Belfast Agglomeration between Round 2 and Round 3. The following section provides an explanation as to the reasons for the changes between Round 2 and Round 3.

Changes in the road source data

5.5.2 There have been several changes and improvements to the roads source data between Round 2 and Round 3 which have resulted in an overall increase in the spatial extent of the roads mapped in Round 3. This includes the inclusion of various new sections of new and upgraded roads and mapping of additional roads which now meet the END threshold. Table 11 shows the updates to the key roads to help improve the representation of roads modelled in Round 3.

Table 11: Key roads manually updated in Round 3 GIS dataset

Road	Description of changes to modelling dataset
A1 Banbridge - Newry - Republic of Ireland Border	Replacement of single road objects in Ordnance Survey Northern Ireland (OSNI) dataset with improved dual carriageway road features.
A2 Derry – Limavady	Replacement of series of single road objects in the OSNI dataset with new dual carriageway road features.

A4 Belfast – Enniskillen	Replacement of single road objects in OSNI dataset with improved dual carriageway road features. Improved spatial representation along some stretches.
A8 Larne Dualling (B95 Coleman's Corner junction and the B100 Ballyrickard Road junction)	Digitisation of new dual carriageway road features and related slip-roads along 14km of new road which was opened in December 2015. The new road was constructed to address traffic congestion, and road safety issues and to ensure effective road connectivity for the port of Larne
A26	Addition of new road section between Banbridge and Lurgan not mapped in Round 2.
A515	Addition of new road sections in Londonderry not mapped in Round 2.

5.5.3 In the Belfast Agglomeration, there has been an increase in the percentage of roads modelled using permanent or temporary traffic data counts and a decrease in the percentage of roads modelled using factors derived from traffic models.

5.5.4 There has also been an improvement in the representation of dual carriageway roads, which has enabled a more refined assignment of flow, speed and Heavy Goods Vehicle (HGV) % values and hence an improved representation of these features in the final maps.

5.5.5 There have been some recently completed schemes that were not included in the modelling for Round 3. Notable schemes include the A26 Dualling Glarryford to A44 Drones Road which was completed in June 2017. The Environmental Statement⁴⁷ for the scheme predicts that the scheme will result in a slight adverse impact in terms of traffic noise at the closest properties. Another scheme not included was the A31 Magherafelt Bypass which was completed in October 2016. The Environmental Statement NTS⁴⁸ for the scheme states that relatively large number of residents living near to the existing A31 would benefit from a reduction in traffic noise levels as a result of the Magherafelt Bypass.

Changes to the 3D propagation model

5.5.6 Changes in the topography and terrain datasets have contributed to the localised changes in the calculated noise exposure. For example, the demolition and construction of buildings between Round 2 and Round 3 has affected noise propagation and population exposure. Several large apartment blocks have been built since Round 2 which alter the propagation of noise and results in changes in the number of dwellings and population exposed to different noise levels.

Changes to extents of the population model

5.5.7 All elements of the population model have been updated for Round 3. The key changes include:

- An increase (5.5%) in the extent of the agglomeration between Round 2 and Round 3;
- Replacement of the 2008 population estimates with 2015 population estimate data;
- An overall increase of 3% in the population for Round 3 compared to Round 2;
- Improvements in the methods used to identify residential buildings which included the removal of objects such as garages and annexes; and

⁴⁷ Department for Regional Development Roads Service. A26 Dualling – Glarryford to A44 Drones Road Junction Environmental Statement Volume I. March 2012. Available from https://www.infrastructure-ni.gov.uk/sites/default/files/publications/drd/a26_environmental_statement.pdf. Accessed 14 June 2018.

⁴⁸ Department for Regional Development Roads Service. A31 Magherafelt Bypass. April 2008. Available from <https://www.infrastructure-ni.gov.uk/sites/default/files/publications/drd/a31-magherafelt-bypass-environmental-statement.pdf>. Accessed 14 June 2018

- Improvements in the methods used to evaluate the number of dwellings within multi-occupancy buildings which has led to an increase in level of population located nearer to the roads mapped under END, particularly in Belfast.

5.5.8 A comparison of the methodology used in Round 2 and Round 3 is shown in Table 12.

Table 12: Comparison of methodology between Round 2 and Round 3

Methodology	Round 2	Round 3
Calculation Method	CRTN	CRTN
Method for converting noise $L_{A10,18h}$ noise levels from CRTN to EU noise indices ⁴⁹	Method 2	Method 2
Noise modelling software	LimA noise modelling package v. 8.1	LimA noise modelling package v. 11.2
Geoprocessing and analysis software	ESRI ArcGIS software	ESRI ArcGIS software

Traffic Data

5.5.9 A hierarchical approach was used with the assignment of new traffic data as follows:

- 62.5% of the network was tagged with a permanent counter ID with data from 2015;
- 11.5% of the network was tagged with a temporary counter ID;
- 7.2% of the network was tagged with the 2015 Belfast survey counter ID; and
- Default values were used where no other data was available.

5.5.10 Table 13 shows the summary of the source datasets used for the Round 3 models.

Table 13: Summary of the source datasets used for the Round 3 models

Data Source	Flow		Speed		Class	
	Length (km)	% of total	Length (km)	% of total	Length (km)	% of total
Permanent ATCs (2015)	1572	63.4%	1397	56.3%	868	35.0%
Temporary ATCs (2013-2015)	281	11.3%	280	11.3%	281	11.3%
Belfast Traffic Model Surveys (2015)	174	7.0%	67	2.7%	131	5.3%
Sub-total	2027	81.7%	1744	70.3%	1280	51.6%
Round 2 values (actual data or derived values)	362	14.6%	587	23.6%	979	39.5%

⁴⁹ TRL & Casella Stanger. Defra, Method for Converting the UK Road Traffic Noise Index $L_{A10,18h}$ to the EU noise indices for road noise mapping. London: 2006.

Round 3 defaults	92	3.7%	150	6.1%	222	9.0%
Sub-total	454	18.3%	737	29.7%	1201	48.4%
Total	2405	100%	2481	100.0%	2481	100.0%

3D Propagation Model

5.5.11 The ground model, buildings and ground cover datasets were updated as per Table 14.

Table 14: Dataset comparison between Round 2 and Round 3

Dataset	Round 2	Round 3
Ground model	OSNI DTM 2011	OSNI DTM 2015
Buildings	OSNI Largescale 2013	OSNI Largescale 2015
Ground cover	CEH Land Cover Map 2007	CEH Land Cover Map 2015
Barriers	Barriers dataset 2012	Barriers dataset 2017
Bridges	Barriers dataset 2012	Barriers dataset 2017
Meteorological Dataset	Barriers dataset 2012	Barriers dataset 2017

5.5.12 Overall the Round 3 methodology has resulted in an improved representation of the population for buildings containing multiple dwellings (i.e. flats and apartments) when compared to Round 2. This change also led to an increase in the population located close to the roads mapped under END when compared to Round 2. This is due to the tendency for buildings with multiple dwellings to be located close to roads mapped when compared to single occupancy dwellings. This issue is particularly evident in Belfast and is an important consideration when assessing the outcomes of the Round 3 END population analysis. Other factors include the age of the OSNI building, Land and Property Services (LPS) Pointer address data and NISRA population datasets used in the analysis; changes and improvements in the OS Pointer address dataset since Round 2. The OSNI Pointer dataset has certain limitations including; the absence of an attribute code to distinguish communal residences (e.g. student residences, army living accommodation) from standard residential accommodation, and potential mis-alignment of Pointer records in relation to the OSNI detailed large scale mapping.

Summary

- 5.5.13 In the Belfast agglomeration, there is a slight reduction in the number of properties located in the >75 dB noise banding. This appears to be due to the use of available temporary count data in Round 3 in preference to higher derived or modelled data used in Round 2.
- 5.5.14 Visual analysis suggests there are locations outside the Belfast agglomeration where there have been minor uplifts in modelled noise values which have led to the movement from the 70-75 to >75 noise mapping category. Some of these locations may also have been modelled at Round 2 using estimate values which have now been replaced with temporary count data. It is also possible that some road links will have been modelled using estimated traffic data derived from available data for similar road values. These differ between Round 2 and 3 and will also have led to changes in final noise values.
- 5.5.15 The noise models used for the END assessment are strategic in nature and have been developed for Round 3 using the best available data. However, the models do have limitations, especially where the input data may be less reliable (i.e. interpolated or derived rather than actual traffic counts). These issues would normally be addressed through more detailed modelling or noise monitoring to establish a more accurate situation.
- 5.5.16 Noise maps give an overall picture of an area's noise environment but should not be relied upon at a very local level without site-specific validation. As noise levels are predicted at a height of 4 metres, the results of the noise maps cannot be used to determine the noise at other elevations. The noise maps are based on predicted noise levels using a 10-metre grid spacing at a receptor height of 4 metres. The noise level for a

given grid square is calculated for the centre of that grid square. Nonetheless, as strategic noise maps, the results do provide a good indication of the overall exposure of the population to environmental noise. However, it should be noted that annoyance due to noise is highly subjective and not determined solely by the number of decibels, but also by the nature of the noise, tonal component and the sensitivity of the ear.

5.6. Identification of CNMAs for Round 3

- 5.6.1 As for Round 2, the process for Round 3 involved the identification and prioritisation of Candidate Noise Management Areas. The Technical Guidance states that $L_{A10,18h}$ and $L_{Aeq,16hr}$ are the primary indicators for roads, and the Competent Authority should identify the total population affected by road noise levels more than 50dB $L_{A10,18h}$ and $L_{Aeq,16hr}$. The round 3 noise maps show that 437,852 people in Northern Ireland experience noise above 50dB $L_{A10,18h}$. 1% of this is 4378 people (1801 dwellings). This corresponds approximately to exposure above 75dB $L_{A10,18h}$. The Technical Guidance states that priority should be focussed on the locations where most people are exposed to the highest noise levels or where sensitive receptors are located. DfI has confirmed that the same threshold noise levels (75dB $L_{A10,18h}$) used in Round 2 should be used in Round 3.
- 5.6.2 DfI grouped properties into clusters within certain bands depending on the number of properties within each cluster. All the clusters were grouped into bands 1 to 4 to enable priorities to be targeted at larger populated areas affected by noise, as outlined:
- Band 1, >20 properties affected
 - Band 2, 11 - 20 properties affected
 - Band 3, 5 - 10 properties affected
 - Band 4, 1 - 4 properties affected
- 5.6.3 Bands 1 and 2 i.e. areas where more than 11 residential properties are affected were considered for Round 3 which is the same approach taken in Round 2.
- 5.6.4 In accordance with the DAERA Technical Guidance 'Having identified areas containing 1% of the population most affected by noise, the Competent Authority then need to assess the extent to which noise needs to be reduced in these areas and prioritise the area's most in need of protection through designation as formal Noise Management Areas. It is considered that attention could be focused on the locations where most people are exposed to the highest levels or where sensitive receptors are located', priority was given to areas where most people are exposed to the highest levels.
- 5.6.5 Noise maps were generated from the Round 3 data and analysis of the data was undertaken by DfI to identify clusters where noise levels at residential properties are above 75 dB $L_{A10,18h}$ and where at least 11 residential properties are located. Following this a review was undertaken to establish that the proposed clusters met the conditions identified above i.e. there were at least 11 residential properties above 75 dB $L_{A10,18h}$.
- 5.6.6 Based on this approach the clusters or Candidate Noise Management Areas were identified across Northern Ireland and are shown in Appendix D. It should be highlighted that noise maps in Appendix D, are for illustration purposes only and are to be reviewed in conjunction with this Action Plan.
- 5.6.7 Within the Belfast Agglomeration, there are a total of 25 CNMAs. Outside of the Belfast Agglomeration there are a total of 28 CNMAs located in the towns and cities of Armagh, Banbridge, Ballynahinch, Crossgar, Lurgan, Newry, Newtownards, Fivemiletown, Clogher, Lisnaskea, Londonderry, Moneymore, Moy, Maguiresbridge, Ballymagorry, Omagh, Ballymena, Broughshane, Coleraine and Dungiven.

6. Mitigation and protection measures

6.1. Overview

- 6.1.1 Prior to formal confirmation of the CNMAs as Noise Management Areas, potential noise mitigation measures and costs and benefits should be investigated. There is a wide range of direct and indirect noise mitigation measures available, some of which are outside control of DfI as they are at a national or regional level and some are not appropriate for the location or cost-effective in their implementation.
- 6.1.2 The Technical Guidance provides an example of potential options that may be considered, including:
- Vehicle noise emissions and tyre noise regulations set at EU level;
 - Noise regulations which would be set at national level;
 - Transport policy objectives set at regional level;
 - District council and Government Departments' powers;
 - Introduction of noise surcharges or taxes on particular vehicles or vehicle restrictions, such as no heavy vehicles or limited access;
 - Vehicle manufacture/design controlling noise at source;
 - Vehicle maintenance to reduce engine noise;
 - Smooth driving with minimal revving, keeping music at an acceptable level and limiting the use of the horn and the slamming of vehicle doors;
 - Use of low noise surfaces to reduce noise at tyre/road interface;
 - Traffic management schemes to divert roads from sensitive premises/provision of alternative route;
 - Road surfacing;
 - Introduction of specific initiatives, such as car pools; and
 - Design and layout of developments or urban landscape to ensure that noise insensitive buildings are used as barriers to protect sensitive structures.
- 6.1.3 Some of the above measures will be outside the remit of DfI and progressed at a European and national level, such as vehicle emission and tyre noise legislation, and the manufacture and maintenance of vehicles. The amendment of any existing national noise policy would be again outside of the control of the DAERA, however the noise mapping process has enabled baseline information to be mapped allowing any future changes to be monitored.
- 6.1.4 When considering the potential measures to be adopted, Competent Authorities should assess their effectiveness and cost in the wider context. This would include, for example, positive impacts on health or quality of life, a potential benefit for the local economy or whether the potential measure may have adverse environmental impacts on air quality. A balance also needs to be struck between the positive effects of the adopted measures and the potential adverse impacts of such measures on economic development. Efforts should be made to implement measures in an integrated manner, to assist in developing an innovative, productive and stable economy which promotes the environment.
- 6.1.5 When considering any new noise management measure within the Action Plan, cognisance should be taken of the following legislation and guidance:
- Regional Development Strategy 2025;
 - Local Area Development Plans;

- Planning Policy Statements and Planning Supplementary Guidance;
- A Planning Strategy for Rural Northern Ireland;
- Regional Transportation Strategy for Northern Ireland 2002 – 2012;
- Belfast Metropolitan Transport Plan 2015;
- Regional Strategic Transport Network Transport Plan 2015;
- Sub-Regional Transport Plan 2015;
- Sustainable development objectives, plans and policies;
- Air Quality Regulations and Air Quality Action Plans;
- Renewable Energy Action Plans;
- Local Authority Open Space policies;
- Mosaic GI strategy for Northern Ireland;
- Emerging climate change initiatives;
- Spatial Data Strategy;
- Urban Regeneration strategies;
- Noise Abatement policies; and
- Noise Insulation Regulations (Northern Ireland) 1995.

6.1.6 Useful criteria to consider when developing any prioritisation matrix may include:

- Identifying the noisiest locations that affect the most people;
- Identifying the location of nearby sensitive buildings;
- Minimising whole life cost;
- Including interventions within existing maintenance or improvement programmes; and
- Minimising disruption.

6.1.7 Deliberation of the action to be undertaken, including consideration of the factors discussed above, will result in one of four outcomes. Such detail should be provided with a revised Action Plan.

- If there are financial resources immediately available and the proposed actions will provide the expected benefit, the Competent Authority will determine a timetable for implementation.
- If there is an appropriate action but no financial resources available, the Competent Authority can secure such resources to carry out the work by obtaining an increased budget or re-prioritising existing budgets, possibly in future financial years. If finance is secured, a timetable for implementation will be set.
- No action is possible because either there is no appropriate measure to take (e.g. reasonable sound insulation already exists, or a noise barrier is at the optimum size) or a technical issue prevents implementation (e.g. ground conditions prevent a barrier being erected). The Competent Authority must justify its decision to Department of Environment.

- No action is possible because there would be significant adverse non-acoustic effects (such as safety, air pollution, congestion or increased journey times) that could not be mitigated by the proposed measure.

6.1.8 DfI Roads must inform DAERA of the justification for its decision on the above four outcomes. DfI Roads has such programmes as the Minor Works Framework and their general maintenance schemes, where any works needed to implement potential noise reduction measures can be planned under. It is proposed that minor works or traffic calming schemes affecting CNMAs should be awarded additional points to boost the Minor Works/ Traffic Calming scoring system used to prioritise such schemes. The Roads Service Policy and Procedure Guidance RSPPG_EO32 Minor Improvement Schemes already awards additional scoring for installing noise barriers and improvements to surfacing to reduce road noise.

6.1.9 On a more strategic scale DfI will further consider amending such policy and guidance to enable schemes to be prioritised which will provide benefits to CNMAs in terms of noise. This can be undertaken across the board for minor works, traffic calming and maintenance schemes.

6.2. Candidate Noise Management Areas

6.2.1 For all the CNMAs, DAERA will monitor, alongside the planning department from the relevant local authority or DfI, any developments plus supporting mitigation measures as part of the design. To ensure that the overall aims of END and this Action Plan are fully realised, noise issues need to be carefully considered through the two tier planning system for specific development proposals and at a more strategic scale through the production of development plans. There needs to be a transparent relationship between the two tier planning system and the END, allowing local and strategic planning policy to reflect this.

6.2.2 Table 15 shows the summary of proposed mitigation measures for Round 3 which are subject to available funding and powers available to DfI. Due to the nature of the measures many of the costs are not known as they are outside the powers available to DfI.

Table 15: Summary of Proposed Mitigation for CNMAs

CNMA Reference	Proposed Measures	Approx. Cost	Delivery
Belfast CNMA 1 (My Ladys Road)	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport. This CNMA is around 400m from the Albertbridge Road where the BRT network is located so could potentially benefit from the scheme.	Not known at time of writing	2023
Belfast CNMA 2 (Antrim Road, Lisburn)	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport.	Not known at time of writing	2023
Belfast CNMA 3 (Broadway)	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport. This area is adjacent to the Falls Road where the BRT network is located so could potentially benefit from the scheme.	Not known at time of writing	2023
Belfast CNMA 4 (Little Georges Street)	Site-specific modelling to determine the effectiveness of an acoustic barrier and/or low noise resurfacing of the Westlink. This CNMA could potentially benefit from the acoustic barrier proposed as part of the York Street Interchange scheme.	Not known at time of writing	2023
Belfast CNMA 5 (Woodstock Road)	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport. This CNMA is around 200m from the Albertbridge Road where the BRT network is located so could potentially benefit	Not known at time of writing	2023

	from the scheme.		
Belfast CNMA 6 (Beersbridge Road)	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport. This CNMA is around 470m from the Albertbridge Road where the BRT network is located so could potentially benefit from the scheme.	Not known at time of writing	2023
Belfast CNMA 7 (Beersbridge Road)	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport. This CNMA is around 360m from the Albertbridge Road where the BRT network is located so could potentially benefit from the scheme.	Not known at time of writing	2023
Belfast CNMA 8 (Beersbridge Road)	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport. This CNMA is around 550m from the Albertbridge Road where the BRT network is located so could potentially benefit from the scheme.	Not known at time of writing	2023
Belfast CNMA 9 (Parkgate Avenue)	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport. This CNMA is around 460m from the Albertbridge Road where the BRT network is located so could potentially benefit from the scheme.	Not known at time of writing	2023
Belfast CNMA 10 (Ballygomartin Road)	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport.	Not known at time of writing	2023
Belfast CNMA 11 (Arosa Park and Glasgow Street)	This CNMA was previously assessed in 2015 and a 3m barrier was recommended at a cost of £58k however low noise surfacing was not deemed cost-effective.	£58k	2023
Belfast CNMA 12 (Carrick Hill)	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport.	Not known at time of writing	2023
Belfast CNMA 13 (Upper Dunmurry Lane)	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport.	Not known at time of writing	2023
Belfast CNMA 14 (Saintfield Road)	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport.	Not known at time of writing	2023
Belfast CNMA 15 (Holywood)	Site-specific modelling to determine the effectiveness of an acoustic barrier and/or low noise resurfacing of the A2 Bangor Road. Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging using public transport.	Not known at time of writing	2023
Belfast CNMA 16 (Bangor)	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport. Improvement and promotion of the public transport system within the Bangor area.	Not known at time of writing	2023
Belfast CNMA 17 (Bangor)	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport. Improvement and promotion of the public transport system within	Not known at time of writing	2023

	the Bangor area.		
Belfast CNMA 18 (Antrim Road)	This CNMA was previously assessed in 2015 and a 3m barrier and low noise surfacing was recommended at a cost of £231,160.	£231k	2023
Belfast CNMA 19 (M2 Whitewell Road)	This CNMA was previously assessed in 2015 and a 3m barrier and low noise surfacing was recommended at a cost of £194,805.	£195k	2023
Belfast CNMA 20 (M2 Whitewell Road)	This CNMA was previously assessed in 2015 and a 3m barrier and low noise surfacing was recommended at a cost of £194,805.	£195k	2023
Belfast CNMA 21 (M2 Whitewell Road)	This CNMA was previously assessed in 2015 and a 3m barrier and low noise surfacing was recommended at a cost of £215,015.	£215k	2023
Belfast CNMA 22 (M2 Whitewell Road)	This CNMA was previously assessed in 2015 and a 3m barrier and low noise surfacing was recommended at a cost of £299,065.	£299k	2023
Belfast CNMA 23 (Carnmoney Road)	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport.	Not known at time of writing	2023
Belfast CNMA 24 (M2 and Hightown Road)	This CNMA was previously assessed in 2015 and a 3m barrier and low noise surfacing was recommended at a cost of £176,710.	£177k	2023
Belfast CNMA 25 (Shore Road)	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport.	Not known at time of writing	2023
Armagh CNMA 1	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport.	Not known at time of writing	2023
Banbridge CNMA 1	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport.	Not known at time of writing	2023
Ballynahinch CNMA 1	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport.	Not known at time of writing	2023
Crossgar CNMA 1	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport.	Not known at time of writing	2023
Lurgan CNMA 1	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport.	Not known at time of writing	2023
Newry CNMA 1	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport.	Not known at time of writing	2023
Newry CNMA 2	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport.	Not known at time of writing	2023
Newtownards CNMA 1	Proposal to assess the introduction of a bus lane on the A21 Bangor Road and heavy goods vehicles restrictions during certain periods.	Not known at time of writing	2023
Newtownards CNMA 2	Proposal to assess the introduction of a bus lane on the A21 Bangor Road and heavy goods vehicles restrictions during certain periods.	Not known at time of writing	2023

Ballymena CNMA 1	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport.	Not known at time of writing	2023
Ballymena CNMA 2	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport.	Not known at time of writing	2023
Broughshane CNMA 1	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport.	Not known at time of writing	2023
Coleraine CNMA 1	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport.	Not known at time of writing	2023
Dungiven CNMA 1	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport. Consideration under the NIR (NI) 1995. The proposed A6 Derry to Dungiven bypass will reroute through traffic away from the CNMA, therefore reducing traffic volumes and percentage of heavy goods vehicles.	Not known at time of writing	2023
Fivemiletown CNMA 1	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport. The Fivemiletown Bypass is included within the Investment Delivery Plan for Roads and if constructed, would reduce noise levels within this CNMA. However, there is currently no funding available for this.	Not known at time of writing	2023
Clogher CNMA 1	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport.	Not known at time of writing	2023
Lisnaskea CNMA 1	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport.	Not known at time of writing	2023
Londonderry CNMA 1	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport.	Not known at time of writing	2023
Londonderry CNMA 2	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport.	Not known at time of writing	2023
Londonderry CNMA 3	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport.	Not known at time of writing	2023
Londonderry CNMA 4	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport.	Not known at time of writing	2023
Moneymore CNMA 1	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport.	Not known at time of writing	2023
Moneymore CNMA 2	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport.	Not known at time of writing	2023
Moy CNMA 1	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport.	Not known at time of writing	2023
Moy CNMA 2	Introduction of specific initiatives such as car	Not known at time	2023

	pools, cycling to work schemes and encouraging the use of public transport.	of writing	
Maguiresbridge CNMA 1	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport.	Not known at time of writing	2023
Ballymagorry CNMA 1	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport.	Not known at time of writing	2023
Omagh CNMA 1	Introduction of specific initiatives such as car pools, cycling to work schemes and encouraging the use of public transport.	Not known at time of writing	2023

7. Consultation

7.1. Public Consultation

7.1.1 Public consultation of the Draft Roads Noise Action Plan was undertaken in accordance with Article 8(7) of the Environmental Noise Directive between 24 September 2018 and 16 November 2018. In addition, the Equality Impact Assessment undertaken by the Department for Regional Development was made available through the consultation process. A full list of the consultees is available in Appendix E.

7.1.2 A total of three responses were received to the public consultation process, from:

- Belfast City Council;
- Northern Ireland Local Government Association; and
- Freight Transport Association

7.1.3 The Department for Infrastructure replied directly to the respondents. The main points raised within the consultation responses together with the Departments reply to these is summarised in the table below.

Table 16: Summary of consultation process and response from the Department for Infrastructure

Specific Comment	Departmental Response
Request that the Department undertake noise validation measurements within CNMAs prior to locations being formally designated as CNMAs	Site-specific noise modelling will be required to determine the appropriateness and specification of mitigation measures proposed for CNMAs. At project design stage, noise monitoring will be undertaken to validate the noise model information, on a case by case basis. Implementation of measures will be subject to the availability of required funding.
Recommend that the Department engages with residents regarding the nature of local noise mitigation measures to be implemented.	The intention is to treat the CNMAs on an area based approach and consultation will be required with occupants of the properties in the CNMAs. Residents within these areas will be consulted and their views considered before any mitigation measures are implemented. Implementation of measures will be subject to the availability of required funding.
Request that the Department collaborate and work with respective council areas to effectively improve service delivery to the citizen through the sharing of information collated through the noise mapping process.	DfI are committed to collaborating with all its partners and stakeholders and will work with councils in relation the 'Candidate Noise Management Areas' by sharing, where possible, information in the interests of achieving improved delivery of service to the citizen.
Request for consideration of proposed initiatives to support the freight and transport industry and movement of commercial vehicles in urban environments.	DfI acknowledged receipt of this interesting perspective and committed to forwarding this information to the appropriate business unit within the department for their consideration.
Request that the Department undertake noise validation measurements within CNMAs prior to locations being formally designated as CNMAs	Site-specific noise modelling will be required to determine the appropriateness and specification of mitigation measures proposed for CNMAs. At project design stage, noise monitoring will be undertaken to validate the noise model information, on a case by case basis. Implementation of measures will be subject to the availability of required funding.
Recommend that the Department engages with	The intention is to treat the CNMAs on an

<p>residents regarding the nature of local noise mitigation measures to be implemented.</p>	<p>area-based approach and consultation will be required with occupants of the properties in the CNMAs. Residents within these areas will be consulted and their views considered before any mitigation measures are implemented.</p> <p>Implementation of measures will be subject to the availability of required funding.</p>
<p>Request that the Department collaborate and work with respective council areas to effectively improve service delivery to the citizen through the sharing of information collated through the noise mapping process.</p>	<p>DfI are committed to collaborating with all its partners and stakeholders and will work with councils in relation the 'Candidate Noise Management Areas' by sharing, where possible, information in the interests of achieving improved delivery of service to the citizen.</p>
<p>Request for consideration of proposed initiatives to support the freight and transport industry and movement of commercial vehicles in urban environments.</p>	<p>DfI acknowledged receipt of this interesting perspective and committed to forwarding this information to the appropriate business unit within the department for their consideration.</p>

7.2. Equality Impact Assessment

- 7.2.1 Under Section 75 of the Northern Ireland Act 1998, public authorities have a statutory duty to promote equality of opportunity. An Equality Impact Assessment (EQIA) was carried out for the Round 2 Action Plan and a further Equality screening exercise for the Round 3 Action Plan was not deemed necessary as the only changes to the Action Plan are in the maps of the CNMAs. Should an equality impact be identified this decision will be reviewed. Further details are available at the Equality Commission website⁵⁰.

⁵⁰ Available at <https://www.equalityni.org/Home>. Accessed July 2018.

8. Forward Strategy

- 8.1.1 This Plan is over a five year period between 2019 and 2023 up until the next round of noise mapping and action planning. However, environmental noise needs to be managed in a cost-effective manner as part of a long term strategy which runs beyond each five year Action Plan. Therefore, in line with the Technical Guidance, the following aspects should be borne in mind over the next five year period.
- 8.1.2 The meetings and progress of the NIENDSG should continue in order for any updates to local, national or European policy can be taken on board. In addition, it would be beneficial for the NIENDSG to discuss the appropriate use of European parameters L_{den} , L_{night} , L_{day} and L_{eve} in the Noise Action Plans.
- 8.1.3 When addressing specific CNMAs validation exercises can be undertaken, for example site-specific noise monitoring can be completed when developing noise models to determine the specification of acoustic barriers. This information can then be used to help inform the next round of mapping exercise in five years time.
- 8.1.4 On a more strategic scale DfI will further consider amending such policy and guidance to enable schemes to be prioritised which will provide benefits to CNMAs in terms of noise. This can be undertaken across the board for minor works, traffic calming and maintenance schemes.
- 8.1.5 In addition, it is recommended that, in accordance with the END, assessment is undertaken to determine the effectiveness of any mitigation implemented as a result of this process. Therefore, all mitigation will be included within the next mapping exercise and comparison made between pre and post-mitigation scenarios.
- 8.1.6 For all the CNMAs DfI will monitor, alongside the planning departments of local councils, and if developments are proposed within these designated areas any mitigation measures will be assessed as part of the design and planning process for implementation. Therefore, DfI should ensure that the planning departments are fully aware of this Action Plan. To ensure that the overall aims of the END and this Action Plan are fully realised, noise issues need to be carefully considered through the planning system for specific development proposals and at a more strategic scale through the production of development plans. There needs to be a transparent relationship between the planning system and the END, allowing local planning policy to reflect this.
- 8.1.7 In addition, DfI will work with DAERA and other relevant authorities and bodies to establish a clear framework of responsibility, so that road noise is properly managed in the context of sustainable development and role of each body is clearly understood by the public. Where a potentially beneficial action has been identified by DfI, for which it is not the managing authority or organisation it will liaise with the relevant authority to discuss the viability of action, or support the other authority in undertaking desired actions.

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Appendix A: Location of Quiet Areas



Legend

Quiet Areas

Rev	Revision Details	Chkd	Appd	Date
Drawn:	KMC			Preliminary
Design:	CC			For Comment
Chkd:	OF			For tender
Appd:	OF			For construction
Date:	August 2018			As constructed
				Other



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Third Round

Drawing Title

Quiet Areas

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RNAP-001 0

WORLD FORM PAVEMENT

1. High Speed	2. Low
3. Med	4. High
5. Low	6. High
7. High	8. Low

Appendix B: List of Current Policy and Framework used in the Management of Environmental Noise

Legislation

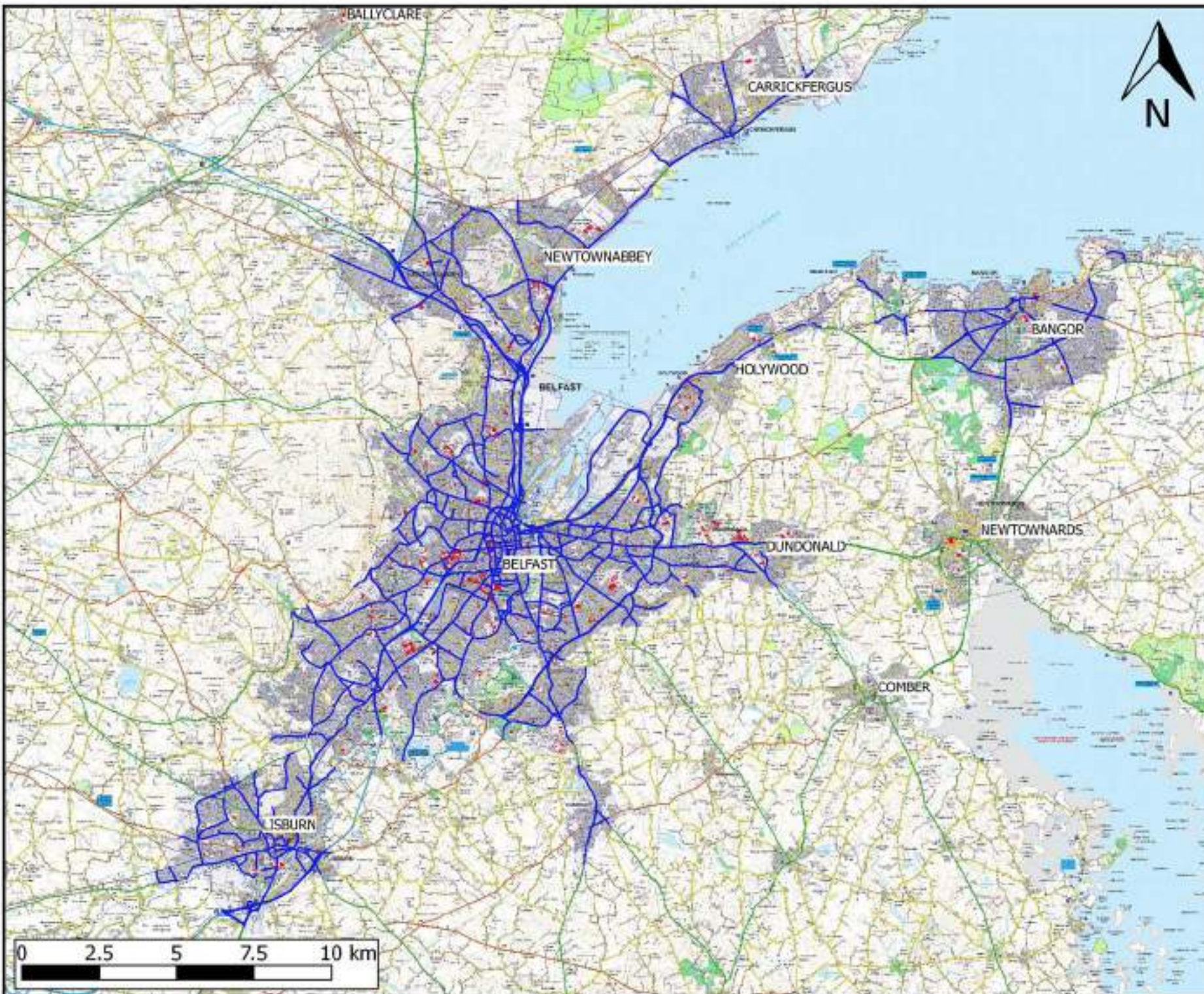
Land Acquisition and Compensation (NI) Order 1973
 Pollution Control and Local Government (NI) Order 1978
 Noise Insulation Regulations (NI) 1995
 The Environment Assessment of Plans and Programmes Regulations (NI) 2004
 Environmental Impact Assessment (NI) Regulations 1999
 The Clean Neighbourhoods and Environment Act 2011

Relevant Policy and Guidance Publications

Control of Noise (Code of Practice for Construction and Open Sites) Order (NI) 2002
 Calculation of Road Traffic Noise – Department of Transport 1988, NI Modification 1995
 Design Manual for Roads and Bridges, Volume 11, Section 3, Part 7, HD 213/11 Noise and Vibration
 Land Compensation – your rights explained. Insulation against traffic noise 1995
 BS 5228 Noise and Vibration Control on Construction and Open Sites
 Part 1 1997 – Code of Practice for basic info and procedures for noise and vibration control.
 Part 2 1997 – Guide to noise and vibration control legislation for construction and demolition including road construction and maintenance
 BS5228 Part 4 1992 – Code of Practice for noise and vibration from piling operations
 BS 6472 1992 Guide to evaluation of human exposure to vibration in buildings (1Hz to 80Hz)
 BS ISO 4866:2010 Mechanical vibration and shock -- Vibration of fixed structures -- Guidelines for the measurement of vibrations and evaluation of their effects on structures
 BS 7385 Part 2 1993 – Evaluation and measurement of vibration in buildings, guide to damage levels from ground borne vibration
 BS 7445 Part 1: 2003 – Description and measurement of environmental noise. Guide to quantities and procedures
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 BS 8233 1999- Sound insulation and noise reduction from buildings Code of Practice
 Defra – Low Frequency Noise 2002
 Delivering the goods – a toolkit for improving night time deliveries Freight Transport Association in consultation with the Department of Transport
 Calculation of Railway Noise – Department of Transport 1995

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Development Control Advice Note 10 (Revised) EIA 1999
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The Air Quality Directive 2008/50/ EC
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The Air Quality Standard Regulations (Northern Ireland) 2010
Environment (NI) Order 2002
Local Air Quality Management Technical Guidance (LAQM TG09)

Appendix C: Modelled Roads in Round 3



Legend

- Major Roads in Belfast
- Belfast Agglomeration

Rev	Revision Details	Drawn/Checked	Date
Drawn	KMC		Preliminary
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Check	DF		For Review
Appd	DF		For Construction
Date	August 2018		As constructed
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Client



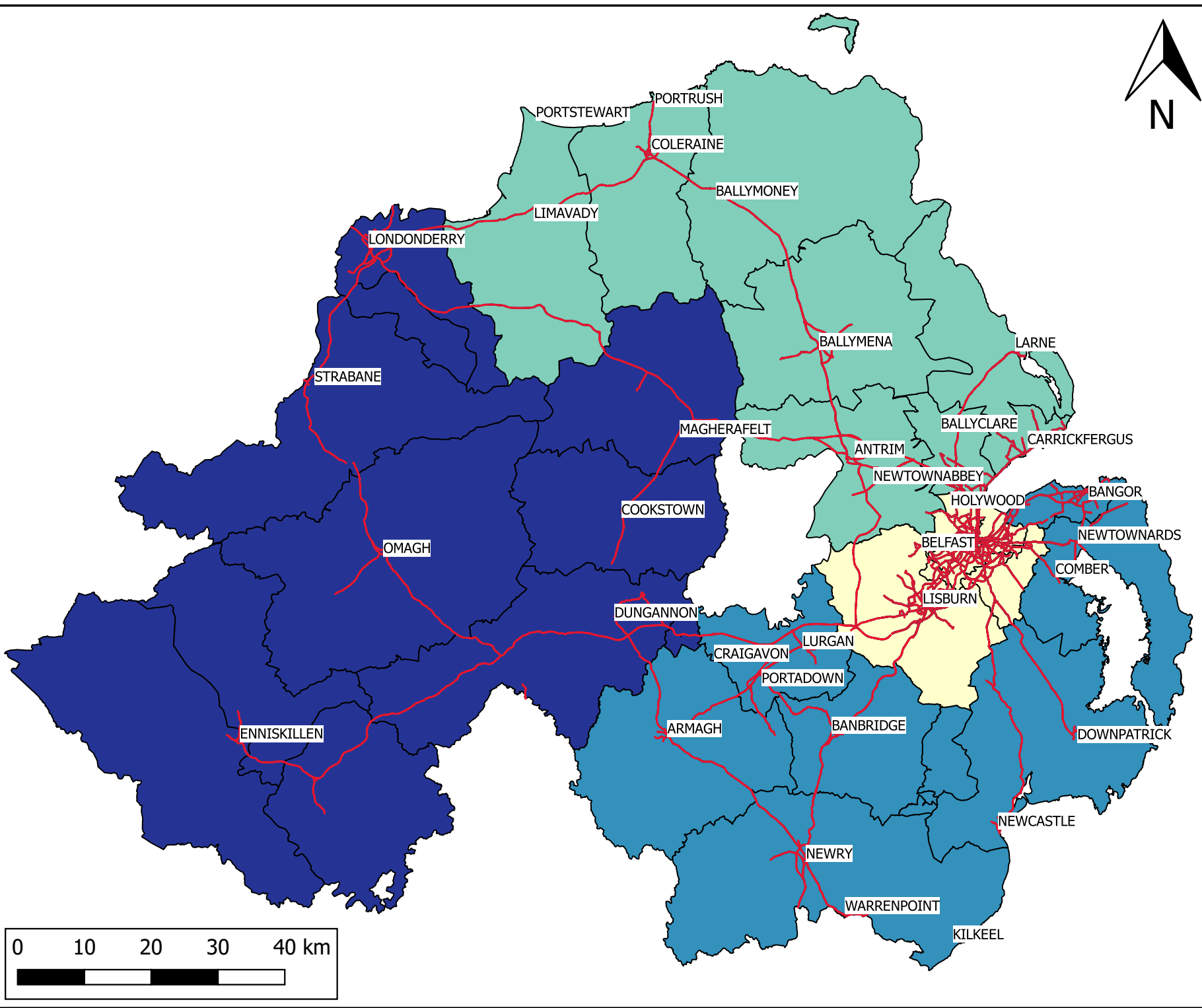
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Drawing Title
Belfast Agglomeration -
Major Roads

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Drawing N°: RNAP-002
Rev: 0



Legend

— Major Roads

Division

- Eastern
- Northern
- Southern
- Western

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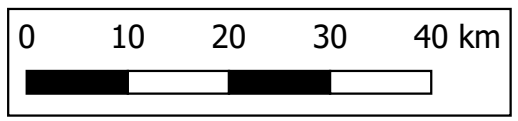


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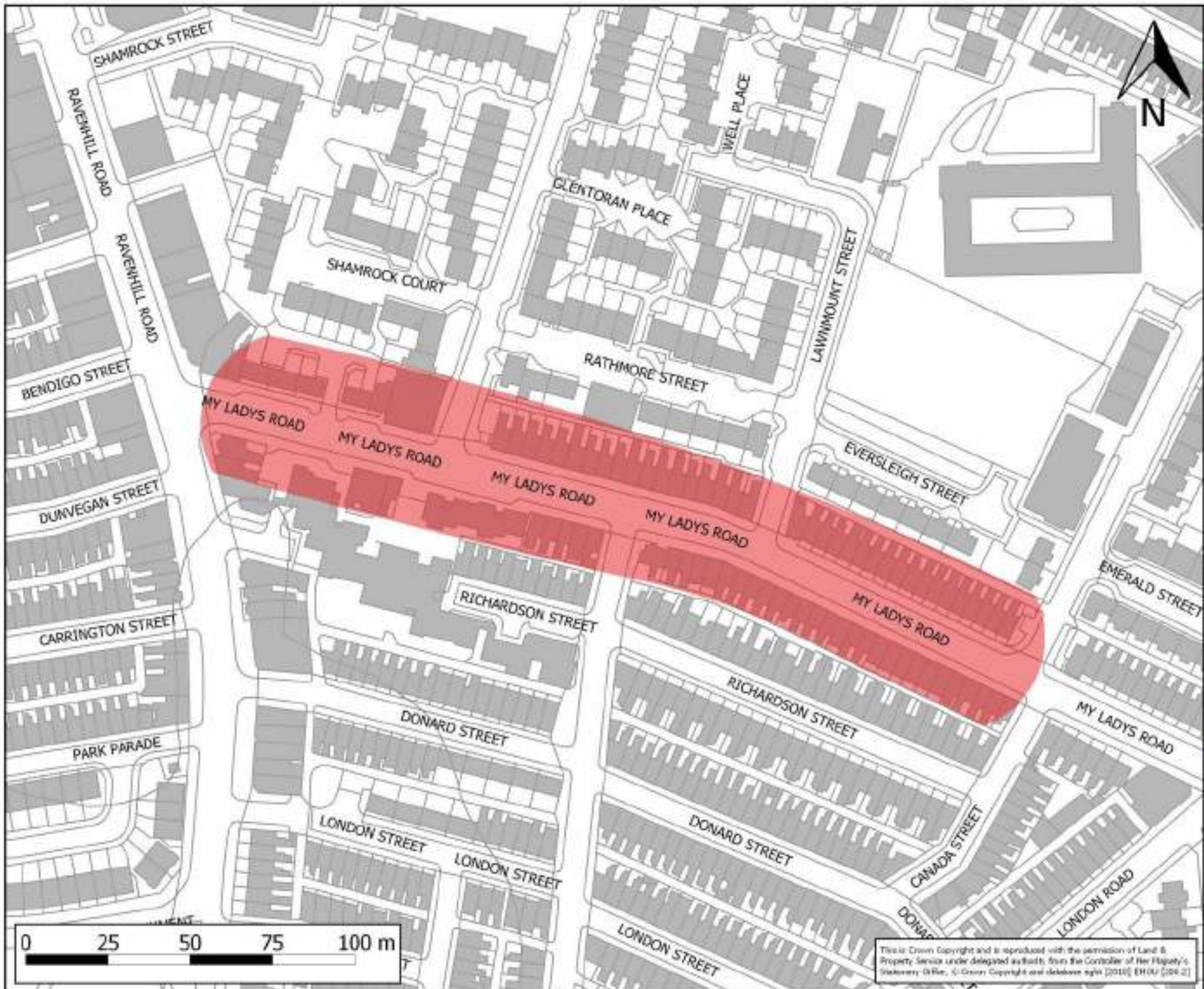
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Appendix D: Proposed CNMAs for Round 3



Legend

■ Candidate Noise Management Area

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Check	DF				For issue
Spec	DF				For construction
Date	July 2018				As constructed
					Other

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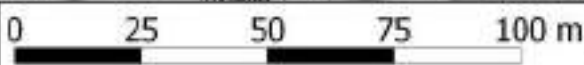
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Drawing Title
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 CNMA 2**

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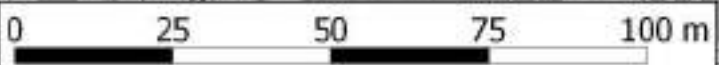
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Check	DF	For tender	
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CNMA 3**

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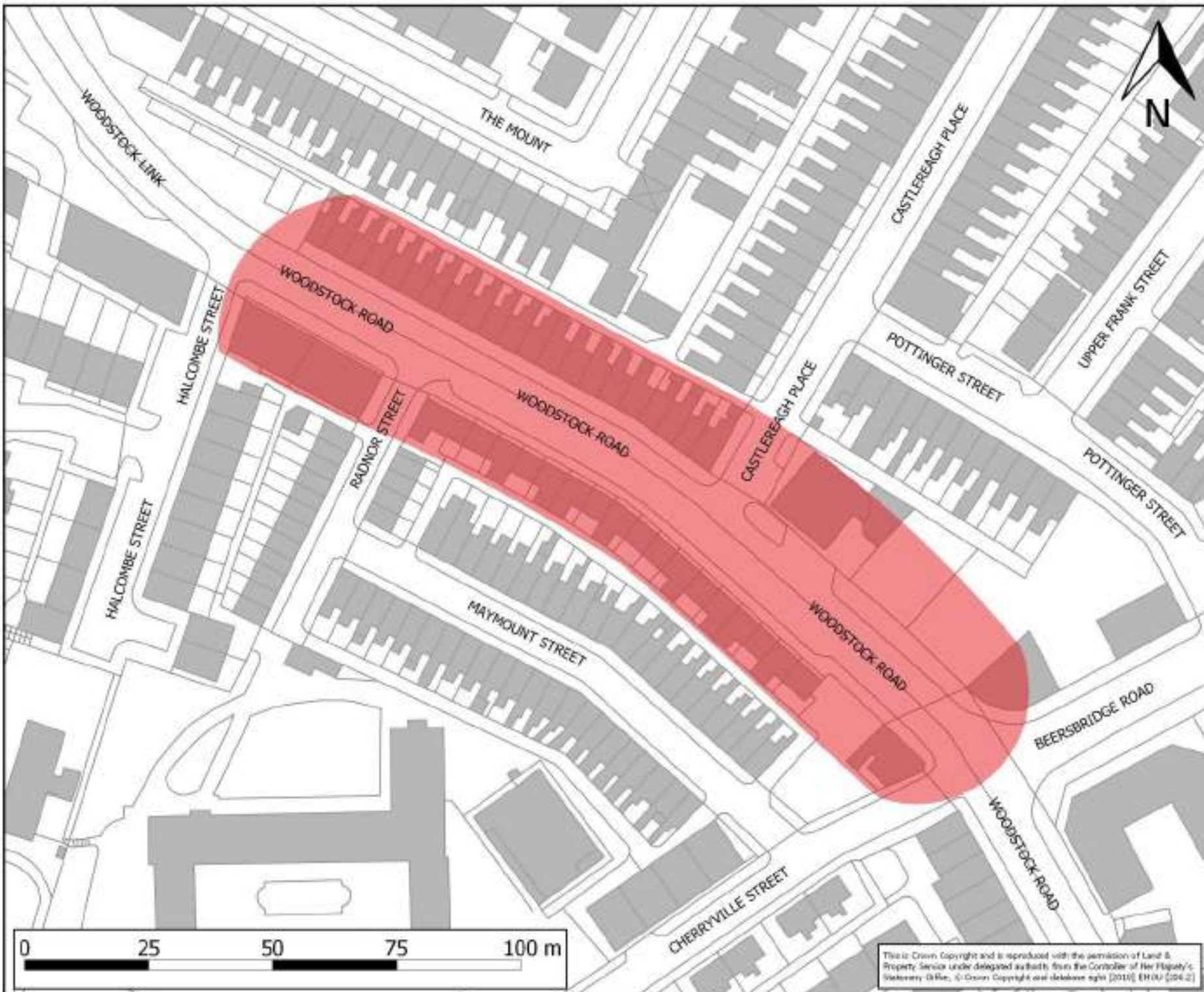
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Date	July 2018			As constructed
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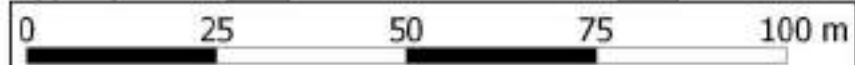
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Drawing Title
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 CNMA 5**



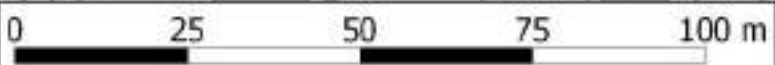
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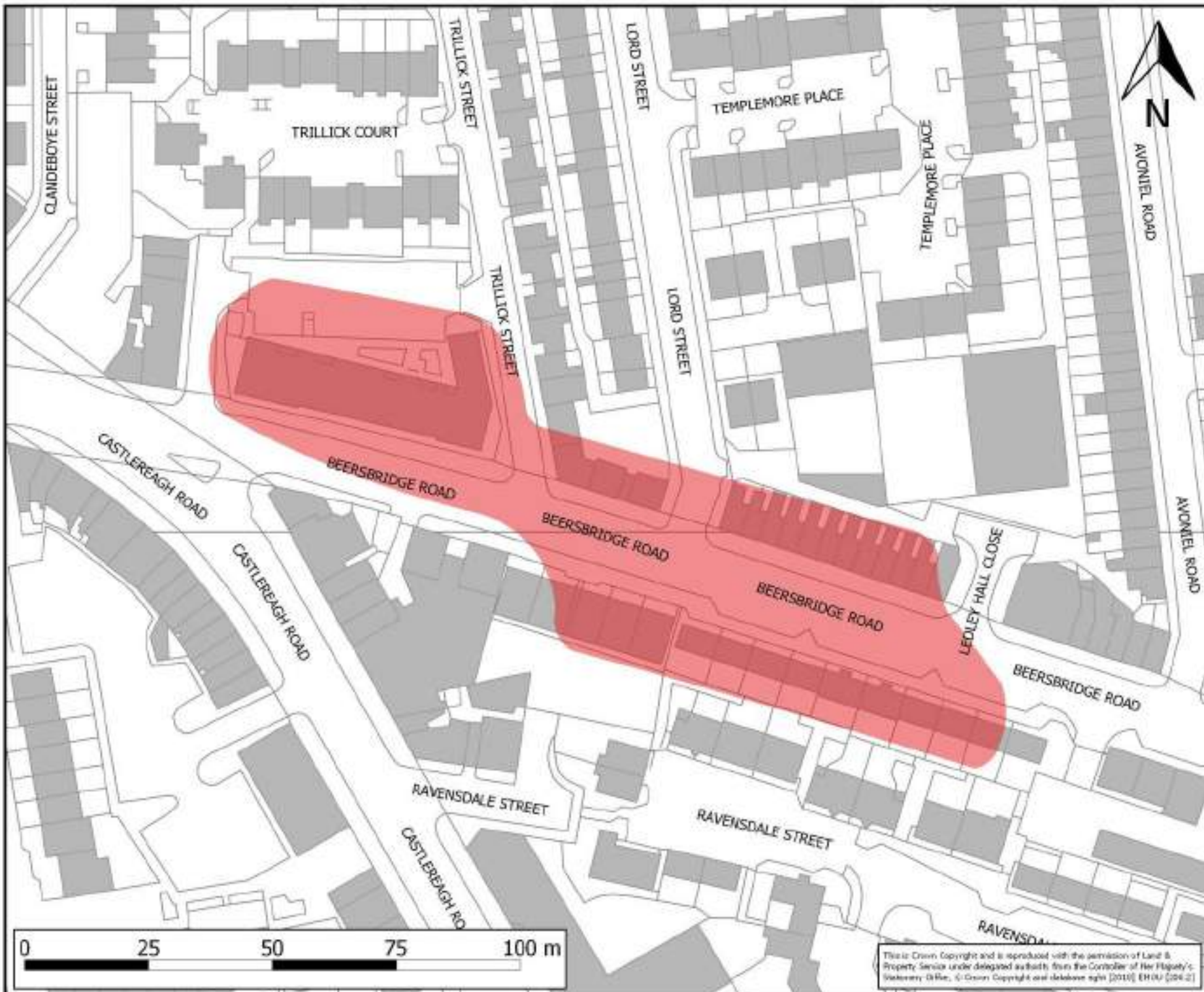


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Third Round

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CNMA 6

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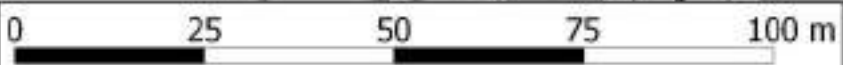
Candidate Noise Management Area

Rev	Revision Details	Chkd	Appd	Date
Drawn	RML			Preliminary
Design	CC			For comment
Check	DF			For issue
Spec	DF			For construction
Date	July 2018			As constructed
				Other



Project Name:
Roads Noise Action Plan
Third Round

Drawing Title
Belfast Agglomeration -
CNMA 7



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Drawing ID	Belfast-CNMA7	Rev	0



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Rev	Revision Details	Chkd	Appd	Date
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Date	July 2018			As constructed
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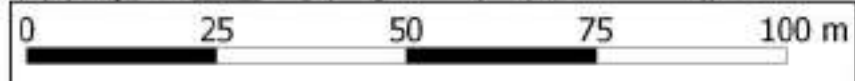
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Project Name
**Roads Noise Action Plan
 Third Round**

Drawing Title
**Belfast Agglomeration -
 CNMA 8**



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Design	DC	For Comment	
Check	DF	For Issue	
Spec	DF	For Construction	
Date	July 2018	As constructed	
		Other	



Project Name:
Roads Noise Action Plan
Third Round

Drawing Title:
Belfast Agglomeration -
CNMA 9

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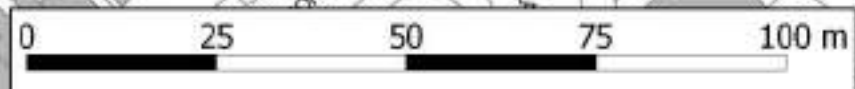
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Project Name
**Roads Noise Action Plan
 Third Round**

Drawing Title
**Belfast Agglomeration -
 CNMA 10**

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Belfast-CNMA10
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Design	DC			For comment
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Date	July 2018			As constructed
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Project Name
 Roads Noise Action Plan
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Drawing Title
 Belfast Agglomeration -
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 Belfast-CNMA11

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Date	July 2018	As constructed	
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Project Name:
Roads Noise Action Plan
Third Round

Drawing Title:
Belfast Agglomeration -
CNMA 12

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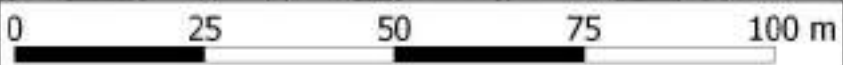
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Date	July 2018			As constructed
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Project Name
 Roads Noise Action Plan
 Third Round

Drawing Title
 Belfast Agglomeration -
 CNMA 13

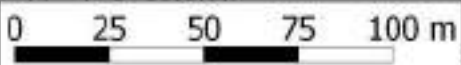
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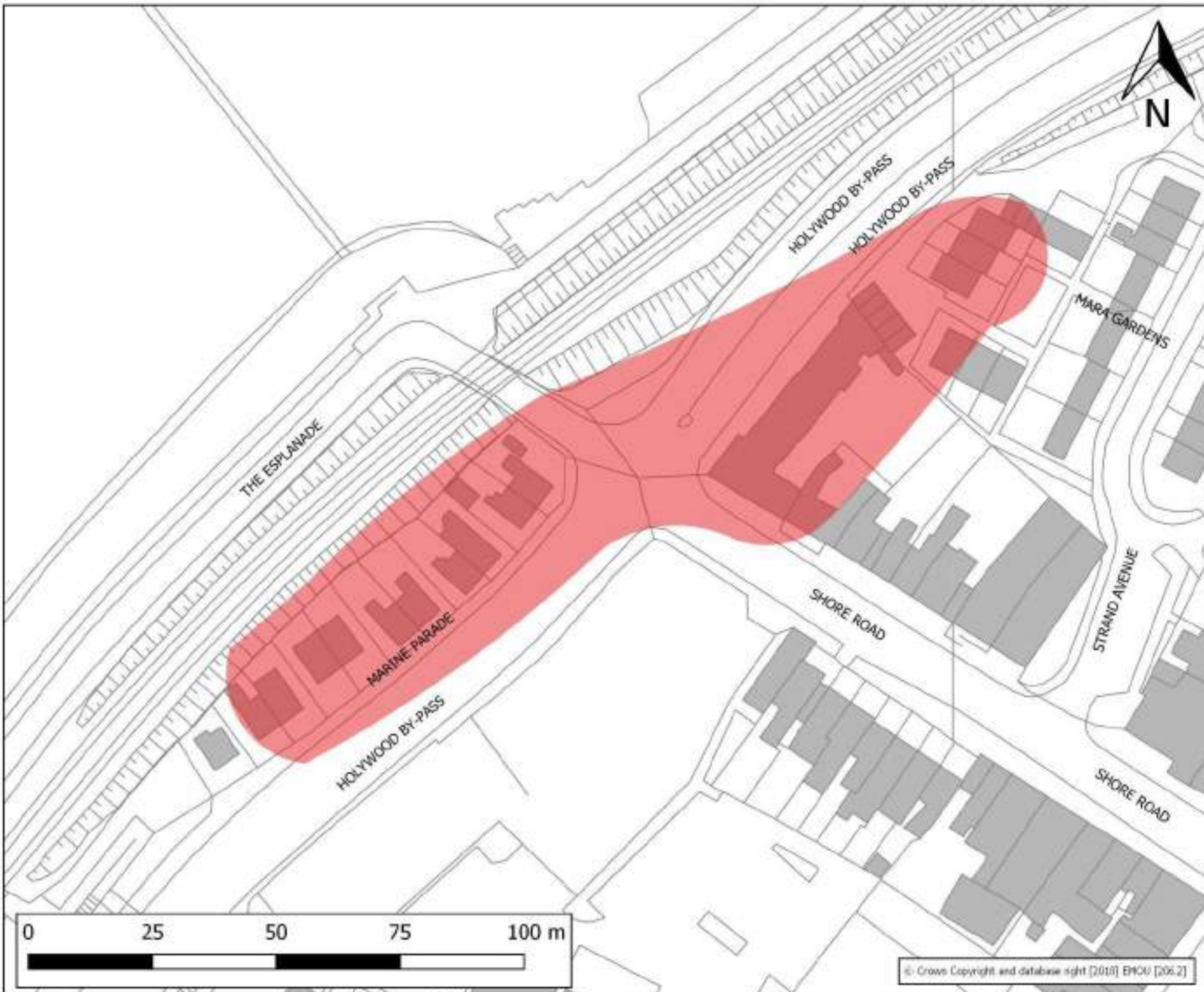
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Drawing Title:
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CNMA 14

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Design	CC			For comment
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Date	July 2018			As constructed
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Project Name:
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Third Round

Drawing Title
Belfast Agglomeration -
CNMA 15

Drawn: RML
Scale: 1:1,000

Drawing ID:
Belfast-CNMA15

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Design	CC			For comment
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Spec'd	DF			For construction
Date	July 2018			As constructed
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Project Name
 Roads Noise Action Plan
 Third Round

Drawing Title
 Belfast - CNMA 16



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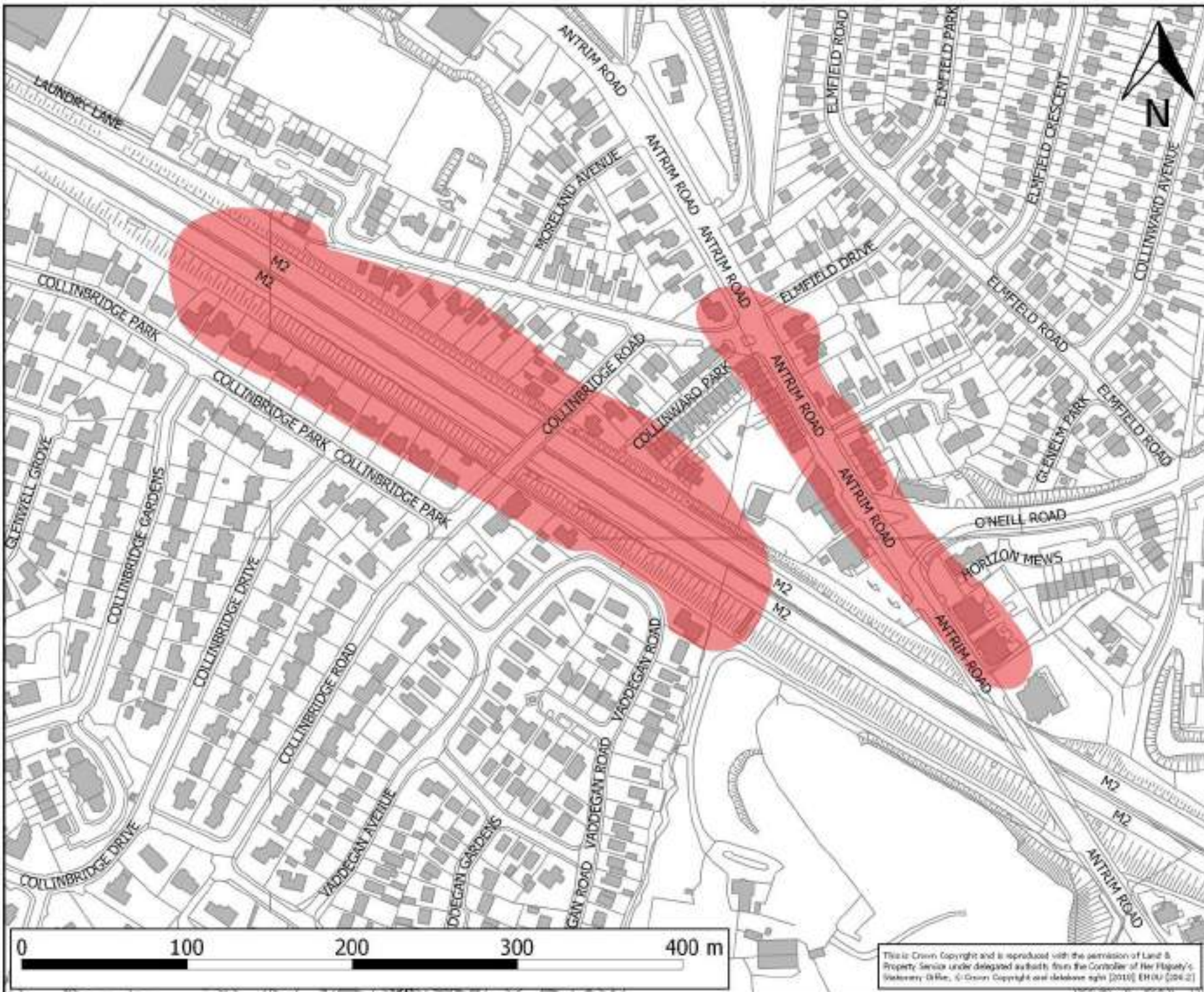
Project Name
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 Third Round

Drawing Title
 Belfast Agglomeration -
 CNMA 17

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Date	July 2019			As constructed
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Project Name:
Roads Noise Action Plan
Third Round

Drawing Title:
Belfast Agglomeration -
CNMA 18

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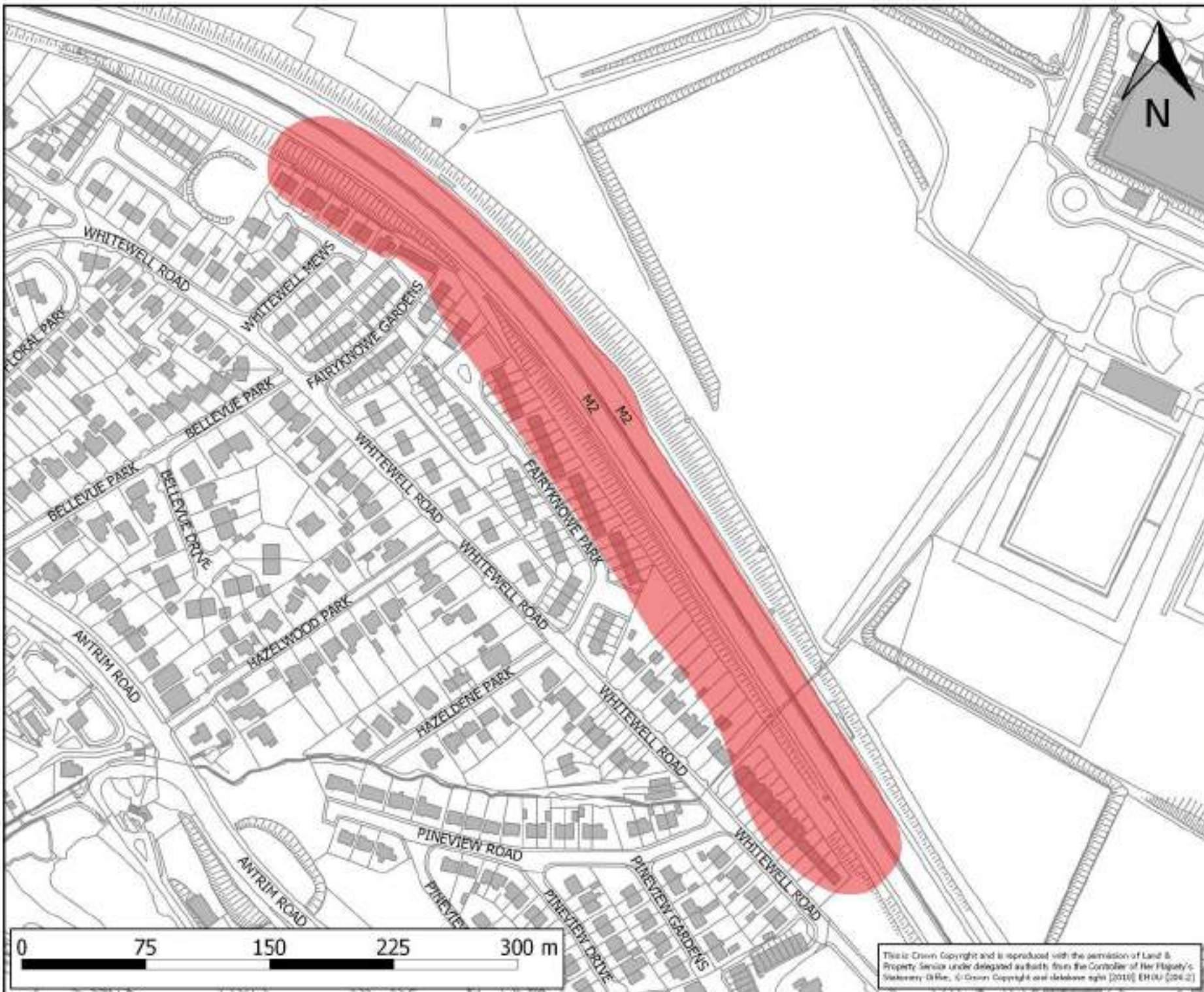


Project Name:
Roads Noise Action Plan
Third Round

Drawing Title:
Belfast Agglomeration -
CNMA 19

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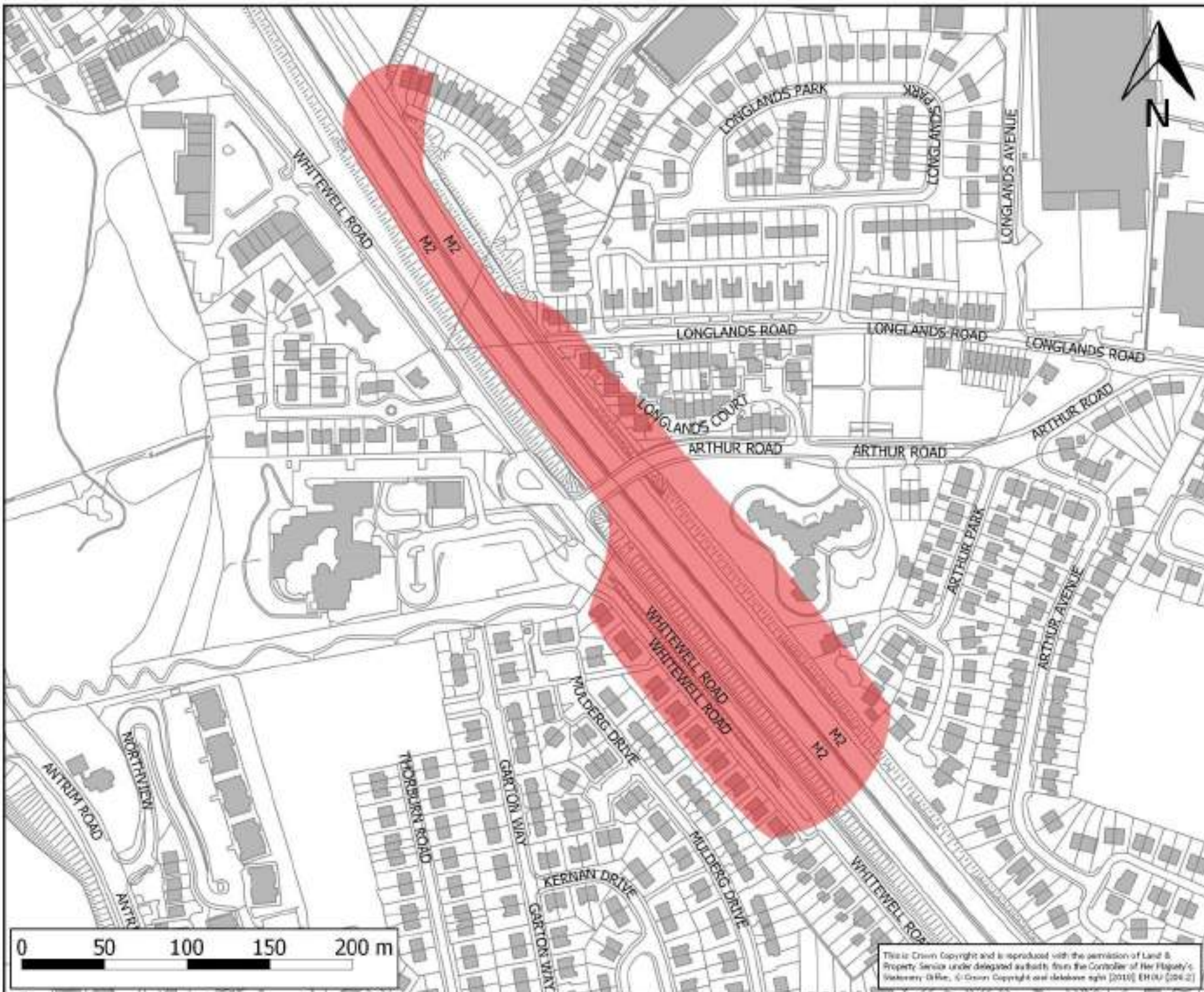
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Roads Noise Action Plan
Third Round

Drawing Title
Belfast Agglomeration -
CNMA 20

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Design	CC			For Comment
Check	DF			For Issue
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Date	July 2019			As constructed
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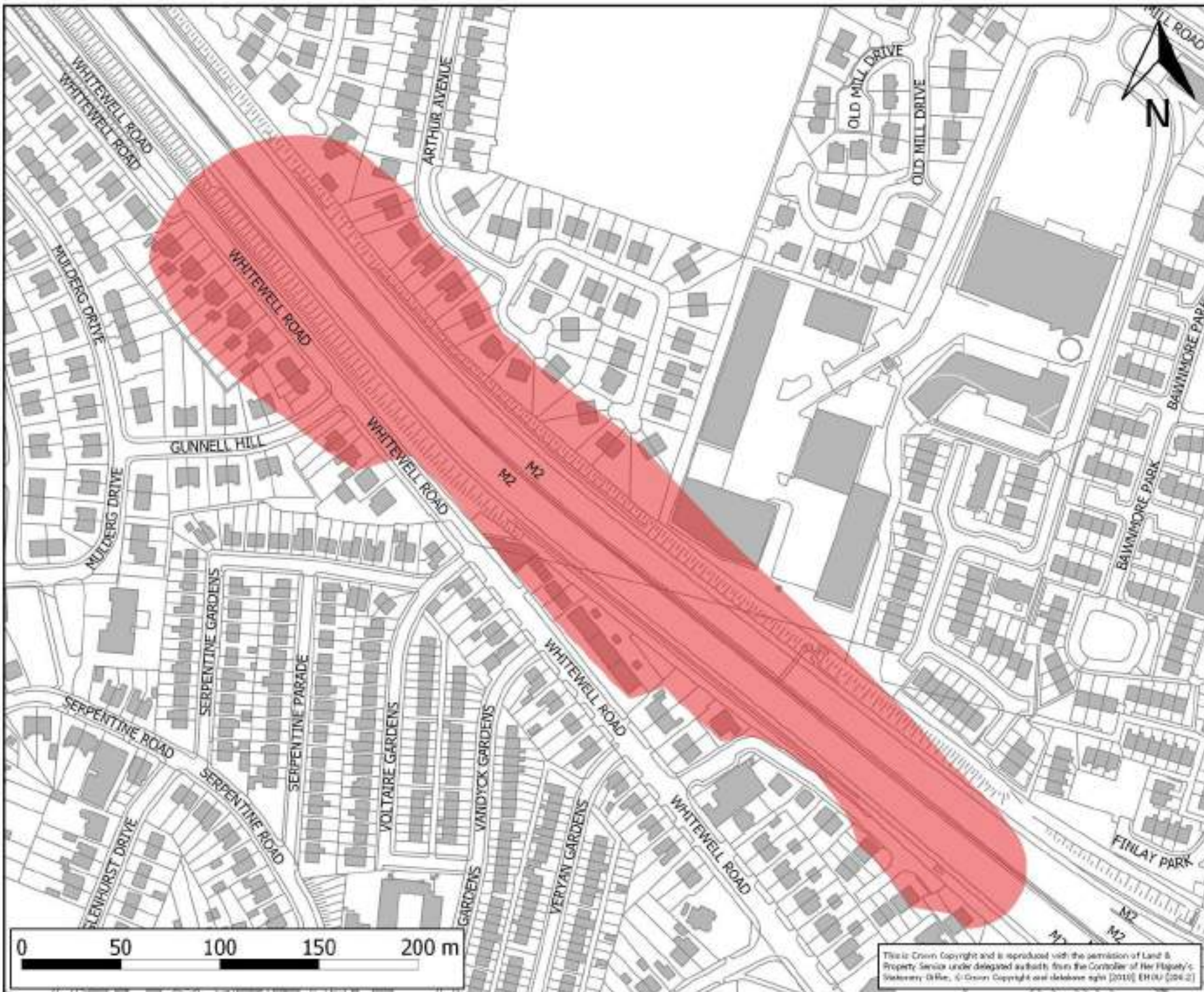
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 Third Round

Drawing Title
 Belfast Agglomeration -
 CNMA 21

Original Dwg Size: A4
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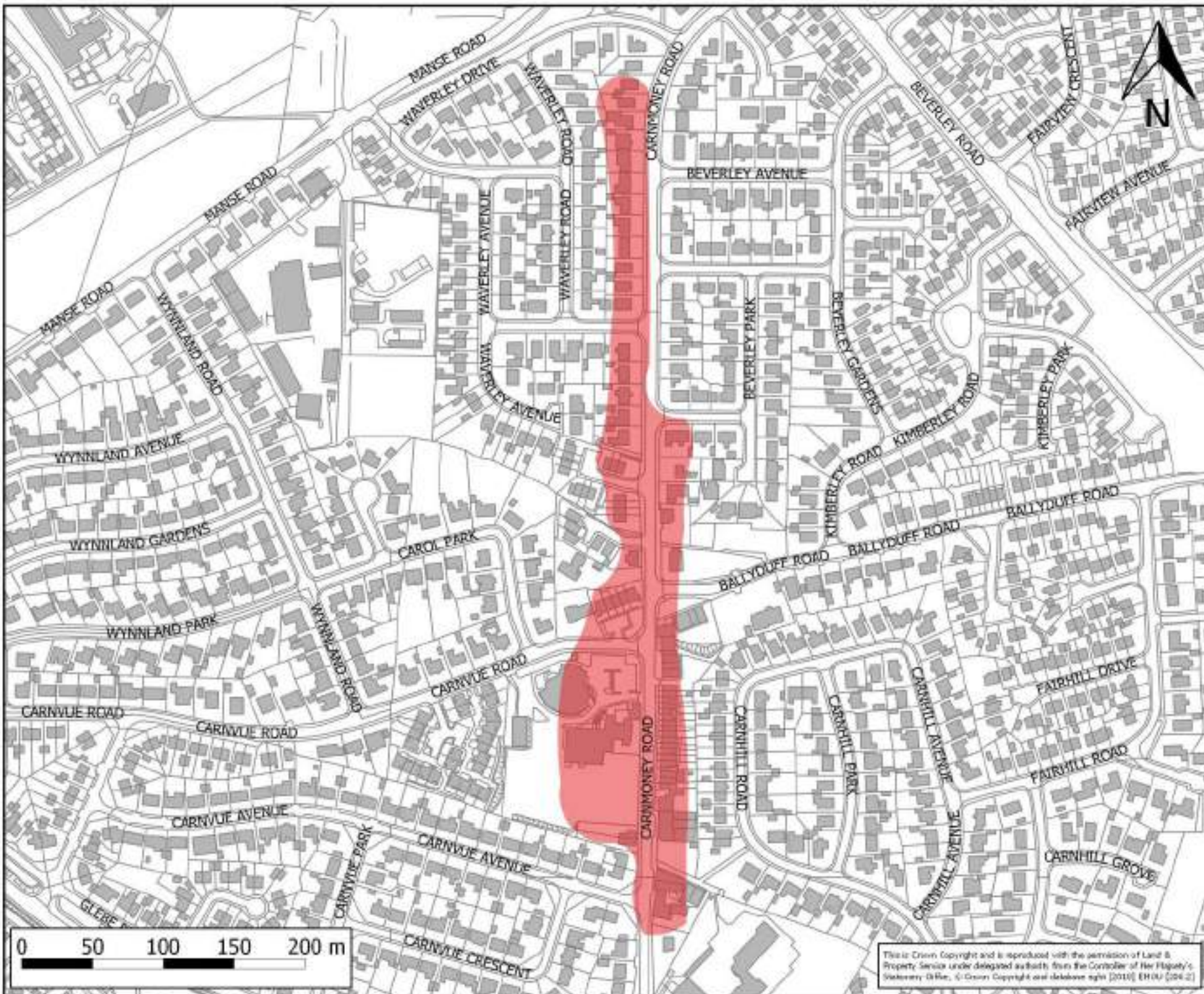
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Project Name
 Roads Noise Action Plan
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Drawing Title
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 CNMA 22

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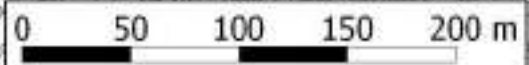
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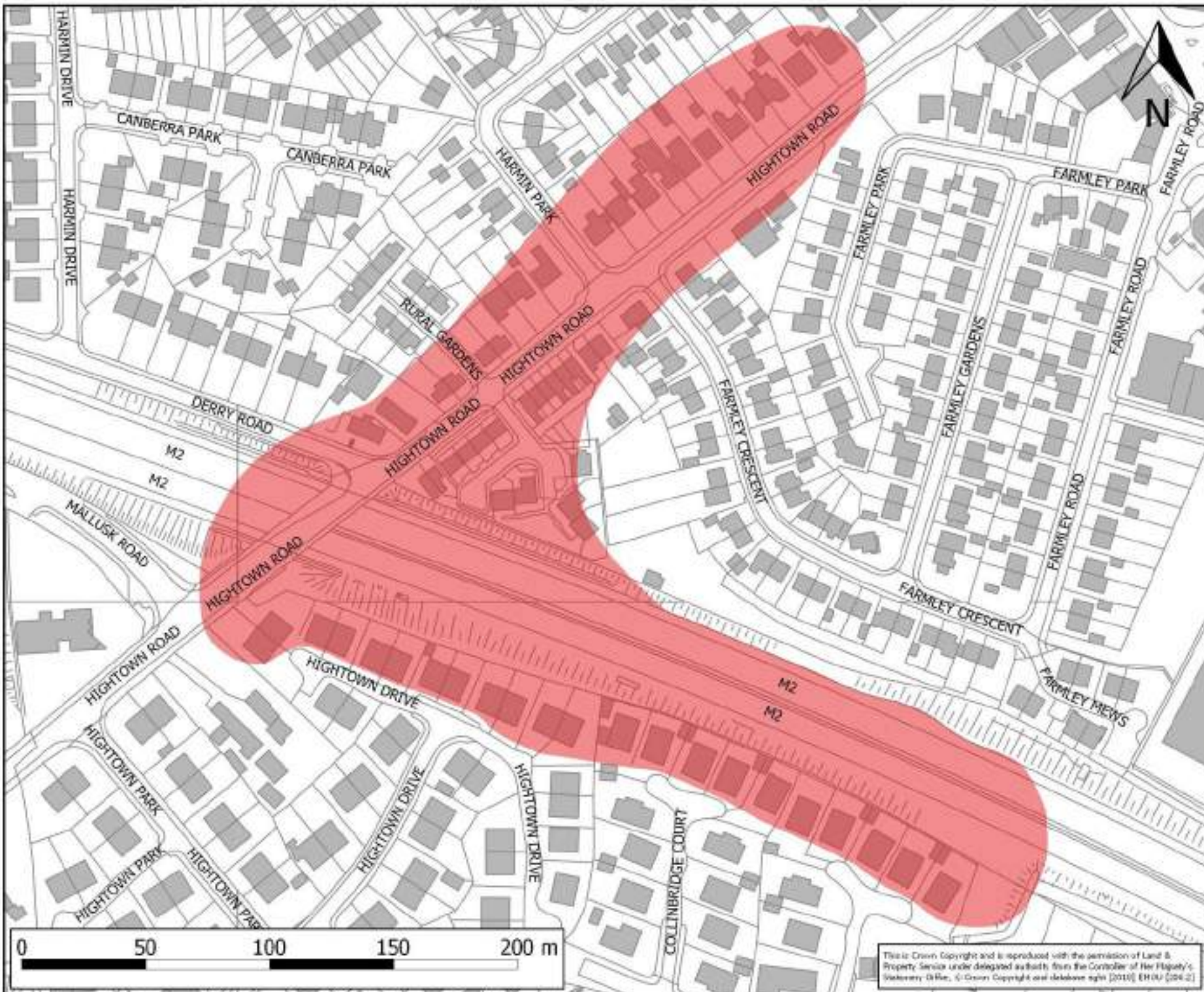
Project Name:
Roads Noise Action Plan
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Drawing Title
Belfast Agglomeration -
CNMA 23



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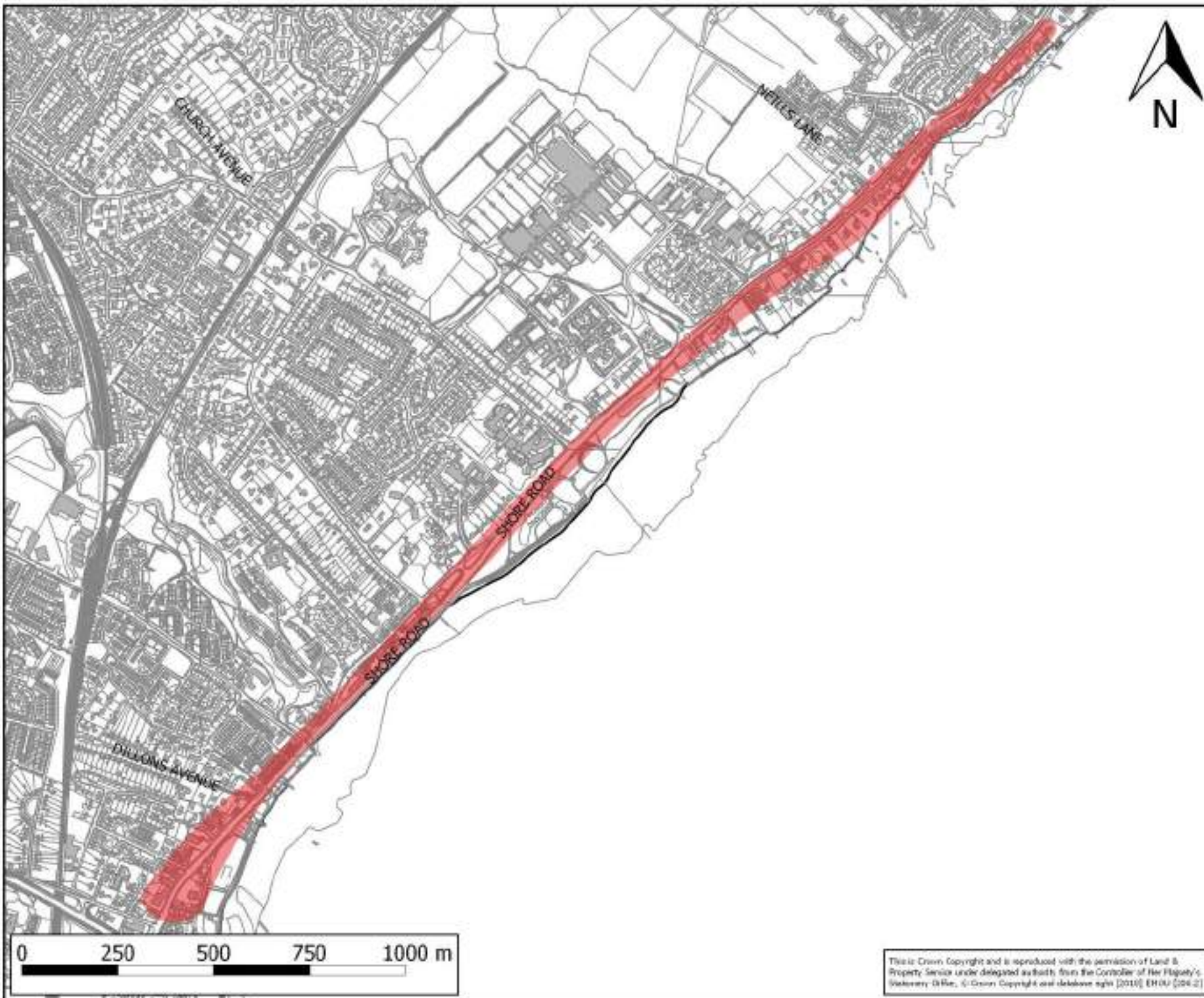


Project Name:
**Roads Noise Action Plan
 Third Round**

Drawing Title:
**Belfast Agglomeration -
 CNMA 24**

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Rev	Revision Details	Chkd	Appd	Date
Drawn	RMC			Preliminary
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Spec	DF			For Construction
Date	July 2019			As constructed
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Project Name
**Roads Noise Action Plan
 Third Round**

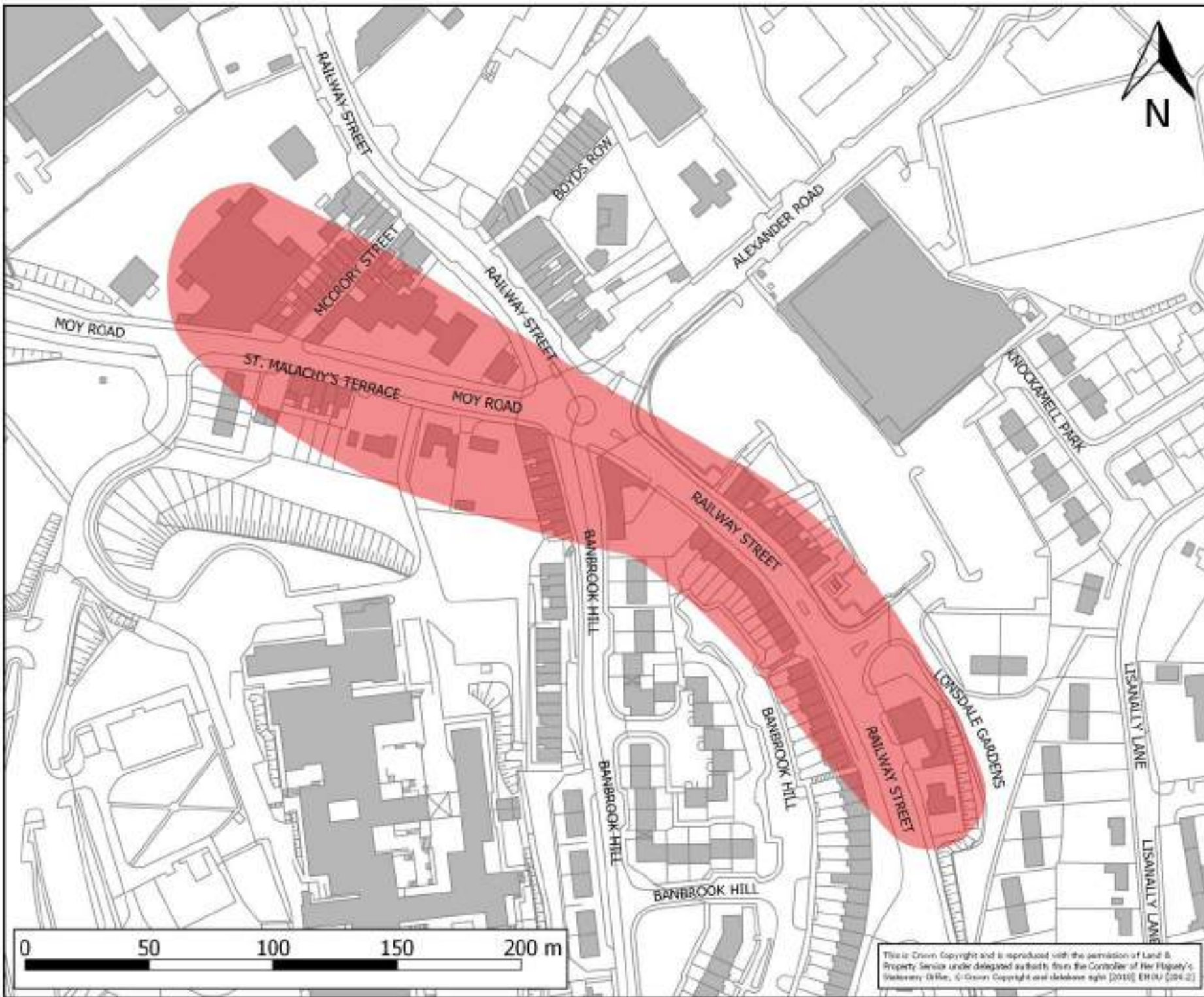
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 CNMA 25**

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Date	July 2018			As constructed
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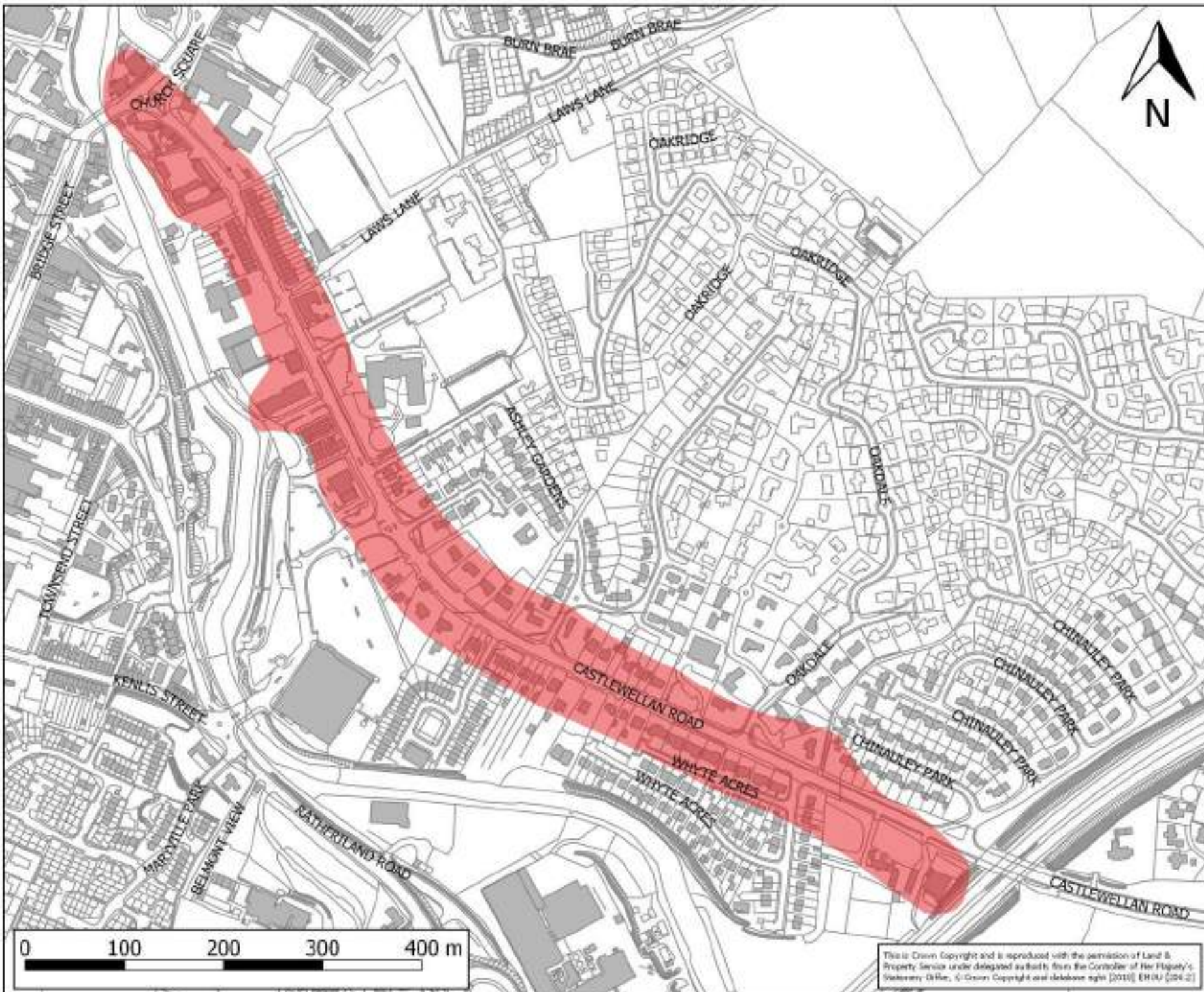
Project Name
**Roads Noise Action Plan
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Drawing Title
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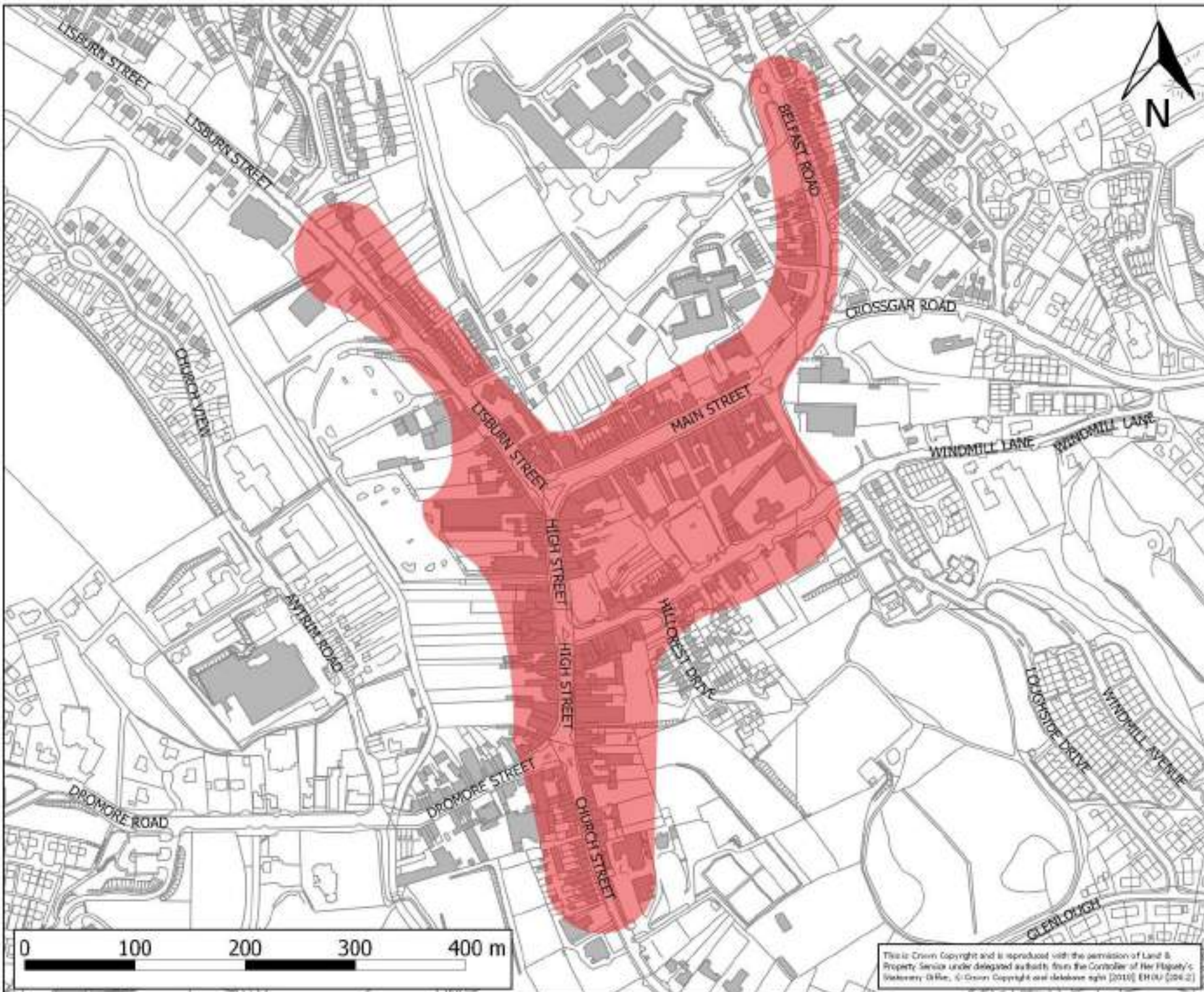


Project Name:
Roads Noise Action Plan
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Drawing Title:
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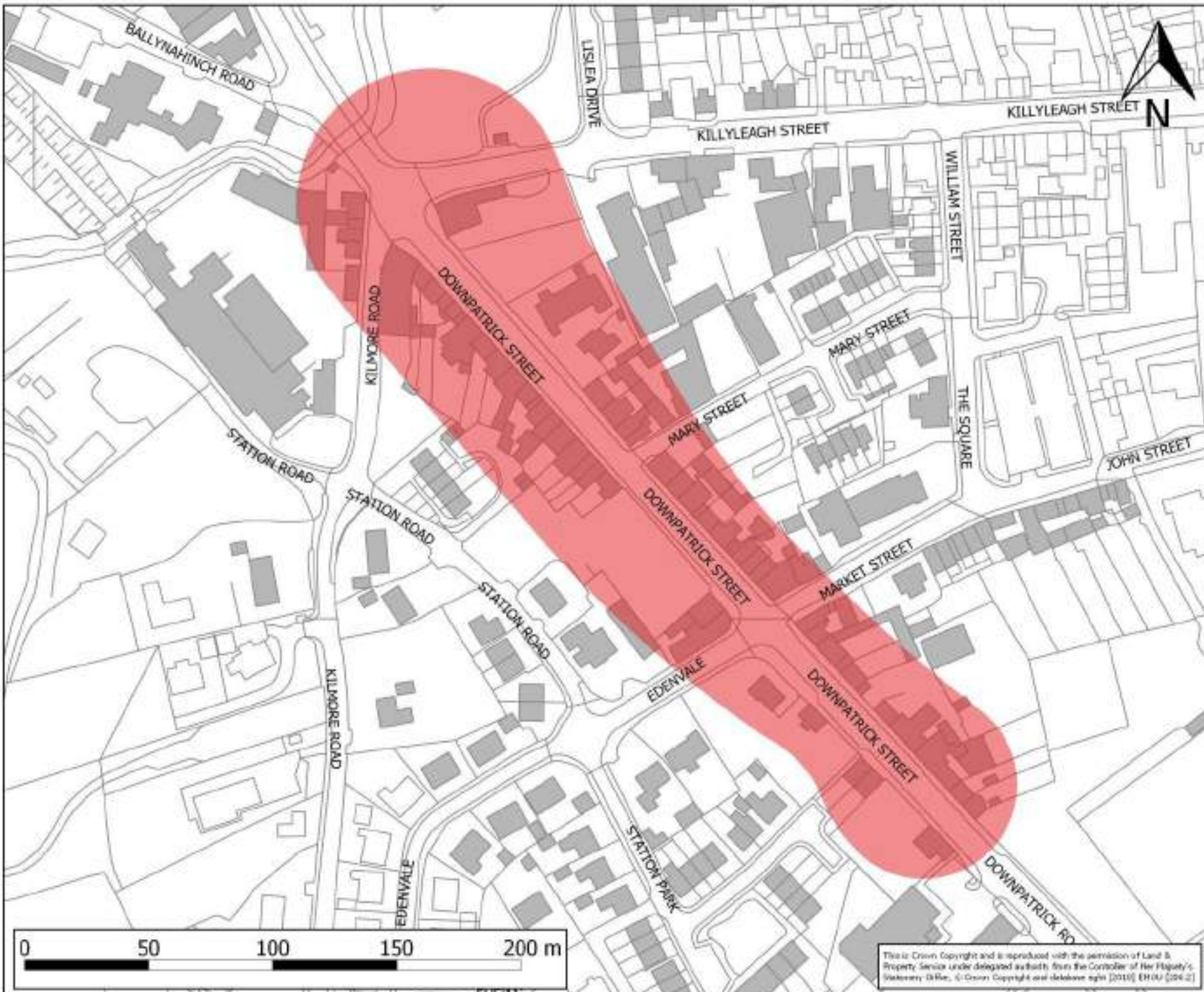


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**Roads Noise Action Plan
 Third Round**

Drawing Title:
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Date	July 2018	As constructed	
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Drawing Title
Crossgar - CNMA 1

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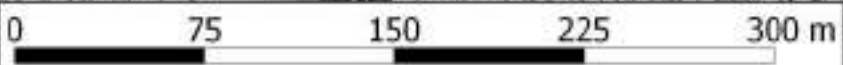
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Drawing Title
Lurgan - CNMA 1



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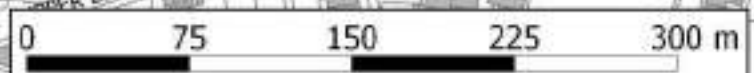
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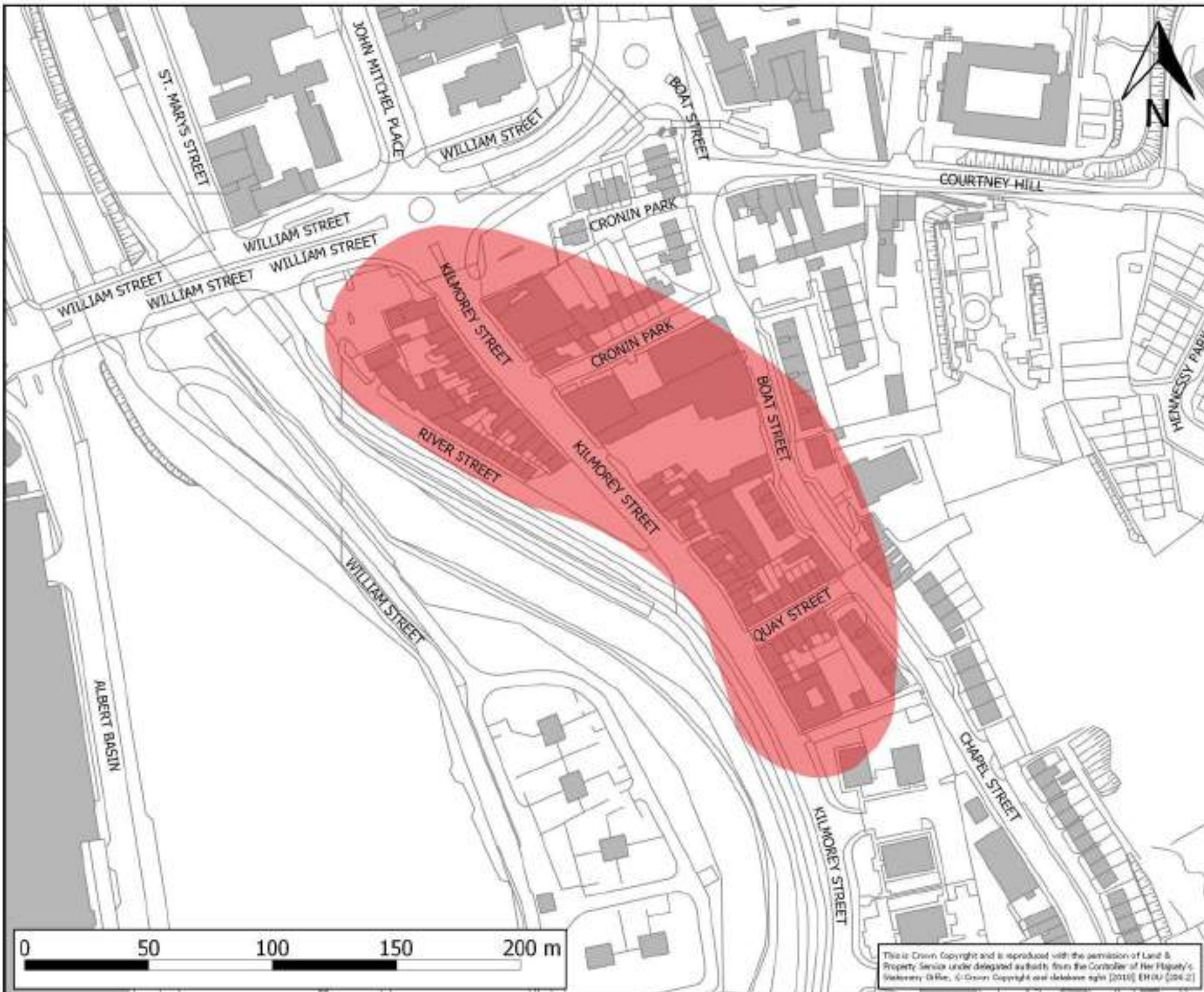
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Newry - CNMA 1



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Design	CC	For Circulation	
Check	DF	For Issue	
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Date	July 2018	As constructed	
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Project Name
Roads Noise Action Plan
Third Round

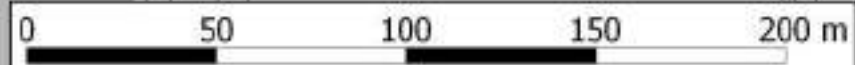
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Newry - CNMA 2

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Newry-CNMA2

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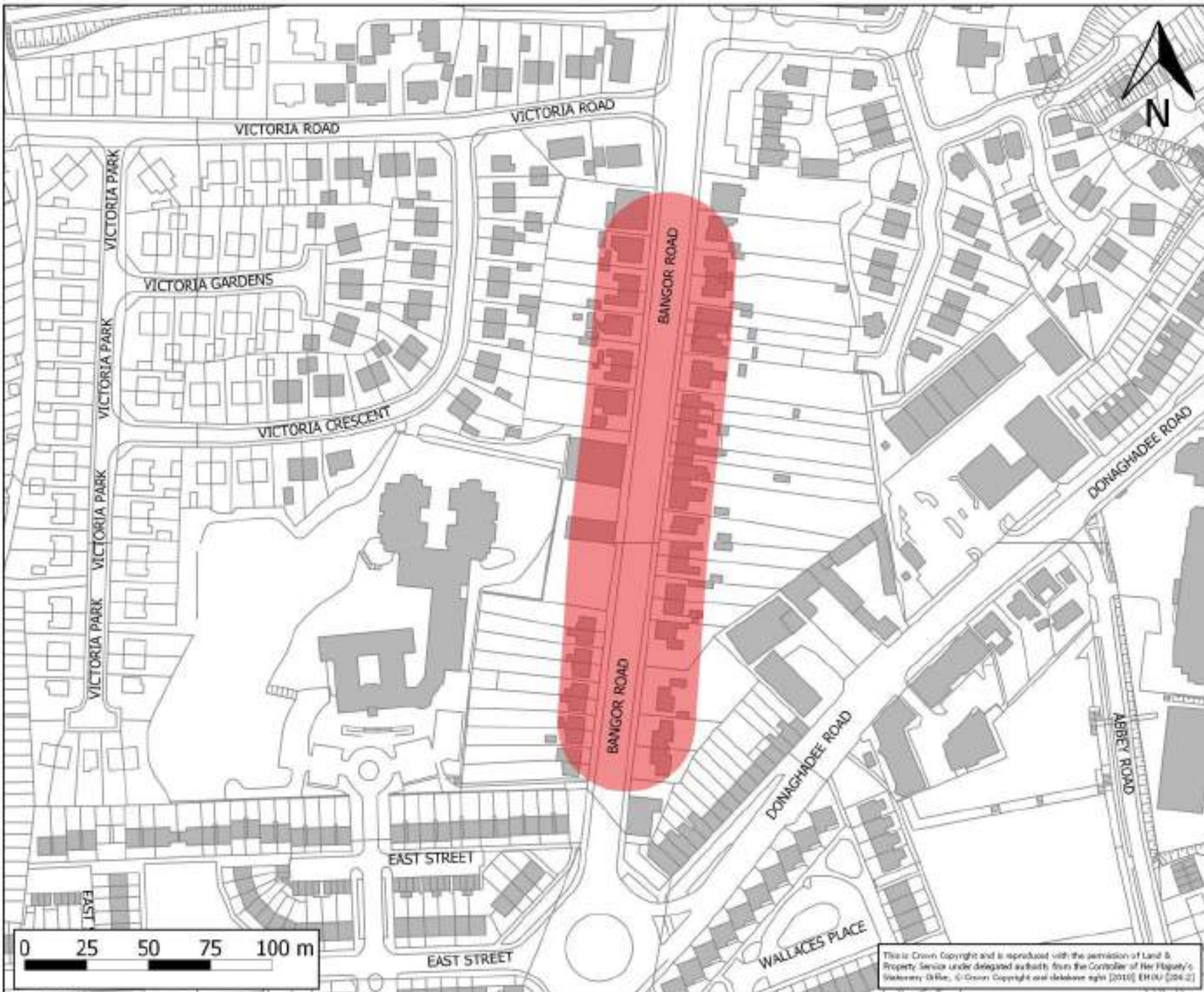
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Newtownards-CNMA1

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Date	July 2018			As constructed
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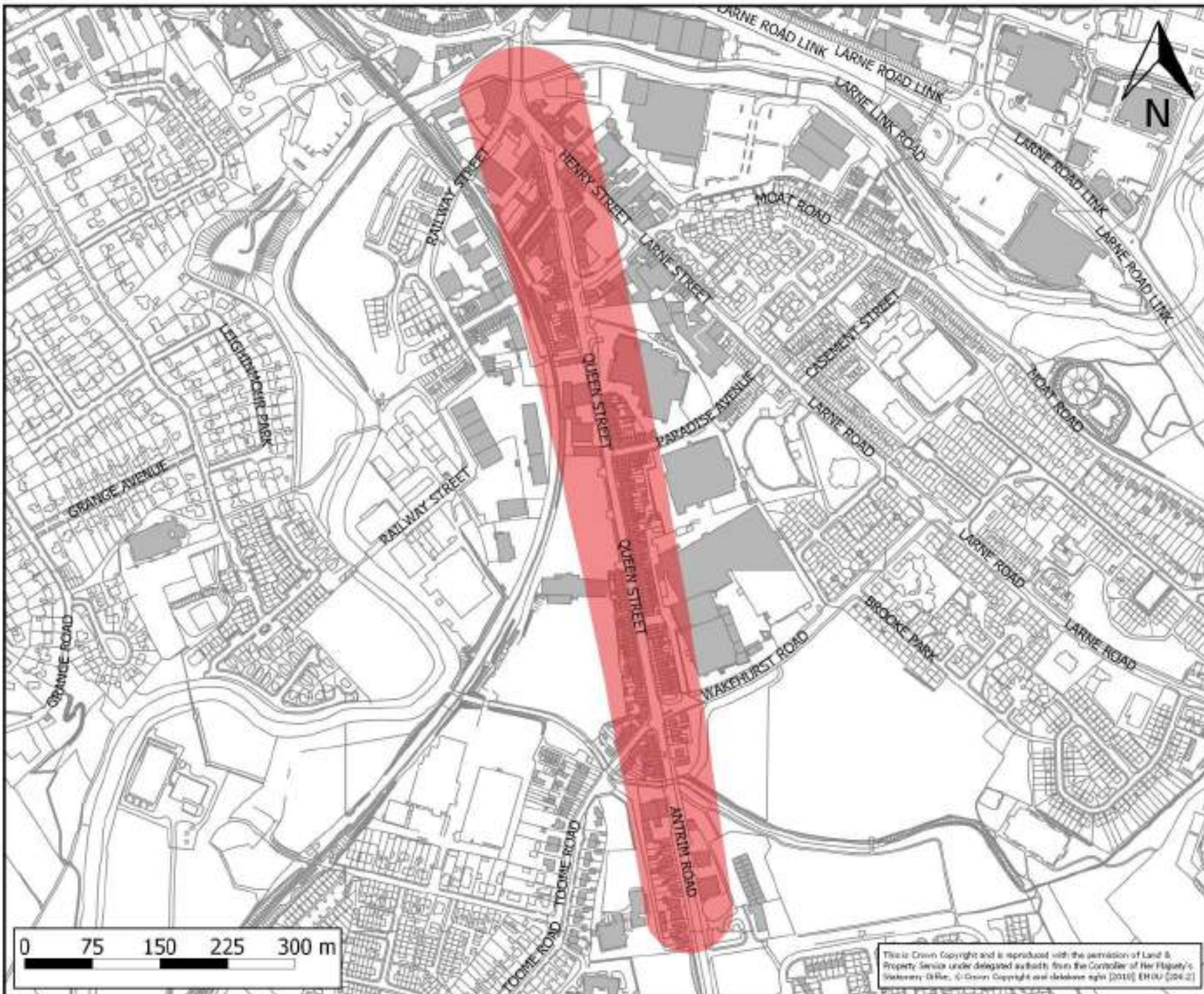


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Drawing Title
 Newtownards - CNMA 2

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Spec	DF	For construction	
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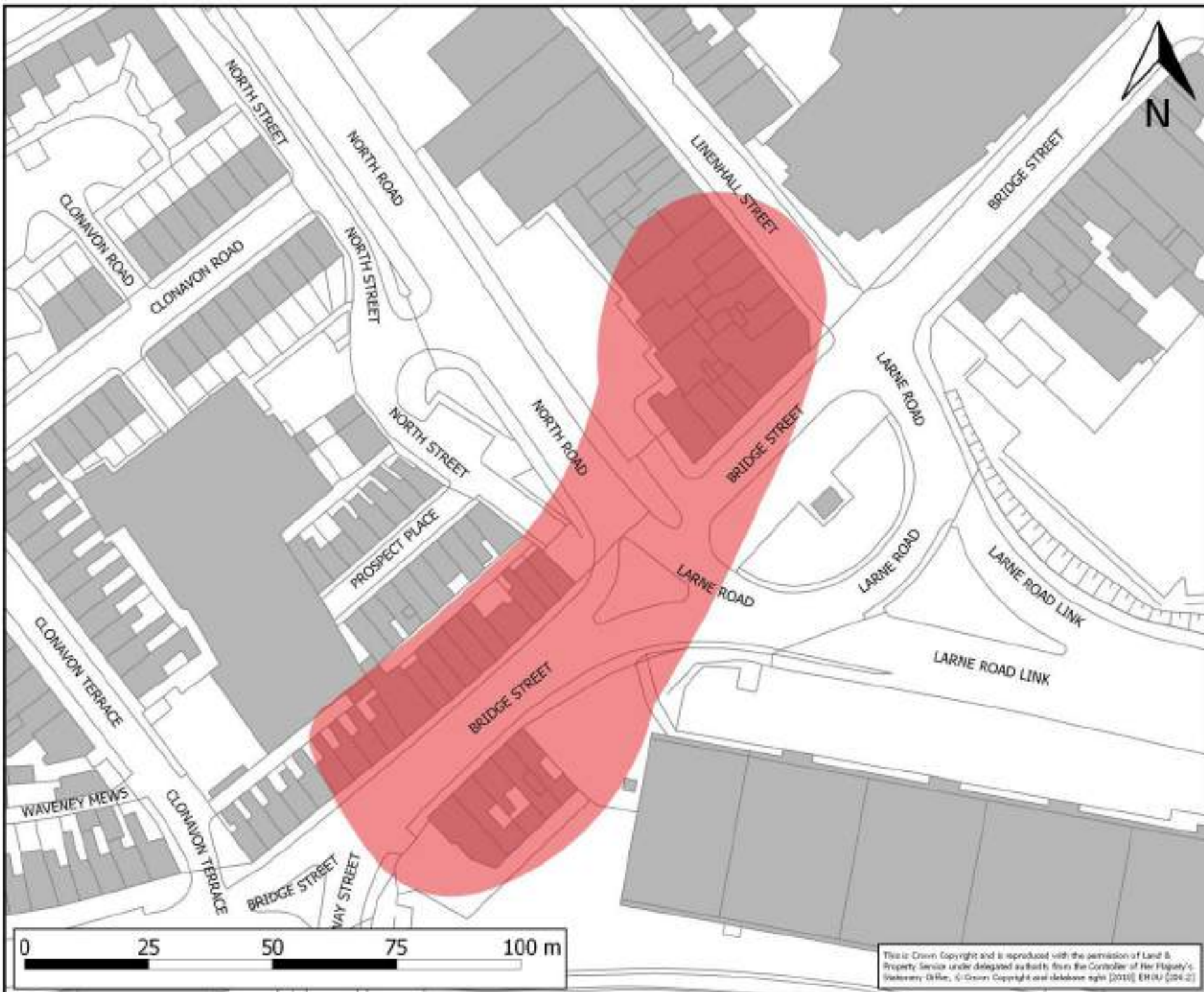
Department for Infrastructure
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Drawing Title
Ballymena - CNMA 1

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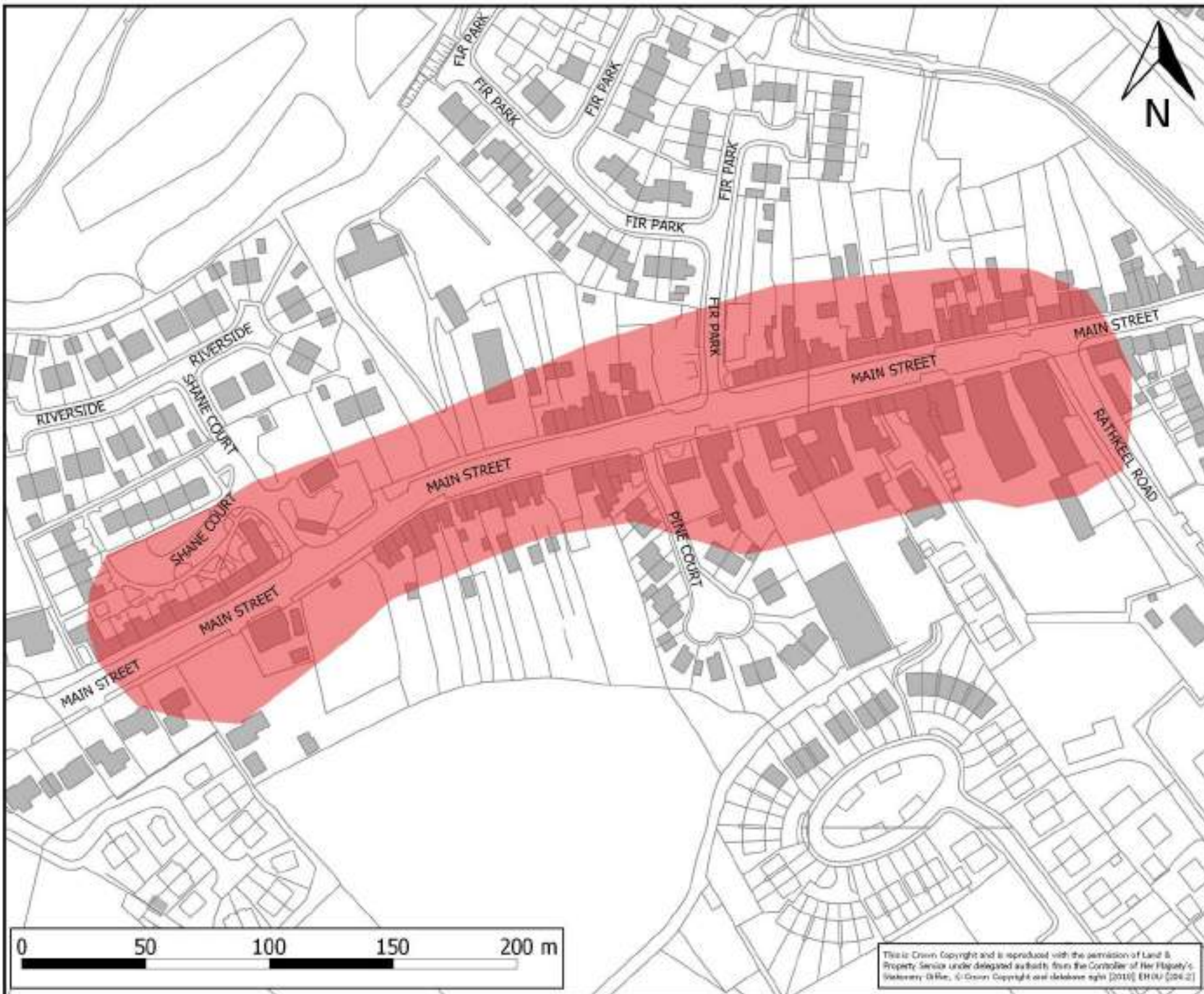
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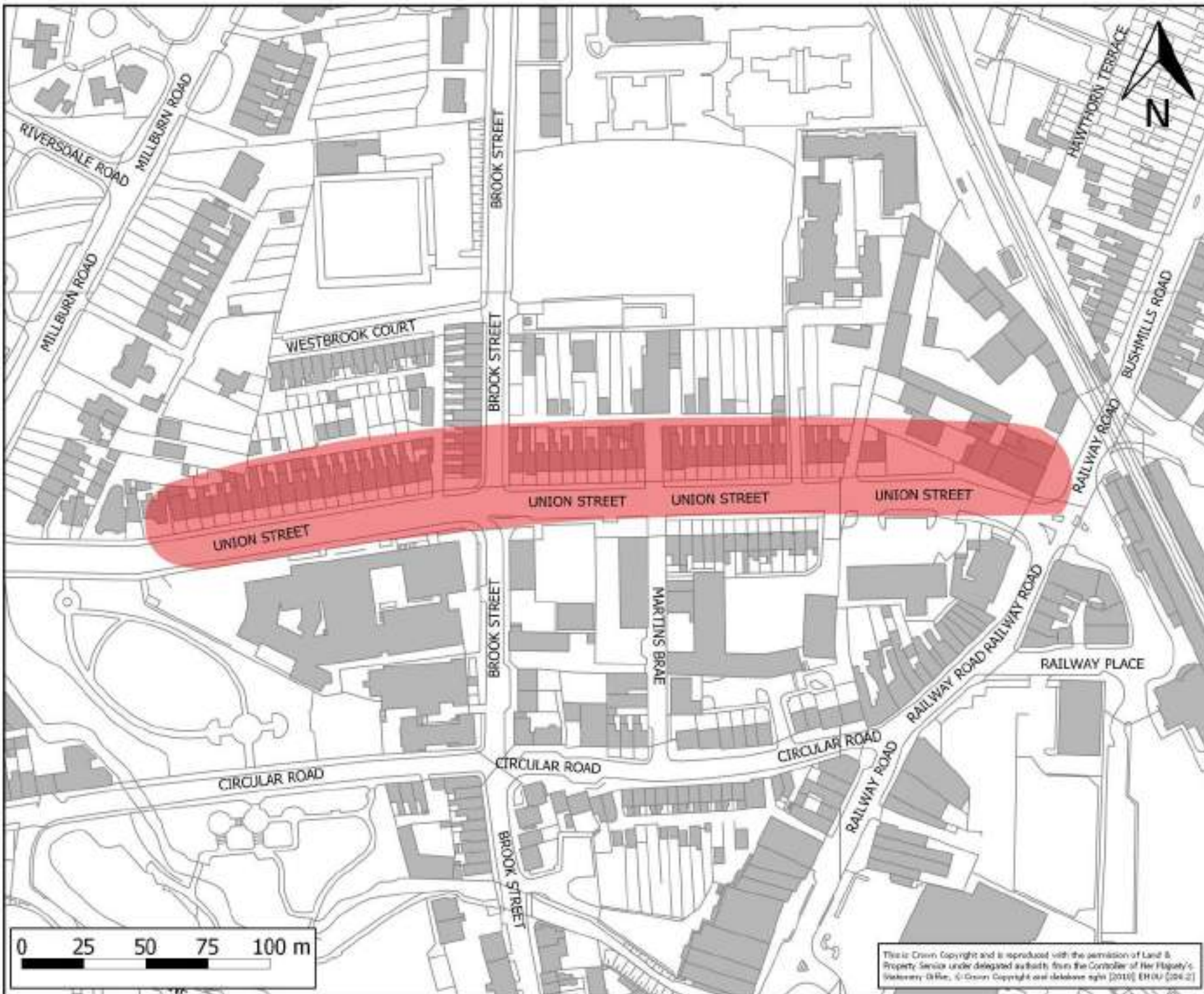
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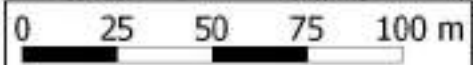


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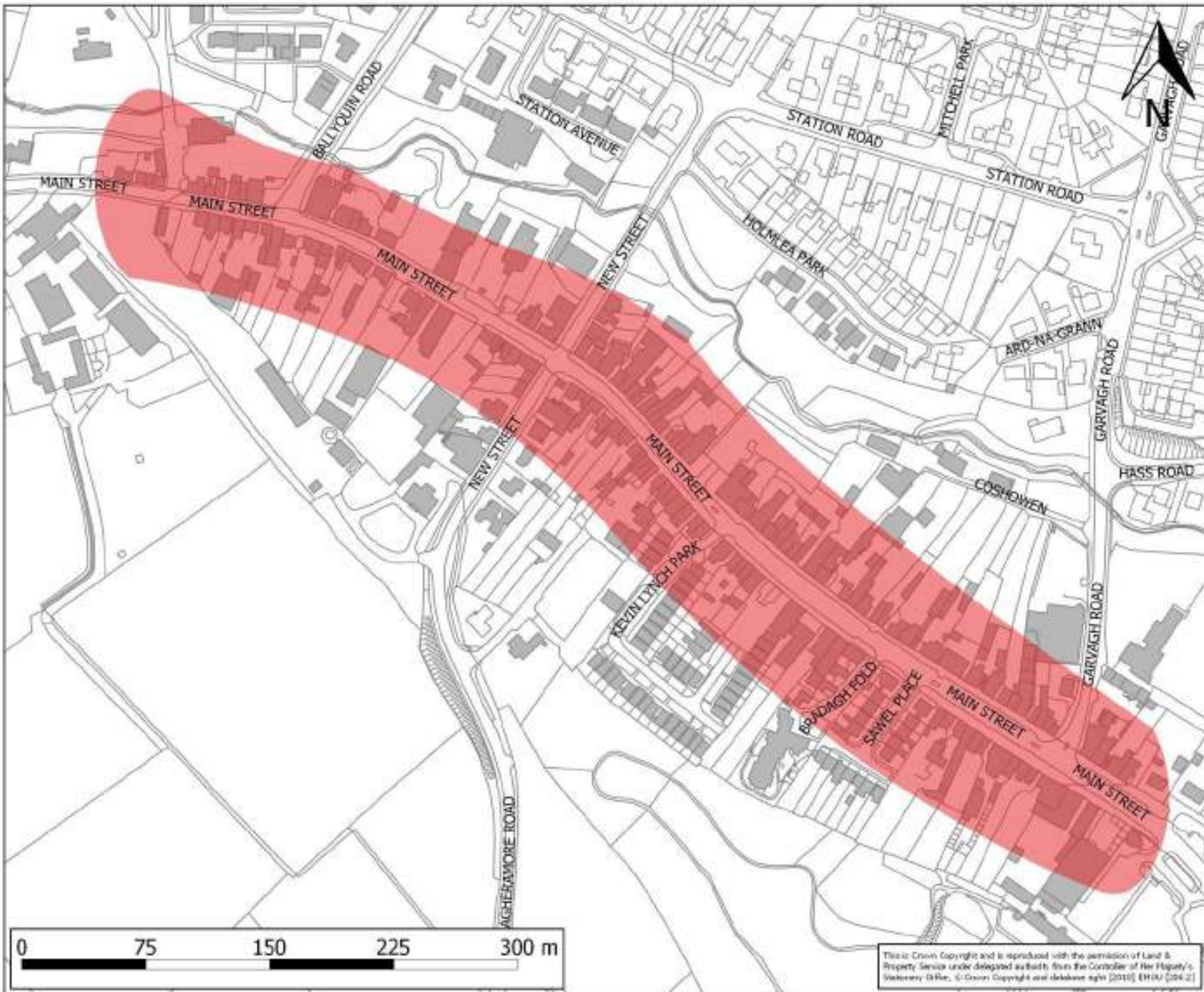
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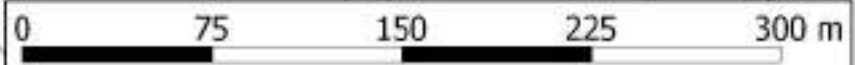
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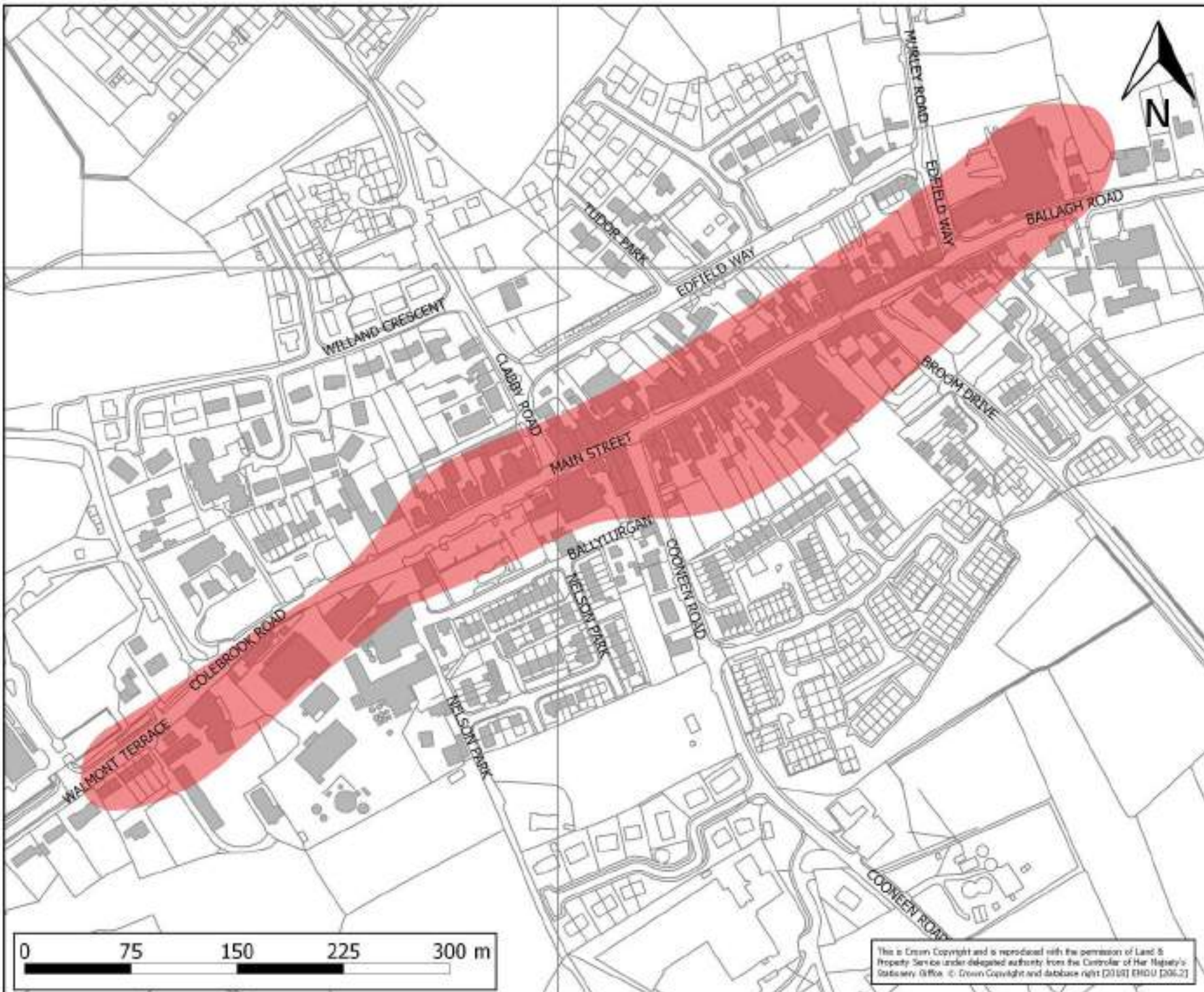
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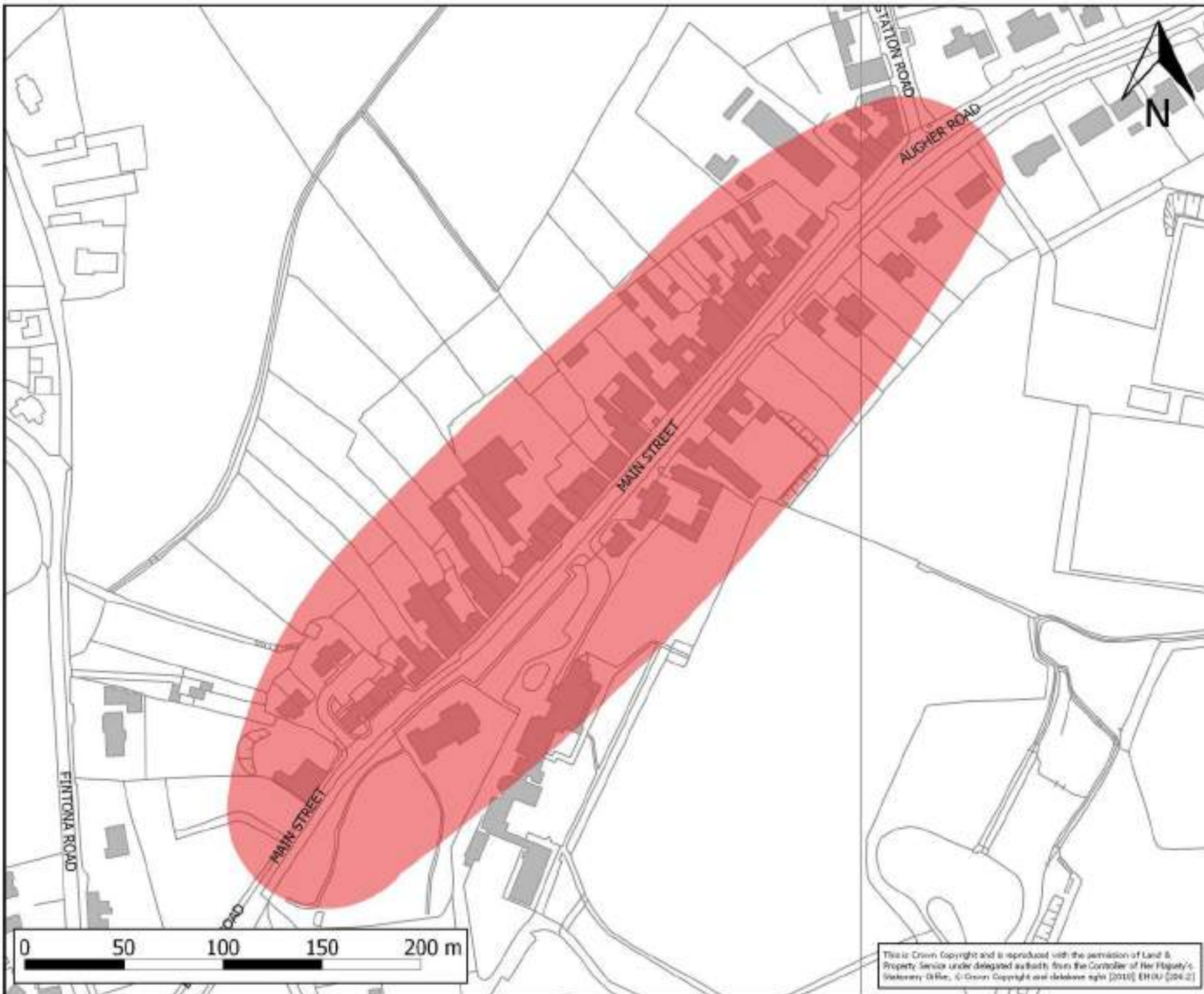
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Spec	DF			For Construction
Date	July 2018			As constructed
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Drawing Title

Clogher- CNMA 1

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Scale: 1:2,500

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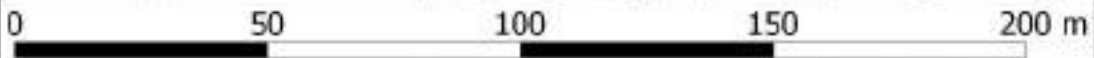
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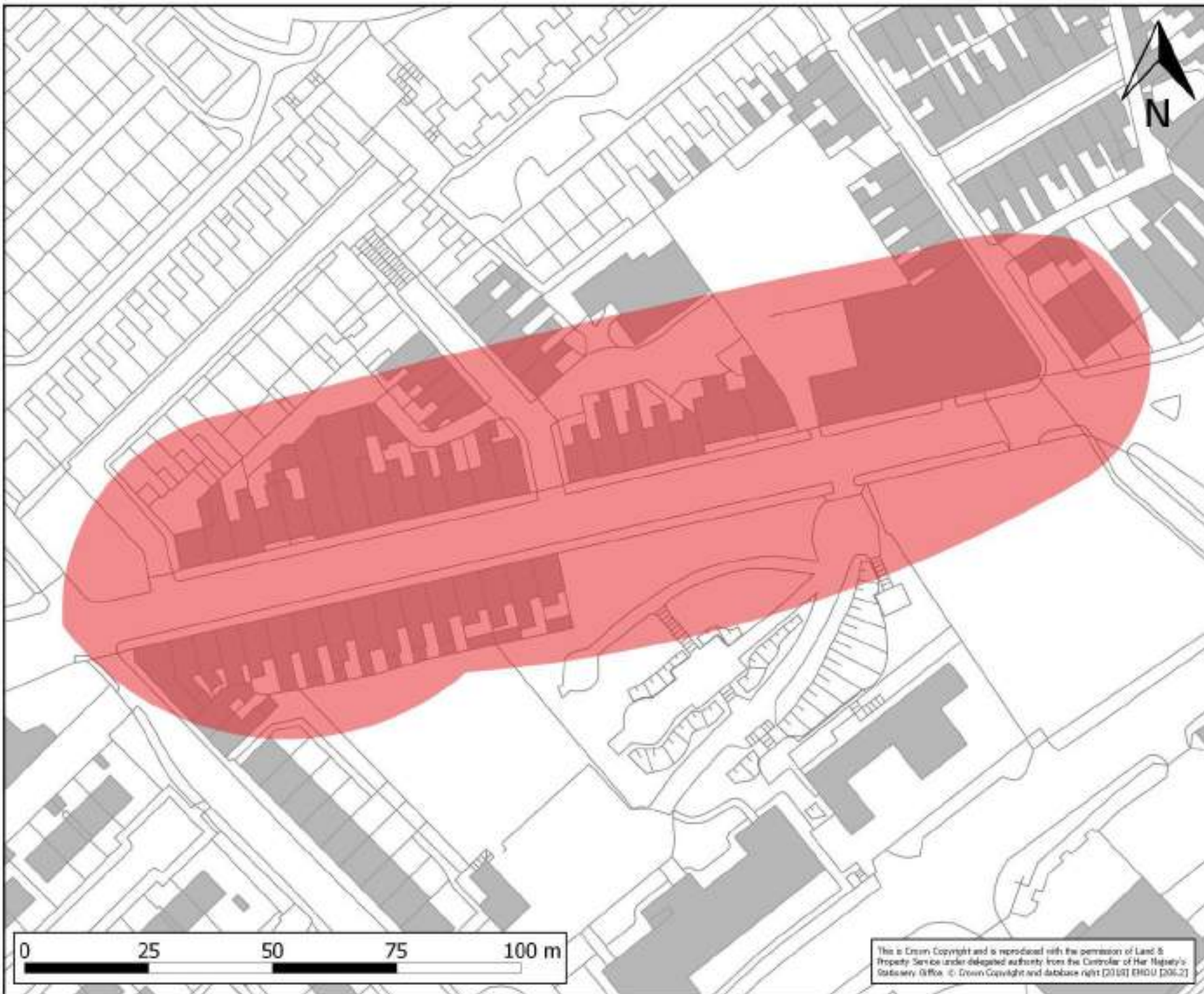
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Drawing Title
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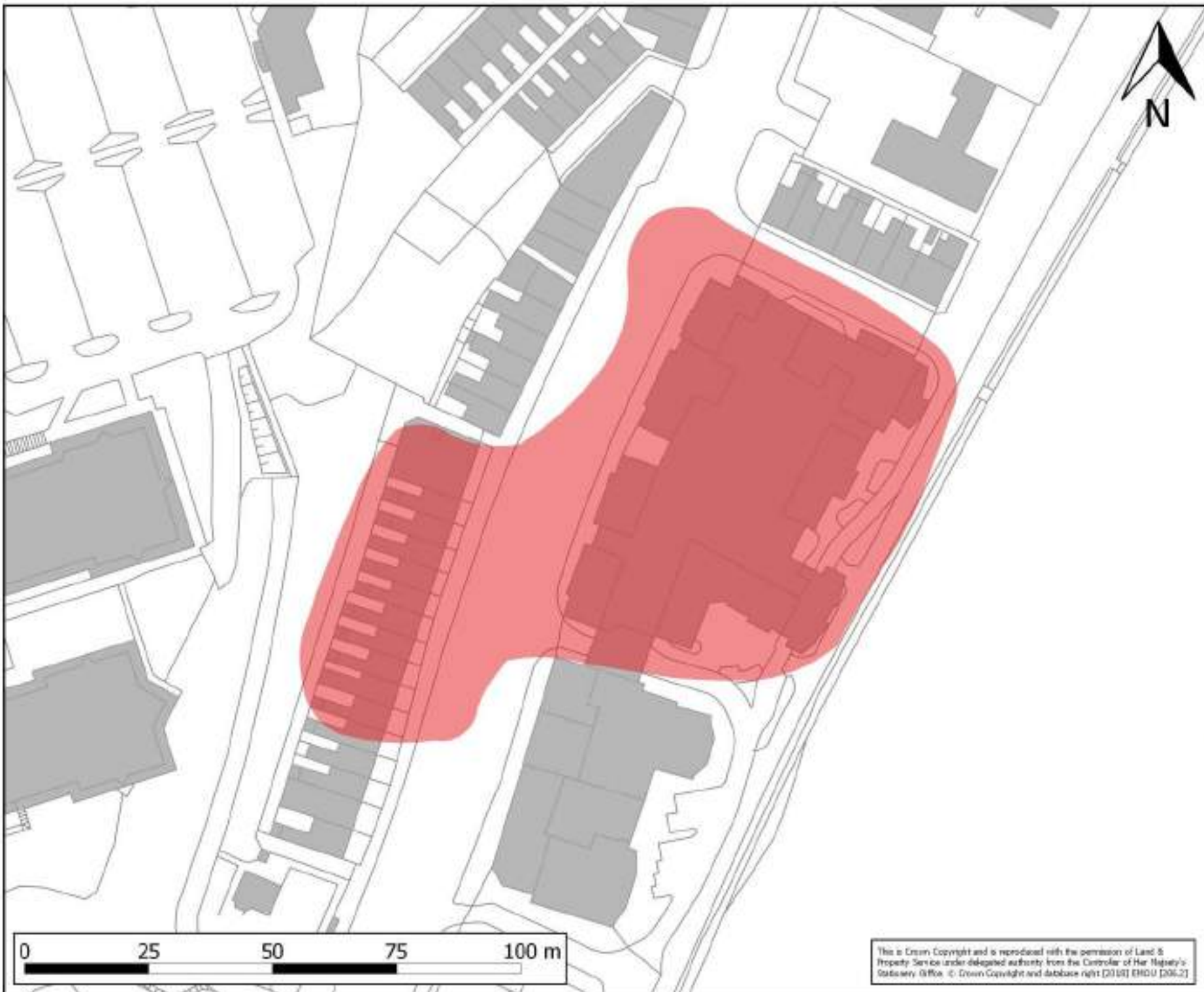
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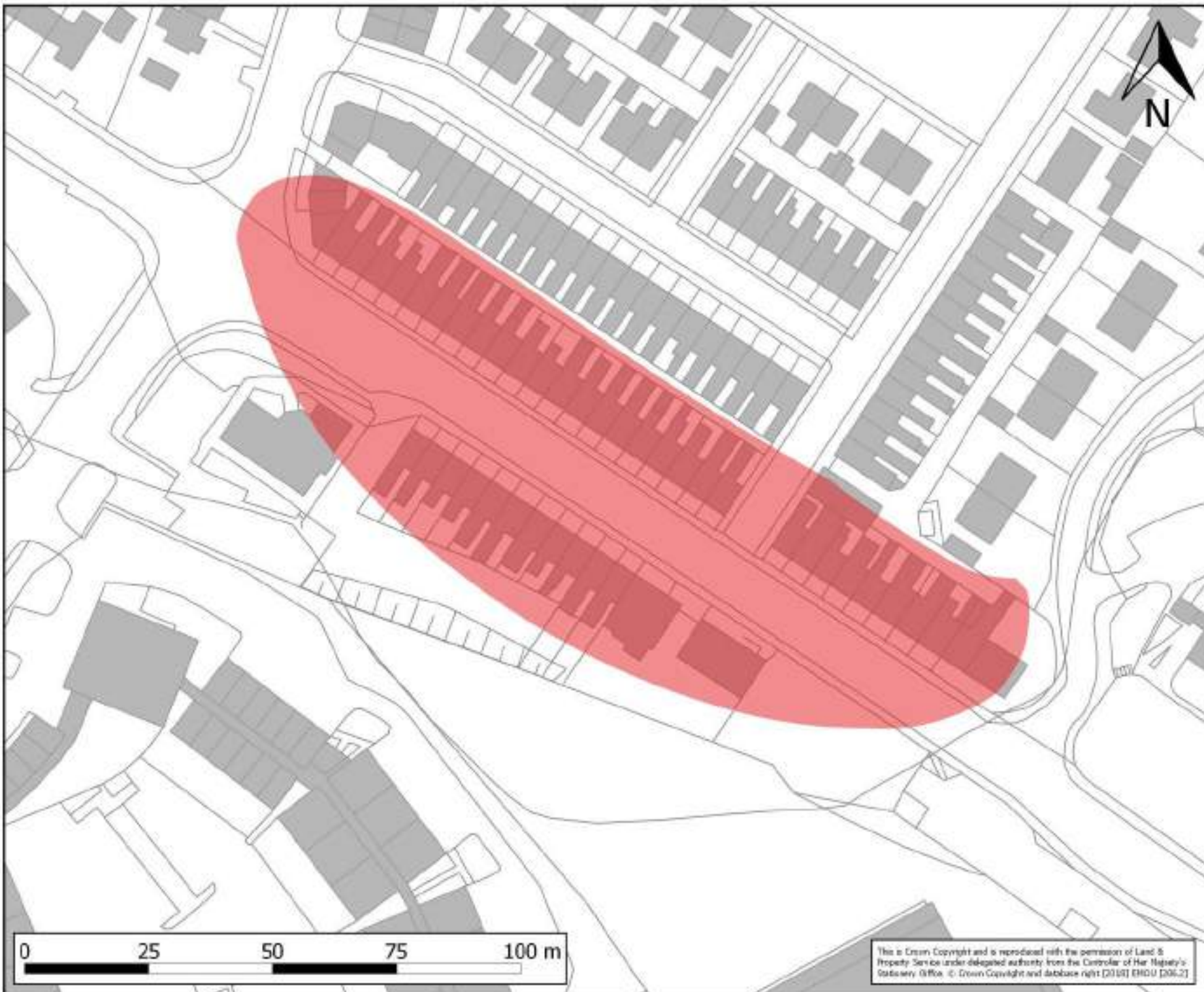
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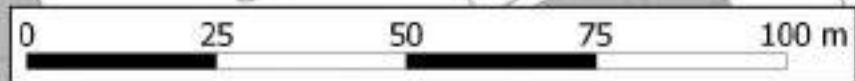
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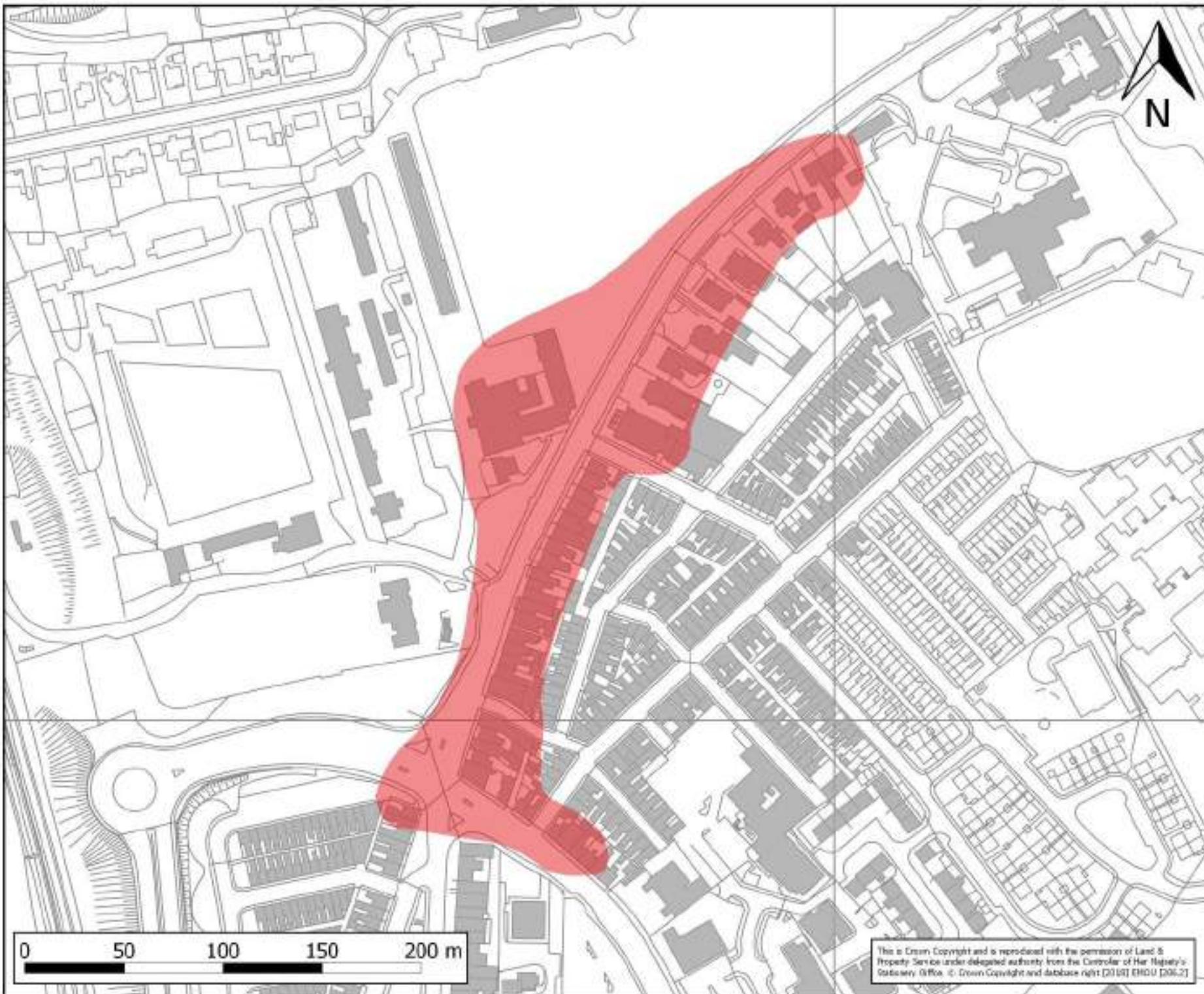
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Check	DF	For tender	
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Roads Noise Action Plan
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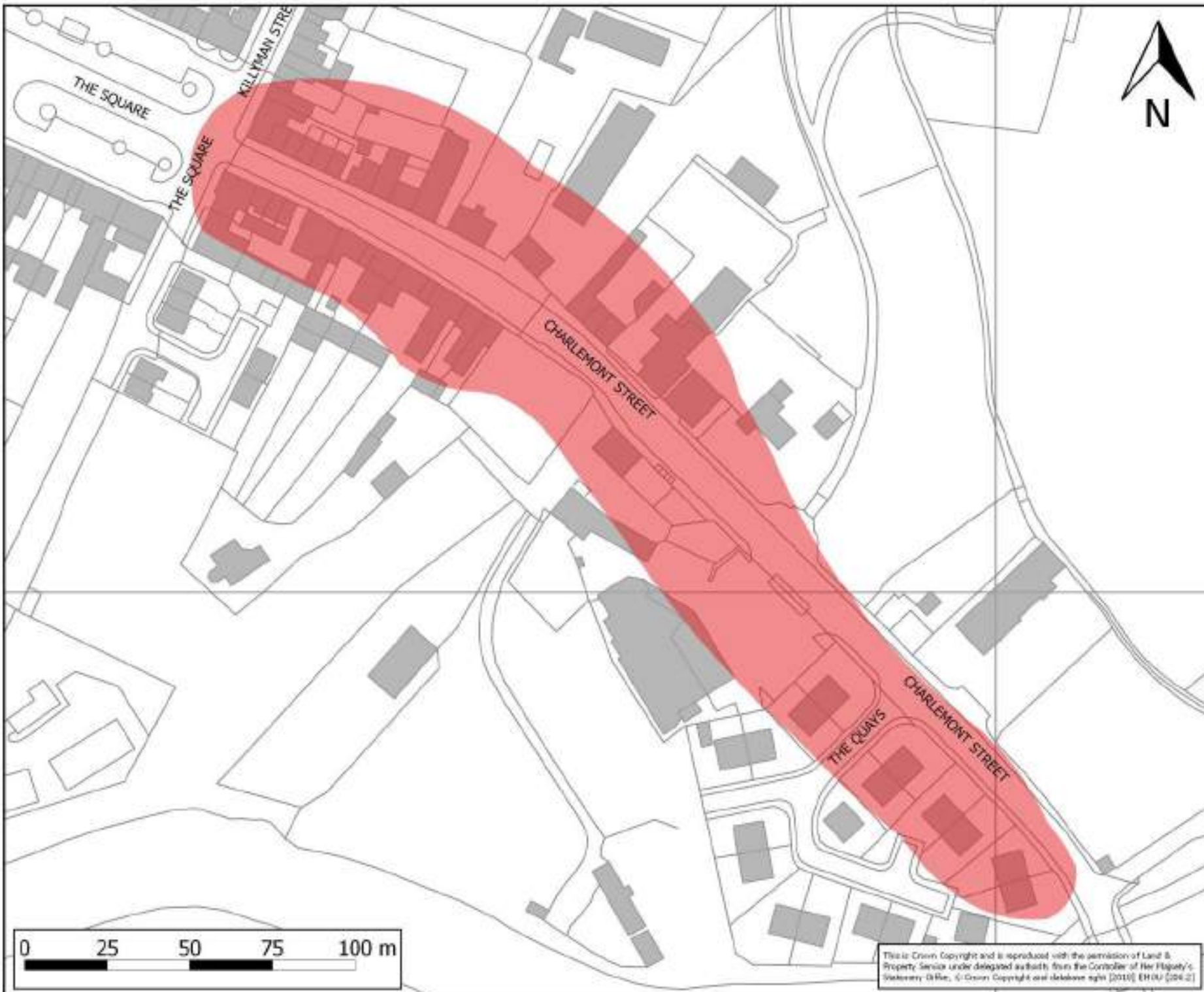
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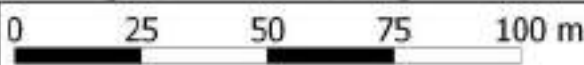
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 Moy - CNMA 1



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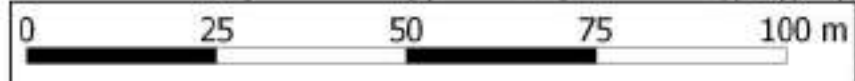
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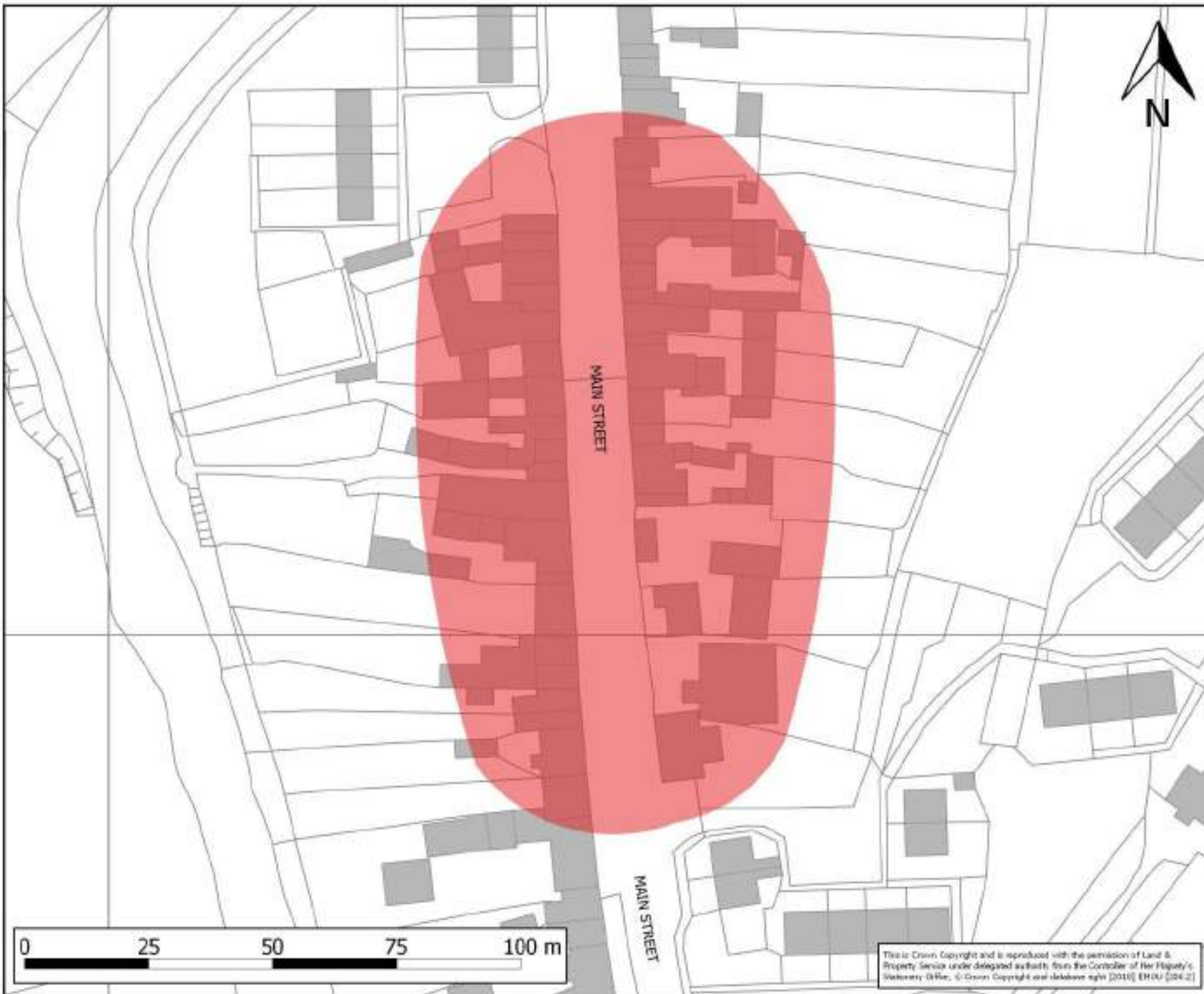
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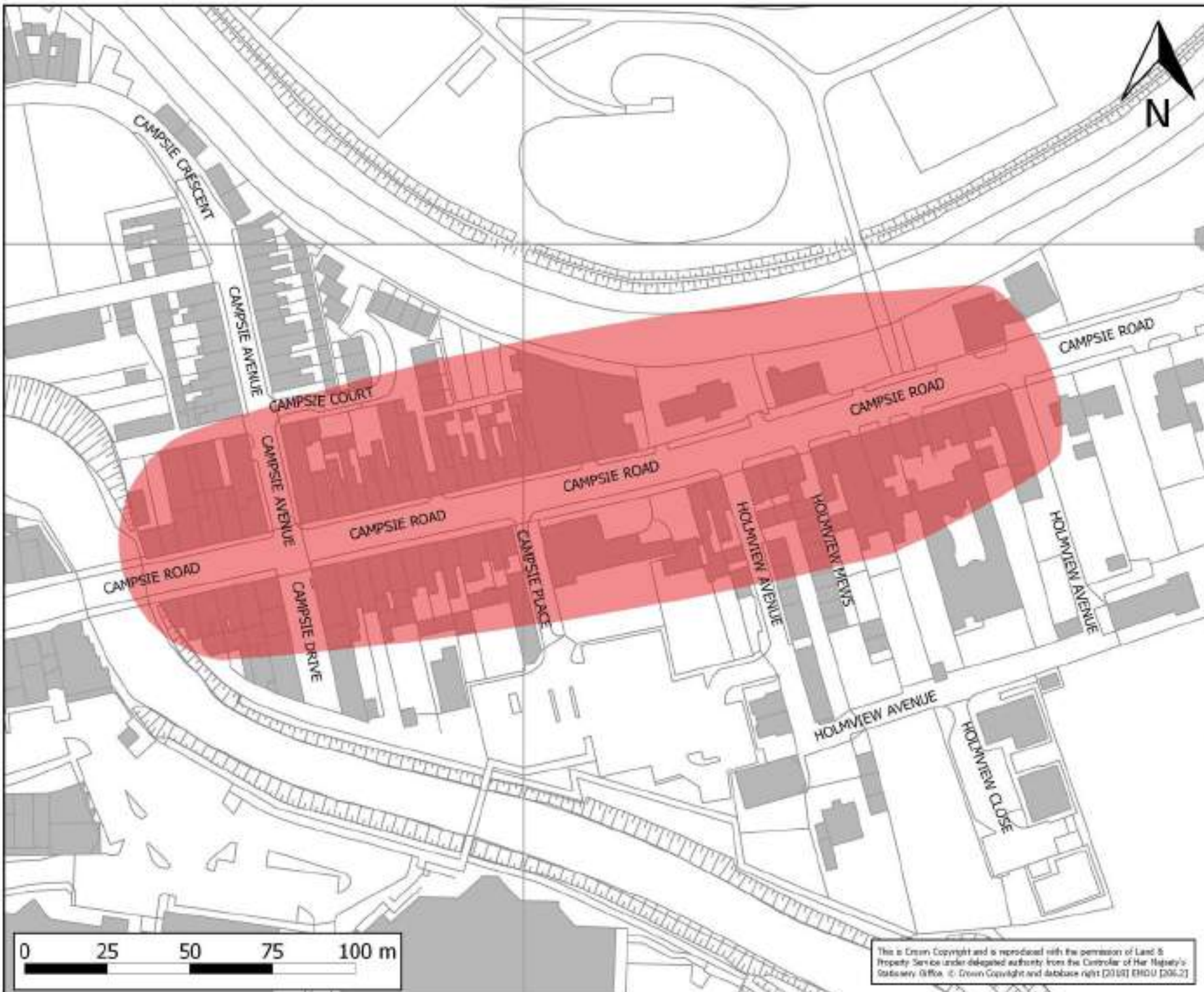
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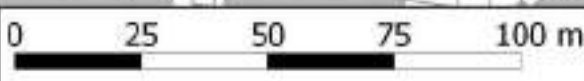
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Omagh - CNMA 1



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Appendix E: Consultee List

Table 17 shows the list of stakeholders to be consulted on the Round 3 Roads Noise Action Plan.

Table 17: Stakeholders Consultee List for Round 3

Consultee	Contact
Action Cancer	info@actioncancer.org
Action for Children	nioffice@actionforchildren.org.uk
Action Mental Health	cchesney@amh.org.uk
Action on Elderly Abuse	veronicagray@elderabuse.org.uk
Action on Hearing Loss	information.nireland@hearingloss.org.uk
ADD-NI	hello@addni.net
Age NI	info@ageni.org
Age Sector Platform (ASP)	alison.mckenna@agesectorplatform.org
Ageing Research and Development Division (IPH)	leah.friend@publichealth.ie
Alliance Party of NI	alliance@allianceparty.org
Alliance Party of Northern Ireland	policy@allianceparty.org
Alzheimer's Disease Society	enquiries@alzheimers.org.uk
An Munia Tober	info@brysonintercultural.org
Antrim and Newtownabbey Borough Council	info@antrimandnewtownabbey.gov.uk
Ards and North Down Borough Council	Amanda.Martin@ardsandnorthdown.gov.uk
Ards and North Down Borough Council	Shirley.Poxen@ardsandnorthdown.gov.uk
Armagh, Banbridge and Craigavon Council	Jennifer.McAneney@armaghbanbridgecraigavon.gov.uk
Armagh, Banbridge and Craigavon Council	Mary.hanna@armaghbanbridgecraigavon.gov.uk
Assembly Library	Thomas.McCullough@niassembly.gov.uk
Asthma UK NI	ni@asthma.org.uk
Autism Initiatives	catherine.oconnor@ai-ni.co.uk
Autism Network NI	derek.doherty9@btinternet.com
Autism NI	irene@autismni.org
Bahá'í Council for Northern Ireland	bcni@bahai.org.uk
Ballybeen Womens' Centre	info@ballybeenwomenscentre.org
Barnardos NI	nicola.darnbrook@barnardos.org.uk

Base 2 NIACRO	niacro@niacro.co.uk
Belfast Butterfly Club	trans@belfastbutterflyclub.co.uk
Belfast Central Mission	info@belfastcentralmission.org
Belfast City Council	equality@belfastcity.gov.uk
Belfast City Council Youth Forum (MAILBOX FULL)	youth@belfastcity.gov.uk
Belfast Harbour	info@belfast-harbour.co.uk
Belfast Hebrew Congregation	rabbidavidsinger@gmail.com
Belfast International Airport	ocs@bfs.aero
Belfast Islamic Centre	info@belfastislamiccentre.org.uk
Belfast Jewish Community	belfastjewishcommunity@gmail.com
Belfast Migrant Centre	admin@migrantcentreni.org;
BELONG (South Tyrone Empowerment Programme)	info@belongni.org
Bishop of Down and Connor - Noel Treanor	dcoffice@downandconnor.org
British Association for Shooting and Conservation	nire@basc.org.uk
British Deaf Association (Northern Ireland)	bda@bda.org.uk
British Red Cross	information@redcross.org.uk
Bryson Charitable Group	adminfamilysupport@brysongroup.org
Bryson InterCultural	edonnelly@brysonintercultural.org
Business Services Organisation - HSC, Equality Unit	Equality.Unit@hscni.net
Campaign for Better Transport	jess.fitch@bettertransport.org.uk
Cancer Focus NI	rachelsmith@cancerfocusni.org
Cancer Lifeline	info@cancerlifeline.info
CaraFriend	admin@cara-friend.org.uk
CaraFriend LGBT Switchboard	keith.tsang@cara-friend.org.uk
CARE In Northern Ireland	mail@care.org.uk
Carers NI	info@carersni.org
CAUSE for Mental Health	info@cause.org.uk
Causeway Coasts and Glens Council	cathy.watson@causewaycoastandglens.gov.uk
Census NISRA	census.nisra@finance-ni.gov.uk

Centre for Effective Services (CES) NI	nioffice@effectiveservices.org
Chartered Institution of Highways & Transportation	roisin.boyle@infrastructure-ni.gov.uk
Children In Northern Ireland (CINi)	info@ci-ni.org.uk
Children's Law Centre	info@childrenslawcentre.org
Chinese Welfare Association	contact@cwa-ni.org
Chrysalis Womens Centre	chrysaliscentre@btconnect.com
Church of Ireland House	janet.maxwell@rcbdub.org
Citizen's Advice Bureau Derry	canorthwest@citizensadvice.co.uk
Citizens Advice Regional Office	admin@citizensadvice.co.uk
City of Derry Airport	info@cityofderryairport.com
CO3 Chief Officers 3rd Sector	info@co3.bz
Coiste-na n-iarchimi	michael@coiste.com
Coleraine Harbour	info@coleraineharbour.com
Colin Neighbourhood Partnership	David@newcolin.com
Commisioner for Older People NI	info@copni.org
Committee on the Administration of Justice (CAJ)	equalitycoalition@caj.org.uk
Equality Coalition	equalitycoalition@caj.org.uk
Community Development & Health Network NI	kathymartin@cdhn.org
Community Places	info@communityplaces.info
Community Relations Council	poneill@nicrc.org.uk
Community Restorative Justice Ireland	lmck@crjireland.org
Community Transport Association (CTAUK)	jacqueline@ctauk.org
Confederation of British Industry (CBI)	enquiries@cbi.org.uk
Conservation Volunteers NI	R.shearman@tcv.org.uk
Consumer Council	info@consumercouncil.org.uk
Contact a Family NI	nireland.office@cafamily.org.uk
Crossroads Care - Caring for Carers (NI) Ltd	mail@crossroadscare.co.uk

Cruse Bereavement Care (NI)	northern.ireland@cruse.org.uk
Cycling UK	cycling@ctc.org.uk
Democratic Unionist Party	info@dup.org.uk
Department for Communities	equality.unit@communities-ni.gov.uk
Department for the Economy	equalityunit@economy-ni.gov.uk
Department of Agriculture Environment & Rural Affairs	EqualityDiversityPublicAppointments@daeara-ni.gov.uk
Department of Education	DE.Equality@education-ni.gov.uk
Department of Finance	equality@finance-ni.gov.uk
Department of Health	equality@health-ni.gov.uk
Department of Justice	dojequality@justice-ni.x.gsi.gov.uk
Derry City and Strabane District Council	equality@derrystrabane.com
Derry Well Woman	info@derrywellwoman.org
Disability Action	hq@disabilityaction.org
Disabled Drivers Association NI	ddanir.club@gmail.com
Downs Syndrome Association	enquiriesni@downs-syndrome.org.uk
Eastern Health and Social Services Board	pr.ehssb@hscni.net
Education Authority	info@eani.org.uk
Education of Deaf & Blind Society	info@jordanstownschoool.org
Employers Forum on Disability (NI)	info@efdni.org
Enniskillen Airport (St Angelo)	info@enniskillen-airport.co.uk
Equality Coalition	equalitycoalition@caj.org.uk
Equality Commission for NI	information@equalityni.org
Falls Community Council	info@fallscouncil.com
Falls Women's Centre	susan@fallswomenscentre.org
Family Planning Association NI	markb@fpa.org.uk
Federation of Small Businesses	donal.mccrossan@fsb.org.uk
Fermanagh and Omagh District Council	consultations@fermanaghomagh.com
Fermanagh Community Transport	anita@fermanaghcommunitytransport.com

Focus: The Identity Trust	info@thefocustrust.com
Foyle Women's Aid	marie.brown@foylewomensaid.org
Foyle Women's Information Network	Info@fwin.org.uk
Freight Transport Association	sleheny@fta.co.uk
Friends of the Earth	foe-ni@foe.co.uk
Gay & Lesbian Youth Northern Ireland (GLYNI)	admin@glyni.org.uk
George Best City Airport	michelle.hatfield@belfastcityairport.com
Gingerbread NI	advice@gingerbreadni.org
Grand Orange Lodge of Ireland	info@grandorangelodge.co.uk
Green Party in Northern Ireland	info@greenparty.org
Health and Safety Executive for NI	mail@hse-ni.gov.uk
HERE NI (for lesbian and bi sexual women)	hello@hereni.org
IMTAC	info@imtac.org.uk
Include Youth - Young Voices Project	andrew@includeyouth.org
Indian Community Centre	iccni@belfast@gmail.com
Institute of Directors (IOD)	linda.brown@iod.com
Institution of Highways and Transportation - Northern Ireland	NorthernIreland@ciht.org.uk
Invest Northern Ireland	william.hoey@investni.com
Irish Congress Of Trade Unions - NI Committee (ICTUNI)	info@ictuni.org
Irish Transport Heritage Limited	willhughes2003@yahoo.co.uk
Larne Harbour	info@portoflarne.co.uk
Law Centre (NI)	admin.belfast@lawcentreni.org
Lisburn and Castlereagh City Council	stephen.malcolm@lisburncastlereagh.gov.uk
Living Streets (The Pedestrians Association)	info@livingstreets.org.uk
Londonderry Port & Harbour Commissioners	info@londonderryport.com
MACS Supporting Young People	info@macsni.org

Magherafelt Women's Group	thelearninglodge@yahoo.co.uk
ME Association (ME/CFS)	admin@meassociation.org.uk
MENCAP	Jonathan.Craig@mencap.org.uk
Methodist Church in Ireland	secretary@irishmethodist.org
Mid and East Antrim Borough Council	sandra.mcdonald@midandeantrim.gov.uk
Mid Ulster District Council	Philip.Moffett@midulstercouncil.org
Mid-Ulster Women's Network	muwncoord@yahoo.co.uk
Mobilise (Formerly Disabled Drivers Association)	info@disabledmotoring.org
Multiple Sclerosis Society	nireception@mssociety.org.uk
National Autistic Society Northern Ireland	northernireland@nas.org.uk
National Children Bureau	enquiriesni@ncb.org.uk
National Society for Prevention of Cruelty to Children	help@nspcc.org.uk
Newry & Mourne Senior Citizen's Consortium	rjackson@ccgnewrycommunity.org
Newry, Mourne and Down District Council	colin.moffett@nmandd.org
NI Anti-Poverty Network	info@communityni.org
NI Association for Mental Health	info@niamhwellbeing.org
NI Association for the Care and Resettlement of Offenders	consultations@niacro.co.uk
NI Chamber of Commerce and Industry	mail@northernirelandchamber.com
NI Chest, Heart & Stroke Association	mail@nichs.org.uk
NI Commissioner for Children & Young People (NICCY)	info@niccy.org
NI Council for Ethnic Minorities (NICEM)	info@nicem.org.uk
NI Council for Voluntary Action (NICVA)	info@nicva.org
NI Environment Link	iona@nienvironmentlink.org
NI Gay Rights Association (NIGRA)	nigra4@hotmail.com
NI Housing Executive Equality Unit	andrew.murray@nihe.gov.uk

NI Human Rights Commission	info@nihrc.org
NI Rural Development Council	info@rdc.org.uk
NI Rural Women's Network	louise@nirwn.org
NI Statistics and Research Agency (NISRA)	info.nisra@finance-ni.gov.uk
NI Women's Aid Federation	info@womensaidni.org
NI Women's European Platform	admin@niwep.org
NI Youth Forum	info@niyf.org
NIPSA	a.mcmillen@nipisa.org.uk
NITHC	Jessica.Waibel@translink.co.uk
North West Community Network	info@nwcni.org
Northern Health and Social Care Trust	equality.unit@northerntrust.hscni.net
Northern Ireland Alternatives	tom@alternativesrj.co.uk
Northern Ireland Ambulance Service HSC Trust	reception@nias.hscni.net
Northern Ireland Assembly	equality@niassembly.gov.uk
Northern Ireland Office (NIO)	sharon.ewart@nio.gsi.gov.uk
NUS-USI Northern Ireland Student Centre	info@nistudents.org
Office for Research Ethics Committees NI (ORECNI)	christine.fawcett@hscni.net
Parenting NI	sharon@parentingni.org
Parkinson's UK Northern Ireland	northernireland@parkinsons.org.uk
Participation Network	pauline@ci-ni.org.uk
Phoenix Natural Gas	info@phoenixnaturalgas.com
POBAL	eolas@pobal.org
Presbyterian Church in Ireland	info@presbyterianireland.org
Press for Change	office@pfc.org.uk
Progressive Unionist Party	None available
Quarry Products Association	info@qpani.org

Queer Space	info@queerspace.org.uk
RNIB	rnibni@rnib.org.uk
Road Safety Council for NI	Pat_Martin9@hotmail.com
Rural Community Network	info@ruralcommunitynetwork.org
Rural Support	info@ruralsupport.org.uk
Save the Children	infoni@savethechildren.org.uk
SDLP	info@sdlp.ie
SEELB	info@seelb.org.uk
Sense NI - for Deafblind People	nienquiries@sense.org.uk
Shine	northern.ireland@shinecharity.org.uk
Shopmobility	julie@shopmobilitybelfast.co.uk
Sinn Fein	admin@sinnfein.ie
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SUSTRANS	belfast@sustrans.org.uk
The Cedar Foundation	info@cedar-foundation.org
The Community Foundation	info@communityfoundationni.org
The Executive Office	EqualityandHumanRights@executiveoffice-ni.gov.uk
The Guide Dogs for the Blind Association	belfast@guidedogs.org.uk
The Law Society of Northern Ireland	info@lawsoc-ni.org
The Omnibus Partnership	omninc@mac.com
The Rainbow Project	info@rainbow-project.org
The Women's Centre	info@womenscentre.co.uk
Training for Women Network Ltd	j.mooney@twnonline.com
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UK Sports Association for People with Learning Disability	info@uksportsassociation.org
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Volunteer Now	info@volunteernow.co.uk

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Waterways Ireland	info@waterwaysireland.org
Wildfowl & Wetlands Trust	info.castleespie@wwt.org.uk
Women's Forum	paddy@spodnik.force9.net
Women's Support Network	policy@wsn.org.uk
Women's Resource and Development Agency	info@wrda.net
Workers Party NI	workerspartyenquiries@gmail.com
Youth Council for NI	info@ycni.org
Youthnet NI	info@communityni.org