A947 Multi-Modal Corridor Study

Outline Business Case – Strategic Case

August 2024

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Quality information

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1. Introduction

1.1 Purpose

This document sets out the Outline Business Case (OBC) for options to improve transport connections along the A947 corridor between the Aberdeen Western Peripheral Route (AWPR) Parkhill Junction and the A96/A947 Junction. The OBC has a particular focus on active travel (walking, wheeling and cycling) and public transport along the corridor and on adjacent routes.

1.2 Context

Several previous studies have considered transport improvements on the A947 corridor and within the study area. In 2016, the Dyce Sustainable Travel Feasibility Study was undertaken to investigate the feasibility of improving sustainable travel links within the Dyce area. The study involved a review of the existing sustainable travel network including walking, cycling and bus routes, identifying problems associated with each mode in the area. The key problems identified during the study were poor public transport permeability to key locations in Dyce, gaps in existing walking and cycle networks, general traffic congestion in the Dyce area and journey time unreliability for public transport.

In 2021, Aberdeen City Council (ACC) commissioned AECOM to develop a Scottish Transport Appraisal Guidance (STAG)-based appraisal of options for improving transport connections on the corridor. This work concluded in September 2022 and included the identification of key problems, issues, opportunities and constraints on the corridor, development of Transport Planning Objectives (TPOs) for the study, generation of a long list of options and a preliminary appraisal.

This OBC builds on the previously identified and appraised options for improving transport connections for all users on the A947 corridor. It includes more detailed consideration and development of the options identified as part of the initial study in order to inform a preferred package of interventions to take forward at the end of the OBC.

1.3 Study Area

The study area encompasses the north-south corridor between the AWPR Parkhill Junction and the A96/A947Junction to the south of Dyce, as shown in Figure 1-1. For the purposes of analysis presented in the Strategic Case, a study area has been defined based on data zones[1] from Dyce, Bucksburn North and Bucksburn South which are on or near the scheme corridor. Whilst the study corridor only covers a distance of approximately four miles (6km) from north to south, it has varied characteristics including urban sections along Victoria Street and more rural sections to the north of the River Don.

The study area incorporates the settlement of Dyce, which has a population of 6,190 and is located in the north-west of Aberdeen City, approximately five miles (8km) from the city centre.[2] The area consists of a diverse selection of land uses, including residential, industry, business, transport and education. The residential areas are generally located in the east of Dyce, between Victoria Street and Riverview Drive. Aberdeen International Airport is located in the west of Dyce. Industrial and business land is mostly congregated around Aberdeen International Airport, including many industrial estates and business parks. Dyce Primary School (~379 pupils) and Dyce Academy (~538 pupils) provide education within Dyce.[3] There are additionally two schools within proximity of the study area to the south of the A96 – Brimmond Primary School (~457 pupils) and Bucksburn Academy (~803 pupils).

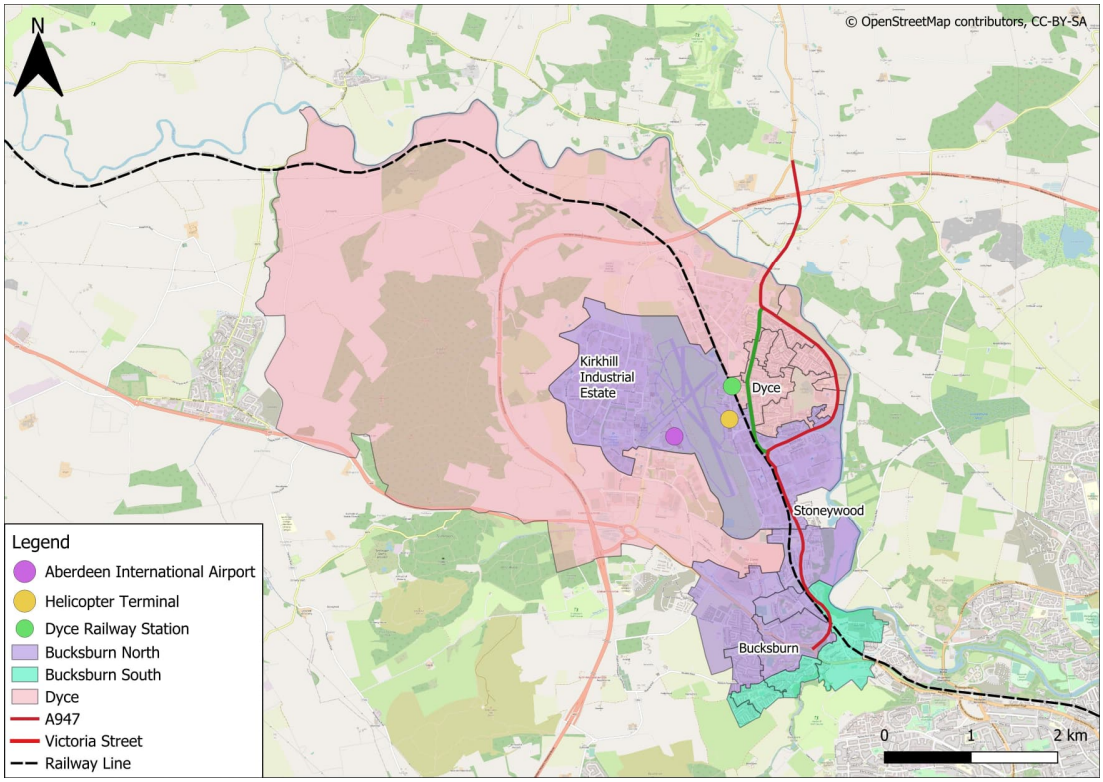
The A947 is the primary road link through Dyce, providing a connection between Aberdeenshire and the A96. Dyce Drive forms a key route to the west of the area, forming part of a loop around Aberdeen International Airport and connecting to various industrial estates and business parks. Wellheads Drive

[1] Data Zones are the geographical areas used to disseminate small area statistics in Scotland are used widely across public and private sector.
[2] https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-estimates/small-area-population-estimates-2011-data-zone-based/mid-2020
[3] School rolls are based on ACC 2022 forecasts: https://www.aberdeencity.gov.uk/services/education-and-childcare/schools-and-education/schools-pupil-roll-forecasts

provides a connection from the centre of Dyce to Dyce Drive and performs a key role in connecting Dyce to nearby industrial estates and business parks.

Dyce is served by Dyce Rail Station, which is located on Station Road, to the west of the centre of Dyce. The station is located on the Aberdeen to Inverness line which is currently undergoing a programme of improvements to shorten journey times between the two cities. The station is located between Aberdeen and Inverurie which formed Phase 1 of this work, involving redoubling of the track, which was completed in 2019.[4] Aberdeen International Airport is a key regional transport hub for the North East. It serves destinations throughout the UK and Europe and also serves as the main heliport for the North Sea oil and gas industry. Although the primary route to the airport is via the A96, the A947 provides a key access route to the eastern helicopter terminal buildings.

Figure 1-1: Study Area



1.4 Structure

Following this introductory chapter, this OBC has been prepared with the following structure:

- **The Strategic Case:** presents the case for change for the package, including the objectives for the study, alongside information on the option appraisal process.
- **The Socio-Economic Case:** presents the social benefit analysis of the shortlisted packages to inform the identification of an overall emerging package recommendation.
- **The Financial Case:** presents the emerging costs of the preferred package, together with information on funding, and budgeting.
- **The Commercial Case:** identifies the procurement strategy for the preferred package option.
- **The Management Case:** outlines the project management plans including the framework for managing risk, benefit realisation, post-project evaluation and the project as a whole.

The main body of this business case is supported by a series of appendices which present the details underpinning the five core cases.

[4] https://www.transport.gov.scot/projects/aberdeen-to-inverness-rail-improvements/aberdeen-to-inverness-rail-improvements/

2. The Strategic Case

2.1 Introduction

This section of the business case sets out the Strategic Case for the A497 Multi-Modal Corridor study. The Strategic Case sets the strategic context for the study, including the rationale for the proposed interventions, and demonstrates how the preferred package of interventions will satisfy the objectives of the study, as well as the overall objectives of the Scottish Government. To support this, the chapter summarises the existing route arrangements and potential changes as a result of the preferred package. It also identifies the key stakeholders, constraints, dependencies, and strategic risks for the study; together with how success will be measured with respect to the objectives.

2.2 Organisation Overview

This section provides an overview of the relevant organisations involved in the study, namely ACC, Aberdeenshire Council, Nestrans and Transport Scotland.

ACC is the scheme promoter and the local authority that represent the Aberdeen City area of Scotland. ACC is responsible for a range of public services within Aberdeen City and are the local highway authority for roads within their boundary, which includes the section of the study area south of the Parkhill Bridge to the A96/A947 Junction at Bucksburn. ACC is also the public transport authority for the Aberdeen City area.

Aberdeenshire Council is the local authority for Aberdeenshire and form part of the Project Steering Group. The Council is the local highway authority for roads within their boundary, including the section of the study corridor to the north of the A947 Parkhill Bridge. Aberdeenshire Council is interested in impacts to the local road network and opportunities to improve connectivity for their residents. This Council is also the public transport authority for the Aberdeenshire area.

Constituted as the North East of Scotland Transport Partnership under the Transport (Scotland) Act 2005, Nestrans began work as a statutory Transport Partnership in 2006. It is one of seven Transport Partnerships set up across Scotland to provide a co-ordinated approach to transport planning and delivery between different local authority areas and covers both the City of Aberdeen and the wider Aberdeenshire area. Nestrans' purpose is to develop a long-term regional transport strategy and deliver strategic transport improvements across the northeast of Scotland. Nestrans form part of the Project Steering Group.

Transport Scotland is the national transport agency for Scotland and is responsible for Scotland's transport network, including the A90 and A96 trunk roads which connect to the study corridor. Transport Scotland will be engaged regarding any options that may impact on the trunk road network.

Key strategic documents relating to ACC, Aberdeenshire, Nestrans and Transport Scotland are set out in Section 2.3.

2.3 Business Strategy and Wider Strategies

This section presents the strategic fit of the scheme, how it contributes towards the priorities of national government and regional and local authorities.

2.3.1 National Policy Context

Scotland's **National Transport Strategy (NTS2) (2020)**[5] provides the national transport policy framework, setting out a clear vision of a sustainable, inclusive, safe and accessible transport system which helps deliver a healthier, fairer and more prosperous Scotland for communities, businesses and visitors. It sets out four key priorities to support this vision: reducing inequalities; taking climate action; helping to deliver inclusive economic growth; and improving health and wellbeing. In addition to these priorities, the NTS2 supports the adoption of a Sustainable Travel Hierarchy, which promotes walking, wheeling, cycling, public transport and shared transport options in preference to single occupancy

[5] https://www.transport.gov.scot/media/47052/national-transport-strategy.pdf

private car use. It also prioritises investment aimed at reducing the need to travel unsustainably, whilst focusing on maintaining and safely operating existing assets ahead of new infrastructure investment.

Delivery of the NTS2 will be supported by accompanying NTS Delivery Plans, the **Climate Change Action Plan**[6] and the second **Strategic Transport Projects Review (STPR2)**[7]. In the **NTS Third Annual Delivery Plan (2023-24)**[8] and The **Climate Change Plan 2018-2032 Update**, the Scottish Government sets out a commitment to develop and implement a coordinated package of policy interventions to support the reduction of car kilometres by 20% by 2030. In January 2022, the Scottish Government published its route map[9] outlining steps needed to achieve this reduction. It sets out a range of sustainable travel behaviours grouped into the four categories of travel less, stay local, switch mode and combine a journey. In 2019, Transport Scotland commenced STPR2, which involved a whole-Scotland, evidence-based review of the performance of the strategic transport network across all transport modes to set transport priorities. The final report was published in December 2022[10] and makes recommendations for national investment priorities for Scottish Ministers to consider in an updated 20-year (2022-2042) Infrastructure Investment Plan for Scotland. Recommendation 13 focuses on the development of a high-quality bus-based rapid transit system (ART) within the North East Region, which would prioritise buses on two key corridors, including Craibstone Park and Ride to Portlethen Transport Interchange (via City Centre). It recommends that Transport Scotland continues to work with Nestrans, ACC and Aberdeenshire Council in developing the ART plans.

The Scottish Government's **Programme for Scotland 2020-2021**[11] also outlines the commitment towards delivering on health, economic and environment goals by investing £500m over the next five years in active travel infrastructure, access to bikes and behaviour change schemes to promote walking, wheeling and cycling. It also outlines a reaffirmed commitment to a £500m Bus Partnership Fund (BPF) to support authorities' ambitions around tackling congestion so that bus journeys are quicker and more reliable, and more people make the choice to take the bus. The BPF was officially launched in November 2020, with funding awarded to eight partnerships in June 2021, including £12m for the North East Bus Alliance. The **Programme for Scotland 2021-2022**[12] continues to support this focus under its action to 'Support a net zero nation'.

A wide range of national policy and guidance, covering active travel and bus, provide direction on national aspirations for increasing the share of healthier, cleaner travel choices. This includes the **Cycling Framework for Active Travel – A Plan for Everyday Cycling**[13] and the national Walking Strategy: **Let's Get Scotland Walking**[14], which aim to increase the levels of walking and cycling as part of everyday journeys and promote the development of well-designed places and infrastructure to encourage walking and cycling. The passing of the **Transport Scotland Act (2019)**[15] also signals the intent at a national level to promote sustainable transport. The Act enables local authorities to introduce Workplace Parking Levies and supports authorities with options to influence and improve bus services in their area.

Separately, the revised **National Planning Framework 4** (NPF4) was approved by Scottish Government in February 2023. It sets out a long-term spatial strategy for development and infrastructure in Scotland, including a need to "*embrace and deliver radical change to tackle and adapt to climate change, restore biodiversity loss, improve health and wellbeing, build a wellbeing economy and create great places*." In this context, NPF4 recognises that places need to be planned in a way that reduces the need to travel and is hence also aligned to the Sustainable Transport Hierarchy and policies for cleaner air and climate change action.

[6] https://sp-bpr-en-prod-cdnep.azureedge.net/published/2021/1/12/afbd2373-a14f-4a78-af9c-4fc5c775b23d/SB%2021-01.pdf
[7] https://www.transport.gov.scot/our-approach/strategy/strategic-transport-projects-review-2/
[8] https://www.transport.gov.scot/publication/national-transport-strategy-third-annual-delivery-plan/
[9] https://www.transport.gov.scot/publication/a-route-map-to-achieve-a-20-per-cent-reduction-in-car-kilometres-by-2030/
[10] https://www.transport.gov.scot/publication/final-summary-report-december-2022-stpr2/
[11] https://www.gov.scot/publications/protecting-scotland-renewing-scotland-governments-programme-scotland-2020-2021/
[12] https://www.gov.scot/publications/fairer-greener-scotland-programme-government-2021-22/documents/
[13] https://www.transport.gov.scot/media/53417/cycling-framework-for-active-travel-a-plan-for-everyday-cycling.pdf
[14] https://www.gov.scot/binaries/content/documents/govscot/publications/strategy-plan/2014/06/lets-scotland-walking-national-walking-strategy/documents/00452622-pdf/00452622-pdf/govscot%3Adocument/00452622.pdf
[15] https://www.legislation.gov.uk/asp/2019/17/enacted

Relevance to the scheme

Encouraging sustainable travel is at the heart of all national policies and strategies, and is embedded in decision making via the Sustainable Travel Hierarchy, which prioritises walking, cycling and public transport over private car use. The Scottish Government has committed to supporting schemes that promote sustainable transport by investing in active travel infrastructure and establishing the BPF to develop and deliver ambitious schemes that incorporate bus priority measures. The study aligns with national priorities by seeking to address existing constraints and barriers in Dyce, and the wider study area, which prevent travel by active and public transport modes. By encouraging a shift to more sustainable and active modes of transport, the scheme will also contribute to the national priorities of reducing inequalities, taking climate action, delivering inclusive growth and improving health and wellbeing.

2.3.2 Regional Policy Context

At a regional level, the Nestrans **Regional Transport Strategy (RTS) 2040**[16] sets the long-term vision and direction for transport in the North East for the next 20 years. The key transport priorities within the RTS are linked to the priorities in the NTS2 and include improving journey efficiencies to enhance connectivity; reducing carbon emissions to support net zero targets; and creating a step change in public transport and active travel allowing for a 50:50 mode spilt. The RTS identifies a range of associated polices and actions including increasing the number of people travelling actively for health and the environment; improving the region's bus network; reducing emissions from transport; and planning and designing places for people, all of which are relevant in the context of this corridor study. Actions identified to support increased active travel include upgrading existing routes and developing a network of high quality and safe active travel routes, improved provision at junctions and crossings points and increased provision and quality of signage. AT2 commits to continue to protect, maintain and improve the Formartine & Buchan Way (F&B Way) as a segregated and green corridor.

The **Draft Regional Economic Strategy (2023)**[17] sets out a long-term plan of investment for North East Scotland to transform its economy over the next decade and beyond. It supports the RTS and includes objectives associated with the promotion of more sustainable travel, such as reducing carbon emissions and maintaining a healthy population. Both the **Aberdeenshire Local Development Plan (LDP) (2023)**[18] and the **Aberdeen City Proposed LDP (2023)**[19] identify opportunities for significant development within the study area. Within Aberdeen City, there are allocations for up 11,500 homes, business and employment land allocations on land adjacent to the study corridor. The Aberdeenshire LDP indicates up to 2,200 homes are planned on the A947 corridor as well as business and employment land. The **Nestrans Active Travel Action Plan (2014-2035)**[20] identifies the F&B Way as an established active travel corridor in the study area, noting the presence of National Cycle Network Route 1 (NCN1). The Plan refers to aspirations for further development of this route including improved surfacing and signage.

Recently, there has also been renewed impetus given to the improvement of bus services in the region following the establishment of a new **North East Scotland Bus Alliance**[21] (building on work of the former Local Authority Bus Operators Forum). The Bus Alliance was formed in 2018 as a voluntary partnership of Nestrans, ACC, Aberdeenshire Council, First Bus Aberdeen, Stagecoach, and Bain's Coaches. The overarching objectives of the Alliance are to:

- Arrest the decline in bus patronage in the North East of Scotland by 2022; and
- Achieve year on year growth in bus patronage to 2025.

Sub-objectives exist around increasing modal share of bus, improving operational performance and customer satisfaction, reducing bus emissions, and improving service accessibility. In April 2020, the Bus Alliance published a new **Bus Action Plan**[22] setting out the priority actions of the partners over

[16] https://www.nestrans.org.uk/wp-content/uploads/2021/03/Nestrans-RTS-Final-Submitted.pdf
[17] https://committees.aberdeencity.gov.uk/documents/s144408/RES%20Appx1%20-%20RES%202035%20Final%20Draft.pdf
[18] https://www.aberdeenshire.gov.uk/planning/plans-and-policies/ldp-2023/
[19] https://www.aberdeencity.gov.uk/services/planning-and-building-standards/local-development-plan/aberdeen-local-development-plan
[20] https://www.nestrans.org.uk/wp-content/uploads/2017/02/AcTrAP_FINAL.pdf
[21] https://www.nestrans.org.uk/wp-content/uploads/2017/09/5b_App-A-Region-Wide-OP-Agreement.pdf
[22] https://www.nestrans.org.uk/wp-content/uploads/2020/04/Bus-Action-Plan-Published_April-2020.pdf

the next five years. The A947 corridor is identified to be one of four corridors to be completed following conclusion of the initial priority corridors.

Relevance to the scheme

Increasing the number of people travelling actively for health and the environment is a key policy for the North East. Providing safe and high-quality active travel routes will therefore be a focus across the region, which will be achieved by developing new infrastructure and upgrading and protecting existing routes, including the F&B Way. Improving the bus network is a priority for the North East Bus Alliance, which was established to reverse decline in bus patronage in the North East of Scotland and achieve growth by improving operational performance and accessibility. The Bus Action Plan identifies the A947 corridor as a future corridor for intervention. Given the significant levels of development anticipated within the study area, investment in active travel and public transport infrastructure will be needed to ensure sustainable growth. The scheme is therefore aligned with regional aspirations and will improve active travel and public transport connections to support residents, businesses and access to employment.

2.3.3 Local Policy Context

Locally, both ACC and Aberdeenshire councils are in the process of updating their respective local transport strategies (LTS). The **Draft Aberdeen Local Transport Strategy (2023-2030)** was reported to the Net Zero, Environment and Transport Committee on 29th August 2023. It was subject to an eight-week period of public consultation concluding in January 2024, following which a final LTS will be produced and reported to committee in 2025. Aberdeenshire Council undertook public engagement between May and September 2023, with residents and stakeholders asked to consider a number of transportation themes and share their views on the main opportunities and challenges facing transport across Aberdeenshire. Feedback from this consultation is being used to help shape the draft LTS which will be developed with a view to going out for a further period of public consultation on the draft document in 2024 with final publication in 2024/2025. Both authorities aim to reduce non-sustainable journeys, increase the modal share of public transport and active travel and make travel more effective.

All councils in Scotland are required to have a Community Planning Partnership in place. Community Planning Aberdeen is the relevant partnership for Aberdeen and consists of 14 core partners, including ACC, who work alongside other organisations and community groups to deliver **The Aberdeen Local Outcome Improvement Plan**[23]. The plan sets out how Community Planning Aberdeen will improve outcomes for local people and communities, to make Aberdeen a place where people can prosper. One of the place-based outcomes in the plan is to increase sustainable travel so that 38% of people walk and 5% of people cycle as their main mode of travel.

The **Sustainable Urban Mobility Plan (SUMP) (2019)**[24] identifies the need to improve connectivity both within and to the city of Aberdeen, as well as improving the public transport experience, particularly in terms of improving journey times and reliability for passengers. These objectives are aimed at locking in the benefits of the AWPR and preventing the erosion of these benefits, as would be anticipated should traffic be allowed to continue to grow to fill the additional road capacity that has been created. The **Aberdeen City Centre Masterplan (CCMP) (2015)**[25] aims to create a vibrant city centre, identifying 49 development and infrastructure projects to support this.

A new **Roads Hierarchy for the North East**[26] was agreed in 2019 following a study to develop options to provide a system that reflects the new role of the city centre (as a destination) and makes the most effective use of the AWPR for distributing traffic around the city to the most appropriate radial route to reduce the extent of cross-city traffic movements.

In terms of the A947 study corridor, the study, and subsequent review by ACC, resulted in the following changes to the classification of Victoria Street and Riverview Drive:

[23] https://communityplanningaberdeen.org.uk/aberdeen-city-local-outcome-improvement-plan-2016-26/
[24] https://consultation.aberdeencity.gov.uk/planning/sump/supporting_documents/Draft%20Sustainable%20Urban%20Mobility%20Plan.pdf
[25] https://www.aberdeencity.gov.uk/sites/default/files/2018-06/Aberdeen%20City%20Centre%20Masterplan%20and%20Delivery%20Programme.pdf
[26] https://www.nestrans.org.uk/wp-content/uploads/2019/06/North-East-Scotland-Roads-Hierarchy-Study-2019.pdf

- Victoria Street changed from an A-class priority route (A947) to a C-class tertiary route; and
- Riverview Drive changed from an unclassified route to an A-class priority route (A947).

In April 2020, ACC set out its net zero vision for Aberdeen in **A Climate-Positive City at the Heart of the Global Energy Transition**[27] and in March 2021, ACC published its **Climate Change Plan 2021-2025**[28] to outline its ambitions and support progress with public sector climate duties.

An updated **Active Travel Action Plan** for 2021-2026[29] was approved in February 2021 and identifies actions and interventions that ACC want to pursue to make walking and cycling safer and more attractive choices and to increase active travel journeys in the city.

Relevance to the scheme

At the local level, ACC and Aberdeenshire Council aim to reduce non-sustainable journeys by increasing the modal share of public transport and active travel, which will reduce the environmental impact of transport and support net-zero ambitions. Local policy also identifies a need to improve connectivity within and to the city of Aberdeen, including enhancing the public transport experience, particularly in terms of journey times and reliability for passengers. Following the road hierarchy review, Victoria Street was changed from an A-class priority route (A947) to a C-class tertiary route, whilst the A947 was rerouted onto Riverview Drive. This reclassification therefore provides an opportunity to reevaluate the role of these roads within Dyce and to prioritise active travel and public transport on Victoria Street.

The policy review presented above enables several themes to be identified, including support for more trips to be undertaken using sustainable modes of travel and the requirement to meet net zero commitments being outlined at national, regional, and local policy levels. As such, developing options for improving public transport and active travel connections along the A947 corridor is a key focus for this study, which strongly aligns with the national, regional and local policy context.

2.4 Problem Identification

This section sets out the key problems and opportunities for the study area, including the underpinning evidence to provide the justification for investment in the A947 transport corridor. A full review of problems was undertaken during the preliminary appraisal stage and is reported in the Problems, Issues, Constraints and Opportunities Technical Note (Appendix A).

2.4.1 Socio-Economic Context

This section outlines the socio-economic profile of the study area to highlight conditions that may influence the scheme. This includes key indicators including population, car / van availability, employment, and transport poverty.

Population

Population estimates according to the National Records of Scotland (NRS) are shown in Table 2-1. There has been a 9% increase in the population of the study area between 2001 and 2020, which is broadly in line with the population growth across Aberdeen City (8%). Population growth in Aberdeen City has been in line with the national average (8%), whilst the rate of growth in Aberdeenshire has been significantly above the national average (15%).

Table 2-1: Population in the Study Area (2001 to 2020)

Settlement	2001	2011	2020	Change (2001-2020)
Study Area	12,446	12,707	13,587	**9%**
Aberdeen City	211,910	222,460	229,060	**8%**
Aberdeenshire	226,940	253,650	260,780	**15%**

[27] https://committees.aberdeencity.gov.uk/documents/s109162/Appendix%201%20-%20Aberdeen%20Energy%20Transition%20Vision.pdf
[28] https://data.climateemergency.uk/media/data/plans/aberdeen-city-council-23971ac.pdf
[29] https://consultation.aberdeencity.gov.uk/place/draft-active-travel-action-plan-consultation/

Scotland	5,064,200	5,299,900	5,466,000	**8%**

Source: NRS

Table 2-2 shows the age profile of the study area in 2020 according to NRS mid-year estimates. This shows that there is an older population in the study area relative to the Aberdeen City, Aberdeenshire and Scotland averages for those aged 65 and over, with 22% of people in the study area within this category compared to 16% for Aberdeen City, 20% for Aberdeenshire and 19% for Scotland. The percentage of the population in the '15 and under' age group is in line with Aberdeen City as a whole (16%) but is lower than the averages for Aberdeenshire (19%) and Scotland (17%).

In terms of the working age population, the study area (62%) is broadly in line with the averages for Aberdeenshire (61%) and Scotland (64%). The proportion of those of working age in the study area, however, is notably less than the average for Aberdeen City (68%).

Table 2-2: Age Profile of the Study Area

Settlement	15 and Under	Working Age	65+
Study Area	16%	62%	22%
Aberdeen City	16%	68%	16%
Aberdeenshire	19%	61%	20%
Scotland	17%	64%	19%

Source: NRS

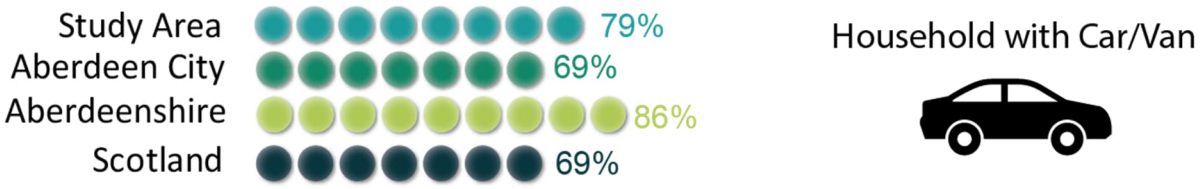
Relevance to the scheme

The population of the study area is estimated to have increased by 9% between 2001 and 2020. Population projections from the NRS indicate that this trend is expected to continue, and it is anticipated that the biggest increases will be amongst those of pensionable age and over. The age profile of the study area shows that there is a slightly older population in comparison to local and national averages. There will therefore be a need to ensure that the transport system can support the needs of an ageing population.

Car / Van Availability

Figure 2-1 presents the percentage of households that had access to at least one car or van in 2011, which demonstrates that there is a high car/van availability within the study area. The data shows that 79% of adults within the study area have access to a car or van, which is higher than the averages for Aberdeen City (69%) and Scotland as a whole (69%).

Figure 2-1: Car / Van Availability in the Study Area



Source: Scotland Census 2011

Relevance to the scheme

Analysis has shown that household car/van availability is higher in the study area compared with the averages for Aberdeen City and Scotland, however, it is lower than Aberdeenshire which demonstrates a greater reliance on car travel in rural areas. To encourage modal shift away from single occupancy private car trips, there will be a need to promote active travel for shorter journeys and increased public transport usage where active journeys are not possible.

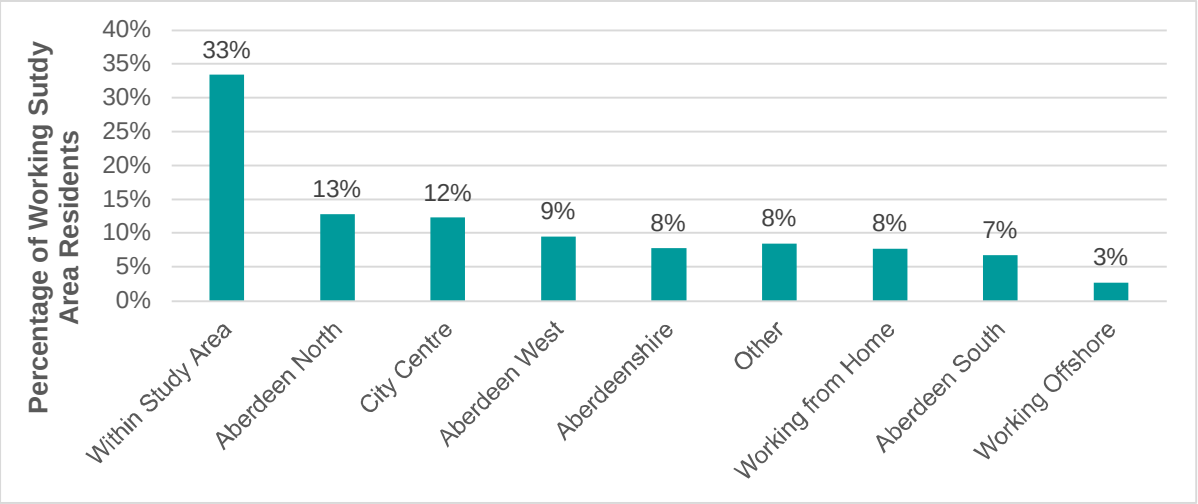
Employment and Journeys to Work

This section further outlines the economic context within the study area, as well as employment trends and journey to work data. Where 2011 Census data has been used, it should be noted that trends and travel patterns are likely to have changed since the data was collected, particularly since the onset of the COVID-19 pandemic in March 2020. It is also noted that travel patterns are likely to have changed in the corridor due to the oil and gas downturn and the opening of the AWPR in 2019. Nevertheless, the information provided facilitates understanding of the A947 corridor.

In 2011 economic activity in the study area (74%) was broadly comparable with Aberdeen City (73%) and Aberdeenshire (75%) and notably higher than the national average (69%).[30] In line with the wider area, unemployment was also lower for the study area (3%) compared with the national average (7%).[31] The study area has high levels of employment in the Mining, Manufacture and Utilities industries, which is also true of Aberdeen City and Aberdeenshire in general, reflecting the importance of the oil and gas sector to the area.[32] The study area also has a higher proportion of people employed in Transportation and Storage than both the national and local authority figures.

Figure 2-2 shows that the most common travel to work destination is within the A947 study area itself (33%), with an additional 8% who work from home. A total of 41% travel to work elsewhere in Aberdeen, including Aberdeen North (13%), the city centre (12%), Aberdeen West (9%) and Aberdeen South (7%). A further 8% of people travelling to work from the A947 study area travel to somewhere in Aberdeenshire.

Figure 2-2: Study Area Travel to Work Destinations



Source: Scotland Census 2011

Key employment sites within the study area include the many industrial and business parks located near to the airport, including Kirkhill Industrial Estate, Aberdeen International Business Park, ABZ Business Park and Wellheads Industrial estate. Due to the proximity to the airport, which serves as the main heliport serving the North Sea oil and gas fields, there are many businesses relating to the energy sector. The area is also home to many transportation and storage, manufacturing, and scientific companies, which are located adjacent to the airport and to the east of Stoneywood Road. The airport itself employs over 85 staff directly but also supports around 3,400 jobs[33], and attracts companies from the hospitality sector, including hotels and restaurants which are concentrated to the south of the main terminal.

Table 2-3 shows the distance travelled to work for residents of the study area of working age and in employment. This shows that the vast majority of those within the study area, that do not work from home, work within 10km of their residence (80%). This is in line with the figure for Aberdeen City

[30] Scotland Census 2011
[31] Scotland Census 2011
[32] BRES 2018
[33] https://www.aberdeenairport.com/about-us/facts-and-figures/

(82%) but is considerably higher than the national figure of 60%. Almost half of residents in the study area work less than 5km from their residence suggesting a significant opportunity to increase active travel as a means of travel to work.

Table 2-3: Distance Travelled to Work in the Study Area

Distance travelled to work (km)	Percentage of Usual Residents aged 16-74 in Employment			
	Study Area	Aberdeen City	Aberdeenshire	Scotland
0-10	80%	82%	43%	60%
10-30	8%	6%	31%	22%
30-40	0%	0%	6%	3%
40-60	1%	0%	5%	2%
60+	1%	1%	2%	2%

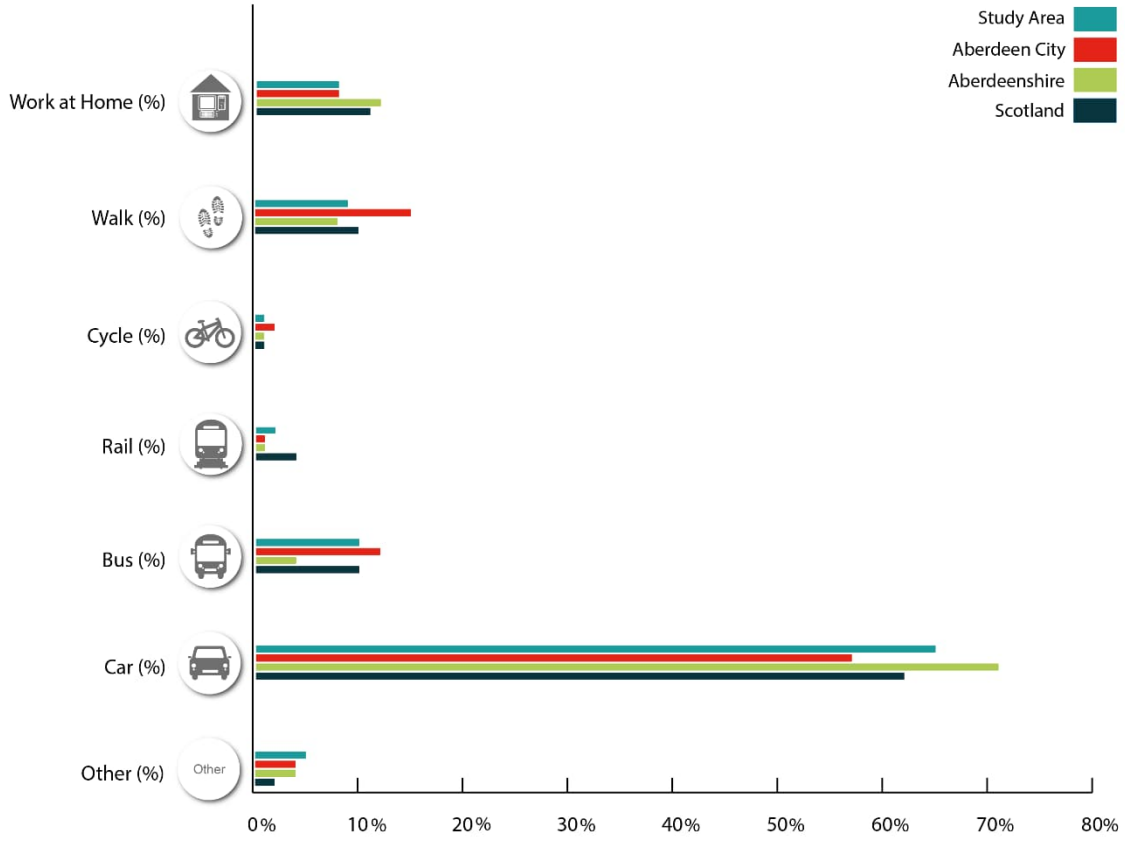
Source: Scotland Census 2011

Figure 2-3 outlines the travel to work modal share for the study corridor. It should be noted that results are taken from the 2011 Census and it is expected that trends shown may have changed, particularly since the onset of the COVID-19 pandemic in early 2020. This shows that the study area has a much lower mode share for walking (9%) than Aberdeen City (15%) but is broadly in line with the national figure (10%). Cycling mode share is low throughout the study area (1%) relative to the average for Aberdeen City (2%).

Use of rail for travel to work is marginally higher in the study area (2%) than Aberdeen City (1%), reflecting the fact that the rail service can be accessed from Dyce Rail Station. Rail mode share is lower than the national average (4%). Travel to work and study by bus in the study area (10%) is lower than the Aberdeen City average (12%) but is in line with the national average (10%). Higher bus usage in Aberdeen City could reflect the higher density public transport network near to the city centre, combined with higher density population who are less likely to have access to a car.

Car is the most used mode of transport for travel to work and study. The study area has a higher rate of travel to work and study by car (65%) than the average for Aberdeen City (58%) and the national average for Scotland (62%).

Figure 2-3: Travel to Work / Study Mode Share for Study Area



Source: Scotland Census 2011

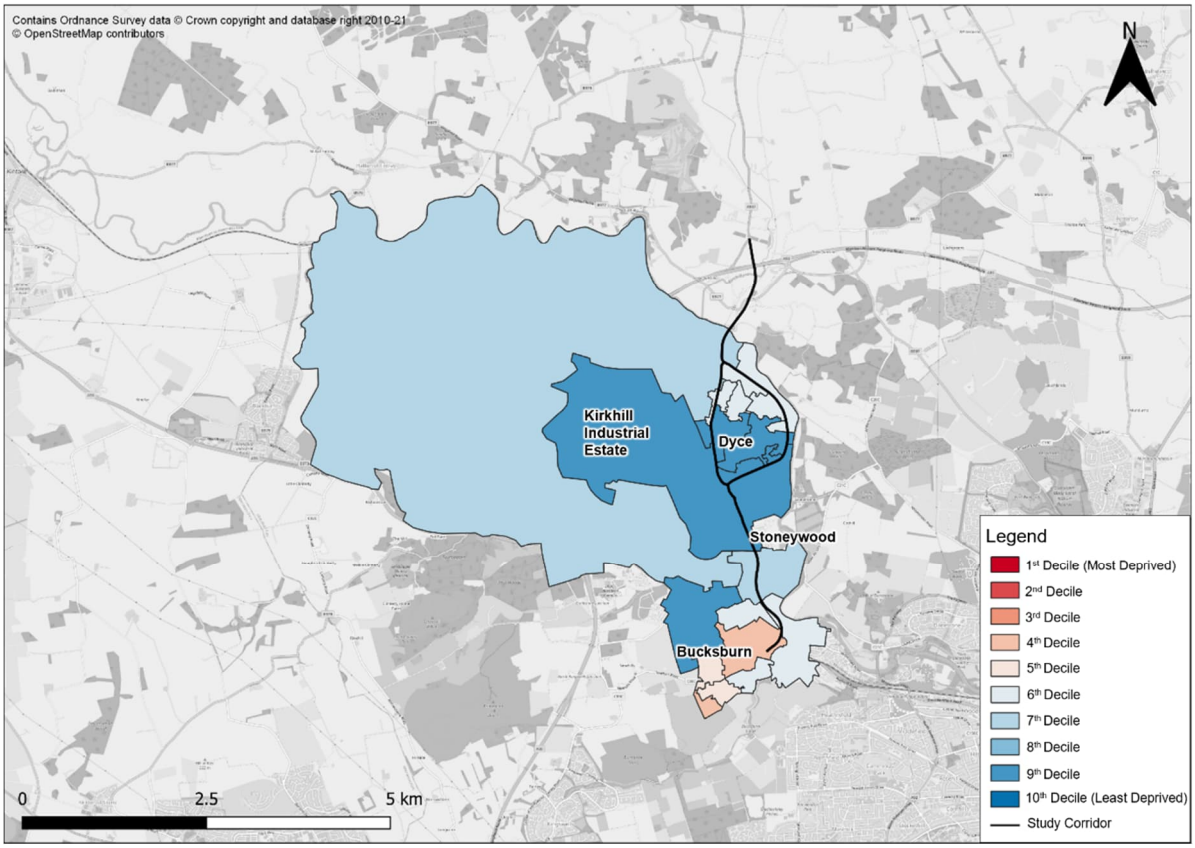
Relevance to the scheme

The study area is home to many businesses which sustain a significant number of jobs within the study area and wider Aberdeen area. In particular, businesses are concentrated around the airport at the many business and industrial parks. Census data shows that 33% of people worked within the study area in 2011 and that almost half of residents worked less than 5km from their workplace. Despite this, car was still the predominant mode of travel to work in 2011 and cycle and walking mode share was lower than average for Aberdeen. Given the density of jobs within the study area and proximity to residential areas, opportunities should be sought to encourage more people to travel to work by active travel and public transport. Improving connectivity between businesses and labour would also support the local economy.

Scottish Index of Multiple Deprivation and Transport Poverty

The Scottish Index of Multiple Deprivation (SIMD) identifies small area concentrations of multiple deprivation across all of Scotland in a consistent way. Figure 2-4 shows the most deprived areas within the study in red and the least deprived in blue. This demonstrates there are relatively low levels of deprivation within the study area, with no data zones within the 20% most deprived nationally and 77% of data zones in the top 50% least deprived. The most deprived areas in the study area are in parts of Bucksburn.

Figure 2-4: Scottish Index of Multiple Deprivation (2020)



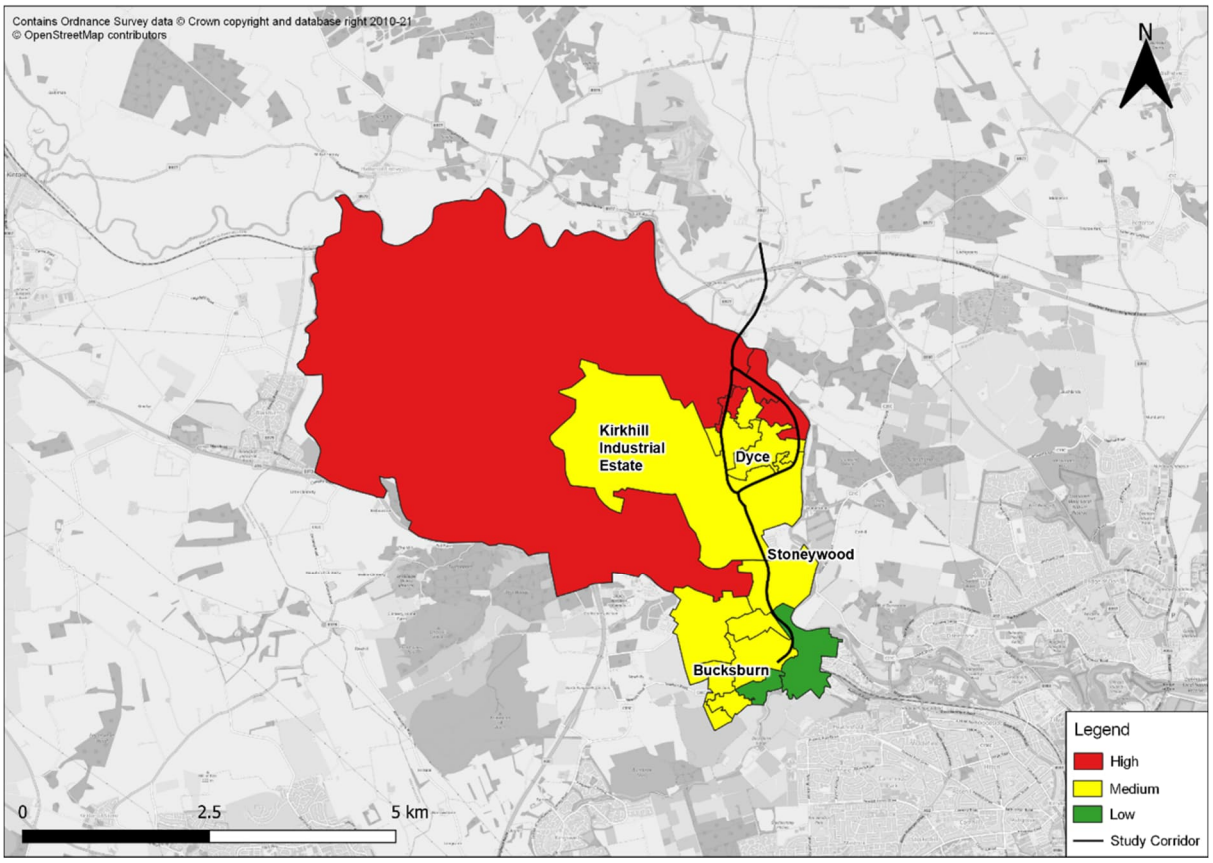
Source: SIMD 2020

Risk of transport poverty has been estimated for the study area based on the method applied in Sustrans' 'Transport Poverty in Scotland' report[34]. For the purposes of this study, household income and public transport travel time from the 2020 SIMD has been used in conjunction with car/van availability from the 2011 Census and the Scottish Government's Scottish Access to Bus Indicator to allocate a risk score to each data zone.

Figure 2-5 shows the risk of transport poverty in the data zones in proximity to the study corridor. This shows that 65% of the zones in the study area are identified to be at medium risk of transport poverty and 24% are identified to be at high risk, particularly those data zones located in the north of Dyce. As relatively low levels of deprivation are observed in these areas, this suggests that poor bus access is driving this trend. Data zones located in the south-east of the study area in proximity to the A947/A96 roundabout are at least risk of transport poverty.

[34] https://www.sustrans.org.uk/media/2880/transport_poverty_in_scotland_2016.pdf

Figure 2-5: Risk of Transport Poverty within the Study Area



Source: SIMD 2020, 2011 Census, 2019 Scottish Access to Bus Indicator

Relevance to the scheme

Most of the population of the study area is at a medium risk of transport poverty, however, parts of Dyce to the north and west are shown to be at high risk. This demonstrates that there is inequality in transport provision within the study area and that these areas are in need of improved connectivity.

2.4.2 Existing Transport Context

The following sections describe the existing transport network within the study area, including a description of its role and function, covering the active travel, bus, road and freight networks, as well as air travel.

Active Travel Network

This section outlines the cycling and walking routes within the study area which form the local active travel network and describes its role. As shown in Figure 2-6, the study area is served by NCN Route 1, which is a strategic cycle route between Dover and John O'Groats. In the vicinity of the scheme, the route provides connectivity to Aberdeen city centre to the south and Aberdeenshire to the north. NCN Route 1 joins the study corridor in the south at Mugiemoss Road, routeing along Stoneywood Road, Riverview Drive and joining the F&B Way to the north. The route is mostly formed of traffic-free sections throughout the study area, with small sections of on-road provision.

The core path network of the study area and wider region is presented in Figure 2-7. The F&B Way is a 53-mile long-distance active travel route which uses the former railway line linking Dyce to the village of Maud, where it splits continuing eastward to Peterhead and northwards to Fraserburgh. The route forms part of the core path networks within Aberdeen City as does the Riverside Path to the east of Riverview Drive. There is an aspirational core path crossing the River Don at Mugiemoss,

which could present an opportunity to enhance east-west links between Dyce and the Grandholm and Bridge of Don areas and complement existing north-south walking and cycling routes in the area.

Figure 2-6: National Cycle Network

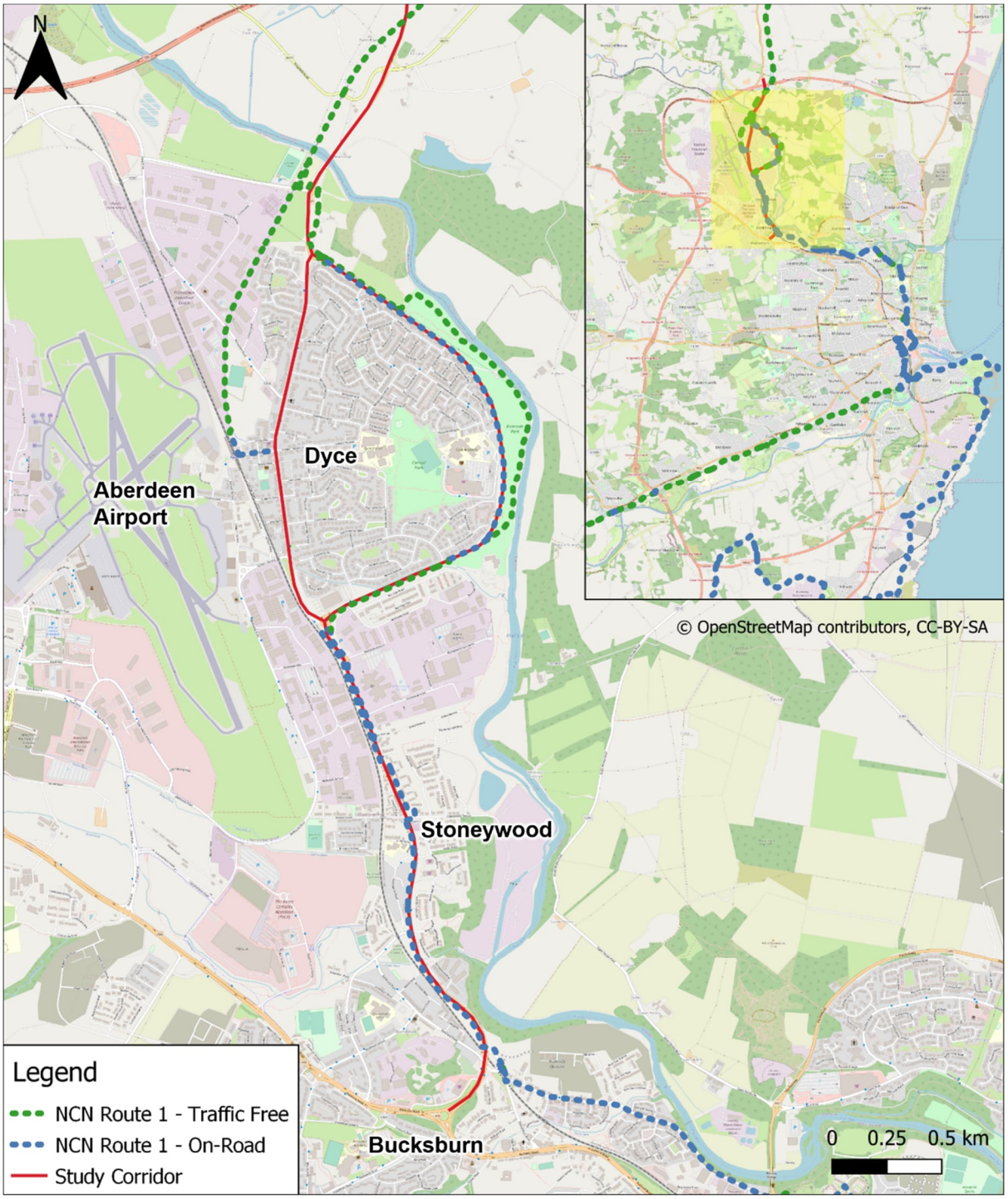
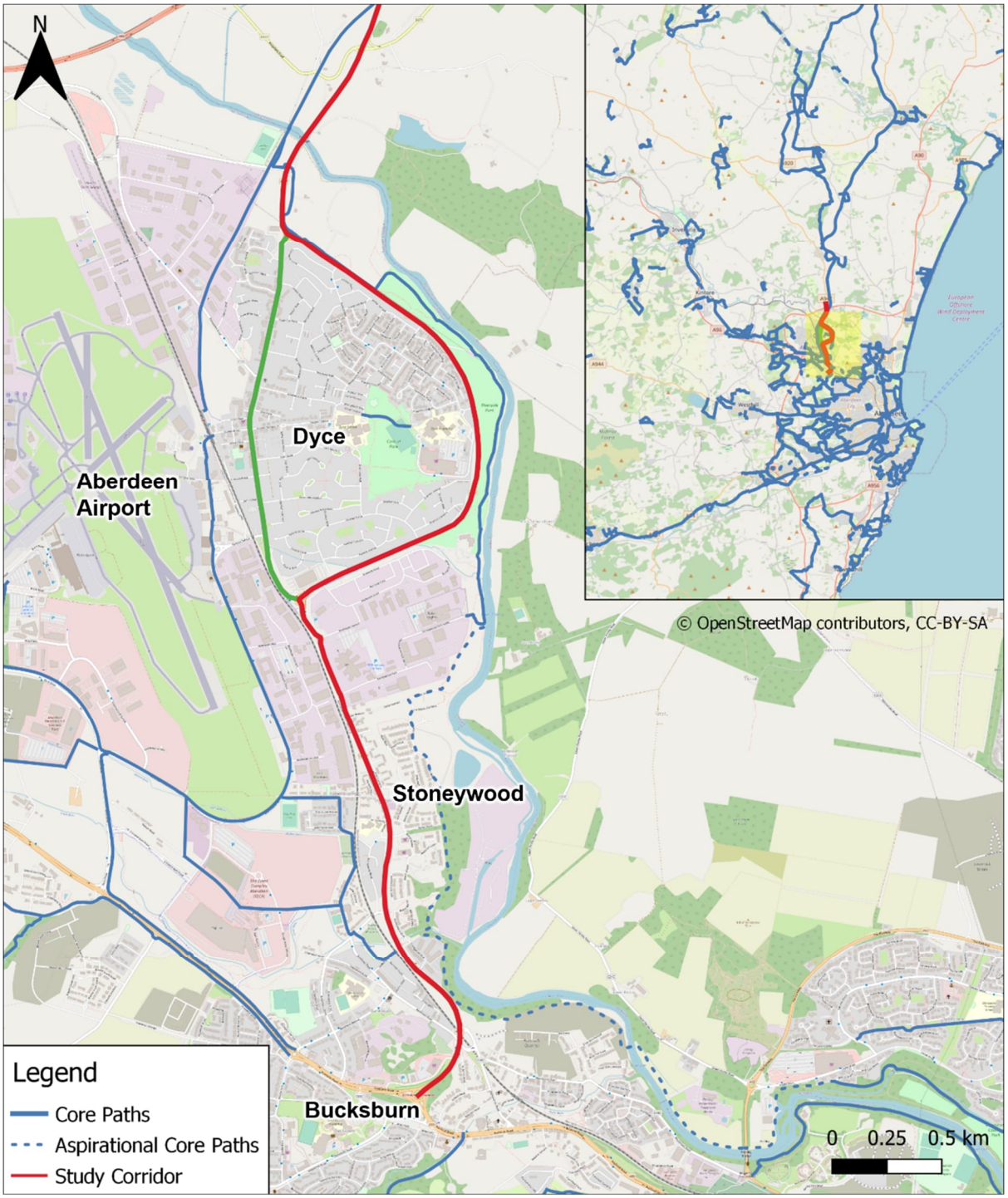
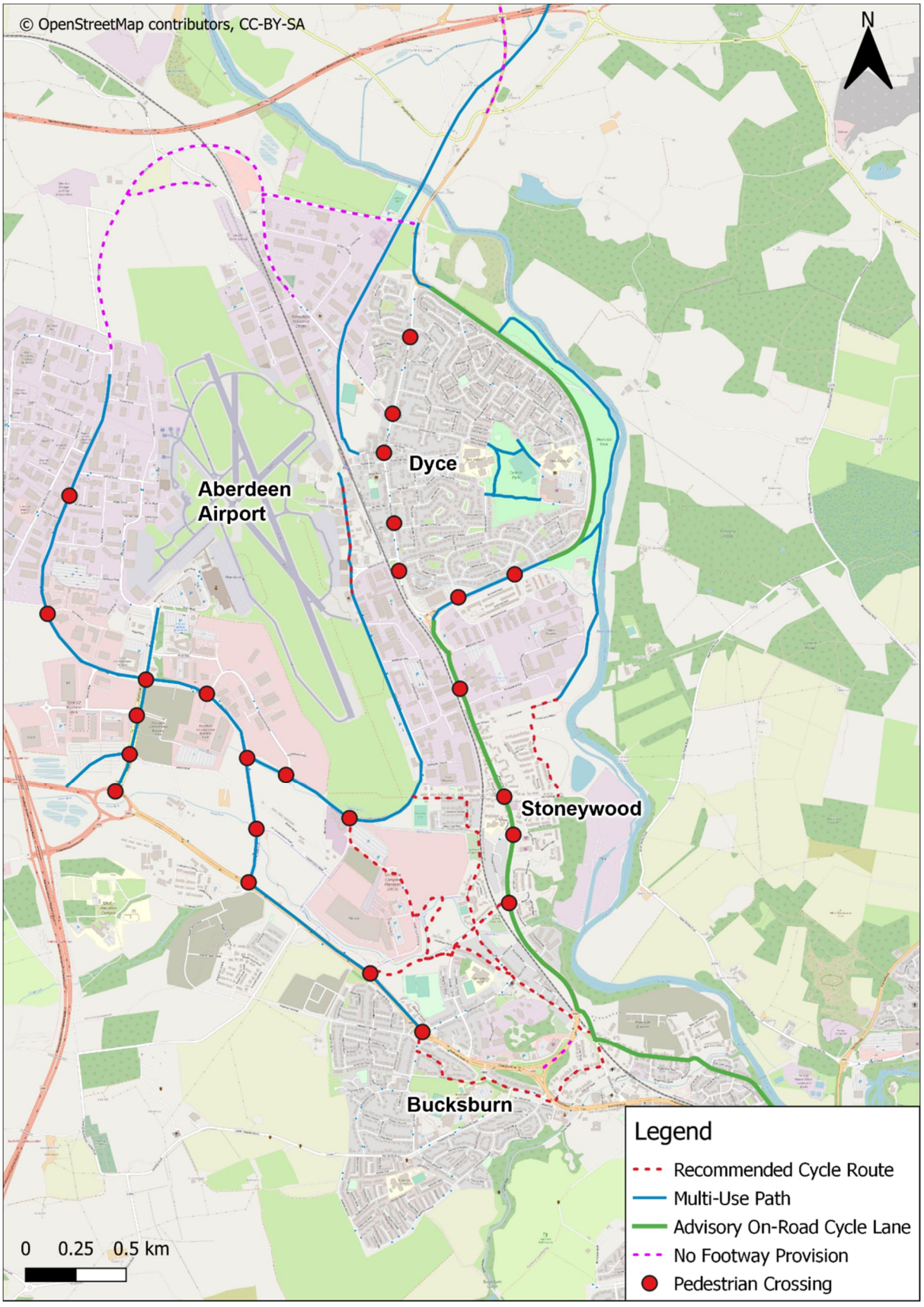


Figure 2-7: Core Paths Within the Study Area



Existing active travel infrastructure within the study area is shown in Figure 2-8. There are a number of active travel routes within the study area, including both on-road and off-road routes. The F&B Way and Riverside Path provide key links for pedestrians and cyclists in the north-west and east of the study area respectively. On-road advisory cycle lanes connect Mugiemoss Road in the south-east of the study corridor to the north of the study corridor via Stoneywood Road and Riverview Drive. As shown, there are few pedestrian crossing points on Stoneywood Road or Riverview Drive to facilitate active travel movements.

Figure 2-8: Active Travel Infrastructure within the Study Area

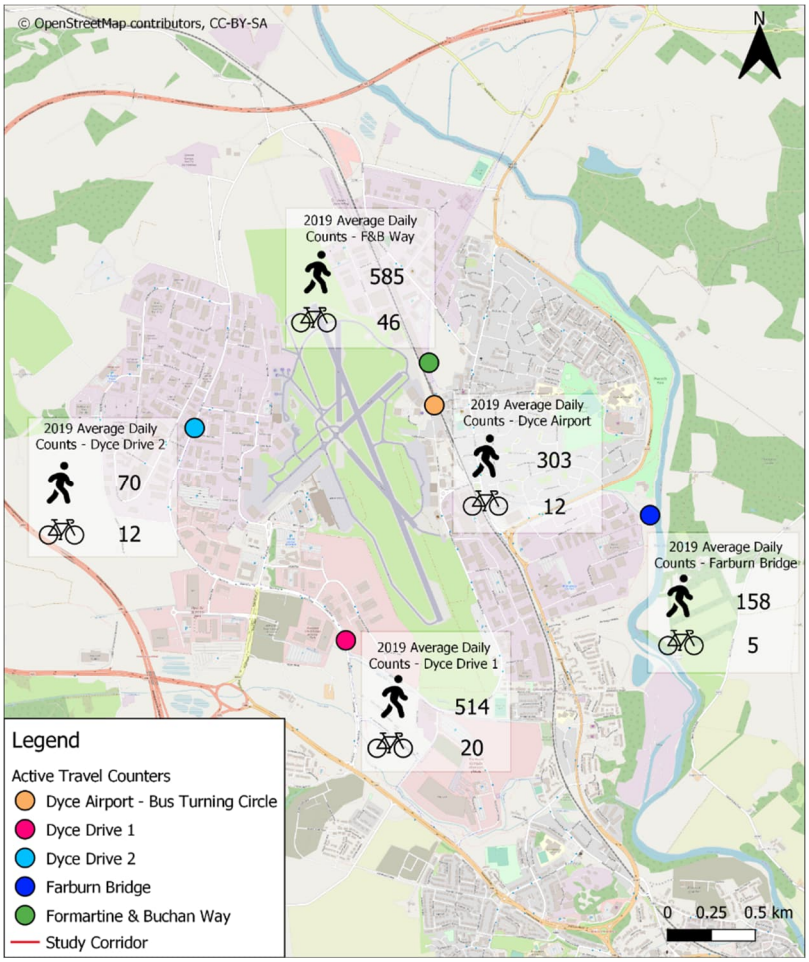


Active Travel Counts

Active travel count data has been analysed to assess the levels of pedestrian and cyclist travel in the study area from five active travel counters. Average daily pedestrian and cycle counts for 2019 are shown in Figure 2-9.

In 2019, the F&B Way had the highest average daily flows of pedestrians and cyclists which reflects its prominence as a strategic and leisure cycling and walking route. This was followed by Dyce Drive, which provides access to Aberdeen International Airport and adjacent business parks via a shared use path. Flows recorded at Farburn Bridge demonstrate that the Riverside Path is also a well-used pedestrian route.

Figure 2-9: Active Travel Counters



Location Specific Issues for Active Travel

A review of localised problems, issues, constraints, and opportunities was undertaken for sections of the study corridor during the preliminary appraisal stage of works (see Appendix A). Table 2-4 summarises existing and future problems identified for the study corridor.

Table 2-4: Location Specific Issues for Active Travel on the Study Corridor

Section	Key Problems
AWPR to Dyce Drive (North)	• Lack of visibility for road users emerging onto B977 from slip road • No active travel provision towards Kirkhill Industrial Estate • Narrow Access onto the F&B Way can require cyclists to dismount • Underpass can cause personal security concerns
Riverview Roundabout (North)	• No direct cycling provision between Dyce Drive and Riverview Drive • Limited wayfinding signage for active travel users

Section	Key Problems
	• Lack of formal / signalised pedestrian crossings
Riverview Drive (North)	• Inconsistent tactile paving at crossing points • Lack of safe pedestrian crossing facilities to Riverside Path • Poor accessibility between Riverside Path and residential areas • Advisory cycle lanes do not continue through junctions • Discontinuous footway provision and lack of crossing points along Riverview Drive • Limited wayfinding signage • Variable surfacing and lack of lighting on Riverside Path
Riverview Drive (South)	• Limited wayfinding signage • Lack of segregated cycle facilities on the National Cycle Network Route • Poor access between Dyce residential areas and Riverside Path • Farburn Industrial Estate signage directs vehicles via Burnside Road with greater interface with residential properties
Victoria Street (North)	• On-street parking limits carriageway space • Lack of segregated cycling infrastructure
Pitmedden Road Junction	• Narrow footways outside Dyce Parish Church
Victoria Street (South)	• On-street parking impacts access by active travel modes • Lack of formal link between Dyce rail station and Union Row • Parking overspill from the rail station • Lack of wayfinding signage • Lack of cycle parking outside shops • High volumes of through traffic • Safety issues when parked vehicles reverse onto Victoria Street
Riverview Roundabout (South)	• Lack of formal pedestrian crossings at roundabout • Advisory cycle lanes abruptly end on entry to roundabout with limited alternative crossing facilities • Poor gateway into Dyce
Stoneywood Road (North)	• Lack of lane designation signage at roundabout can cause confusion for users • Narrow cycle lanes resulting in vehicles passing close to cyclists • Narrow footway provision in places • Lack of segregated cycle infrastructure along Stoneywood Road • Poor wayfinding for active travel users • Lack of dropped kerbs on Wellheads Drive to allow access to shared use path
Stoneywood Road (South)	• Narrow sections of road promote close passing

Relevance to the scheme

A review of localised problems, issues, constraints and opportunities along the study corridor highlighted specific areas to improve accessibility and connectivity for active travel users. Whilst there is generally good provision of pedestrian infrastructure within the study area, there are areas where there is a lack of footway or formal pedestrian crossings to match pedestrian desire lines. Cycle facilities were found to be inconsistent with narrow sections contributing to close passing by vehicles and a lack of segregation, which can impact on perceptions of safety and constrain uptake. Limited wayfinding signage, high volumes of traffic and on-street parking were also identified as problems. To encourage sustainable travel on the study corridor and deliver against Government's

objectives, the scheme should consider addressing these problems. The study area is served by several established active travel routes, including NCN Route 1 and parts of Aberdeen's core path network, particularly the F&B Way and the Riverside Path. Access to these nationally and regionally significant routes should be maximised to benefit residents and visitors. There is an opportunity to improve connectivity within Dyce, to existing active travel routes and to key destinations such as Kirkhill Industrial Estate and Dyce station.

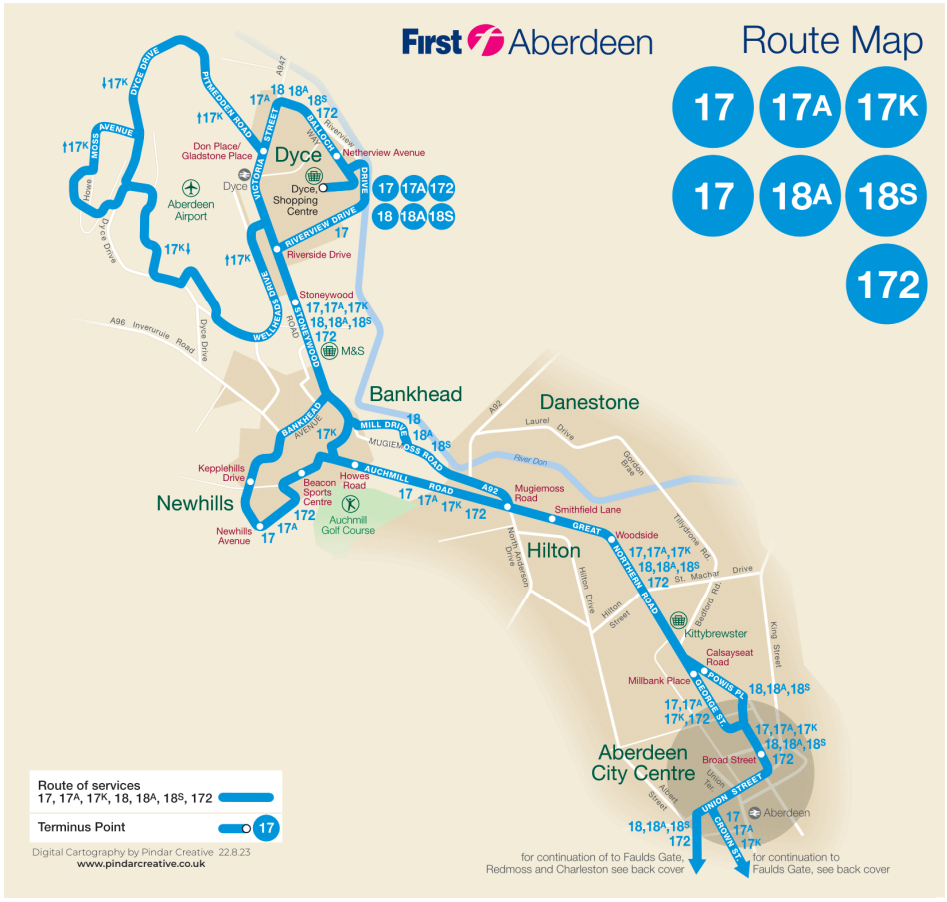
Bus Network

Aberdeen City has two main bus operators, with First Bus, who are based in Aberdeen, operating the majority of routes. Stagecoach operates services in Aberdeen City as well as a number of inter-urban and local services in Aberdeenshire. Both operators operate within the A947 study area, as shown in the network map for First (Figure 2-10) and Stagecoach (Figure 2-11).

There is no bus priority infrastructure on the A947 corridor within the study area. Buses also utilise Stoneywood Road, Victoria Street, Riverview Drive and Dyce Drive but are not given priority over general traffic on any of these routes. Bus stop provision within the study area is not consistent and ranges from basic bus stop poles to shelters with seating, contributing to varied waiting environment. Bus stops generally provide passenger information including timetabled services.

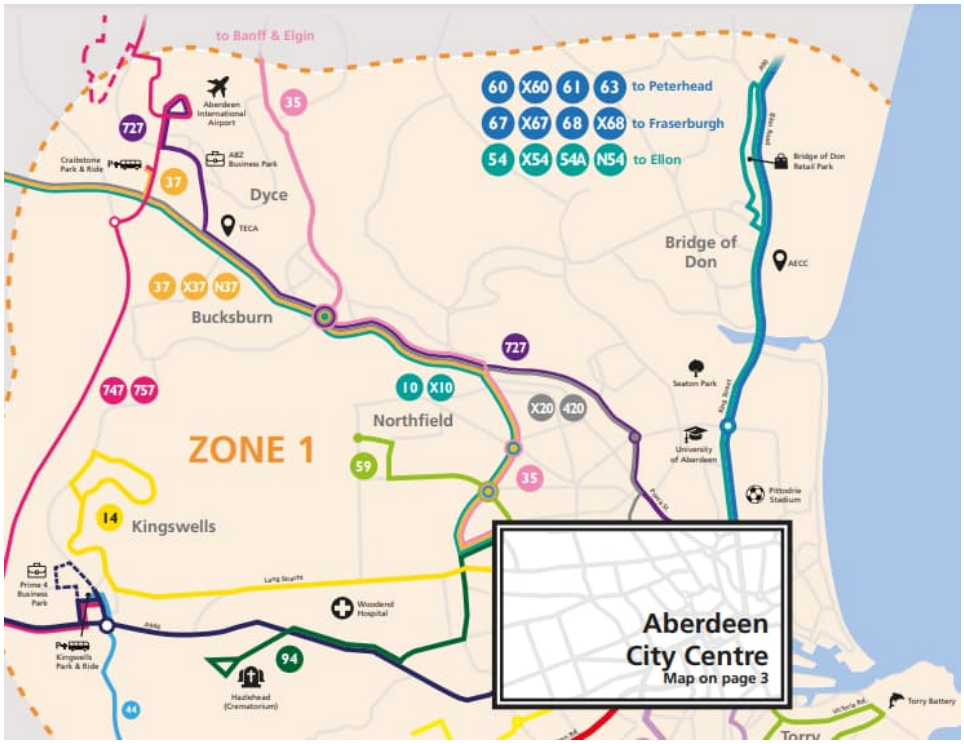
Craibstone P&R is located to the south-west of the study corridor and is accessed from the eastbound lanes of the A96 and from Airport Road. It has capacity for 996 vehicles and includes waiting room facilities, showers, cycle lockers and cycle parking. Following its opening in 2017, the site was initially served by buses, however lack of passenger demand resulted in services being withdrawn and no services currently operate via the site.

Figure 2-10: First Bus Services Route Map



Source: First Bus Aberdeen (Accessed 23/02/2024)

Figure 2-11: Stagecoach Services Route Map



Source: Stagecoach (Accessed 23/02/2024)

Table 2-5 outlines the frequency of the key services operating on the study corridor.

Table 2-5: Frequency of Bus Services on the Study Corridor

Route	Description	Frequency		
		Monday to Friday	Saturday	Sunday
First Bus				
17/17 A	Faulds Gate – Dyce	15-20 mins	20 mins	20 mins
17k	Faulds Gate – Kirkhill Ind Estate	6 per day	No Service	No Service
18	Charleston – Dyce	20 mins	20-30 mins	No Service
18A	Charleston/Redmoss - Dyce	7 per day	No Service	No Service
172	Faulds Gate – Dyce	30 mins (evening)	30-40 mins (evening)	30-60 mins (evening)
Stagecoach				
35	Aberdeen – Banff & Elgin	Up to every 30 mins	Up to every 30 mins	Hourly
727	Aberdeen Bus Station – Airport	15-20 mins	20 mins	20 mins

Source: First Bus and Stagecoach (Accessed 23/02/2024)

In recent years, there has been a trend of ongoing decline in bus use in Scotland, a trend also evident in the North East, albeit not to the same extent as in some other parts of the country. To provide a baseline of bus patronage along the corridor that can be monitored in future years to assess the impact of any interventions that are implemented, data was provided by the two main bus operators that service the A947 corridor. Given commercial sensitivities, numbers have been presented as an index. FY2019/20 has been taken as the base year, as shown in Table 2-6.

Table 2-6: Index of Year Patronage on A947 Corridor (19/20-21/22)

Financial Year	Index of Patronage on A947 Corridor	
	First Bus	Stagecoach
2019/20 (Base Year)	100	100
2020/21	38.4	35.7
2021/22	70.3	66.8

Source: First Bus and Stagecoach

The significant decline in patronage in 2020/21 on the 2019/20 base year is attributed to the COVID-19 pandemic which placed significant restrictions on movement and discouraged use of public transport; consequently, contributing to a large decline in bus use. As shown in the table, bus use has recovered to an extent during 2021/22 (circa 66% to 70% of pre-COVID levels) although by 2021/22 it remained significantly below that recorded during the 2019/20 base year.

A high-level analysis of bus stop reliability (delay and dwell times) was conducted across ten stops serving First Bus services along the A947 corridor. However, no significant delays were identified at the bus stop level.

Location Specific Issues for Buses

A review of localised problems, issues, constraints, and opportunities on the study corridor during the preliminary appraisal stage of works (see Appendix A) identified a number of issues for buses, as summarised in Table 2-7.

Table 2-7: Location Specific Issues for Buses on the Study Corridor

Section	Key Problems
Victoria Street (North)	• Bus laybys cause difficulties for buses re-joining Victoria Street • On-street parking limits carriageway space
Victoria Street (South)	• Bus stops are provided on-line which can delay traffic and requires other vehicles to overtake while buses are stopped • Bus laybys cause difficulties for buses re-joining
Riverview Roundabout (South)	• Bus laybys cause difficulties for buses re-joining
Stoneywood Road (South)	• On-street parking along Mugiemoss Road delays buses

Relevance to the scheme

The A947 corridor forms a key arterial bus route into Aberdeen city centre from the north west of the city and offers regional connectivity to Aberdeenshire via inter-urban services to Oldmeldrum, Banff and Elgin. As well as providing access for residents, services within the study area connect to destinations such as the Aberdeen International Airport / Heliport, TECA and various business parks and industrial estates. Opportunities to improve connectivity between the study area and these destinations would help to promote sustainable access as well as support the local economy. Following the national trend, bus patronage in the study area has declined in recent years and was significantly impacted by the COVID-19 pandemic. Measures that consider improvements to accessibility, journey times and journey time reliability should be considered to make bus travel more competitive and reverse the decline in patronage.

Rail Network

The study area is served by Dyce rail station, which is a stop on the Aberdeen to Inverness line. The Aberdeen to Inverness and Montrose to Inverurie services call at the station, with destinations further south accessible via interchange at Aberdeen. The station is located on Station Road, off Victoria Street, to the west of the centre of Dyce and to the east of Aberdeen Airport. Although the station is located next to the airport runway, there is no direct link between the station and the airport as the passenger terminal is on the opposite side of the runway. The F&B Way begins at Dyce station, however, users must cross the car park to access the start of the route. Table 2-8 below shows the approximate frequency of the services from Dyce station.

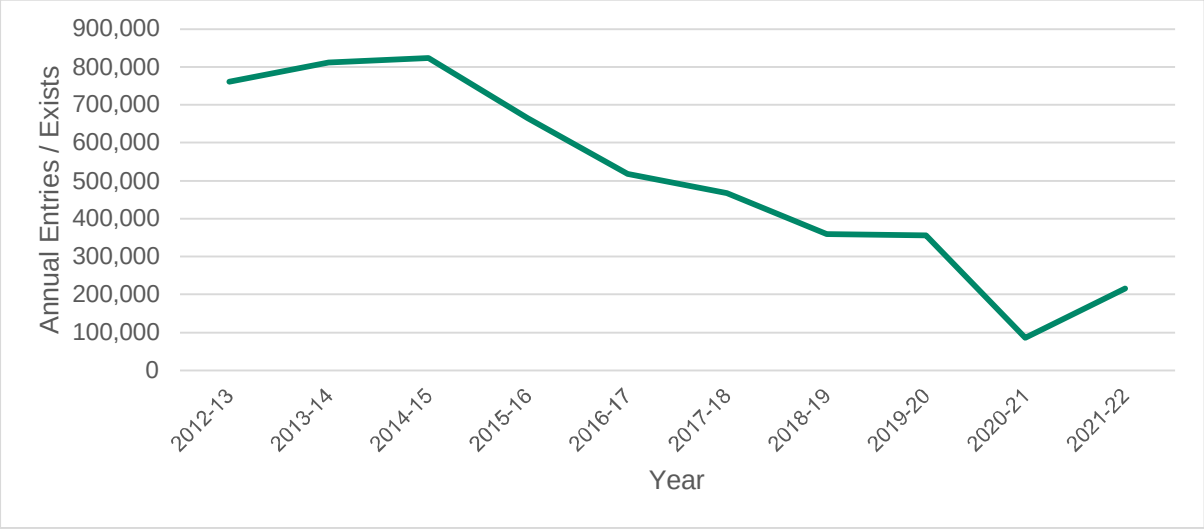
Table 2-8: Frequency of Services from Dyce Rail Station

Destination	Frequency
Aberdeen	Approximately 40 services daily
Inverness	Approximately 10 services daily
Inverurie	Approximately 35 services daily
Montrose	Approximately 30 services daily

Source: National Rail

Figure 2-12 shows the estimated annual passenger entries and exits at Dyce station over a ten-year period between April 2012 and March 2022. This shows that over the period, usage has declined since 2014-15 when annual entries and exits totalled around 820,000 passengers. Between 2018 and 2020, passenger numbers had stabilised at around 350,000 per year but were impacted by the COVID-19 pandemic, falling to around 85,000 in 2020-21. Although there has been some recovery, passenger numbers in 2021-22 are still lower than pre-pandemic levels at around 215,000 annual entries and exits.

Figure 2-12: Passenger Entries and Exits at Dyce Station (2012-13 to 2021-22)



Source: ORR

Relevance to the scheme

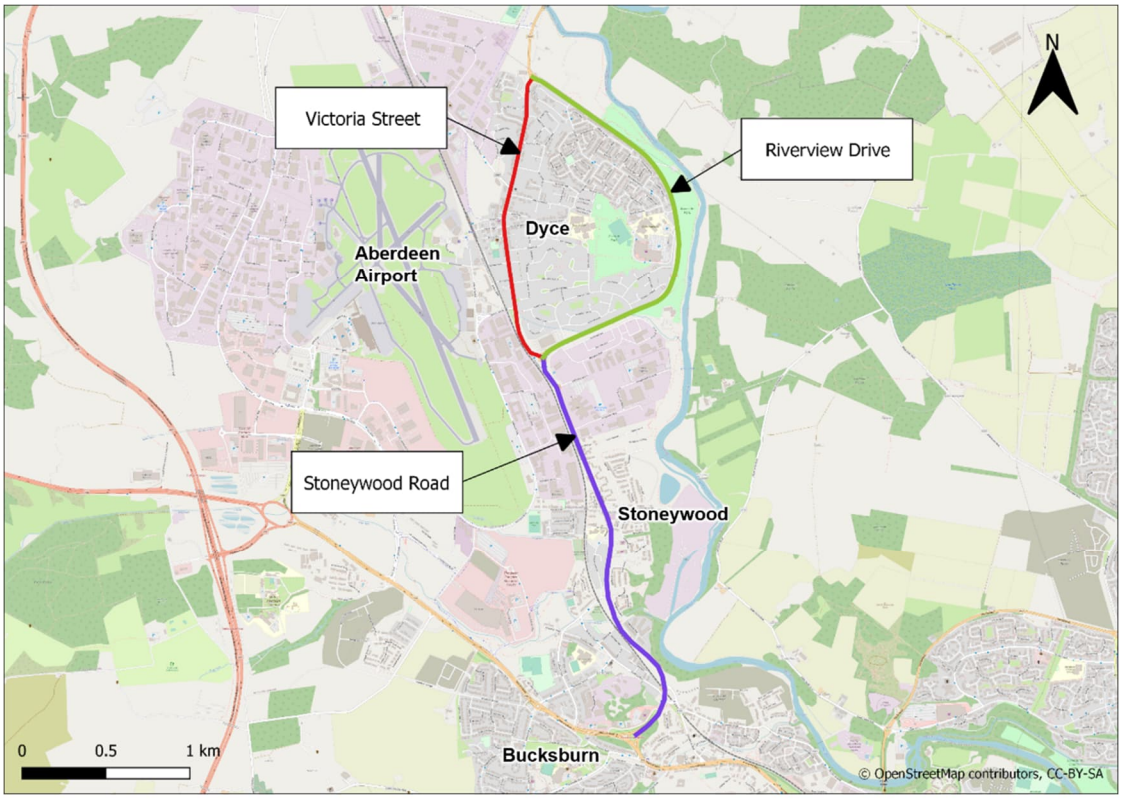
Whilst the rail service to Dyce is good, access to the station is difficult for all users, particularly active travel users. The footway on Station Road is discontinuous and overspill from the station car park adds to on-street parking to create a hazardous and unattractive environment. There is a lack of infrastructure between the station and community facilities, and poor access to the F&B Way via the station car park. Despite being located next to the airport, there is no direct pedestrian access to the passenger terminal. Although in the past there have been bus services between the station and the airport, none are currently operational. Station usage has fallen over the last decade and has yet to recover to pre-pandemic levels. Opportunities to improve access to the station from Dyce, as well as to the F&B Way and Airport, should be sought to encourage sustainable travel and support rail patronage.

Road Network

The A947 study corridor between the AWPR Parkhill Junction and the A96/A947 Junction is comprised of three key road links, as shown in Figure 2-13 and described below:

- **Stoneywood Road** comprises the section of the corridor between the A96/A947 Junction and the Stoneywood Road/Riverview Drive roundabout. This section is approximately 2.5km long and is a two-lane single carriageway for the majority, with the exception of a short dual carriageway section at its southern end. This section has a speed limit of 40mph at its southern end which changes to 30mph approximately 500m north of the A96/A947 roundabout. This section provides access to the residential areas in the south of Dyce, as well as retail space and offices, including the Dyce headquarters of BP.
- **Riverview Drive** is a two-lane single carriageway section of the study corridor which forms a loop around the east of Dyce, bypassing Victoria Street. It has a speed limit of 40mph and, as well as serving as a bypass of Dyce, provides access to Dyce Shopping Centre and to the residential areas in the east of Dyce. Riverside Park, a popular area for leisure activities, is also accessed from Riverview Drive. The road was redesignated as the A947 in the update to the ACC roads hierarchy in 2020.
- **Victoria Street** forms the main thoroughfare through Dyce, containing a mix of retail units, restaurants and residential properties fronting onto the street. It is a two-lane single carriageway with a speed limit of 30mph and provides access to a number of key destinations in the area including Dyce Rail Station, the F&B Way and Aberdeen Heliport. Additionally, this section connects to Pitmedden Road and Wellheads Drive both of which facilitate movements to the business parks and industrial estates to the west of Dyce. Victoria Street was declassified from an A-class route (i.e. the A947) in the update to the ACC roads hierarchy and is now a tertiary route.

Figure 2-13: A947 Study Corridor Road Network



Traffic Volumes

There is an automatic traffic counter located on Stoneywood Road. The table below provides a monthly summary from the counter for 2019 and 2021.[35] The effects of the COVID-19 pandemic on traffic movements are evident.

Table 2-9: Traffic Count Data from Stoneywood Road

Month	Average Daily Traffic Flows in Both Directions		
	2019	2021	% Change (2019-2021)
January	14,707	8,977	**-39%**
February	15,434	10,026	**-35%**
March	15,081	11,345	**-25%**
April	14,894	12,045	**-19%**
May	15,001	12,489	**-17%**
June	15,001 (est.)	12,883	**-14%**
July	15,001 (est.)	12,198	**-19%**
August	14,886	12,652	**-15%**
September	14,825	12,750 (est.)	**-14%**
October	14,484	12,167 (est.)	**-16%**
November	15,079	12,968 (est.)	**-14%**
December	13,934	12,123 (est.)	**-13%**

Source: ACC

Road Safety

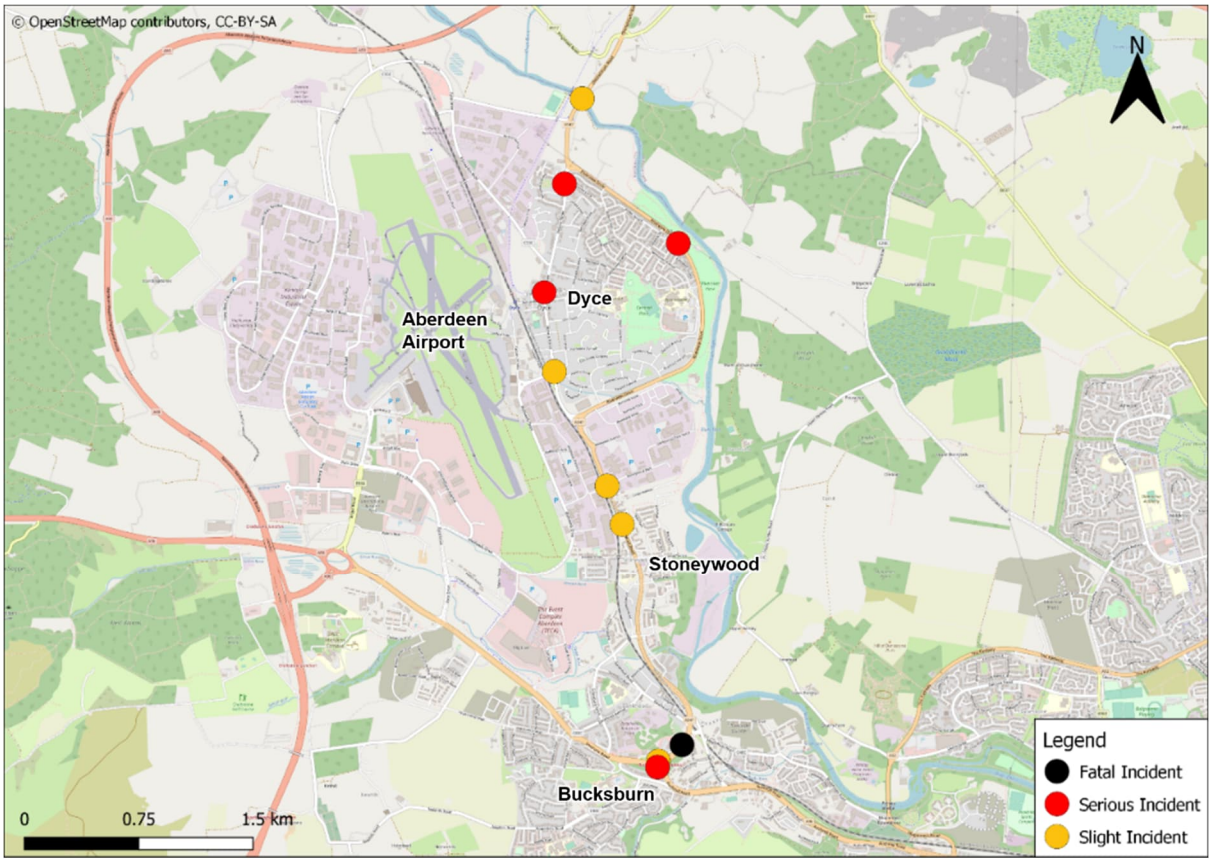
Analysis of recent road safety incident data along the study corridor between 2016 and 2020 found that there were ten incidents over the period, comprising five slight, four serious and one fatal incident (Table 2-10). Four of the incidents involved a pedestrian and three involved a pedal cycle. In 2017 a fatal incident occurred just north of the A96/A947 roundabout (Figure 2-14), which resulted in the death of a pedestrian. Two other incidents occurred near to this location on the A96/A947 roundabout, which involved cyclists in 2018 and 2019.

Table 2-10: Road Safety Incidents along Study Corridor (2016-2020)

Year	Pedestrians			Pedal Cycles			All Vehicles		
	Slight	Serious	Fatal	Slight	Serious	Fatal	Slight	Serious	Fatal
2016	0	0	0	0	0	0	0	0	0
2017	1	0	1	0	0	0	2	0	1
2018	0	0	0	1	1	0	1	1	0
2019	0	0	0	0	1	0	2	1	0
2020	0	2	0	0	0	0	0	2	0
Total	**1**	**2**	**1**	**1**	**2**	**0**	**5**	**4**	**1**

[35] The AWPR opened between Parkhill (at the A947) and Blackdog in June 2018, between Craibstone and Stonehaven/Charleston in December 2018, with the route becoming fully operational in February 2019, following completion of the final section between Craibstone and Parkhill.

Figure 2-14: Road Safety Incidents on the Study Corridor (2016-2020)



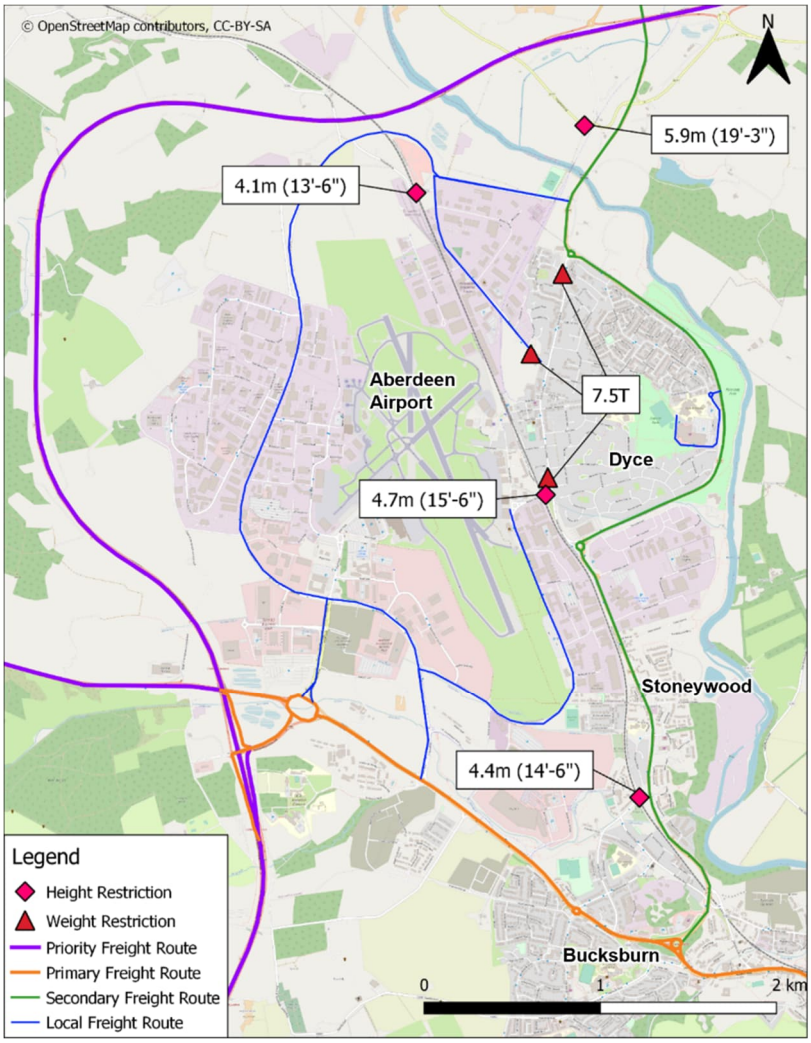
Relevance to the scheme

The key road links on the study corridor consist of Stoneywood Road, Riverview Drive and Victoria Street. Following ACC's Road Hierarchy review, Riverview Drive was redesignated an A road and Victoria Street was downgraded to a tertiary route. There may be opportunities to implement infrastructure changes on these roads to reflect their updated status, such as prioritising active travel users on Victoria Street and providing greater protection to cyclists on Riverview Drive where traffic flows are higher. Road safety data highlighted that there have been a number of accidents involving pedestrians and cyclists along the study corridor in recent years, including a pedestrian fatality in 2017 on the A947 north of the A96/A947 roundabout. Several other accidents occurred on the Victoria Street, Riverview Drive and Stoneywood Road. The package of measures taken forward as part of the OBC should seek to identify opportunities to improve safety for vulnerable users along the corridor.

Freight

Figure 2-15 provides an overview of the freight routes on the study corridor. There are multiple industrial estates which are a key origin and destination for freight including Kirkhill Industrial Estate to the north-west and Wellheads Industrial Estate to the west of the study corridor. There are restrictions in place on Victoria Street, banning vehicles over 7.5 tonnes in weight and height restrictions on Farburn Terrace caused by a low bridge, which prevents vehicles over 4.7m high from using the route.

Figure 2-15: Freight Routes



Relevance to the scheme

Parts of the study corridor on Riverview Drive and Stoneywood Road are categorised as secondary freight routes, with Wellheads Drive, Dyce Drive and Pitmedden Road designated as local freight routes. The industrial estates to the west of the study area are key attractors for freight traffic. High volumes of freight traffic reduce the attractiveness of active travel routes to users, particularly if cyclists must share the highway with other road users without segregation. There may be an opportunity to encourage increased active travel by providing better segregation where users are likely to come into conflict with freight traffic.

Air Travel

Aberdeen International Airport is located within the study area to the west of the centre of Dyce. The airport serves over 30 destinations and also serves as the main heliport for the offshore North Sea oil and gas industry. Facilities at Aberdeen Airport include one fixed-wing runway and 3 helicopter runways, one passenger terminal and 1 offshore fixed wing terminal.[36] Around 85 people are employed by Aberdeen International Airport, however more than 3,400 jobs are supported by the airport.[37]

In 2022, terminal passenger traffic at Aberdeen Airport totalled approximately 1.96 million passengers, which was a decrease of 36.6% since 2017 when this totalled 3.09 million. Table 2-11 shows Aberdeen Airport's top ten routes for international and domestic flights. This shows that in 2022,

[36] https://www.aberdeenairport.com/about-us/facts-and-figures/
[37] https://www.aberdeenairport.com/about-us/facts-and-figures/

around 47% of passenger traffic was attributed to international flights and 53% to domestic. In terms of international flights, the highest number of passengers travelled to oil rigs, which reflects the significance of the airport to the North Sea oil and gas industry. This is also reflected in the presence of other destinations associated with the oil industry, including Stavanger, Bergen and Sumburgh. Other key routes, such as Alicante, Tenerife and Palma show the importance of the airport for leisure purposes, whilst it also provides access for tourists inbound to Scotland.

Table 2-11: International and Domestic Passengers from Aberdeen by Route (2022)

Number	International		Domestic	
	Airport	Total passengers	Airport	Total passengers
1	Oil Rigs	349,263	Heathrow	411,683
2	Amsterdam	212,731	Gatwick	162,333
3	Stavanger	62,664	Sumburgh	91,096
4	Bergen	38,120	Manchester	72,848
5	Alicante	31,848	Luton	67,572
6	Gdansk	30,658	Birmingham	50,098
7	Tenerife (Surreina Sofia)	27,613	Kirkwall	41,444
8	Dublin	27,012	Norwich	28,598
9	Palma De Mallorca	26,617	Newquay	23,565
10	Malaga	20,545	Belfast City (George Best)	21,902
Total	All International	921,173	All Domestic	1,044,384

Source: UK Civil Aviation Authority, Annual Airport Data 2022

Surface access to Aberdeen Airport is predominantly gained by car. Although there are numerous bus services which serve the main terminal, only 12% of passengers arrive by public transport.[38] Dyce rail station is located close to the airport, however, there are no direct public transport connections which limits utility for airport passengers.

Relevance to the scheme

Aberdeen Airport is a key gateway for domestic and international air travel and serves passengers travelling for a range of businesses and leisure purposes. The airport serves as the main heliport for the offshore oil and gas industry and is therefore vital to the local economy. At present, car is the predominant mode used by passenger to access the airport, which results in significant traffic and environmental impact. There is an opportunity to support sustainable access to the airport by improving public transport connections to Dyce railway station. As the airport and related businesses are key local employers, enhancing access would also support those living in the study area that are employed at the site. As people travelling to the airport for work are often more able to use active modes than passengers, options should also consider how access for pedestrians and cyclists can be enhanced to encourage modal shift.

Journey Time Analysis

A high-level comparison of journey times by car, bus and cycle to key destinations has been undertaken using Google Maps. This analysis considered inbound journeys arriving by 09:00 on Tuesday 31st October 2023 and return journeys leaving after 17:00 on Tuesday 31st October 2023. It should be noted that some bus journeys may include walk time to reach the destination from the nearest bus stop.

[38] https://www.nestrans.org.uk/wp-content/uploads/2021/12/Nestrans-RTS_PUBLISHED.pdf

Table 2-12: Car, Bus and Cycle Journey Time Analysis

Destination	Car		Bus		Cycle	
	Time (mins)	Speed (mph)	Time (mins)	Speed (mph)	Time (mins)	Speed (mph)
AM Peak Inbound (from Victoria Street/Station Road Junction)						
Aberdeen Bus Station	24	18	36	12	32	12
Aberdeen Royal Infirmary	16	19	18	17	30	10
Newmachar	8	33	12	22	28	9
Robert Gordon University	26	19	66	8	49	10
University of Aberdeen	16	19	40	8	26	12
PM Peak Outbound (to Victoria Street/Station Road Junction)						
Aberdeen Bus Station	24	16	44	10	36	11
Aberdeen Royal Infirmary	20	17	24	12	30	10
Newmachar	9	29	12	22	24	12
Robert Gordon University	30	17	70	9	50	10
University of Aberdeen	16	19	43	8	29	11

Source: Google Maps

The following table includes a selection of destinations which are located within or near the study area and therefore are deemed to be walkable from within Dyce. As east-west public transport connectivity in Dyce is poor, some journeys require a transfer or walking as part of the journey, which increases journey time and reduces average speed.

Table 2-13: Car, Bus, Cycle and Walking Journey Time Analysis

Destination	Car		Bus		Cycle		Walk	
	Time (mins)	Speed (mph)	Time (mins)	Speed (mph)	Time (mins)	Speed (mph)	Time (mins)	Speed (mph)
AM Peak Inbound (from Victoria Street/Station Road Junction)								
Aberdeen Airport	7	21	24	13	14	12	59	3
Craibstone P&R	8	20	42	7	14	11	58	3
Dyce Rail Station	1	6	-	-	1	6	2	3
Kirkhill Industrial Estate	5	30	12	14	13	11	54	3
The Event Complex Aberdeen (TECA)	8	21	22	5	11	12	41	3
PM Peak Outbound (to Victoria Street/Station Road Junction)								
Aberdeen Airport	8	18	27	6	13	12	58	3
Craibstone P&R	9	17	31	6	14	12	59	3
Dyce Rail Station	1	6	-	-	1	6	2	3
Kirkhill Industrial Estate	6	25	24	8	12	13	52	3
The Event Complex Aberdeen (TECA)	7	16	20	6	10	12	41	3

Source: Google Maps

Relevance to the scheme

The analysis highlighted that journey times are generally longer by bus than car and often significantly so. This is particularly notable for destinations which require an interchange (e.g. to Robert Gordon University) as direct services are not available. For destinations within the study area or in close proximity, cycle journey times are shown to be significantly shorter than the respective bus journey times. For some destinations, walking journey times are similar to the bus

or slightly longer. There is poor public transport permeability within the study area, particularly between Dyce and the airport and adjacent industrial estates, and long walking journey times may encourage car travel. Options should consider how to improve public transport connectivity between key destinations or provide more direct and attractive routes to encourage active travel.

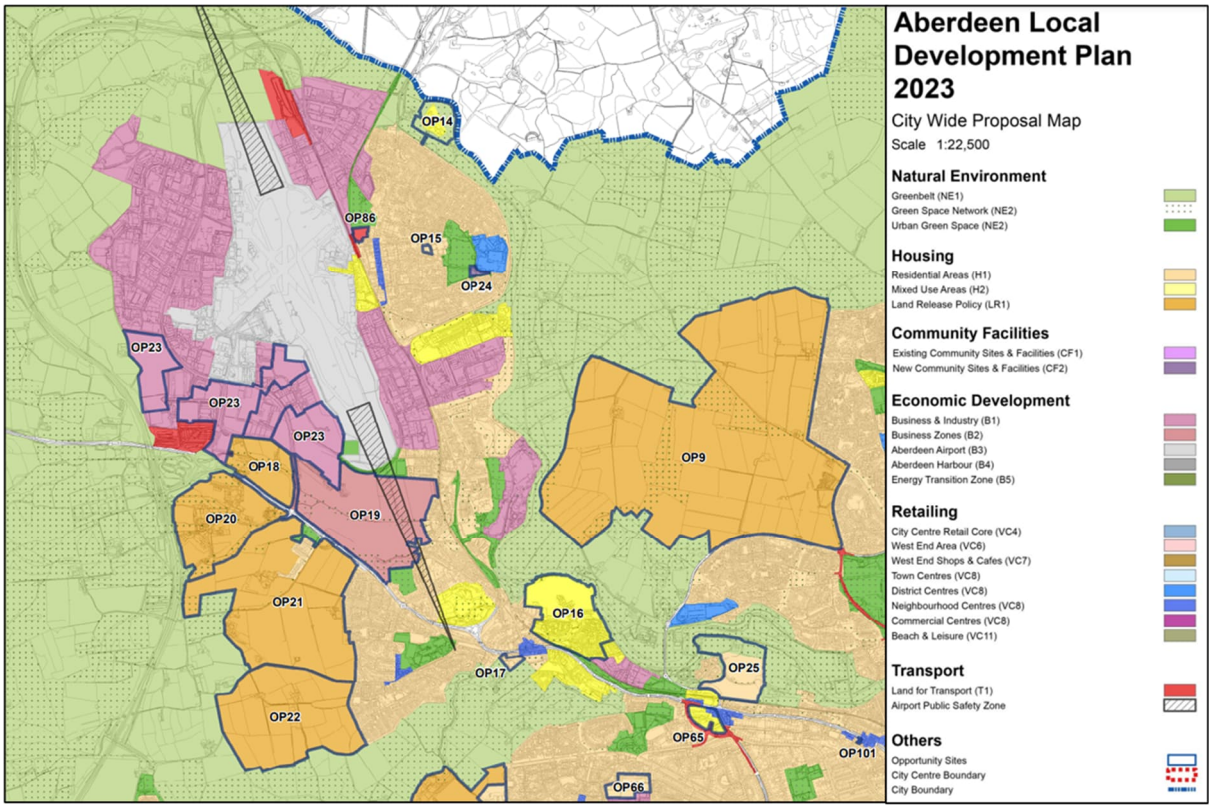
2.4.3 Development Context

This section provides an overview of the planning context of the study area, including information on relevant development allocations along the corridor and considers how potential changes could impact the package. Further details on the planning context is provided in Appendix A (Problems, Issues, Constraints and Opportunities Technical Note).

Development in Aberdeen City

Within the ACC local authority area, there are 13 allocations within the Proposed LDP 2023 which are of relevance to the A947 Multi-Modal Corridor Study as presented in Figure 2-16 and summarised in Table 2-14. The most significant allocation for housing in the area is OP9 at Grandhome, with plans for 7,000 homes and 5 hectares of employment land across seven neighbourhoods. Overall, the Proposed LDP 2020 includes allocations for 11,560 homes and 41ha employment land within the vicinity of the A947 corridor.

Figure 2-16: ACC Proposed LDP 2023



Source: ACC, LDP 2023

Table 2-14: Details of LDP 2023 Allocations

Ref	Site	Description	Site Area (Ha)	Capacity	
				Homes	Employment Land (ha)
OP9	Grandhome	Identified for 7,000 homes and 5 hectares of employment land.	323	7,000	5
OP14	Former Cordyce School	Site suitable for a number of uses including housing, retail and leisure.	7.9	100	-
OP15	Former Carden School	Part of Dyce Primary School deemed surplus to requirements.	0.37	20	-
OP16	Davidsons Papermill, Mugiemoss Road, Bucksburn	Former paper mill site and adjoining land. Development Framework and Phase 1 Masterplan approved for mixed use.	29.5	-	-
OP17	Former Bucksburn Primary School	Former primary school suitable for residential or other uses compatible with a residential area.	0.94	-	-
OP18	Craibstone North and Walton Farm	Opportunity for development of 1.5ha of employment and 18.5 hectares of Strategic Reserve employment land or a higher education and research institute in the 2033-40 period. Masterplan required.	20	-	1.5
OP19	Rowett North	Site for The Event Complex Aberdeen and complementary employment uses. Masterplan approved.	63.9	-	34.5
OP20	Craibstone South	Opportunity for 1,000 homes. Part of approved Newhills Development Framework.	42.6	1,000	-
OP21	Rowett South	Opportunity for 1,940 homes of which 240 homes are phased in the period beyond 2032. Part of approved Newhills Development Framework.	106.85	1,940	-
OP22	Greenferns Landward	Opportunity for 1,500 homes on Council owned land, of which 500 homes are phased for the period beyond 2032. Part of approved Newhills Development Framework.	69.6	1,500	-
OP23	Dyce Drive	Allocated for business and industrial land / green space network.	65	-	-
OP24	Central Park, Dyce	Site reserved for a new medical centre.	0.71	-	-
OP86	Dyce Railway Station	Opportunity Site for an expanded car park with associated SuDS and landscaping. Access to the Formartine Buchan Way should be retained and enhanced.	1.1	-	-

Source: ACC, LDP 2023

There are two relevant planning applications within the Aberdeen City section of the study corridor as follows:

- 181050/DPP – This application refers to a residential development comprising 283 flats over five storeys, associated infrastructure, access roads and landscaping to the east of Stoneywood Road south of Riverview Drive.
- 210665/DPP – This application refers to the erection of an energy storage facility with associated works to the west of Victoria Street north of Farburn Terrace. The application was approved in September 2021.

Development in Aberdeenshire

The Proposed LDP includes housing allocations for a number of settlements to the north of the study area within Aberdeenshire, including in Newmachar (470 homes), Oldmeldrum (368 homes), Turriff (744 homes), Banff (600 homes) and Macduff (22 homes). There are two relevant planning applications within the vicinity of the study corridor in Aberdeenshire as follows:

- APP/2012/3943 – This application refers to the OP1 allocation in Newmachar within the Proposed LDP 2020. It is for a residential development, primary education provision and associated infrastructure. The application was approved in 2015 for 140 houses; however, there has been no build out at the site to date.
- APP/2021/2089 – This application refers to the erection of 34 houses and associated infrastructure on the land of Meldrum House, Oldmeldrum which has now been approved.

Relevance to the scheme

Significant development is anticipated in the study area over the coming years with the Proposed LDP 2020 including allocations for 11,560 homes and 41ha employment land within the vicinity of the A947 corridor. Land to the south of the airport will be a focus for the development for employment and business/industrial uses, which could stimulate growth of jobs in the area. Housing allocations including the housing development at Grandhome and some smaller sites adjacent to the A94 corridor will also see a growth in residential areas. Development is also anticipated in Aberdeenshire to the north of the study area. To facilitate this growth and accommodate increased travel demand, it will be essential to encourage sustainable travel on the A947 and within the study area.

2.4.4 Summary

The case for change, drawing on information from the business strategy and problems and opportunities sections above is summarised below:

- **Policy context:** The study aims are strongly aligned with the national, regional, and local policy, which makes it clear that encouraging sustainable travel is a priority to support the environment, as well as delivering inclusive growth and improving health and wellbeing. Encouraging sustainable travel is at the heart of all transport policies and strategies and is embedded in decision making via the Sustainable Travel Hierarchy, which prioritises walking, cycling and public transport over private car use.
- **Inadequate active travel infrastructure:** Whilst there is generally good provision of pedestrian infrastructure within the study area, there are areas where there is a lack of footway or formal pedestrian crossings to match pedestrian desire lines. Cycle facilities were found to be inconsistent with narrow sections contributing to close passing by vehicles and a lack of segregation, which can impact on perceptions of safety and constrain uptake. Between 2016 and 2020, there were seven accidents involving pedestrians or cyclists, one of which resulted in a fatality. There is therefore a need to enhance the active travel provision through safe, direct and coherent routes that improve connectivity within Dyce, to existing active travel routes and to key destinations such as Kirkhill Industrial Estate and Dyce station.

- **Bus service provision:** Although bus services along the study corridor are generally good, there is a gap in east-west provision which means it is difficult to access the airport and Kirkhill Industrial Estate from Dyce by bus, particularly outside of shift times. Measures that consider improvements to accessibility, journey times and journey time reliability should be considered to make bus travel more competitive and reverse declining patronage.
- **Access to Dyce railway station:** Whilst the rail service to Dyce is good, access to the station is difficult for all users, particularly active travel users, and there is a lack of connectivity to Aberdeen Airport. Opportunities to improve access to the station from Dyce, as well as to the F&B Way and Airport, should be sought to encourage sustainable travel and support rail patronage.
- **High car usage:** Car availability and car mode share along the corridor is high, with the study area recording rates of driving to work above the national average. This has implications in terms of national, regional and local objectives to reduce carbon emissions and meet air quality objectives.
- **Poor access to employment sites:** The study area is highly productive due to the significant levels of businesses surrounding the airport. In 2011, a third of residents worked within the study area, however the majority commuted by car, with low levels of walking and cycling. There is a lack of public transport services that connect key employment sites in the west of the study area to residential areas to the east.
- **Climate change:** In May 2019, the Scottish Government declared a 'Climate Emergency'. The Climate Change (Scotland) Act 2019 sets a legally binding net zero target for all greenhouse gases by 2045. It is likely that climate change will have an increasing impact on the region in future years, bringing rising sea levels and a potential increase in extreme weather events.
- **Impact of development:** Significant development is anticipated in the study area in the coming years. To accommodate additional travel demand generated by new development, it is essential that there is high quality active travel infrastructure and public transport to promote sustainable travel and reduce car dependency in the area.

2.5 Existing Arrangements and the Impact of Not Changing

In considering whether to progress with any proposed enhancement, it is important to consider the counterfactual, that is, what would happen if the status quo was allowed to continue and the promoting organisation did not intervene. This involves assessing the current and future situation without the intervention. Following on from the problems identified section, commentary is provided below against the key impact areas of transportation; socio-economic; and environment.

The key issues that will continue or be exacerbated without investment include:

Transportation

- Inadequate active travel infrastructure in the study area would continue to constrain uptake of active modes due to poor perceptions of safety and user experience.
- Bus accessibility would continue to be constrained by poor east-west connectivity, making it uncompetitive with car travel and limiting bus patronage.
- Poor connections between Dyce railway station and Dyce, as well as Aberdeen Airport and the F&B Way, would hinder the potential for multi-modal journeys using rail.
- Without viable options for active travel and public transport within the study area, car travel would continue to be the dominant mode of transport, making it challenging to deliver sustainable travel aspirations and meet mode share targets.

Socio-economic

- Poor public and active transport connectivity between employment sites in the west of the study area and residential areas in the east would constrain access to employment opportunities and sustainable economic growth.

- Parts of the study area would remain at high risk of transport poverty.
- Forthcoming housing and employment developments will generate additional travel demand, which will be met by increased car trips unless there is high quality active travel infrastructure and public transport.

Environment

- Without modal shift from private car to sustainable modes, the transport sector will continue to be a major contributor to carbon emissions, which could risk achieving national and local carbon and air quality targets, and impact on health objectives.

2.6 SMART Spending Objectives

This section sets out the TPOs for the scheme that aim to address the existing and future transport challenges and wider socio-economic issues. The objectives have been developed to be SMART (specific, measurable, achievable, relevant and time-bound).

Initial TPOs were developed during the previous stage of the study and agreed between AECOM and the client team. As part of the OBC, the initial TPOs were reviewed to ensure that they were still relevant. This resulted in the initial five TPOs being reduced to the following two, which were revised to include targets and timescales:

- **TPO 1** – Increase the number of walking trips in the study area by 20% within 5 years of project delivery (against a 2024 baseline)
- **TPO 2** – Increase the number of cycling trips in the study area by 20% within 5 years of project delivery (against a 2024 baseline)

Table 2-15 overleaf demonstrates how the revised study TPOs relate to the SMART principles.

Table 2-15: SMART TPOs

TPO	Specific	Measurable	Achievable	Realistic	Time Bound
TPO1 – Increase the number of walking and wheeling trips in the study area by 20% within 5 years of project delivery (against a 2024 baseline)	TPO relates to increasing the number of walking and wheeling trips within the settlement of Dyce for all journey purposes. Objective is specific in terms of geographic area and scale of change desired.	Issues with count technology were identified during the PICOs analysis. It has been agreed with ACC that a 2024 baseline should be sought as a basis for monitoring this TPO going forward. Monitoring information to be recorded yearly from the same source. The total number of walking trips could be recorded for a range of frequencies, including daily, monthly and on an annual basis. Discussion required for baseline wheeling trips and monitoring of wheeling trips.	There is strong support from governance at a local, regional and national level to increase the number of trips undertaken by active modes. Active mode provision is within the remit of ACC; control over delivery subject to factors such as land ownership and access permissions.	TPO is consistent with the overall aim of the A947 Multi-Modal Study. Problems and opportunities analysis highlighted that there is inadequate active travel infrastructure, high levels of car ownership and usage and lack of sustainable access to employment, education and key services and facilities in the study area.	Within 5 years of project delivery
TPO2 – Increase the number of cycling trips in the study area by 20% within 5 years of project delivery (against a 2024 baseline)	TPO relates to increasing the number of cycling trips within the settlement of Dyce for all journey purposes. Objective is specific in terms of geographic area and scale of change desired.	Issues with count technology were identified during the PICOs analysis. It has been agreed with ACC that a 2024 baseline should be sought as a basis for monitoring this TPO going forward. Monitoring information to be recorded yearly from the same source. The total number of cycling trips could be recorded for a range of frequencies, including daily, monthly and on an annual basis.	There is strong support from governance at a local, regional and national level to increase the number of trips undertaken by active modes. Active mode provision is within the remit of ACC; control over delivery subject to factors such as land ownership and access permissions.	TPO is consistent with the overall aim of the A947 Multi-Modal Study. Problems and opportunities analysis highlighted that there is inadequate active travel infrastructure, high levels of car ownership and usage and lack of sustainable access to employment, education and key services and facilities in the study area.	Within 5 years of project delivery

2.7 Measures of Success and Planning for Delivery

Based upon the TPOs, Table 2-16 summarises potential performance indicators to measure the success of the scheme.

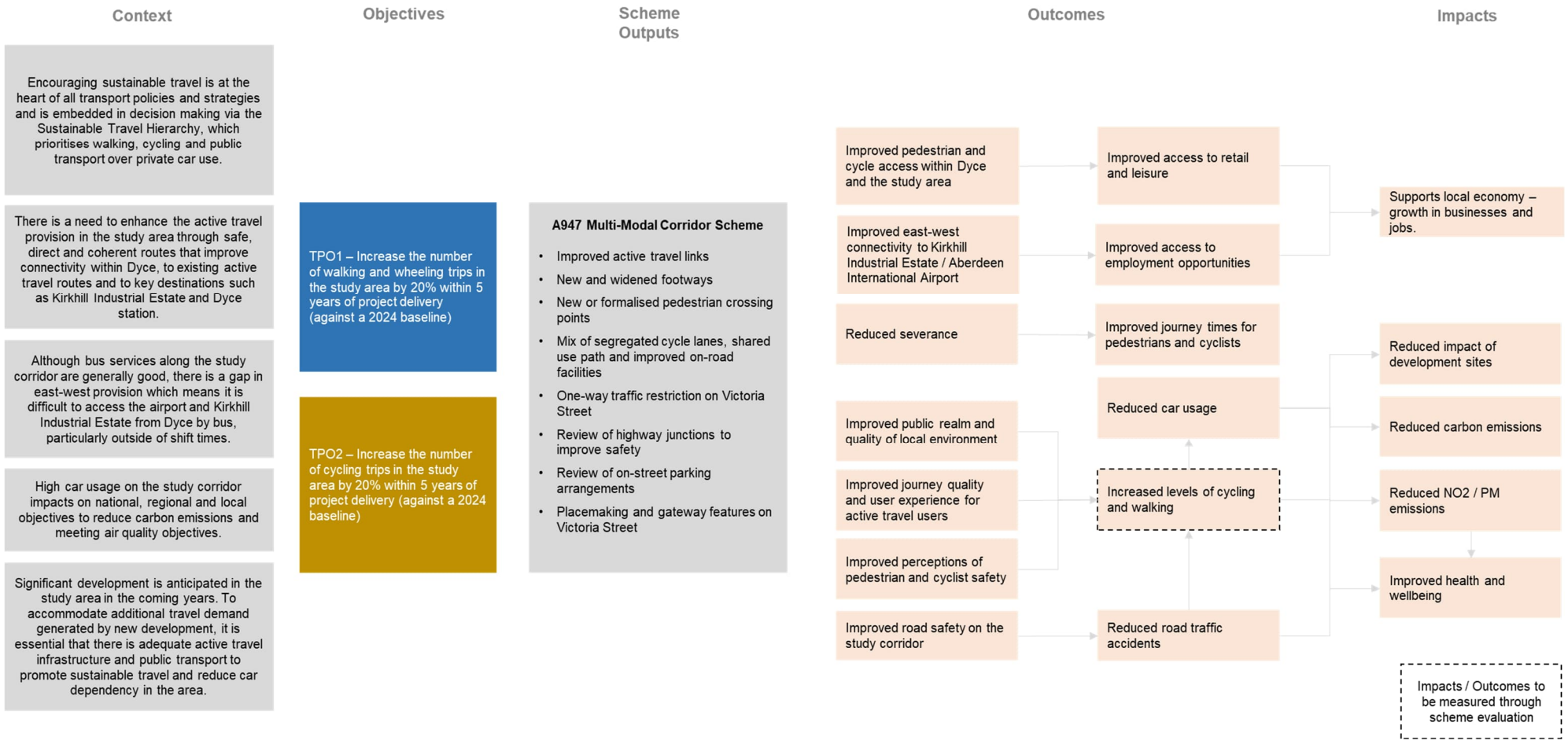
Table 2-16: Potential Performance Indicators for Measuring Success

TPO	Indicator	Performance Target	Metric
TPO1 – Increase the number of walking and wheeling trips in the study area by 20% within 5 years of project delivery (against a 2024 baseline)	Increased levels of walking in the study area	20% increase in walking and wheeling trips within 5 years of project delivery	Annual walking trips (2024 baseline to five years post-opening) Annual wheeling trips (2024 baseline to five years post-opening)
TPO2 – Increase the number of cycling trips in the study area by 20% within 5 years of project delivery (against a 2024 baseline)	Increased levels of cycling trips in the study area	20% increase in cycling trips within 5 years of project delivery	Annual cycling trips (2024 baseline to five years post-opening)

2.8 Strategic Benefits

This section describes the strategic benefits that the scheme will provide. To improve transparency of decision-making, the scheme objectives are accompanied by an Investment Logic Map (ILM) that shows a clear rationale for the investment, including short-, medium- and long-term outcomes. The ILM is shown in Figure 2-17.

Figure 2-17: Investment Logic Map



2.9 Interdependencies

The following section sets out a number of related projects, both committed and in development, which have the potential to influence the delivery or direction of the scheme.

A96 Multi-Modal Study

ACC is currently undertaking a STAG-based appraisal of options for improving transport connections (particularly active travel and public transport) on the A96 between Inverurie and Aberdeen. The study area for this study overlaps with the A947 study area at the A947/A96 roundabout at Bucksburn. The A96 study has recently completed initial option appraisal – and as the A947 study progresses, close liaison with the ACC client teams will ensure options developed in the study are complementary of those being promoted for the A96.

Cross City Connections

ACC recently undertook a review of the STAG Part 2 appraisal for Cross-City Connections. The study aims to identify priority schemes for development along with a programme of delivery that considers development build out, connections with the internal links of development sites as well as the general feasibility and affordability of each option.

There were three routes developed as part of the Cross-City Connections Study that are of relevance for the A947 corridor and the review recommended that all are progressed to the concept design stage:

- Route 7:
  - Provide a new connection between Grandhome and Stoneywood, including a new bridge crossing over the River Don; and
  - Provide a new connection between new bridge of the River Don and Stoneywood Terrace.
- Route 8:
  - Upgrade and extend CP101 to meet new bridge (Route 7) and Stoneywood development.
- Route 9:
  - Stop up Millhill Brae on western side of A947 before the underpass and prior to the residential property and allow residential access only;
  - Upgrade section of CP4 through park; and
  - Upgrade on-road section of CP4 on Waterton Road.

Due to the ongoing work on the Cross-City Connections Study, such options have not been included within the remit of the A947 Multi-Modal Study. However, given the interaction with the A947 corridor, options developed as part of the Cross-City Connections Study will be kept under review and referenced appropriately as the study progresses.

A96 Corridor Review

Scottish Government have committed to take forward a programme of transport enhancements on the A96 corridor to improve connectivity between surrounding towns, tackle congestion and address safety and environmental issues. This includes reviewing the A96 corridor in accordance with Scottish Transport Appraisal Guidance (STAG).

The review covers the transport corridor from Raigmore Interchange at Inverness to Craibstone Junction at Aberdeen. The Initial Appraisal: Case for Change has now concluded which considered transport problems and opportunities, the changing policy context and other key considerations, such as development and growth aims for the corridor and surrounding area. It has also considered the impact of the global climate emergency and the COVID-19 pandemic on how people work and travel within the corridor. Sixteen options considering all relevant transport modes within the A96 corridor, including road, rail, public transport and active travel have been taken forward for the next stage of STAG appraisal.

Subsequent phases of the STAG process, the preliminary and detailed appraisal phases, involve more detailed appraisal work, considering the feasibility and performance of options to address the

identified transport related problems and opportunities and will be developed as the process moves forward.

2.10 Business Needs and Service Gaps

This section provides the drivers for change focusing on the internal and external factors that are needed for the transport intervention to fulfil its objectives. A summary of the internal and external drivers for change is provided in Table 2-17.

Table 2-17: Drivers for Change Summary

	Internal Drivers	External Drivers
Political	• Regional Transport Strategy priorities to improve journey efficiencies to enhance connectivity; reduce carbon emissions to support net zero targets; and create a step change in public transport and active travel allowing for a 50:50 mode spilt. • Roads Hierarchy for the North East resulted in the A947 re-routing along Riverview Drive and Victoria Street changing to a C-class, creating opportunity to reimagine road space and provision for different modes. • A Quality Partnership Agreement was signed by parties in the region in 2018 to form the North East Bus Alliance, providing renewed impetus for the identification of measures that can enhance the attractiveness of bus services in the region.	• National Transport Strategy sets out a need to deliver a healthier, fairer and more prosperous Scotland for communities, businesses and visitors. • A need to encourage increased levels of walking and cycling as part of everyday journeys as identified in the Cycling Action Plan for Scotland and Lets Get Scotland Walking • The Scottish Government has committed record funding for active travel and bus priority by investing in active travel infrastructure and a reaffirmed commitment to a £500m Bus Partnership Fund was officially launched in November 2020 • North East Bus Alliance aims to reverse declining bus patronage and Bus Action Plan identifies A947 as a future corridor for intervention.
Economics	• Need to support the economy of Aberdeen City and Aberdeenshire through the provision of a quality transport network. • Need to improve sustainable access to employment sites near to Aberdeen International Airport and wider study area.	• National priority to deliver inclusive economic growth.
Social	• Need for investment in sustainable transport to support local housing and commercial development as identified in the Aberdeen City Proposed LDP / Aberdeenshire LDP. • Aspiration to increase the number of people travelling actively for health. • Aberdeen Local Outcome Improvement Plan sets target for 38% of people to walk and 5% of people to cycle as their main mode of travel.	• Need to deliver a fairer Scotland that reduces inequalities and improves health and wellbeing. • Adoption of a Sustainable Travel Hierarchy that promotes walking, cycling and public transport over private car use. • Improved access to employment, homes and services.

	Internal Drivers	External Drivers
Environmental	• ACC and Aberdeenshire Council have made commitments to reduce carbon emissions. • Potential to reduce environmental impact of transport by promoting increased levels of sustainable travel.	• Deliver commitment by Scottish Government to develop and implement policy interventions to support reduction in car use and implement the Climate Change Action Plan.

2.11 Strategic Assessment of Investment Options

This section presents an overview of the option identification and assessment process, including option generation and sifting, preliminary options appraisal and detailed options appraisal.

Option Generation and Sifting

During the Stage 1 study, a long list of options was developed based on a number of sources, including consultation with ACC, Aberdeenshire Council and Nestrans officers, stakeholders, Community Council groups and members of the public; a review of previous studies to identify historical proposals that remain viable options; a review of statutory planning and policy documents; and outputs from the evidence-led process followed by the team undertaking the appraisal. This resulted in the generation of 68 active travel options, 14 public transport and 27 'other' options.

Based on a high-level performance of options against the TPOs, deliverability criteria, position in the Sustainable Investment Hierarchy and identified problems and opportunities in the study area, it was recommended that 31 options were sifted out, including 15 active travel options, eight public transport and eight other options.

Option Development and Packaging

An extensive Option Development process was undertaken, with full detail provided in the Option Generation, Sifting & Development Technical Note included in Appendix B. Following the option development process, options were grouped into six packages for the purposes of appraisal as follows:

- Active Travel – Strategic Routes;
- Active Travel – Leisure Route;
- Active Travel – Quiet Route Measures;
- Public Transport – Priority Interventions;
- Placemaking – Living Streets; and
- Placemaking – Complementary Measures.

The options included in each package are outlined in Table 2-18, with more detail in the Option Generation, Sifting and Development Technical Note (Appendix B)

Table 2-18: Option Packages

Active Travel – Strategic Routes	
AT1	Provide protected junction for active travel users at the A947/A90 slip road junction.
AT2	Improve visibility for cyclists at the B977/A90 slip road roundabout
AT4	Implement measures to give active travel users priority over Burnside Drive when using the shared use path on Riverview Drive
AT8	Reconfigure the Auchmill Road/Oldmeldrum Road junction to improve connections for pedestrians and cyclists
AT10	Widen on-road advisory cycle lane on Riverview Drive
AT11	Implement missing sections of on-road advisory cycle lane on Riverview Drive

AT12	Widen on-road advisory cycle lane on Stoneywood Road at Stoneywood Park junction
AT13	Provide a formal pedestrian crossing point to the north of the A947/Riverview Drive Roundabout to facilitate movements to the F&B Way
AT14	Provide a formal pedestrian crossing point to the east of the A947/Riverview Drive Roundabout
AT16	Implement formal pedestrian crossing facilities on the arms of the Riverview Drive/Stoneywood Road Roundabout
AT20	Conduct a footway review throughout the study area, identifying gaps in provision and considering the width and surfacing of existing footways
AT28	Implement dropped kerbs for cyclists to transfer between the carriageway and pavement at the northbound bus stop on the A947, north of the River Don
AT30	Provide direct active travel link between Dyce Drive and Riverview Drive
AT47	Implement with-flow segregated cycleway on the A947 between AWPR Junction and A947/A96 Junction
AT48	Implement two-way segregated cycleway on the A947 between AWPR Junction and A947/A96 Junction
AT51	Implement with-flow segregated cycleway on Oldmeldrum Road
AT52	Implement two-way segregated cycleway on Oldmeldrum Road
AT55	Implement with-flow segregated cycleway on Gilbert Road
AT56	Implement two-way segregated cycleway on Gilbert Road
AT57	Implement shared use path on the A947 between AWPR Junction and A947/A96 Junction
AT58	Implement shared use path on Dyce Drive between the A947 and Kirkhill Industrial Estate to the north of Aberdeen International Airport
AT59	Widen the shared use path on the east side of the A947 to the north of Riverview Drive
AT60	Provide continuous footways on Riverview Drive for the duration of the route
AT62	Widen the shared use path on the east side of the A947 between the A96 and Beech Manor
AT63	Review alignment of the A947 shared use path to the north of the Oldmeldrum Road Junction where the safety barrier constrains the width of the path
AT64	Implement shared use path on Oldmeldrum Road
AT66	Implement shared use path on Gilbert Road
O3	Review the layout of the Riverview Drive/Balloch Way Junction
O4	Review the layout of the Riverview Drive/Todlaw Walk Junction
O5	Review the layout of the Riverview Drive/Netherview Avenue Junction
O7	Review the layout of the A947/Stoneywood Road Junction at Co-Op/Marks & Spencer
O8	Review the layout of the A947/Stoneywood Brae Junction
O10	Review layout of the A947/McDonalds access road junction
O17	Reduce the speed limit along the A947 to support active travel improvements
Active Travel – Leisure Route	
AT31	Improve active travel links between the Riverside Path and housing within Dyce
AT45	Upgrade the Riverside Path to a high quality active travel route, including improvements to the surfacing of the route
AT46	Implement lighting on the Riverside Path
Active Travel – Quiet Route Measures	
AT7	Review signals at Forrit Burn Road bus gate to allow cyclists access
AT24	Improve active travel connectivity between the A947 study area and Aberdeen Airport/Heliport
AT25	Improve active travel connectivity between the A947 study area and Craibstone Park & Ride
AT26	Improve active travel connectivity between the A947 study area and TECA
AT27	Improve active travel connectivity between the A947 study area and Kirkhill Industrial Estate
AT32	Implement footways on the south side of the carriageway on Pitmedden Road
AT35	Implement quiet route measures on the local road network to the west of the A947 via Bankhead Road, Wellheads Drive and Farburn Terrace to Dyce Rail Station

AT37	Implement dropped kerbs between Wellheads Drive shared use path and the carriageway
AT38	Review access restrictions on Market Street to allow for cargo bikes and recumbent cycles
AT39	Remove access controls on off-road path between Waterton Road and Ruthriehill Road
AT41	Improve active travel access to the retail park at the Bucksburn Roundabout
AT43	Implement active travel connection between the A947 and the B977, utilising a section of the old A947 (pre-AWPR)
AT65	Implement streetscape improvements and widened pavements along Mugiemoss Road
AT67	Widen the shared use path on the west side of Howe Moss Drive
O14	Review parking arrangements on Mugiemoss Road
O18	Consider options to reduce vehicle speeds on Bankhead Road
Public Transport – Priority Interventions	
PT2	Conduct a traffic signal review to consider bus priority at all traffic signals along the A947 corridor
PT5	Implement real time passenger information at key bus stops along the study corridor
PT9	Improve public transport connectivity between the A947 study area and Aberdeen Airport/Heliport
PT10	Improve public transport connectivity between the A947 study area and Craibstone Park & Ride
PT11	Improve public transport connectivity between the A947 study area and TECA
PT12	Improve public transport connectivity between the A947 study area and Kirkhill Industrial Estate
AT22	Promote Craibstone Park & Ride as a Park & Pedal facility
Placemaking – Living Streets	
AT3	Review layout of Victoria Street/Pitmedden Road junction for pedestrians
AT17	Implement signalised crossing facility on Victoria Street adjacent to Tesco
AT33	Provide improved active travel links between Dyce Rail Station and the A947 and the eastern section of Dyce, particularly along Station Road
AT61	Implement shared use path on Victoria Street
O1	Increase enforcement of stopping restrictions on Victoria Street, specifically adjacent to Tesco
O2	Review the layout of the Victoria Street/Skene Place Junction
O11	Undertake a review of parking arrangements on Victoria Street
O12	Implement signage to encourage reverse parking at the shops on Victoria Street
O15	Introduce placemaking and gateway features on Victoria Street
O16	Implement package of measures to support implementation of a 20-minute neighbourhood in Dyce
O25	Implement access only restrictions for general traffic on Victoria Street
O26	Implement one-way restrictions for general traffic on Victoria Street
Placemaking – Complementary Measures	
AT21	Implement cycle parking at key trip attractors in the study area
AT23	Implement a bike hire scheme within Dyce
AT42	Review access to the F&B Way from within Dyce
AT68	Conduct a review of wayfinding signage throughout the study area
O24	Implement electric vehicle charging points at key locations within Dyce

Pre-Detailed Appraisal

In preparation for the Detailed Appraisal stage, ACC undertook a review of the individual options remaining following the Preliminary Appraisal and separated these into four discrete tables, as described in the following section.

Table 1 options were to be progressed directly to detailed design and OBC, with no further appraisal required (Table 2-19).

Table 2-19: Table 1 Options

AT4	Implement measures to give active travel users priority over Burnside Drive when using the shared use path on Riverview Drive
AT8	Reconfigure the Auchmill Road/Old Meldrum Road junction to improve connections for pedestrians and cyclists
AT13	Provide a formal pedestrian crossing point to the north of the A947/Riverview Drive Roundabout to facilitate movements to the Formartine and Buchan Way
AT14	Provide a formal pedestrian crossing point to the east of the A947/Riverview Drive Roundabout
AT16	Implement formal pedestrian crossing facilities on the arms of the Riverview Drive/Stoneywood Road Roundabout
AT17	Implement signalised crossing facility on Victoria Street adjacent to Tesco
AT19	Implement pedestrian crossing facilities at the Old Meldrum Road/Mugiemoss Road Junction
AT20	Conduct a footway review throughout the study area, identifying gaps in provision and considering the width and surfacing of existing footways
AT30	Provide direct active travel link between Dyce Drive and Riverview Drive
AT32	Implement footways on the south side of the carriageway on Pitmedden Road
AT59	Widen the shared use path on the east side of the A947 to the north of Riverview Drive
AT60	Provide continuous footways on Riverview Drive for the duration of the route
AT68	Conduct a review of wayfinding signage throughout the study area
O11	Undertake a review of parking arrangements on Victoria Street
O15	Introduce placemaking and gateway features on Victoria Street

Whilst initially conceived for direct inclusion in the OBC at the outset of the study, the following two Table 1 options were removed from the OBC:

- Option AT8 (Reconfigure the Auchmill Road/Old Meldrum Road junction to improve connections for pedestrians and cyclists) – junction proposals at this location will be progressed and consulted on as part of the A96 corridor study design with the A947 study proposals for Old Meldrum Road tying-in to what emerges from the A96 appraisal.
- Option AT19 (Implement pedestrian crossing facilities at the Old Meldrum Road/Mugiemoss Road Junction) – pedestrian crossing facilities implemented as part of the Barratt Homes development along Mill Drive have superseded the requirement for this option in the study.

In addition, the following options from Table 1 will also not feature in the OBC having been subject to work as part of this study, with the outcomes now with ACC to further consider:

- Option AT20 (Conduct a footway review throughout the study area, identifying gaps in provision and considering the width and surfacing of existing footways).
- Option AT68 (Conduct a review of wayfinding signage throughout the study area).
- Option O11 (Undertake a review of parking arrangements on Victoria Street).

Table 2 options were to be subjected to further development, appraisal (in line with STAG) and design, with a view to potential inclusion in the OBC at the end of this process (Table 2-20).

Table 2-20: Table 2 Options

AT24	Improve active travel connectivity between the A947 study area and Aberdeen Airport/Heliport
AT26	Improve active travel connectivity between the A947 study area and TECA
AT27	Improve active travel connectivity between the A947 study area and Kirkhill Industrial Estate
AT31	Improve active travel links between the Riverside Path and housing within Dyce

AT33	Provide improved active travel links between Dyce Rail Station and the A947 and the eastern section of Dyce, particularly along Station Road
AT35	Implement quiet route measures on the local road network to the west of the A947 via Bankhead Road, Wellheads Drive and Farburn Terrace to Dyce Rail Station
AT41	Improve active travel access to the retail park at the Bucksburn Roundabout
AT42	Review access to the Formartine and Buchan Way from within Dyce
AT43	Implement active travel connection between the A947 and the B977, utilising a section of the old A947 (pre-AWPR)
AT47	Implement with-flow segregated cycleway on the A947 between AWPR Junction and A947/A96 Junction
AT48	Implement two-way segregated cycleway on the A947 between AWPR Junction and A947/A96 Junction
AT51	Implement with-flow segregated cycleway on Old Meldrum Road
AT52	Implement two-way segregated cycleway on Old Meldrum Road
AT55	Implement with-flow segregated cycleway on Gilbert Road
AT56	Implement two-way segregated cycleway on Gilbert Road
AT58	Implement shared use path on Dyce Drive between the A947 and Kirkhill Industrial Estate to the north of Aberdeen International Airport
AT61	Implement shared use path on Victoria Street
AT64	Implement shared use path on Old Meldrum Road
AT65	Implement streetscape improvements and widened pavements along Mugiemoss Road
AT66	Implement shared use path on Gilbert Road
PT2	Conduct a traffic signal review to consider bus priority at all traffic signals along the A947 corridor
PT9	Improve public transport connectivity between the A947 study area and Aberdeen Airport/Heliport
PT10	Improve public transport connectivity between the A947 study area and Craibstone Park & Ride
PT11	Improve public transport connectivity between the A947 study area and TECA
PT12	Improve public transport connectivity between the A947 study area and Kirkhill Industrial Estate
O2	Review the layout of the Victoria Street/Skene Place Junction
O3	Review the layout of the Riverview Drive/Balloch Way Junction
O4	Review the layout of the Riverview Drive/Todlaw Walk Junction
O5	Review the layout of the Riverview Drive/Netherview Avenue Junction
O7	Review the layout of the A947/Stoneywood Road Junction at Co-Op/Marks and Spencer
O8	Review the layout of the A947/Stoneywood Brae Junction
O10	Review layout of the A947/McDonalds access road junction
O16	Implement package of measures to support implementation of a 20-minute neighbourhood in Dyce
O25	Implement access only restrictions for general traffic on Victoria Street
O26	Implement one-way restrictions for general traffic on Victoria Street

Options included in Table 3 and Table 4 were removed from the scope of the OBC to instead be considered internally by ACC:

- Table 3 options are to be reserved for internal appraisal by ACC (AT3, AT23, AT45, PT5, O18, O24 and AT46).
- Table 4 options are to be progressed by ACC as ‘quick wins’ (AT1, AT2, AT7, AT10, AT11, AT12, AT21, AT22, AT28, AT37, AT38, AT39, O1 and O12).

In advance of the Detailed Appraisal, the Table 2 options were subject to a Preliminary Option Development exercise to establish if there were any deliverability barriers considering the design requirements and existing conditions. It also sought to identify conflicting proposals or solutions which are dependent on each other. Further information on this exercise is presented in the 'Table 2 Preliminary Option Development Technical Note'. This resulted in Option AT24 moving to the 'quick wins' and 12 options being sifted out from further development, as shown in Table 2-21.

Table 2-21: Preliminary Option Development

Option Ref	Description	Retain for Detailed Appraisal / Sift	Rationale for Sifting
AT24	Improve active travel connectivity between the A947 study area and Aberdeen Airport/Heliport	**Sift**	It was agreed with ACC during the sifting exercise that Option AT24 should be reassigned to Table 4 (Quick Wins) on the basis that the measures associated with the option are already well defined; supporting progression as a quick win, without the need for further appraisal.
AT26	Improve active travel connectivity between the A947 study area and TECA	**Retain**	-
AT27	Improve active travel connectivity between the A947 study area and Kirkhill Industrial Estate	**Sift**	This option promotes similar outcomes to Options AT24, AT26 and AT58 which are more targeted and specific.
AT31	Improve active travel links between the Riverside Path and housing within Dyce	**Retain**	-
AT33	Provide improved active travel links between Dyce Rail Station and the A947 and the eastern section of Dyce, particularly along Station Road	**Retain**	-
AT35	Implement quiet route measures on the local road network to the west of the A947 via Bankhead Road, Wellheads Drive and Farburn Terrace to Dyce Rail Station	**Retain**	-
AT41	Improve active travel access to the retail park at the Bucksburn Roundabout	**Retain**	-
AT42	Review access to the Formartine and Buchan Way from within Dyce	**Sift**	Improvement in access facilitated to F&B Way facilitated by multiple other Table 1 and 2 options.
AT43	Implement active travel connection between the A947 and the B977, utilising a section of the old A947 (pre-AWPR)	**Retain**	-
AT47	Implement with-flow segregated cycleway on the A947 between AWPR Junction and A947/A96 Junction	**Sift**	Section specific options which broadly cover extent of the route are available across Tables 1-4 and are considered more deliverable when considered individually.
AT48	Implement two-way segregated cycleway on the A947 between AWPR Junction and A947/A96 Junction	**Retain**	-
AT51	Implement with-flow segregated cycleway on Old Meldrum Road	**Retain**	-
AT52	Implement two-way segregated cycleway on Old Meldrum Road	**Retain**	-

Option Ref	Description	Retain for Detailed Appraisal / Sift	Rationale for Sifting
AT55	Implement with-flow segregated cycleway on Gilbert Road	**Sift**	Not feasible to achieve Cycling by Design absolute minimum segregation along route without removal of parking. Low moving traffic volumes and speeds would suggest mixed traffic street measures could be more effective here.
AT56	Implement two-way segregated cycleway on Gilbert Road	**Sift**	
AT58	Implement shared use path on Dyce Drive between the A947 and Kirkhill Industrial Estate to the north of Aberdeen International Airport	**Retain**	-
AT61	Implement shared use path on Victoria Street	**Retain**	
AT64	Implement shared use path on Old Meldrum Road	**Sift**	Segregated facilities along Old Meldrum Road (Options AT51 and AT52) offer a higher Level of Service to cyclists and therefore will be retained over Option AT64.
AT65	Implement streetscape improvements and widened pavements along Mugiemoss Road	**Retain**	-
AT66	Implement shared use path on Gilbert Road	**Sift**	Not feasible to achieve Cycling by Design absolute minimum shared use without removal of parking on one side. Low moving traffic volumes and speeds would suggest mixed traffic street measures could be more effective here.
PT2	Conduct a traffic signal review to consider bus priority at all traffic signals along the A947 corridor	**Retain**	-
PT9	Improve public transport connectivity between the A947 study area and Aberdeen Airport/Heliport	**Sift**	Following engagement with the client group, it was agreed that these standalone public transport options could be sifted. The Roads Hierarchy places greater emphasis on active travel and by delivering traffic calming and active travel improvements as captured under retained Table 1 and 2 options, benefits in terms of public transport attractiveness and journey time reliability will be realised. It is also noted that public transport improvements are reliant on commitment and buy-in from private operators.
PT10	Improve public transport connectivity between the A947 study area and Craibstone Park & Ride	**Sift**	
PT11	Improve public transport connectivity between the A947 study area and TECA	**Sift**	
PT12	Improve public transport connectivity between the A947 study area and Kirkhill Industrial Estate	**Sift**	
O2	Review the layout of the Victoria Street/Skene Place Junction	**Retain**	-
O3	Review the layout of the Riverview Drive/Balloch Way Junction	**Retain**	-
O4	Review the layout of the Riverview Drive/Todlaw Walk Junction	**Retain**	-

Option Ref	Description	Retain for Detailed Appraisal / Sift	Rationale for Sifting
O5	Review the layout of the Riverview Drive/Netherview Avenue Junction	**Retain**	-
O7	Review the layout of the A947/Stoneywood Road Junction at Co-Op/Marks and Spencer	**Retain**	-
O8	Review the layout of the A947/Stoneywood Brae Junction	**Retain**	-
O10	Review layout of the A947/McDonalds access road junction	**Retain**	-
O16	Implement package of measures to support implementation of a 20-minute neighbourhood in Dyce	**Retain**	-
O25	Implement access only restrictions for general traffic on Victoria Street	**Retain**	-
O26	Implement one-way restrictions for general traffic on Victoria Street	**Retain**	-

Final Options for Detailed Appraisal

In the process of preparing for the Detailed Appraisal and design of the remaining Table 2 options, some further minor modifications were made to some options to better reflect the opportunities they present for change on the A947 corridor. Table 2-22 sets out the final options – including rescoped options – that were subject to Detailed Appraisal as described in the Socio-Economic Case.

Table 2-22: Final Options for Detailed Appraisal

Option Ref	Description	Option Rescope
AT26	Improve active travel connectivity between the A947 study area and TECA	N/A
AT31	Improve active travel links between the Riverside Path and housing within Dyce	N/A
AT33	Provide improved active travel links between Dyce Rail Station and the A947 and the eastern section of Dyce, particularly along Station Road	N/A
AT35a	Implement improvements to develop a mixed-traffic street (which allows for safe, on-road cycling) on the local road network to the west of the A947, incorporating Bankhead Road, Greenburn Road and Millhill Brae	Following a review of Option AT35, the wording of the option was redefined to broaden the scope from focusing on quiet route measures to active travel improvements. The option reference was updated to AT35a to reflect this change. In addition, with existing committed works being progressed separately by ACC, introduction of any new active travel measures on Farburn Terrace and Wellheads Drive will not be considered further as part of this study.
AT41a/b	Improve active travel access to the retail park at the Bucksburn Roundabout	Two variants are to be considered for this option in the appraisal and design. Option AT41a assumes the existing dual carriageway layout is retained and the existing northbound footway is upgraded to a shared use facility between the A947 crossing and the retail park. Option AT41b would involve A947 carriageway width reduction to one lane to facilitate a segregated two-way cycleway.
AT43	Implement active travel connection between the A947 and the B977, utilising a section of the old A947 (pre-AWPR)	N/A
AT48a	Implement active travel improvements to support highest practicable level of service on the A947 between the Bucksburn Roundabout and Riverview Drive Roundabout North	In order to capture sections along the A947 which are not considered under other targeted active travel options and to promote an overall coherent and connected network, AT48 has been reworded to incorporate the evaluation of solutions which offer a high level of service between the Bucksburn Roundabout and Riverview Drive Roundabout North, through the implementation of new shared use and segregated cycleway facilities. This would enable active travel improvements along the entirety of Riverview Drive. The option reference has now been updated to AT48a to reflect this change.
AT51	Implement with-flow segregated cycleway on Old Meldrum Road	N/A
AT52	Implement two-way segregated cycleway on Old Meldrum Road	N/A
AT58	Implement shared use path on Dyce Drive between the A947 and Kirkhill Industrial Estate to the north of Aberdeen International Airport	N/A
AT61a	Implement package of active travel measures on Victoria Street	As the urban centre of Dyce, implementation of a shared use path would bring a higher risk of conflict between users. Therefore, shared use is not considered

Option Ref	Description	Option Rescope
		appropriate on the primary residential and commercial section of Victoria Street. As a result of the recent reprioritisation of the A947 along Riverview Drive as part of the Roads Hierarchy revision, it is anticipated that there will be reduced traffic levels along Victoria Street with route reclassification. Despite the implementation of a shared use path being discounted, it is important to continue developing other active travel measures along Victoria Street to improve accessibility and active travel opportunities in the 'heart' of Dyce. AT61 has been reworded to capture a broader range of options for active travel improvements along Victoria Street. The option reference has now been updated to AT61a to reflect this change.
AT65	Implement streetscape improvements and widened pavements along Mugiemoss Road	N/A
PT2	Conduct a traffic signal review to consider bus priority at all traffic signals along the A947 corridor	N/A
O2	Review the layout of the Victoria Street/Skene Place Junction	N/A
O3	Review the layout of the Riverview Drive/Balloch Way Junction	N/A
O4	Review the layout of the Riverview Drive/Todlaw Walk Junction	N/A
O5	Review the layout of the Riverview Drive/Netherview Avenue Junction	N/A
O7	Review the layout of the A947/Stoneywood Road Junction at Co-Op/Marks and Spencer	N/A
O8	Review the layout of the A947/Stoneywood Brae Junction	N/A
O10	Review layout of the A947/McDonalds access road junction	N/A
O16	Implement package of measures to support implementation of a 20-minute neighbourhood in Dyce	N/A
O25	Implement access only restrictions for general traffic on Victoria Street	N/A
O26	Implement one-way restrictions for general traffic on Victoria Street	N/A

2.12 Scope

Following option development and detailed appraisal, an OBC package was compiled of individual measures from the Table 1 and Table 2 options, focusing primarily on active travel improvements on the A947 corridor and supporting measures. The scope of the OBC package is reported in the Socio-Economic Case, with additional detail on the individual options reported in the Table 1 and Table 2 Design Technical Notes.

The detailed appraisal of the Table 2 options included in the OBC package is presented in the Socio-Economic Case, including an assessment against:

- TPOs;
- STAG criteria (environment; climate change; health, safety and wellbeing; economy; and equality and accessibility);
- Deliverability criteria; and
- Statutory Impact Assessment (SIA) criteria.

2.13 Risks and Constraints

The Strategic Case includes consideration of internal and external strategic risks and constraints which may impact on the package's ability to meet the identified TPOs. These are summarised in the following sections.

2.13.1 Risks

Table 2-23 summarises the key strategic risks for the investment. A further description of scheme specific risks is presented in the Management Case.

Table 2-23: Key Scheme Risks

Risk	Description
Funding	If funding is not made available, the package will not be able to progress.
Demand	If the level of demand for the scheme is lower than anticipated, it may be difficult to deliver the mode share targets outlined in the scheme objectives.
Public / Stakeholder Buy-in	Public and stakeholder buy-in is needed to ensure support for any options implemented following the detailed appraisal and OBC. A Stakeholder Engagement Plan was prepared to set out scope and aims of engagement activities to ensure meaningful engagement including multi-pronged engagement techniques to ensure the approach is inclusive as possible. Engagement has been completed as part of the OBC.
Political Buy-in	Political buy-in is needed to ensure support for any options implemented following the detailed appraisal and OBC. Due to the historic prevalence of private car travel in much of the study area, measures focused on enhancing walking, cycling and public transport use may not be supported by the public, which could reduce political support for such measures.
Changing travel patterns	Increased working from home and propensity to travel resulting from the COVID-19 pandemic may continue, impacting demand and patterns for public transport and active travel journeys.

2.13.2 Constraints

The following key strategic constraints have been identified for the scheme:

- **Political Will:** Due to the historic prevalence of private car travel in much of the study area, measures focussed on enhancing walking, wheeling, cycling and public transport use may not be supported by the public, which could reduce political support for such measures.
- **Funding:** While the availability of increased funding at a national level provides an opportunity for investment in sustainable modes, funding streams will be competitive. Furthermore, a 2019 report by Audit Scotland found that Scottish Government revenue funding to local authorities has been increasingly constrained in recent years, with national policy initiatives making up an

increasing proportion of Council budgets, which limits flexibility for local authorities to plan how to allocate funds.

- **Environment:** There are a number of environmental constraints that will require consideration as the study develops, particularly as options are assessed against environmental criteria at a later stage in the STAG process to ensure identified options avoid or seek to mitigate adverse environmental impacts. There are segments of the A947 with a high likelihood of river flooding where they cross the River Don and its tributaries, and along the course of the river which runs adjacent to the study corridor. Options along the River Don are also constrained by wildlife habitats.
- **Trunk Road Contracts (AWPR/B-T):** The AWPR operator Aberdeen Roads Limited have a design, build and operate contract for the AWPR. Therefore, any design changes at AWPR junctions may be more complex to bring forward than at other locations on the corridor and any alteration to infrastructure may require consideration of contractual arrangement at these locations, in consultation with Aberdeen Roads Limited, Transport Scotland and the Local Roads Authority.

2.14 Stakeholders' Views and Requirements

This section identifies key stakeholders and describes their interest and role in the scheme. To ensure the effective development of the scheme, a number of key stakeholders have been and will continue to be involved throughout the lifecycle of the project, from development through to delivery. The key stakeholders that have an interest in or will be impacted by the proposed scheme are summarised in Table 2-24.

Table 2-24: Key Stakeholders

Stakeholder	Interest
ACC	ACC is the promoter and the local authority that represent the Aberdeen City area of Scotland. ACC are responsible for a range of public services within Aberdeen City and are the local highway authority for roads within the boundary, which includes the section of the study area south of the Parkhill Bridge to the A96/A947 Junction at Bucksburn. ACC will therefore be responsible for delivering improvements on this section of the study corridor.
Aberdeenshire Council	Aberdeenshire Council is the local authority for Aberdeenshire and form part of the Project Steering Group. The Council is the local highway authority for roads within their boundary, including the section of the study corridor to the north of the A947 Parkhill Bridge. Aberdeenshire Council is interested in impacts to the local road network and opportunities to improve connectivity for their residents. This Council is also the public transport authority for the Aberdeenshire area.
Nestrans	Nestrans is the Regional Transport Partnership for Aberdeen City and Aberdeenshire and form part of the project Steering Group. Their purpose is to develop a long-term regional transport strategy and deliver strategic transport improvements across the north east of Scotland.
Transport Scotland	Transport Scotland is the national transport agency for Scotland and is responsible for Scotland's transport network, including the A90 and A96 trunk roads which connect to the study corridor. Transport Scotland will be engaged regarding any options that may impact on the trunk road network.
North East Bus Alliance	The North East Bus Alliance was established in 2018 and is a voluntary Quality Partnership Agreement between Nestrans, ACC, Aberdeenshire Council, First in Aberdeen, Stagecoach Bluebird and Bains Coaches. The main objectives of the agreement are to arrest decline in bus patronage and achieve year on year growth by 2025. Bus Alliance partners want to

Stakeholder	Interest
	deliver improvements for bus passengers across the region through the development and delivery of a region-wide Bus Action Plan and are interested in how improvements along the study corridor can support this.
Sustrans	Sustrans is a UK-based walking, wheeling and cycling charity, and the custodian of the National Cycle Network. Sustrans have an interest in promoting improvements along the study corridor to support the active travel network.
Bus Operators	Liaison with bus operators will be required to understand problems and opportunities for the local bus network. Bus services in the study area are predominantly operated First Aberdeen and Stagecoach. Options that implement bus priority would provide a positive outcome for this stakeholder group.
Community Councils	Community Councils are voluntary organisations set up by statute by the Local Authority and run by residents on behalf of its area. They advise, petition, influence and advocate numerous causes and cases of concern on behalf of local communities. Engagement with relevant Community Councils (Dyce & Stoneywood, Bucksburn & Newhills, Danestone and Newmachar) ensures that the scheme supports local communities and helps to establish stakeholder buy-in.
Local Councillors / Elected Representatives	Local Councillors and Elected Members will be involved, providing political support and oversight on behalf of their constituents. Engagement with locally elected representatives provides a further opportunity, beyond that captured through wider public consultation, to document local perceptions, concerns and suggestions for the project.
Landowners	Landowners directly affected by any infrastructure investment and those who live within the vicinity of any proposals would need to be consulted to manage impacts, including those during construction.
Local Businesses	Engagement with local businesses will manage any impacts, particularly for businesses that may be affected during construction. Businesses would benefit from enhanced connectivity and an extended catchment from which to draw employees. Early engagement would also support businesses to ensure they maximise new opportunities.
Community / Local Residents	As the end users of the scheme, engagement with the community and local residents will be essential to understand their needs and requirements. This will also enable further assessment of the potential scheme demand.
Schools	School pupils in the study area will be future users of the corridor and therefore are likely to be impacted by the final outcomes of the study in some way. Pupils will be invited to provide feed

2.14.1 Engagement to Date

The following section provides an overview of public and stakeholder engagement activities undertaken to date to inform the A947 Multi-Modal Corridor Study OBC

Part 1 (Autumn 2021)

An initial stage of engagement was undertaken in Autumn 2021 to determine the problems, issues, constraints and opportunities along the study corridor. A number of steps were involved in delivering the first stage of the engagement process, as outlined below.

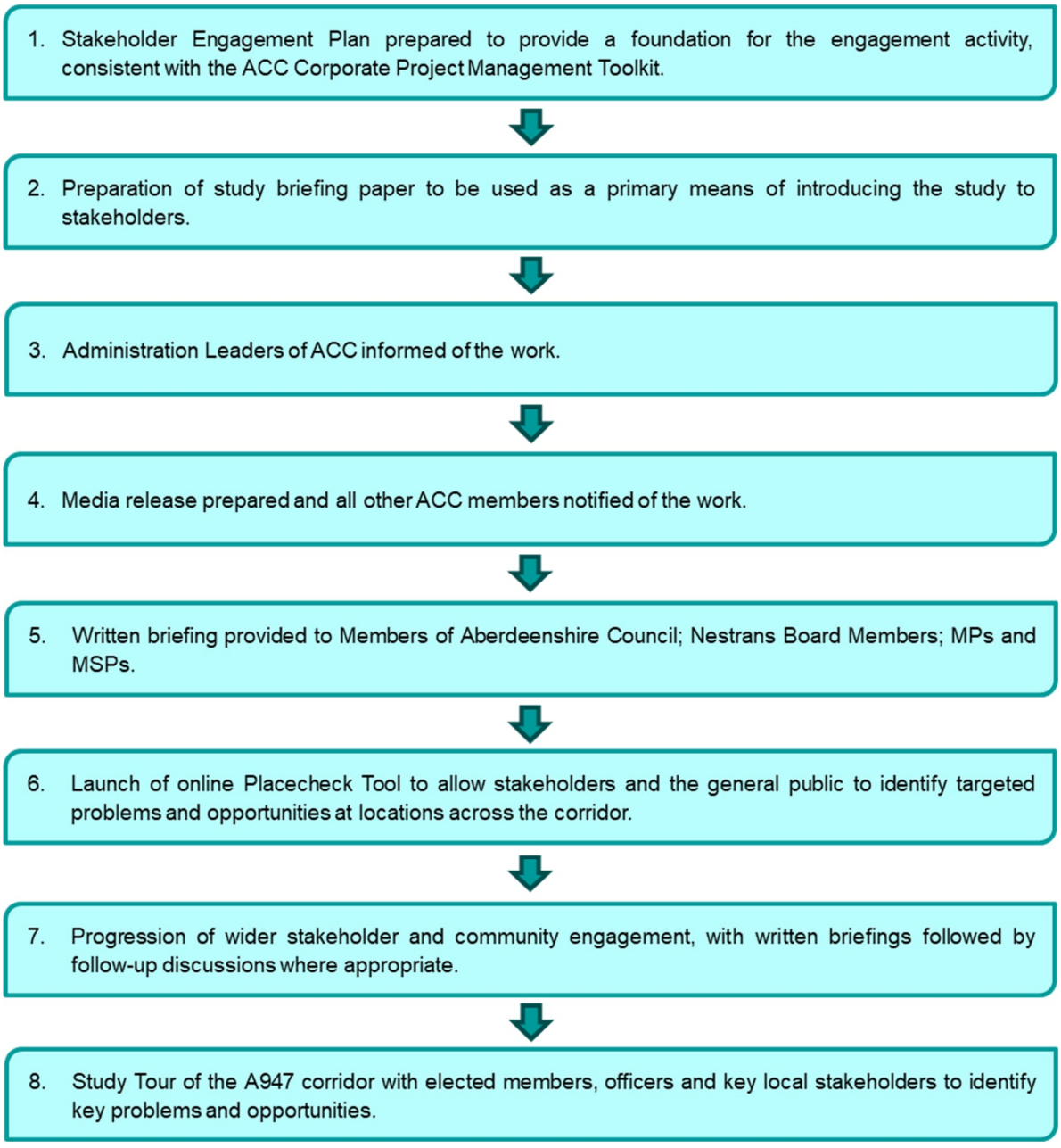


Table 2-25 below presents the key findings from this phase of stakeholder engagement. Outcomes from the study tours, Placecheck and School Engagement Workshop are reported in Appendix A.

Table 2-25: Key Outcomes from Part 1 Stakeholder Engagement

Stakeholder	Key Findings
Aberdeen Cycle Forum	• There is a general lack of wayfinding signage for cyclists on the study corridor. • It was noted that access controls are not suitable for all bike types e.g. adapted bikes, cargo bikes, bikes with trailers, etc. • There is a lack of cycle lane lead-ins ahead of advanced stop lines at box junctions.

Stakeholder	Key Findings
ACC, AC and Nestrans Officers	• Options on the Riverside Path are constrained by ownership and wildlife habitats. • There is an opportunity to influence drivers to use Riverview Drive rather than Victoria Street. • There is variable quality of infrastructure for active travel on Victoria Street. • There are limited crossing opportunities on Victoria Street, and few dropped kerbs for those with mobility issues. • The rail service is good but access to the station is difficult for all users, particularly active travel users. • Issues noted with overspill at the Dyce Rail Station car park. • It was noted that congestion issues affecting car users and public transport on the corridor have been alleviated through the opening of the AWPR and the majority of issues on the corridor are now relating to active travel. • There are opportunities to improve east to west connectivity on the study corridor.
Aberdeen International Airport	• It was noted that car travel is the dominant mode of travel to the airport, despite staff often living in close proximity. • There are issues for accessing the airport sustainably as shift times are often outwith the operation times of public transport and weather and darkness creates the perception of being unsafe for active travel. • There is an opportunity for a direct bus service between Dyce Rail Station and the airport, which could also integrate with TECA. • It was noted that there is potential for improved active travel links between the study corridor and the airport.
First Aberdeen	• The COVID-19 pandemic has had a particularly significant impact on bus service use within the study area, partly due to much lower demand for travel to Aberdeen International Airport. • The width of Victoria Street was noted as a constraint on the route. • Increased use of Riverview Drive for private car journeys would better facilitate bus movements on Victoria Street. • On-street parking on Mugiemoss Road can cause delays for buses.
Newmachar Community Council	• Introducing lighting between the Parkhill AWPR junction and the Victoria Street/ Riverview Drive Roundabout could improve safety and pedestrian comfort and improve consistency of lighting for drivers.
Scottish Enterprise	• Scottish Enterprise support a focus on sustainable options which contribute to the transition to a net zero economy in the North East of Scotland. They are actively engaged with regional partners to deliver transformational economic projects in the North East and sustainable transport could have a positive impact on promoting these projects.

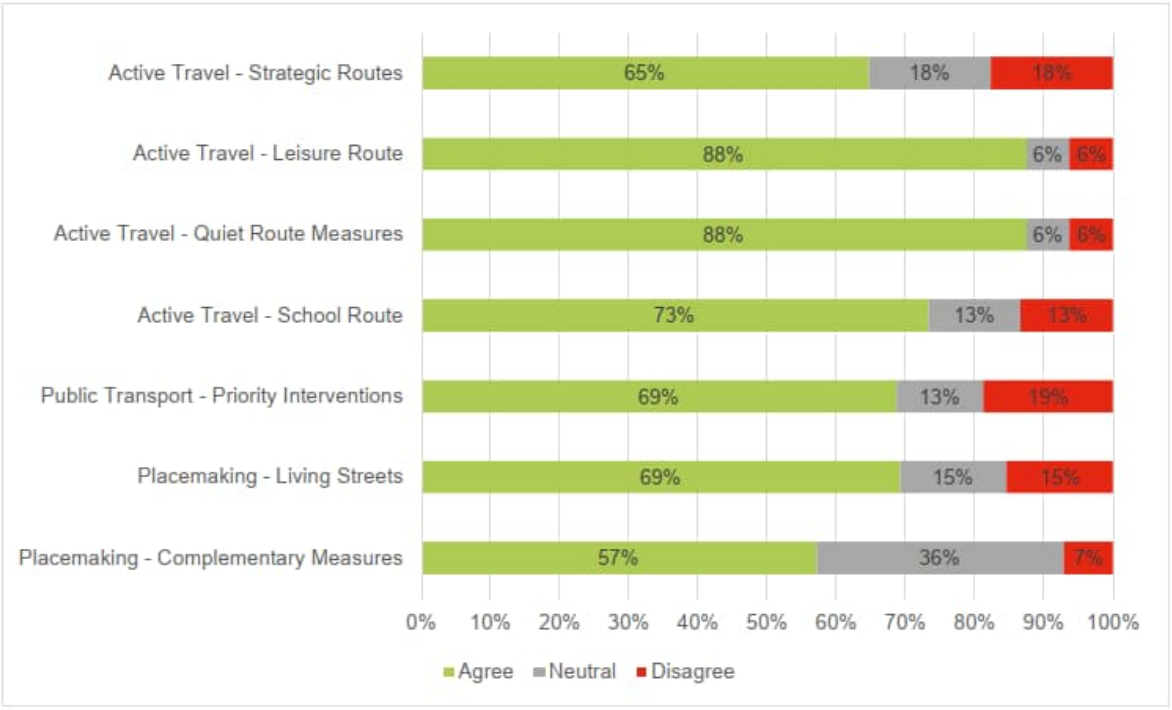
Part 2 (Summer 2022)

The second stage of consultation was undertaken in Summer 2022 and focused on gaining public and stakeholder feedback on the six devised option packages for the corridor as outlined in Section 2.11. The consultation period lasted four weeks between 22nd July 2022 and 19th August 2022 and was conducted via a Virtual Consultation Room linked through the ACC website, public drop-in events and online drop-in sessions. Attendees were asked to complete a feedback form seeking view on:

- Current use of the A947 corridor;
- Option concepts, including anticipated future behaviour;
- Prioritisation of option packages, in form of a ranking; and
- The accessibility of the consultation process, to inform the planning of future consultations.

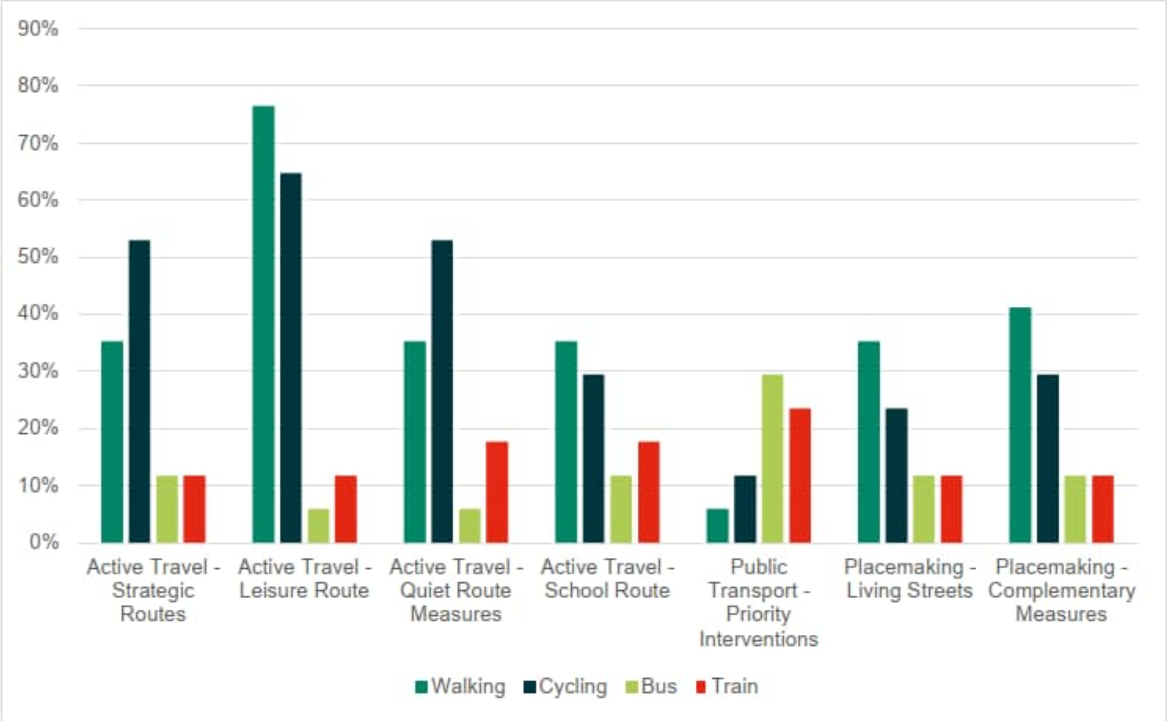
In total, 17 responses were received via the feedback form, online Q&A and direct email. Respondents were asked to rank the different option concepts based on which they thought should be prioritised for future consideration. Respondents considered that active travel packages would bring the bring the greatest transport benefits to the corridor and there was less support in general for public transport priority measures compared to the active travel packages, although the need to improve connectivity between the study area and key destinations – which forms part of the considerations in the Public Transport – Priority Interventions package – was identified in some of the consultation responses. However, as shown in Figure 2-18, in all cases the majority of respondents agree that the packages would have a beneficial impact on transport conditions in the study area.

Figure 2-18: Views on Option Concepts



As shown in Figure 2-19, the largest uptake in walking and cycling would be anticipated with the Active Travel – Leisure Route Package, the Active Travel – Quiet Route Measures Package and the Active Travel – Strategic Routes Package. While the Public Transport – Priority Interventions Package could influence around 30% of respondents to use bus, this is a less significant impact than any of the active travel packages.

Figure 2-19: Potential for Modal Shift Associated with Option Concepts



Engagement Related to Detailed Appraisal / OBC

Further public and stakeholder engagement was completed in spring 2024 in support of the Detailed Appraisal. A targeted programme of engagement activities was undertaken to gauge public acceptability of the scheme, including:

- An online consultation;
- Public drop-in event;
- Surveys (online and printed);
- School engagement (interactive session with pupils at Stoneywood Primary School on 8th May 2024);
- Consultation promotion (Social media posts, emails to stakeholders and community councils); and
- Briefings for Local Elected Members (ACC Councillors), MSPs and MPs to notify them about the consultation.

For the purposes of consultation, five option packages were created to support interpretation of the options in which feedback was being sought. A description of the options which comprise each package is provided in the Detailed Appraisal report. These were:

1. A947 (West) Package.
2. Riverview Drive Package.
3. Victoria Street Package.
4. Targeted Local Improvements Package.
5. Strategic Corridor Improvements Package.

The online consultation ran for four weeks between 17th May and 14th June 2024 and was held through the Citizen Space page hosted on the ACC website. It comprised of online information boards which presented the background to the study and features of the option packages, and an online survey. A total of 54 responses were received from members of the public, with seven organisations responding to the consultation. The extent of support for the options from organisations in particular should therefore be treated with caution.

Table 2-26 summarises feedback received through the online consultation which demonstrates the level of support for the options within the packages. More detailed results and analysis is reported in the Detailed Appraisal report.

Table 2-26: Online Consultation Summary

Package	Summary of Feedback
A947 (West) Package	**Public** • Members of the public largely agreed with the options contained within this package. • The option to review the layout at the A947/McDonalds access road junction received the greatest support (55.7% agreeing). • Implementation of a two-way segregated cycle track (to the west of the A947) received mixed views by members of the public. **Organisations** • Organisations largely disagreed with the options contained within this package. • Introducing improvements to the active travel network at TECA was the most positively received option (57.2% strongly agreed or agreed). • Over half strongly disagreed with options relating to widening of the existing shared use footway to the west of the A947 and implementation of a two-way segregated cycle track to the west of the A947.
Riverview Drive Package	**Public** • Members of the public largely agreed with the options contained within this package. • Implementation of a new footpath to connect the Riverside Path to Dyce housing was the most positively received option (63.5% agreeing). **Organisations** • Organisations largely disagreed with the options contained within this package. • 42.9% agreed with the implementation of the new footpath to connect the Riverside Path to Dyce housing, though no support for the remaining options within the package was expressed.
Victoria Street Package	**Public** • For each option in this package, more than half of responses from members of the public expressed disagreement. • Implementation of a one-way system on Victoria Street received the lowest level of public support (56.6% strongly disagreed). **Organisations** • Organisations overwhelmingly (strongly) disagreed with the options contained within this package, with no support expressed for any of the proposed interventions.

Package	Summary of Feedback
Targeted Local Improvements Package	**Public** • Varied opinion amongst members of the public for the options in this package. • Around two-thirds expressed support for the option seeking to prevent illegal turning manoeuvres at the A947/Stoneywood Road Junction. **Organisations** • Organisations overwhelmingly (strongly) disagreed with the options contained within this package, with no support expressed for any of the proposed interventions. • The with-flow segregated cycleway on Old Meldrum Road demonstrated a particular lack of support.
Strategic Corridor Improvements Package	**Public** • Varied opinion amongst members of the public for the options in this package. • The option to implement a shared use footway on Dyce Drive was positively received. • Notably less support for the implementation of measures to support establishment of a 20-minute neighbourhood in Dyce. **Organisations** • Organisations largely disagreed with the options contained within this package. • There was a level of support expressed for the option to implement the shared use footway on Dyce Drive. • Otherwise overwhelmingly (strongly) disagreed with the other options contained within this package.

Table 2-27 outlines respondent's views on the overall transport strategy for the A947 corridor. Members of the public held mixed views with 48.0% agreeing and 44.3% disagreeing in total. In contrast, organisations overwhelmingly opposed the strategy with 71.4% stating that they strongly disagree. No organisations agreed with the strategy. It should be noted that the low sample size may have impacted these results and so this result should be treated with caution.

Table 2-27: Views on Overall A947 Transport Strategy

	Strongly Agree	Agree	Disagree	Strongly Disagree	Neutral	Other
Members of Public	28.8%	19.2%	13.5%	30.8%	5.8%	1.9%
Organisations	0%	0%	0%	71.4%	28.6%	0%

A public drop-in event was also hosted at the Craighaar Hotel on Thursday 6 June 2024 between 16:00 and 20:00, where attendees had the opportunity to discuss the options within the packages with members of the project team and provide feedback. The event was attended by 14 people, who provided the following feedback:

- General support for the principles of the study and the rationale behind the composition of the option packages;
- Concern about parking on residential streets by offshore workers for prolonged periods of time;
- Business representation identified a significant concern relating to the options involving restriction on access to Victoria Street – previous traffic management in the area was cited as having adversely affected trade;

- Concern about impact on surrounding residential streets in the event Victoria Street was made one-way (or access only); and
- Concern about articulated HGVs turning off Riverview Drive into Burnside Drive, a residential street, to access Farburn Industrial Estate. It was suggested that this is due to the position of the current wayfinding signage on Riverview Drive.

A detailed written response was also received from Dyce & Stoneywood Community Council following the conclusion of the public consultation. The community council confirmed that, overall, they agreed with the overall transport strategy for the A947 corridor. Specific feedback relating to some of the options is provided within the Detailed Appraisal report.

Appendix A – Problems, Issues, Constraints and Opportunities Technical Note

A947 Multi-Modal Study - STAG-Based Appraisal

Problems, Issues, Constraints and Opportunities Technical Note

Aberdeen City Council

Project number: 60667436

September 2022

Delivering a better world

Quality information

Prepared by	Checked by	Verified by	Approved by
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Revision History

Revision	Revision date	Details	Authorized	Name	Position
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1	21-02-2022	Final	AR	Andrew Robb	Project Manager
2	07-09-2022	Updates for Final Report	AR	Andrew Robb	Project Manager

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1. Introduction

1.1 Introduction

AECOM has been commissioned by Aberdeen City Council (ACC) to develop a Scottish Transport Appraisal Guidance (STAG)-based appraisal of options for improving transport connections (particularly public transport and active travel connections) along the A947 corridor between the AWPR Parkhill Junction and the A96/A947 Junction.

The study is being guided by a Project Steering Group led by ACC and supported by Aberdeenshire Council, Nestrans and Sustrans.

1.2 Study Area

The study area is the north-south corridor between the AWPR Parkhill Junction and the A96/A947 Junction to the south of Dyce. The study corridor is 4 miles (6km) long and includes Stoneywood Road, Victoria Street and Riverview Drive. The study area is shown in **Figure 1.1**.

Figure 1.1: Study Area

1.3 Structure of Report

Following this introduction, the remainder of the report is structured as follows:

- **Chapter 2 – Policy Context and Previous Work:** An overview is provided of the background policy context against which this study is being taken forward and a summary of previous work undertaken with relevance to the study area.
- **Chapter 3 – Geographic Context:** An overview of the geographic context of the study area.
- **Chapter 4 – Socio-Economic Context:** An overview of the socio-economic context of the study area.
- **Chapter 5 – Baseline Transport Conditions:** A baseline review of transport conditions on the A947 corridor, drawing on the findings of analysis of active travel and traffic count data.
- **Chapter 6 – Planning Context:** A baseline review of development allocations and planning applications on the A947 corridor.
- **Chapter 7 – Environmental Context:** A baseline review of the environmental context of the A947 corridor.
- **Chapter 8 – Stakeholder Consultation:** An overview of the approach to the initial stage of consultation and a summary of the key findings.
- **Chapter 9 – Problems and Opportunities:** Drawing on the findings from the baseline review, detail is provided on the identified problems that should be addressed along the study corridor, with consideration also given to issues, constraints and opportunities in the study area.
- **Chapter 10 – Summary:** A summary of the work that has been completed during the Problems and Opportunities work package.

The following appendices support the report:

- **Appendix A** – Environmental Constraints Mapping; and
- **Appendix B** – Study Tour Findings Note.

2. Policy Context and Previous Work

2.1 Introduction

This chapter presents an overview of the background to this study, including the policy context against which this study is being taken forward and provides a summary of previous work undertaken in the study area, drawing on key outcomes of relevance to the study.

2.2 Policy Context

This section provides an overview of local, regional and national strategies of relevance to this study.

2.2.1 National

At a national level, Scotland's second **National Transport Strategy (NTS2) (2020)**[1] provides the national transport policy framework, setting out a clear vision of a sustainable, inclusive, safe and accessible transport system which helps deliver a healthier, fairer and more prosperous Scotland for communities, businesses and visitors. It sets out four key priorities to support this vision: reducing inequalities; taking climate action; helping to deliver inclusive economic growth; and improving health and wellbeing. In addition to these priorities, the NTS2 supports the adoption of a Sustainable Travel Hierarchy, which promotes walking, wheeling, cycling, public transport and shared transport options in preference to single occupancy private car use. It also supports the adoption of a Sustainable Investment Hierarchy, which prioritises investment aimed at reducing the need to travel unsustainably and maintaining and safely operating existing assets ahead of new infrastructure investment.

Delivery of the NTS2 will be supported by accompanying NTS Delivery Plans, the **Climate Change Action Plan**[2] and the second **Strategic Transport Projects Review (STPR2)**[3]. In the NTS Delivery Plan and The Climate Change Plan 2018-2032 Update, the Scottish Government sets out a commitment to develop and implement a coordinated package of policy interventions to support the reduction of car kilometres by 20% by 2030. In January 2022, the Scottish Government published its route map[4] outlining steps needed to achieve this reduction. It sets out a range of sustainable travel behaviours grouped into the four categories of travel less, stay local, switch mode and combine a journey. STPR2 involves a whole-Scotland, evidence-based review of the performance of the strategic transport network across all transport modes and made draft recommendations in January 2022 for potential transport investments for Scottish Ministers to consider as national investment priorities in an updated 20-year (2022-2042) Infrastructure Investment Plan for Scotland. It is anticipated to conclude later in 2022. The work undertaken to develop Nestrans' Regional Transport Strategy 2040 (RTS2040) has fed into the development of STPR2, thus ensuring key issues for the North East are represented at a national level. The Scottish Government's **Programme for Scotland 2020-2021**[5] also outlines the commitment towards delivering on health, economic and environment goals by investing £500m over the next five years in active travel infrastructure, access to bikes and behaviour change schemes to promote walking, wheeling and cycling. It also outlines a reaffirmed commitment to a £500m Bus Partnership Fund (BPF) to support authorities' ambitions around tackling congestion so that bus journeys are quicker and more reliable, and more people make the choice to take the bus. The BPF was officially launched in November 2020, with funding awarded to eight partnerships in June 2021, including £12m for the North East Bus Alliance. The **Programme for Scotland 2021-2022**[6] continues to support this focus under its action to 'Support a net zero nation'.

In addition to the above, the UK Government announced in March 2021 that the phase out date for the sale of new petrol and diesel cars and vans will be brought forward to 2030 and from 2035, all new cars and vans must be fully zero emission at the tailpipe[7]. In November 2021, the UK Government subsequently announced that all heavy goods vehicles in the UK will be zero-emission by 2040[8].

A wider range of national policy and guidance, covering active travel and bus, provide direction on national aspirations for increasing the share of healthier, cleaner travel choices. This includes the **Cycling Action Plan for Scotland**[9] and the national Walking Strategy: **Let's Get Scotland Walking**[10], which aim to increase the levels of

[1] https://www.transport.gov.scot/media/47052/national-transport-strategy.pdf
[2] https://sp-bpr-en-prod-cdnep.azureedge.net/published/2021/1/12/afbd2373-a14f-4a78-af9c-4fc5c775b23d/SB%2021-01.pdf
[3] https://www.transport.gov.scot/our-approach/strategy/strategic-transport-projects-review-2/
[4] https://www.transport.gov.scot/publication/a-route-map-to-achieve-a-20-per-cent-reduction-in-car-kilometres-by-2030/
[5] https://www.gov.scot/publications/protecting-scotland-renewing-scotland-governments-programme-scotland-2020-2021/
[6] https://www.gov.scot/publications/fairer-greener-scotland-programme-government-2021-22/documents/
[7] https://www.gov.uk/government/consultations/consulting-on-ending-the-sale-of-new-petrol-diesel-and-hybrid-cars-and-vans
[8] https://www.gov.uk/government/news/uk-confirms-pledge-for-zero-emission-hgvs-by-2040-and-unveils-new-chargepoint-design
[9] https://www.transport.gov.scot/media/10311/transport-scotland-policy-cycling-action-plan-for-scotland-january-2017.pdf
[10] https://www.gov.scot/binaries/content/documents/govscot/publications/strategy-plan/2014/06/lets-scotland-walking-national-walking-strategy/documents/00452622-pdf/00452622-pdf/govscot%3Adocument/00452622.pdf

walking and cycling as part of everyday journeys and promote the development of well-designed places and infrastructure to encourage walking and cycling. The passing of the **Transport Scotland Act (2019)**[11] also signals the intent at a national level to promote sustainable transport. The Act enables local authorities to introduce Workplace Parking Levies and supports authorities with options to influence and improve bus services in their area.

2.2.2 Regional

At a regional level, the Nestrans **Regional Transport Strategy (RTS) 2040**[12] sets the long-term vision and direction for transport in the North East for the next 20 years. The key transport priorities within the RTS are linked to the priorities in the NTS2 and include improving journey efficiencies to enhance connectivity; reducing carbon emissions to support net zero targets; and creating a step change in public transport and active travel allowing for a 50:50 mode spilt. The RTS identifies a range of associated polices and actions including increasing the number of people travelling actively for health and the environment; improving the region's bus network; reducing emissions from transport; and planning and designing places for people, all of which are relevant in the context of this corridor study.

The **Regional Economic Strategy (2018-2023)**[13] includes objectives associated with the promotion of modal shift and helping to maximise the benefits of improved transport infrastructure. Both the **Aberdeenshire Proposed Local Development Plan (LDP) (2020)**[14] and the **Aberdeen City Proposed LDP (2020)**[15] identify opportunities for significant development within the study area. Within Aberdeen City, there are allocations for up to 1,000 new homes within the study area, with an additional 8,500 homes, business and employment land allocations on land adjacent to the study corridor. The Aberdeenshire LDP indicates up to 2,000 homes are planned on the A947 corridor as well as business and employment land. The **Nestrans Active Travel Action Plan (2014-2035)**[16] identifies the Formartine and Buchan Way (F&B Way) as an already established active travel corridor in the study area, noting the presence of National Cycle Network Route 1 (NCN1). The Plan refers to aspirations for further development of this route including improved surfacing and signage.

Recently, there has also been renewed impetus given to the improvement of bus services in the region following the establishment of a new **North East Scotland Bus Alliance**[17] (building on work of the former Local Authority Bus Operators Forum). The Bus Alliance was formed in 2018 as a voluntary partnership of Nestrans, ACC, Aberdeenshire Council, First Bus Aberdeen, Stagecoach, and Bain's Coaches. The overarching objectives of the Alliance are to:

- Arrest the decline in bus patronage in the North East of Scotland by 2022; and
- Achieve year on year growth in bus patronage to 2025.

Sub-objectives exist around increasing modal share of bus patronage, improving operational performance and customer satisfaction, reducing bus emissions, and improving service accessibility. In April 2020, the Bus Alliance published a new **Bus Action Plan**[18] setting out the priority actions of the partners over the next five years. The A947 corridor is identified to be one of four corridors to be completed following conclusion of the initial priority corridors.

2.2.3 Local

Locally, both the **Aberdeenshire Local Transport Strategy (LTS) (2012)**[19] and **Aberdeen City LTS (2016-2021)**[20] aim to reduce non-sustainable journeys, increase the modal share of public transport and active travel, and make travel more effective. ACC is currently going through the process of updating its LTS. The 'Main Issues Consultation' took place in October and November 2021 and the analysis of problems and opportunities has now been undertaken which will inform the strategy. A draft LTS is anticipated to be published in 2023, and, following consultation on this, a final version will be developed. The **Sustainable Urban Mobility Plan (SUMP) (2019)**[21] identifies the need to improve connectivity both within and to the city of Aberdeen, as well as improving the public transport experience, particularly in terms of improving journey times and reliability for passengers. These objectives are aimed at locking in the benefits of the AWPR and preventing the erosion of these benefits, as would

[11] https://www.legislation.gov.uk/asp/2019/17/enacted
[12] https://www.nestrans.org.uk/wp-content/uploads/2021/03/Nestrans-RTS-Final-Submitted.pdf
[13] https://investaberdeen.co.uk/images/uploads/RES%20Action%20Plan%202018-2023%20FINAL.pdf
[14] https://www.arcgis.com/apps/MapJournal/index.html?appid=0b6df3fd06024c798c89138dce7a6a7e
[15] https://www.aberdeencity.gov.uk/sites/default/files/2020-05/Proposed%20Aberdeen%20Local%20Development%20Plan%202020.pdf
[16] https://www.nestrans.org.uk/wp-content/uploads/2017/02/AcTrAP_FINAL.pdf
[17] https://www.nestrans.org.uk/wp-content/uploads/2017/09/5b_App-A-Region-Wide-QP-Agreement.pdf
[18] https://www.nestrans.org.uk/wp-content/uploads/2020/04/Bus-Action-Plan-Published_April-2020.pdf
[19] https://www.aberdeenshire.gov.uk/media/2374/2012finallts.pdf
[20] https://www.aberdeencity.gov.uk/sites/default/files/Local%20Transport%20Strategy%20%282016-2021%29.pdf
[21] https://consultation.aberdeencity.gov.uk/planning/sump/supporting_documents/Draft%20Sustainable%20Urban%20Mobility%20Plan.pdf

be anticipated should traffic be allowed to continue to grow to fill the additional road capacity that has been created. The **Aberdeen City Centre Masterplan (CCMP) (2015)**[22] aims to create a vibrant city centre, identifying 49 development and infrastructure projects to support this. A new **Roads Hierarchy for the North East**[23] was agreed in 2019 following a study to develop options to provide a system that reflects the new role of the city centre (as a destination) and makes the most effective use of the AWPR for distributing traffic around the city to the most appropriate radial route to reduce the extent of cross-city traffic movements. This is covered in more detail as part of **Section 2.3**. In April 2020, ACC set out its net zero vision for Aberdeen in **A Climate-Positive City at the Heart of the Global Energy Transition**[24] and in March 2021, ACC published its **Climate Change Plan 2021-2025**[25] to outline its ambitions and support progress with public sector climate duties. Additionally, ACC introduced a **Low Emission Zone**[26] (LEZ) in May 2022, where only certain vehicles can enter based on their emissions standard. It has been introduced with a two year 'grace' period meaning that between 2022 and May 2024, drivers will not be fined for entering the LEZ with a non-compliant vehicle. The LEZ area is shown in the diagram below[27]. An updated **Active Travel Action Plan** for 2021-2026[28] was approved at ACC's City Growth and Resources Committee in February 2021.

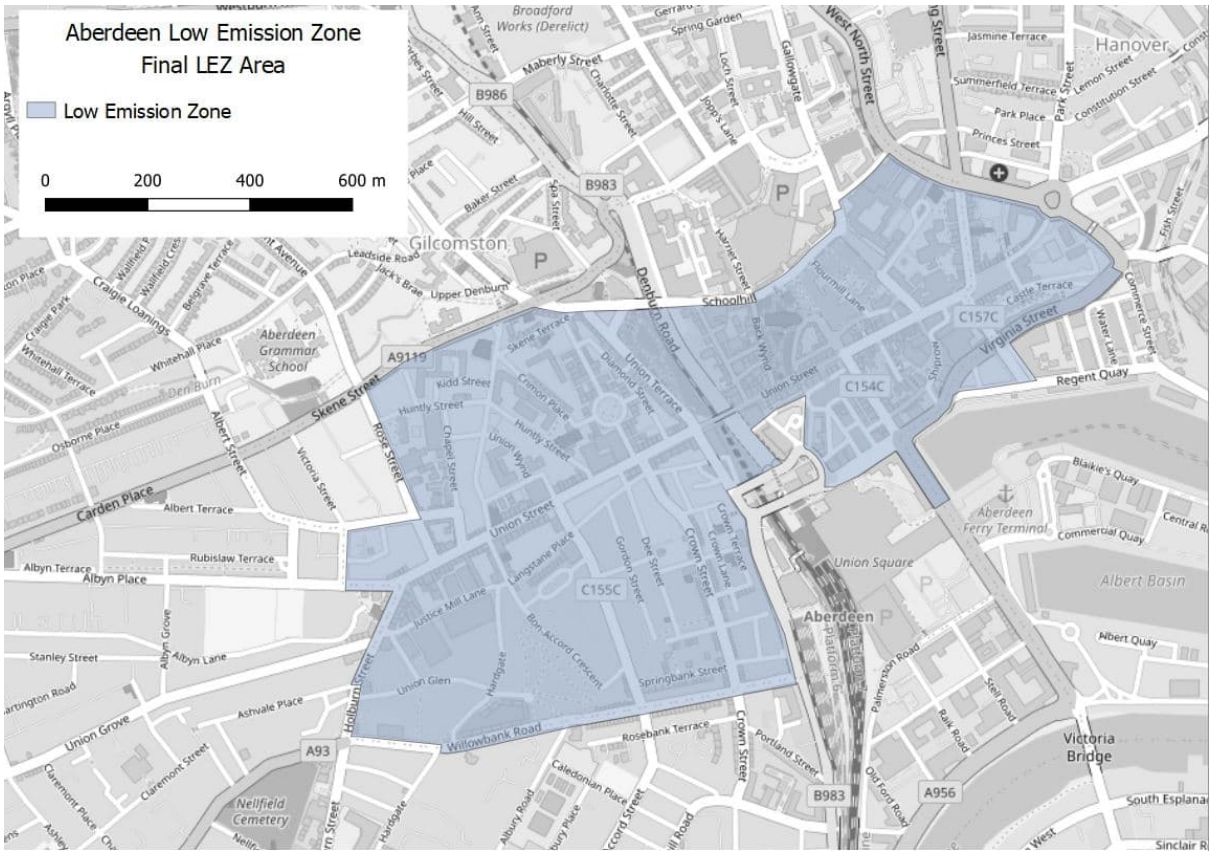


Figure 2.1: Aberdeen Low Emission Zone

The policy review presented above and in **Figure 2.2** overleaf enables several themes to be identified, including support for more trips to be undertaken using sustainable modes of travel and the requirement to meet net zero commitments being outlined at national, regional, and local policy levels. As such, the key focus of this study on developing options for improving public transport and active travel connections along the A947 corridor strongly aligns with the national, regional and local policy context.

[22] https://www.aberdeencity.gov.uk/sites/default/files/2018-06/Aberdeen%20City%20Centre%20Masterplan%20and%20Delivery%20Programme.pdf
[23] https://www.nestrans.org.uk/wp-content/uploads/2019/06/North-East-Scotland-Roads-Hierarchy-Study-2019.pdf
[24] https://committees.aberdeencity.gov.uk/documents/s109162/Appendix%201%20-%20Aberdeen%20Energy%20Transition%20Vision.pdf
[25] https://data.climateemergency.uk/media/data/plans/aberdeen-city-council-23971ac.pdf
[26] https://www.aberdeencity.gov.uk/sites/default/files/2021-06/Proposal%20to%20make%20a%20LEZ%20Scheme.pdf
[27] https://www.aberdeencity.gov.uk/services/roads-transport-and-parking/low-emission-zone
[28] https://consultation.aberdeencity.gov.uk/place/draft-active-travel-action-plan-consultation/

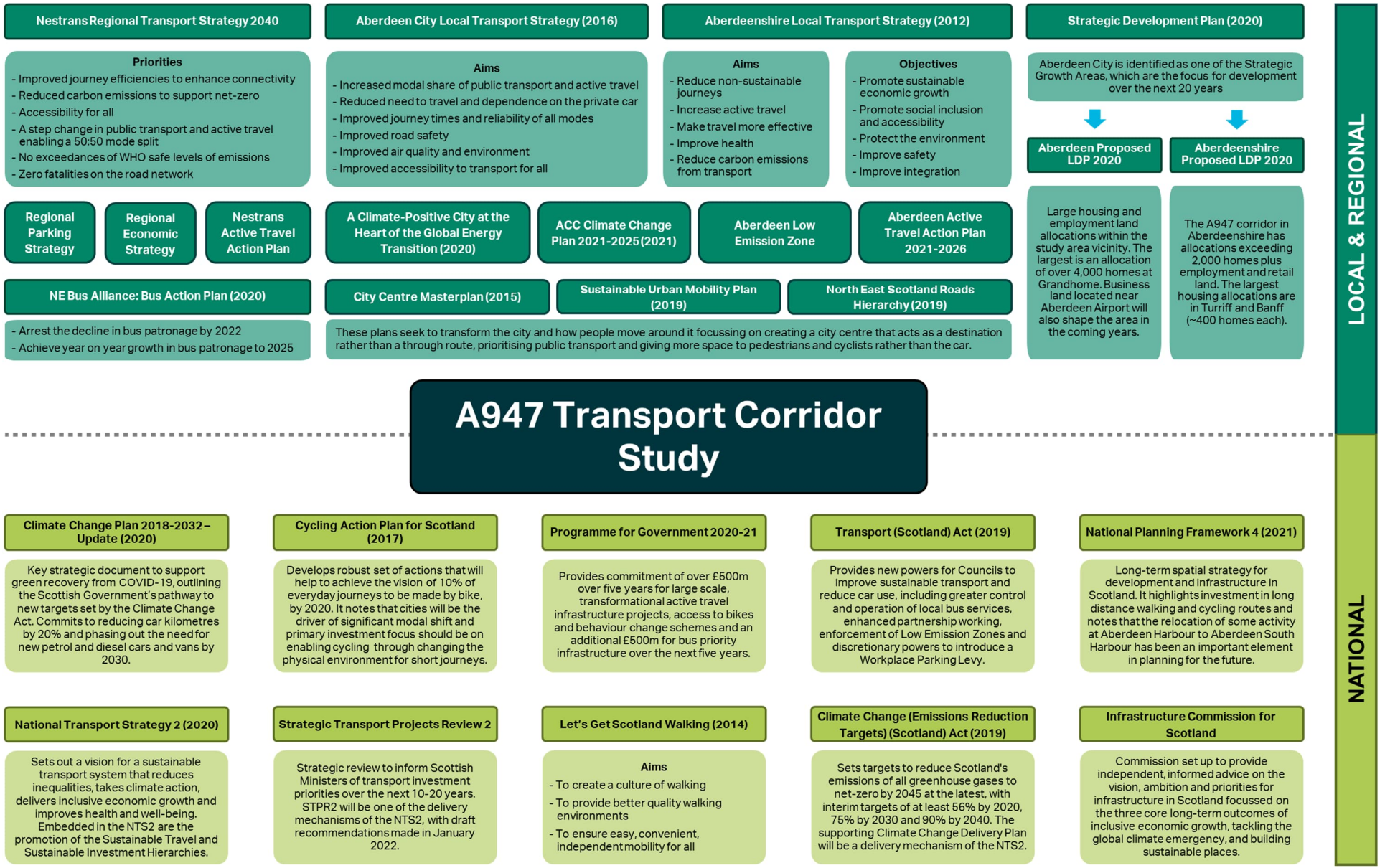


Figure 2.2: Overview of Policy Context

2.3 Previous Studies

A review of previous studies has been undertaken, with the key findings presented below.

2.3.1 Dyce Sustainable Travel Feasibility Study (2016)

The Dyce Sustainable Travel Feasibility Study investigated the feasibility of improving and upgrading sustainable travel links within the Dyce area. The study considered a range of sustainable transport options including walking, cycling, bus, rail and car sharing. The aims of the study were to:

- Identify missing bus infrastructure in terms of routeing options; bus stops; bus service frequency; Real Time Passenger Information (RTPI) provision and bus information; disabled access; bus priority measures; and night services.
- Identify pedestrian improvements required for recreational circular routes as well as commuter routes, links between bus drop off points and areas where walkability components need to be addressed.
- Identify missing cycling infrastructure, especially along Dyce Drive from Dyce Avenue to Howe Moss Avenue and beyond and Gordon Terrace – Dyce Academy cycling link route options to promote cycling to school.
- Identify access to existing cycle routes.
- Identify aspects of the Dyce cycling routes network, including signage, safety, directness, attractiveness, comfort and coherence.
- Identify potential areas for car club bays/electric vehicle (EV) charging points.
- Identify potential options for heavy goods vehicle (HGV) priority.

The study involved a review of the existing sustainable travel network including walking, cycling and bus routes, identifying problems associated with each mode in the area. This was supported by a robust consultation exercise with key ACC officers, Aberdeenshire Council officers, public transport providers, local active travel groups, the local Community Council and other relevant stakeholders.

The key problems in the Dyce area that were identified during the study were:

- Poor public transport permeability to key locations in Dyce.
- Gaps in existing walking and cycling networks.
- General traffic congestion in the Dyce area[29].
- Journey time unreliability for public transport.

The study suggested that Dyce has the “building blocks” with which to establish a sustainable transport network and the range of transport and development proposals for the area provide opportunities to capture benefits for sustainable transport. Options identified in the study include:

- Footway/cycleway extensions.
- New crossing facilities on existing routes.
- New active travel links between existing routes.
- Improved active travel signage.
- Improved access by active travel to Dyce Train Station.
- New cycle lanes.
- Improved links to the F&B Way.
- New hardstanding areas at bus stops.
- Traffic management interventions to improve flow for buses.
- Connections between the bus and active travel networks.

[29] It should be noted that the study was undertaken at a time when ~21,000 people were travelling to Dyce on a daily basis for work purposes, with a very high car mode share.

The study also recommended a series of locations for pedestrian and cycle monitoring in Dyce, including both automatic and manual counters. These would allow for an overview of route usage at a more detailed level and allow trends in active travel to be monitored over time.

2.3.2 North East Scotland Roads Hierarchy Study (2019)

The North East Scotland Roads Hierarchy Study[30] was undertaken throughout 2018 and 2019 as ACC, along with Nestrans, Aberdeenshire Council and the Strategic Development Planning Authority (SDPA), wish to take advantage of the recent investment in transport infrastructure (road and rail) in the City Region to facilitate the implementation of the CCMP's aim of creating a vibrant city centre with an environment that encourages visits to and lengthens stays in the city centre and to lock-in the benefits of this investment for the whole city.

The study therefore sought to update the city's roads hierarchy to provide a system that reflects the new role of the city centre (as a destination) and makes the most effective use of the AWPR for distributing traffic around the city to the most appropriate radial route to reduce the extent of cross-city traffic movements.

In terms of the A947 study corridor, the study, and subsequent review by ACC, resulted in the following changes to the classification of Victoria Street and Riverview Drive:

- Victoria Street changed from an A-class priority route (A947) to a C-class tertiary route; and
- Riverview Drive changed from an unclassified route to an A-class priority route (A947).

The Roads Hierarchy Study defines priority routes as the main movement corridors linking the AWPR to key destinations and notes that they should be considered for the provision of bus lanes and segregated cycle lanes where possible, with bus and cycle priority through junctions. The change in classification of Riverview Drive means that the A947 now routes via Riverview Drive instead of Victoria Street.

The Roads Hierarchy Study defines tertiary routes as local access roads with little strategic function, and as such are unsuitable for large volumes of traffic. The redesignation of Victoria Street therefore provides enhanced opportunities to implement improvements for public transport and active travel.

2.3.3 Civitas PORTIS Dyce Travel Planning Report (2020)

The Dyce Travel Planning Study[31] was undertaken to better understand commuting movements of those working in the Dyce area of Aberdeen and to encourage businesses to collaborate and promote sustainable transport use. The focus of the project was to establish problems, issues, barriers and opportunities regarding a modal shift away from single occupancy car use.

The study involved extensive consultation with four businesses across six different office locations in Dyce – Baker Hughes (Kirkhill and Stoneywood Park); Helix (Kirkton Drive and Stoneywood Park); BP and SKF. This included travel surveys focussing on existing travel patterns of staff working at the six sites as well as direct engagement sessions. It additionally involved a review of existing infrastructure, a review of accident data and a business breakfast.

The key problems that were identified during the study include:

- Pedestrians – areas without adequate footway provision, areas where footways end without a crossing point and areas without crossing points.
- Cycling – perceived unsafe on-road cycle lanes, lack of continuous cycle routes and poorly maintained off-road cycle lanes.
- Public transport – frequency, timetables, reliability, cost, bus stop infrastructure and lack of options from origin points.
- Car sharing – difficulty in finding others to share with and/or those who work similar hours.

The measures proposed within the Action Plan included promotion and marketing measures (9 no.), active travel infrastructure (8 no.), future considerations (5 no.), public transport infrastructure (4 no.) and car infrastructure and car share measures (3 no.).

Promotion and marketing measures proposed included promotion of funding opportunities, discounts for sustainable transport options, workshops with sustainable transport organisations, designation of a travel plan coordinator within each business, creation and promotion of travel plans for the Dyce area, development of a travel

[30] https://www.nestrans.org.uk/wp-content/uploads/2019/06/North-East-Scotland-Roads-Hierarchy-Study-2019.pdf
[31] Report provided by Nestrans

plan steering group for the area, setting up of bike user groups, updates to the Aberdeen cycling maps and preparation and maintenance of a travel to Dyce leaflet.

Active travel measures proposed included dropped kerbs and tactile paving, toucan crossing points, shared use paths, extension of existing cycle routes, widening of existing footways, promotion of Park & Pedal facilities at Craibstone Park & Ride (P&R) and promotion of hire bikes.

Future considerations proposed included connection and formalisation of off-road cycle routes, extension of the River Don cycle path, review of bus route coverage and potential demand for services, shuttle bus from Dyce Rail Station to service the Dyce area and a Dyce Town Centre Masterplan.

Public transport measures proposed included improvements to bus stop infrastructure, integrated ticketing, flexible ticketing and provision of live information.

Car infrastructure measures proposed included pool car stations, car share collaboration schemes and EV charging points.

3. Geographical Context

As set out in **Chapter 1**, the study area encompasses the north-south corridor between the AWPR Parkhill Junction and the A96/A947 Junction to the south of Dyce. Whilst the study corridor only covers a distance of approximately four miles (6km) from north to south, it has varied characteristics including urban sections along Victoria Street and more rural sections to the north of the River Don.

The study area encompasses the settlement of Dyce, which has a population of 6,190[32] and is located in the north-west of Aberdeen City, approximately five miles (8km) from the city centre[33]. The area consists of a diverse selection of land uses, including residential, industry, business, transport and education. The residential areas are generally located in the east of Dyce, between Victoria Street and Riverview Drive. Aberdeen International Airport is located in the west of Dyce. Industrial and business land is mostly congregated around Aberdeen International Airport, including many industrial estates and business parks. Dyce Primary School (~379 pupils[34]) and Dyce Academy (~538 pupils) provide education within Dyce. There are additionally two schools within close proximity of the study area to the south of the A96 – Brimmond Primary School (~457 pupils) and Bucksburn Academy (~803 pupils).

The A947 is the primary road link through Dyce, providing a connection between Aberdeenshire and the A96. Dyce Drive forms a key route to the west of the area, forming part of a loop around Aberdeen International Airport and connecting to various industrial estates and business parks. Wellheads Drive provides a connection from the centre of Dyce to Dyce Drive and performs a key role in connecting Dyce to nearby industrial estates and business parks.

Dyce is served by Dyce Rail Station, which is located on Station Road, to the west of the centre of Dyce. The station is located on the Aberdeen to Inverness line which is currently undergoing a programme of improvements to shorten journey times between the two cities. The station is located between Aberdeen and Inverurie which formed Phase 1 of this work, involving redoubling of the track. This was completed in 2019[35]. Aberdeen International Airport is a key regional transport hub for the North East. It serves destinations throughout the UK and Europe and also serves as the main heliport for the North Sea oil and gas industry. Although the primary route to the airport is via the A96, the A947 provides a key access route to the eastern helicopter terminal buildings.

For the purposes of the analysis contained within **Chapter 4** and **Chapter 5**, the study area has been defined based on data zones from Dyce, Bucksburn North and Bucksburn South. The data zones making up these areas are illustrated in **Figure 3.1**, along with key transport hubs within the study area.

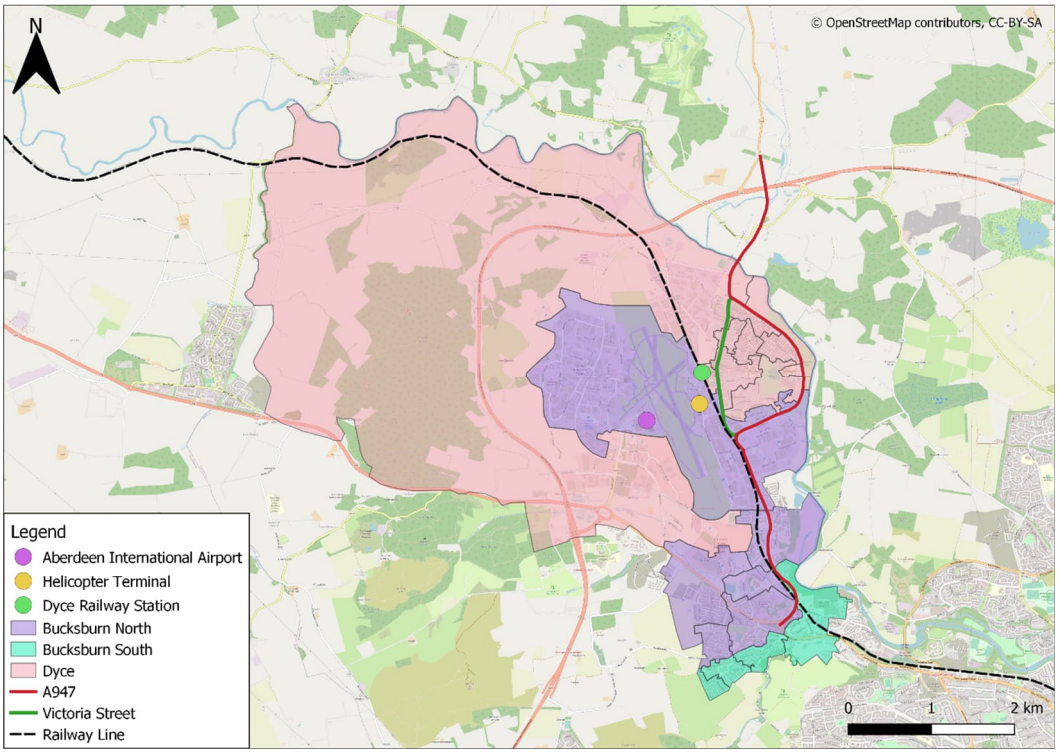


Figure 3.1: Geographic Context of Study Corridor

[32] https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-estimates/small-area-population-estimates-2011-data-zone-based/mid-2020
[33] Measured from the Victoria Street/Farburn Terrace Junction to Union Street.
[34] School rolls are based on ACC 2022 forecasts: https://www.aberdeencity.gov.uk/services/education-and-childcare/schools-and-education/schools-pupil-roll-forecasts
[35] https://www.transport.gov.scot/projects/aberdeen-to-inverness-rail-improvements/aberdeen-to-inverness-rail-improvements/

4. Socio-Economic Context

4.1 Introduction

This section outlines the demographic profile of the study area and discusses key indicators including population, employment, car availability, deprivation and health.

4.2 Population

The table below shows the population of the study area between 2001 and 2020.

Table 4.1: Population in the Study Area (National Records of Scotland Population Estimates)

Settlement	2001	2011	2020	Change (2001-2020)
Study Area	12,446	12,707	13,587	**9%**
Aberdeen City	211,910	222,460	229,060	**8%**
Aberdeenshire	226,940	253,650	260,780	**15%**
Scotland	5,064,200	5,299,900	5,466,000	**8%**

- There has been a 9% increase in the population of the study area between 2001 and 2020, which is broadly in line with the population growth across Aberdeen City (8%).
- Population growth in Aberdeen City has been in line with the national average (8%), whilst the rate of growth in Aberdeenshire has been significantly above the national average (15%).

4.3 Age Profile

The population age structure of the study area is shown in **Table 4.2** below.

Table 4.2: Age Structure of the Study Area (National Records of Scotland 2020 Mid-Year Estimates)

Settlement	15 and Under	Working Age	65+
Study Area	16%	62%	22%
Aberdeen City	16%	68%	16%
Aberdeenshire	19%	61%	20%
Scotland	17%	64%	19%

- There is an older population in the study area relative to the Aberdeen City, Aberdeenshire and Scotland averages for those aged 65 and over, with 22% of people in the study area within this category compared to 16% for Aberdeen City, 20% for Aberdeenshire and 19% for Scotland.
- The percentage of the population in the '15 and under' age group is in line with Aberdeen City as a whole (16%) but is lower than the averages for Aberdeenshire (19%) and Scotland (17%).
- In terms of the working age population, the study area (62%) is broadly in line with the averages for Aberdeenshire (61%) and Scotland (64%). The proportion of those of working age in the study area, however, is notably less than the average for Aberdeen City (68%).

4.4 Employment

4.4.1 Economic Activity

Figure 4.1 below shows economic activity in the study area. This is defined in the census as the proportion of people aged 16 and over who were working or looking for work at the time of the census.

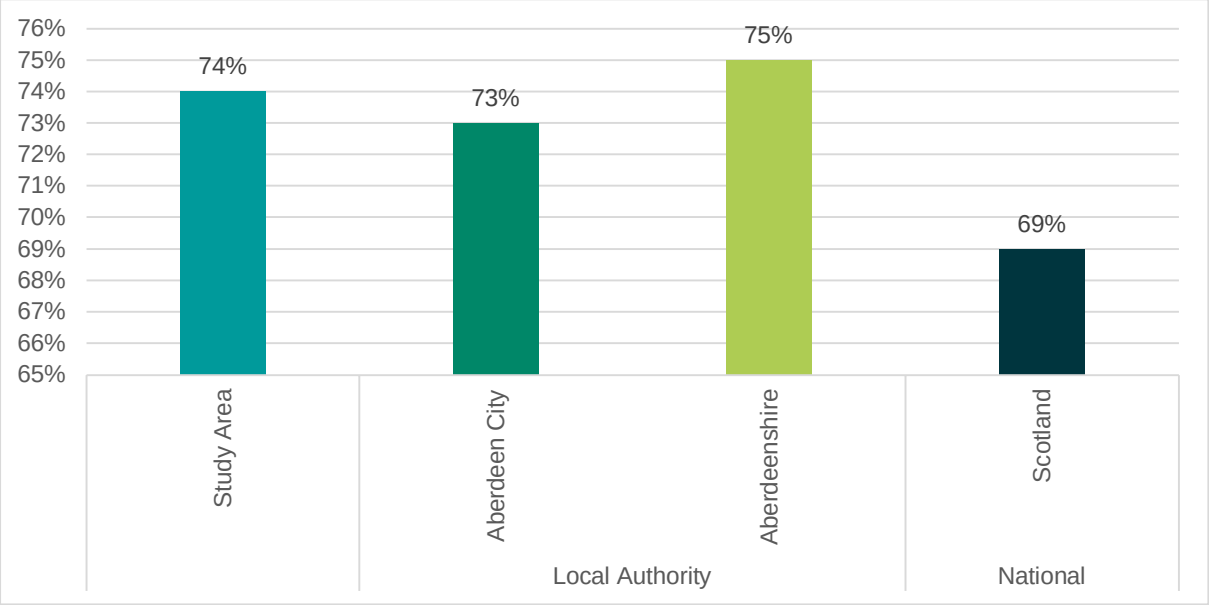


Figure 4.1: Economic Activity (Scotland Census 2011)

- Economic activity in the study area (74%) is broadly in line with economic activity in Aberdeen City (73%) and Aberdeenshire (75%).
- Economic activity in the study area is notably higher than the national average of 69%.

4.4.2 Unemployment

The diagram below shows the unemployment rate in the study area.

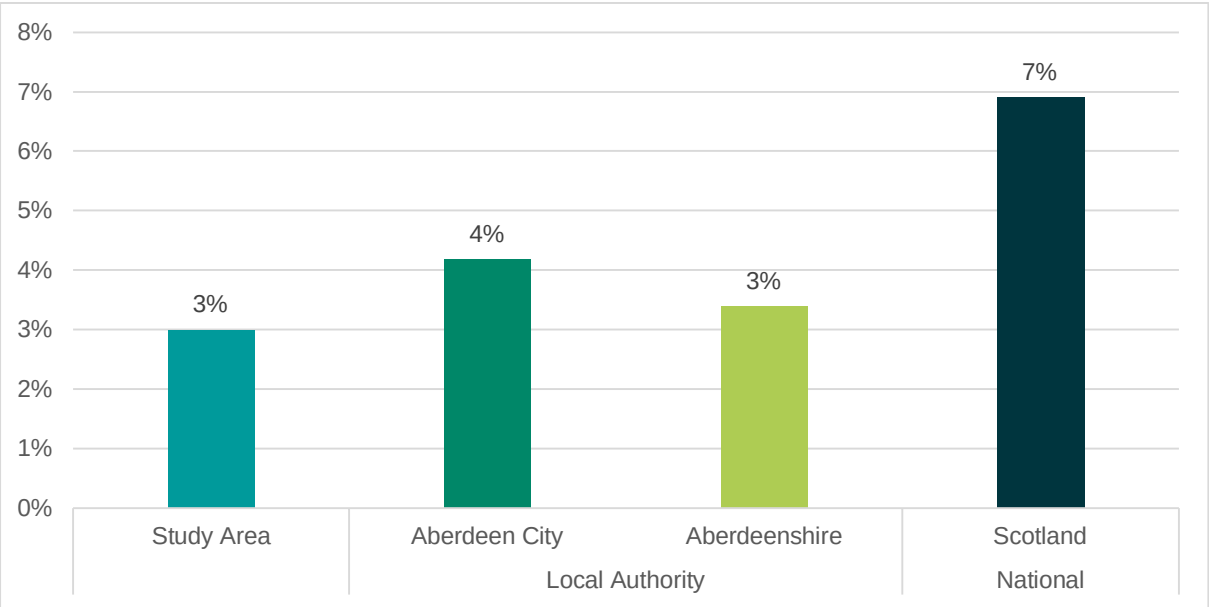


Figure 4.2: Unemployment Rate (Scotland Census 2011)

- The unemployment rate is low within the study area (3%) and is in line with the unemployment rates of Aberdeen City (4%) and Aberdeenshire (3%).
- The unemployment rate across the region as well as in the study area is significantly lower than the national average of 7%.

4.4.3 Industry

The diagram below shows employment by industry within the study area.

Figure 4.3: Employment by Industry (Source: BRES)

- **Figure 4.3** shows that the study area has high levels of employment in the Mining, Manufacture and Utilities industries. Aberdeen City and Aberdeenshire in general have high levels of employment in this sector, reflecting the importance of the oil and gas sector to the area.
- The study area also has a higher proportion of people employed in Transportation and Storage than both the national and local authority figures.
- The study area, in line with Aberdeen City and Aberdeenshire, has much lower levels of employment in the IT, Finance and Real Estate industries than the national average.
- The study area, in line with Aberdeen City and Aberdeenshire, has higher levels of people employed in Professional, Scientific and Technical Activities.

4.5 Car/Van Availability

The diagram below illustrates the availability of cars or vans in the study area.

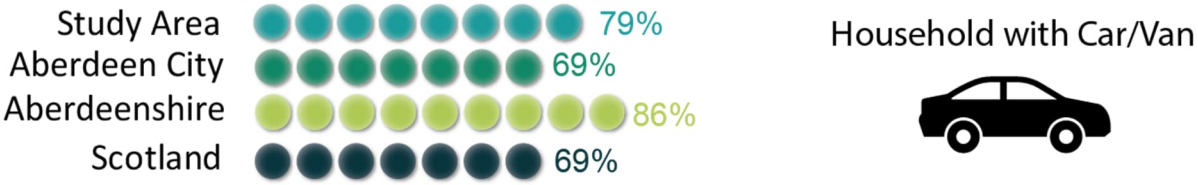


Figure 4.4: Car/Van Availability in the Study Area (Scotland Census 2011)

- There is a high car/van availability within the study area. The data shows that 79% of adults within the study area have access to a car or van, which is higher than the averages for Aberdeen City (69%) and Scotland (69%).

4.6 Scottish Index of Multiple Deprivation

The Scottish Index of Multiple Deprivation (SIMD) identifies small area concentrations of multiple deprivation across all of Scotland in a consistent way. In the diagram below, the most deprived areas within the study area are shown in red and the least deprived are shown in blue.

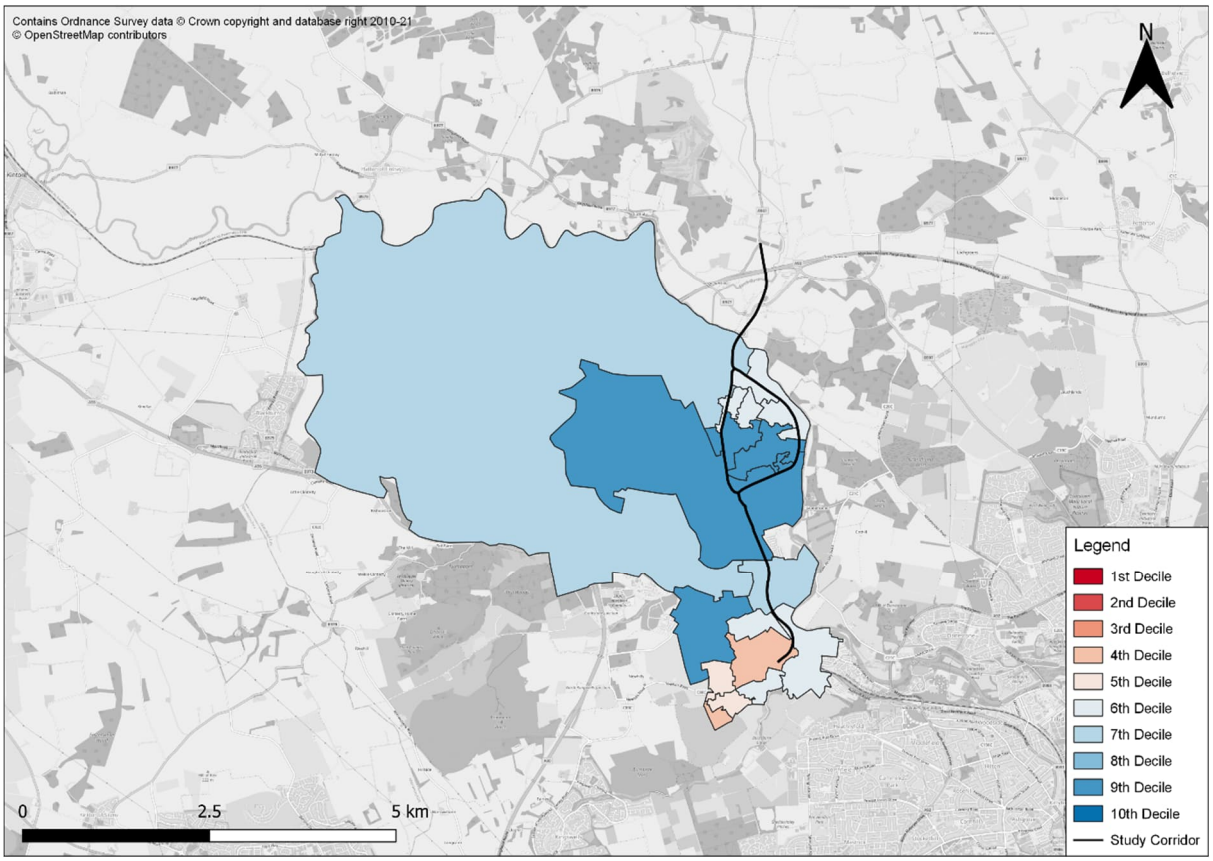


Figure 4.5: Scottish Index of Multiple Deprivation (2020)

- There are no data zones in the study area within the 20% most deprived in Scotland according to the 2020 SIMD figures. The most deprived areas within the study area are located in the south-west and are within the 40% most deprived areas in Scotland.
- The SIMD 2020 figures note that 77% of the data zones within the study area are located in the top 50% least deprived areas in Scotland.

4.7 Transport Poverty

Based on the 2016 'Transport Poverty in Scotland' report by Sustrans, data relating to household income and public transport travel time from the SIMD were used in conjunction with car/van availability from the 2011 Census and bus accessibility statistics to allocate a risk score to each data zone in Scotland. The diagram below provides an overview of the methodology[36] applied by Sustrans.

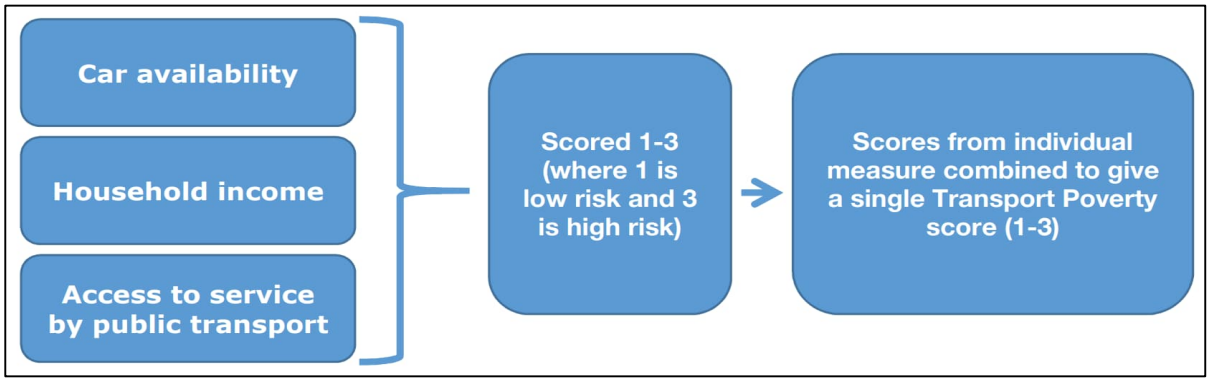


Figure 4.6: Transport Poverty Methodology[37]

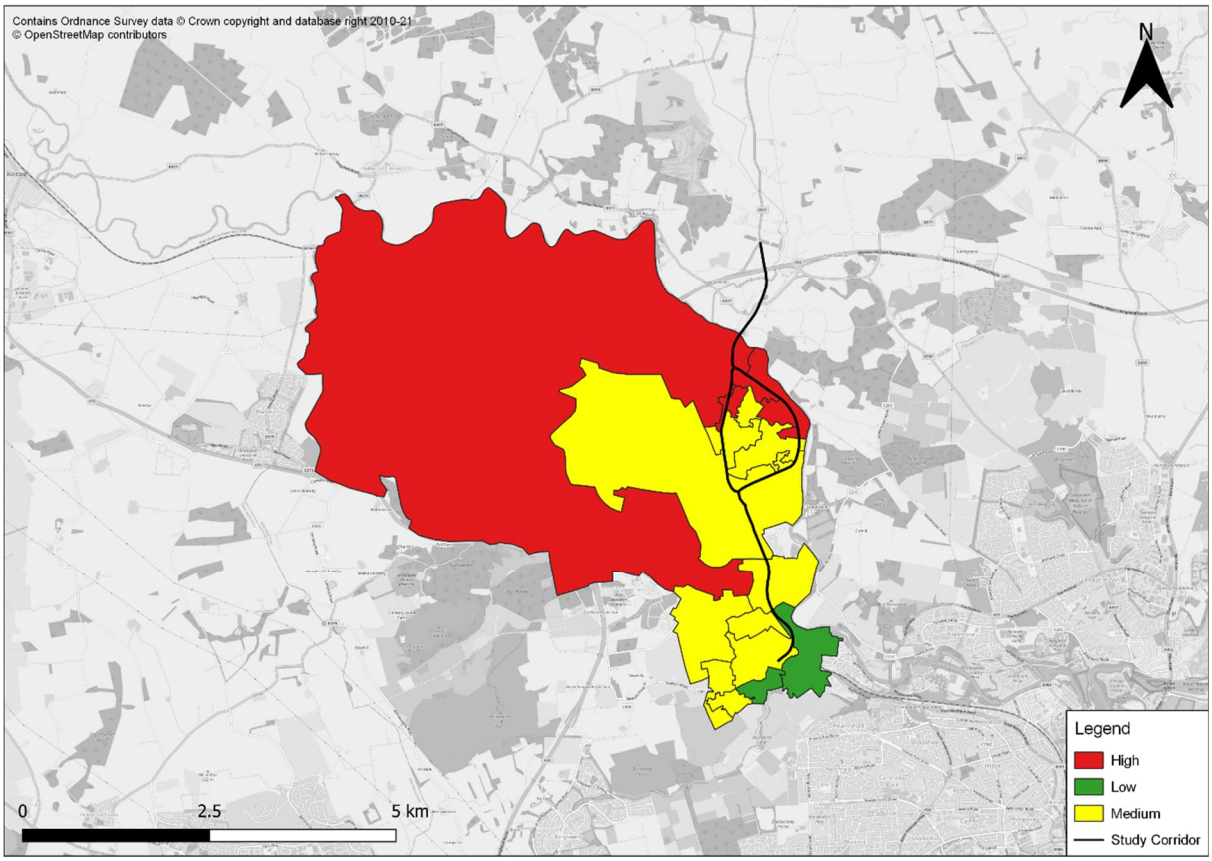


Figure 4.7: Risk of Transport Poverty within the Study Area

- 65% of the data zones in the study area are identified to be at medium risk of transport poverty.
- 24% of the data zones in the study area are identified to be at high risk of transport poverty. These data zones are located in the north-west of the study area and around the northern section of Riverview Drive.
- 12% of the data zones in the study area are identified to be at low risk of transport poverty. These data zones are located in the south-east of the study area in proximity to the A947/A96 roundabout.

[36] It should be noted that while the original work undertaken by Sustrans was based on SIMD 2012, SIMD 2020 has been used for the purposes of this study. Similarly, the original Sustrans approach used the frequency of public transport services to assess the access to services by public transport. This study has used the Scottish Government's Scottish Access to Bus Indicator (SABI) dataset, which provides a score for the accessibility of bus services in each data zone and provides an objective measure of accessibility to public transport by bus in Scotland. The latest SABI dataset (2019) has been used for the purposes of this study.

[37] https://www.sustrans.org.uk/media/2880/transport_poverty_in_scotland_2016.pdf

4.8 Healthy and Physical Activity

The diagram below shows the quality of general health of the population in the study area.

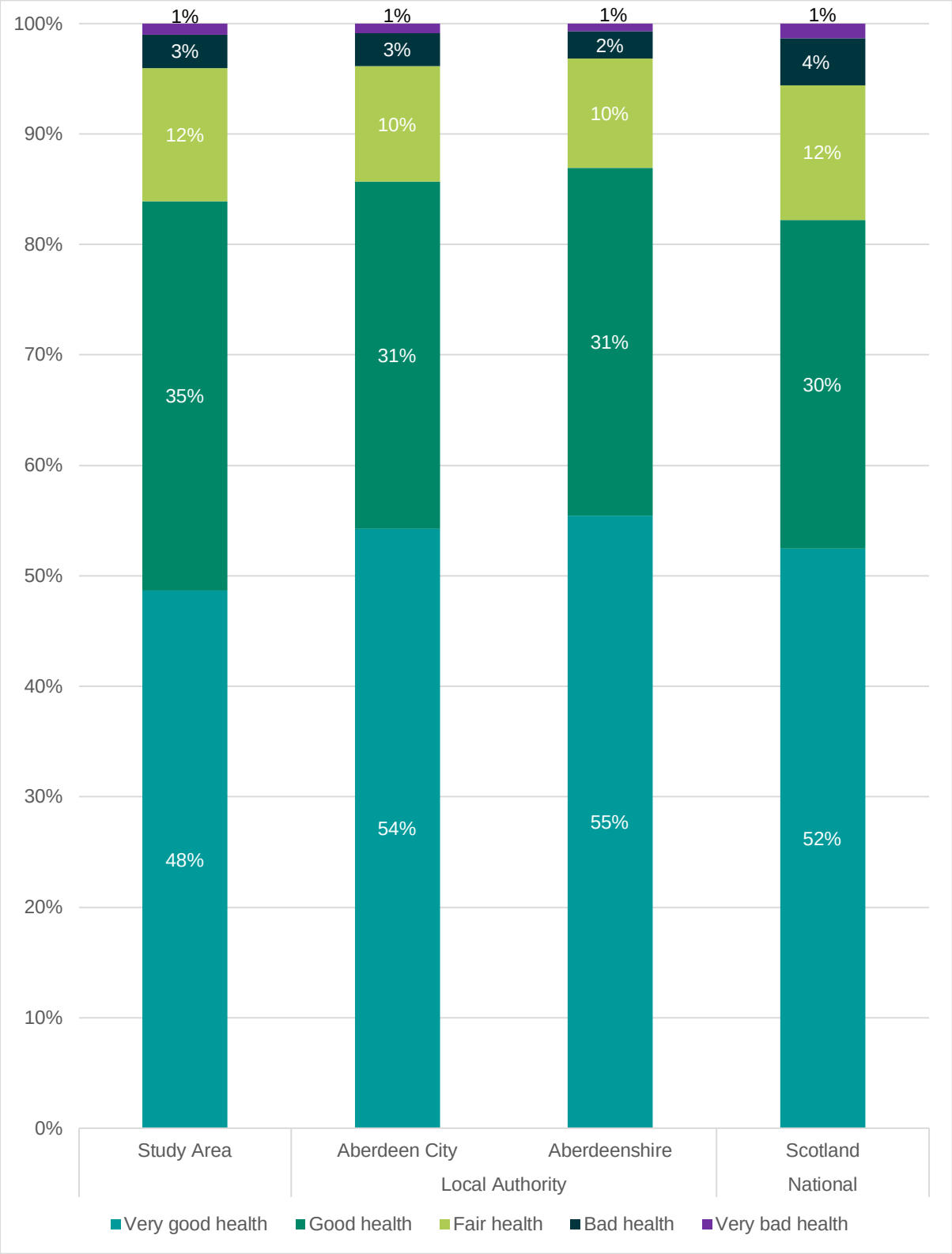


Figure 4.8: General Health (Scotland Census 2011)

- General health is shown to be good in the study area, with 83% reporting very good or good health. This is slightly lower than the average for Aberdeen City (85%) and the average for Aberdeenshire (86%), however it is higher than the average for Scotland (82%).

The diagram below shows the level of limitation experienced due to a long-term health problem or disability in the study area.

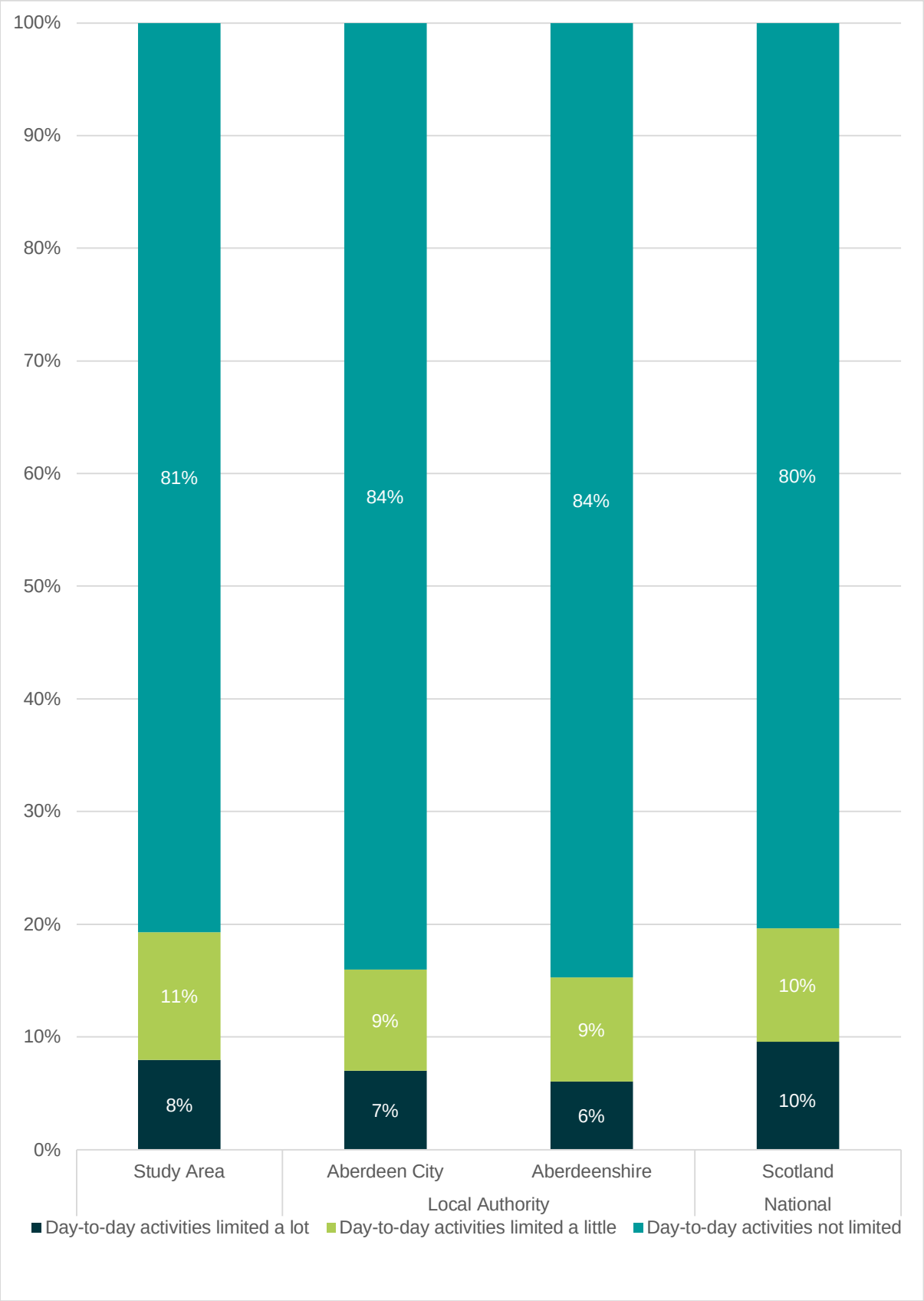


Figure 4.9: Long-Term Health Problem or Disability (Scotland Census 2011)

- At 19%, the proportion of those limited by a long-term disability or health problem in the study area is greater than the figures for Aberdeen City (16%) and Aberdeenshire (15%). The figure for the study area however is broadly in line with the national average of 20%.

5. Baseline Transport Conditions

5.1 Origin Destination Analysis

This section outlines travel to work destination information for residents in the study area based on information from the 2011 census. It should be noted that travel patterns are likely to have changed since the data was collected, particularly since the onset of the COVID-19 pandemic in March 2020. It is also noted that travel patterns are likely to have changed on the corridor due to the oil and gas downturn and the opening of the AWPR. Nevertheless, the information provided facilitates understanding of typical movements along the A947 corridor.

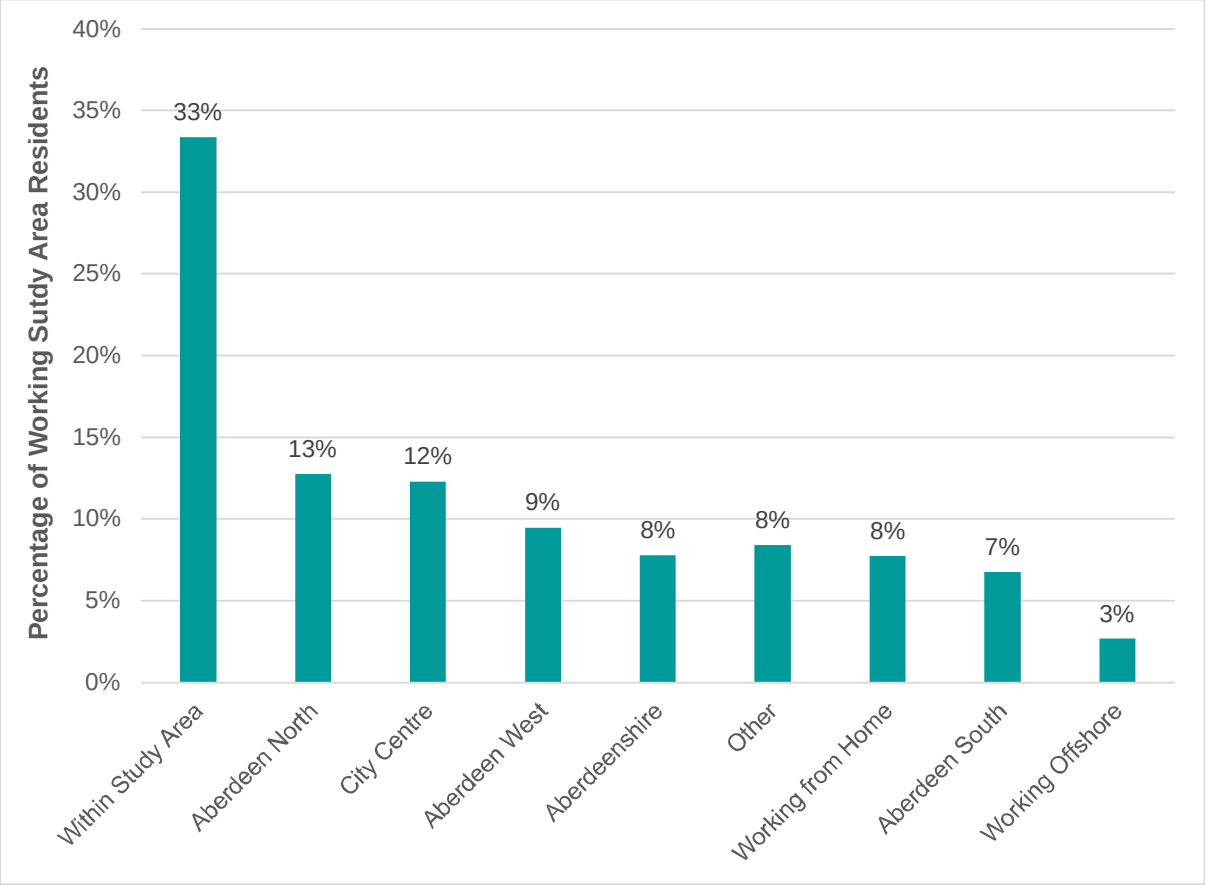


Figure 5.1: Study Area Travel to Work Destinations (Scotland Census 2011)

- The most common travel to work destination is within the A947 study area itself (33%), with an additional 8% who work from home.
- A total of 41% travel to work elsewhere in Aberdeen, including Aberdeen North (13%), the city centre (12%), Aberdeen West (9%) and Aberdeen South (7%).
- 8% of people travelling to work from the A947 study area travel to somewhere in Aberdeenshire.

5.2 Distance Travelled to Work

The diagram below shows the data for distance travelled to work in the study area.

Figure 5.2: Distance Travelled to Work in the Study Area (Scotland Census 2011)

- The vast majority of those within the study area, that do not work from home, work within 10km of their residence (80%). This is in line with the figure for Aberdeen City (82%) but is considerably higher than the national figure of 60%.
- Almost half of residents in the study area work less than 5km from their residence suggesting a significant opportunity to increase active travel as a means of travel to work.

5.3 Mode Share

The diagram below outlines the travel to work modal share for the study corridor. It should be noted that results are taken from the 2011 Census and it is expected that trends shown may have changed, particularly since the onset of the COVID-19 pandemic in early 2020.

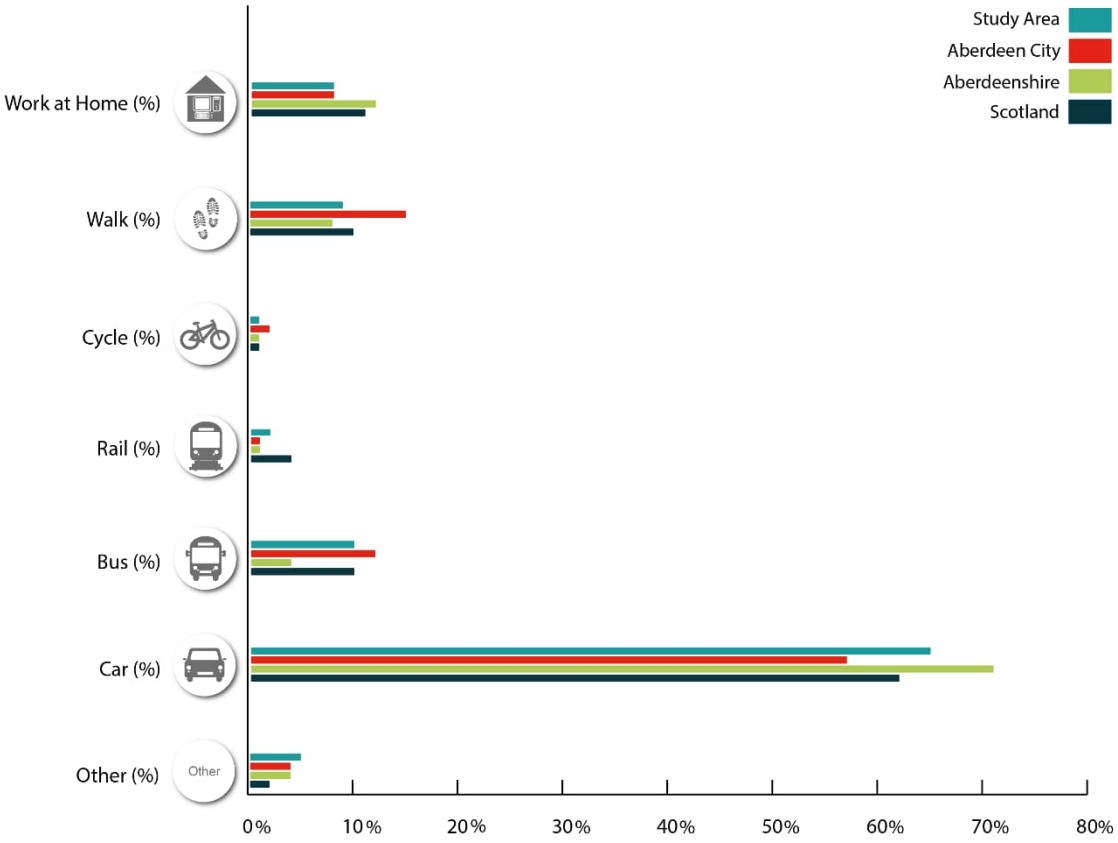


Figure 5.3: Travel to Work/Study Mode Share for the Study Corridor (Scotland Census 2011)

- The study area has a much lower mode share for walking (9%) than Aberdeen City (15%) but is broadly in line with the national figure (10%).
- Cycling mode share is low throughout the study area (1%) relative to the average for Aberdeen City (2%).
- Use of rail for travel to work is marginally higher in the study area (2%) than Aberdeen City (1%), reflecting the rail service that can be accessed from Dyce Rail Station. Rail mode share is lower than the national average (4%).
- Travel to work and study by bus in the study area (10%) is lower than the Aberdeen City average (12%) but is in line with the national average (10%).
- Car is the most used mode of transport for travel to work and study. The study area has a higher rate of travel to work and study by car (65%) than the average for Aberdeen City (58%) and the national average for Scotland (62%).

5.4 Active Travel

5.4.1 National Cycle Network

As shown in **Figure 5.4** below, the NCN1 features prominently in the area. NCN1 joins the study corridor in the south at Mugiemoss Road, routeing along Stoneywood Road, Riverview Drive and joining the F&B Way in the north of the study area. The route is mostly formed of traffic-free sections throughout the study area, with small sections of on-road provision.

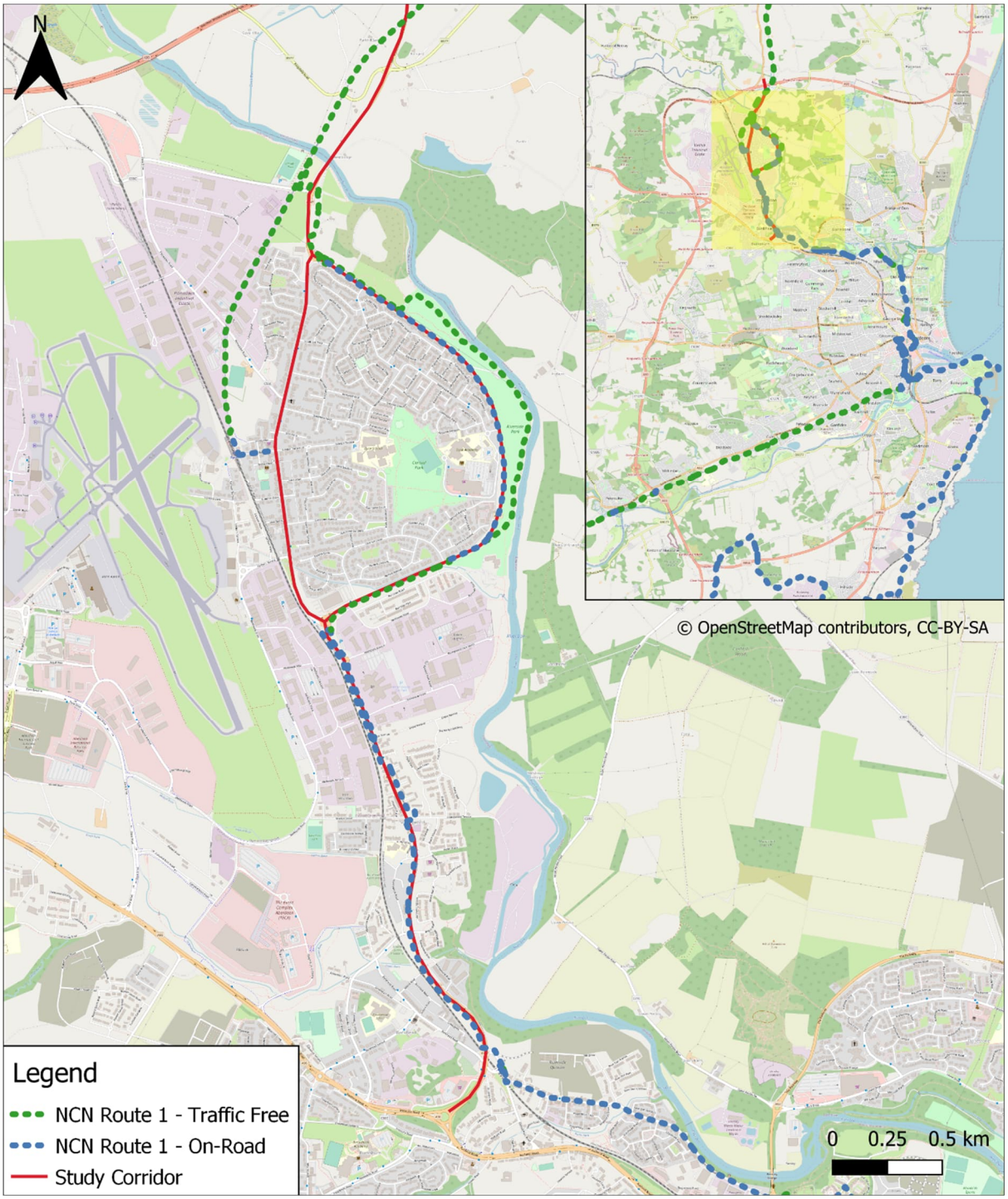


Figure 5.4: National Cycle Network

5.4.2 Core Paths

Figure 5.5 below outlines the location of core paths in Aberdeen City and Aberdeenshire located within the study area.

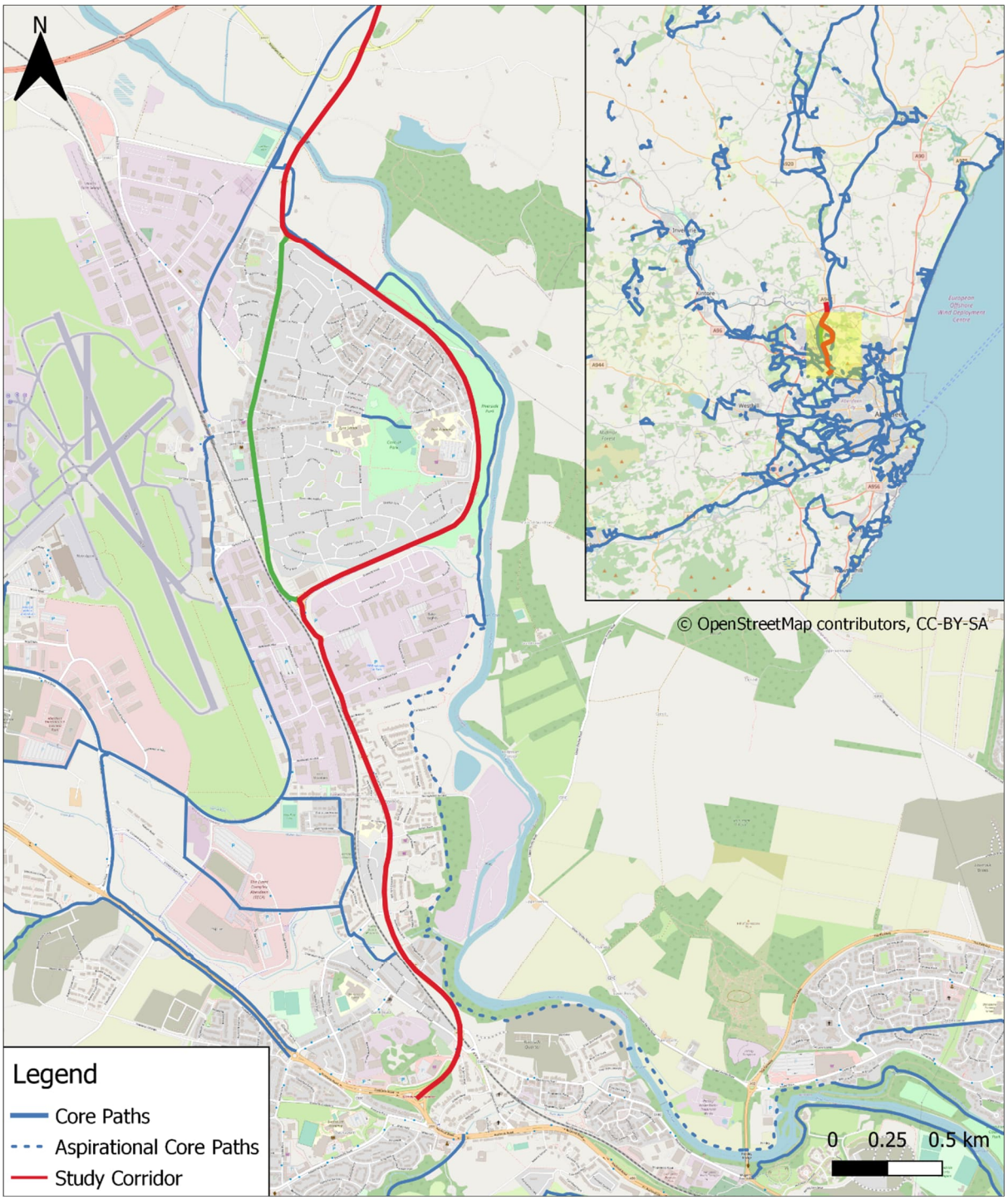


Figure 5.5: Core Paths within the Study Area

- Core paths provide connections to the industrial areas to the west of the study area and onwards to Aberdeen International Airport via Wellheads Drive. The F&B Way forms part of the core path network within Aberdeen City, as does the Riverside Path to the east of Riverview Drive.
- There is an aspirational core path crossing the River Don at Mugiemoss. This could present an opportunity to enhance east-west links between Dyce and the Grandholm and Bridge of Don areas and complement existing north-south walking and cycling routes in the area.

5.4.3 Active Travel Infrastructure

The existing active travel infrastructure within the study area is shown below.

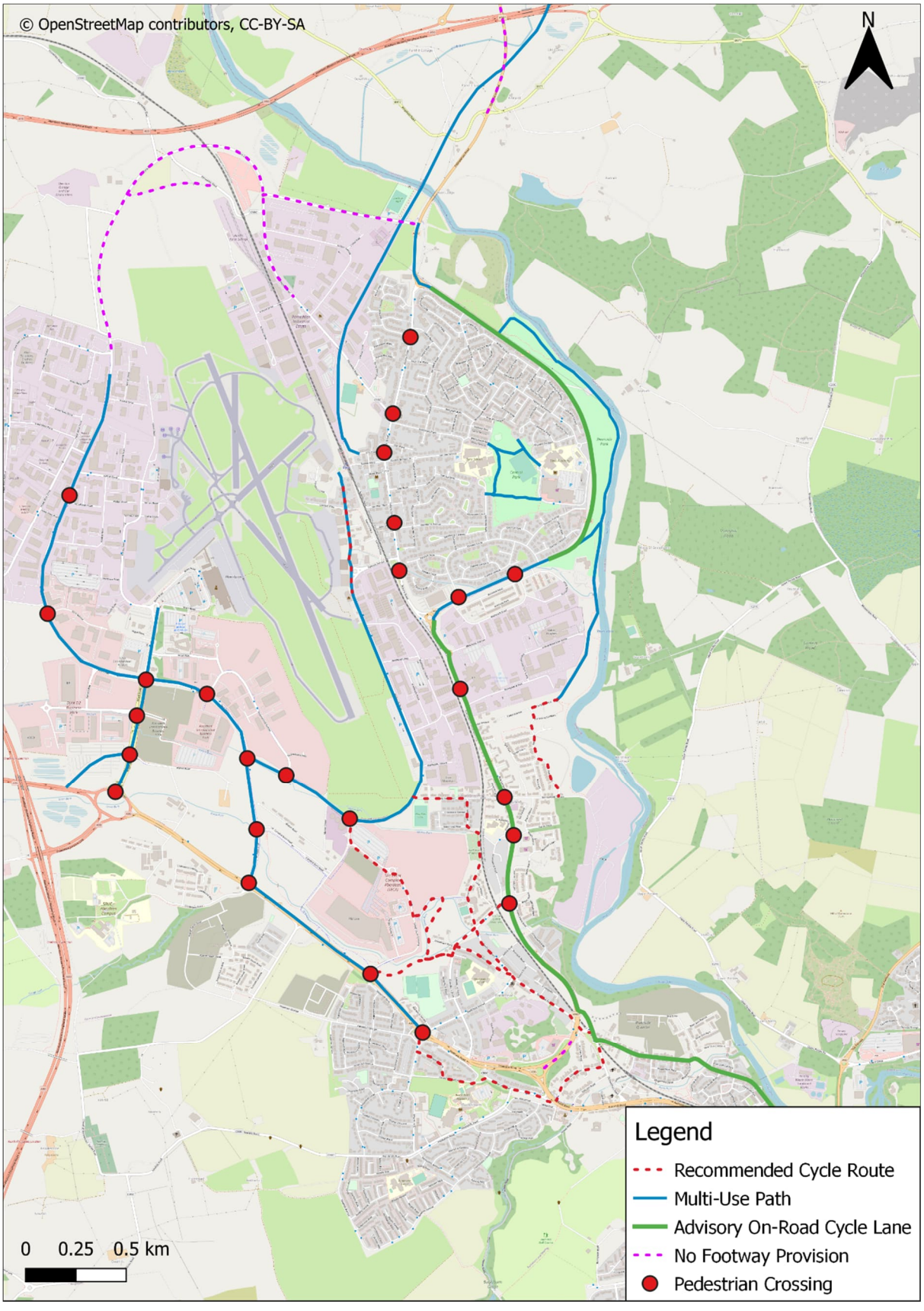


Figure 5.6: Active Travel Infrastructure within the Study Area

- There are a number of active travel routes within the study area, both on-road and off-road.

- The F&B Way and the Riverside Path provide key off-road infrastructure for pedestrians and cyclists in the north-west and east of the study area respectively.
- On-road advisory cycle lanes connect Mugiemoss Road in the south-east of the study corridor to the north of the study corridor via Stoneywood Road and Riverview Drive.
- Despite the introduction of retail facilities and significant housing development in recent years, there are few pedestrian crossing points on Stoneywood Road to facilitate movement.

5.4.4 Active Travel Counts

There are five active travel counters located in close proximity to the study corridor as shown in **Figure 5.7**. Analysis of the active travel counters has been undertaken, with key results presented in this section. Due to issues with the count technology throughout a number of the years under review, average daily pedestrian and cycle counts have been used for the analysis, with a snapshot of average daily counts from 2019 illustrated in the diagram below.

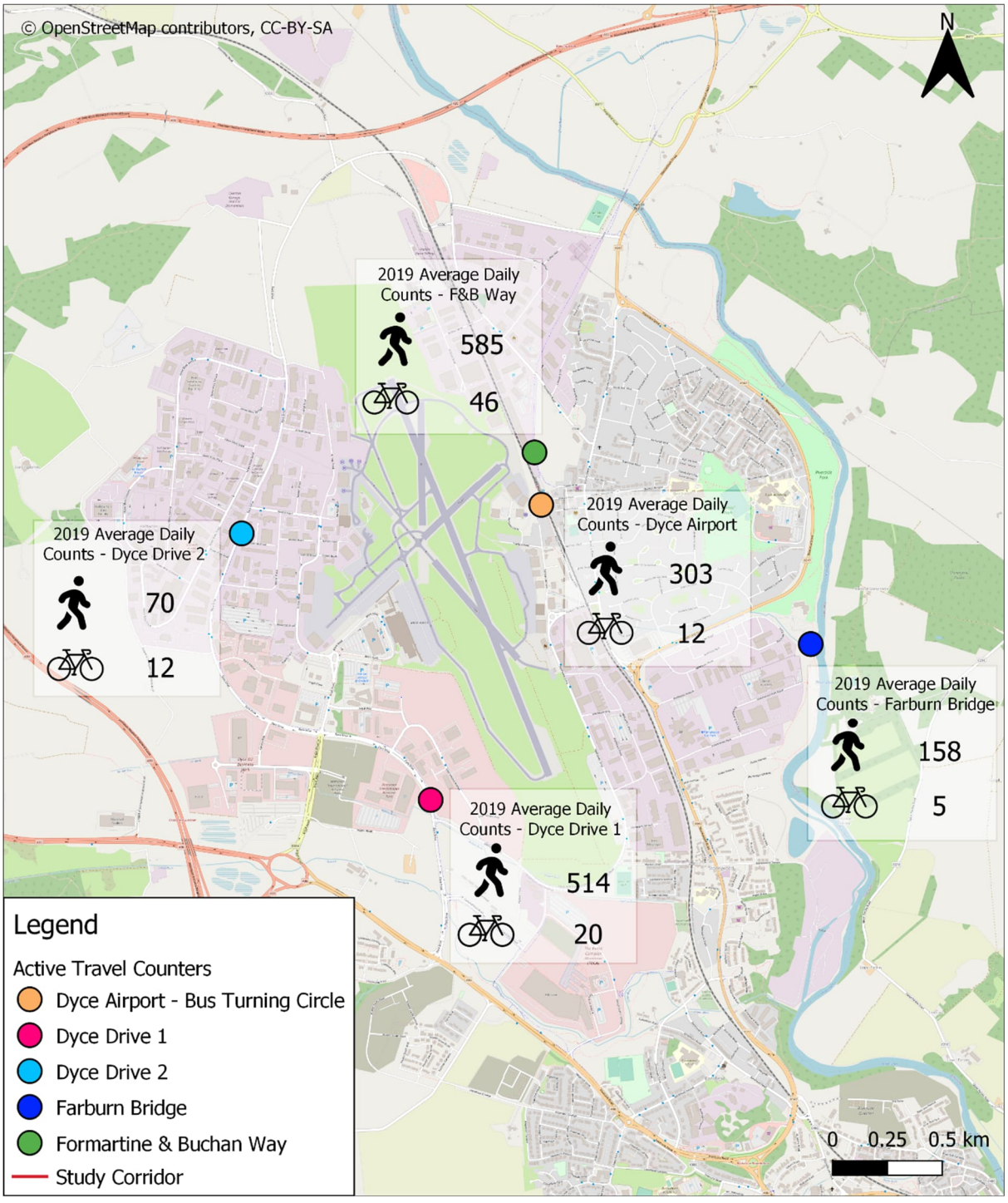


Figure 5.7: Active Travel Counters

Table 5.1: Average Daily Pedestrian Counts (2017-2021) (Source: ACC via Eco-Visio)

Site	Average Daily Pedestrian Count				
	2017	2018	2019	2020	2021
Dyce Airport	97	127	303	1,637	No Data
Dyce Drive 1	44	238	514	84	767
Dyce Drive 2	27	173	70	72	84
F&B Way	365	460	585	No Data	No Data
Farburn Bridge	No Data	No Data	158	332	319

- There has been high variability in the numbers of pedestrians recorded across all counters, reflecting issues with the count technology in many instances. Counter validation may support further understanding of active travel movements on the corridor.
- It can be seen that not all counters were operational for the five years investigated and that only partial data is available for some years at some counters.
- Despite the deficiencies in the data, it would appear that there have been increases in pedestrian activity at the counter locations, but this conclusion is difficult to base on evidence given these reliability concerns.
- Comparing the years with the highest counts at each site, the F&B Way and the Riverside Path (reflected in the Farburn Bridge counter) are well-used routes for pedestrians while high counts on Dyce Drive may reflect its importance as a pedestrian route.

Table 5.2: Average Daily Cycle Counts (2017-2021) (Source: ACC via Eco-Visio)

Site	Average Daily Cycle Count				
	2017	2018	2019	2020	2021
Dyce Airport	10	17	12	7	No Data
Dyce Drive 1	56	47	20	21	14
Dyce Drive 2	10	11	12	11	9
F&B Way	51	50	46	No Data	No Data
Farburn Bridge	No Data	No Data	5	33	18

- There is a degree of variability across some of the counters, reflecting issues with the count technology in some instances. It is observed that full year data is not available at some locations during certain years.
- The route with the highest count of cyclists is the F&B Way, which is expected due to its prominence as both a strategic and leisure cycling route.

5.5 Bus Services

5.5.1 Bus Operators

Aberdeen City has two main bus operators, with First Bus, who are based in Aberdeen, operating the majority of routes. Stagecoach operate in both Aberdeen City and Aberdeenshire, operating a number of inter-urban services and local services in Aberdeenshire. Both operators operate within the A947 study area.

Craibstone P&R is located to the south-west of the study corridor and is accessed from the eastbound lanes of the A96 and from Airport Road. It has capacity for 996 vehicles and includes waiting room facilities, showers, cycle lockers and cycle parking. It is understood that no services are currently operating via the site.

5.5.2 Bus Priority Infrastructure

There is no bus priority infrastructure on the A947 corridor within the study area. Buses utilise Stoneywood Road, Victoria Street and Riverview Drive but are not given priority over general traffic on any of these routes.

5.5.3 Local Bus Services

Within Aberdeen City, bus services cover the major routes into and around the city, as well as the main suburbs. Historically, services entering Aberdeen have been hub and spoke, with services focussed on accessing the city centre and requiring connections to other key destinations, such as Aberdeen Royal Infirmary (ARI). While a number of connections have been introduced in recent times to link key destinations without the need for interchange, direct connections and interchange opportunities outwith the city centre could be improved.

The First Bus services operating along the corridor include the 17, 17A, 18, 18A and 172. These services all connect the Dyce area to the city centre via the A96. The 17, 17A and 172 services travel to Dyce via Bucksburn while the 18 and 18A services leave the A96 at the Haudagain Roundabout, travelling along Mugiemoss Road and joining the A947 on Oldmeldrum Road. To the south of the city centre, the 17, 17A and 172 services follow a route down Polmuir Drive and eventually loop round Kincorth as their southern-most destination. The 18 and 18A routes travel through Kincorth but continue to Wellington Road, eventually serving Charleston and Cove.

Figure 5.8: First Bus Services Route Map (Source: First Bus Aberdeen)

The principal Stagecoach service operating along the study corridor is the Service 35, which provides a connection between Aberdeen, Banff and Elgin. It routes via the A947 corridor as shown below in **Figure 5.9**.

Figure 5.9: Stagecoach Services in the Study Area (Source: Stagecoach)

In addition to the First Bus and Stagecoach services, Bain's Coaches operate Service 305 between Oldmeldrum and Union Terrace in Aberdeen via Victoria Street in the study area.

The table below outlines the frequency of the key services operating on the study corridor.

Table 5.3: Frequency of Bus Services on the Study Corridor (Source: First Bus and Stagecoach)

Route	Description	Frequency		
		Monday to Friday	Saturday	Sunday
First Bus				
17/17A	Faulds Gate – Dyce	15-20 mins	20 mins	20 mins
18	Charleston – Dyce	20 mins	20-30 mins	No Service
172	Faulds Gate – Dyce	30 mins (evening)	30-40 mins (evening)	30-60 mins (evening)
Stagecoach				
35	Aberdeen – Banff & Elgin	Up to every 30 mins	Up to every 30 mins	Hourly
Bain's Coaches				
305	Oldmeldrum to Aberdeen	6 per day	No Service	No Service

5.5.4 Bus Fares

The bus fares for First Bus services are summarised in the **Table 5.4** below, focussing on the cheapest standard adult ticket option available. First Bus additionally has 'Tap & Cap' in place, which uses contactless payments to cap passengers' travel charges to ensure that customers never pay more than the price of a day ticket in a single day or a weekly ticket in a week.

Table 5.4: First Bus Fares (Source: First Bus Aberdeen)

	Online/App	On Bus
Single (based on a journey from Dyce to the city centre)	-	£2.70
FirstDay	£4.20	£4.40
FirstWeek	£16.99	£18.00
FirstMonth	£64.99	-
FirstAnnual	£699.00	-

The bus fares for local Stagecoach services are summarised in the table below. Fares are based on the cheapest standard adult return ticket option available for each journey.

Table 5.5: Stagecoach Bus Fares (Source: Stagecoach)

	City Centre	Dyce	Turriff	Macduff	Banff	Elgin
City Centre		£4.00	£14.00	£14.00	£14.00	£14.00
Dyce	£4.00		£14.00	£14.00	£14.00	£14.00
Turriff	£14.00	£14.00		£9.00	£9.00	£14.00
Macduff	£14.00	£14.00	£9.00		£1.80	£14.00
Banff	£14.00	£14.00	£9.00	£1.80		£14.00
Elgin	£14.00	£14.00	£14.00	£14.00	£14.00	

5.5.5 Bus Patronage

In recent years, there has been a trend of ongoing decline in bus use in Scotland, a trend also evident in the North East, albeit not to the same extent as in some other parts of the country. The North East Bus Alliance's 'Assessing the State of the Bus Network in Aberdeen and Aberdeenshire' report[38] notes that there has been a considerable drop in bus patronage in the region in recent years; in the order of 11% between 2015/16 and 2017/18, as illustrated in **Table 5.6**.

Table 5.6: North East Bus Patronage 2015/16-2017/18

	Total Patronage	Number of Concessionary Passengers	Proportion of Concessionary Passengers
2015/16	29.9 million	10.4 million	35%
2016/17	28.6 million	10.5 million	37%
2017/18	26.5 million	10.2 million	38%
% change from 2015/16	-11.2%	-3%	+3%

To provide a baseline of bus patronage along the corridor that can be monitored in future years to assess the impact of any interventions that are implemented, data was provided by the two main bus operators that service the A947 corridor.

The First Bus data represents Ticketer boarding data for the 17/17A/172 service and the 18 service along the following boarding stages: Stoneywood Road BP HQ; Farburn Terrace; Victoria Street; Gladstone Place and MacIntosh Court. The Stagecoach data includes passengers boarding within the study area for the 35 service.

Given commercial sensitivities, numbers have been presented as an index. FY2019/20 has been taken as the base year, as shown in **Table 5.7**.

[38] https://www.nestrans.org.uk/wp-content/uploads/2019/06/5aapp-State-of-the-Network-Report_Final.pdf

Table 5.7: Index of Year Patronage on A947 Corridor (19/20-20/21)

Financial Year	Index of Year Patronage on A947 Corridor	
	First Bus	Stagecoach
2019/20 (Base Year)	100	100
2020/21	38.4	35.7
2021/22	70.3	66.8

The significant decline in patronage in 2020/21 on the 2019/20 base year is attributed to the COVID-19 pandemic which placed significant restrictions on movement and discouraged use of public transport; consequently, contributing to a large decline in bus use. As shown in the table, bus use has recovered to an extent during 2021/22 although it remains significantly below that recorded during the 2019/20 base year.

The figure below provides an overview of bus patronage on the First services operating in the study area, indexed against the average weekly patronage during FY2019/20, highlighting the impact of the COVID-19 pandemic.

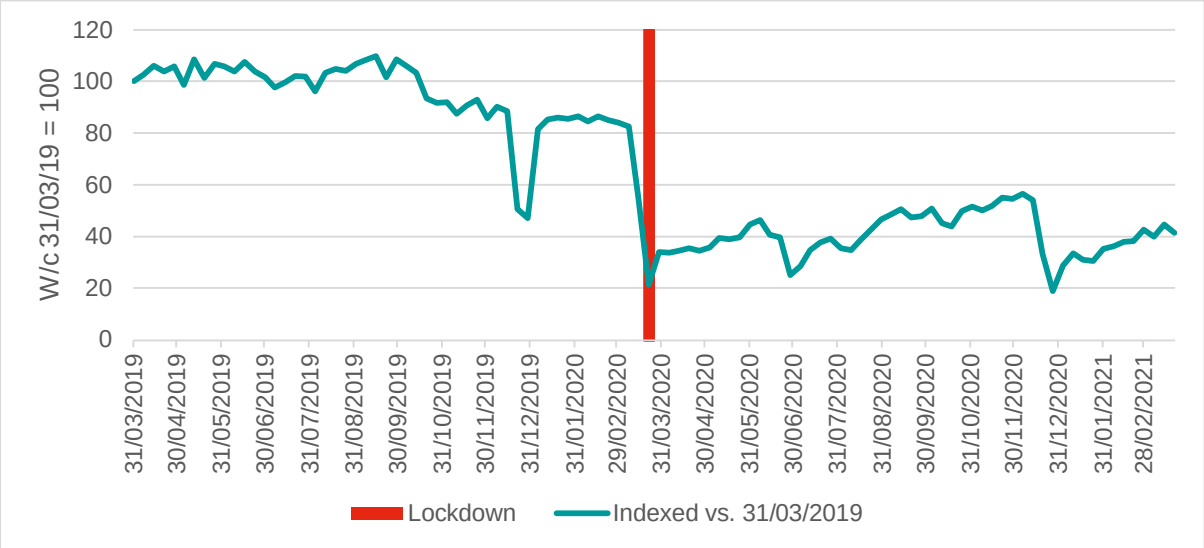


Figure 5.10: First Bus Patronage 2019-2021 Indexed vs. March 2019

The figure below provides an overview of bus patronage on the Stagecoach service in the study area, indexed against January 2019. It also highlights the significant impact that the pandemic has had on bus use on the corridor.

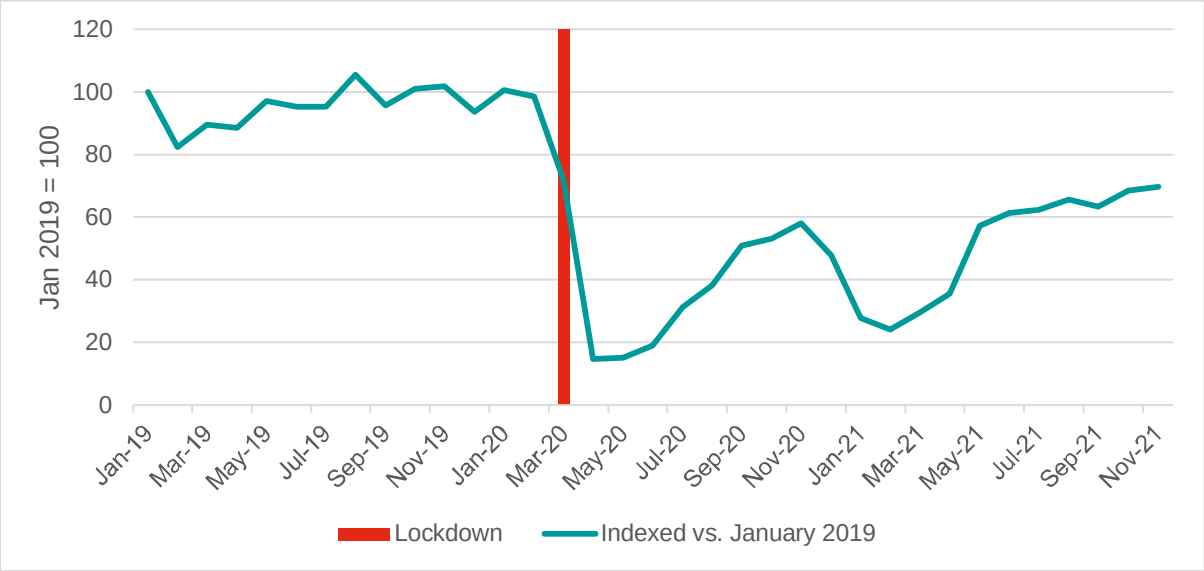


Figure 5.11: Stagecoach Bus Patronage 2019-2021 Indexed vs January 2019

5.5.6 Emissions

The 'Assessing the State of the Bus Network in Aberdeen and Aberdeenshire' report[39] includes information about average emissions by service. The main First Bus services on the corridor (17/18) run a fleet of Euro V vehicles, however it is intended that hydrogen double deckers will soon be operating on the services[40].

The Stagecoach 35 service is almost entirely operated by EuroVI+ standard double deckers, which feature "smart hybrid" systems to further improve emissions. Stagecoach additionally operates the JET 727 service in the vicinity of the study area, which is understood will soon be operating electric double deckers.

5.5.7 Bus Journey Times

The table below presents a selection of journey time changes for bus services along the study corridor between 2016 and 2019.

Table 5.8: Bus Journey Time Changes between 2016 and 2019

From	To	Service	Journey Time (Minutes)		% Change
			2016	2019	
Banff	Aberdeen	35	127	121	-4.7%
Banff	Aberdeen Royal Infirmary	35	107	106	-0.9%
Dyce	St Nicholas Kirk	18	59	47	-20.3%

- The key services on the corridor saw significant journey time reductions between 2016 and 2019. As shown, the First Bus 18 service between the study corridor and the city centre showed a decrease in journey times of approximately 20% between 2016 and 2019.
- The Stagecoach 35 service also exhibited journey time reductions of between approximately 1% and 5% depending on destination.
- The time savings on both services were likely due to the opening of the AWPR.

5.6 Bus Journey Time Variability

5.6.1 First Bus

A high-level analysis of bus stop reliability (delay and dwell times) has been conducted across ten stops serving First Bus services along the A947 corridor. **Figure 5.12** illustrates the location of these stops with the average recorded delay at each. **Table 5.9** shows a summary of the average length of delay as well as the dwell times at each stop.

It should be noted that:

- All times are in seconds;
- The data is for March to June 2019 (inclusive) and the data presents both delay and dwell times as day averages, therefore the average delay/dwell figures have been calculated subsequent to this across all months;
- There are eight bus services recorded as serving the stops (Service 17, 17A, 17B, N17, 18, 18A, 117 and 172) – the analysis has not been split by service number;
- A negative delay value at a stop is assumed to indicate that previously delayed services are generally (i.e. on average) able to recoup time at that stop;
- Victoria Street at McIntosh Crescent (ATCO639004751) is associated only with service #N17, a night only service and Stoneywood Road at Riverview Drive (ATCO639004702) is associated only with service #117, an airport service; and
- Services 17B, N17, 18A and 117 were subsequently cancelled or suspended as a result of COVID-19.

[39] https://www.nestrans.org.uk/wp-content/uploads/2019/06/5aapp-State-of-the-Network-Report_Final.pdf
[40] It should be noted that the fleet of hydrogen buses operating on First Service 19 was taken off service in February 2022 due to a technical issue.

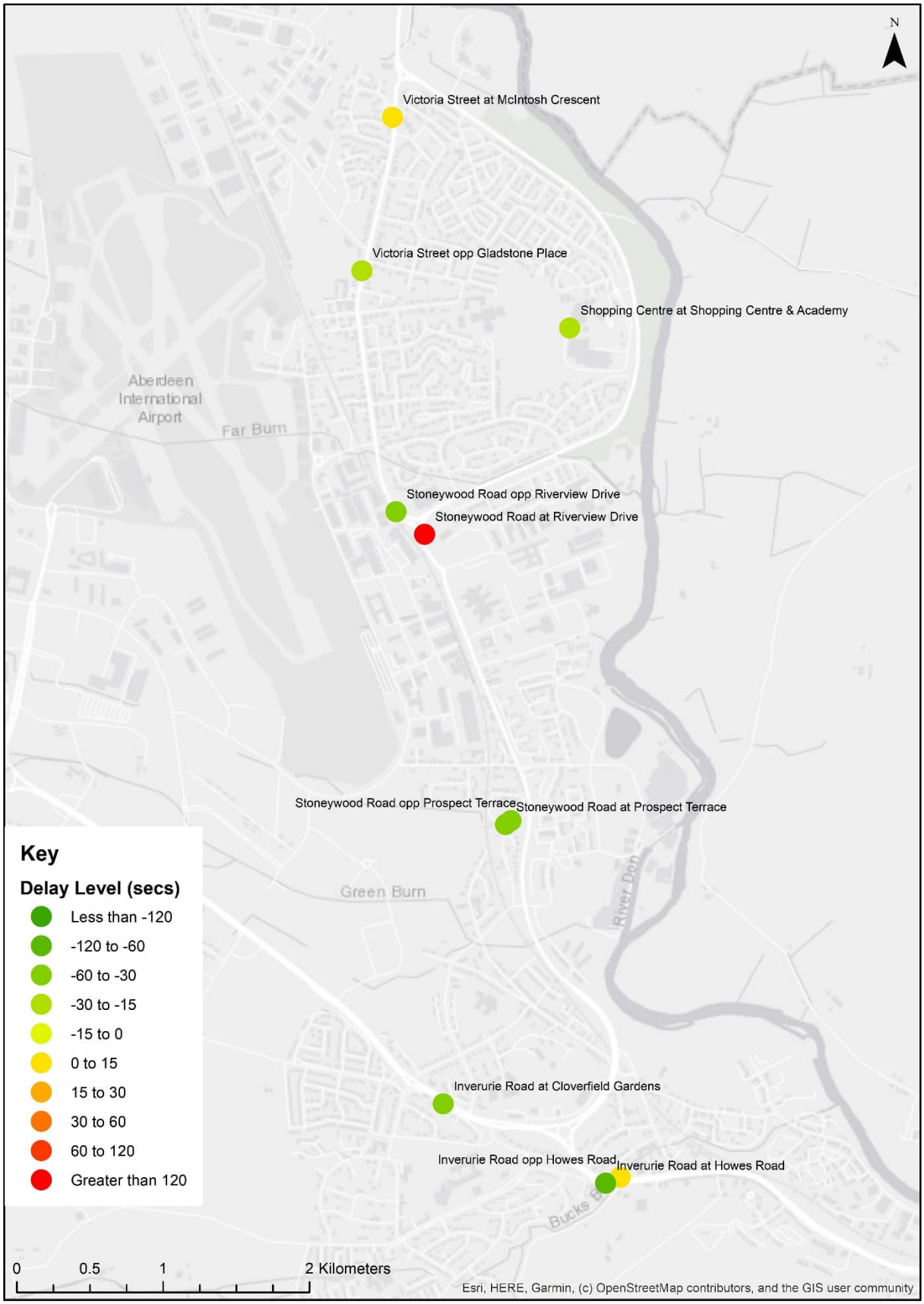


Figure 5.12: Average Delay at Bus Stops on A947 Corridor

Table 5.9: Average Length of Delay and Dwell Time at Bus Stops on A947 Corridor

Stop Name / Location	Delay		Dwell	
	Direction(s)	Average Delay (seconds)	Direction(s)	Average Dwell (seconds)
Inverurie Road opp Howes Road	Inbound	6	Inbound	16
Inverurie Road at Howes Road	Both	-83	Both	32
Inverurie Road at Cloverfield Gardens	Outbound	-46	Outbound	0
Stoneywood Road at Prospect Terrace	Outbound	-41	Outbound	27
Stoneywood Road opp Prospect Terrace	Inbound	-56	Inbound	26
Stoneywood Road opp Riverview Drive	Inbound	-57	Both	20
Stoneywood Road at Riverview Drive[41]	Inbound	170	Inbound	21
Victoria Street opp Gladstone Place	Outbound	-29	Outbound	29
Victoria Street at McIntosh Crescent[42]	Inbound	1	Both	17
Shopping Centre & Academy	Inbound	-22	Inbound	102

Stoneywood Road at Riverview Drive (located on the southbound carriageway of Stoneywood Road) is recorded as having the most significant delays on average across the bus stops. This stop serves only Service 117, routeing from the airport via Wellheads Drive – Farburn Terrace – A947 Victoria Street. The level of delay at this location could therefore be an indicator of frequent congested traffic southbound along Victoria Street or it might be indicative of a more general pattern of delays coming from the airport. The dwell time at this location is broadly average across the stops.

Inverurie Road at Howes Road (located on the westbound carriageway of the A96) is recorded as having the least delays across the stops. This could be an indicator that time is generally able to be recouped at this location due to the relatively higher traffic flows along the dualled A96 westbound. The dwell time at this location is very slightly higher than the average across the stops. There is no correlation between the length of delay at each stop and the dwell time at that stop.

The variance in delay times between the months ranges from five seconds at the Shopping Centre & Academy to 42 seconds at Stoneywood Road opposite Riverview Drive. The variance in dwell times ranges from two seconds at Inverurie Road opposite Howes Road to 10 seconds at Victoria Street at McIntosh Crescent.

5.7 Journey Time Analysis

A high level comparison of journey times by car, bus and cycle to key destinations has been undertaken using Google Maps. This analysis considered inbound journeys arriving by 09:00 on Tuesday 25th January 2022 and return journeys leaving after 17:00 on Tuesday 25th January 2022.

Table 5.10: Car, Bus and Cycle Journey Time Analysis

	Car Journey Times (mins)	Bus Journey Times (mins)	Cycle Journey Times (mins)
Inbound (from Victoria Street/Station Road Junction)			
Aberdeen Bus Station	30	43	37
Aberdeen Royal Infirmary	22	38	29
Newmachar	10	16	29
Robert Gordon University	40	59	43

[41] Airport service #117 only – now withdrawn
[42] Night only service #N17 only – now withdrawn

	Car Journey Times (mins)	Bus Journey Times (mins)	Cycle Journey Times (mins)
University of Aberdeen	22	37	28
Outbound (to Victoria Street/Station Road Junction)			
Aberdeen Bus Station	35	45	38
Aberdeen Royal Infirmary	24	33	29
Newmachar	10	13	24
Robert Gordon University	40	52	47
University of Aberdeen	24	42	32

The following table includes a selection of destinations which are located within or in close proximity to the study area and therefore are deemed to be walkable from within Dyce.

Table 5.11: Car, Bus, Cycle and Walking Journey Time Analysis

	Car Journey Times (mins)	Bus Journey Times (mins)	Cycle Journey Times (mins)	Walk Journey Times (mins)
Inbound (from Victoria Street/Station Road Junction)				
Aberdeen Airport	9	44	14	53
Craibstone P&R	10	51	14	52
Dyce Rail Station	1	-	1	2
Kirkhill Industrial Estate	6	20	13	49
The Event Complex Aberdeen (TECA)	10	20	11	37
Outbound (to Victoria Street/Station Road Junction)				
Aberdeen Airport	9	42	13	52
Craibstone P&R	12	45	15	53
Dyce Rail Station	1	-	1	2
Kirkhill Industrial Estate	7	19	12	47
The Event Complex Aberdeen (TECA)	9	20	10	37

- Journey times are generally longer by bus than car and often significantly so. This is particularly notable for destinations which require an interchange (e.g. to Robert Gordon University) as direct services are not available.
- For destinations within the study area or in close proximity, cycle journey times are shown to be significantly shorter than the respective bus journey times. For some destinations, walking journey times are similar to the bus or slightly longer.
- Across all routes, journey times by bus were found to be 199 minutes longer than journey times by bike and 308 minutes longer than journey times by car.

5.8 Rail Services

Within the study area, Dyce Rail Station is located on the Aberdeen to Inverness line. Dyce is a stop on the Aberdeen to Inverness service, Montrose to Inverurie service and services further south can be accessed via Aberdeen. The table below shows the approximate frequency of each of these services.

Table 5.12: Frequency of Services from Dyce Rail Station (Source: National Rail)

Destination	Frequency
Aberdeen	Approximately 40 services daily
Inverness	Approximately 10 services daily
Inverurie	Approximately 35 services daily
Montrose	Approximately 30 services daily

5.9 Road Network

5.9.1 Overview

The A947 study corridor between the A96/A947 Junction and the AWPR Parkhill Junction is comprised of three key road links, as shown in **Figure 5.13** below.

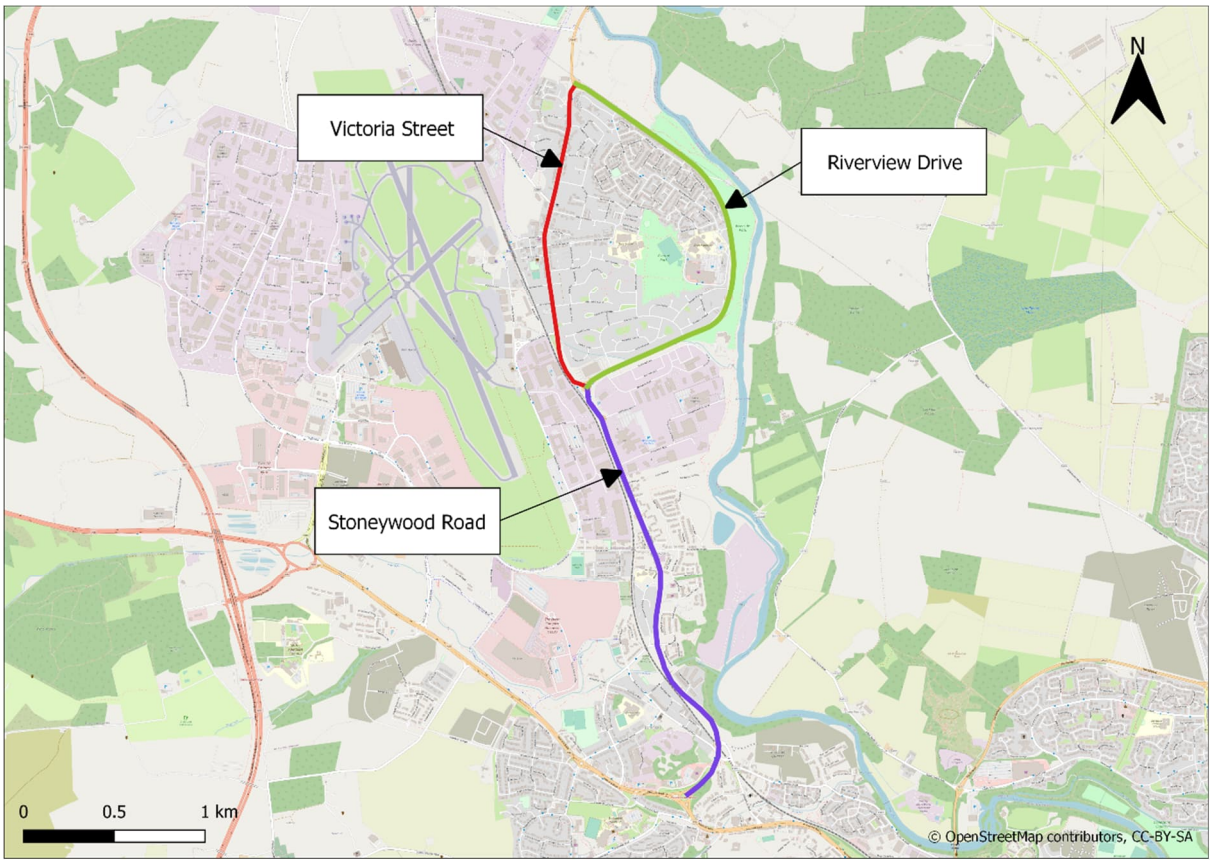


Figure 5.13: Road Network

- **Stoneywood Road** comprises the section of the corridor between the A96/A947 Junction and the Stoneywood Road/Riverview Drive roundabout. This section is approximately 2.5km long and is a two-lane single carriageway for the majority, with the exception of a short dual carriageway section at its southern end. This section has a speed limit of 40mph at its southern end which changes to 30mph approximately 500m north of the A96/A947 roundabout. This section provides access to the residential areas in the south of Dyce, as well as retail space and offices, including the Dyce headquarters of BP.
- **Riverview Drive** is a two-lane single carriageway section of the study corridor which forms a loop around the east of Dyce, bypassing Victoria Street. It has a speed limit of 40mph and, as well as serving as a bypass of Dyce, provides access to Dyce Shopping Centre and to the residential areas in the east of Dyce. Riverside Park, a popular area for leisure activities, is also accessed from Riverview Drive. The road was redesignated as the A947 in the update to the ACC roads hierarchy in 2020.
- **Victoria Street** forms the main thoroughfare through Dyce, containing a mix of retail units, restaurants and residential properties fronting onto the street. It is a two-lane single carriageway with a speed limit of 30mph and provides access to a number of key destinations in the area including Dyce Rail Station, the F&B Way and Aberdeen Heliport. Additionally, this section connects to Pitmedden Road and Wellheads Drive both of which facilitate movements to the business parks and industrial estates to the west of Dyce. Victoria Street was declassified from an A-class route (i.e. the A947) in the update to the ACC roads hierarchy and is now a tertiary route.

5.9.2 Traffic Volumes

Automatic traffic count (ATC) data from Stoneywood Road on the study corridor was supplied by ACC. The information covers the period 2019-2021 and provides the baseline level of traffic found on the corridor. The effects of the COVID-19 pandemic on traffic movements are evident, particularly throughout 2020.

Table 5.13: Traffic Count Data from Stoneywood Road (Source: ACC)

Month	Average Daily Traffic Flows in Both Directions				
	2019	2020	2021	% Change (2020-2021)	% Change (2019-2021)
January	14,707	14,068	8,977	**-36%**	**-39%**
February	15,434	14,578	10,026	**-31%**	**-35%**
March	15,081	11,709	11,345	**-3%**	**-25%**
April	14,894	6,153	12,045	**96%**	**-19%**
May	15,001	7,596	12,489	**64%**	**-17%**
June	15,001 (est.)	9,983	12,883	**29%**	**-14%**
July	15,001 (est.)	11,112	12,198	**10%**	**-19%**
August	14,886	10,814	12,652	**17%**	**-15%**
September	14,825	11,941	12,750 (est.)	**7%**	**-14%**
October	14,484	12,039	12,167 (est.)	**1%**	**-16%**
November	15,079	12,172	12,968 (est.)	**7%**	**-14%**
December	13,934	11,768	12,123 (est.)	**3%**	**-13%**

- The average daily traffic flows were lower throughout each month of 2021 relative to 2019. This may reflect the continued impact of the COVID-19 pandemic on travel patterns (e.g. increased working from home).
- From April onwards, traffic flows for 2021 were higher than 2020.

The automatic traffic counter (ATC) on Stoneywood Road also collects weekly average two-way daily traffic flow data for the A947 corridor which is shown in **Figure 5.14** below; from March 2020 to August 2021.

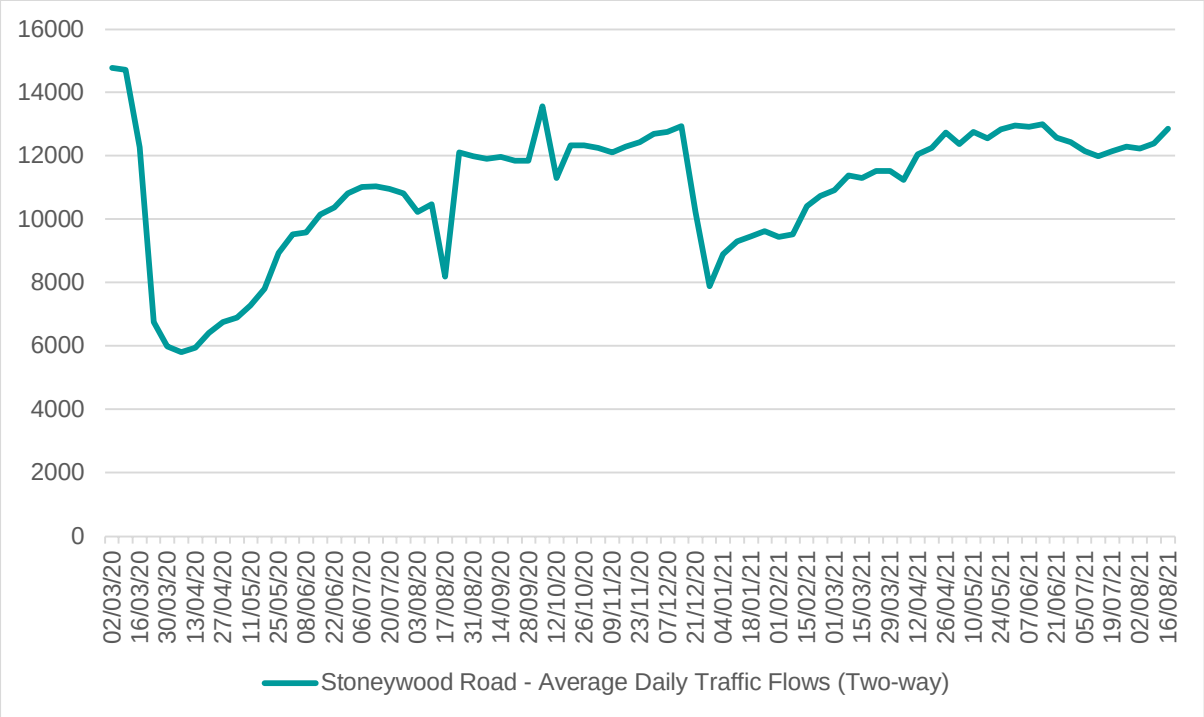


Figure 5.14: ATC Weekly Summary – Average Daily Traffic Flows (Source: ACC)

- The above diagram highlights the significant impact that the initial lockdown in March 2020 had on traffic volumes along the corridor, dropping to a low of 5,820 for the week commencing 6th April 2020 (a 60% drop in the flows recorded at the start of March).

- Traffic flows have steadily increased since the low point in April, reaching a high of 13,558 in October 2020.
- The second lockdown period following Christmas 2020 saw another steep decline in traffic on the corridor of 39%, reaching a low of 7,874 two-way vehicle flows.
- Vehicle flows have steadily increased through 2021 since the lockdown period, reaching a high of 12,997 in June 2021.

5.9.3 Road Safety

The table and corresponding figure below show the number and location of slight, serious and fatal road incidents involving pedestrians, pedal cycles, and buses as well as all vehicles between 2016 and 2020 along the study corridor.

Table 5.14: Road Safety Incidents along Study Corridor (2016-2020)[43]

	Pedestrians			Pedal Cycles			Buses			All Vehicles		
	Slight	Serious	Fatal	Slight	Serious	Fatal	Slight	Serious	Fatal	Slight	Serious	Fatal
2016	0	0	0	0	0	0	0	0	0	0	0	0
2017	1	0	1	0	0	0	0	0	0	2	0	1
2018	0	0	0	1	1	0	0	0	0	1	1	0
2019	0	0	0	0	1	0	0	0	0	2	1	0
2020	0	2	0	0	0	0	0	0	0	0	2	0

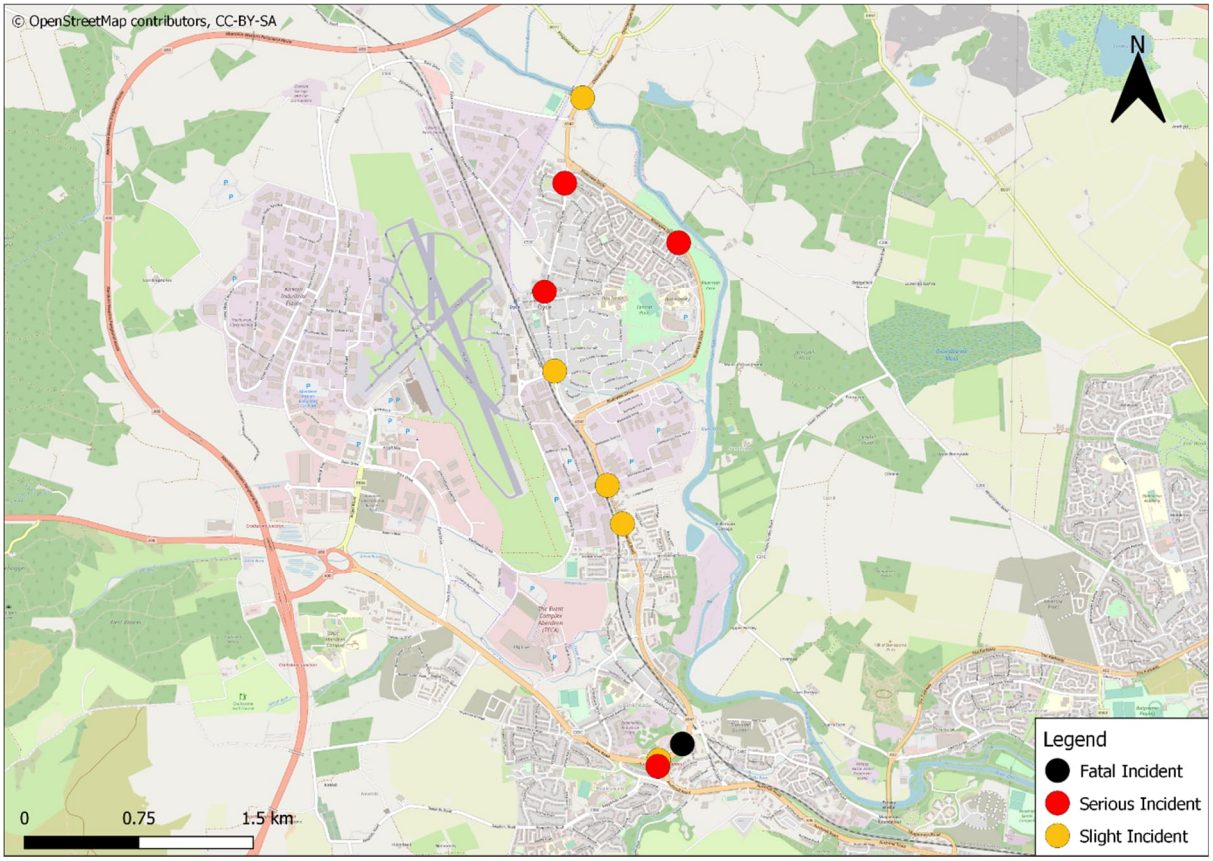


Figure 5.15: Road Safety Incidents along the Study Corridor (2016-2020)

- One fatal incident occurred during the 2016-2020 time period which involved a pedestrian in 2017. The incident occurred just north of the A96/A947 Junction.
- Seven incidents were recorded and marked as “slight” in nature and four were marked as “serious” in nature over the five-year period.

[43] Created using information from CrashMap - https://www.crashmap.co.uk/

5.9.4 Car Sharing

Nestrans supports a carshare database[44] through Getabout, where a number of organisations can use their own private groups within the scheme. The total number of participants signed up to this scheme has generally been increasing year on year since 2007/08 from 811 to 3,547 in 2019/20, an increase of 337% as reported in the latest Nestrans monitoring report[45]. It is possible that actual numbers of those car sharing is higher than reported numbers due to the amount of informal car sharing that takes place between work colleagues in the region. Whilst car sharing has been discouraged throughout the COVID-19 pandemic, it is unclear how the impacts of the pandemic will be reflected in car sharing levels in future monitoring years.

5.9.5 Electric Vehicles

The diagram below outlines the number of licensed ultra-low emission vehicles (ULEVs)[46] within the AB21 postcode area which covers the study area since the beginning of 2014.

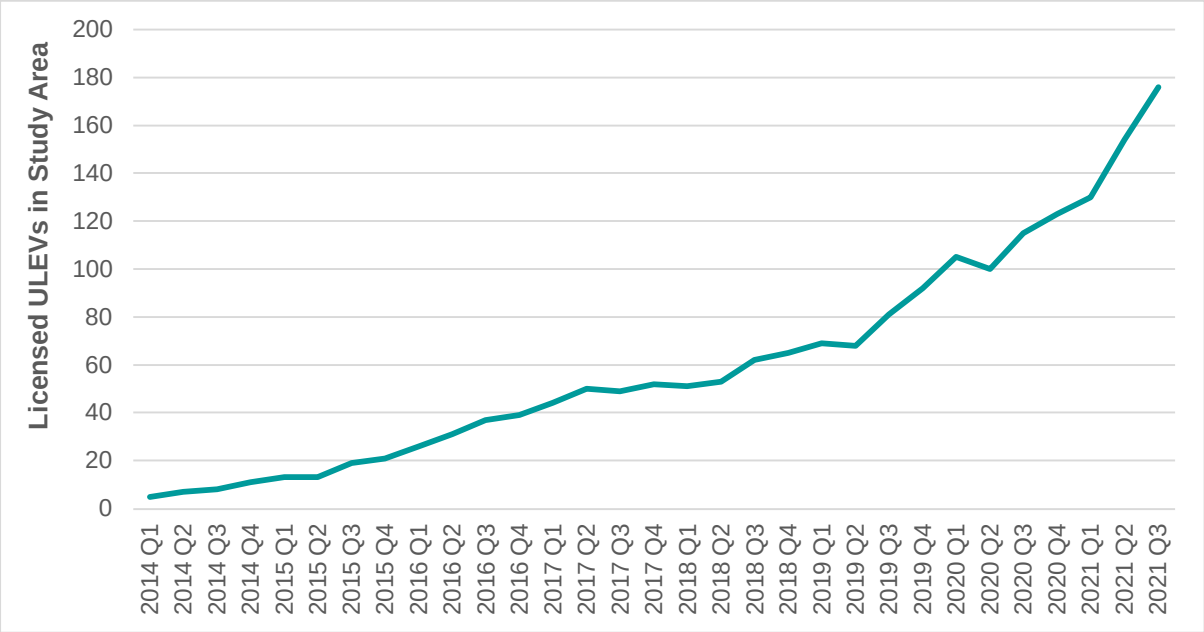


Figure 5.16: Ultra-Low Emission Vehicles Licensed in the AB21 Postcode Area 2014-2021[47]

- There has been a significant increase in the number of licensed ultra-low emission vehicles in the study area in recent years to a high of 175 in Q3 of 2021.

[44] https://liftshare.com/uk/community/getabout
[45] https://www.nestrans.org.uk/wp-content/uploads/2020/07/Monitoring-report-2020.pdf
[46] Ultra-low emission vehicles (ULEVs) are vehicles that are reported to emit less than 75g of carbon dioxide (CO_2) from the tailpipe for every kilometre travelled. In practice, the term typically refers to battery electric, plug-in hybrid electric and fuel cell electric vehicles.
[47] Department for Transport, Table VEH0134a, https://www.gov.uk/government/statistical-data-sets/all-vehicles-veh01

The diagram below shows the location of EV charging infrastructure in relation to the study corridor and ACC area based on ChargePlace Scotland data.

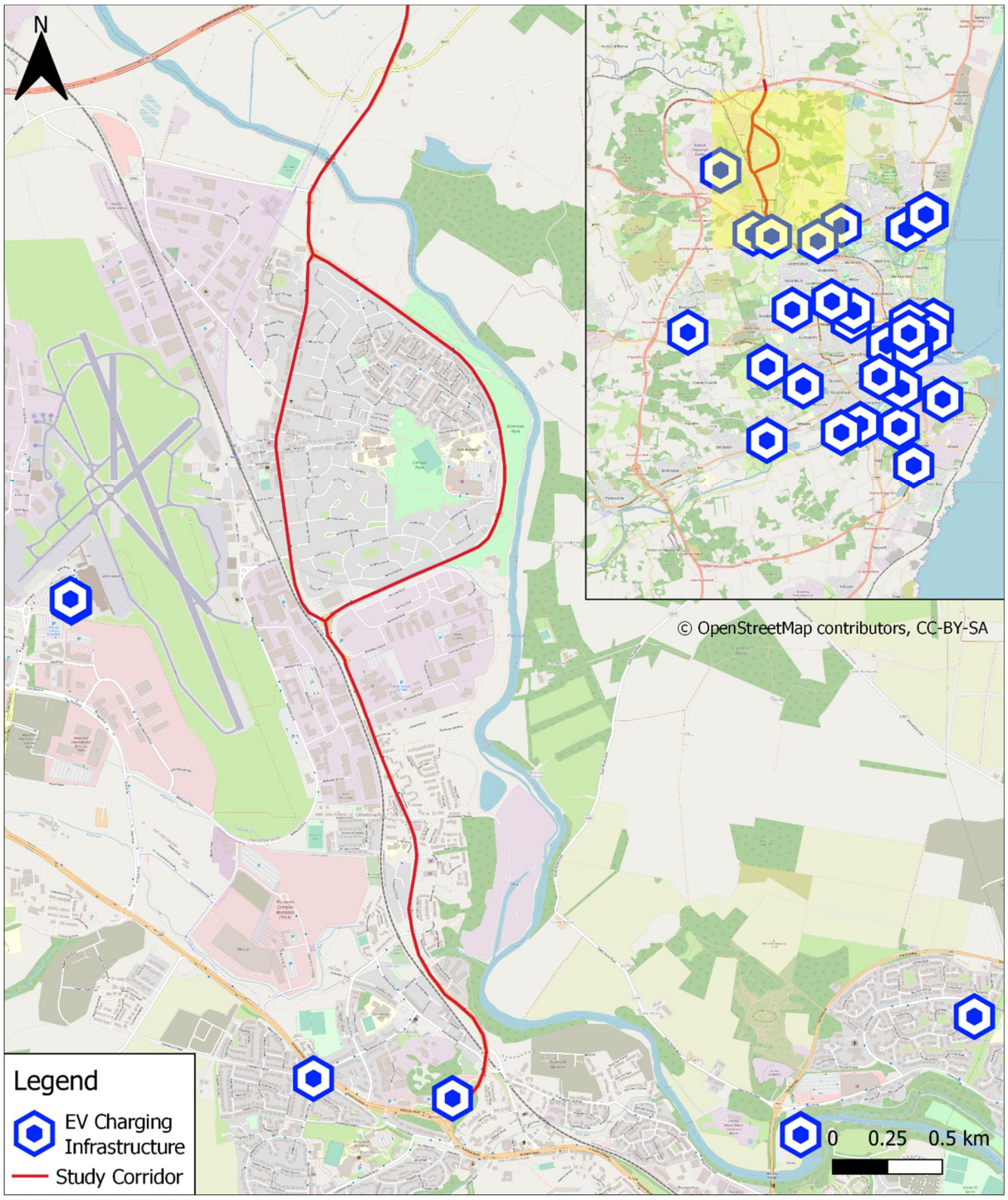


Figure 5.17: EV Charging Infrastructure

- There is limited EV charging infrastructure on the study corridor. There are EV charging points in the south of the study corridor, close to its junction with the A96 and at Aberdeen International Airport.
- It is noted that in January 2022, the Scottish Government published a new draft vision statement for public electric vehicle charging in Scotland. This notes a "new public electric vehicle charging fund will be launched in Scotland which seeks to attract investment from the private sector. This fund will provide up to £60 million to local authorities over the next four years with approximately half of this funding anticipated to be invested from the private sector. This step has the potential to double the size of the public charging network in Scotland."[48]

[48] A new vision for electric vehicle charging infrastructure in Scotland | Transport Scotland

5.10 Freight

5.10.1 Freight Routes

The diagram below provides an overview of the freight routes on the study corridor.

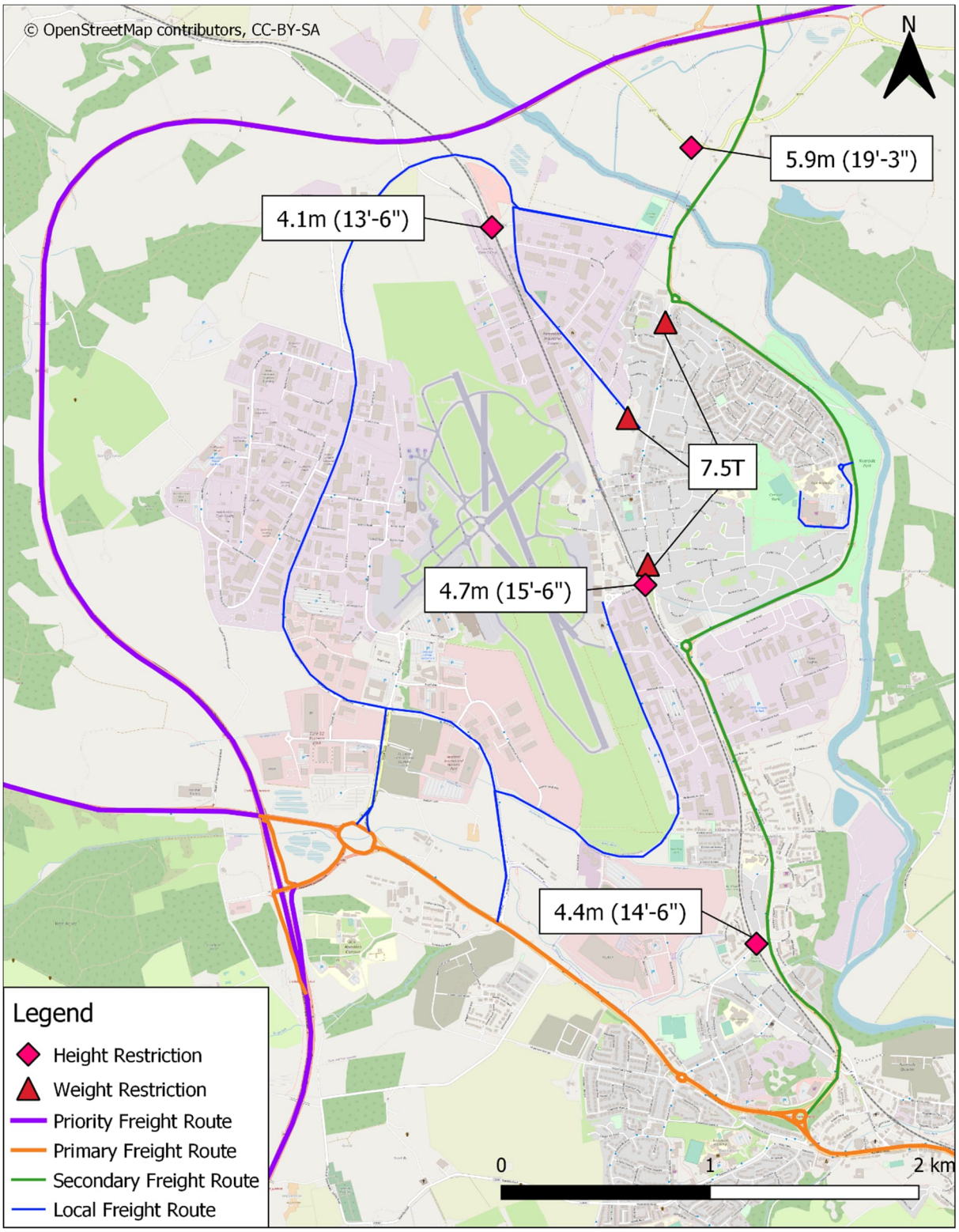


Figure 5.18: Freight Routes

- There are multiple industrial estates which are a key origin and destination for freight including Kirkhill Industrial Estate to the north-west and Wellheads Industrial Estate to the west of the study corridor.
- There are restrictions in place on Victoria Street, banning vehicles over 7.5 tonnes in weight. There are height restrictions on Farburn Terrace caused by a low bridge, which prevents vehicles over 4.7m high from using the route.

5.10.2 Freight Counts

Data has been obtained on two-way HGV movements from the automatic traffic counter on Stoneywood Road between March 2020 and September 2021. **Figure 5.19** below shows freight movements trends through this period.

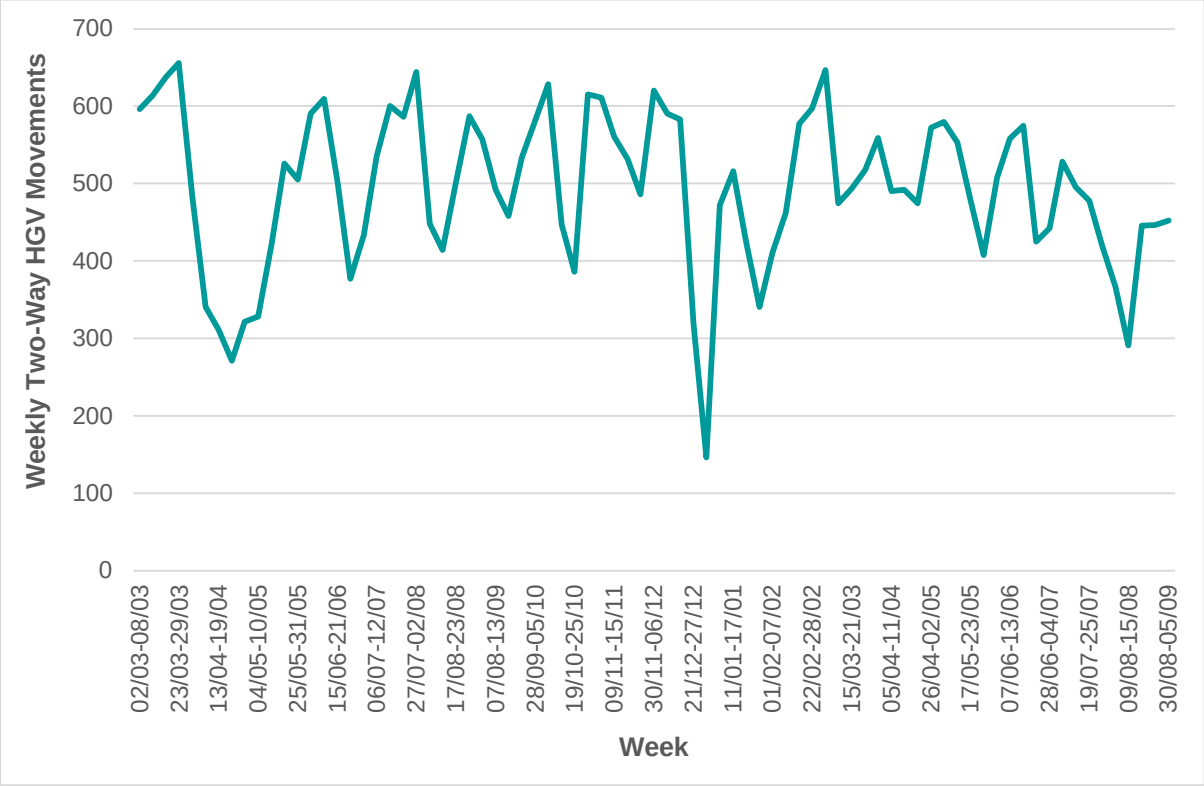


Figure 5.19: Freight Counts

- The data is slightly limited given it is only available between 2020 and 2021 meaning that the majority of the data is from during the COVID-19 pandemic.
- It can be seen that there was a significant decline in HGV traffic immediately after COVID-19 restrictions were introduced in March 2020, however this recovered relatively quickly.
- Other than the period immediately following the introduction of COVID-19 restrictions, the HGV numbers follow a pattern of relatively consistent peaks and troughs throughout the year other than a large decrease during the week of Christmas.

6. Planning Context

6.1 Introduction

This section provides an overview of the planning context of the study area, providing information on relevant development allocations and planning applications along the corridor.

6.2 Strategic Development Plan

The Aberdeen City and Shire Strategic Development Plan (SDP)[49] published in 2014 identified four Strategic Growth Areas to be the main focus for development in the area up to 2035. The Strategic Growth Areas included Aberdeen City, which was carried through to the SDP approved in 2020.

Within Aberdeen City, it is noted that tackling road congestion will be a key consideration along with reducing the effect of transport on the environment (including improving air quality), providing safe active travel opportunities and promoting the connectivity of green networks. Particularly relevant to the A947 corridor, the SDP notes the need to improve road infrastructure and links to the Northern Coastal Communities, including the A947 to Banff and Macduff.

As part of the preparation of the SDP, cumulative transport impacts resulting from the delivery of the SDP were investigated. Following this study, supplementary appraisal was undertaken to understand how a range of transport intervention proposals would mitigate predicted impacts to facilitate the delivery of the SDP. Three option packages were developed, with interventions of relevance to the study corridor outlined in the table below.

Table 6.1: Relevant Transport Interventions identified in the Nestrans Cumulative Transport Appraisal[50]

	Interventions
Package 1	• Cross city connections – orbital bus routes to reflect improved bus access to development areas in Aberdeen City • Rail station car parking – additional spaces at Dyce (208 spaces in total) • Behavioural initiative – increase, encouragement/marketing of Grasshopper ticket • Behavioural initiative – active travel improvements in Bucksburn and Dyce • Monitoring and optimisation of traffic signals • A947 Route Strategy – minor capacity improvements
Package 2	• Rail Station at Bucksburn/Stoneywood – new station served by Inverness to Aberdeen line services
Package 3	• Dyce Drive capacity upgrade from Pitmedden Road to A947 – upgrade Dyce Drive to four-lane distributor with signal control at east and west accesses • A947 Riverview Drive to Dyce Drive capacity upgrade – upgrade A947 section to four-lane distributor, including two lane approach southbound over River Don; A947 to B979 northbound slip road

6.3 Local Development Plan Review

6.3.1 Aberdeenshire Council

The Aberdeenshire Proposed LDP 2020 was published for consultation in May 2020. The relevant areas within the plan have been reviewed and are summarised below. Some allocations in the Proposed LDP 2020 remain from the earlier 2017 publication of the plan and this has been noted within the 'LDP' column of the tables that follow. The relevant settlements to the study corridor are considered to be those which lie on the A947 corridor within Aberdeenshire including: Newmachar, Oldmeldrum, Turriff, Banff and Macduff. Progress updates are based on information contained within the Housing Land Audit 2020[51], the Employment Land Audit 2018/19[52], supplemented by discussions with planning officers.

[49] Available at: http://www.aberdeencityandshire-sdpa.gov.uk/AboutUs/Publications.aspx
[50] https://www.nestrans.org.uk/wp-content/uploads/2019/06/20190515-Nestrans-CTA-Option-Testing-Report-v1.1.pdf
[51] https://www.aberdeencity.gov.uk/sites/default/files/2020-12/Appendix%201%20for%20SDPA%20HLA%202020.pdf
[52] http://publications.aberdeenshire.gov.uk/dataset/85402573-8685-4cd5-b2e7-a106bcf1d1cb/resource/b2a84cea-02ee-4c41-ae32-0f64816ae154/download/aberdeencityandaberdeenshireemploymentlandaudit2019.pdf

6.3.1.1 Newmachar

The allocations for Newmachar in the Proposed LDP 2020 are shown in the diagram below.

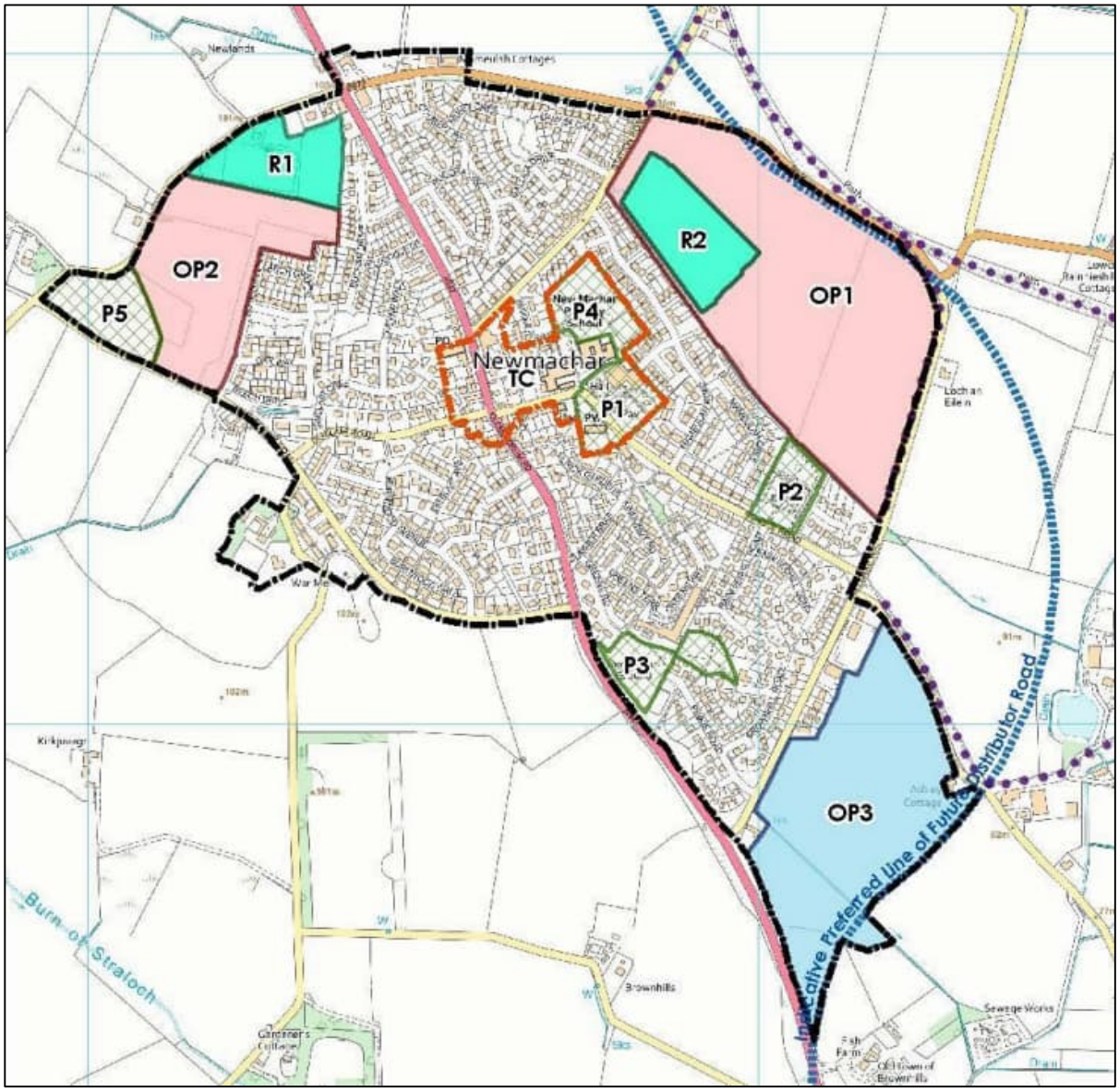


Figure 6.1: Newmachar Development Allocations in the Proposed LDP 2020

Further details of the allocations are provided in the table below.

Table 6.2: Details of Development Allocations in Newmachar

Ref	LDP	Description	Progress
OP1	2017	340 homes	Application approved in June 2021 for 340 units and primary education. Build out has not yet commenced at the site, with five-year effective build out of 103 units.
OP2	2017	165 homes	The site boundary was reconfigured to account for an earlier phase of development which has been built out. The site has a five-year effective build out of 72 units.
OP3	2017	11.1ha employment land	The site was previously allocated in the 2017 LDP but has been increased in size for the Proposed LDP 2020. No progress at the site to date.

6.3.1.2 Oldmeldrum

The allocations for Oldmeldrum in the Proposed LDP 2020 are shown in the diagram below.

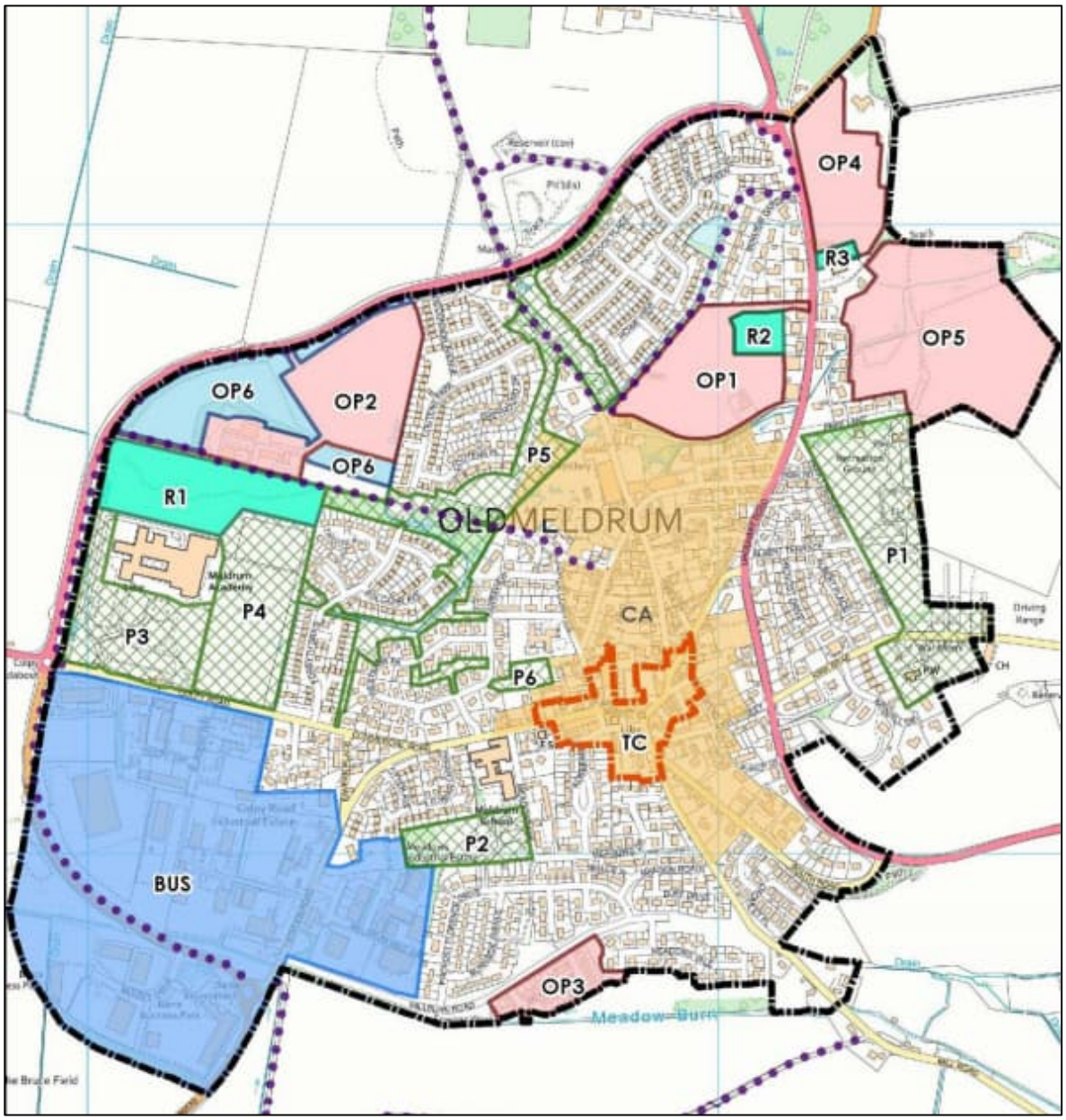


Figure 6.2: Oldmeldrum Development Allocations in the Proposed LDP 2020

Further details of the allocations are provided in the table below.

Table 6.3: Details of Development Allocations in Oldmeldrum

Ref	LDP	Description	Progress
OP1	2017	88 homes	Allocation has been increased from 50 homes to 88 homes from the 2017 LDP. Application has been approved subject to Section 75 agreement with a five-year effective build out of 50 units.
OP2	New	85 homes	Allocation has been increased from 50 homes to 85 homes from the 2017 LDP. The site is currently constrained and developer is awaiting adoption of new LDP before progressing.
OP3	2017	26 homes	Site built out and Report for Examination to determine if allocation is to be removed from Proposed LDP.
OP4	2017	68 homes	Application approved in October 2020 with five-year effective build out of 35 units.
OP5	New	146 homes	No update available – awaiting adoption of new LDP.

6.3.1.3 Turriff

The allocations for Turriff in the Proposed LDP 2020 are shown in the diagram below.

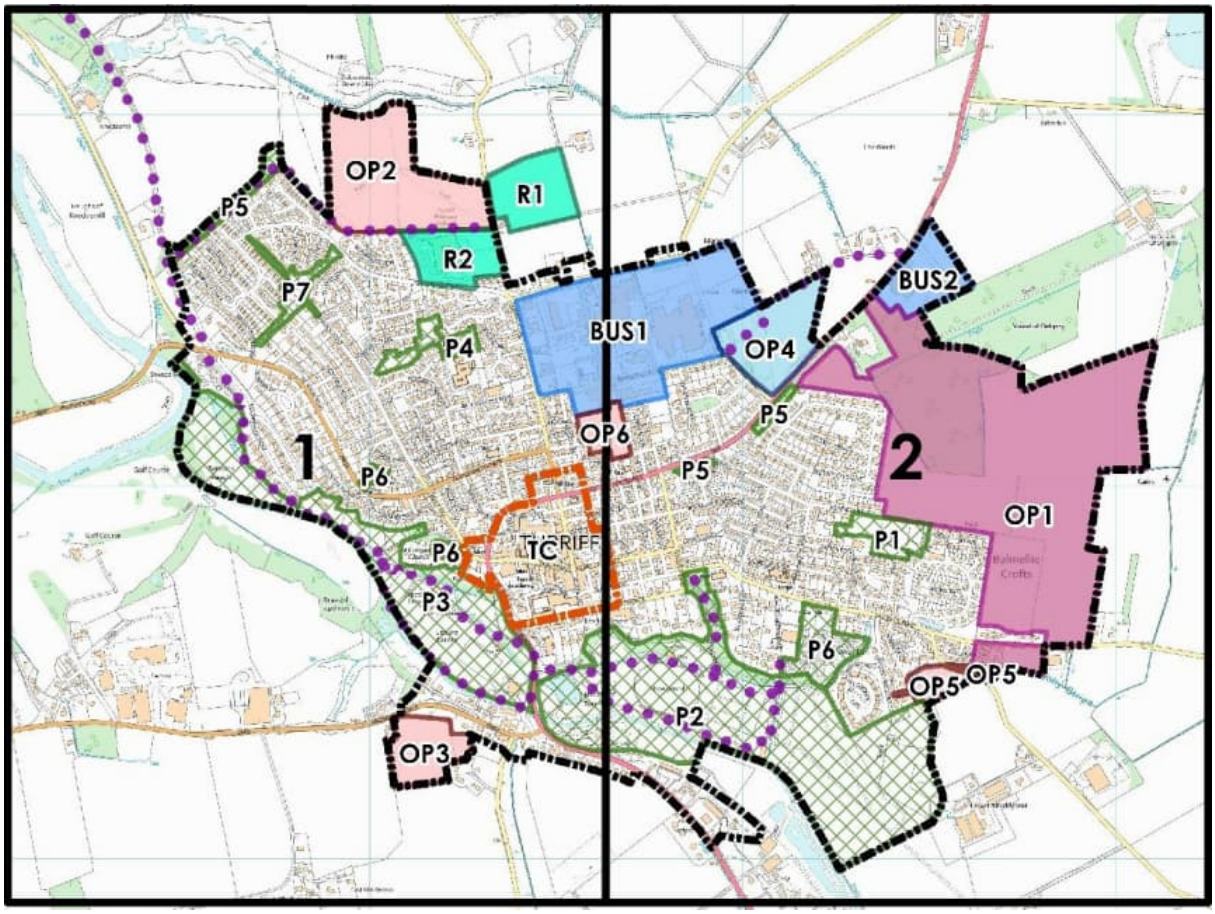


Figure 6.3: Turriff Development Allocations in the Proposed LDP 2020

Further details of the allocations are provided in the table below.

Table 6.4: Details of Development Allocations in Turriff

Ref	LDP	Description	Progress
OP1	2017	450 homes and 10ha employment land, commercial land and community facilities	The five-year effective build out is 8 units with the remaining 442 units constrained by marketability.
OP2	2017	227 homes	Application approved subject to a Section 75 agreement with a five-year effective build out of 130 units.
OP3	New	40 homes	No update available – awaiting adoption of new LDP.
OP4	2017	4.5ha employment land	Site remains undeveloped.
OP5	New	27 homes	No update available – awaiting adoption of new LDP.
OP6	New	40 homes	No update available – awaiting adoption of new LDP.

6.3.1.4 Banff

The allocations for Banff in the Proposed LDP 2020 are shown in the diagram below.

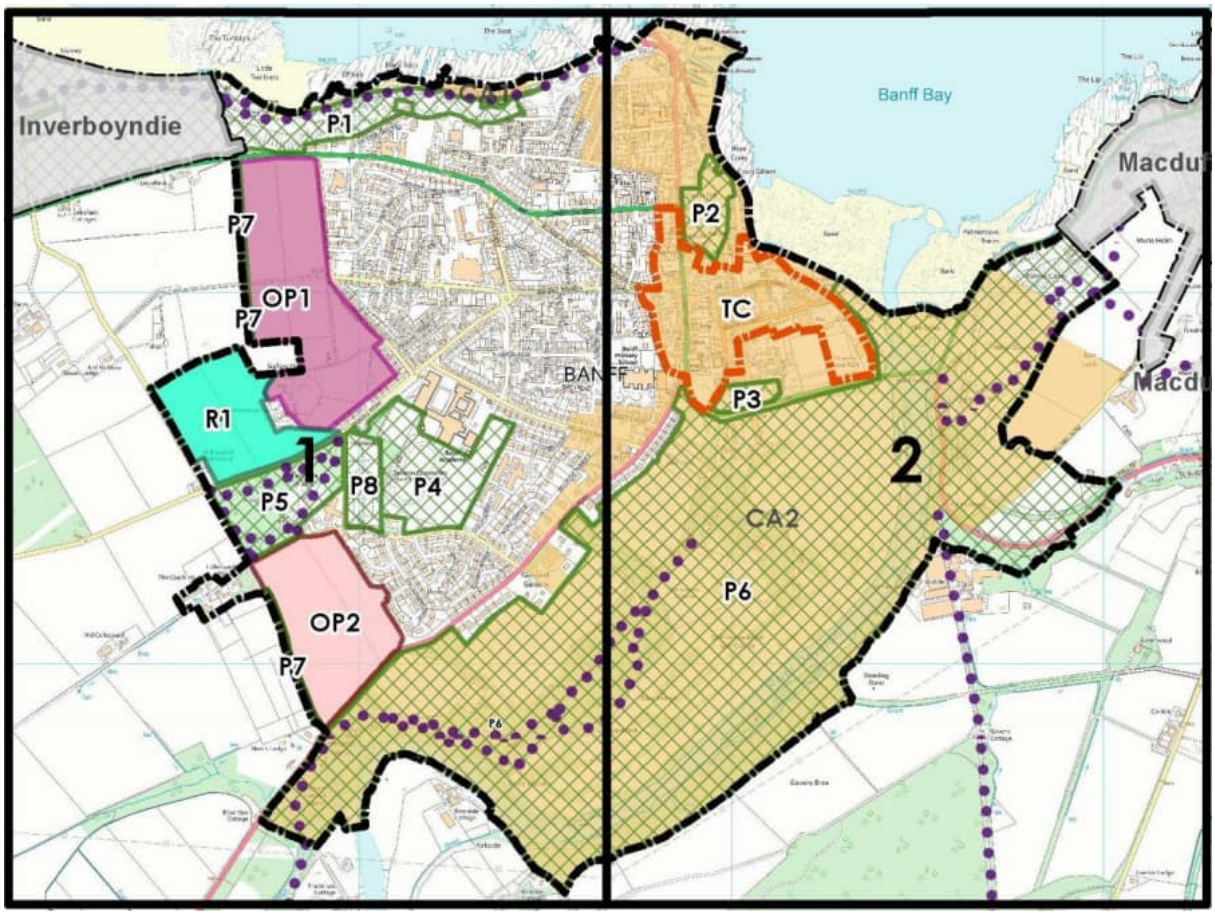


Figure 6.4: Banff Development Allocations in the Proposed LDP 2020

Further details of the allocations are provided in the table below.

Table 6.5: Details of Development Allocations in Banff

Ref	LDP	Description	Progress
OP1	2017	400 homes, community facilities and leisure and retail units	It is anticipated that 94 units will be built within the next five years, while the remaining 306 units are constrained.
OP2	2017	200 homes	The site has numerous constraints including physical constraints, marketing constraints and infrastructure constraints.

6.3.1.5 Macduff

The allocations for Macduff in the Proposed LDP 2020 are shown in the diagram below.

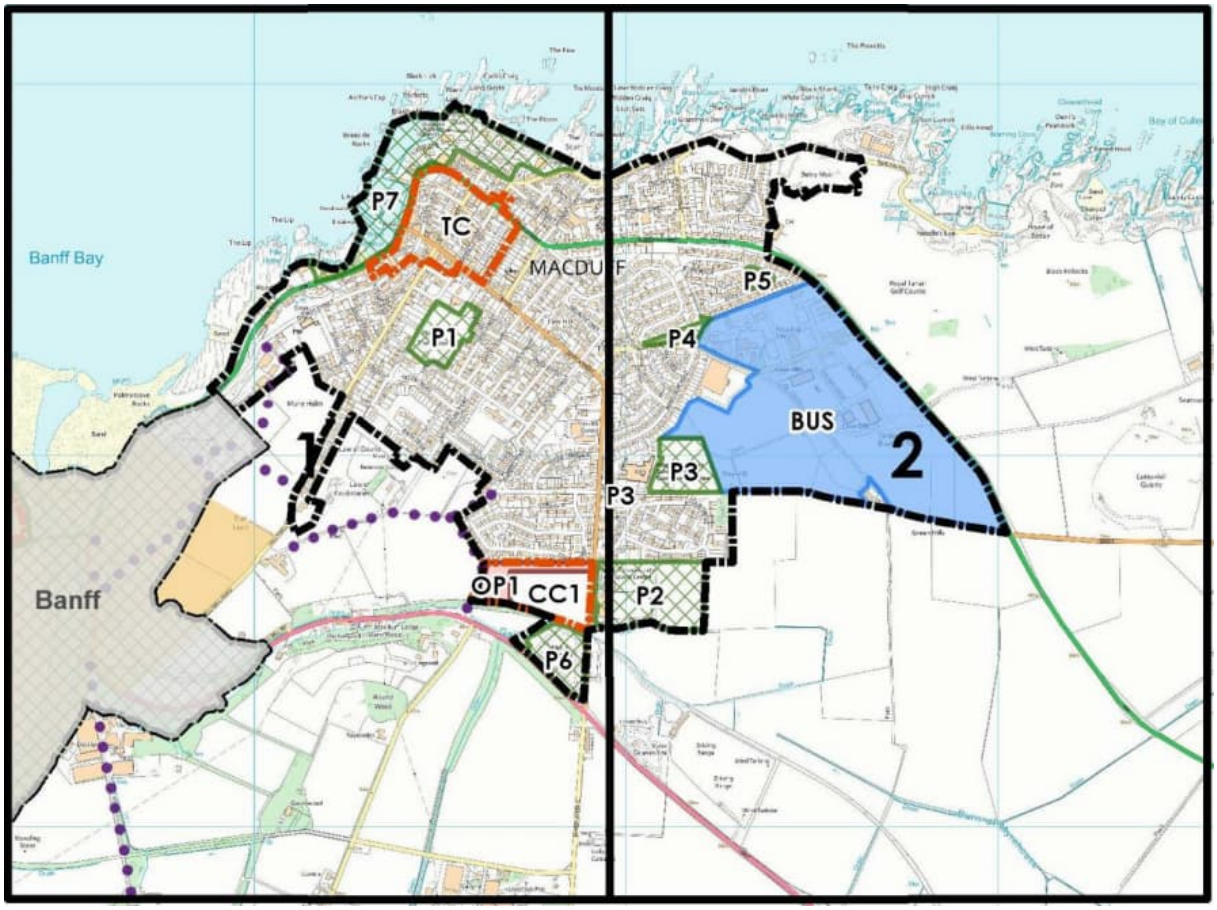


Figure 6.5: Macduff Development Allocations in the Proposed LDP 2020

Further details of the allocation is provided in the table below.

Table 6.6: Details of Development Allocations in Macduff

Ref	LDP	Description	Progress
OP1	2017	22 homes	Previously allocated for retail space in the 2017 LDP.

6.3.2 Aberdeen City Council

Within the ACC local authority area, there are 13 allocations within the Proposed LDP 2020 which are of relevance to the A947 Multi-Modal Corridor Study. These are shown in **Figure 6.6** below.

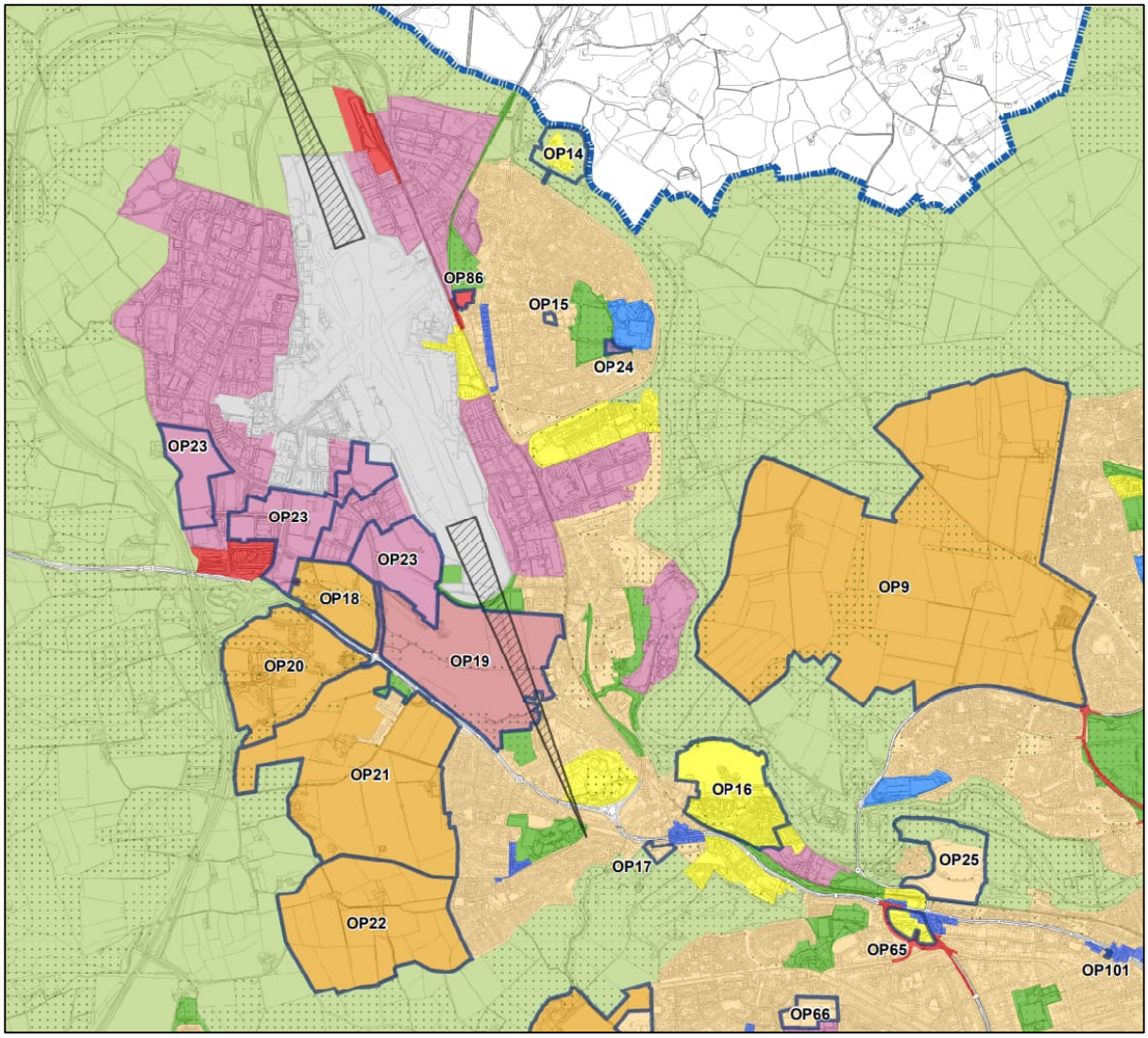


Figure 6.6: ACC Proposed LDP 2020 Allocations

Further details of the allocations are provided in the table below.

Table 6.7: Details of Relevant Development Allocations in Aberdeen City

Ref	LDP	Description	Progress
OP9	2017	4,700 homes	Building has commenced at the site and, at present, the remaining capacity is 4,637 units with a five-year effective build out of 690 units.
OP14	New	25 Homes	Five-year effective build out of 25 units.
OP15	2017	0.37ha residential land with capacity for 20 homes	Build out has not yet commenced, with the site being constrained due to ownership issues.
OP16	2017	29.5ha mixed-use land with capacity for 900 homes	Five-year effective build out of 348 units.
OP17	New	0.94ha residential land formerly occupied by Bucksburn Primary School	No update available – awaiting adoption of new LDP.
OP18	2017	1.5ha employment land	Build out has not yet commenced and site is physically constrained.
OP19	2017	34.5ha employment land	Site on which TECA has been constructed.

Ref	LDP	Description	Progress
OP20	2017	42.6ha land with capacity for 1,000 homes	Approximately 300 units at the site are constrained. There remains capacity for 676 homes of the remaining 700 units at the site, of which 228 are expected to be constructed within the next five years.
OP21	2017	1,700 homes with an additional 240 beyond the lifetime of the LDP	Remaining capacity of 1,625 homes, with 756 expected to be constructed within the next five years.
OP22	2017	1,000 homes	Build out has not yet commenced and 500 units are constrained.
OP23	2017	65ha business and industrial land	No update available.
OP24	New	0.71ha community facilities – medical centre	No update available – awaiting adoption of new LDP.
OP86	2017	1.1ha of land allocated for expanding the rail station car park	No progress on this site.

6.4 Planning Applications

This section provides a review of live planning applications within the study area vicinity as of January 2022.

6.4.1 Aberdeenshire Council

There are two relevant planning applications within the vicinity of the study corridor in Aberdeenshire.

Planning Application Reference APP/2012/3943 – Decision (Approved)

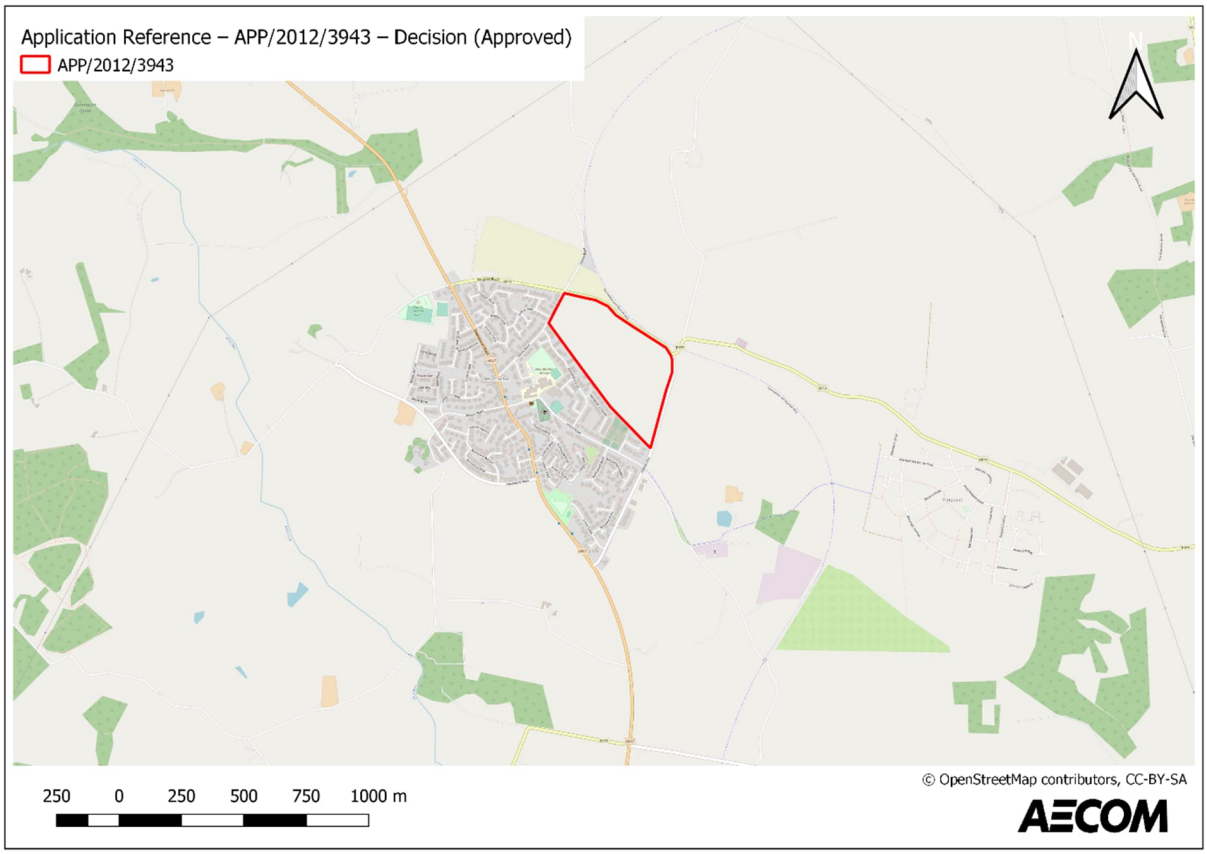


Figure 6.7: Planning Application Reference APP/2012/3943

- This application refers to the OP1 allocation in Newmachar within the Proposed LDP 2020 and is for a residential development, primary education provision and associated infrastructure.
- It was approved in 2015 for 140 houses, however no build out has occurred to date.

Planning Application Reference APP/2021/2089 – Decision (Awaiting Decision)

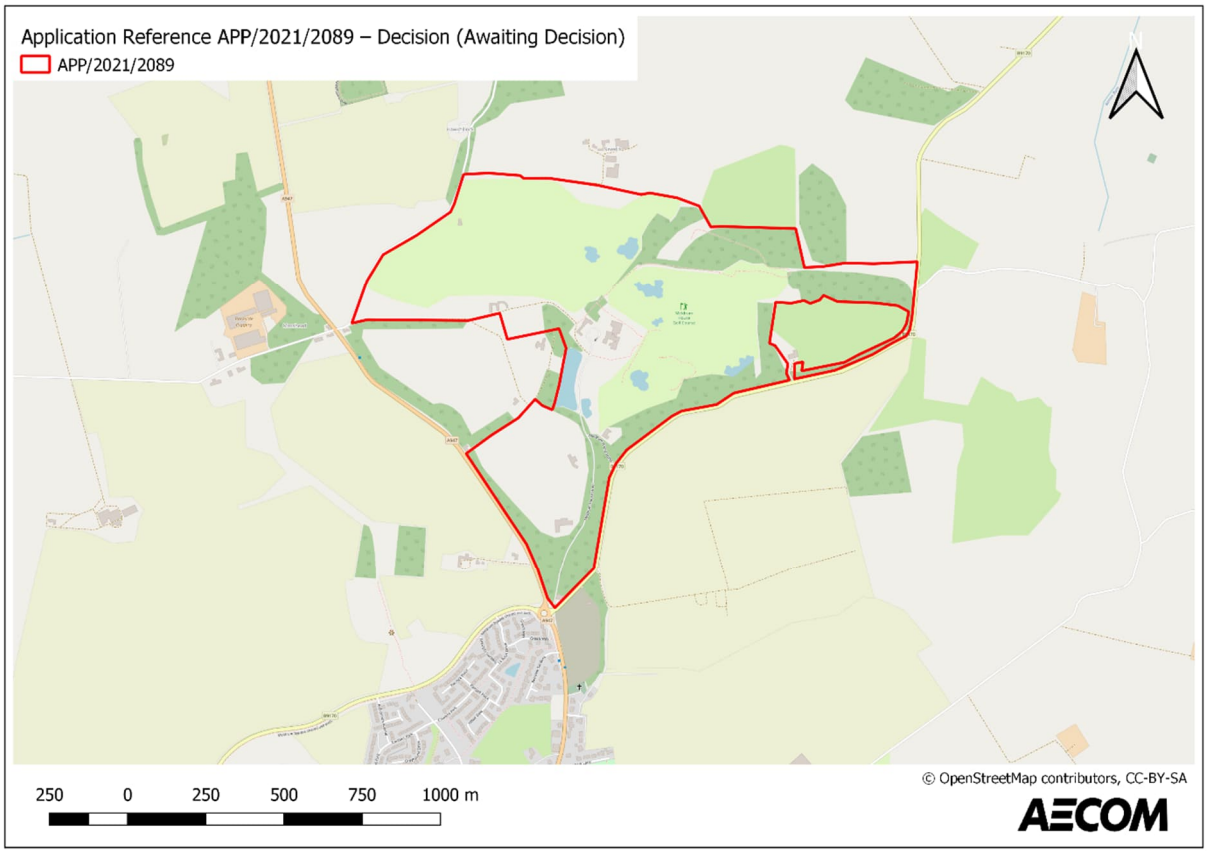


Figure 6.8: Planning Application Reference APP/2021/2089

- This application refers to the erection of 34 houses and associated infrastructure on the land of Meldrum House, Oldmeldrum.
- The application was submitted in September 2021 and approved in July 2022.

6.4.2 Aberdeen City Council

There are two relevant planning applications within the Aberdeen City section of the study corridor.

Planning Application Reference – 181050/DPP – Decision (Approved Conditionally with Legal Agreement)

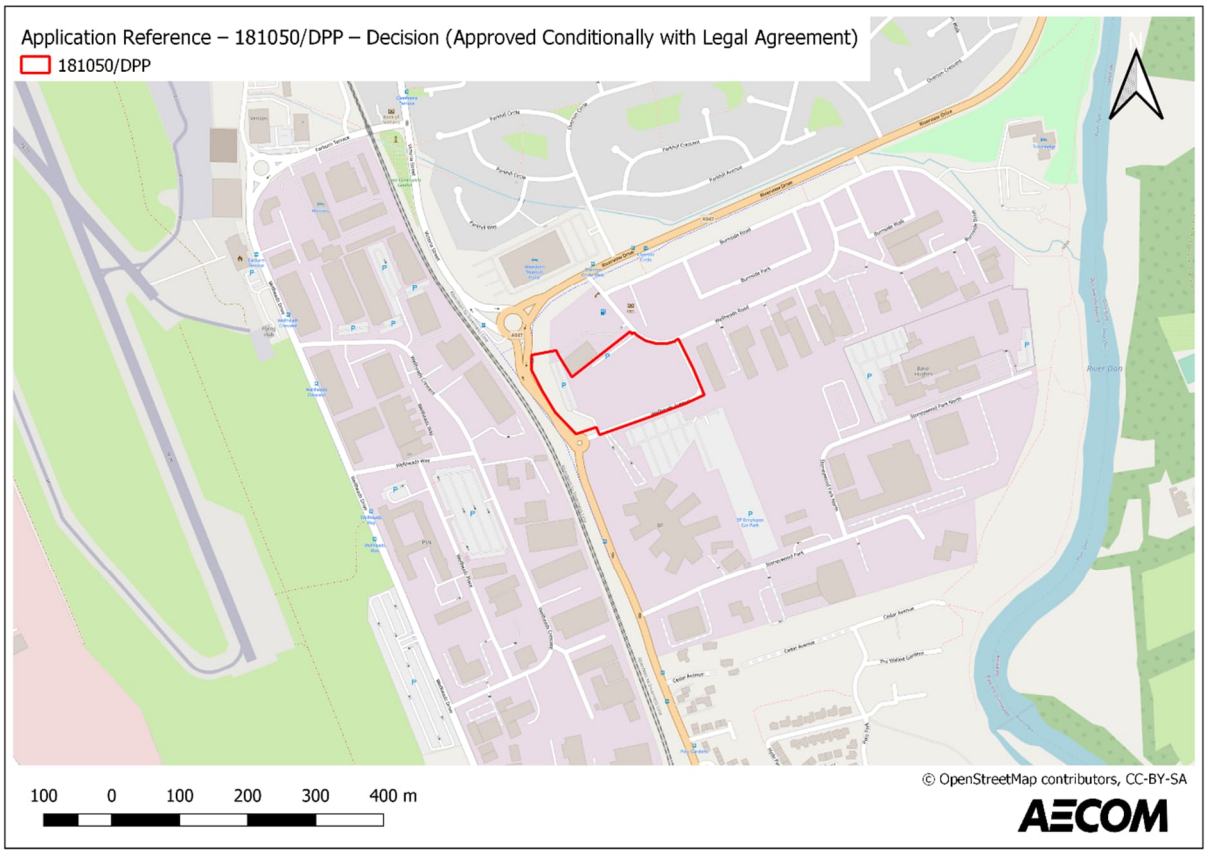


Figure 6.9: Planning Application Reference 181050/DPP

- This application refers to a residential development comprising 283 flats over five storeys, associated infrastructure, access roads and landscaping.

Planning Application Reference – 210665/DPP – Decision (Approve Conditionally)

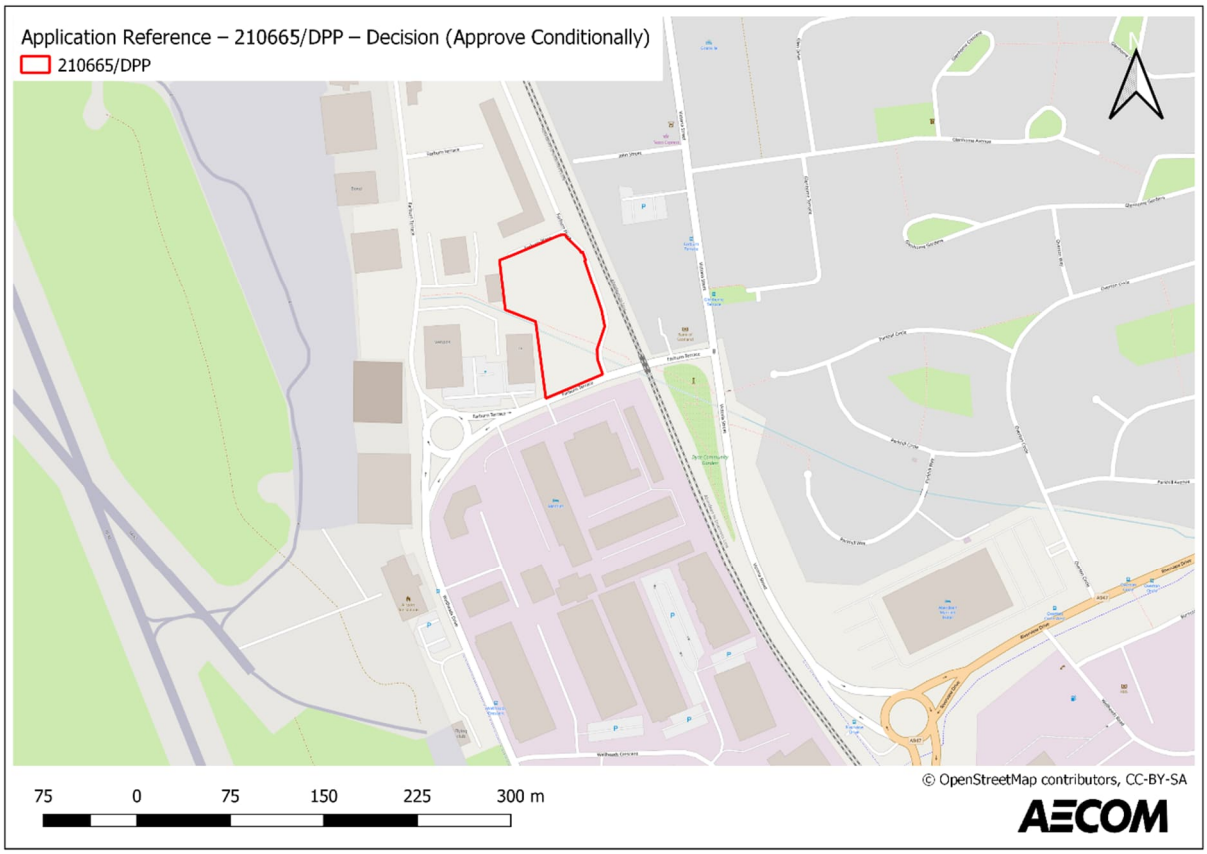


Figure 6.10: Planning Application Reference 210665/DPP

- This application refers to the erection of an energy storage facility with associated works.
- The planning application was approved in September 2021.

7. Environmental Context

7.1 Introduction

This chapter provides an overview of the environmental considerations which are present along and in the vicinity of the A947 corridor. The study area extends for approximately 4 miles from the AWPR Parkhill Junction and the A96/A947 Junction to the south of Dyce. In describing the environmental context, consideration has been given to the following:

- Ecology and biodiversity: identifying designated ecological interests within the study area;
- Landscape character: describing the landscape character within the study area;
- Land use: providing an overview of the existing use of the land within the study area;
- Cultural heritage and archaeology: identifying designated heritage and archaeological interests within the study area;
- Water resources and flood risk: identifying key waterbodies/quality and the risk of flooding within the study area;
- Outdoor access and recreation: identifying recreational resources within the study area; and
- Air quality: identifying any Air Quality Management Areas (AQMAs) within the study area.

This chapter is supported by Environmental Constraints Mapping provided in **Appendix A**.

7.2 Ecology and Biodiversity

Ecological designations have been identified from the NatureScot[53] and Scotland's Environment websites[54]. There are no areas of ecological designations within the study area. However, there are areas of ancient woodland inventory, the majority of which is long established (of plantation origin). There are small areas of Other (on Roy Map) spanning the A947 itself.

7.3 Landscape

A review of the landscape character types has been undertaken on the NatureScot website. The study area is characterised by a number of varying landscapes. The landscape character types comprise river valley, undulating wood farmland, wooded estates, narrow winding farm valley, undulating open farmland and urban. There are no landscape designations within the study area.

7.4 Land Use

A review of existing land use has been undertaken from satellite imagery as well as the Land Capability for Agriculture (LCA). The LCA classification within the study area is shown on **Figure 3** in **Appendix A**. This ranks land based on its potential productivity and cropping flexibility. Upon review of this data, the land capabilities of the study area show that the majority of the land is capable of supporting mixed agriculture, with a small area to the south of the study area classed as prime agricultural land for arable agriculture.

Land at Dyce is classed as urban; this area comprises a mix of homes, shops and businesses including Aberdeen International Airport and Dyce Rail Station.

7.5 Water Environment and Flood Risk

The River Don crosses under the A947 to the north of Dyce, with Parkhill Bridge taking traffic across the river. The River Don then runs north-south to the east of the study corridor. A number of tributaries also join the River Don within the study area: Goval Burn, Far Burn and Green Burn.

The River Don is considered to have 'moderate' quality status. Pressures in the form of barriers preventing access to fish migration, modifications to beds, banks and shores impacting the physical condition of the river bed, and diffuse sources and point source discharges impacting on the water quality are cited as responsible for the 'moderate' quality status of the river.

[53] https://sitelink.nature.scot/map
[54] https://map.environment.gov.scot/sewebmap/

Areas of flood risk within the study area have been identified from SEPA's website. The majority of the corridor is considered to have a low level of flood risk, which is defined as having less than 0.1% chance of flooding within any one year. There is a 10% chance of river flooding along the course of the River Don to the east of the study corridor. Due to how the river meanders, the proximity of the A947 to areas of flood risk varies, with the A947 crossing the flood risk area at the point where it crosses the River Don at Parkhill Bridge. There is high likelihood of flooding (10% chance of flooding) along a number of the River Don's tributaries which intersect with the A947 namely Far Burn, which is centrally located and runs west-east crossing Victoria Street and Riverview Drive, Green Burn which runs west-east to the south of Stoneywood and Goval Burn which runs east-west and crosses a northern segment of the A947.

7.6 Cultural Heritage and Archaeology

There are seven Category A Listed buildings and 12 Category B Listed buildings in the study area. There are no other designations for cultural heritage and archaeology within the study area.

7.7 Air Quality Management Area

There is an AQMA at the A96 within 1km of the A947, just beyond the A947/A96 Junction to the south of the study area. The AQMA does not impact on the A947 corridor.

7.8 Outdoor Access and Recreation

Core paths have been identified from the Scotland Environment's website. There are a number of core paths within the study area, as has been outlined in **Section 5.4**. Core paths in the study area include:

- CP4 (Kirkhill to Bucksburn);
- CP5 the F&B Way;
- CP6 River Don Path;
- CP9 Aberdeen Airport to Inverurie Road;
- CP38 A96/Sclattie Place Roundabout to Craibstone Estate;
- CP40 Central Park, Dyce;
- CP71 Dyce Airport Cycle Path; and
- CP101 Stoneywood Path.

Core paths CP4, CP5 and CP6 intersect with the A947 corridor.

7.9 Key Points

- There are segments of the A947 with a high likelihood of river flooding where they cross the River Don and its tributaries, and along the course of the river which runs adjacent to the study corridor.
- There are no environmental or landscape designations within the study area.
- There are listed buildings within the study area but no other designations for cultural heritage or archaeology.
- There are several core paths which intersect or share the A947.

8. Stakeholder Consultation

8.1 Introduction

In order to further explore problems, issues, constraints and opportunities (PICOs) on the study corridor, an extensive programme of consultation has been undertaken to support the study. This chapter summarises the key outcomes from the engagement exercise.

8.2 Approach

A robust public and stakeholder consultation strategy is an essential part of the transport appraisal process, required to assess PICOs and to thereafter inform the assessment of option implementability in terms of public acceptability.

A number of steps were involved in delivering the first stage of the consultation process, as outlined below.

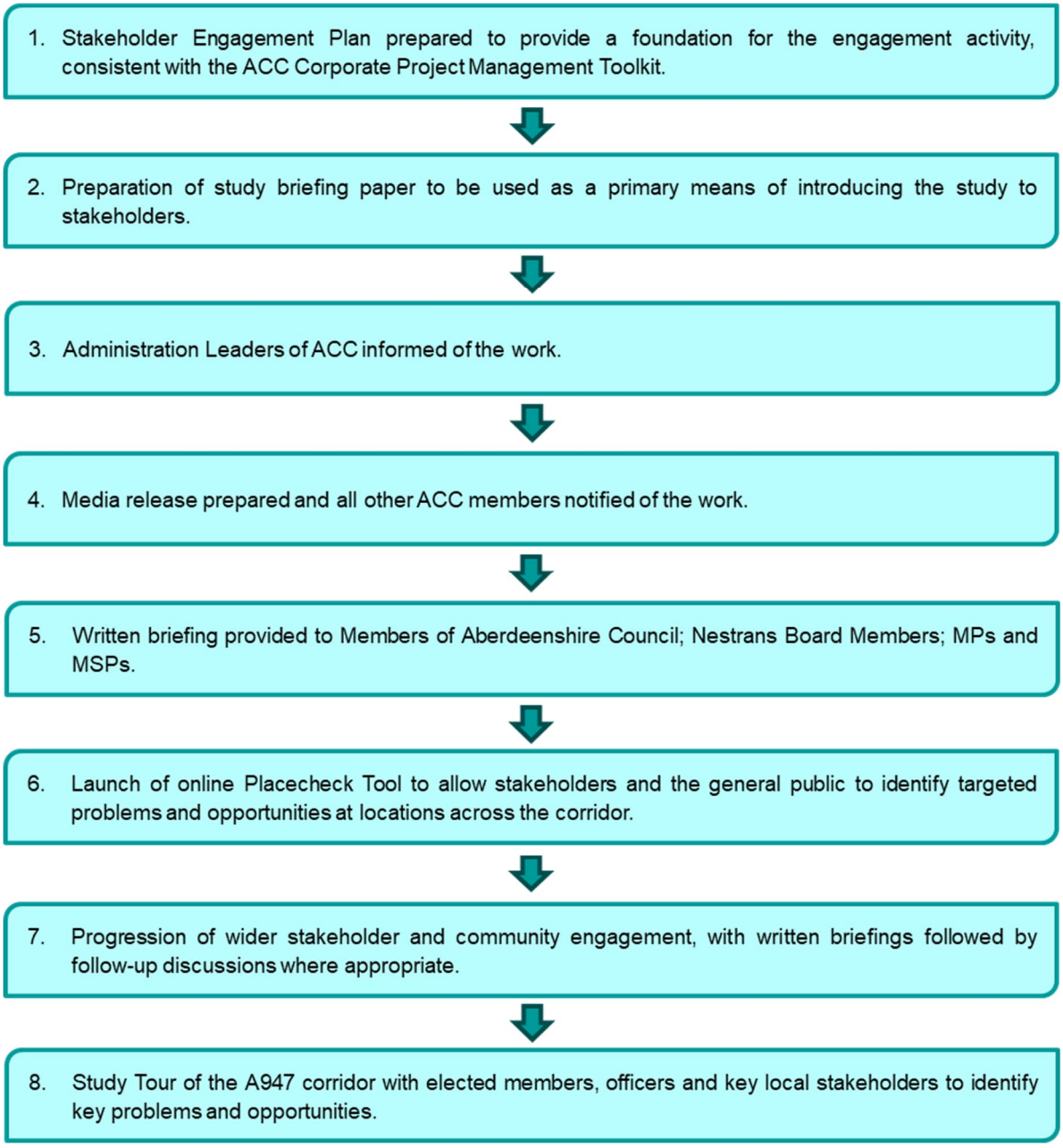


Figure 8.1: Stakeholder Engagement Activities

The diagram below provides an overview of the special interest groups who were invited to participate in the consultation period for the study.

Figure 8.2: Stakeholders Invited to Provide Feedback to Study

8.3 Key Findings

8.3.1 Stakeholder Discussions

The table below presents the key findings from the stakeholder consultation meetings and workshops.

Table 8.1: Key Outcomes from Stakeholder Discussions

Stakeholder	Key Findings
Aberdeen Cycle Forum	• There is a general lack of wayfinding signage for cyclists on the study corridor. • It was noted that access controls are not suitable for all bike types e.g. adapted bikes, cargo bikes, bikes with trailers, etc. • There is a lack of cycle lane lead-ins ahead of advanced stop lines at box junctions.
ACC, AC and Nestrans Officers	• Options on the Riverside Path are constrained by ownership and wildlife habitats. • There is an opportunity to influence drivers to use Riverview Drive rather than Victoria Street. • There is variable quality of infrastructure for active travel on Victoria Street. • There are limited crossing opportunities on Victoria Street, and few dropped kerbs for those with mobility issues. • The rail service is good but access to the station is difficult for all users, particularly active travel users. • Issues noted with overspill at the Dyce Rail Station car park. • It was noted that congestion issues affecting car users and public transport on the corridor have been alleviated through the opening of the AWPR and the majority of issues on the corridor are now relating to active travel. • There are opportunities to improve east to west connectivity on the study corridor.
Aberdeen International Airport	• It was noted that car travel is the dominant mode of travel to the airport, despite staff often living in close proximity. • There are issues for accessing the airport sustainably as shift times are often outwith the operation times of public transport and weather and darkness creates the perception of being unsafe for active travel. • There is an opportunity for a direct bus service between Dyce Rail Station and the airport, which could also integrate with TECA. • It was noted that there is potential for improved active travel links between the study corridor and the airport.
First Aberdeen	• The COVID-19 pandemic has had a particularly significant impact on bus service use within the study area, partly due to much lower demand for travel to Aberdeen International Airport. • The width of Victoria Street was noted as a constraint on the route. • Increased use of Riverview Drive for private car journeys would better facilitate bus movements on Victoria Street. • On-street parking on Mugiemoss Road can cause delays for buses.
Newmachar Community Council	• Introducing lighting between the Parkhill AWPR junction and the Victoria Street/ Riverview Drive Roundabout could improve safety and pedestrian comfort and improve consistency of lighting for drivers.
Scottish Enterprise	• Scottish Enterprise support a focus on sustainable options which contribute to the transition to a net zero economy in the North East of Scotland. They are actively engaged with regional partners to deliver transformational economic projects in the North East and sustainable transport could have a positive impact on promoting these projects.

8.3.2 Study Tours

To aid identification of problems and opportunities along the study corridor, AECOM led a Study Tour on Wednesday 24th November 2021, which representatives from ACC, Nestrans and other key stakeholders attended. An additional Study Tour was held on Monday 6th December 2021 with elected members. Attendees across the Study Tours included representatives from ACC, Nestrans, Grampian Cycle Partnership, British Horse Society, First Aberdeen, Stagecoach, Robert Gordon University, Aberdeen Cycle Forum and Elected Members from ACC.

A summary of the key findings is presented below, with full details included as part of **Appendix B**.

Table 8.2: Key Findings from A947 Study Tours

Location	Problems/Opportunities
Dyce Rail Station	**Problems**
	• Lack of wayfinding signage for active travel users. • Route to access the F&B Way from the rail station is through the car park. • Station access is poor for active travel.
	Opportunities
	• Potential to create active travel route through car park. • Potential to formalise link between Dyce Rail Station and Union Row.
A947/Dyce Drive Junction	**Problems**
	• No direct cycling provision (alternative route via underpass is convoluted – underpass to connect to F&B Way requires cyclists to dismount and there are perceived personal security issues due to a lack of lighting). • Lack of wayfinding signage for equestrian users. • Overgrown vegetation on approach to F&B Way.
	Opportunities
	• Opportunity to improve wayfinding signage. • Potential to create a direct active travel link between Dyce Drive and Riverview Drive.
Victoria Street/Pitmedden Road Junction	**Problems**
	• Width of junction encourages increased vehicle speeds. • Guardrails present safety issues for cyclists and affect placemaking opportunities.
	Opportunities
	• Wide junction has potential to be reduced in footprint. • Opportunity to reconnect Dyce Parish Church and Dyce Church Hall via improved crossings.
Victoria Street	**Problems**
	• Bus laybys cause difficulties for buses rejoining carriageway. • Footway surfacing is poor. • History of issues at the zebra crossing near Tesco including conflicts relating to parking and cash machine use.
	Opportunities
	• Opportunity to improve placemaking on the route. • Opportunity to widen footways. • Potential to introduce restrictions on traffic movement. • Potential to introduce segregated cycle lanes. • Potential to reduce access widths to improve facilities for pedestrians. • Opportunity to prevent through traffic movements on Victoria Street.
Victoria Street/Station Road/Gordon Terrace	**Problems**
	• Lack of cohesion at junction and space is severed by the main road. • Lack of crossing facilities. • Lack of infrastructure to connect the station to community facilities and green space near Dyce Primary and Central Park.
	Opportunities

Location	Problems/Opportunities
	• Opportunity to create quieter streets through traffic management and enhance placemaking. • Opportunity for greater placemaking around the war memorial which currently acts as a mini roundabout.
Riverview Drive	**Problems**
	• Discontinuous footway provision and lack of crossing points. • Variable surfacing on Riverside Path as well as narrowing of the path. • Limited linkages between the Riverside Path and housing developments.
	Opportunities
	• Opportunity to provide segregated cycle facilities as part of NCN1. • Potential to narrow some junctions to reduce vehicle speeds. • Further enhancements could be made to the Riverside Path. • Potential for a formalised crossing point at the northern end of Riverview Drive.
Stoneywood Road	**Problems**
	• Inconsistent advisory cycle lanes. • Pinch point at Stoneywood Terrace/Stoneywood Road junction resulting in a break in footway provision.
	Opportunities
	• Potential for segregated cycle facilities on Stoneywood Road. • Opportunity to review movements on Stoneywood Road and reduce junction radii where possible to reallocate space for active travel. • Opportunity to increase footway provision to match pedestrian desire lines.
General	**Problems**
	• Limited provision for horse riders. • Bus routes are limited by width of some roads. • Long bus journey times to the city centre. • Speed of general traffic off-putting to cyclists. • Some issues with drainage meaning paths can be flooded. • Instances of rat-running through areas of Dyce such as the Dandara Scheme in Stoneywood.
	Opportunities
	• Provide wayfinding signage for the F&B Way. • Provide more consistent bus stop provision. • Potential to reconfigure existing bus routes to include the new housing development on Mugiemoss Road. • Potential to adopt the 20-minute neighbourhood concept in Dyce.

8.3.3 Placecheck

To allow stakeholders and the general public to identify targeted problems and opportunities at locations throughout the corridor, an online 'Placecheck' was available from Wednesday 17th November 2021 until Tuesday 11th January 2022. Placecheck is an online map-based exercise that allows the user to highlight the location of specific issues/problems by placing a point at the location and adding the detail of the problem. Placecheck asks three questions: what do we like about a place; what do we dislike about a place; and what do we need to work on?

A total of 121 comments were received from 28 different participants, with the split across response categories shown below.

Table 8.3: Split of Responses to the Online Placecheck

Category	Number	Percentage
Things I like	13	11%
Things I don't like	60	50%
Things to work on	48	40%

An initial cleaning of responses was undertaken to identify any comments that did not require further analysis. 24 comments were identified as not requiring further analysis. Common reasons included positive statements about the study corridor (8), issues being considered as part of other ongoing studies (6), comments relating to areas outwith the study area (5), repeated comments from the same user (3), and lack of clarity regarding the content of the comment (2).

The remaining 97 comments were categorised into themes to determine the key problems and opportunities emerging from this element of the consultation exercise. The table below provides a summary of the themes raised. It should be noted that comments could cover a number of themes and therefore numbers do not total 97.

Table 8.4: Description of Themes Emerging from Placecheck Exercise

Theme	Description	Number of Times Raised
Cycling Infrastructure	Comments relating to lacking infrastructure (21) particularly dropped kerbs, opportunities for new cycling infrastructure (8), poor quality of existing advisory lanes (4), opportunities for new cycling infrastructure along the River Don (5), opportunities for upgrades to existing cycling infrastructure (3) and opportunities for realignment of NCN1 route along the River Don (3).	44
Pedestrian Infrastructure	Comments relating to lacking pedestrian infrastructure (7), upgrades to existing paths to enhance pedestrian connectivity (6) and opportunities for new footpaths along the River Don (6).	19
Maintenance	Comments relating to maintenance of overgrown trees (6), maintenance of cycle infrastructure on Riverview Drive (2), maintenance of footways along Victoria Street (1), maintenance of road surface on Stoneywood Road (1) and maintenance of the underpass at Millhill Brae (1).	11
Driver Behaviour	Comments relating to vehicles travelling in excess of the speed limit (3), vehicles ignoring cycle provision (3), vehicles flouting 'no entry' signs (2), vehicles ignoring double yellow line restrictions (1) and vehicles failing to stop at informal crossing points (1).	10
General Traffic	Comments relating to volume of traffic (4), safety concerns when vehicles reverse onto Victoria Street (2), congestion at car parks (2) and high volume of through-traffic on Victoria Street (1). One comment proposed opening barriers on Market Street during times when Farburn Terrace is temporarily closed.	10
Active Travel Priority	Comments relating to priority for active travel modes at junctions (3), traffic light sensitivity to oncoming cyclists (2), early release for cyclists at traffic lights (1), enhanced priority for sustainable modes on Victoria Street (1) and access for cyclists through barriers on Market Street (1).	8
Surfacing	Comments relating to poor quality of surface for cycling (4), poor quality of footways (2) and poor quality of surface along the F&B Way (2).	8
Accessibility	Comments relating to issues with accessing the F&B Way (3), barriers blocking access for recumbent cycles and cargo bikes (2) and steps preventing access by cycle (1).	6
Crossing Facilities	Comments include locations that are considered dangerous for crossing (2), locations where new active travel crossing facilities would be beneficial (1), issues with existing crossing facilities (1) and the potential for upgrade of existing crossing facilities (1).	5
Junction Layout	Junction locations along the corridor that are problematic and would benefit from review include the B977 slip road (1), Skene Place (1), Netherview Avenue (1), Bankhead Avenue (1) and the access road to McDonald's (1).	5
Signage and Information	Comments relating to lack of consistent wayfinding signage for active travel users to path facilities along River Don (2) and Stoneywood Drive (1), lack of information signage regarding other users (1) and lack of directional signage at key junctions for vehicle drivers (1).	5

Theme	Description	Number of Times Raised
Lighting	Comments relating to the lack of lighting provision increasing security concerns (2), lighting being obstructed by overgrown trees and vegetation due to its location (1) and opportunity to increase the use the F&B Way through an increase in lighting provision (1).	4
Width	Comments relating to narrow path on the F&B Way (1), at the access to Dyce Rail Station (1) and on the footway along Stoneywood Road (1). Further comment relating to the narrow width of Mugiemoss Road for larger vehicles and buses (1).	4
Parking	Comment relating to on-street parking on Victoria Street creating a dangerous environment for pedestrians and a comment regarding parked cars impeding visibility for pedestrians when crossing the road.	2
Conflict Between Users	Problem relating to conflict between users on footway designated as shared use.	1
Environment	Problem relating to sections of footways prone to flooding.	1

8.3.4 A947 Corridor – School Engagement

A workshop session was carried out on 20th May 2022 with one Primary 7 class at Stoneywood School. Pupils were given a presentation on the role of a Transport Planner and then were asked to think about what they like and don't like with the transport network in their local area using large maps and sticky notes. Approximately 25 pupils took part in the workshop, allowing them to consider how the transport network in Dyce could be improved.

The table below provides a summary of the key points of feedback from the workshop with pupils.

Table 8.5: Key Findings from School Engagement Workshop

Things I like	Things I don't like	Things to work on
• Riverside Path • The underpass of the A96 providing access to TECA • The paths around TECA provide good access to this facility	• Pot holes that make it hard to cycle • Vehicles travelling too fast • Vehicles parking on double yellow lines at the school • Noise concerns due to the volume of traffic • Not enough safe crossing facilities	• Provision of additional crossing facilities • Addition of scooter facilities on the corridor

9. Problems and Opportunities

9.1 Introduction

This chapter identifies actual and perceived PICOs within the study area. Within STAG, PICOs are described as follows:

- **Problem:** existing and future problems within the transport and land use system;
- **Issues:** uncertainty that the study may not be in a position to resolve, but must work within the context of;
- **Constraints:** representing the bounds within which a study is being undertaken;
- **Opportunity:** changes to improve the transport and land use system to realise opportunities.

The findings that have been presented in previous chapters have been used to inform the identification of existing and future problems and opportunities along the study corridor, including a review of relevant policy documents, review of previous studies, review of relevant data sources and outcomes from consultation.

Throughout this chapter, localised PICOs are presented along various sections of the corridor before consideration is given to non-location specific issues and wider issues that should be borne in mind as the study progresses. The key below is used across the PICO diagrams in the following sections.

Problem

Issue

Constraint

Opportunity

Other

9.2 Localised Corridor Review

9.2.1 AWPR to Dyce Drive (North)

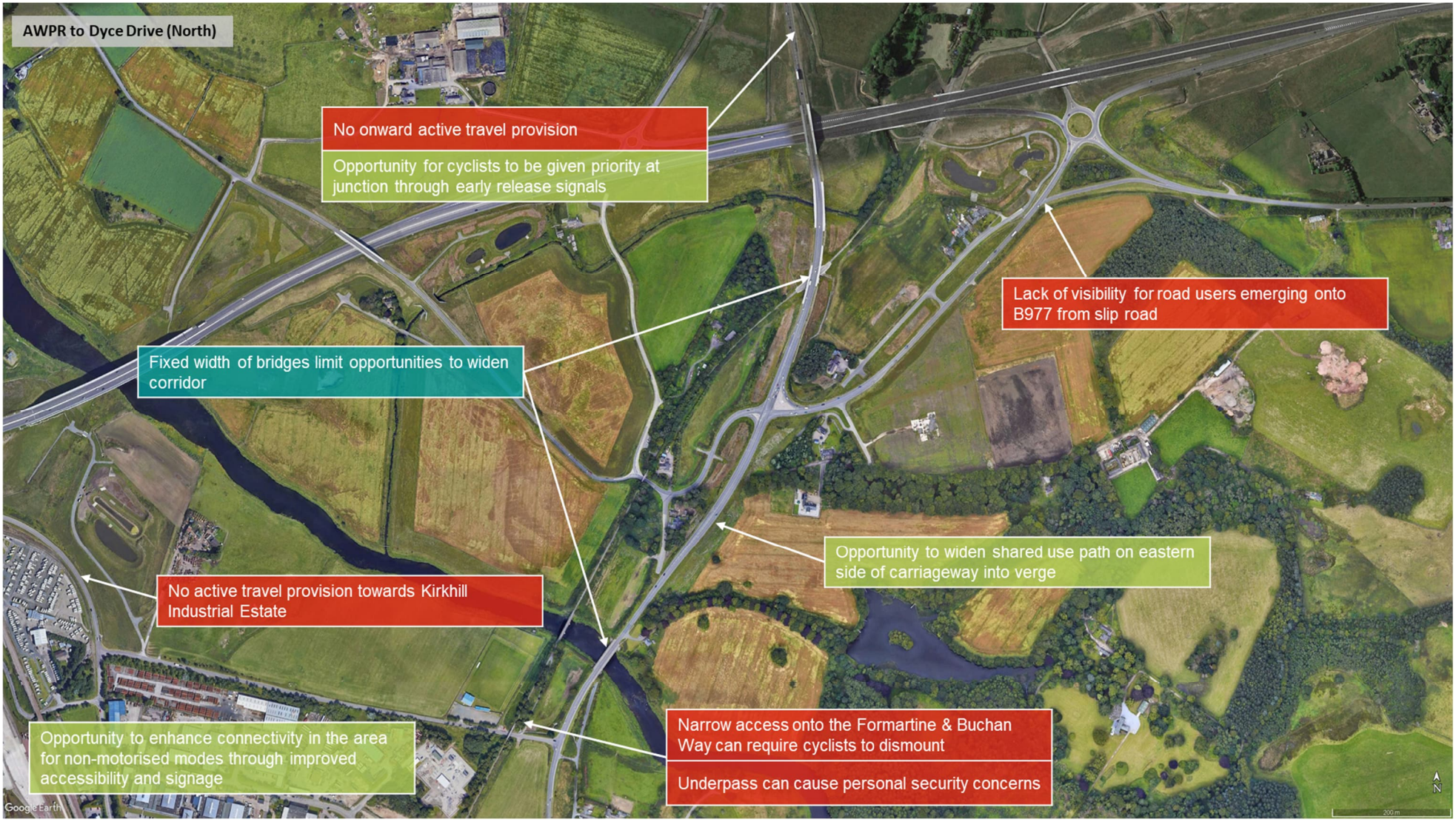


Figure 9.1: Location-Specific Issues between the AWPR and Dyce Drive (North) (Image Source: Google Earth)

9.2.2 Riverview Roundabout (North)

Figure 9.2: Location-Specific Issues at Riverview Roundabout (North) (Image Source: Google Earth)

9.2.3 Riverview Drive (North)

Figure 9.3: Location-Specific Issues on Riverview Drive (North) (Image Source: Google Earth)

9.2.4 Riverview Drive (South)

Figure 9.4: Location-Specific Issues on Riverview Drive (South) (Image Source: Google Earth)

9.2.5 Victoria Street (North)

Figure 9.5: Location-Specific Issues on Victoria Street (North) (Image Source: Google Earth)

9.2.6 Pitmedden Road Junction

Figure 9.6: Location-Specific Issues at the Pitmedden Road Junction (Image Source: Google Earth)

9.2.7 Victoria Street (South)

Figure 9.7: Location-Specific Issues on Victoria Street (South) (Image Source: Google Earth)

9.2.8 Riverview Roundabout (South)

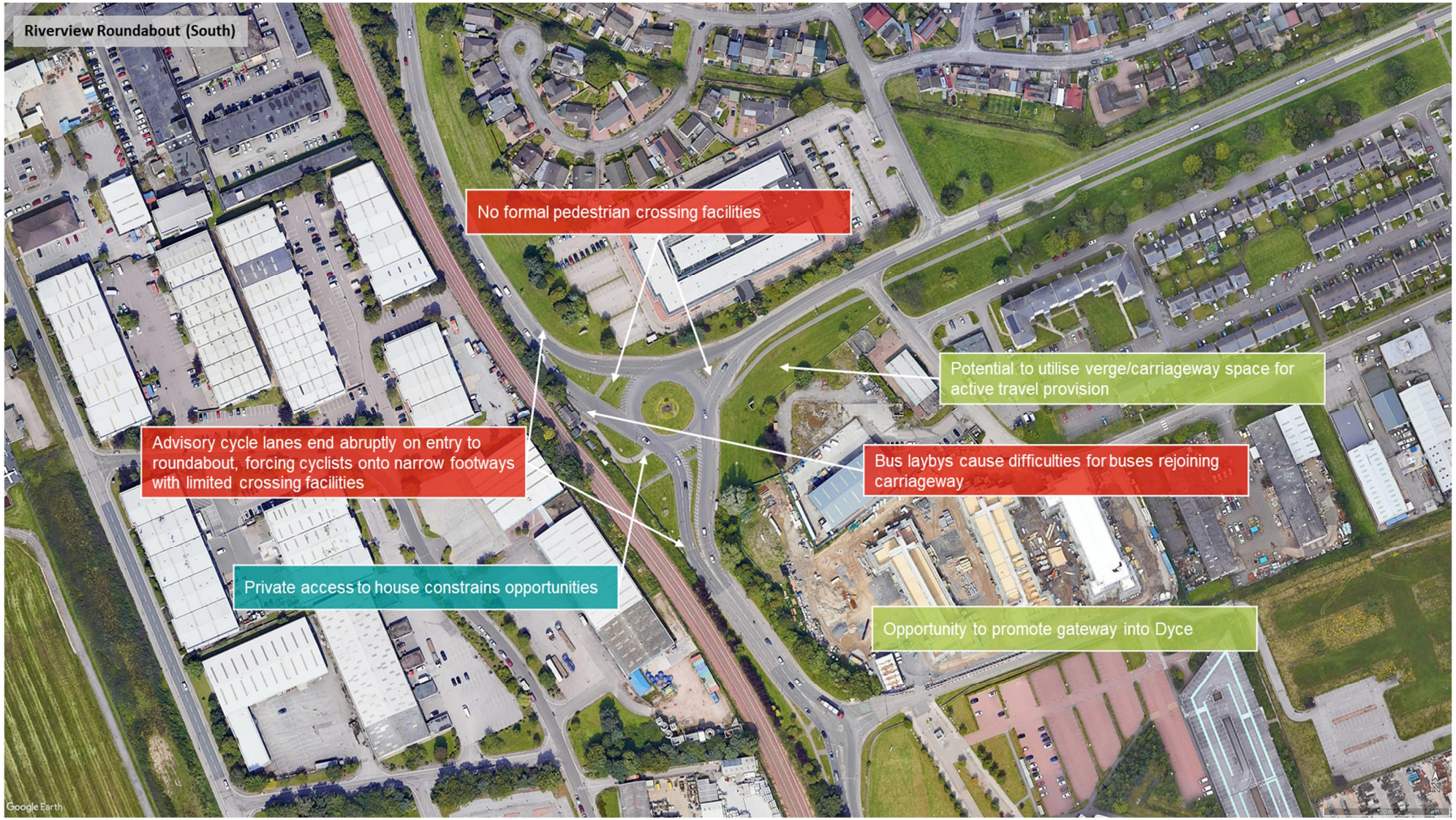


Figure 9.8: Location-Specific Issues at Riverview Roundabout (South) (Image Source: Google Earth)

9.2.9 Stoneywood Road (North)

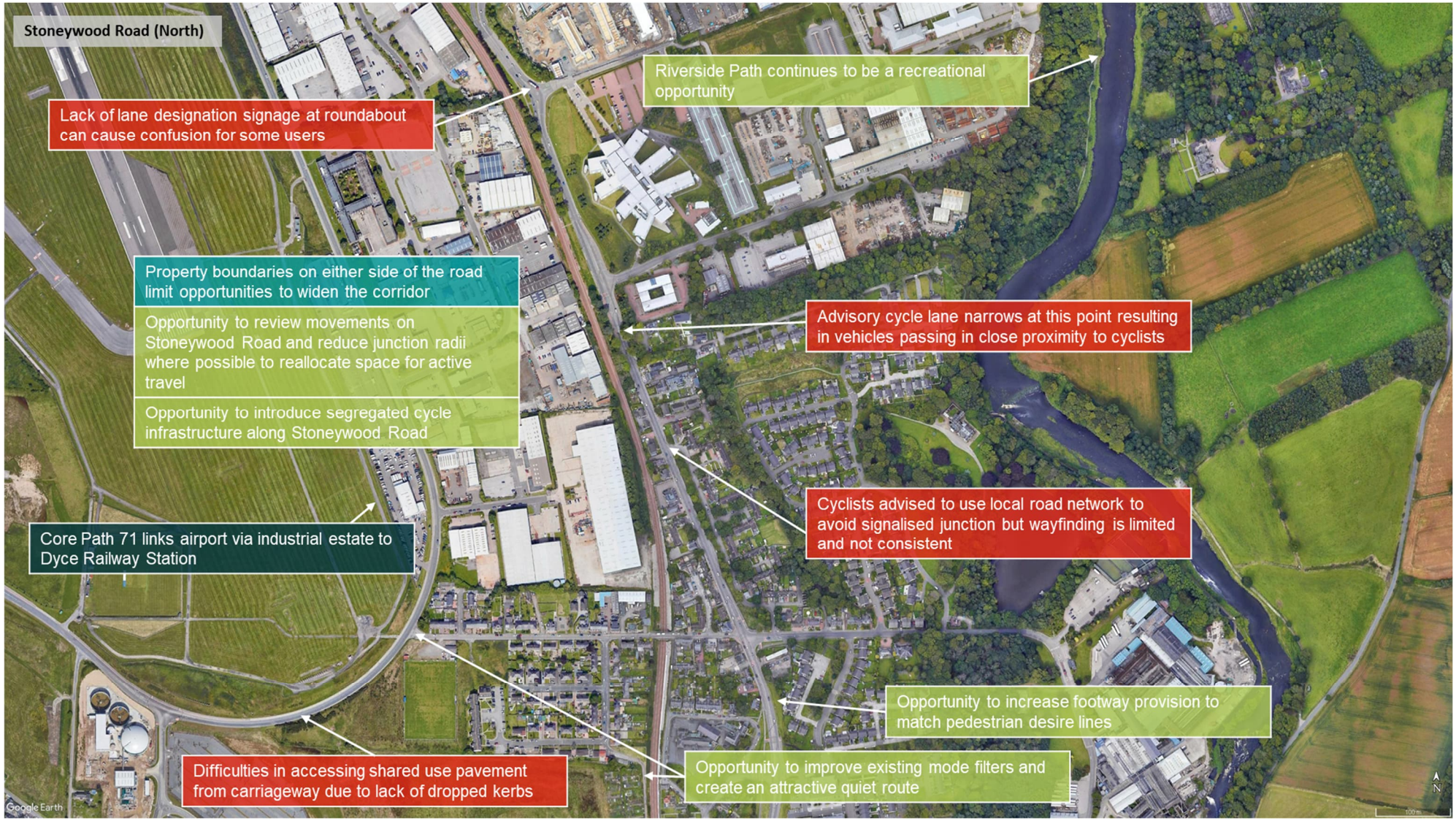


Figure 9.9: Location-Specific Issues on Stoneywood Road (North) (Image Source: Google Earth)

9.2.10 Stoneywood Road (South)

Figure 9.10: Location-Specific Issues on Stoneywood Road (South) (Image Source: Google Earth)

9.3 Strategic Corridor Review

In addition to the localised PICOs set out in the preceding sections, consideration has been given to strategic issues that will be important to consider as the study progresses.

9.3.1 Problems

The strategic problems identified along the study corridor include:

- **F&B Way**: the PICOs work has identified a number of problems along this route:
  - **Maintenance** – there is a lack of maintenance, evidenced by encroaching vegetation.
  - **Signage** – there is generally a lack of signage associated with the route.
  - **Accessibility** – many access points along the F&B Way are not accessible due to gates and barriers.
- **Declining Bus Patronage:** As discussed in **Section 5.5.5**, declining bus patronage in the region in recent years has been exacerbated by the COVID-19 pandemic. The consultation exercise highlighted a number of barriers to increased bus usage for people living along the study corridor:
  - **Journey times** – whilst evidence shown in **Section 5.5.7** highlights decreasing bus journey times, the consultation exercise highlighted that bus users still feel journey times are long given the distance to the city centre from Dyce.
  - **Frequency/Timetabling** – difficulties accessing the airport by bus as shift patterns are outwith bus operation times.
- **Active Travel Infrastructure:** Whilst there is generally good provision of pedestrian infrastructure within the study area, the PICOs work has identified a number of areas where there is a lack of footway provision to match pedestrian desire lines. Further problems identified included advisory cycle lanes being narrow and inconsistent and a limited number of appropriate crossings for pedestrians and cyclists throughout the study area.
- **Driver behaviour:** Outcomes of the consultation highlighted anecdotal evidence of driver behaviour issues including vehicles travelling in excess of speed limits, ignoring cycling provision, flouting 'no entry' signs and parking on double yellow lines. This can impact on the safety and perceptions of safety for other road users, particularly cyclists.
- **Maintenance of Active Travel Infrastructure:** As highlighted from Placecheck feedback in **Table 8.4**, there is a lack of maintenance of active travel infrastructure including the surfaces of advisory cycle lanes, footways and the underpass at Millhill Brae. The Riverside Path was highlighted as a particular problem area in terms of maintenance.
- **Signage:** There is generally a lack of active travel signage along the corridor.
- **Monitoring:** There appears to be issues with the active travel counters in the study area. Counter validation may support further understanding of active travel movements on the corridor. It is understood that this is under consideration by ACC as part of a separate workstream.

9.3.2 Opportunities

The strategic opportunities identified along the study corridor include:

- **Locking in the Benefits of the AWPR**: The opening of the AWPR has significantly changed travel patterns and journey times, reducing delays in many areas throughout the network. There is therefore an opportunity to incentivise public transport use along the corridor, locking in the benefits of reduced congestion and journey time savings.
- **Policy Context:** The study aims strongly align with the national, regional and local policy context, including support for more trips to be undertaken using sustainable modes of travel.
- **Bus Service Partnerships:** The Transport (Scotland) Act 2019 has provided new powers for Councils to enable greater control and operation of local bus services as well as enhanced partnership working arrangements under Bus Service Improvement Partnerships (BSIPs). A Quality Partnership Agreement was signed by parties in the region in 2018 to form the North East Bus Alliance, providing renewed impetus to the identification of measures that can enhance the attractiveness of bus services in the region.

- **Funding:** In 2020, The Scottish Government announced funding for active travel and bus priority. The 2020/21 Programme for Government outlines a commitment towards delivering on health, economic and environment goals by investing £500m over the next five years in active travel infrastructure, access to bikes and behaviour change schemes to promote walking, wheeling and cycling. It also outlines a reaffirmed commitment to a £500m BPF to support authorities' ambitions around tackling congestion so that bus journeys are quicker and more reliable, and more people make the choice to take the bus. The BPF was officially launched in November 2020, with funding awarded to eight partnerships in June 2021, including £12m for the North East Bus Alliance.
- **Distances to Work:** As discussed in **Section 5.2**, the vast majority of those living within the study area travel less than 10km for work. This presents opportunities to encourage active travel use for journeys to work from these settlements.
- **20-minute Neighbourhood:** potential to adopt the 20-minute neighbourhood concept in Dyce, capitalising on its walkability.

9.3.3 Issues

The strategic issues identified along the study corridor include:

- **Future Attitudes to Travel and Travel Behaviour:** There are significant uncertainties regarding future attitudes to travel and travel behaviour given the unprecedented times brought about by the COVID-19 pandemic. Significant changes were observed in the short-term, with a shift to working from home and flexible working, a reduction in overall travel demand and an increased uptake of active travel. While it has been shown that there is evidence of travel demand returning, it is unclear whether some of the observed changes will be short-term or result in a structural change in how society operates.
- **Climate Change:** In May 2019, the Scottish Government declared a 'Climate Emergency'. The Climate Change (Scotland) Act 2019 sets a legally binding net zero target for all greenhouse gases by 2045. It is likely that climate change will have an increasing impact on the region in future years, bringing rising sea levels and a potential increase in extreme weather events.
- **Technology:** There is uncertainty about the impact that advances in EV technology and autonomous vehicle technology will have on travel behaviour and vehicle ownership. There is a risk that advances in EV technology and improved affordability/availability of EVs could result in an increase in single occupancy car use. Advances in autonomous vehicle technology could result in an increase in travel demand, due to more usable travel time. However, it could encourage other changes in travel behaviour such as increased car sharing or reduced car ownership/increased use of Mobility as a Service (MaaS).
- **Policy:** Demand management measures in the city centre could result in a shift away from private car to public transport and active travel for journeys to the city centre. This could also have longer term implications for land use, shifting to a denser population in the city centre and around major public transport nodes.
- **High Car Usage:** As discussed in **Section 5.3**, the car mode share for travel to work along the corridor is high, with the study area recording rates of driving to work above the national average. This has implications in terms of national, regional and local objectives to reduce carbon emissions, meet air quality objectives and deliver reliable bus services.

9.3.4 Constraints

The strategic constraints identified along the study corridor include:

- **Political Will:** Due to the historic prevalence of private car travel in much of the study area, measures focussed on enhancing walking, wheeling, cycling and public transport use may not be supported by the public, which could reduce political support for such measures.
- **Funding:** While the availability of increased funding at a national level provides an opportunity for investment in sustainable modes, funding streams will be competitive. Furthermore, a 2019 report by Audit Scotland found that Scottish Government revenue funding to local authorities has been increasingly constrained in recent years, with national policy initiatives making up an increasing proportion of Council budgets, which limits flexibility for local authorities to plan how to allocate funds.
- **Environment:** As set out in **Chapter 7**, there are a number of environmental constraints that will require consideration as the study develops, particularly as options are assessed against environmental criteria at a later stage in the STAG process to ensure identified options avoid or seek to mitigate adverse environmental impacts. There are segments of the A947 with a high likelihood of river flooding where they cross the River

Don and its tributaries, and along the course of the river which runs adjacent to the study corridor. Options along the River Don are also constrained by wildlife habitats.

- **Trunk Road Contracts (AWPR/B-T):** The AWPR operator Aberdeen Roads Limited have a design, build and operate contract for the AWPR. Therefore, any design changes at AWPR junctions may be more complex to bring forward than at other locations on the corridor and any alteration to infrastructure may require consideration of contractual arrangement at these locations, in consultation with Aberdeen Roads Limited, Transport Scotland and the Local Roads Authority.

10. Summary

This report has been prepared to outline the findings of the PICOs work package of the A947 Multi-Modal Corridor Study. It has:

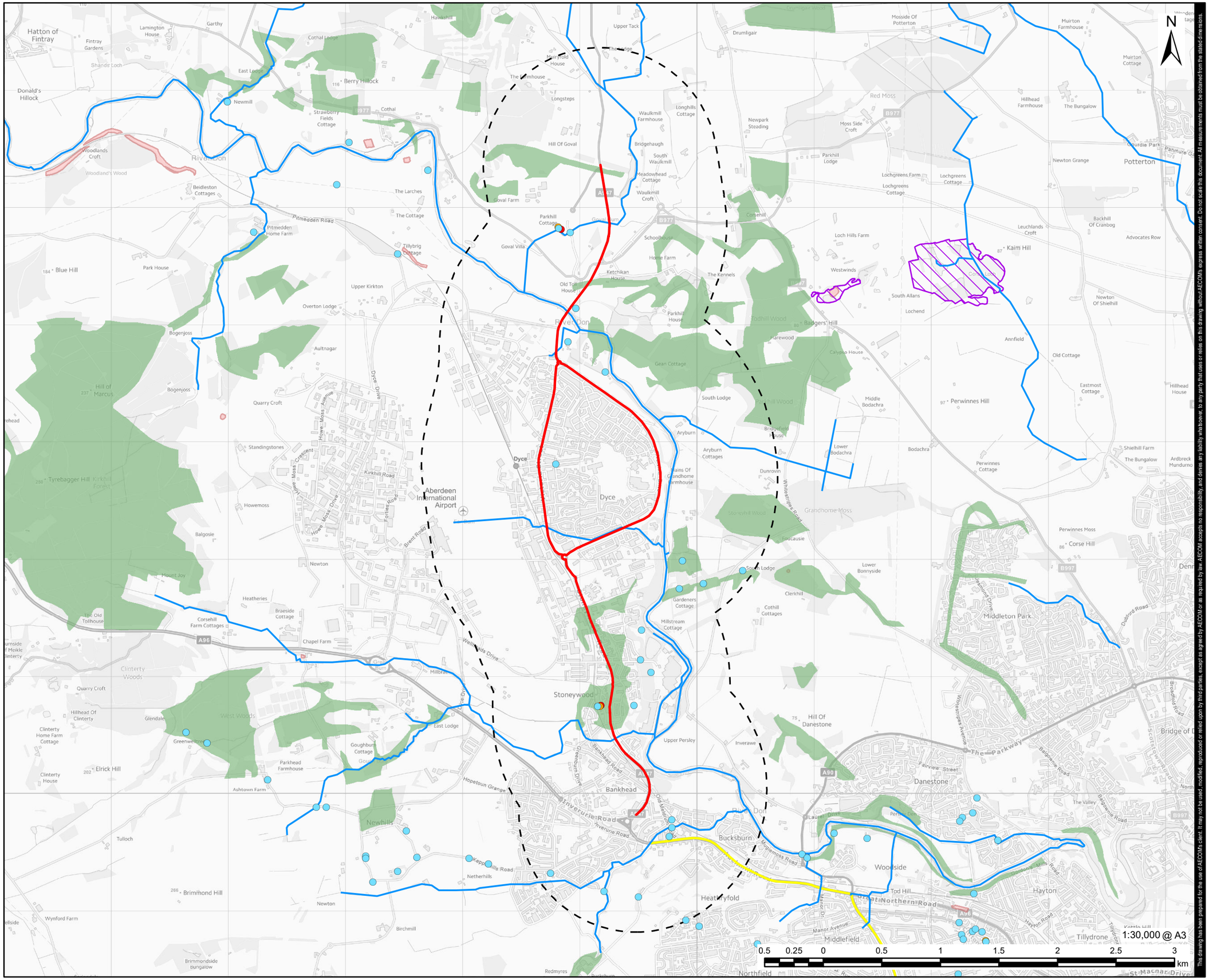
- Set the policy context within which the study is being taken forward;
- Provided a summary of previous work that has been undertaken in the study area, drawing on key outcomes of relevance to the study;
- Set the baseline context of the study area, drawing on a review of socio-economic data, relevant transport datasets, development allocations and environmental constraints;
- Presented the findings from consultation with stakeholders, community groups and members of the public; and
- Presented evidence-based problems, issues, constraints and opportunities along the study corridor considered at both the local and strategic level.

The report lays the foundations for the development of Transport Planning Objectives (TPOs), option generation, sifting and development and the appraisal of options.

Appendix A – Environmental Constraints Mapping

Revision: 01 Drawn: ER Checked: LC Approved: AI Date: 2021-12-15

Filename: C:\Users\RaineE\OneDrive - AECOM\Documents\Projects\A947\02_Maps\Fig1_EnvironmentalConstraints_211210.mxd



AECOM

PROJECT

A947 Multi-Modal Study - STAG-Based Apprasial

CLIENT

Aberdeen City Council

CONSULTANT

AECOM Limited
2 City Walk
Holbeck, Leeds
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www.aecom.com

LEGEND

- Study Area
- 1km Study Corridor
- River
- Site of Special Scientific Interest (SSSI)
- Air Quality Management Area (AQMA)
- Ancient Woodland
- Scheduled Monument
- Grade 1 Listed Building
- Grade 2 Listed Building
- Grade 3 Listed Building

NOTES

ISSUE PURPOSE

FINAL

PROJECT NUMBER

60667436

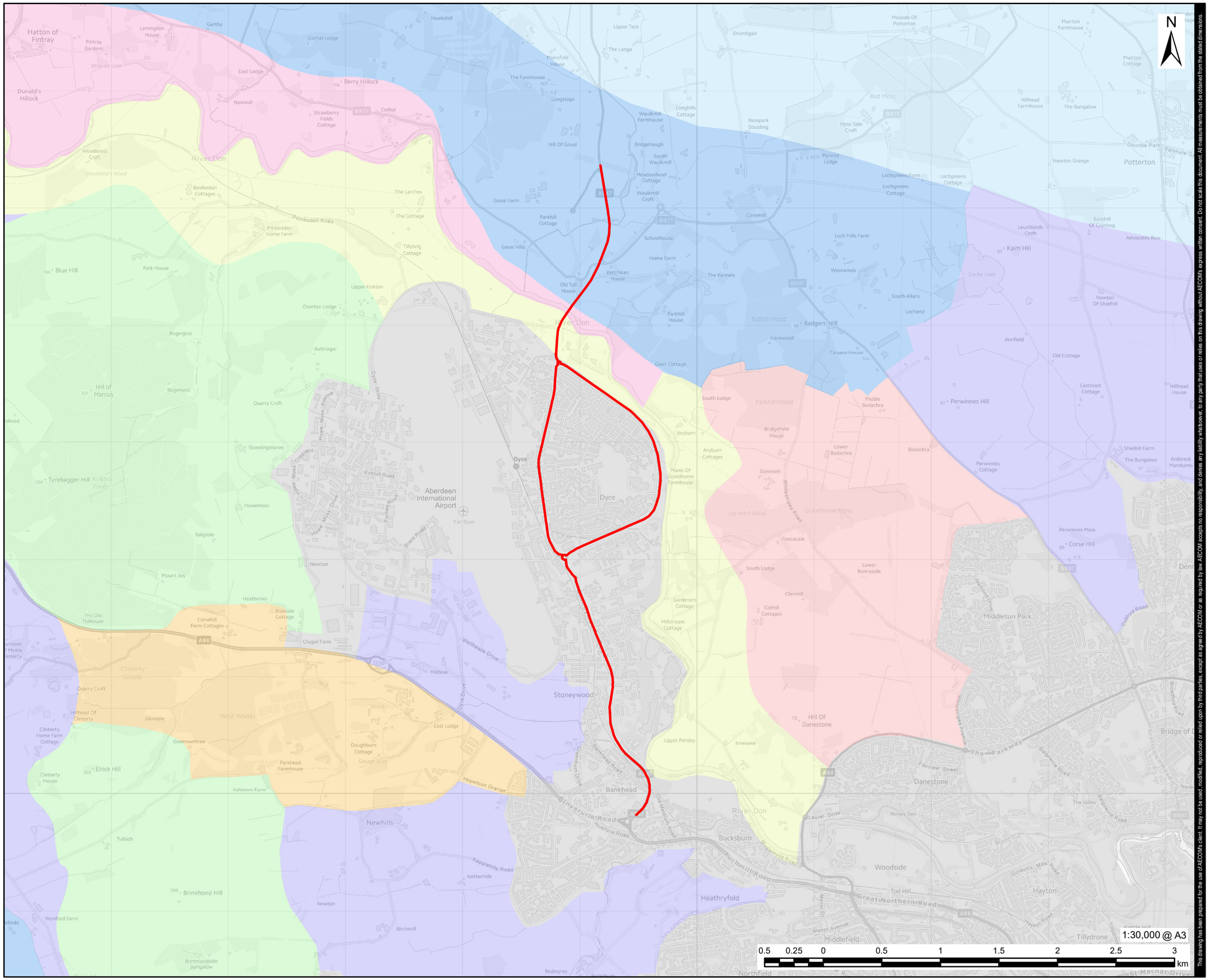
FIGURE TITLE

Environmental Constraints Plan

FIGURE NUMBER

Figure 1

Revision: 01 Drawn: ER Checked: LC Approved: AI Date: 2021-12-15



AECOM

PROJECT

A947 Multi-Modal Study - STAG-Based Appraisal

CLIENT

Aberdeen City Council

CONSULTANT

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www.aecom.com

LEGEND

Study Area

NOTES

Contains Ordnance Survey Data © Crown Copyright and database right [2021].
Soil Survey of Scotland Staff (1981). Soil maps of Scotland at a scale of 1:250 000. Macaulay Institute for Soil Research, Aberdeen. DOI: 10.5281/zenodo.4646891.

ISSUE PURPOSE

FINAL

PROJECT NUMBER

60667436

FIGURE TITLE

Landscape Character Areas

FIGURE NUMBER

Figure 2

Filename: C:\Users\RaineE\OneDrive - AECOM\Documents\Projects\A947\02_Maps\Fig2_Landscape_Character_Areas_211215.mxd

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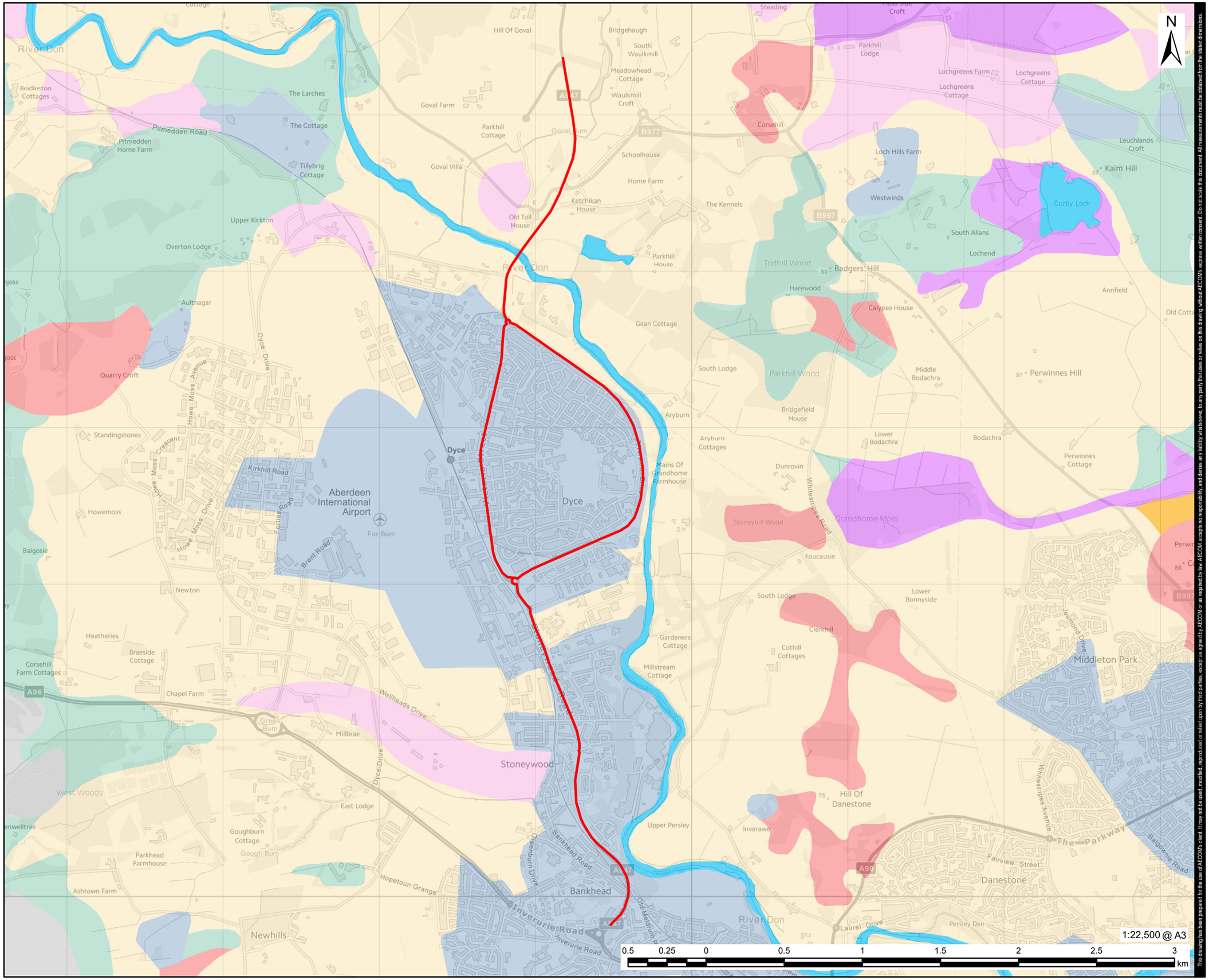

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PROJECT

A947 Multi-Modal Study - STAG-Based Appraisal

CLIENT

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LEGEND

- Study Area

Land Capability for Agriculture

- 3.1 - Land capable of producing consistently high yields of a narow range of crops and/or moderate yields of a wider range. Short grass leys are common.
- 3.2 - Land capable of average production though high yields of barley, oats and grass can be obtained. Grass leys are common.
- 4.1 - Land capable of producing a narrow range of crops, primarily grassland with short arable breaks of forage crops and cereal
- 4.2 - Land capable of producing a narrow range of crops, primarily on grassland with short arable breaks of forage crops.
- 5.2 - Land capable of use as improved grassland. Few problems with pasture establishment but may be difficult to maintain.
- 5.3 - Land capable of use as improved grassland. Pasture deteriorates quickly.
- 6.2 - Land capable of use as rough grazings with moderate quality plants.
- Urban
- Unknown

NOTES

ISSUE PURPOSE

FINAL

PROJECT NUMBER

60667436

FIGURE TITLE

Land Capability for Agriculture

FIGURE NUMBER

Figure 3

Appendix B – Study Tour Findings Note

A947 Study Tours – Key Findings

Introduction

AECOM has been commissioned by Aberdeen City Council (ACC) to develop a Scottish Transport Appraisal Guidance (STAG)-based appraisal of options for improving transport connections (particularly public transport and active travel connections) along the A947 corridor between Bucksburn Roundabout and the AWPR (Parkhill Junction). This note has been prepared to provide a summary of a site visit 'Study Tour' that was undertaken with members of the AECOM Project Team, representatives from the Client Group and key stakeholders.

Study Tours

Overview

As part of the A947 Multi-Modal Corridor Study, AECOM led a Study Tour on Wednesday 24th November 2021 which representatives from ACC, Nestrans and other key stakeholders attended. An additional study tour was held on Monday 6th December with elected members. These events allowed transport-related issues along the corridor to be raised and identification of opportunities which may enhance the A947 corridor in terms of active travel and public transport interventions to be discussed. Feedback from the study tour will be used to inform the Problems, Issues, Constraints and Opportunities (PICOs) – a key task in the STAG-based appraisal.

Attendees

The attendees of the Study Tours are detailed in the tables below.

Table 1: 24th November Attendees

Name	Organisation
Tony Maric	Aberdeen City Council
Gregor Whyte	Aberdeen City Council
Mark Yule	Aberdeen City Council
Ross Stevenson	Aberdeen City Council
Jon Barron	Nestrans / Grampian Cycle Partnership
Ruth Riddell	British Horse Society
David Adam	First Aberdeen
Daniel Laird	Stagecoach
Nico Silvani	Robert Gordon University / Aberdeen Cycle Forum
Andrew Robb	AECOM
Andy Keba	AECOM
Dmitrijs Stepanovs	AECOM
Fiona Bebbington	AECOM

Table 2: 6th December Attendees

Name	Organisation
Councillor Neil MacGregor	Dyce / Bucksburn / Danestone Councillor
Councillor Sandra Macdonald	George Street / Harbour Councillor
Gregor Whyte	Aberdeen City Council
Andrew Robb	AECOM
Fiona Bebbington	AECOM

Format

The study tour on 24th November 2021, provided attendees the opportunity to participate in a walking tour between 09:30 and 12:45 or a cycling tour between 13:15 and 15:00. The event held on 6th December was solely a walking tour held between 13:00 and 15:00. Attendees for each tour met at Dyce Railway Station and undertook a tour of the A947 study area including the National Cycle Network.

The groups stopped at various locations in the study area and attendees were asked to think about problems with the existing transport provision and provide suggestions on how the study area could be improved for active travel and public transport.

Key Findings

The following sections highlight the key issues and opportunities raised through discussions on the Study Tour, including location specific and general comments for the corridor as whole.

Dyce Railway Station

Problems & Issues

Key problems/issues identified at Dyce Railway Station related to a lack of signage to the Formartine and Buchan Way and cycle / pedestrian access.

The lack of signage and identifying features to the Formartine and Buchan Way limits its navigability to those who are not familiar with the route and will affect path usage. The access to the route is at the northern end of the station, the station car park is very constrained and there is no clear route through the station for active travel users towards the start of the Formartine and Buchan Way.

Network Rail Access for All improvements do provide a lift allowing cyclists or wheelchair users to cross the rail line. However, this would only accommodate for very low volumes of users crossing west/east which may affect choice of transport mode.

Figure 1: Dyce Station Car Park

The station access from Victoria Street for active travel users is poor, with a narrow footway on one side of the road and stretches of on-street parking.

It was noted that previous feasibility work looking at the potential to extend the car park at Dyce Station was undertaken by AECOM on behalf of Nestrans. This scheme has not moved forward as yet, but should be borne in mind as part of consideration of options involving the rail station.

Opportunities

Creation of an active travel route through the station car park would help improve safety and navigability of the route. This could be achieved through introducing lining for cyclists / pedestrians through the car park and greater provision of wayfinding signage .

There is a local path connection across the field to Union Row and this is well lit. During the walkover, desire lines were identified that link the station car park to the Union Row path – this is likely used by local residents to access the station. There is the potential to consider options that would formalise this link to meet the existing demand.

Figure 2: Desire line from Union Row to Dyce Station

A947 / Dyce Drive Junction

Problems & Issues

Dyce Drive provides a link to the Formartine and Buchan Way however on-road links have no provision for non-motorised users (pedestrians, cyclists, horse riders). This affects the safety and attractiveness of the route.

The Formartine and Buchan Way is a major route for horse riders however none of the wayfinding signage which promotes shared use indicates that horses are allowed on the path.

An alternative route to remaining adjacent to the A947 corridor involves utilising a private road network which leads to an underpass with links to the Formartine and Buchan Way. The underpass requires cyclists to dismount due to height limitations and to ensure visibility when entering and exiting. In addition, due to the nature of the underpass and lack of lighting, personal security concerns may affect its use especially during hours of darkness.

Figure 3: NCN Underpass access

Although signage is present it is limited, and the route may not be clear to users especially when travelling from Dyce Drive to Riverview Drive. Further to this, the path on the approach to the Formartine and Buchan Way was found to be overgrown, with collected leaves and vegetation potentially causing a hazard.

Figure 4: Existing Signage

Opportunities

The improved provision of wayfinding signage would help improve the navigability of the route. In addition, as horse riders are frequent users of the Formartine and Buchan Way, inclusion of a horse rider on signage would help make all users aware of their presence.

The creation of a more direct shared path link between Dyce Drive and Riverview Drive would create a more desirable route for all users and reduce personal safety concerns associated with the underpass route. As Dyce Drive offers no

provision for non-motorised users currently, any new provision would support the creation of a more direct route.

Victoria Street / Pitmedden Road Junction

Problems & Issues

The Victoria Street / Pitmedden Road junction is relatively wide which could encourage increased vehicle speeds.

Guardrails are currently in place around the junction. It was suggested that this is likely to encourage pedestrians to the dedicated crossing points for the use of crossing sensors. Although offering protection for pedestrians, guardrails can present safety issues for on-road cyclists and would affect ability to create a sense of place.

Figure 5: Victoria Street / Pitmedden Road Junction
(Google Maps)

Opportunities

The junction is wide and has the potential to be reduced following vehicle tracking which would enable greater space to be reallocated to non-motorised users, such as protected junction or place creation.

There is currently a physical disconnect between Dyce Parish Church and Dyce Church Hall. These two community assets and attractive heritage features are separated by a wide junction and inconsistent footways (interrupted via old access to a disused site/informal car park). As such there is an opportunity to reconnect the two buildings with improved crossings and visual cues.

An informal active travel link to the Formartine and Buchan Way exists from Pitmedden Road providing links to the Railway Station as well as wider connections.

Victoria Street

Problems & Issues

Vehicles travelling along Victoria Street are likely to be travelling straight through rather than using Riverview Drive. It was noted that signage directs road users travelling to destinations beyond Dyce to use Riverview Drive – i.e. using the A947 – however during discussions it was noted that those familiar with the area and likely those using Sat Navs will travel on Victoria Street.

Build outs exist along Victoria Street, likely previously introduced for traffic calming purposes when turning into and out of side roads along the corridor. Bus operators in attendance noted that the build outs can result in difficulties for bus drivers when pulling back into traffic as they are required to give way to oncoming traffic to carry out the manoeuvre.

Footway provision at various locations along Victoria Street has poor surfacing which can increase the risk of trips, slips and falls as well as potentially making it unsuitable for those with mobility issues.

Figure 6: Victoria Street Build outs

There is an existing zebra crossing providing access to the Tesco. It was raised that there has been a history of issues at this location related to parking and cash machine use.

Opportunities

Various opportunities were discussed among the group for the introduction of placemaking interventions. It was noted that the section south of Pitmedden Road lends itself to creation of place with more community facilities and shops.

Road build outs with double yellow lining may provide some traffic calming but with no functional footway width or public realm improvement. There is the opportunity to widen the footways to the same width as the build out to provide greater space for pedestrians.

Restriction of access to Victoria Street was discussed to prevent the existing through traffic movement and allow greater opportunities to enhance the area for the local community. Bus operators noted that they would prefer that bus services are maintained along Victoria Street as these stops receive the greatest patronage. Concerns were also raised into the effect any traffic restrictions would have on local residential roads, especially near to schools.

The potential for the introduction of segregated cycle lanes was discussed among the group and it was noted that segregation may not be possible as a coherent route due to space constraints; however it was also suggested that reduction to traffic volumes may remove the need for segregated infrastructure.

Large access widths for local businesses have the potential to be reduced or continuous footways created to give greater priority to pedestrians.

Presence of Dyce in Bloom planters/benches and areas of community gardens evident around Dyce indicate likely support for further measures to improve and enhance community spaces.

Victoria Street / Station Road / Gordon Terrace

Problems & Issues

This cross-roads connects both the north and south of the village with the east and west and is adjacent to local amenities. However, there is a lack of cohesion and the space is severed by the main road.

There are also a lack of crossing facilities on the south side of the junction to link into Dyce Station. In addition, there is a lack of visual or physical infrastructure to connect the station through to the community facilities and greenspace available near Dyce Primary and Central Park area.

Figure 7: Victoria Street / Station Road / Gordon Terrace

Opportunities

Opportunities exist to create quiet streets which could be facilitated through creating one-way streets or traffic re-routing. This would provide opportunities to enhance the area as a place and facilitate linkages to Dyce Primary and other destinations. The development of a parklet, including green infrastructure and street furniture, around the war memorial, which at present acts as a mini-roundabout, could be created. There are signs that vehicles have collided with the low-level bollards surrounding the memorial in the past.

Figure 8: Gordon Terrace War Memorial

Riverview Drive

Problems & Issues

Riverview Drive currently acts as part of the National Cycle Route 1 and has advisory cycle lanes along much of its length. It was noted that these cycle lanes provide little protection for on road cyclists.

Specific issues were raised during the Study Tour relating to the provision of crossing points along Riverview Drive as at some locations there is only footway provision on one side of the carriageway without adequate crossing provision to change sides when the footway ends. In addition, some crossing points have tactile paving only on one side of the carriageway. This has the potential to disorientate visually impaired users.

It was noted by representatives from Aberdeen City Council that one of the signalised crossings on the southside of Riverview Drive has the potential to be removed in future. This would impact non-motorised user permeability across Riverview Drive to the housing development, Donside path and industrial units.

Figure 9: Riverview Drive Crossing Provision

The Donside path is a valuable link for the community however the surface is variable, narrowing and degrading towards the south of the path. In addition, there are limited formal links connecting to housing developments or Riverview Drive itself. This may make it unsuitable for certain user types such as those with mobility issues or cyclists only with access to a road bike and therefore potentially limits accessibility for some users.

Opportunities

The opportunity exists to introduce segregated cycleways along this route as part of the NCN however it is noted that cyclists have the option to utilise the Donside Path for some of this section as an alternative to being on-road but this is a less direct route. The need for this may be influenced by any alterations to Victoria Street i.e., creation of placemaking or low traffic neighbourhood.

Some junctions on the west of the road corridor have the potential to be narrowed (i.e. Todlaw Walk) which would lower vehicle speeds and create more space for non-motorised users.

The Donside Path provides a traffic free route to active travel users. Various improvements have been undertaken in recent years, including the addition of a cycling and pedestrian bridge over a tributary. Further enhancements could be considered to make it a more desirable route.

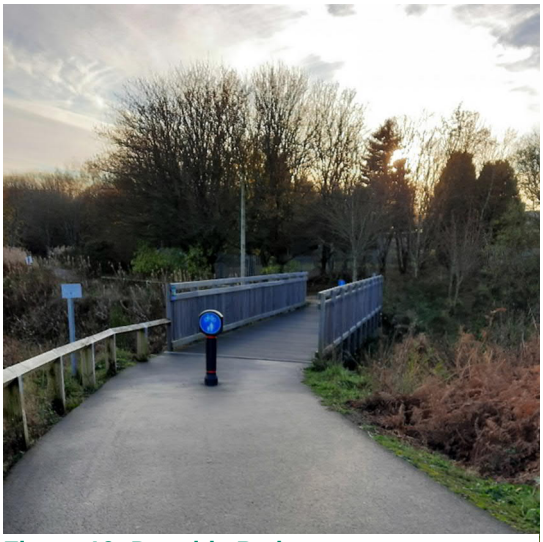

Figure 10: Donside Path

At the northern end of Riverview Drive, it was noted that informal accesses into the housing development could be formalised potentially providing a more direct route for local residents.

Stoneywood Road

Problems & Issues

On Stoneywood Road, advisory cycle lanes are present however these are not consistent along the entirety of the road, creating an incoherent route for cyclists that may detract some users by not having dedicated infrastructure.

There is a pinch point south of the Stoneywood Terrace / Stoneywood Road junction which results in a break in the footway provision. A desire line exists through the verge to where the footway continues.

Figure 11: Stoneywood Road Advisory Cycle Lanes

Opportunities

There is the potential for a segregated cycleway on Stoneywood Road to be introduced between Riverview Drive and Stoneywood Park which may encourage cycle uptake, with users feeling safer.

Stoneywood Road is generally wide and is suitable for a high volume of motorised vehicles. It was noted during the Study Tour that there are a few active frontages along the section however there are also large access points to businesses / industrial areas. A review of movements along Stoneywood Road and side roads may allow for the reduction of junction radii along the route to reallocate space to pedestrians.

Where footway provision breaks south of Stoneywood Terrace there is the potential to introduce a footway in the verge to meet the desire lines of the local community.

The potential conversion of existing bus stops on Stoneywood Road to bus stop lay-bys was raised, particularly the Beech Manor bus stop. Verge space exists that could accommodate this however discussions with the bus operators suggested that the benefits of bus stop lay-bys are location specific and would need further consideration.

Figure 12: Stoneywood Road / Beech Manor Bus Stop *(Google Maps)*

General

In addition to location specific issues and opportunities there were also some general comments raised for the corridor, relating to bus stop facilities, shared use signage and the new Mugiemoss housing development.

Problems & Issues

As covered at the Dyce Drive junction, the Formartine and Buchan Way is a major route for horse riders, but signage provided does not indicate the horse riders are allowed on the path.

Some bus services use the local road network to serve the community however it was noted that some residential roads are too narrow for bus services which limits routes and the areas of the community that can be served.

Bus services into Aberdeen City Centre take a long time in relation to the distance travelled – long journey times reduce the attractiveness of the service and consequently people are more likely to make the decision to travel by private vehicle. However, it was observed that those living closer to Dyce rail station are likely to be more inclined to take the train into the city centre rather than the bus.

On the local residential roads, it was observed by the group that there can be fast traffic likely due to the width and feel of the road i.e. Netherview Drive; this may reduce the number of active travel users as well as have an effect on how the area feels as a place.

Drainage issues were identified in a few locations during the site visit. Flooded paths have the potential to deter the number of users walking and cycling along a link.

Although rat-running through streets in Dyce appears to be less significant than in previous years (potentially due to the impacts of the AWPR, the oil and gas downturn and the COVID-19 pandemic), there are still instances of this through some areas e.g. the Dandara scheme within Stoneywood.

Opportunities

The opportunity exists to update the wayfinding signage for the Formartine and Buchan Way to include equestrian users. This would help provide information to all path users about the presence of horse riders and encourage the sharing of space.

Figure 13: Shared Use Signage *(Source: Traffic Signs Manual)*

Bus stop provision within the study area is not consistent therefore the opportunity exists to improve facilities such as bus shelters and road markings.

The new Mugiemoss housing development was raised by the bus operators stating that there would be the potential for reconfiguring existing routes in order to serve the development.

Fast vehicle speeds were observed on Netherview Drive – to mitigate this and help to enhance the area as a place, traffic calming measures could be introduced.

Potential for the 20-minute neighbourhood concept to be adopted in Dyce, which would allow more needs to be met within the local area. This ties into potential placemaking considerations on Victoria street.

Bankhead Quiet Route

Although not signed there is an existing quiet route through Bankhead providing an alternative access to Dyce Station – as shown in Figure 14.

There are sections of this route which include existing 'modal filters' preventing through traffic, such as at the end of Waterton Road and where Market Street meets Wellheads Drive.

Opportunities exist to greater promote this route as a quiet route for the local community who may feel safer cycling away from busier roads. Existing crossing provision is not suitable in all locations therefore opportunities exist to upgrade crossing facilities to provide east-west links.

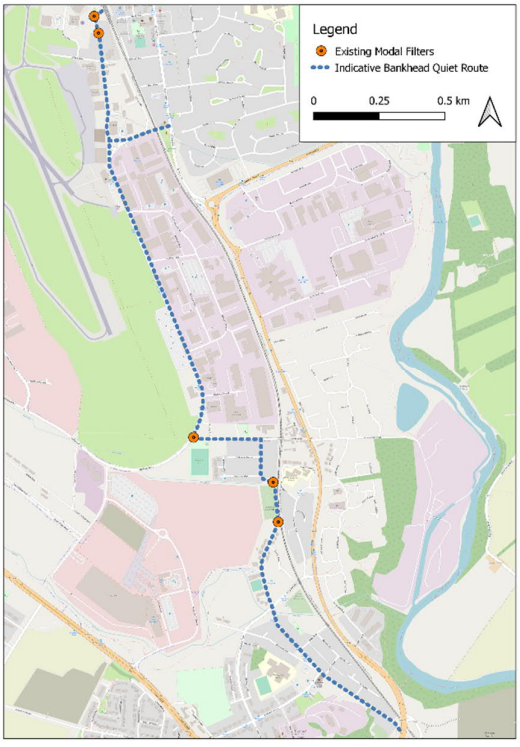

Figure 14: Bankhead Quiet Route

Next Steps

The key findings from this note will help to inform the Problems, Issues, Constraints and Opportunities mapping as part of the STAG-based appraisal, thereafter supporting the setting of study objectives in early 2022.

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Appendix B – Option Generation, Sifting and Development Technical Note

A947 Multi-Modal Study: STAG-Based Appraisal

Option Generation, Sifting and Development Technical Note

Project number: 60667436

August 2022

Delivering a better world

Quality information

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Revision History

Revision	Revision date	Details	Authorized	Name	Position
0	25-05-2022	Draft for Client Comment	AR	Andrew Robb	Project Manager
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1. Introduction

1.1 Overview

This note presents an overview of the option generation, sifting and development process that has been undertaken to arrive at a set of options for appraisal for the A947 Multi-Modal Corridor Study. The aim is to identify a set of options that could potentially deliver the Transport Planning Objectives (TPOs) and, in turn, help to address the problems, issues and constraints identified on the study corridor while helping to realise the opportunities. The study area is shown in the diagram below.

Figure 1.1: Study Area

1.2 Approach

A long list of options has been developed based on a number of sources, including:

- Consultation with ACC, Aberdeenshire Council and Nestrans officers, stakeholders, Community Council groups and members of the public;
- A review of previous studies to identify historical proposals that remain viable options;
- A review of statutory planning and policy documents; and
- Outputs from the evidence-led process following by the team undertaking the appraisal.

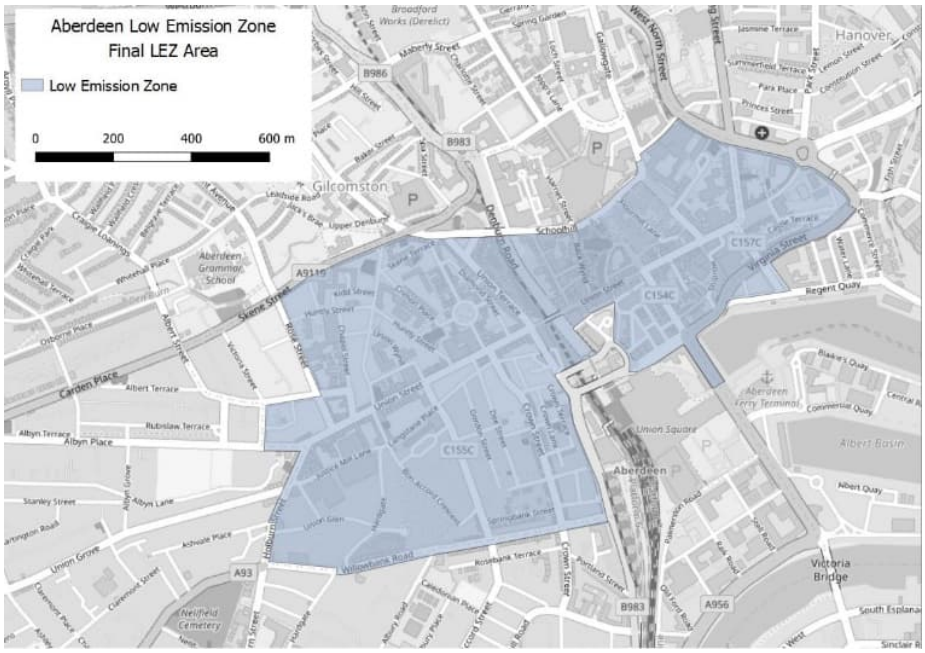
1.3 Do-Minimum Scenario

In line with Scottish Transport Appraisal Guidance (STAG), all generated options must be appraised against a Do-Minimum scenario. Transport Scotland define the Do-Minimum in STAG as:

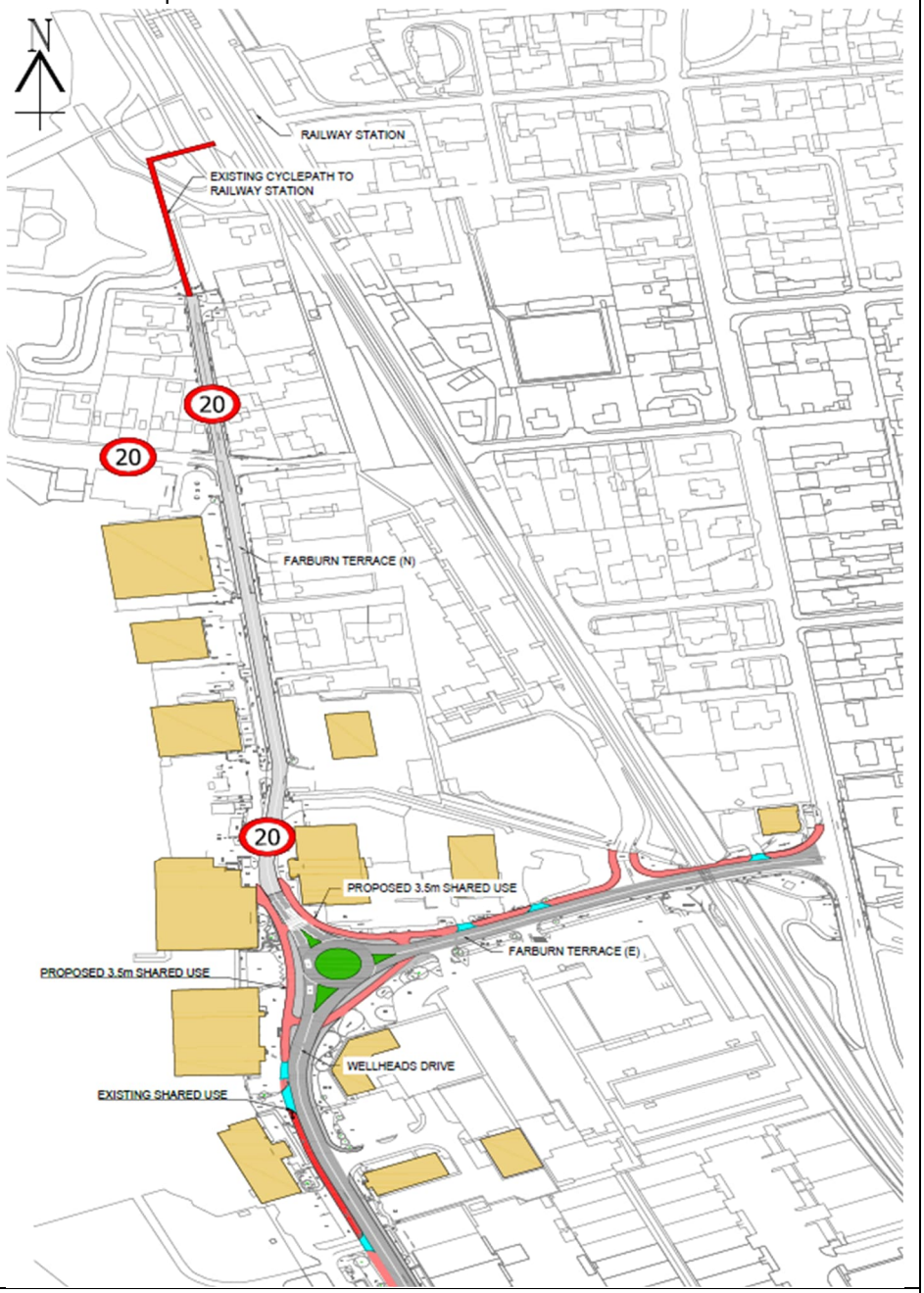
'the most likely transport situation over the course of the appraisal period if no intervention were to occur…The do-minimum should also include minor changes which can be expected to be carried out as conditions deteriorate, should the proposed interventions not go ahead. These improvements should not be significant, with any significant changes considered as an option in their own right as part of Option Generation, Sifting and Development.'[1]

The Do-Minimum for the A947 Multi-Modal Corridor Study assumes the interventions presented in the table below are in place.

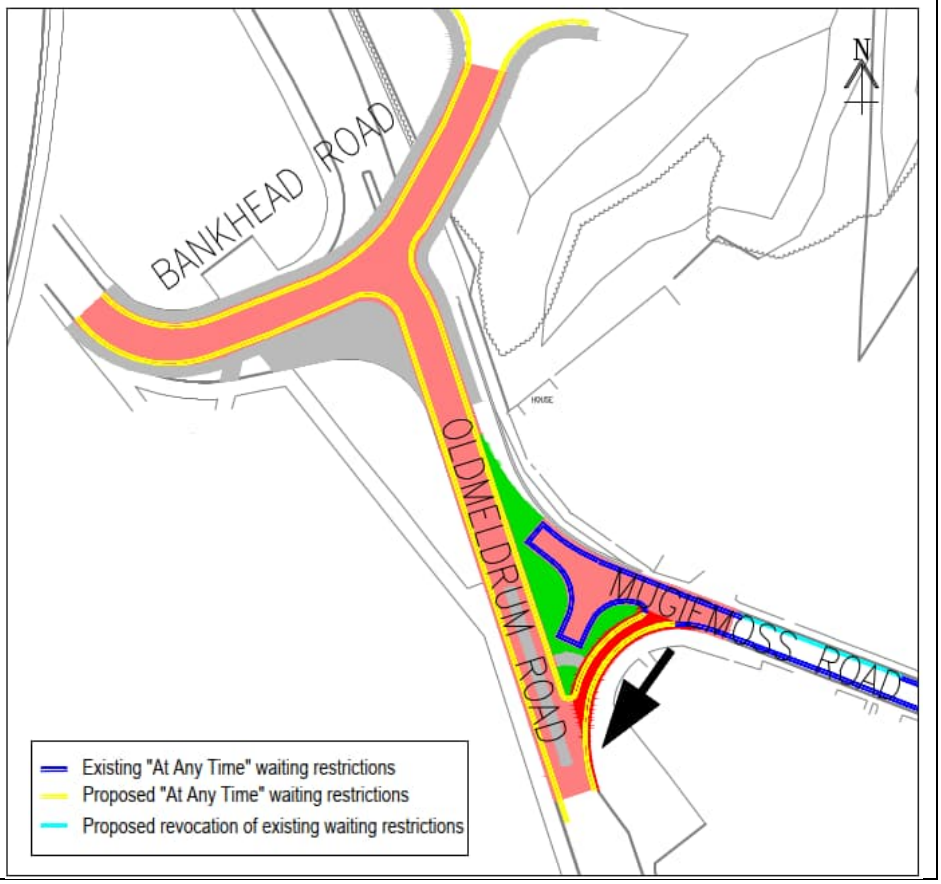
Table 1.1: Committed Transport Projects included within the A947 Multi-Modal Corridor Study

Scheme	Description
Low Emission Zone (LEZ)	• ACC will introduce an LEZ in May 2022, where only certain vehicles will be able to enter based on their emissions standards. It will be introduced with a two year 'grace' period meaning that between 2022 and May 2024, drivers will not be fined for entering the LEZ with a non-compliant vehicle. The LEZ will then come into full effect in June 2024. • The LEZ area[2] is shown in the diagram below. 
A92/A96 Haudagain Improvement	• The A92/A96 Haudagain Improvement Project includes approximately 500m of new dual carriageway connecting the A92 North Anderson Drive and the A96 Auchmill Road to assist in reducing traffic congestion and improving journey time reliability. • The Haudagain Junction is located approximately 2km east of the southern extent of the A947 corridor and therefore may affect travel patterns within the study area. • The Haudagain Improvement Project was formally opened by the Transport Minister in May 2022.

[1] https://www.transport.gov.scot/publication/stag-technical-database/section-2/#s23
[2] https://www.aberdeencity.gov.uk/services/roads-transport-and-parking/low-emission-zone

Scheme	Description
Farburn Terrace Cycle and Pedestrian Improvements	• As part of ACC's Active Travel Action Plan, ACC is progressing improvements in accessibility for pedestrians and cyclists to and from Dyce Station, Aberdeen International Airport and the surrounding business and residential areas of Dyce. • Farburn Terrace and in particular its roundabout with Wellheads Drive, have been identified as a missing link for active travel between the existing cycleway on Wellheads Drive and Dyce Station. • ACC has secured funding from Sustrans and Nestrans to develop a detailed design for shared use cycleways along Wellheads Drive, around the existing roundabout and along Farburn Terrace to Victoria Street. • It is understood that land acquisition is now underway and due to be concluded within 2022. Construction is anticipated to start in 2023, subject to appropriate funding. • An overview plan of the scheme is shown below[3]. 
Oldmeldrum Road/Mugiemoss Road Junction	• A planning application (110786) for 900 residences, business and community facilities and associated infrastructure to the north of Mugiemoss Road was approved in December 2011. • One of the conditions of the development stated that, subsequent to the completion of the 375th residential property, no subsequently completed residential property shall be occupied unless restricted movements at the Mugiemoss Road/Oldmeldrum Road

[3] Farburn Terrace Proposed Cyclist & Pedestrian Improvements - Aberdeen City Council - Citizen Space

Scheme	Description
	junction or the A947 junction and associated spine road are implemented. A modification to this condition was applied for in 2018 and approved conditionally in March 2021 to increase this threshold to 470 units. • The intervention will make the western end of Mugiemoss Road one-way westbound and prohibit right-turning movements from Mugiemoss Road to Oldmeldrum Road. It will also revoke the ban on right-turning movements from Bankhead Road to Oldmeldrum Road. This is shown in the diagram below. 

1.4 City Centre Masterplan

The Aberdeen City Centre Masterplan (CCMP) is a regeneration blueprint that is transforming the city centre whilst conserving its proud heritage. The goal is greater prosperity and a better quality of life for all. The Masterplan was shaped following extensive public consultation and unanimously approved by ACC in June 2015.

Eight objectives feed through the Masterplan as follows:

- Changing perceptions;
- Growing the city centre employment base;
- A metropolitan outlook;
- A living city for everyone;
- Made in Aberdeen;
- Revealing waterfronts;
- Technologically advanced and environmentally responsible; and
- Culturally distinctive.

A review of the CCMP was undertaken during 2021, with a number of changes for the city centre agreed at ACC's City Growth and Resources Committee in August 2021. Further changes were agreed at ACC's City Growth and Resources Committee in November 2021 for the city centre, former market and beach front area. The Draft Beachfront Development Framework was approved at Full Council on 29th June 2022, with a key focus on improving active travel provision within the central beach area and active travel linkage through to the city centre.

1.5 Formartine and Buchan Way

It has been agreed with the Client Group that the A947 Multi-Modal Study will not generate options for the Formartine and Buchan Way (F&B Way) due to other studies being progressed on the route – the F&B Way Health Check and the Core Path Network Survey. Whilst options for the route itself will not be developed as part of this study, options focussed on connections to the F&B Way and access onto the route will be included.

The F&B Way Health Check was undertaken to survey the sections of the F&B Way within the Aberdeenshire Council boundary and to identify recommendations for future maintenance and improvement. The survey was undertaken on foot and by cycling in December 2021. The recommendations emerging from the study focus on addressing health and safety issues, drainage, barrier removal, signage and waymarking, surfacing, vegetation control, information and interpretation and improvements to the southern terminus of the route.

The Core Path Network Survey was undertaken to carry out condition surveys of ACC's core paths network, identify options for improvements and develop and apply a prioritisation framework for these options. The study commenced in July 2021 and the findings are anticipated to be available within the timescales of the A947 Multi-Modal Corridor Study. It is understood that this will include options for the F&B Way within Aberdeen City.

1.6 Other Ongoing Studies

1.6.1 A96 Multi-Modal Study

ACC is currently undertaking a STAG-based appraisal of options for improving transport connections (particularly active travel and public transport) on the A96 between Inverurie and Aberdeen. The study area for this study overlaps with the A947 study area at the A947/A96 roundabout at Bucksburn. The A96 study has recently completed initial option appraisal – and as the A947 study progresses, close liaison with the ACC client teams will ensure options developed in the study are complementary of those being promoted for the A96.

1.6.2 Cross-City Connections

ACC is currently undertaking a review of the STAG Part 2 appraisal for Cross City Connections. The study aims to identify priority schemes for development along with a programme of delivery that considers development build out, connections with the internal links of development sites as well as the general feasibility and affordability of each option.

There were three routes developed as part of the Cross City Connections Study that are of relevance for the A947 corridor and the review recommended that all are progressed to the concept design stage:

- Route 7:
  - Provide a new connection between Grandhome and Stoneywood, including a new bridge crossing over the River Don;
  - Provide a new connection between new bridge of the River Don and Stoneywood Terrace.
- Route 8:
  - Upgrade and extend CP101 to meet new bridge (Route 7) and Stoneywood development.
- Route 9
  - Stop up Millhill Brae on western side of A947 before the underpass and prior to the residential property and allow residential access only;
  - Upgrade section of CP4 through park; and
  - Upgrade on-road section of CP4 on Waterton Road.

Due to the ongoing work on the Cross City Connections Study, such options have not been included within the remit of the A947 Multi-Modal Study. However, given the interaction with the A947 corridor, options developed as part of the Cross City Connections Study will be kept under review and referenced appropriately as the study progresses.

1.6.3 A96 Corridor Review

In August 2021, the Scottish Government and Scottish Green Party Parliamentary Group agreed a Cooperation Agreement and a shared policy programme. As part of this shared policy programme, various agreed principles

regarding investment in the transport network were set out. In relation to the A96, the Scottish Government committed to take forward a transport enhancements programme on the A96 corridor that will improve connectivity between surrounding towns, tackle congestion and address safety and environmental issues. This includes reviewing the A96 corridor with a view to implementing appropriate bus priority measures.

The A96 Corridor Review covers the transport corridor from Raigmore Interchange at Inverness to Craibstone Junction at Aberdeen. The review findings will be used to test current plans for dualling outwith the Inverness to Nairn scheme. The review is considering transport problems and opportunities, the changing policy context and other key considerations, such as development and growth aims for the corridor and surrounding area. This review is being carried out in line with STAG and is considering all relevant transport modes within the A96 corridor, including road, rail, public transport and active travel.

2. Option Generation

2.1 Active Travel

The active travel options that have been generated are presented in the table below.

Table 2.1: Active Travel Options

Ref	Title	Source
AT1	Provide protected junction for active travel users at the A947/A90 slip road junction	Study Team
AT2	Improve visibility for cyclists at the B977/A90 slip road roundabout	Study Team
AT3	Review layout of Victoria Street/Pitmedden Road junction for pedestrians	Consultation, Study Team
AT4	Implement measures to give active travel users priority over Burnside Drive when using the shared use path on Riverview Drive	Consultation
AT5	Increase pedestrian phasing at the Market Street/Stoneywood Terrace Junction	Consultation
AT6	Implement early release signals for cyclists at the Market Street/Stoneywood Terrace Junction	Consultation
AT7	Review signals at Forrit Burn Road bus gate to allow cyclists access	Consultation
AT8	Reconfigure the Auchmill Road/Oldmeldrum Road junction to improve connections for pedestrians and cyclists	Consultation
AT9	Conduct a maintenance review of existing cycling infrastructure within the study area	Consultation
AT10	Widen on-road advisory cycle lane on Riverview Drive	Consultation
AT11	Implement missing sections of on-road advisory cycle lane on Riverview Drive	Consultation
AT12	Widen on-road advisory cycle lane on Stoneywood Road at Stoneywood Park junction	Consultation
AT13	Provide a formal pedestrian crossing point to the north of the A947/Riverview Drive Roundabout to facilitate movements to the F&B Way	Study Team
AT14	Provide a formal pedestrian crossing point to the east of the A947/Riverview Drive Roundabout	Study Team
AT15	Remove one of the two signalised pedestrian crossing points in the south of Riverview Drive	Study Team
AT16	Implement formal pedestrian crossing facilities on the arms of the Riverview Drive/Stoneywood Road Roundabout	Study Team
AT17	Implement signalised crossing facility on Victoria Street adjacent to Tesco	Consultation
AT18	Implement a pedestrian crossing facility on Dyce Avenue	Previous Work
AT19	Implement pedestrian crossing facilities at the Oldmeldrum Road/Mugiemoss Road Junction	Study Team
AT20	Conduct a footway review throughout the study area, identifying gaps in provision and considering the width and surfacing of existing footways	Consultation
AT21	Implement cycle parking at key trip attractors in the study area	Consultation
AT22	Promote Craibstone Park & Ride as a Park & Pedal facility	Previous Work
AT23	Implement a bike hire scheme within Dyce	Previous Work

Ref	Title	Source
AT24	Improve active travel connectivity between the A947 study area and Aberdeen Airport/Heliport	Consultation, Study Team
AT25	Improve active travel connectivity between the A947 study area and Craibstone Park & Ride	Consultation, Study Team
AT26	Improve active travel connectivity between the A947 study area and TECA	Consultation, Study Team
AT27	Improve active travel connectivity between the A947 study area and Kirkhill Industrial Estate	Consultation, Study Team
AT28	Implement dropped kerbs for cyclists to transfer between the carriageway and pavement at the northbound bus stop on the A947, north of the River Don	Consultation
AT29	Improve the underpass between the shared use path to the east of the A947 and the F&B Way access	Consultation, Study Team
AT30	Provide direct active travel link between Dyce Drive and Riverview Drive	Study Team
AT31	Improve active travel links between the Riverside Path and housing within Dyce	Study Team
AT32	Implement footways on the south side of the carriageway on Pitmedden Road	Consultation
AT33	Provide improved active travel links between Dyce Station and the A947 and the eastern section of Dyce, particularly along Station Road	Consultation, Study Team
AT34	Implement an active travel bridge over the railway line	Consultation, Study Team
AT35	Implement quiet route measures on the local road network to the west of the A947 via Bankhead Road, Wellheads Drive and Farburn Terrace to Dyce Station	Consultation, Study Team
AT36	Improve active travel connections between Wellheads Drive and the A947	Previous Work
AT37	Implement dropped kerbs between Wellheads Drive shared use path and the carriageway	Consultation
AT38	Review access restrictions on Market Street to allow for cargo bikes and recumbent cycles	Consultation
AT39	Remove access controls on off-road path between Waterton Road and Ruthriehill Road	Consultation
AT40	Improve drainage at underpass between Millhill Brae and Stoneywood Brae	Consultation
AT41	Improve active travel access to the retail park at the Bucksburn Roundabout	Consultation
AT42	Review access to the F&B Way from within Dyce	Consultation, Study Team
AT43	Implement active travel connection between the A947 and the B977, utilising a section of the old A947 (pre-AWPR)	Consultation
AT44	Develop path connections from Dyce to east of the River Don towards Seaton Park and Donmouth, through implementation of aspirational Core Path AP6	Consultation, Previous work
AT45	Upgrade the Riverside Path to a high quality active travel route, including improvements to the surfacing of the route	Consultation, Study Team
AT46	Implement lighting on the Riverside Path	Consultation
AT47	Implement with-flow segregated cycleway on the A947 between AWPR Junction and A947/A96 Junction	Consultation, Study Team
AT48	Implement two-way segregated cycleway on the A947 between AWPR Junction and A947/A96 Junction	Consultation, Study Team
AT49	Implement with-flow segregated cycleway on Victoria Street	Consultation, Study Team
AT50	Implement two-way segregated cycleway on Victoria Street	Consultation, Study Team
AT51	Implement with-flow segregated cycleway on Oldmeldrum Road	Consultation

Ref	Title	Source
AT52	Implement two-way segregated cycleway on Oldmeldrum Road	Consultation
AT53	Implement with-flow segregated cycleway on Mugiemoss Road	Consultation
AT54	Implement two-way segregated cycleway on Mugiemoss Road	Consultation
AT55	Implement with-flow segregated cycleway on Gilbert Road	Consultation
AT56	Implement two-way segregated cycleway on Gilbert Road	Consultation
AT57	Implement shared use path on the A947 between AWPR Junction and A947/A96 Junction	Consultation, Study Team
AT58	Implement shared use path on Dyce Drive between the A947 and Kirkhill Industrial Estate to the north of Aberdeen International Airport	Consultation
AT59	Widen the shared use path on the east side of the A947 to the north of Riverview Drive	Study Team
AT60	Provide continuous footways on Riverview Drive for the duration of the route	Study Team
AT61	Implement shared use path on Victoria Street	Consultation, Study Team
AT62	Widen the shared use path on the east side of the A947 between the A96 and Beech Manor	Consultation
AT63	Review alignment of the A947 shared use path to the north of the Oldmeldrum Road Junction where the safety barrier constrains the width of the path	Consultation
AT64	Implement shared use path on Oldmeldrum Road	Consultation
AT65	Implement shared use path on Mugiemoss Road	Consultation
AT66	Implement shared use path on Gilbert Road	Consultation
AT67	Widen the shared use path on the west side of Howe Moss Drive	Previous Work
AT68	Conduct a review of wayfinding signage throughout the study area	Consultation

2.2 Public Transport

The public transport options that have been generated are presented in the table below.

Table 2.2: Public Transport Options

Ref	Title	Source
PT1	Implement Aberdeen Rapid Transit along the study corridor	Consultation
PT2	Conduct a traffic signal review to consider bus priority at all traffic signals along the A947 corridor	Study Team
PT3	Introduce bus priority on the southbound approach to the A96 between Stoneywood Brae and the Bucksburn Roundabout	Consultation
PT4	Conduct a route wide review of bus stop provision and infrastructure	Study Team
PT5	Implement real time passenger information at key bus stops along the study corridor	Previous Work
PT6	Implement bus lay by at northbound stop on Victoria Street outside Aberdein Considine	Consultation

Ref	Title	Source
PT7	Undertake a review of fares on public transport	Consultation
PT8	Conduct a marketing campaign with the aim of increasing public transport awareness and use	Consultation
PT9	Improve public transport connectivity between the A947 study area and Aberdeen Airport/Heliport	Consultation, Study Team
PT10	Improve public transport connectivity between the A947 study area and Craibstone Park & Ride	Consultation, Study Team
PT11	Improve public transport connectivity between the A947 study area and TECA	Consultation, Study Team
PT12	Improve public transport connectivity between the A947 study area and Kirkhill Industrial Estate	Consultation, Study Team
PT13	Provide integrated ticketing between bus and rail	Consultation
PT14	Review the layout of the Oldmeldrum Road/Mugiemoss Road Junction for bus manoeuvrability	Consultation

2.3 Other

The other options that have been generated are presented in the table below.

Table 2.3: Other Options

Ref	Title	Source
O1	Increase enforcement of stopping restrictions on Victoria Street, specifically adjacent to Tesco	Consultation, Study Team
O2	Review the layout of the Victoria Street/Skene Place Junction	Consultation
O3	Review the layout of the Riverview Drive/Balloch Way Junction	Study Team
O4	Review the layout of the Riverview Drive/Todlaw Walk Junction	Study Team
O5	Review the layout of the Riverview Drive/Netherview Avenue Junction	Consultation
O6	Improve clarity of lane designation at the Stoneywood Road/Wellheads Avenue Junction	Consultation
O7	Review the layout of the A947/Stoneywood Junction at Co-Op/M&S	Consultation
O8	Review the layout of the A947/Stoneywood Brae Junction	Consultation
O9	Review the layout of the Bankhead Road/Oldmeldrum Road Junction	Consultation
O10	Review layout of the A947/McDonalds access road junction	Consultation
O11	Undertake a review of parking arrangements on Victoria Street	Consultation
O12	Implement signage to encourage reverse parking at the shops on Victoria Street	Consultation
O13	Reassess the feasibility of expanding car parking provision at Dyce Rail Station to provide additional opportunities for multi-modal journeys involving rail on the A947 corridor	Consultation, Previous Work
O14	Review parking arrangements on Mugiemoss Road	Consultation
O15	Introduce placemaking and gateway features on Victoria Street	Study Team

Ref	Title	Source
O16	Implement package of measures to support implementation of a 20-minute neighbourhood in Dyce	Study Team
O17	Reduce the speed limit along the A947 to support active travel improvements	Consultation
O18	Consider options to reduce vehicle speeds on Bankhead Road	Consultation
O19	Upgrade Riverview Drive to a dual carriageway	Consultation
O20	Review the layout of the access road into Asda car park	Consultation
O21	Reopen Market Street to vehicles	Consultation
O22	Widen carriageway at the western extent of Mugiemoss Road where narrow carriageway causes delay for buses	Consultation
O23	Promote car sharing schemes within Dyce	Previous Work
O24	Implement electric vehicle charging points at key locations within Dyce	Previous Work
O25	Implement access only restrictions for general traffic on Victoria Street	Study Team
O26	Implement one-way restrictions for general traffic on Victoria Street	Study Team
O27	Restrict access on Mugiemoss Road to resident access only	Consultation

3. Option Sifting

3.1 Approach

STAG states that: *"The Option Sifting process should be undertaken when an unmanageably large number of options have been generated or where there is general consensus that a particular option or options generated will clearly not achieve the intended objectives or meet the identified transport problems and/or opportunities."*

The guidance also highlights that*: "There are a number of ways in which options can be sifted and practitioners should agree the approach with stakeholders (and, where appropriate, decision makers)."*

A multi-criteria sifting approach has been adopted in agreement with the Client Group which sifts options based on their high-level performance against:

- The agreed A947 Multi-Modal Study Transport Planning Objectives (TPOs);
- Deliverability Criteria (Feasibility, Affordability and Public Acceptability);
- Position in the Sustainable Investment Hierarchy (SIH)[4]; and
- Identified Problems and Opportunities in the A947 study area.

Consideration has also been given to dependencies, with the Option Development section noting which options should be considered in line with each other to achieve the most appropriate solution in each location. The option sifting process is summarised in the diagram below.

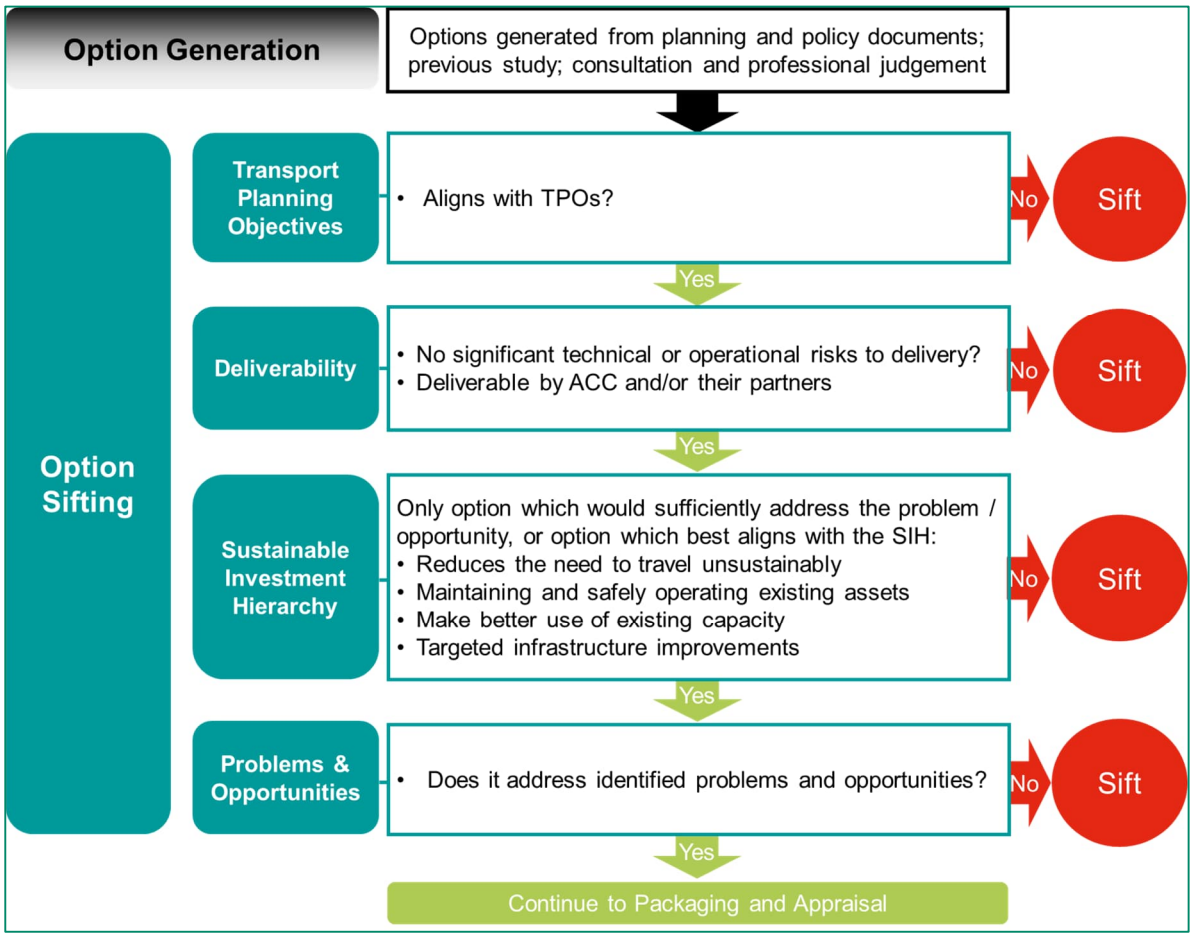


Figure 3.1: Option Sifting Process

[4] The Sustainable Investment Hierarchy (SIH) is promoted within the National Transport Strategy (NTS2) as an approach to informing budgetary decisions, considering in order of priority: Investment aimed at reducing the need to travel unsustainably; Investment aimed at maintaining and safely operating existing assets taking due consideration of the need to adapt to the impacts of climate change; Investment promoting a range of measures, including innovative solutions, to make better use of existing capacity, ensuring that existing transport networks and systems are fully optimised (these may include technology based, regulatory, fiscal or value engineering solutions to asset renewals); and Investment involving targeted infrastructure improvements.

3.2 Summary of Sifted Out Options

Based on the sifting exercise, it is recommended that the options presented in the table below are sifted from further consideration at this stage.

Table 3.1: Options to be Sifted from Further Consideration

Ref	Title	Rationale
AT5	Increase pedestrian phasing at the Market Street/Stoneywood Terrace Junction	The Market Street/Stoneywood Terrace Junction is being considered through the ongoing Cross City Connections work and measures have been recommended for progression. Therefore, whilst this option does not require further consideration as part of the A947 Multi-Modal Study, it will continue to be referenced as appropriate throughout the study.
AT6	Implement early release signals for cyclists at the Market Street/Stoneywood Terrace Junction	The Market Street/Stoneywood Terrace Junction is being considered through the ongoing Cross City Connections work and measures have been recommended for progression. Therefore, whilst this option does not require further consideration as part of the A947 Multi-Modal Study, it will continue to be referenced as appropriate throughout the study.
AT9	Conduct a maintenance review of existing cycling infrastructure within the study area	Option is unlikely to have any significant impact on the study TPOs and could be considered "business as usual" for ACC.
AT15	Remove one of the two signalised pedestrian crossing points in the south of Riverview Drive	Option should not be progressed on the basis that this would have negative impacts on pedestrians and walkability within Dyce. However, it would allow Riverview Drive to function as per role in the revised Roads Hierarchy. Crossing rationalisation will be considered by ACC Committee in Autumn 2022.
AT18	Implement a pedestrian crossing facility on Dyce Avenue	Option is not required as there is an existing crossing at the junction with Dyce Drive.
AT19	Implement pedestrian crossing facilities at the Oldmeldrum Road/Mugiemoss Road Junction	There is a temporary crossing facility located just to the north of the Oldmeldrum Road/Mugiemoss Road Junction which has been on-site since 2018. It is understood that a permanent facility is due to be provided at this location as part of the works associated with the adjacent housing development on the Davidsons Mill site.
AT29	Improve the underpass between the shared use path to the east of the A947 and the F&B Way access	Option should not be progressed due to significant deliverability risks. Option AT13 may provide an alternative and more deliverable solution to address a similar problem. It is also understood that ACC have funding committed to improve the lighting in the underpass.
AT34	Implement an active travel bridge over the railway line	Option should not be progressed due to significant deliverability risks.
AT36	Improve active travel connections between Wellheads Drive and the A947	Option is covered by AT24, AT35 and AT38.
AT40	Improve drainage at underpass between Millhill Brae and Stoneywood Brae	Option is unlikely to have any significant impact on the study TPOs and could be considered "business as usual" for ACC.
AT44	Develop path connections from Dyce to east of the River Don towards Seaton Park and Donmouth, through implementation of aspirational core path AP6	While contributing to TPO1 and TPO2, this option is outwith the scope / sphere of influence of the A947 corridor study. However, it should be reserved for ACC to consider within other workstreams.
AT49	Implement with-flow segregated cycleway on Victoria Street	Option should not be progressed due to significant deliverability risks. Other solutions are available using the hierarchy of provision which looks at removing or calming traffic to permit people to use the carriageway with people driving. In addition, this could be combined with placemaking solutions.
AT50	Implement two-way segregated cycleway on Victoria Street	Option should not be progressed due to significant deliverability risks. Other solutions are available using the hierarchy of provision which looks at removing or calming traffic to permit people to use the carriageway with people driving. In addition, this could be combined with placemaking solutions.
AT53	Implement with-flow segregated cycleway on Mugiemoss Road	Option is not achievable without land take due to the narrow width of Mugiemoss Road.

Ref	Title	Rationale
AT54	Implement two-way segregated cycleway on Mugiemoss Road	Option is not achievable without land take due to the narrow width of Mugiemoss Road.
PT1	Implement Aberdeen Rapid Transit along the study corridor	While contributing to TPO3 and TPO5, this option is outwith the scope of the A947 corridor study. However, as ART is developed (including on the A96 corridor), cognisance should be given to how the A947 corridor can directly benefit from associated interventions.
PT3	Introduce bus priority on the southbound approach to the A96 between Stoneywood Brae and the Bucksburn Roundabout	Option should not be progressed on the basis that it would not address identified problems and opportunities on the A947 corridor.
PT4	Conduct a route wide review of bus stop provision and infrastructure	Option is unlikely to have any significant impact on the study TPOs and could be considered "business as usual" for ACC.
PT6	Implement bus lay by at northbound stop on Victoria Street outside Aberdein Considine	Option has the potential to have a (minor) negative impact on the flow of buses along Victoria Street, therefore, on this basis, it should be sifted out from further consideration.
PT7	Undertake a review of fares on public transport	Option is unlikely to have any significant impact on the study TPOs. However, fares reviews could be considered as part of strategic discussions relating to bus service delivery in the North East, which is within the remit of the North East Bus Alliance.
PT8	Conduct a marketing campaign with the aim of increasing public transport awareness and use	Option has limited impacts on the TPOs developed for this study. Option should be considered on a region-wide basis through initiatives such as Smarter Choices Smarter Places and Getabout - which has a forthcoming new campaign
PT13	Provide integrated ticketing between bus and rail	Option is unlikely to have any significant impact on the study TPOs. However, integrated ticketing could be considered as part of strategic discussions relating to transport integration in the North East, which could be facilitated by Nestrans and ACC. PlusBus ticketing is also available and it is understood that integrated ticketing is being considered nationally.
PT14	Review the layout of the Oldmeldrum Road/Mugiemoss Road Junction for bus manoeuvrability.	Option is superseded by planned changes at the Oldmeldrum Road/Mugiemoss Road Junction associated with the development to the north of Mugiemoss Road.
O6	Improve clarity of lane designation at the Stoneywood Road/Wellheads Avenue Junction	Option is unlikely to have any significant impact on the study TPOs and could be considered "business as usual" for ACC.
O9	Review the layout of the Bankhead Road/Oldmeldrum Road Junction.	Option is superseded by planned changes at the Oldmeldrum Road/Mugiemoss Road Junction associated with the development to the north of Mugiemoss Road.
O13	Reassess the feasibility of expanding car parking provision at Dyce Rail Station to provide additional opportunities for multi-modal journeys involving rail on the A947 corridor	Option is likely to have negative impacts across the majority of the TPOs given the key focus of the study on active travel and bus travel. However, it is recognised that providing further opportunities to access Dyce Station by car will enable an increase in (rail) modal share along the corridor. On this basis, this option should be considered by Nestrans/ACC outwith the scope of the A947 Multi-Modal Study.
O19	Upgrade Riverview Drive to a dual carriageway	Option is likely to have negative impacts across the majority of the TPOs. Therefore, on this basis, it should be sifted out from further consideration.
O20	Review the layout of the access road into Asda car park	Option is unlikely to have any significant impact on the study TPOs. Therefore, on this basis, it should be sifted out from further consideration.
O21	Reopen Market Street to vehicles	Option is likely to have negative impacts across the majority of the TPOs. Therefore, on this basis, it should be sifted out from further consideration.
O22	Widen carriageway at the western extent of Mugiemoss Road where narrow carriageway causes delay for buses	Option should not be progressed due to significant deliverability risks.
O27	Restrict access on Mugiemoss Road to resident access only.	Option is superseded by planned changes at the Oldmeldrum Road/Mugiemoss Road Junction associated with the development to the north of Mugiemoss Road.

4. Option Development

4.1 Overview

For the purposes of Option Development, the remaining options have been grouped into categories as outlined in the table below.

Table 4.1: Grouping of Remaining Options

Active Travel Groupings
Active Travel Provision at Junctions
Advisory Cycling Infrastructure
Crossing Facilities (outwith junctions)
Dyce Permeability
Other Connections
Segregated Cycling Infrastructure
Shared Use Path Infrastructure
Signage
Public Transport Groupings
Bus Priority Infrastructure
Bus Stop Review
Public Transport Connectivity
Junction Reviews
Other Groupings
Enforcement
Junction Reviews
Parking Reviews
Placemaking
Reduced Speeds
Sustainable Transport Initiatives
Vehicle Restrictions

4.2 Active Travel Options

4.2.1 Overview

The analysis of active travel options has been undertaken in line with Transport Scotland's 'Cycling by Design' Guidance in association with SCOTS National Roads Development Guide, Designing Streets, Roads for All and Inclusive Mobility.

Cycling by Design provides guidance for permanent active travel infrastructure design on all roads, streets and paths in Scotland. This is in line with the Scottish Government's NTS2, which aims to encourage people to utilise active travel facilities which will contribute to equality, health and carbon reduction targets. The guidance also references the Sustainable Travel Hierarchy, which defines the modes of travel that designers should be prioritising when designing new or upgraded roads, streets and paths. As outlined in **Figure 4.1**, walking and wheeling should be prioritised first followed by cycling. Recent changes to the highway code further support this by giving pedestrians priority when crossing side roads at junctions.

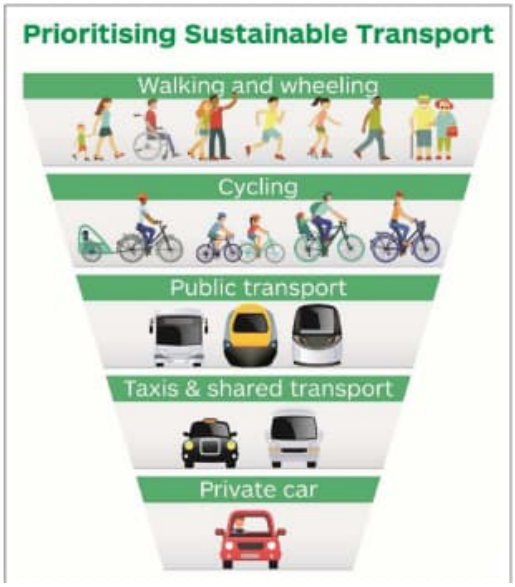


Figure 4.1: Sustainable Transport Hierarchy (NTS2)

Cycling by Design Guidance defines the 'desirable minimum' and 'absolute minimum' widths for various cycling facilities. 'Desirable minimum' widths should be considered as the minimum requirement to provide a high-quality facility. Reductions below this level should only be applied where specific constraints are identified, such that the desirable minimum cannot be reasonably achieved. In such cases, limited reductions are permissible, but the highest achievable standard should be maintained. 'Absolute minimum' widths represent the scope of permissible reduction to the requirement. Where elements of the design are subject to statutory obligations, these must be adhered to.

The Cycling by Design footway and cycle track width requirements for different cycle track types are outlined in the table below.

Table 4.2: Cycling by Design Track Width Requirements (Source: Cycling by Design)

Cycle Track Types		Footway Width	Separation	Cycle track width* – One-way, less than 300 cycles per hour peak	Cycle track width* – One-way, more than 300 cycles per hour peak	Cycle track width* – Two-way, less than 300 cycles per hour peak (per direction)	Cycle track width* – Two-way, more than 300 cycles per hour peak (per direction)	Buffer Width
Remote Cycle Tracks Separated from Pedestrians	Desirable minimum	2.0 m	Varies with Facility	2.0 m	2.5 m	3.0 m	4.0 m	N.A.
	Absolute minimum	1.5 m	Varies with Facility	1.5 m	2.0 m	2.0 m	3.0 m	N.A.
Remote Cycle Tracks Shared with Pedestrians	Desirable minimum	N.A.	N.A.	Not Recommended	Not Recommended	4.0 m	Not Recommended	N.A.
	Absolute minimum	N.A.	N.A.	Not Recommended	Not Recommended	2.5 m	Not Recommended	N.A.
Cycle Tracks adjacent to Carriageway Separated from Pedestrians	Desirable minimum	2.0 m	Varies with Facility	2.0 m	2.5 m	3.0 m	4.0 m	Refer to Table 3.8
	Absolute minimum	1.5 m	Varies with Facility	1.5 m	2.0 m	2.0 m	3.0 m	Refer to Table 3.8
Cycle Tracks adjacent to Carriageway Shared with Pedestrians	Desirable minimum	N.A.	N.A.	Not Recommended	Not Recommended	4.0 m	Not Recommended	Refer to Table 3.8
	Absolute minimum	N.A.	N.A.	Not Recommended	Not Recommended	2.5 m	Not Recommended	Refer to Table 3.8

- On gradients greater than 3%, cycle track width should be increased by 0.25 m to allow for greater lateral movement.
- Where gullies are present on a cycle track that do not allow cycles to easily overrun, the cycle track width should be increased by the widths of the gully.

Concept designs have been considered to assess feasibility of the following options. During any future design process, the final design parameters can be tailored to individual situations in consultation with ACC. For junction design options in particular, there may be an opportunity for additional tightening of corner radii, supported by recent changes to the Highway Code to further increase the benefit on walking and wheeling.

4.2.2 Active Travel Provision at Junctions

This grouping contains the following options:

Table 4.3: Active Travel Provision at Junctions Options

AT1	**Provide protected junction for active travel users at the A947/A90 slip road junction**
AT2	**Improve visibility for cyclists at the B977/A90 slip road roundabout**
AT3	**Review layout of Victoria Street/Pitmedden Road junction for pedestrians**
AT4	**Implement measures to give active travel users priority over Burnside Drive when using the shared use path on Riverview Drive**
AT7	**Review signals at Forrit Burn Road bus gate to allow cyclists access**
AT8	**Reconfigure the Auchmill Road/Oldmeldrum Road junction to improve connections for pedestrians and cyclists**

AT1 – Provide protected junction for active travel users at the A947/A90 slip road junction

The A947/A90 slip road junction is signalised to facilitate vehicle turning manoeuvres onto and from the slip road. Cycle users are not permitted on the A90 slip road and therefore, proposed measures only consider the north-south movement on the A947.

It is recommended that advanced stop lines (ASLs) with reservoirs 4.0-7.5m deep are added at the signals in both directions on the A947. These would allow on-road cycle users to position themselves ahead of traffic and, as a low-cost measure that has minimal impact on junction capacity, could be considered as a potential quick win.

The introduction of early release traffic signals would increase the benefit for active travel users by allowing them an advanced start to gain momentum before the vehicle phase commences. It is recommended that further assessment of cycle user demand is undertaken to inform value of this as a solution as otherwise it may negatively impact general operation of the junction.

Similarly, subject to observed demand and in consideration with wider proposals, an option to further improve provision for cycle users in the southbound carriageway would be to introduce a cycle bypass facility. This would be a continuous cycle track separate from the carriageway, allowing users to continue beyond the traffic signals and maintain momentum. This option would be most effective if developed in conjunction with wider segregated cycle track facilities in the southbound verge, although minor impacts on third party land would be anticipated. If integrated with advisory lanes downstream, consideration of the point at which cycle users merge with the road space would be required to mitigate against potential conflict with other road users.

Figure 4.2 shows a typical cycle bypass layout. The lack of pedestrian movement at this junction increases the feasibility of such a layout being introduced.

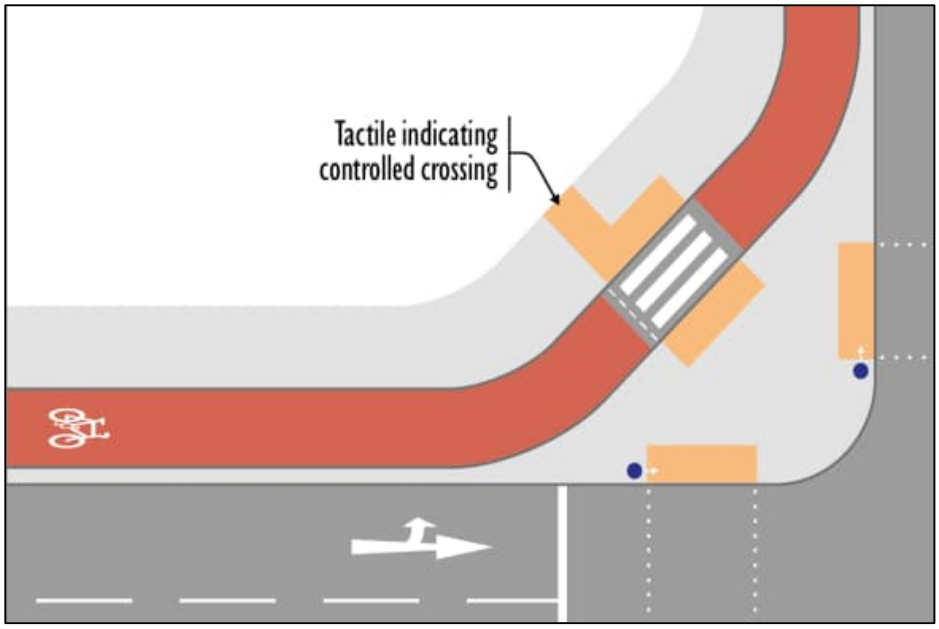


Figure 4.2: Cycle Bypass Example (Source: Cycling by Design)

Option AT1 to be considered in line with Option AT2.

AT2 – Improve visibility for cyclists at the B977/A90 slip road roundabout

Stakeholder consultation responses highlighted an issue with visibility for users merging onto the B977. The grade separated A90 roundabout is located approximately 110m north-east of the junction of the southbound slip onto the B977. The B977 has a speed limit of 40mph and therefore, based on an assumed 85th percentile speed of 85kph, a 160m Y-distance is required. The proximity of the roundabout means that the full Y-distance is not achievable, however, unobstructed visibility should be provided to the roundabout exit. The desirable minimum X-distance required by Cycling by Design for cycle users on the road is 4.5m.

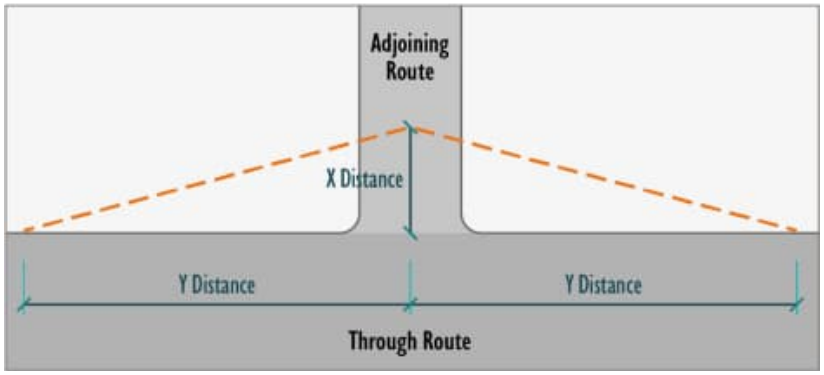


Figure 4.3: Typical Visibility Envelope

From initial 2D assessment, the 3.0m verge of the B977 adequately encompasses the desirable minimum visibility requirements and therefore, it is anticipated that the issue has been raised as a result of the management and maintenance of the landscaping. It is recommended that further site investigation is undertaken to confirm this as the issue, followed by necessary improvements to the cyclic maintenance regime. This would deliver an immediate improvement in isolation and could be considered a "quick win".

Figure 4.4: Distance between the A90 Roundabout and B977 Slip Junction (Source: Google Maps)

Option AT2 to be considered in line with Option AT1.

AT3 – Review layout of Victoria Street/Pitmedden Road junction for pedestrians

Pitmedden Road approaches Victoria Street at a skewed 55-degree angle. On approach to the point of intersection at the junction, a 14m corner radius is present on the north side to support a perpendicular connection and the swept path of northbound turning vehicles. A 10.5m corner radius is present on the south side. The junction is currently signal-controlled and pedestrian crossing movements are facilitated by a demand driven signal phase. Widened footways on approach to the junction support access to the crossing and it is assumed that these were developed to accommodate junction visibility splays, prior to signalisation.

DMRB CD 123 states the requirement for a minimum corner radius of 10m in urban areas where provision is made for heavy goods vehicles (HGVs). It is assumed that HGVs will use the junction for access due to the proximity of Pitmedden Industrial Estate.

Initial assessment and swept path analysis of the junction using an FTA Rigid Vehicle has demonstrated potential feasibility of reducing the existing corner radius on the north side from 14m to 10m, enabling the reallocation of space for non-motorised users (NMUs) and reducing the crossing length. It is recommended that this is considered further with Options AT21 and AT23 for effective utilisation of any off-carriageway space gained.

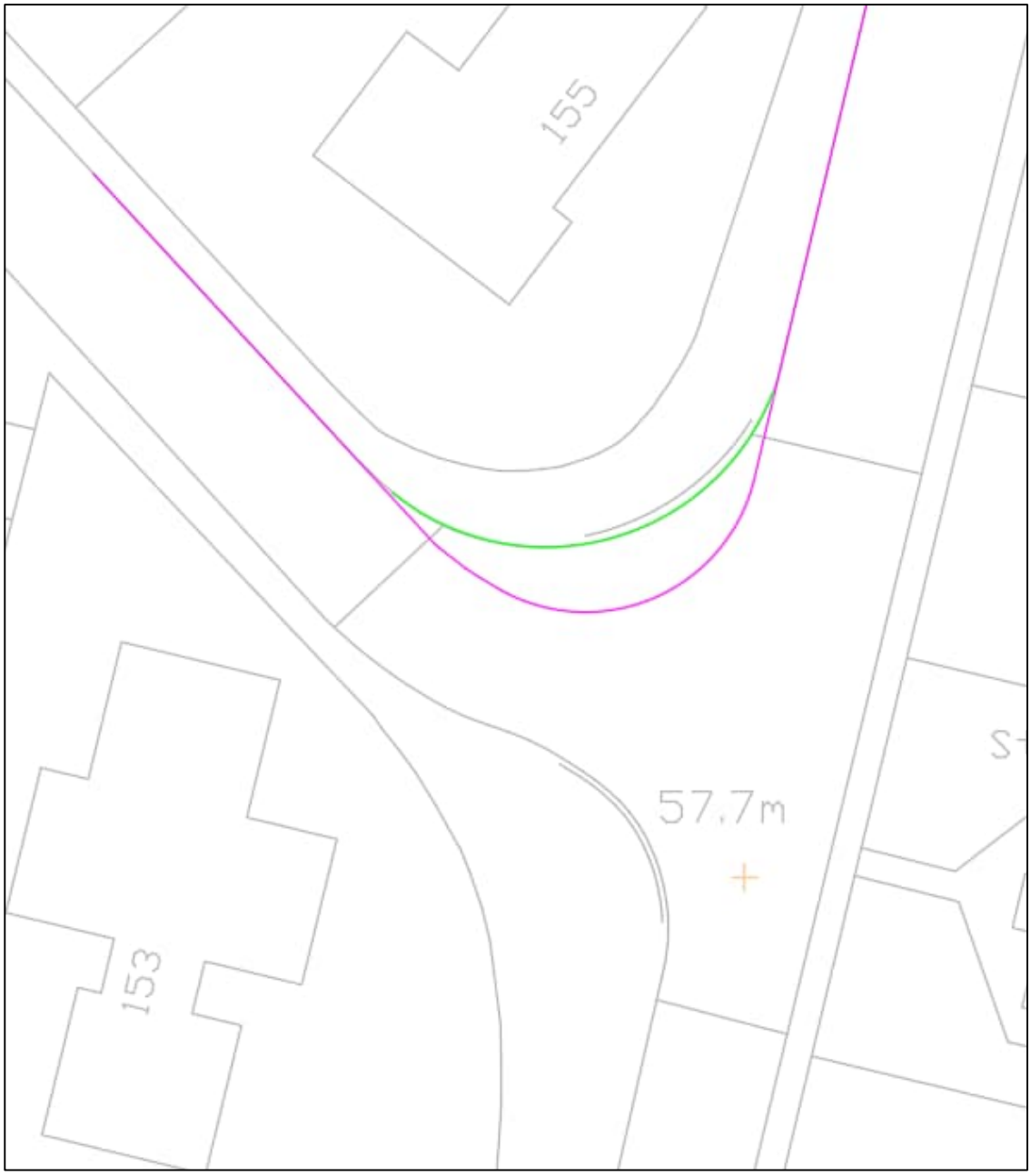


Figure 4.5: Proposed Improvements to Victoria Street/Pitmedden Road Junction

Option AT3 to be considered in line with Options AT21 and AT23.

AT4 – Implement measures to give active travel users priority over Burnside Drive when using the shared use path on Riverview Drive

It is recommended that a raised table and crossing is introduced at the entrance to Burnside Drive from Riverview Drive to support active travel movements in this area. A raised table would reduce vehicle speeds as they turn off from Riverview Drive, promoting a safer crossing point for pedestrians and cyclists. Due to the 40mph speed limit on Riverview Drive, Cycling by Design states that the raised table would need to be set back by a minimum of 5.0m to allow storage of motor vehicles entering or exiting the junction. This requirement will cause the pedestrian desire line at this junction to be moved further back and will involve the realignment of the existing footpath.

The diagram below provides an example of a raised table crossing, which includes a parallel crossing. Footfall in this area does not require controlled crossing so would not be included in this option. The example does indicate the likely realignment of the footway which will see both sides curve into the set-back from the existing straight route.

The implementation of a raised table crossing point at the entry to Burnside Drive has a low deliverability risk for feasibility and affordability. However, the public acceptance is considered to be medium risk due to reducing vehicle speeds upon entry/exit to Burnside Drive and concerns of directness for the footpath route.

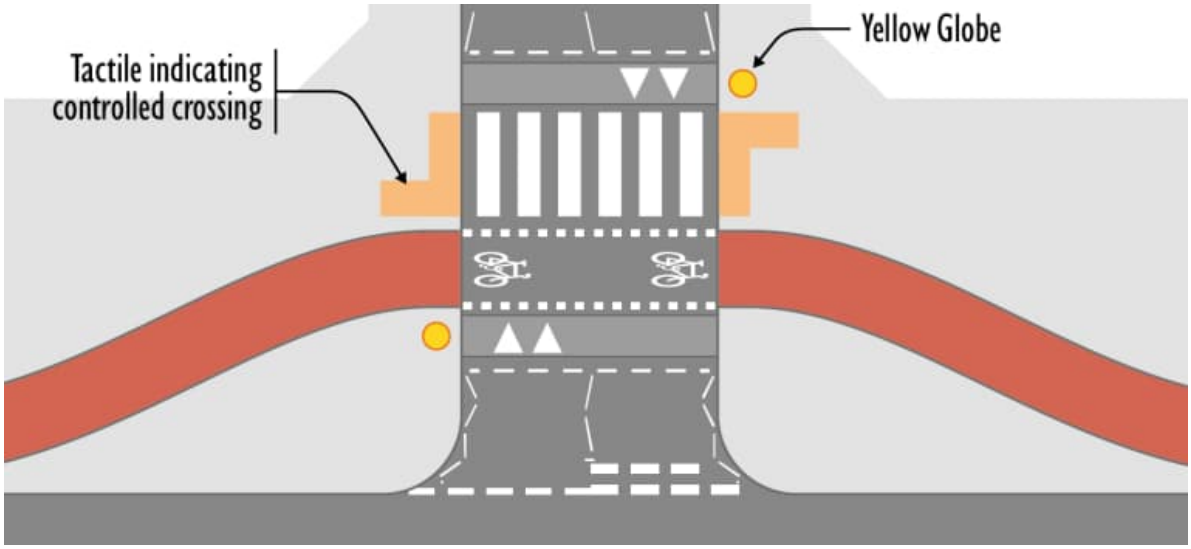


Figure 4.6: Raised Table Crossing Example (Source: Cycling by Design)

Option AT4 to be considered in line with Options AT57.

AT7 – Review signals at Forrit Burn Road bus gate to allow cyclists access

Stakeholder consultation highlighted an issue with the right turn signal on Wellheads Drive at the bus gate junction with Forrit Burn Road. Cycle users are permitted to make the right turn manoeuvre and pass through the bus gate, but it is noted that the current signal detector does not register cycle users at the stop line.

It is recommended that the eastbound lane detectors on Wellheads Drive are upgraded so that they can detect when a cyclist is waiting in the right turn lane at the junction, allowing cyclist movement into Forrit Burn Road. This could be considered a ‘quick win’ and delivered in isolation to improve on existing facilities.

Alternatively, automation of the right turn signal would remove the need for detection. However, this would impact traffic flow and journey time reliability of the public transport connection therefore would only be recommended if challenges with upgrading the detector were to emerge.

AT8 – Reconfigure the Auchmill Road/Oldmeldrum Road junction to improve connections for pedestrians and cyclists

The existing A96 Auchmill Road/Oldmeldrum Road junction is a staggered arrangement which limits scope for improvement to NMU facilities due to the more onerous geometric parameters required by DMRB CD 123.

Stopping-up of the staggered right turn onto Oldmeldrum Road from the westbound A96 Auchmill Road would generate potential for improvement of the junction through adoption of tighter corner radii and reallocation of space to provide improved staggered NMU crossing facilities. Westbound vehicular traffic would be diverted via Bucksburn Roundabout to gain access to the areas north of the A96.

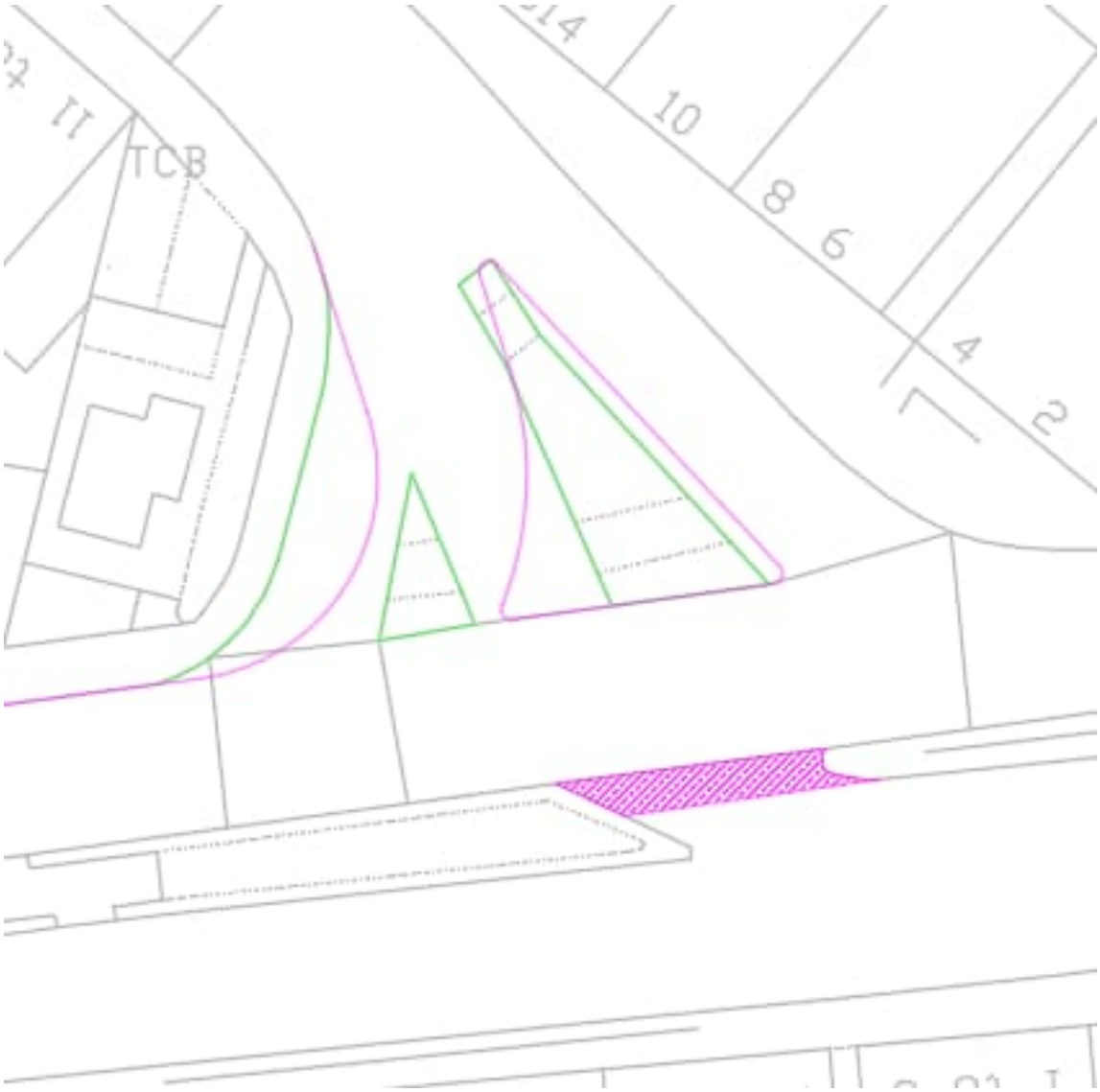


Figure 4.7: Indicative Junction Improvements on A96 Auchmill Road/Oldmeldrum Road

As part of the parallel STAG study of the A96 corridor, an option is being promoted to introduce a two-way segregated cycle track in the eastbound verge of the A96 Auchmill Road. Redevelopment of this junction would help facilitate A96 corridor improvements and should be developed further in collaboration with the parallel study. Analysis of traffic data will also be required to confirm technical feasibility.

4.2.3 Advisory Cycling Infrastructure

This grouping contains the following options:

Table 4.4: Advisory Cycling Infrastructure Options

AT10	**Widen on-road advisory cycle lane on Riverview Drive**
AT11	**Implement missing sections of on-road advisory cycle lane on Riverview Drive**
AT12	**Widen on-road advisory cycle lane on Stoneywood Road at Stoneywood Park junction**

AT10 – Widen on-road advisory cycle lane on Riverview Drive

The existing with-flow advisory cycle lanes on Riverview Drive are 1.5m wide and the road carriageway is approximately 7.3m wide. Advisory cycle lanes are generally not favoured; however, they are permitted where adjacent traffic lanes are less than 3.25m. Reallocating 0.4m of road space from each lane to the advisory cycle lane would improve on existing facilities for cycle users. Swept path analysis would be required over the full length of Riverview Drive to assess the impact on vehicle manoeuvrability, particularly at junctions.

An alternative recommendation to improve cyclist safety along Riverview Drive is to convert the existing advisory cycle lanes to mandatory cycle lanes. This would prohibit vehicles from crossing into the cycle lanes, unless it is

safe and necessary to do so, such as passing a stationary vehicle. To convert the advisory lanes into mandatory lanes, a Traffic Regulation Order (TRO) would be required.

Option AT10 to be considered in line with Options AT11, AT47, AT48 and AT57.

AT11 – Implement missing sections of on-road advisory cycle lane on Riverview Drive

Advisory cycle lanes are present along Riverview Drive between Overton Circle and the northern roundabout. The lanes terminate locally at junctions and therefore do not offer a continuous link for cycle users. The cross-sectional width of the existing road corridor along Riverview Drive is adequate to potentially accommodate continuous advisory lanes, however, the marked right-turn arrangement at the Netherview Avenue junction presents a spatial constraint.

It is recommended that traffic manoeuvres are surveyed to determine appropriateness for the existing layout. With the link forming part of the priority route, it is anticipated that alternative arrangements will be required to connect the sections of advisory lanes in the vicinity of this junction. It is recommended that consideration should be given to locally transitioning advisory lanes to off-carriageway cycle tracks to provide offset and protected crossings at junctions. This is generally deemed to be feasible through utilisation of existing verge space.

Carriageway widths on Riverview Drive reduce in the south, at Burnside Drive, where the width narrows to approximately 7.5m. Advisory cycle lanes along this narrower section do not merit further consideration due to the presence of an existing shared use path in the southern verge. This forms part of NCN Route 1.

Option AT11 to be considered in line with Options AT10, AT47, AT48 and AT57.

AT12 – Widen on-road advisory cycle lane on Stoneywood Road at Stoneywood Park junction

The existing southbound cycle lane on Stoneywood Road, south of the Stoneywood Park Junction, is approximately 1.0m wide with an adjacent 3.3m wide southbound traffic lane. The existing northbound dedicated right turning lane ahead of the junction is approximately 4.3m wide. DMRB CD 123 states that this should be a minimum of 3.0m wide and therefore, it is recommended that consideration is given to reduction in the width of the turning lane and reallocation of road space to widen the advisory cycle lane. This option is only considered a short-term intervention and could be delivered as a “quick win” however, it should be noted that the promotion of advisory cycle lanes offers limited benefit to cycle users.

4.2.4 Crossing Facilities (outwith junctions)

This grouping contains the following options:

Table 4.5: Crossing Facilities Options

AT13	**Provide a formal pedestrian crossing point to the north of the A947/Riverview Drive Roundabout to facilitate movements to the F&B Way**
AT14	**Provide a formal pedestrian crossing point to the east of the A947/Riverview Drive Roundabout**
AT16	**Implement formal pedestrian crossing facilities on the arms of the Riverview Drive/Stoneywood Road Roundabout**
AT17	**Implement signalised crossing facility on Victoria Street adjacent to Tesco**

AT13 – Provide a formal pedestrian crossing point to the north of the A947/Riverview Drive Roundabout to facilitate movements to the F&B Way

As outlined under Option AT30, the introduction of a signal-controlled toucan crossing north of the Dyce Drive junction is recommended. This would provide a formal pedestrian crossing and facilitate active travel movements between the A947 and the F&B Way. A new section of shared use path would be required to link the crossing and the access point to the trail. This would be approximately 60-75m in length and 3.0m wide. The feasibility and affordability of this option, with a potential impact on third party land, bring a medium-high risk on its deliverability.

Option AT13 to be considered in line with Options AT30, AT31, AT58 and AT59.

AT14 – Provide a formal pedestrian crossing point to the east of the A947/Riverview Drive Roundabout

There are currently two informal crossings east of the A947/Riverview Drive north roundabout. One is located at the roundabout and utilises the existing splitter island to stagger the crossing. The other is located 50m east of the roundabout, with a direct crossing length of approximately 10m. An NMU demand assessment is recommended to establish greater context to support promotion of an appropriate form of formal crossing. This option is recommended for further consideration in conjunction with Options AT31 and AT60.

Option AT14 to be considered in line with Options AT31 and AT60.

AT16 – Implement formal pedestrian crossing facilities on the arms of the Riverview Drive/Stoneywood Road Roundabout

An assessment would be required to understand how the introduction of formal pedestrian crossing points on the arms of Riverview Drive/Stoneywood Road roundabout would impact on traffic flow. Depending on the progression of other active travel solutions in the area, it may be more suitable to signalise the junction. Altering the existing conditions of the roundabout could impact the function of the A947 as a priority route within the Roads Hierarchy, and therefore potential risks to deliverability are recognised.

Option AT16 to be considered in line with Options AT31.

AT17 – Implement signalised crossing facility on Victoria Street adjacent to Tesco

It is recommended that the existing zebra crossing be replaced with a pelican crossing, which would include pedestrian push buttons and signal heads. Upgrading the existing crossing facility to a signalised crossing will improve pedestrian safety. This option is achievable and supports a number of the study TPOs.

Option AT17 to be considered in line with Options AT33, AT61, O1, O2, O11, O12, O15, O16, O25 and O26.

4.2.5 Dyce Permeability

This grouping contains the following options:

Table 4.6: Dyce Permeability Options

AT20	Conduct a footway review throughout the study area, identifying gaps in provision and considering the width and surfacing of existing footways
AT21	Implement cycle parking at key trip attractors in the study area
AT22	Promote Craibstone Park & Ride as a Park & Pedal facility
AT23	Implement a bike hire scheme within Dyce
AT24	Improve active travel connectivity between the A947 study area and Aberdeen Airport/Heliport
AT25	Improve active travel connectivity between the A947 study area and Craibstone Park & Ride
AT26	Improve active travel connectivity between the A947 study area and TECA
AT27	Improve active travel connectivity between the A947 study area and Kirkhill Industrial Estate
AT28	Implement dropped kerbs for cyclists to transfer between the carriageway and pavement at the northbound bus stop on the A947, north of the River Don
AT30	Provide direct active travel link between Dyce Drive and Riverview Drive
AT31	Improve active travel links between the Riverside Path and housing within Dyce
AT32	Implement footways on the south side of the carriageway on Pitmedden Road
AT33	Provide improved active travel links between Dyce Station and the A947 and the eastern section of Dyce, particularly along Station Road
AT35	Implement quiet route measures on the local road network to the west of the A947 via Bankhead Road, Wellheads Drive and Farburn Terrace to Dyce Station
AT37	Implement dropped kerbs between Wellheads Drive shared use path and the carriageway
AT38	Review access restrictions on Market Street to allow for cargo bikes and recumbent cycles
AT39	Remove access controls on off-road path between Waterton Road and Ruthriehill Road
AT41	Improve active travel access to the retail park at the Bucksburn Roundabout

AT20 – Conduct a footway review throughout the study area, identifying gaps in provision and considering the width and surfacing of existing footways

A holistic review of footways within the study area is recommended, focussing on existing physical attributes to enable assessment of current provision against core design principles of Cycling by Design. Mapping existing

facilities will support identification of missing links and inform specific interventions. This option should be taken forward for more detailed review and assessment in conjunction with the targeted footway improvement options.

AT21 – Implement cycle parking at key trip attractors in the study area

Installing secure cycle parking near existing bus stops or creating hubs along the corridor where Park & Pedal facilities can be established could encourage people to make the change to active travel. Expansion and improvement of the existing cycle parking at Dyce Station could be considered to promote modal shift for local journeys.

The key design consideration for cycle parking is for it to be safe and visible whilst being accessible to users. On-street cycle storage is being rolled out across Scotland and could be used at key locations along the A947 corridor to help support those wishing to cycle. Cycle parking near bus stops does exist along the corridor but it is recommended that a review is undertaken, considering distances to bus stops.

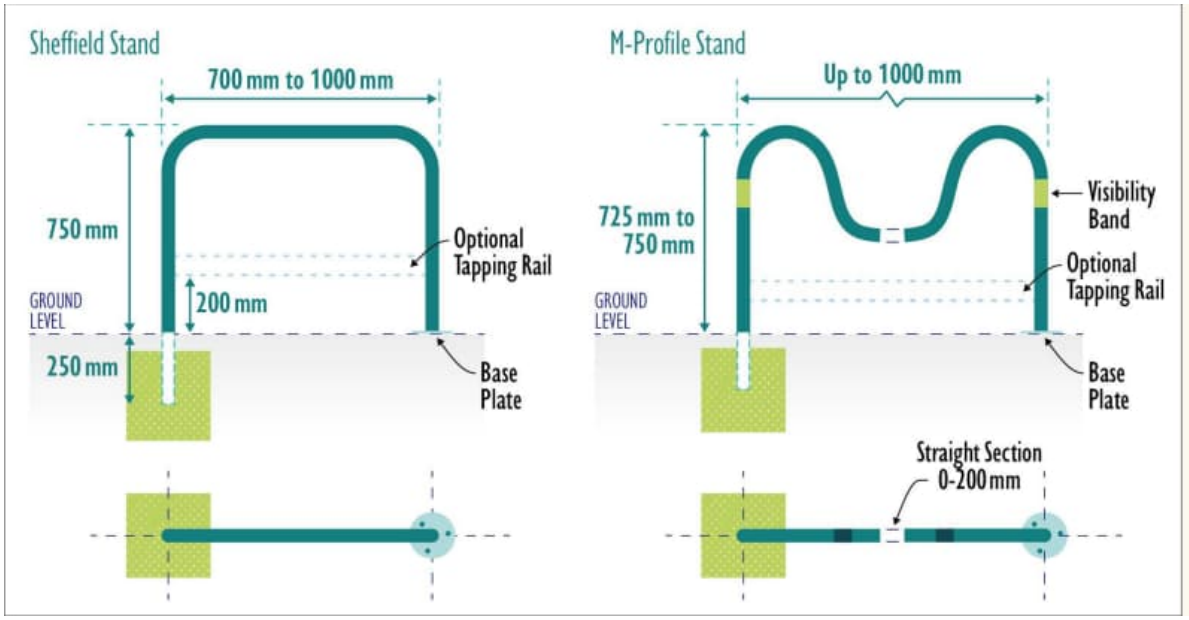


Figure 4.8: Typical Sheffield Stand and M-Profile Stand (Source: Cycling by Design)

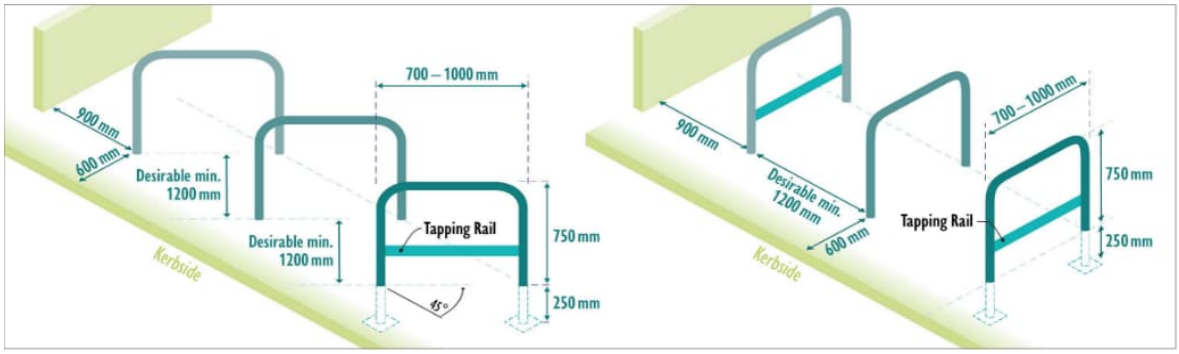


Figure 4.9: Typical Layout of Sheffield Stands (Source: Cycling by Design)

Option AT21 to be considered in line with Options AT3 and AT61.

AT22 – Promote Craibstone Park & Ride as a Park & Pedal facility

Park & Pedal facilities can help to encourage the uptake of cycling for parts of journeys by reducing the need to travel fully by bike. Craibstone Park & Ride is located close to an interchange between the A96 and the AWPR and, if considered as part of a wider suite of improvements, could facilitate attractive cycle links to employment areas in Kirkhill Industrial Estate and Aberdeen International Airport. Secure cycle parking provision would be required, and bike hire from this location could be considered to help its promotion to new cycle users.

Option AT22 to be considered in line with Option AT23.

AT23 – Implement a bike hire scheme within Dyce

Bike hire schemes are an effective method of providing entry level access to cycling facilities to those who do not own a bike. They increase visibility and awareness of cycling infrastructure in an area and more inclusively promote modal shift. Integration with public transport, recreation and employment centres in the Dyce area would be required to achieve the desired benefit. Affordability is also recognised as a key factor in the visibility of a scheme and would require consultation with stakeholders to take proposals forward.

Option AT23 to be considered in line with Option AT3, AT22 and AT61.

AT24 – Improve active travel connectivity between the A947 study area and Aberdeen Airport/Heliport

The A947 study area and Aberdeen Airport/Heliport are connected via Farburn Terrace and Market Street. It is noted that cyclist and pedestrian improvements to Farburn Terrace are being advanced as part of a separate study therefore it is recommended that improvements on Market Street are taken forward for consideration as part of this study. Further consideration of facilities on Victoria Street and Stoneywood Road, in conjunction with Farburn Terrace and Market Street proposals, is also recommended for a fully integrated network.

Market Street in conjunction with Wellheads Drive provides a southern connection between the A947 study area and Aberdeen Airport. Wellheads Drive includes an existing shared use path adjacent to the road carriageway. Market Street is a residential street with on-street parking prevalent. Based on anticipated traffic volumes and speeds on Market Street, it is considered that adoption as a mixed-use street would be appropriate and would provide a high level of service in terms of Safety against the core principle of Cycling by Design.

The provision of wayfinding signage from Farburn Terrace and Market Street to Aberdeen Airport/Heliport would support the use of these streets as an active travel link.

Option AT24 to be considered in line with Options AT25, AT27 and AT37.

AT25 – Improve active travel connectivity between the A947 study area and Craibstone Park & Ride

Craibstone Park & Ride has established shared use path and toucan crossing connections north on Airport Road, which are integrated with the wider shared use path network on Dyce Drive and Wellheads Drive. Upgrade of existing footpath and puffin crossing facilities on Airport Road south of the Park & Ride junction would facilitate integration with wider improvements along the A96 corridor and provide a more direct link to facilities to the south of the A947 study area. It is also recommended that a review of traffic sign mounting heights on Airport Road is undertaken to confirm that they are compliant with the minimum required 2.3m clearance over the cycle route.

Figure 4.10: Existing Traffic Sign Mounting on Airport Road (Source: Google Streetview)

Option AT25 to be considered in line with Options AT24 and AT27.

AT26 – Improve active travel connectivity between the A947 study area and TECA

TECA currently has multiple links to the study area through an existing core path network, which provides connections:

- North to Wellheads Drive;
- East to Waterton Road;
- South to Greenburn Drive; and
- West to Dyce Drive.

The core path routes provide for multiple user groups. The existing path to the west of TECA is unbound. Based on Cycling by Design's core design principle of Comfort, this would be considered to provide a low level of service. To achieve a high level of service, it is recommended that this path is upgraded to a bound surface, similar to the other paths surrounding TECA. A review of wayfinding signage, as detailed under Option AT68, would support the use of this existing network as an active travel link between TECA and the study area. This option should also be considered in conjunction with improvements along Wellheads Drive to deliver optimum benefit.

It should be noted that path improvements are proposed as part of the Cross City Connections Study, between Millhill Brae and Stoneywood Road, which would support improved active travel connectivity between the A947 study area and TECA.

Option AT26 to be considered in line with Options AT35 and AT68.

AT27 – Improve active travel connectivity between the A947 study area and Kirkhill Industrial Estate

There are various active travel solutions which could be implemented to improve connectivity between the A947 study area and Kirkhill Industrial Estate. These have been considered in a more targeted way as part of other options. See commentary for Options AT24 and AT58 for more detail.

Option AT27 to be considered in line with Options AT24, AT25 and AT58.

AT28 – Implement dropped kerbs for cyclists to transfer between the carriageway and pavement at the northbound bus stop on the A947, north of the River Don

The existing dropped kerbs in the vicinity of the northbound and southbound bus stops on the A947 accommodate users crossing the carriageway perpendicularly. The dropped kerbs, and short connecting length of shared use path northbound towards the old A947 carriageway do not effectively facilitate transition from road to shared use path for cycle users. Incorporation of an additional dropped kerb connecting to a diverge transition would improve integration and attractiveness for cycle users.

Widening of the footway to provide a desirable minimum 4.0m wide shared use path would facilitate better integration with the old A947 (pre-AWPR) carriageway and provide an active travel connection between the A947 and B977, improving access to the F&B Way. Distinction would be required to ensure diverge transitions are not mistaken for merges by cycle users travelling against the flow direction of the road. This option can be advanced within the existing road boundary and is considered to deliver a short-term benefit in isolation. It also has potential to offer further increased benefit in association with wider improvements.

Figure 4.11: Existing Dropped Kerbs on A947 (Northbound) (Source: Google Streetview)

Option AT28 to be considered in line with Option AT43.

AT30 – Provide direct active travel link between Dyce Drive and Riverview Drive

A signal-controlled toucan crossing on the A947, north of the Dyce Drive junction, would deliver value and support direct connection if considered in conjunction with other improvement options on the A947, Dyce Drive and Riverview Drive. The A947 has a 40mph speed limit and therefore a signal-controlled crossing is assumed to be permitted, subject to confirmation of the 85th percentile speed. The crossing would provide a high level of service for all users, however, further consideration of the impact on the operation of the A947 as a priority route would be required.

Option AT30 to be considered in line with Options AT13 and AT59.

AT31 – Improve active travel links between the Riverside Path and housing within Dyce

The Riverside Path runs along the River Don and connects into the southbound verge of Riverview Drive, approximately 220m east of Overton Circle in the south and 200m east of Balloch Way in the north.

Existing informal dropped kerb crossings on Riverview Drive connect the Riverside Path with housing in Dyce, as shown at the locations circled in the diagram below. It is noted that the existing crossings do not meet desirable accessibility requirements, with limited use of tactile paving, narrow crossing widths and poorly aligned crossings.

A continuous footway, approximately 1.5m wide runs along the full extent of the northbound verge of Riverview Drive. A shared use path, 2.5m wide and set back approximately 5.0m in the verge provides connection between the Riverside Path and the crossing locations at the northern roundabout. On the southern side, a 2.5m wide shared use path terminates 150m west of the Riverside Path access. The shared use paths and Riverside Path form part of NCN Route 1.

Assessment of pedestrian desire lines is required to determine appropriate locations for crossings to improve connection between the Riverside Path and housing areas. Improvements to existing crossing facilities should be developed in conjunction with Options AT13, AT14, AT15 and AT16. Additional central connections from the Riverside Path onto Riverview Drive can be considered if the desire line assessment determines an existing demand. This would improve directness and connectivity with the residential area. It is recommended that this option is also considered in conjunction with Option AT60 to improve integration of the Riverside Path with the surrounding network.

Figure 4.12: Riverside Path Route and Location of Crossing Points (Source Image: Google Maps)

Option AT31 to be considered in line with Options AT13, AT14, AT16, AT45 and AT60.

AT32 – Implement footways on the south side of the carriageway on Pitmedden Road

A 2.0m wide footway is currently provided on the south side of the carriageway from the Victoria Street junction to the Dyce Scout Hut access. Beyond this access, a grass verge with kerb upstand and minimum 3.0m width extends to the F&B Way underbridge. Adequate space is available within the verge to accommodate an extension to the 2.0m footway but consideration of impact on the existing kerb and gully drainage system would be required if the impermeable area is increased.

Extended provision of footway beyond the F&B Way underbridge should be subject to assessment of demand. The wide junction arrangements which provide access to the industrial premises would require offset crossings to minimise crossing length and this may introduce deliverability challenges from interface with third party land.

This option should be considered further in conjunction with Option AT42 to support integration with the F&B Way.

Option AT32 to be considered in line with Option AT42.

AT33 – Provide improved active travel links between Dyce Station and the A947 and the eastern section of Dyce, particularly along Station Road

Station Road is the main link between Dyce Station, Victoria Street and the eastern section of Dyce. It comprises a 5.5m carriageway with 1.5m footways on either side, however, the footway access becomes limited on approach to the station. On-street parking restrictions are present on part of Station Road and the majority of residential and commercial properties off the link have dedicated off-road parking facilities.

Given the nature of Station Road with assumed low traffic volumes and speeds, mixed-traffic street or light segregation measures are considered to offer a high level of service for users. Adoption of low traffic neighbourhood (LTN) measures including expansion and formalisation of 20mph speed limits and introduction of one-way side roads is recommended for further consideration to support successful implementation of active travel improvements.

It is recommended that contra-flow cycle lanes with minimum 2.0m width are considered where one-way streets are proposed to maintain directness of active travel provision. A one-way traffic lane on Station Road should be reduced to 3.0m in support of the contra-flow arrangement, allowing 0.5m for incorporation of light segregation measures. This option would require extension to the existing on-street parking restrictions to implement.

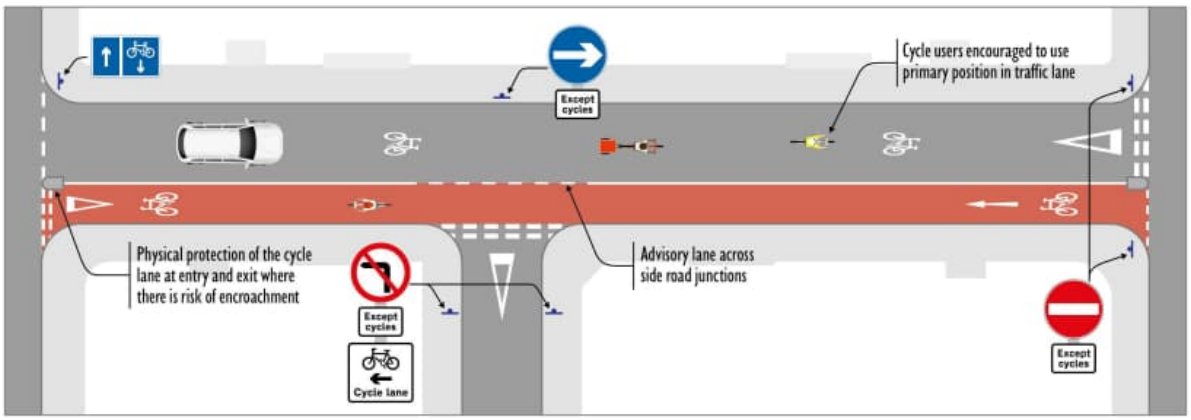


Figure 4.13: Contra-flow Cycle Lane (Source: Cycling by Design)

Option AT33 to be considered in line with Options AT17, AT61, O1, O2, O11, O12, O15, O16, O25 and O26.

AT35 – Implement quiet route measures on the local road network to the west of the A947 via Bankhead Road, Wellheads Drive and Farburn Terrace to Dyce Station

Quiet street measures are appropriate in LTNs and can be adopted so that:

- There is no direct through route for motorised vehicles;
- All homes can be accessed by private vehicles; and
- New public space is created, activating the streets.

Key quiet street measures, based on Sustrans and Cycling by Design guidance, are outlined in the table below.

Table 4.7: Quiet Street Measures (Cycling by Design)

Tool	Description
Modal Filters	A simple bollard or planter through which people can travel by walking or cycling, but not by car.
Pocket Parks	These are two sets of filters, spaced slightly apart to create a new area through which people can only travel by walking or cycling.
Diagonal Filters	Bollards or planters diagonally through a crossroad. These minimise the need for reversing, facilitating refuse collection or other large vehicle movements.
Turning Restrictions	Removing the possibility of motorised vehicles to perform certain turns.
One-way Streets	These can be effective in combination with banned turns or when introducing conflicting one-ways but can lead to increased speeding.
Bus Gate	A modal filter, through which buses can travel. This is usually camera-enforced, and its operation can be timed.

Bankhead Road, Wellheads Drive, and Farburn Terrace could be considered to form the boundary streets of the LTN as they facilitate wider connection with the local transport network.

It is recommended that further assessment of appropriate quiet street measures is undertaken on the following local access roads which connect with the boundary streets.

Bankhead Road

- Millburn Brae (in conjunction with Station Road) – to support access to NMU underpass below railway and A947; and
- Greenburn Road – to support access to the school.

Wellheads Drive

- Wellheads Crescent/Wellheads Way/Wellheads Place – to control vehicle movements and create new active travel opportunities; and
- Market Street (access controls already in place – see Option AT38).

It should be noted that Route 9 of Cross City Connections and the proposals for active travel improvements along Farburn Terrace and Wellheads Drive will facilitate delivery of this option as a whole.

Option AT35 to be considered in line with Options AT26, AT37, AT38 and AT39.

AT37 – Implement dropped kerbs between Wellheads Drive shared use path and the carriageway

There is a shared use path in the northbound verge of Wellheads Drive between Dyce Drive and the approach to Farburn Terrace. Existing dropped kerb access between the shared use path and the carriageway is limited to junction crossings and the dropped kerb access adjacent to Market Street.

Wellheads Drive has a 40mph speed limit therefore, assuming this is reflective of 85th percentile speed, controlled zebra or parallel crossings are not permitted, and uncontrolled crossings are considered to provide a low level of service for users. Signal-controlled crossings are considered to provide a high level of service as an alternative.

Dropped kerbs to facilitate transition between carriageway and the shared use path for cycle users could be implemented as part of a minor improvement package, however, further assessment of user demand is required to inform perpendicular crossing arrangements that are suitable for all users. It is recommended that this option is considered further in conjunction with Options AT24, AT35 and AT38 for a holistic solution.

Option AT37 to be considered in line with Options AT24, AT35 and AT38.

AT38 – Review access restrictions on Market Street to allow for cargo bikes and recumbent cycles

The junction of Market Street and Wellheads Drive currently has gated restrictions across the carriageway width to prevent through vehicular access. Active travel users currently can transfer between Market Street and Wellheads Drive using the adjacent 1.5m footway and dropped kerbs. However, this is a restrictive arrangement for users of cargo and recumbent cycles. It is therefore recommended that the access restrictions be reconfigured to enhance through permeability and accessibility for all active travel users using part of the redundant road junction carriageway footprint. Temporary vehicular access could still be accommodated with a simple junction and bollard or similar adjustable access controls in place.

Option AT38 to be considered in line with Options AT35 and AT37.

AT39 – Remove access controls on off-road path between Waterton Road and Ruthriehill Road

The off-road path between Waterton Road and Ruthriehill Road currently has traditional access controls with restrictive barriers and narrow bypasses for path users. It is recommended that the gated accesses are removed and replaced by bollards with minimum width for access of 1.5m as detailed in Cycling by Design. This will improve accessibility for users and increase active travel permeability whilst continuing to prevent vehicular access onto the path.

Option AT39 to be considered in line with Option AT35.

AT41 – Improve active travel access to the retail park at the Bucksburn Roundabout

Active travel access to the retail park from the A947 study area is currently provided via an informal staggered crossing over the A947 dual carriageway and a stepped access off Bankhead Road. The A947 has a 40mph speed limit in this area and therefore the existing crossing represents a low level of service in terms of safety for users.

A signal-controlled crossing on the A947 would be required to deliver a high level of service and improve integration with existing public transport infrastructure. However, designation of the A947 as a priority traffic route and the proposed implementation of a signal-controlled crossing on the north arm of Bucksburn Roundabout as part of the A96 study is expected to impact the feasibility of this as a solution.

Option AT62 discusses constraints associated with providing active travel facilities between the Oldmeldrum Road junction and Bucksburn Roundabout in the southbound A947 verge. Potential integration with the proposed signal-controlled crossing at the roundabout is therefore limited, reducing directness for some users.

As an alternative access route to the retail park for users travelling southbound on the A947 corridor, it is proposed that further consideration be given to development of an inclusive ramp access in place of the existing steps off Bankhead Road. This would facilitate options for integration with wider active travel infrastructure on the A947 southbound and Oldmeldrum Road and provide an alternative access to the retail park without need for an at-grade crossing of the A947.

Users of the north-east quadrant of Bucksburn Roundabout would be accommodated by the choice of utilising the most direct route between the proposed facilities along the A96 corridor or via Bankhead Road to gain access to the retail park.

Further consideration of the capital cost associated with this option is required due to the proximity of the existing A947 bridge wing wall and potential earthworks associated with forming the ramp.

Option AT41 to be considered in line with Options AT47, AT48, AT57 and O10.

4.2.6 Other Connections

This grouping contains the following options:

Table 4.8: Other Connections Options

AT42	**Review access to the F&B Way from within Dyce**
AT43	**Implement active travel connection between the A947 and the B977, utilising a section of the old A947 (pre-AWPR)**
AT45	**Upgrade the Riverside Path to a high quality active travel route, including improvements to the surfacing of the route**
AT46	**Implement lighting on the Riverside Path**

AT42 – Review access to the F&B Way from within Dyce

There are multiple existing points of access onto the F&B Way from the Dyce area. These are outlined in the figure below as follows:

1. Dyce Station car park/Union Row;
2. Pitmedden Road overbridge;
3. McIntosh Crescent (residential street);
4. Dyce Drive, west of A947 junction; and
5. Former A947, close to the junction with B977.

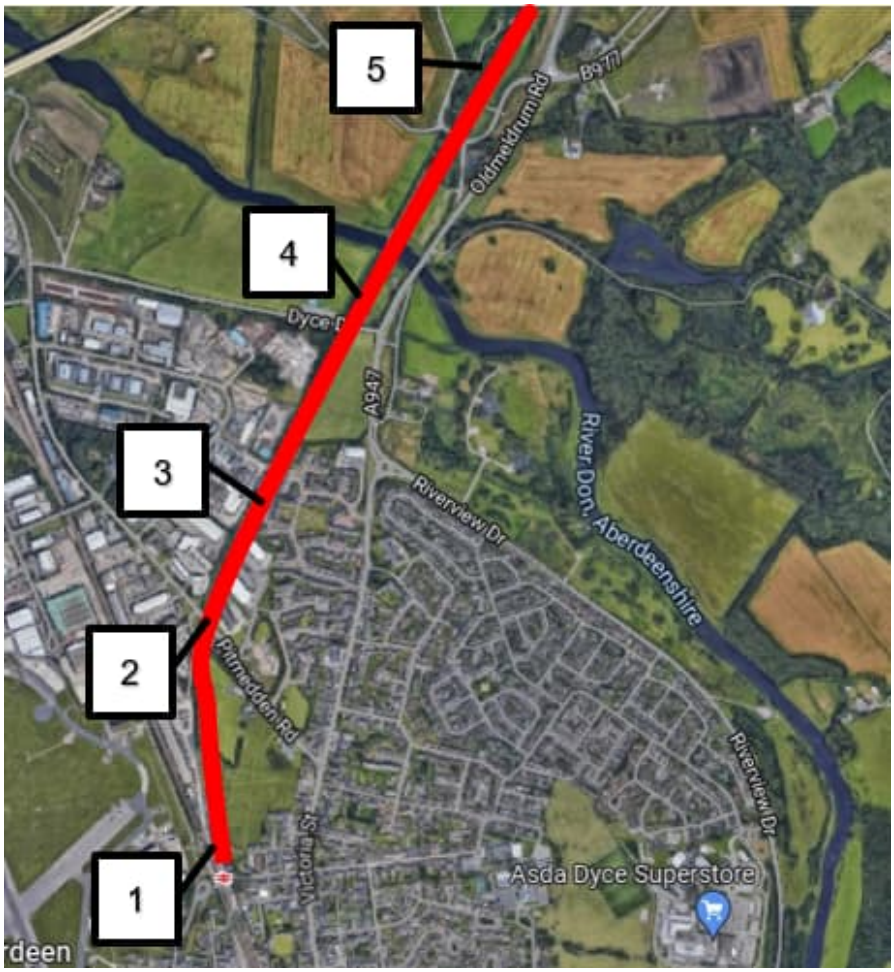


Figure 4.14: Existing Points of Access onto the F&B Way (Source Image: Google Maps)

From the Study Tour, it was acknowledged that a lack of signage and protected space for active travel users within the station car park limit the effective integration with the F&B Way. It is recommended that improvements are considered in conjunction with Option AT68.

The F&B Way has access points north and south of Pitmedden Road, which are intended to facilitate access to the surrounding industrial and residential areas. However, it is noted that the access to the north, which connects through a private car park, is now blocked following closure of the associated office. Consideration should be given to the reinstatement of the connection on the north side of Pitmedden Road, although it should be noted that there may be a requirement for third party agreement to re-establish the access.

The access on the southern side ramps directly onto Pitmedden Road but is observed to be less than 1.5m wide and therefore does not meet desirable or absolute minimum criteria for a shared use path. Furthermore, the link terminates with no connection to an extended path network or formalised crossing. Consideration should be given to an integrated and accessibility compliant solution at this location to support movements between the F&B Way and surrounding trip generators/attractors.

Access to the F&B Way from Dyce Drive is proposed for improvement through Options AT13 and AT58. The accesses off McIntosh Crescent and the former A947 are not considered to require further consideration for improvement at this stage.

Figure 4.15: F&B Way Route with Access Points from Pitmedden Road (Source Image: Google Maps)

Figure 4.16: Existing Overbridge and Southern Access Point (Source: Google Streetview)

Option AT42 to be considered in line with Options AT32, AT58 and AT68.

AT43 – Implement active travel connection between the A947 and the B977, utilising a section of the old A947 (pre-AWPR)

Former sections of the A947 were repurposed for local access only as the primary route was diverted to align with new infrastructure as part of the AWPR project. There is an opportunity to utilise these as quiet mixed-traffic streets to improve integration of the active travel network in the area.

A bus stop and short connected section of narrow footway is located in the northbound verge of the A947, approximately 120m north of the Parkhill Bridge over the River Don. The footway extends longitudinally along the A947 with a short spur to connect to the redundant A947 carriageway which has been stopped-up immediately north-east.

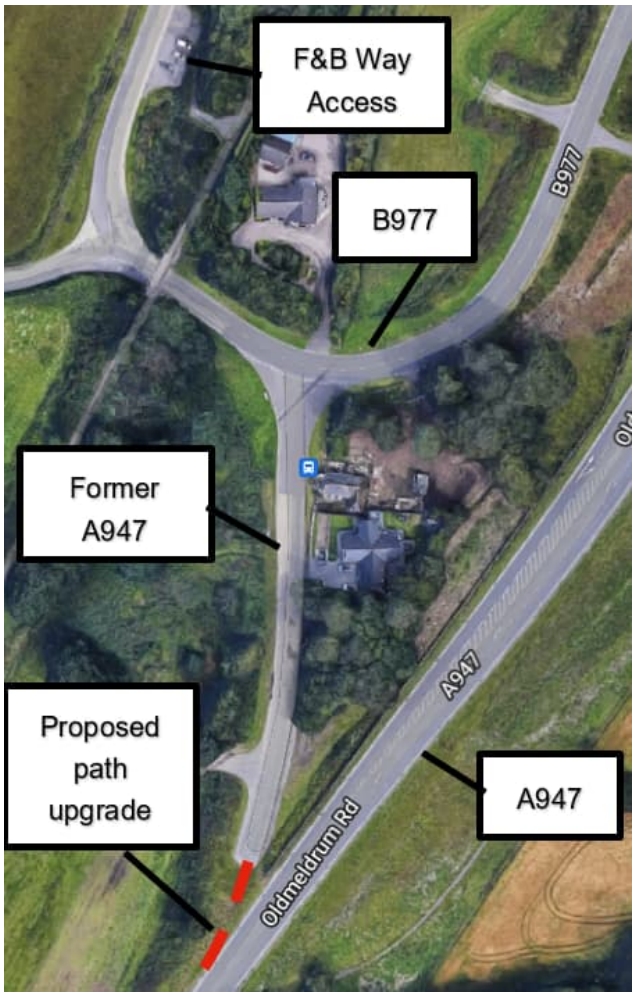


Figure 4.17: Proposed Improved Connection from A947 (Source Image: Google Maps)

Widening of the footway to provide a desirable minimum 4.0m wide shared use path would facilitate better integration with the former A947 carriageway and provide an improved active travel connection between the A947 and B977, improving access to the F&B Way.

Figure 4.18: Existing Narrow Footpath Connection (Source: Google Streetview)

This option is principally limited by the existing uncontrolled crossing over the A947 which would link it with wider existing shared use facilities towards Dyce. Due to the 40mph speed limit on the A947 at this location, the crossing represents a low level of service in terms of safety for users. This option should still however be considered further in conjunction with Option AT28 which proposes dropped kerb transition facilities for on-road cycle users.

A second opportunity for improved connections using the former A947 carriageway exists to the north-east of this location. An unbound shared use path, approximately 1.5-2.0m wide, is set-back from the carriageway in the eastern verge of the A947 and B977 between the Parkhill Bridge and Parkhill Junction. The shared use path terminates with an uncontrolled crossing over the B977, connecting to the section of former A947 which now serves only as a residential and maintenance access.

The maintenance route comprises an unbound track serving the two SuDS attenuation ponds and connects to the former A947 carriageway and the F&B Way, with gated restrictions at each end.

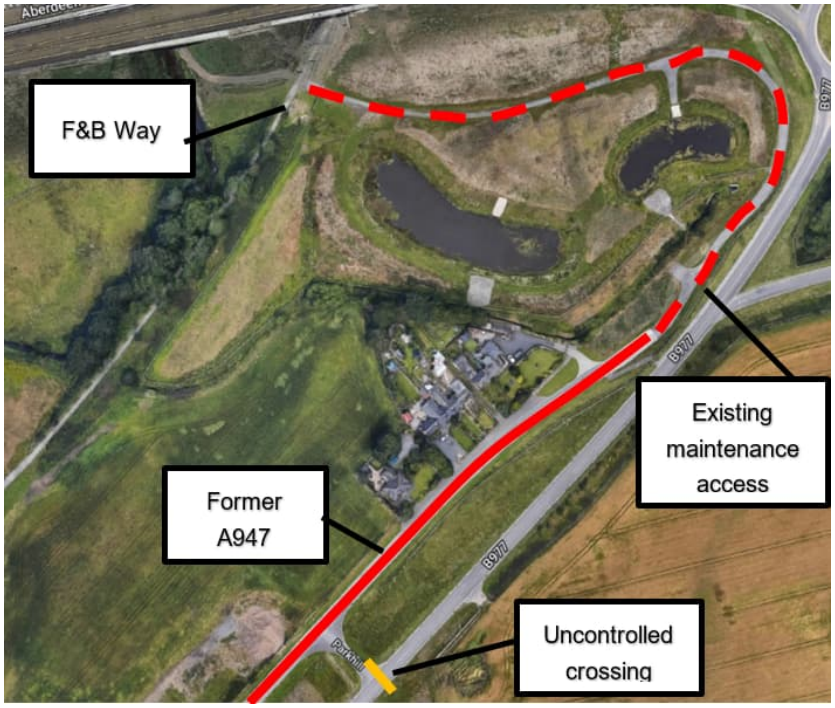


Figure 4.19: Proposed Alignment along Maintenance Route (Source Image: Google Maps)

Figure 4.20: Existing Gated Entrance/Exit (Source: Google Streetview)

There is an opportunity to repurpose the maintenance access to facilitate an alternative connection between the A947 and F&B Way for active travel users.

It is assumed that the SuDs ponds serve the AWPR and therefore, consultation with the Trunk Road Overseeing Authority would be required to gain approval for the repurposing of the maintenance access. Consideration of new boundary fencing would also be required to mitigate the risk of unauthorised entry into the ponds. Similarly, an alternative form of adjustable modal filter such as removable bollards in place of the existing gate would facilitate unimpeded access for active travel users and maintenance vehicles whilst preventing access for other motorised vehicles.

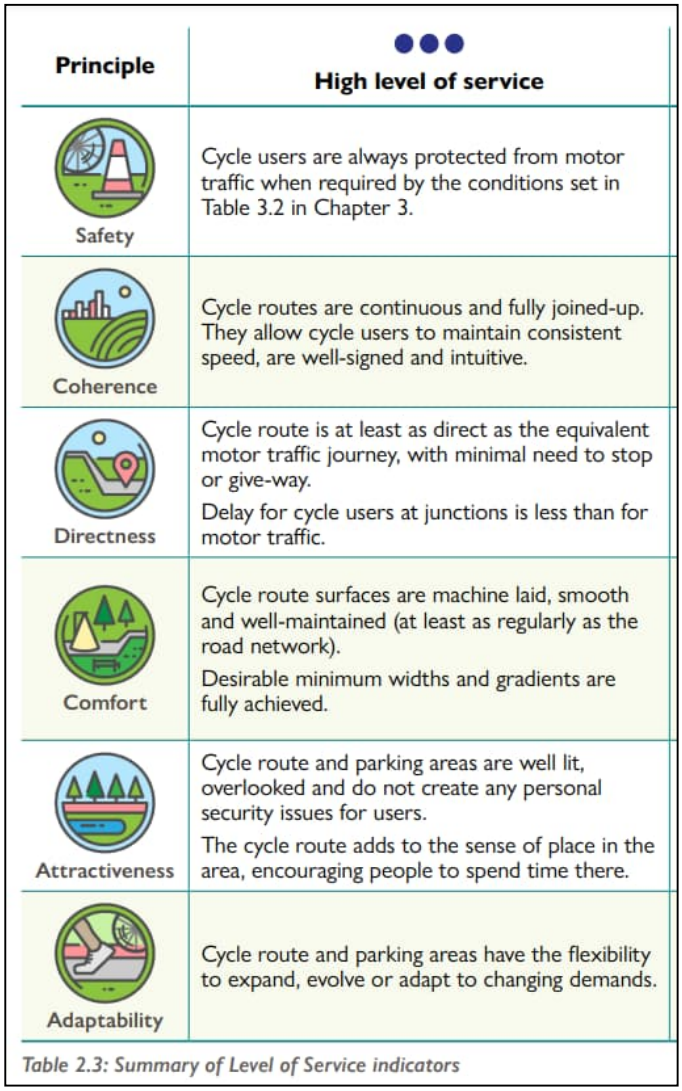
The existing maintenance access surfacing is of unbound construction. If repurposed as an active travel link, this would represent a low level of service in relation to the core design principle of Comfort. This presents an affordability risk; however, it is in-keeping with the wider character of the F&B Way.

The overall option is also limited by the existing uncontrolled crossing over the B977. This route has a speed limit of 40mph and therefore, the crossing represents a low level of service in its existing form. It is recommended that consideration be given to the feasibility of a signal-controlled crossing in combination with the wider measures to provide a high level of service for users.

Option AT43 to be considered in line with Option AT28.

AT45 – Upgrade the Riverside Path to a high quality active travel route, including improvements to the surfacing of the route

From the Study Tour, it was noted that the Riverside Path has a variable surface with a typical cross-section of 2-2.5m, however, this narrows and degrades towards the southern end. To increase the level of service offered in line with criteria set out in Cycling by Design, improvements in terms of width, surfacing and lighting should be taken forward for more detailed assessment.



Principle	●●● High level of service
Safety	Cycle users are always protected from motor traffic when required by the conditions set in Table 3.2 in Chapter 3.
Coherence	Cycle routes are continuous and fully joined-up. They allow cycle users to maintain consistent speed, are well-signed and intuitive.
Directness	Cycle route is at least as direct as the equivalent motor traffic journey, with minimal need to stop or give-way. Delay for cycle users at junctions is less than for motor traffic.
Comfort	Cycle route surfaces are machine laid, smooth and well-maintained (at least as regularly as the road network). Desirable minimum widths and gradients are fully achieved.
Attractiveness	Cycle route and parking areas are well lit, overlooked and do not create any personal security issues for users. The cycle route adds to the sense of place in the area, encouraging people to spend time there.
Adaptability	Cycle route and parking areas have the flexibility to expand, evolve or adapt to changing demands.

Table 2.3: Summary of Level of Service indicators

Figure 4.21: Summary of High Level of Service Indicators (Source: Cycling by Design)

From an initial assessment of space available, it is proposed that the link is taken forward for upgrade to a 4.0m wide shared use path, with a consistent bound surface to meet the desirable minimum requirements of Cycling by Design and to deliver a high level of service for users. This option should be considered as a package in conjunction with Option AT31 and AT46 to deliver the greatest value.

Option AT45 to be considered in line with Options AT31 and AT46.

AT46 – Implement lighting on the Riverside Path

To meet Cycling by Design's core design principle of Attractiveness, a cycle route which aims to have a high level of service must be well lit to ensure the safety of users. The introduction of lighting along the Riverside Path would improve the experience for users. This option could form part of a wider package of measures relating to the improvement of the path. An environmental assessment would be required for this option to identify sensitivities in the area which may be impacted by the introduction of lighting. Following this, the most appropriate form of lighting could be selected (i.e. solar studs would provide a more sensitive solution).

Figure 4.22: Solar Stud Lighting Example (Coe Fen Cycle Route Cambridge)

Option AT46 to be considered in line with Options AT45.

4.2.7 Segregated Cycling Infrastructure

This grouping contains the following options:

Table 4.9: Segregated Cycling Infrastructure Options

AT47	**Implement with-flow segregated cycleway on the A947 between AWPR Junction and A947/A96 Junction**
AT48	**Implement two-way segregated cycleway on the A947 between AWPR Junction and A947/A96 Junction**
AT51	**Implement with-flow segregated cycleway on Oldmeldrum Road**
AT52	**Implement two-way segregated cycleway on Oldmeldrum Road**
AT55	**Implement with-flow segregated cycleway on Gilbert Road**
AT56	**Implement two-way segregated cycleway on Gilbert Road**

AT47 – Implement with-flow segregated cycleway on the A947 between AWPR Junction and A947/A96 Junction

Implementation of continuous with-flow segregated cycle tracks on the A947 between the AWPR and A947/A96 junction is not feasible along the full length due to a number of fixed physical constraints at overbridges, property boundaries and junctions, which would require extensive works and third-party land acquisition to overcome.

The A947 corridor is of variable character throughout the study area. It is principally a single carriageway all-purpose route but widens to dual carriageway between Stoneywood Brae and Bucksburn Roundabout. The route has a 40mph speed limit along its full length between Bucksburn Roundabout and the AWPR.

Table 3.7 in Cycling by Design specifies a desirable minimum 2.0m width for a footway and 2.0m for an adjacent one-way cycle track. These dimensions reduce to 1.5m each in the absolute minimum case. The width of the cycle track should be increased by 0.25m where the link has a gradient of 3% or greater. A 0.5m minimum buffer is also required between the road and cycle track for a 30mph speed limit and 1.0m for a 40mph speed limit.

Holistic assessment of the corridor-wide proposal alongside targeted options will better inform realistic extents of with-flow segregated cycle tracks along the route. Consideration alongside Options AT10 and AT11 with inclusion of light segregation would support continuous connection along Riverview Drive. Adaption of existing advisory lanes on Stoneywood Road would create similar opportunity. Option AT51 supports segregated connection to facilities in the south as proposed by the parallel A96 study.

Verge widths offer adequate space for widening over much of the inter-urban route but opportunities to rationalise the A947 road carriageway width and speed limit would also support implementation – most notably at fixed constraints such as the railway and River Don overbridges. Challenges are also recognised in providing appropriate crossing facilities over the A947 priority route to link the one directional network of segregated cycle tracks with the equivalent provision and trip generators/attractors on the opposing roadside.

A combination of active travel solutions and adoption of absolute minimum design parameters in localised areas is anticipated to provide the most deliverable solution. Further stakeholder consultation is required to better gauge the public acceptability of the range of potential measures.

Option AT47 to be considered in line with Options AT10, AT11, AT41, AT48, AT51, AT57, O10 and O17.

AT48 – Implement two-way segregated cycleway on the A947 between AWPR Junction and A947/A96 Junction

Implementation of continuous two-way segregated cycle tracks on the A947 between the AWPR and A947/A96 junction is not feasible along the full length due to a number of fixed physical constraints at overbridges, property boundaries and junctions which would require extensive works and third-party land acquisition to overcome.

The A947 corridor is of variable character throughout the study area. It is principally a single carriageway all-purpose route but widens to dual carriageway between Stoneywood Brae and Bucksburn Roundabout. The route has a 40mph speed limit along its full length between Bucksburn Roundabout and the AWPR.

Table 3.7 in Cycling by Design details a desirable minimum 2.0m width for a footway and 3.0m for an adjacent two-way cycle track. These dimensions reduce to 1.5m and 2.0m respectively in the absolute minimum case. The width of the cycle track should be increased by 0.25m where the link has a gradient of 3% or greater. A 1.0m minimum buffer is also required between the road and cycle track for a 40mph speed limit.

Existing footways of varying standard are provided along the entirety of the route. This option is recognised as having fewer deliverability challenges than Option AT47 due to the provision being focussed on one side of the A947 carriageway. As a result, there is greater scope to manage the design to reduce the impact of identified constraints.

Holistic assessment of the corridor-wide proposal alongside targeted options will better inform realistic extents of two-way segregated cycle tracks along the route. Consideration alongside Option AT52 will support segregated connection to facilities in the south as proposed by the parallel A96 study.

Verge widths offer adequate space for widening over much of the inter-urban route but opportunities to rationalise the A947 road carriageway width and speed limit would also support implementation – most notably at fixed constraints such as the railway and River Don overbridges. Challenges are also recognised in providing appropriate crossing facilities over the A947 priority route to link the facilities with trip generators/attractors on the opposing roadside.

A combination of active travel solutions and adoption of absolute minimum design parameters in localised areas is anticipated to provide the most deliverable solution. Further stakeholder consultation is required to better gauge the public acceptability of the range of potential measures.

Option AT48 to be considered in line with Options AT10, AT11, AT41, AT47, AT52, AT57, O10 and O17.

AT51 – Implement with-flow segregated cycleway on Oldmeldrum Road

Oldmeldrum Road is a connector road and bus route between the A947 Stoneywood Road and A96 Auchmill Road. The existing road and active travel corridor cross-section is approximately 15m wide on average along the length of the route. The existing road is non-uniform in cross-section, with varied width throughout to accommodate on-street parking and the interface with residential and commercial property boundaries/accesses.

Variable width footways are present on both sides with an approximate minimum width of 2.5m. These are generally positioned directly in front of fixed property boundaries and are discontinuous across junctions with Mugiemoss Road, Gilbert Road, Malcolm Road and Station Road. To the north of Mugiemoss Road, designated shared use paths are located adjacent to the carriageway and connect to the wider network on Mugiemoss Road, Bankhead Road and on the A947.

Table 3.7 in Cycling by Design details a desirable minimum 2.0m width for a footway and 2.0m for an adjacent one-way cycle track. These dimensions reduce to 1.5m each in the absolute minimum case. A 0.5m minimum buffer is also required between the road and cycle track for a 30mph speed limit.

Implementation of desirable minimum with-flow segregated facilities on Oldmeldrum Road would negate the viability of existing on-street parking arrangements and require formalisation of a 6.0m wide single carriageway road cross-section throughout. It is recognised that this may impact on manoeuvrability for buses operating on the route. Promotion of an arrangement compliant with the absolute minimum standard for with-flow segregation, or a speed limit reduction to 20mph would support a 7.0m wide road carriageway, however, this would still not facilitate on-street parking.

This option represents significant improvement to existing NMU facilities on Oldmeldrum Road however, impact on parking is recognised to present a risk to deliverability. It is recommended that further assessment of parking requirements in the area is undertaken and that this option continues to be considered in conjunction with improvements on the connecting roads and parallel A96 study.

Option AT51 to be considered in line with Options AT47, AT52, AT55, AT56, AT64 and AT66.

AT52 – Implement two-way segregated cycleway on Oldmeldrum Road

As outlined under Option AT51, Oldmeldrum Road is a connector road and bus route with an approximate 15m wide road corridor between fixed property boundaries.

Table 3.7 in Cycling by Design details a desirable minimum 2.0m width for a footway and 3.0m width for an adjacent two-way cycle track. Adoption of a two-way segregated cycleway would be more space efficient than a segregated with-flow arrangement, however, it would still negate the viability of existing on-street parking arrangements.

Implementing the segregated facility on the southbound side of the A947 would best support integration with facilities on Mugiemoss Road and the A947. A two-way segregated cycle track would also offer continuity in association with a similar facility proposed on the A96 Auchmill Road as part of the parallel A96 study.

This option also represents significant improvement on existing NMU facilities on Oldmeldrum Road, however, impact on parking is recognised to present a risk to deliverability. It is recommended that further assessment of parking requirements in the area is undertaken and that this option continues to be considered in conjunction with improvements on the connecting roads and parallel A96 study.

Option AT52 to be considered in line with Options AT48, AT51, AT55, AT56, AT64 and AT66.

AT55 – Implement with-flow segregated cycleway on Gilbert Road

Gilbert Road is a residential street between Oldmeldrum Road to the north-east and the A96 to the south-west. The road has a typical 7.7m cross-section bounded by 1.7m wide footways and residential boundaries on both sides. On-street parking is prevalent throughout with several dropped-kerb accesses across the footways to private driveways.

Table 3.7 in Cycling by Design details a desirable minimum width of 2.0m for a footway and 2.0m for an adjacent one-way cycle track. Adoption of a with-flow segregated cycleway would not be feasible without acquiring third party land due to the limited available space within the existing road corridor.

As part of the parallel A96 study, options are being promoted to introduce access controls on the southern end of Gilbert Road, removing through vehicular access. Based on the proposed arrangements and anticipated traffic flows, Table 3.2 in Cycling by Design suggests development as a mixed-traffic street represents a high level of service in relation to the Safety design principle.

Option AT55 to be considered in line with Options AT51, AT52, AT56, AT64 and AT66.

AT56 – Implement two-way segregated cycleway on Gilbert Road

As outlined under Option AT55, Gilbert Road is a residential street with typical road corridor width of 11.1m between property boundaries.

Table 3.7 in Cycling by Design details a desirable minimum width of 2.0m for a footway and 3.0m for an adjacent two-way cycle track. Adoption of a two-way segregated cycleway would be more space efficient than a segregated with-flow arrangement however it would still negate the viability of existing on-street parking arrangements without acquisition of third party land.

As discussed under Option AT55, the anticipated stopping-up of through access onto the A96 would suggest a mixed-traffic street is a more appropriate and deliverable arrangement on Gilbert Road.

Option AT56 to be considered in line with Options AT51, AT52, AT55, AT64 and AT66.

4.2.8 Shared Use Path Infrastructure

This grouping contains the following options:

Table 4.10: Shared Use Path Infrastructure Options

AT57	**Implement shared use path on the A947 between AWPR Junction and A947/A96 Junction**
AT58	**Implement shared use path on Dyce Drive between the A947 and Kirkhill Industrial Estate to the north of Aberdeen International Airport**
AT59	**Widen the shared use path on the east side of the A947 to the north of Riverview Drive**
AT60	**Provide continuous footways on Riverview Drive for the duration of the route**
AT61	**Implement shared use path on Victoria Street**
AT62	**Widen the shared use path on the east side of the A947 between the A96 and Beech Manor**
AT63	**Review alignment of the A947 shared use path to the north of the Oldmeldrum Road Junction where the safety barrier constrains the width of the path**
AT64	**Implement shared use path on Oldmeldrum Road**
AT65	**Implement streetscape improvements and widened pavements along Mugiemoss Road**
AT66	**Implement shared use path on Gilbert Road**
AT67	**Widen the shared use path on the west side of Howe Moss Drive**

AT57 – Implement shared use path on the A947 between AWPR Junction and A947/A96 Junction

Implementation of a continuous shared use path on the A947 between the AWPR and A947/A96 junction is potentially feasible along the majority of the A947 route with minor diversion via Oldmeldrum Road to connect to the facilities proposed for the A96 corridor in the south.

Challenges in relation to a number of fixed physical constraints at overbridges, property boundaries and junctions require further evaluation with more extensive works and third-party land acquisition anticipated if desirable minimum standards are targeted throughout.

The A947 corridor is of variable character throughout the study area. It is principally a single carriageway all-purpose route but widens to dual carriageway between Stoneywood Brae and Bucksburn Roundabout. The route has a 40mph speed limit along its full length between Bucksburn Roundabout and the AWPR.

Table 3.7 in Cycling by Design specifies a desirable minimum 4.0m width for shared use paths with an absolute minimum width of 2.5m. This width should be increased by a further 0.25m where the link has a gradient of 3% or greater. A 1.0m minimum buffer is also required between the road and cycle track for a 40mph speed limit.

Existing footways of varying standard are provided along the entirety of the route. This option is recognised as having fewer deliverability challenges than Option AT47 due to the provision being focussed on one side of the A947 carriageway. As a result, there is greater scope to manage the design to reduce the impact of identified constraints.

Holistic assessment of the corridor-wide proposal alongside targeted options such as Options AT4, AT59, AT63, AT64 and AT66 will better inform the realistically deliverable standard of shared use facilities along the route.

Verge widths offer adequate space for widening over much of the inter-urban route but opportunities to rationalise the A947 road carriageway width and speed limit would also support implementation – most notably at fixed constraints such as the railway and River Don overbridges. Challenges are also recognised in providing appropriate crossing facilities over the A947 priority route to link the facilities with trip generators/attractors on the opposing roadside.

Continuous shared use route provision is considered as the most feasible solution if a single coherent approach is desired throughout the whole study area. However shared use is recognised to represent a lower level of service compared with segregation for users based on road speed usage volumes. Therefore, a combination of active travel solutions and adoption of absolute minimum design parameters in localised areas is recommended for continued consideration. Further stakeholder consultation is required to better gauge the public acceptability of the range of potential measures.

Option AT57 to be considered in line with Options AT4, AT10, AT11, AT41, AT47, AT48, AT59, AT62, AT63, AT64, AT65, AT66, O10 and O17.

AT58 – Implement shared use path on Dyce Drive between the A947 and Kirkhill Industrial Estate to the north of Aberdeen International Airport

Dyce Drive is a derestricted (60mph) rural all-purpose single carriageway road with a variable cross-section. The eastern half of the link between the A947 and the junction north of Pitmedden Industrial Estate has a typical 6.0m road cross-section, with minimal to no verges and is directly bound by third party land. A fixed constraint exists at the F&B Way overbridge, where the road carriageway is at its narrowest and the abutments slope down to the road channel with no level verge area. The cross-section widens to approximately 7.0m, with minimum 2.0m verges on the western half of this link. The link between Pitmedden Road and Kirkhill Industrial Estate has a typical 7.3m carriageway width with minimum 1.5m verges. The northern verge of this link is constrained by the fixed position of the parapet at the railway overbridge, however, widening for visibility has been implemented on the southern verge and therefore it is possible to reallocate space within the existing road boundary for improved active travel facilities.

Figure 4.23: Dyce Drive Carriageway and Entrance to F&B Way (Source: Google Streetview)

Table 3.7 in Cycling by Design details a desirable minimum width of 4.0m and absolute minimum width of 2.5m for a shared use cycle track when adjacent to the carriageway. The width should be increased by a further 0.25m where the link has a gradient of 3% of greater. For a 60mph speed limit, as exists on the majority of Dyce Drive, this should be accompanied by a 2.5m buffer strip between the track and the carriageway. The buffer can be reduced to 1.0m on the sections where the speed limit is 40mph.

It is recommended that a shared use path with desirable minimum dimensions where feasible be taken forward for development. On the link between the A947 and Pitmedden Industrial Estate, this would be best located on the northern side of the carriageway for integration with access onto the F&B Way. It is anticipated that an absolute minimum standard is most realistic locally around the overbridge given the spatial constraints at the abutment.

The eastern section of this link is key for the integration of multiple routes, however, does also carry risk in terms of deliverability and cost certainty due to the impact on third party land. Promoting an extension of the 40mph speed limit along Dyce Drive would enable reduction in buffer strip width to assist with more efficient utilisation of space and reduced deliverability risk.

On the link between Pitmedden Road and Kirkhill Industrial Estate, a desirable minimum width shared use path would be best considered in the north/westbound verge towards the industrial estate. This would enable a continuous route along the link without impact on the existing road carriageway around the railway overbridge. This would require consideration of safe crossing facilities at both extents to connect with the wider network.

Option AT58 to be considered in line with AT13, AT27, AT42 and AT59.

AT59 – Widen the shared use path on the east side of the A947 to the north of Riverview Drive

The A947 north of Riverview Drive is a 40mph single carriageway with a shared use path, approximately 1-2m wide in the eastern verge between Riverview Drive Roundabout and the B977 junction. The path is of bound formation between Riverview Drive Roundabout and Parkhill Bridge and then becomes unbound north of the bridge. The current condition of this path does not meet parameters set by Cycling by Design.

Table 3.7 in Cycling by Design details a desirable minimum 4.0m width for shared use paths, with an absolute minimum width of 2.5m. Additionally, Table 3.8 outlines a requirement for a minimum 1.0m buffer between road and cycle track, based on a 40mph posted speed limit.

There is sufficient nominally flat verge space along the majority of this corridor to implement widening to achieve desirable minimum standards without impact on third party land. However, localised constraints exist over two sections – north of the private access and on the Parkhill Bridge over the River Don.

For a 100m length north of the private access, the verge narrows to approximately 3.5m and existing path to 1m due to the close proximity and level difference of adjacent private land. Subject to more detailed assessment and stakeholder consultation, improvement of the existing path to absolute minimum standard without impact on third party land may represent optimum value and minimise deliverability challenges. The typically rural nature of this link would suggest low probability of conflict between users and therefore, the reduced width could be promoted as appropriate over a short length.

Figure 4.24: Narrow Verge with Adjacent Land Boundary (Source: Google Streetview)

A fixed verge width of 3.5m exists on the Parkhill Bridge over the River Don. This is further constrained by the presence of a vehicle restraint system (VRS), set-back 1.2m from the carriageway edge, which reduces the usable shared use path space to approximately 2.0m.

Figure 4.25: VRS Placement on Parkhill Bridge (Source: Google Streetview)

It is recommended that consideration is given to the assessment and potential upgrade of the existing bridge parapet to provide adequate containment and allow removal of the secondary VRS system. Alternatively, considering reduction of the VRS set-back from 1.2m to 0.6m from the edge of the carriageway is permitted as a relaxation by DMRB CD 127 where the speed limit is less than 50mph. Both options would release space in the existing verge for use as part of an improved shared use path. It is recognised that absolute minimum shared path provision is the optimum reasonably practicable solution over the structure. Major improvements to the overbridge are anticipated to introduce increased risk in terms of feasibility and affordability.

As a quick win to improve existing facilities on the A947, it is also recommended that review of traffic sign mounting heights in the verge is undertaken to confirm that they are compliant with the minimum required 2.3m clearance over the cycle route.

Option AT59 to be considered in line with Options AT13, AT30, AT57 and AT58.

AT60 – Provide continuous footways on Riverview Drive for the duration of the route

Pedestrian access on Riverview Drive is currently accommodated by a footway along the full extent of the northbound verge, with informal dropped kerb crossings at the multiple simple junctions. A shared use path is also currently provided in two parts in the southbound verge – between the southern roundabout and a point 65m east of the Overton Circle junction and between the northern roundabout and the northern Riverside Path access.

Provision of continuous footways in the southbound verge is principally restricted by the presence of a 260m length of VRS, which protects errant vehicles against the hazard of the nearby River Don. There is insufficient space behind the VRS before the embankment slopes towards the river. This area is also densely populated by vegetation. Street lighting columns are a further obstruction in the southbound verge, which limits space for extension to the existing shared use provision.

It is recommended that extension to the shared use path in the southbound verge is limited to the section between Overton Circle and the southern Riverside Path access. The new construction should aspire to desirable minimum width requirements of Cycling by Design, specifically a 4.0m path and 1.0m buffer strip due to the 40mph speed limit of Riverview Drive.

Consideration should be given to the affordability of reallocating existing carriageway space, which serves as an advisory cycle lane to form a shared use path in front of the existing lighting columns in comparison with relocation of the lighting columns to develop a path entirely in the existing verge.

It is also recommended that further consideration be given to widening the northern section of shared use path to meet current 4.0m desirable minimum requirements. This link currently achieves the absolute minimum 2.5m width, however, improvements are considered feasible given the existing offset of the alignment and available verge space.

Implementing an extended shared use path in the southbound verge will deliver value in conjunction with improvements to the Riverside Path and benefit NCN Route 1. Further consideration of junction arrangements as proposed by Options O3, O4 and O5 will also improve upon the existing continuous footpath in the northbound verge.

Option AT60 to be considered in line with Options AT14, AT31, O3, O4 and O5.

AT61 – Implement shared use path on Victoria Street

The variability of the existing road corridor along Victoria Street presents a number of constraints, however, it has been assessed to have the physical width to accommodate implementation of a continuous shared use path through the urban centre of Dyce with minimal impact on third party land.

Table 3.7 in Cycling by Design outlines a desirable minimum width of 4.0m for a shared use path and an absolute minimum width of 2.5m. A 0.5m buffer strip is also required where the shared path runs adjacent to a 30mph road.

Reconfiguration of the existing road corridor to implement a 4.0m desirable minimum shared use path, 6.5m standardised road carriageway and 1.5m footway is considered technically feasible but wider practical implications require further consideration as part of a holistic design. Challenges in terms of interface with existing shop frontages, business parking and loading areas, bus stops and on-street residential parking are recognised and will require further consultation.

Based on the indicative cross-section, there is insufficient space to accommodate the buffer strip between the road and the shared use path as required. Promotion of a reduced 20mph speed limit along Victoria Street as part of placemaking measures would remove the requirement for the buffer strip. The feasibility of this is enhanced by the reprioritisation of the A947 route along Riverview Drive. This should be considered further in conjunction with Options AT21 and AT23.

Option AT61 to be considered in line with Options AT17, AT21, AT23, AT33, O1, O2, O11, O12, O15, O16, O25 and O26.

AT62 – Widen the shared use path on the east side of the A947 between the A96 and Beech Manor

An existing shared use path is located in the eastern verge of the A947 between the Oldmeldrum Road junction and Beech Manor. The path has a typical width of 2.5m but narrows over a length of approximately 130m to 2.0m due to the presence of VRS in the verge as the A947 converges with the River Don. The A947 has a 40mph

speed limit throughout and is single carriageway between Beech Manor and Stoneywood Brae before widening to dual carriageway up to the A96 roundabout.

Table 3.7 in Cycling by Design details a desirable minimum width of 4.0m for a shared use path and an absolute minimum width of 2.5m. It is recommended that cycle tracks are widened by an additional 0.25m on gradients greater than 3%. It is assumed that this parameter applies over the length between Stoneywood Brae and Oldmeldrum Road based on initial visual inspection. A 1.0m buffer is also required between the shared use path and road carriageway due to the speed limit.

The existing road corridor includes a sufficiently wide verge between Stoneywood Brae to Beech Manor which could facilitate widening of the existing shared use path to the desirable minimum 4.0m + 1.0m buffer standard without need for third party land acquisition. Existing street lighting columns, set-back 2.5m on the outside of the existing shared use path, would require repositioning to accommodate.

The existing road corridor narrows between Stoneywood Brae and Oldmeldrum Road with limited space at the rear of the verge to accommodate widening without impacting on third party land and the need for ground works on top of the existing embankment. Absolute minimum provision is more realistic over this length with a buffer strip incorporated as far as possible. The errant vehicle risk mitigated by the existing VRS could be reassessed and a system with smaller working width incorporated at the back of the shared use path to maximise unobstructed space for the path. Alternatively, considering reduction of the VRS set-back from 1.2m to 0.6m from the edge of the carriageway is permitted as a relaxation by DMRB CD 127 where the speed limit is less than 50mph and would offer similar space-saving benefit.

Between Oldmeldrum Road and the A96, the existing cross-section is constrained by the fixed width of the Bankhead Road overbridge and signage in advance of the roundabout. It is therefore recommended that users are directed via Oldmeldrum Road to meet the A96 further east and that no shared use provision is implemented on this section of the A947.

Option AT62 to be considered in line with Option AT57 and O8.

AT63 – Review alignment of the A947 shared use path to the north of the Oldmeldrum Road Junction where the safety barrier constrains the width of the path

An existing shared use path is located in the eastern verge of the A947 between the Oldmeldrum Road junction and Beech Manor. The path has a typical width of 2.5m but narrows over a length of approximately 130m to 2.0m due to the presence of VRS in the verge as the A947 converges with the River Don. The A947 has a 40mph speed limit and is dual carriageway in the vicinity of the VRS.

The errant vehicle risk mitigated by the existing VRS could be reassessed and a system with narrower working width incorporated at the back of the shared use path to maximise unobstructed space for the path. Alternatively, considering reduction of the VRS set-back from 1.2m to 0.6m from the edge of the carriageway is permitted as a relaxation by DMRB CD 127 where the speed limit is less than 50mph and would offer similar space-saving benefit.

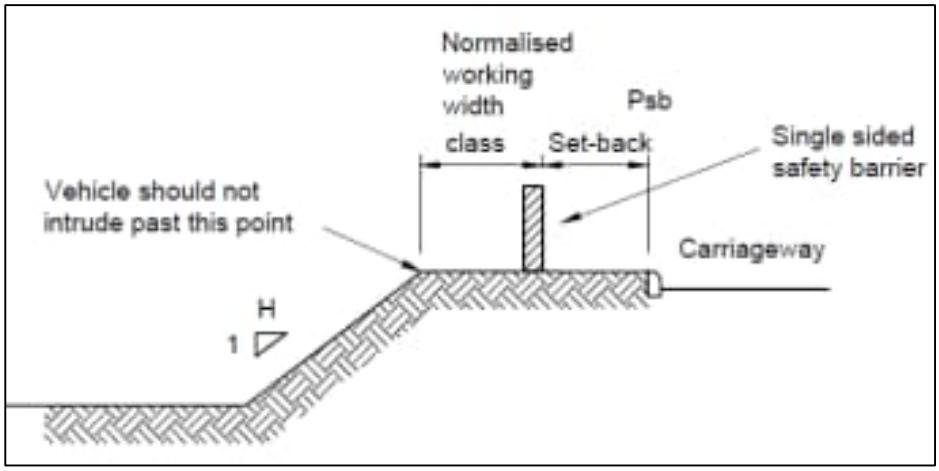


Figure 4.26: VRS Parameters (Source: DMRB CD 377)

It is recommended that further assessment is undertaken in line with the process defined in DMRB CD 377: Requirements for Road Restraint Systems to establish feasibility and inform cost implications of delivery.

Option AT63 to be considered in line with Option AT57.

AT64 – Implement shared use path on Oldmeldrum Road

Oldmeldrum Road is a connector road and bus route between the A947 Stoneywood Road and A96 Auchmill Road. The existing road and active travel corridor cross-section is approximately 15m wide on average along the length of the route. The existing road is non-uniform in cross-section with varied width throughout to accommodate on-street parking and the interface with residential and commercial property boundaries/accesses.

Variable width footways are present on both sides with approximate minimum width of 2.5m. These are generally positioned directly in front of fixed property boundaries and are discontinuous across junctions with Mugiemoss Road, Gilbert Road, Malcolm Road and Station Road. To the north of Mugiemoss Road, designated shared use paths are located adjacent to the carriageway and connect to the wider network on Mugiemoss Road, Bankhead Road and on the A947.

Table 3.7 in Cycling by Design details a desirable minimum 4.0m and absolute minimum 2.5m width for a shared use path when adjacent to the carriageway. For a 30mph speed limit, as exists on Oldmeldrum Road, a 0.5m buffer between the road and path is also required.

Implementation of a shared use facility to the desirable minimum requirement would retain a typical road carriageway width of 8.0m which would be insufficient to accommodate on-street parking without adverse impact on the bus route. This assumes that the adjacent footway would be retained at its existing width to avoid negative impact on users and reduce the extent of works.

Consideration of secondary measures, such as narrowing this adjacent footway to a minimum width, reduction in speed limit to eliminate the requirement for a buffer strip and localised relaxation of the shared use path to an absolute minimum design width, could be implemented to accommodate space for on-street parking provision.

Implementing the shared use facility on the southbound side of Oldmeldrum Road would best support integration with facilities on Mugiemoss Road and the A947.

This option represents significant improvement to existing NMU facilities on Oldmeldrum Road. It is recommended that further assessment of parking requirements in the area is undertaken and that this option continues to be considered in conjunction with improvements on the connecting roads and parallel A96 study.

Option AT64 to be considered in line with Options AT51, AT52, AT55, AT56, AT57 and AT66.

AT65 – Implement streetscape improvements and widened pavements along Mugiemoss Road

Between the Oldmeldrum Road and Mill Drive junctions, the link has an existing 20mph speed limit and typical 6.0m road carriageway with 2.0m footways on each side. A number of minor and direct property accesses exist on the link and double yellow lines on the northern part of this section prohibit on-street parking.

The narrow road corridor offers limited scope for widening of the existing footways in this section. It is not feasible to utilise road carriageway space due to its function as a bus corridor. Consideration of special traffic controls in this section to reduce traffic volume and minimise vehicle conflict should be considered further as this could create opportunity for improved pedestrian streetscape. It is recommended that consideration also be given to providing pedestrian priority across the Mugiemoss Crescent and Station Road minor accesses.

Subject to further assessment of user desire lines, controlled zebra crossings would represent a high level of service on this low-speed route and could be provided across Mugiemoss Road to facilitate improved connection for all users.

Between the Mill Drive junction and A92, the link has an existing 30mph speed limit and the typical cross-section widens to provide a 7.5m road carriageway with adjacent 2.0m footways. The proximity of private and industrial property boundaries, as well as the River Don limit the feasibility of implementing extensive active travel improvements, however, it is recommended that further consideration be given to the reduction of the existing 7.5m typical road carriageway width with reallocation of space to widen the existing footway to improved standard or implement an absolute minimum shared use path. This should be undertaken in conjunction with swept path assessment to maintain accessibility for vehicles to industrial premises as required.

A widened footway or shared use path would be more appropriately located on the north side of the carriageway to limit interface with minor junctions/accesses on the route. Adoption of full desirable minimum width of shared use path is anticipated to require localised stabilisation of the bank of the River Don however this may be avoidable with more detailed design development.

Option AT65 to be considered in line with Option AT57.

AT66 – Implement shared use path on Gilbert Road

Gilbert Road is a residential street between Oldmeldrum Road to the north-east and the A96 to the south-west. The road has a typical 7.7m cross-section bounded by 1.7m wide footways and residential boundaries on both sides. On-street parking is prevalent throughout with several dropped-kerb accesses across the footways to private driveways.

Table 3.7 in Cycling by Design outlines a desirable minimum width of 4.0m for a shared use path with an absolute minimum width of 2.5m. Upgrade of one of the existing footways to meet desirable minimum standard would improve active travel connections but negate the viability of existing on-street parking arrangements without acquisition of third-party land. An absolute minimum 2.5m wide shared use path would be more realistic in terms of limiting impact on the other existing arrangements. This would require a TRO to support the proposed change of use if taken forward.

As part of the parallel A96 study, options are being promoted to introduce access controls on the southern end of Gilbert Road, removing through vehicular access. Based on the proposed arrangements and anticipated traffic flows, Table 3.2 in Cycling by Design suggests development as a mixed-traffic street represents a high level of service in relation to the Safety design principle and therefore would be appropriate for further consideration on Gilbert Road.

Option AT66 to be considered in line with Options AT51, AT52, AT55, AT56, AT57 and AT64.

AT67 – Widen the shared use path on the west side of Howe Moss Drive

Howe Moss Drive serves a number of business and industrial units. The roadside footways are not currently designated for shared use. They are approximately 2.0m wide on both sides of the route, with a 7.3m road carriageway between. Reduction in road carriageway width to facilitate widening of the footway to a desirable minimum 4.0m shared use path with 0.5m buffer would require a TRO to underpin the change of use and vehicle tracking assessment to confirm the route remains viable for industrial vehicles. Consideration of treatment for prioritisation across the number of private accesses would also be required. Adoption of quiet road measures for cycle users on Howe Moss Drive may be more appropriate subject to an assessment of usage volumes.

4.2.9 Signage

This grouping contains the following option:

Table 4.11: Signage Option

AT68	**Conduct a review of wayfinding signage throughout the study area**

AT68 – Conduct a review of wayfinding signage throughout the study area

Wayfinding is important to permit users of the linear route to understand where they currently are along the route. It can also act as a signposting opportunity to attract users of the linear route into local areas such as Dyce. It is therefore proposed that a branding and wayfinding strategy is established to permit the F&B Way to be promoted to a wider audience whilst supporting the local area.

Option AT68 to be considered in line with Option AT26 and AT42.

4.3 Public Transport Options

4.3.1 Bus Priority Infrastructure

This grouping contains the following option:

Table 4.12: Bus Priority Infrastructure Option

PT2	**Conduct a traffic signal review to consider bus priority at all traffic signals along the A947 corridor**

PT2 – Conduct a traffic signal review to consider bus priority at all traffic signals along the A947 corridor

It is recommended that a review of signal timings be undertaken along the study corridor and consideration given to the introduction of adaptive traffic signals to improve traffic flow through the junctions for all users. The

introduction of adaptive traffic signal timings at junctions along the A947 corridor would help to support the flow of traffic through each junction which would have a positive impact on journey times.

Split Cycle and Offset Optimisation Technique (SCOOT) can be utilised at junctions to improve traffic flow and give buses priority at junctions. On average, installing SCOOT at a junction reduces traffic disruption by between 8 and 12%[5]. This option could form part of a wider package of measures to facilitate public transport in the study area. Further engineering assessment is required to better establish the holistic feasibility of this option.

4.3.2 Bus Stop Review

This grouping contains the following option:

Table 4.13: Bus Stop Review Option

PT5	**Implement real time passenger information at key bus stops along the study corridor**

PT5 – Implement real time passenger information at key bus stops along the study corridor

The implementation of real-time passenger information at bus stops would require to be delivered in partnership with the bus operators. Ensuring ease of access to information of bus service occupancy levels will help reduce the need to travel unsustainably. This option could form part of a wider package of measures to facilitate public transport in the study area.

4.3.3 Public Transport Connectivity

This grouping contains the following options:

Table 4.14: Public Transport Connectivity Options

PT9	**Improve public transport connectivity between the A947 study area and Aberdeen Airport/Heliport**
PT10	**Improve public transport connectivity between the A947 study area and Craibstone Park & Ride**
PT11	**Improve public transport connectivity between the A947 study area and TECA**
PT12	**Improve public transport connectivity between the A947 study area and Kirkhill Industrial Estate**

PT9 – Improve public transport connectivity between the A947 study area and Aberdeen Airport/Heliport

Further engineering work would be required to establish the feasibility of introducing bus lanes and/or bus gates between the airport/heliport and the A947 corridor. It is recommended that a review of existing bus services and bus stop provision is undertaken to ensure that the network best meets community demand. This would be assessed through establishing bus services and bus stop locations; distance between stops; current footfall; and usage numbers as well as looking at infrastructure at stops such as shelters, benches etc. Potential exists to enhance opportunities for cycle carriage on bus services on the A947 corridor to promote multi-modal journeys to the airport/heliport. Similarly, opportunity exists to introduce safe cycle storage at bus stops and new/improved provisions at the airport/heliport as part of the same drive. Wider stakeholder consultation would be required. This option would require to be delivered in partnership with the bus operators.

Option PT9 to be considered in line with Options PT10 and PT12.

PT10 – Improve public transport connectivity between the A947 study area and Craibstone Park & Ride

It is recommended that a review of existing bus services is undertaken to ensure that the network best meets community demand and encourages use of the Park & Ride for multi-modal journeys. This would be assessed through establishing bus services, current footfall and usage numbers as well as looking at infrastructure at stops such as shelters, benches, safe cycle storage, etc. There is potential to enhance opportunities for cycle carriage on bus services on the A947 corridor to promote multi-modal journeys to the Park & Ride. Similarly, opportunity exists to introduce safe cycle storage at bus stops on the A947 corridor. Wider stakeholder consultation would be required. This option would require to be delivered in partnership with the bus operators and ACC.

Option PT10 to be considered in line with Options PT9 and PT12.

[5] https://tfl.gov.uk/info-for/media/press-releases/2014/july/delivering-the-future-of-london-s-traffic-signals

PT11 – Improve public transport connectivity between the A947 study area and TECA

Further engineering work would be required to establish the feasibility of introducing bus lanes along the A96 to connect the TECA site with the A947 corridor. It is recommended that a review of existing bus services is undertaken to ensure that the network best meets community demand and encourages use of public transport for multi-modal journeys. This would be assessed through establishing bus services, current footfall and usage numbers as well as looking at infrastructure at stops such as shelters, benches, safe cycle storage, etc. Potential exists to enhance connectivity of the Craibstone Park & Ride and TECA by completing the missing link in the footway network on the north side of the A96 between the two sites (east of the existing bus stop). Opportunities for cycle carriage on bus services on the A947 corridor to promote multi-modal journeys to TECA and Craibstone Park & Ride should be considered. Similarly, opportunity exists to introduce safe cycle storage at bus stops on the A947 corridor. Wider stakeholder consultation would be required. This option would require to be delivered in partnership with the bus operators and TECA.

PT12 – Improve public transport connectivity between the A947 study area and Kirkhill Industrial Estate

Further engineering work would be required to establish the feasibility of introducing bus lanes and/or bus gates along Dyce Drive to connect the Kirkhill Industrial Estate with the A947 corridor. It is recommended that a review of existing bus services and bus stops is undertaken to ensure that the network best meets community demand and encourages use of public transport for multi-modal journeys. This would be assessed through establishing bus services, bus stops, current footfall and usage numbers as well as looking at infrastructure at stops such as shelters, benches, safe cycle storage, etc. Opportunities for cycle carriage on bus services on the A947 corridor to promote multi-modal journeys to the Industrial Estate should be considered. Similarly, opportunity exists to introduce safe cycle storage at bus stops on the A947 corridor. Wider stakeholder consultation would be required. This option would require to be delivered in partnership with the bus operators and businesses in Kirkhill Industrial Estate.

Option PT12 to be considered in line with Options PT9 and PT10.

4.4 Other Options

4.4.1 Enforcement

This grouping contains the following option:

Table 4.15: Enforcement Option

O1	**Increase enforcement of stopping restrictions on Victoria Street, specifically adjacent to Tesco**

O1 – Increase enforcement of stopping restrictions on Victoria Street, specifically adjacent to Tesco

From stakeholder consultation, it was established that road users have been regularly observed to disregard the zig zag markings on approach to and exit from the existing zebra crossing adjacent to the Tesco Express. These markings are enforceable and prohibit parking and overtaking in the vicinity of the crossing. There is substantial double yellow line coverage in the surrounding area which also serves a similar purpose, advising motorists that waiting or parking is not allowed at any time. It is anticipated that violation is linked to customers of the supermarket.

Recommended improvements for consideration around this location would be improved signage for the customer car park which is located behind the store and can be accessed off John Street. The double yellow lines to the north of Tesco, on the east side of the road, could be extended back approximately 11.5m to an existing driveway. This may assist in preventing obstruction on the road during arrival and departure of loading vehicles to the store.

This option could be delivered in conjunction with Option AT17, which outlined a proposal to upgrade the existing zebra crossing outside of Tesco to a signalised crossing point. As part of this, it is recommended that the existing TRO is reviewed along with potential increased observation patrols and enforcement of parking restrictions.

Option O1 to be considered in line with Options AT17, AT33, AT61, O2, O11, O12, O15, O16, O25 and O26.

4.4.2 Junction Reviews

This grouping contains the following options:

Table 4.16: Junction Reviews Options

O2	**Review the layout of the Victoria Street/Skene Place Junction**
O3	**Review the layout of the Riverview Drive/Balloch Way Junction**
O4	**Review the layout of the Riverview Drive/Todlaw Walk Junction**
O5	**Review the layout of the Riverview Drive/Netherview Avenue Junction**
O7	**Review the layout of the A947/Stoneywood Junction at Co-Op/M&S**
O8	**Review the layout of the A947/Stoneywood Brae Junction**
O10	**Review layout of the A947/McDonalds access road junction**

O2 – Review the layout of the Victoria Street/Skene Place Junction

Option AT33 recommends the adoption of LTN measures along Station Road and its side roads. Skene Place is linked to Station Road by Merrivale. It is recommended that further consideration is given to the introduction of a one-way network using Station Road, Merrivale and Skene Place as indicatively shown in **Figure 4.27**.

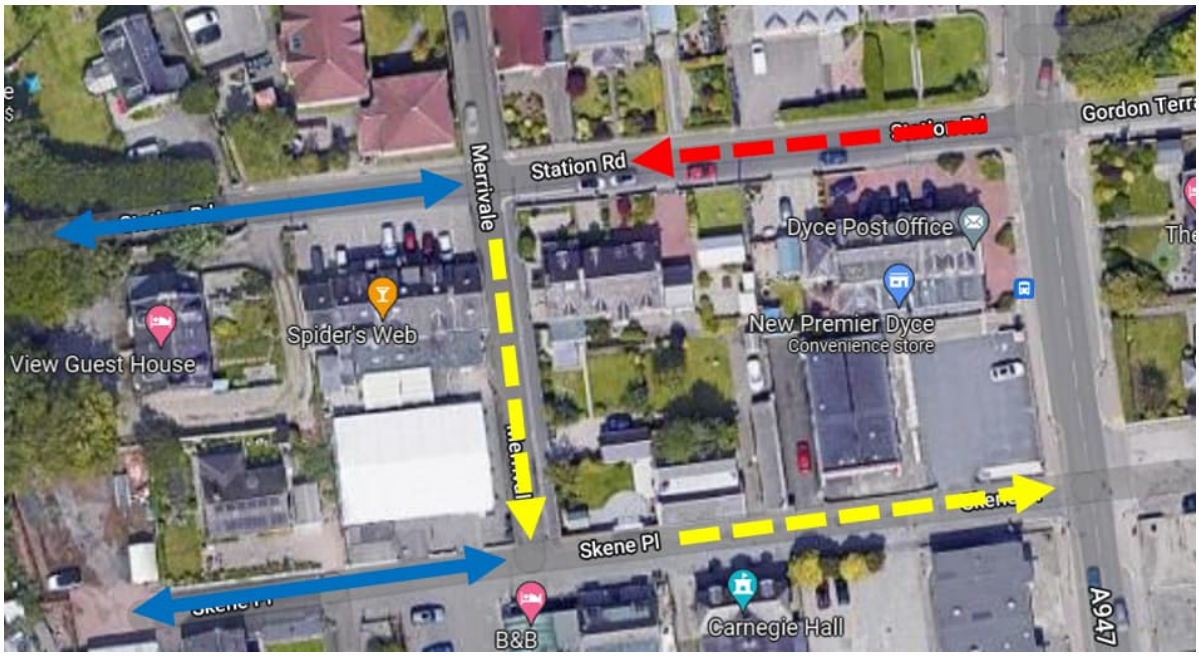


Figure 4.27: Indicative One-Way System on Station Road/Skene Place (Source Image: Google Maps)

This is considered to simplify traffic movements to/from Victoria Street and would facilitate LTN improvements on Station Road as proposed by Option AT33. West of Merrivale, Station Road and Skene Place would remain with bi-directional flow due to there being no alternative through link available.

This option is potentially limited by the narrow existing road width and manoeuvrability challenges for a larger vehicle such as a fire appliance. To support vehicle manoeuvrability, implementation of parking restrictions would be required on Merrivale. Promotion of a TRO would be required to implement this option.

Option O2 to be considered in line with Options AT17, AT33, AT61, O1, O11, O12, O15, O16, O25 and O26.

O3 – Review the layout of the Riverview Drive/Balloch Way Junction

As indicated on **Figure 4.28**, the junction could be narrowed from the existing kerb line (green) to a reduced width (pink) with 6.0m corner radii to provide greater space to NMUs as well as facilitating reduced vehicle speeds. The narrowing has been established through a vehicle tracking exercise using a DB32 Fire Appliance.

Figure 4.28: Proposed Improvements to Riverview Drive/Balloch Way Junction

Option O3 to be considered in line with Options AT60, O4 and O5.

O4 – Review the layout of the Riverview Drive/Todlaw Walk Junction

As indicated on **Figure 4.29**, the junction could be narrowed from the existing kerb line (green) to a reduced width (pink) with 6.0m corner radii to provide greater space to NMUs as well as facilitating reduced vehicle speeds. The narrowing has been established through a vehicle tracking exercise using a DB32 Fire Appliance.

Figure 4.29: Proposed Improvements to Riverview Drive/Todlaw Walk Junction

Option O4 to be considered in line with Options AT60, O3 and O5.

O5 – Review the layout of the Riverview Drive/Netherview Avenue Junction

As indicated on **Figure 4.30**, the junction could be narrowed from the existing kerb line (green) to a reduced width (pink) with 10.0m corner radii to provide greater space to NMUs as well as facilitating reduced vehicle speeds. The narrowing has been established through a vehicle tracking exercise using an FTA Rigid Vehicle.

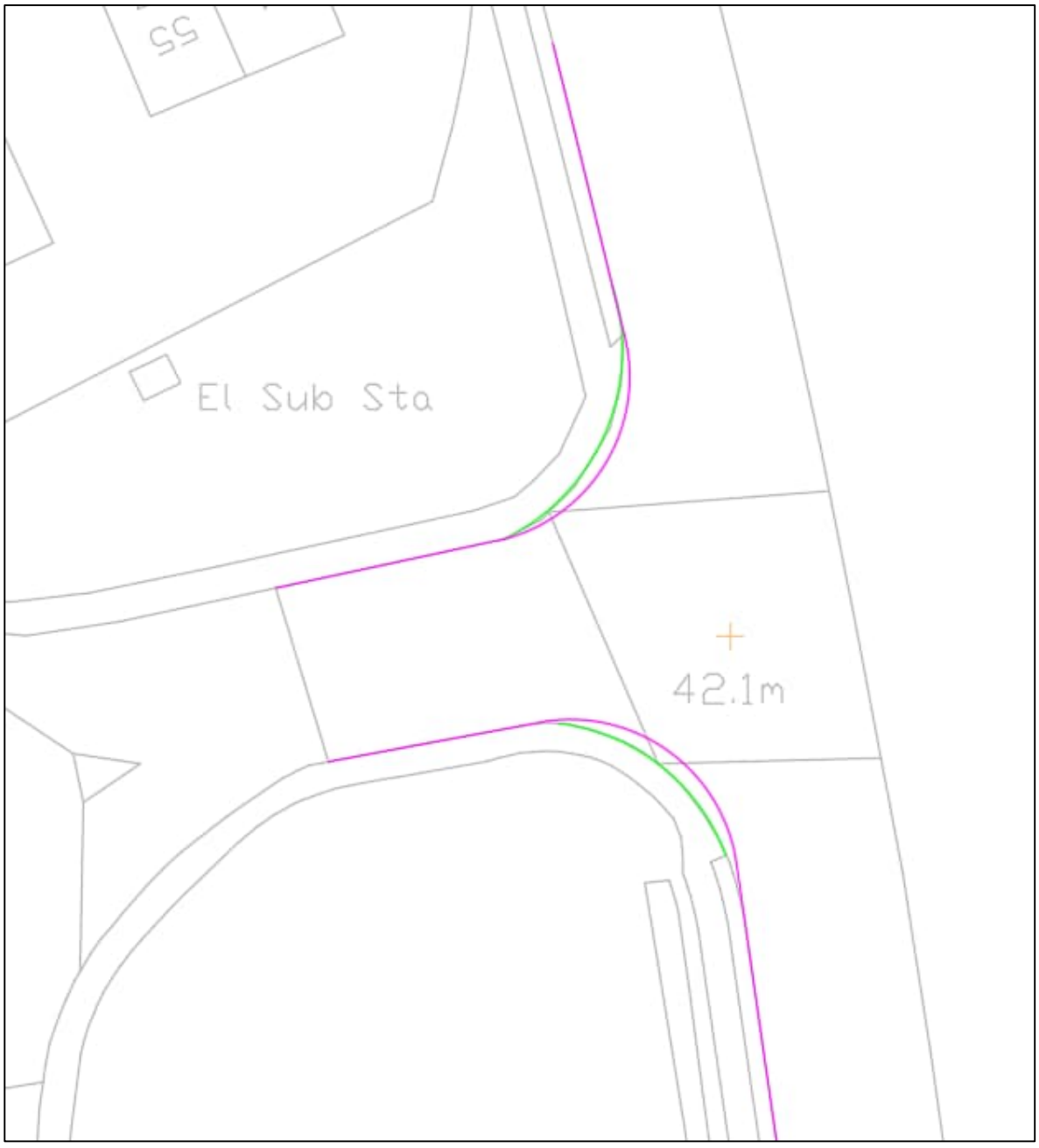


Figure 4.30: Proposed Improvements to Riverview Drive/Netherview Avenue Junction

Option O5 to be considered in line with Options AT60, O3 and O4.

O7 – Review the layout of the A947/Stoneywood Junction at Co-Op/M&S

The A947/Stoneywood Road junction was altered following residential development nearby. This introduced a left-turn only lane for motorists leaving Stoneywood Road. Stakeholder consultation raised concerns that drivers regularly ignore the mandatory no right-turn instruction at the junction as there is no physical restriction which prohibits this.

Consideration of improvements to this junction are required to better enforce the left-turn only exit from Stoneywood Road. It is recommended that traffic information is collected and assessed which will then allow a more detailed geometric analysis of the junction to be completed. Following this, an appropriate form of improvement for this junction can be developed.

O8 – Review the layout of the A947/Stoneywood Brae Junction

This junction is located on the A947 southbound immediately before the transition from single to dual carriageway. Stakeholder consultation raised concern with vehicle acceleration through the junction on approach to the dual carriageway and the interface between vehicles and on-road cycle users.

Suitability of the existing junction arrangement should be considered through analysis of traffic data and evaluation of the transition taper length against the requirements of DMRB CD 127. The speed limit on the A947 is 40mph (~65kph) and therefore a minimum taper ratio of 1:35 is required for implementation of the change in carriageway width.

It is recommended that the assessment of the existing junction arrangement is undertaken in conjunction with the development of improved active travel facilities as proposed by Option AT62. It is recommended that as part of any junction improvements, dropped kerbs are introduced to facilitate transition for on-road cyclists to off-road facilities prior to commencement of the dual carriageway.

Option O8 to be considered in line with Option AT62.

O10 – Review layout of the A947/McDonalds access road junction

The retail park has an existing access off the northbound carriageway of the A947. The current simple junction arrangement is wide to accommodate swept paths of larger design vehicles negotiating the access.

The kerb radius on exit from the junction is measured as 10m and meets the minimum requirement of DMRB CD 123. Assessment of vehicle swept path and turning flows should be undertaken to determine if the existing junction arrangement is the most appropriate for the demand and requirements.

This should be considered in conjunction with Option AT41 to ensure any potential alteration to the junction is not delivered to the detriment of accessibility for active travel users.

Option O10 to be considered in line with Options AT41, AT47, AT48 and AT57.

4.4.3 Parking Reviews

This grouping contains the following options:

Table 4.17: Parking Reviews Options

O11	**Undertake a review of parking arrangements on Victoria Street**
O12	**Implement signage to encourage reverse parking at the shops on Victoria Street**
O14	**Review parking arrangements on Mugiemoss Road**

O11 – Undertake a review of parking arrangements on Victoria Street

On-street parking is prevalent through the urban centre of Dyce with restrictions localised around junctions, crossing points and in the vicinity of Dyce Station. Bay parking is also provided at existing commercial properties. A number of properties on Victoria Street are not served by private driveways and therefore, a need for some parking provision is recognised. It is recommended that a parking survey is undertaken to establish effectiveness of existing restrictions and parking demand. This should be considered in conjunction with options to improve provision for active travel users along this corridor.

Option O11 to be considered in line with Options AT17, AT33, AT61, O1, O2, O12, O15, O16, O25 and O26.

O12 – Implement signage to encourage reverse parking at the shops on Victoria Street

The shops located on Victoria Street have off-street parking bays located in front of them. It is recommended that signs are implemented which encourage customers to reverse park into these bays. The aim of these signs would be to improve the safety of the driver when they are leaving the parking bay as well as the safety of oncoming traffic. Encouraging reverse parking would do this by reducing the number of vehicles reversing out into traffic flow and would improve the visibility of users in departing vehicles.

Option O12 to be considered in line with Options AT17, AT33, AT61, O1, O2, O11, O15, O16, O25 and O26.

O14 – Review parking arrangements on Mugiemoss Road

There is extensive double yellow line coverage on Mugiemoss Road between Oldmeldrum Road and Mugiemoss Drive. The narrow cross-section of Mugiemoss Road continues between Mugiemoss Drive to Mill Drive without on-street parking restrictions in place. The majority of residential properties on this part of the link have access to private off-road parking facilities.

On-street parking does however have the potential to impact operation of the bus service on this route and therefore, it is recommended that monitoring and further consultation is undertaken to consider the need for extension of existing restrictions. This option should also be considered further in conjunction with proposed active travel improvement options along the Mugiemoss Road corridor.

4.4.4 Placemaking

This grouping contains the following options:

Table 4.18: Placemaking Options

O15	**Introduce placemaking and gateway features on Victoria Street**
O16	**Implement package of measures to support implementation of a 20-minute neighbourhood in Dyce**

O15 – Introduce placemaking and gateway features on Victoria Street

The introduction of placemaking and gateway features is a proposed option for Dyce, with particular focus on Victoria Street. This would help to create a sense of place and enhance the environment for the local community. Considerations of design, location, infrastructure and logistics are required as part of this process and could include creating LTNs, introducing seating places, planting and green infrastructure.

In the community, a combination or variation of the design considerations below could be adopted. On-street car parking within the community centres may require reallocation to support the area to be people-focussed.

Figure 4.31: Placemaking Design Considerations

Gateway features that could be adopted include signage, zebra crossings, traffic calming etc. This can help to reduce vehicle speeds when entering communities, which support a sense of place as well as enhancing safety.

Option O15 to be considered in line with Options AT17, AT33, AT61, O1, O2, O11, O12, O16, O25 and O26.

O16 – Implement package of measures to support implementation of a 20-minute neighbourhood in Dyce

The 20-minute neighbourhood concept allows people to meet most of their everyday needs by a short, convenient, and pleasant 20-minute return walk or cycle from their home. The aim is to reduce the volume and speed of traffic and improve accessibility for local people to walk, wheel and spend time outdoors in their community. This is to be achieved within a 20-minute walk (approximately 800m).

Possible measures to facilitate this include:

- Restricting access to certain streets for vehicles;
- One-way streets;
- Traffic calming;
- Creating new pocket parks and community spaces;
- Bus gates; and
- Modal filters.

The potential for 20-minute neighbourhoods in Dyce has been considered for Victoria Street, near Dyce Station and Dyce Primary School. **Figure 4.32** illustrates an 800m radius from the Station Road junction.

Figure 4.32: 20-minute Neighbourhood from Victoria Street, Dyce (Source Image: Google Maps)

During the creation of 20-minute neighbourhoods, it would be important to engage with the local community to ensure designs best meet their needs. A proposed design process is shown below. The timeline for the full process could be around 9-10 months.

Option O16 to be considered in line with Options AT17, AT33, AT61, O1, O2, O11, O12, O15, O17, O25 and O26.

4.4.5 Reduced Speeds

This grouping contains the following options:

Table 4.19: Reduced Speeds Options

O17	**Reduce the speed limit along the A947 to support active travel improvements**
O18	**Consider options to reduce vehicle speeds on Bankhead Road**

O17 – Reduce the speed limit along the A947 to support active travel improvements

The speed limit has a direct correlation with user experience and level of service. The current speed limit along the full length of the A947 is 40mph. A reduction in speed limit can help support active travel improvements as Cycling by Design specifies the minimum buffer width required between NMU facilities and the carriageway in 10mph increments. Speed limit also impacts the suitability of crossing types. A further assessment on the suitability of speed limit reductions would be required to identify impact on all modes.

Option O17 to be considered in line with Options AT47, AT48, AT57 and O16.

O18 – Consider options to reduce vehicle speeds on Bankhead Road

Stakeholder consultation feedback noted that Bankhead Road can often be used as a 'rat run' with motorists exceeding the 20mph speed limit. The street is bordered by parking so motorists exceeding the speed limit present a safety hazard to residents exiting parking bays.

It is recommended that physical "self-enforcing" measures are introduced along Bankhead Road to ensure motorists observe the 20mph recommended speed limit. Speed cushions could be introduced along the full length of Bankhead Road to reduce the speed of traffic, however, further consideration of impact on cycle users would be required as it is recognised that retrofitting measures have the potential to reduce comfort.

An alternative option would be to widen the existing footways into the carriageway space. This has been demonstrated as an effective means of reducing vehicle speeds in urban environments. Bankhead Road has a total cross-sectional width of 12m, which is comprised of 6.0m wide carriageway, 1.5m wide bays/on-street parking and 1.5m wide footways. The widening of each footway by 0.5m is feasible and would benefit pedestrian movement along Bankhead Road and assist in reducing vehicle speeds.

4.4.6 Sustainable Transport Initiatives

This grouping contains the following option:

Table 4.20: Sustainable Travel Initiatives Option

O23	**Promote car sharing schemes within Dyce**
O24	**Implement electric vehicle charging points at key locations within Dyce**

O23 – Promote car sharing schemes within Dyce

A car sharing scheme would help support the aim to reduce car travel throughout the study area. This could be in the form of a car club, which are becoming more popular across the UK due to increased accessibility for non-car owners and the benefits for carbon reduction.

A car club scheme is a short-term car rental service that offers members access to a locally parked car, with an aim of reducing private car ownership within the local area. A car club requires an allocation of car parking spaces be designated solely to the scheme. Within Dyce, this could be implemented in various key locations near residential properties to help promote a mode shift away from private car travel.

Wider stakeholder consultation would be required to understand the demand for such a scheme in Dyce and would help understand certain key locations where existing parking bays could be reallocated.

O24 – Implement electric vehicle charging points at key locations within Dyce

Due to growing uptake of electric vehicles (EVs), it is important that charging infrastructure grows at a similar rate. Reliable and easily accessible charging infrastructure is key to the continued growth of EVs. Some important factors that must be considered when selecting appropriate locations are:

- There are five different plugs which are used in the UK. Any public charging point must have the required connectors to service any potential users; and
- Users of a public EV charging point may need to leave their car in a certain location for several hours. Users must feel a sense of confidence in the safety of their vehicle during this time.

To identify the most appropriate locations to implement electric vehicle charging points throughout Dyce, it is recommended that wider stakeholder consultation is carried out to ensure the locations selected best meet the needs of stakeholders.

4.4.7 Vehicle Restrictions

This grouping contains the following options:

Table 4.21: Vehicle Restrictions Options

O25	**Implement access only restrictions for general traffic on Victoria Street**
O26	**Implement one-way restrictions for general traffic on Victoria Street**

O25 – Implement access only restrictions for general traffic on Victoria Street

This option is potentially feasible but would require further engineering assessment. It should be noted that quiet street measures are appropriate in LTNs and can be adopted so that:

- There is no direct through route for motorised vehicles;
- All homes can be accessed by private vehicles; and
- New public space is created, activating the streets.

However, Victoria Street is currently considered to be a major route through Dyce and as such it is recommended that further assessment of its suitability for the proposed option is carried out.

Potential associated issues included impeded access to Pitmedden and Kirkhill Industrial Estates; access to Aberdeen International Airport and Dyce Station; and Dyce Primary School. The potential negative impact on public transport (due to services not running along Victoria Street) could be 'offset' by the introduction of new high-quality active travel infrastructure promoting active travel for local/short-distance journeys.

Wider stakeholder consultation would be required including with the local community, airport/heliport, ScotRail and local businesses. This option should not be considered in isolation and an LTN-style holistic approach should be employed.

Option O25 to be considered in line with Options AT17, AT33, AT61, O1, O2, O11, O12, O15, O16 and O26.

O26 – Implement one-way restrictions for general traffic on Victoria Street

This option is potentially feasible but would require further engineering consideration with multi-disciplinary input. Implementation of one-way restrictions would need to account for all junctions and conflict points with particular emphasis on movements to/from Dyce Station. This would also likely extend to consideration of Riverview Drive improvements to cater for north-south movements.

It is recommended that traffic flow analysis is undertaken to determine the preferred direction of any one-way restriction on Victoria Street. Wider stakeholder consultation with the local community, airport/heliport, ScotRail and local businesses would also be required.

This option could be implemented in conjunction with new high-quality active travel infrastructure along Victoria Street, promoting active travel for local/short-distance journeys and should be considered in an LTN-style holistic approach.

Option O26 to be considered in line with Options AT17, AT33, AT61, O1, O2, O11, O12, O15, O16 and O25.

5. Option Packaging

Following the option development process, options were grouped into six packages for the purposes of appraisal as follows:

- Active Travel – Strategic Routes;
- Active Travel – Leisure Route;
- Active Travel – Quiet Route Measures;
- Public Transport – Priority Interventions;
- Placemaking – Living Streets; and
- Placemaking – Complementary Measures.

The options included within each package are outlined in the table below, with more detailed diagrams presented in **Appendix A**.

Table 5.1: Option Packages

Active Travel – Strategic Routes	
AT1	Provide protected junction for active travel users at the A947/A90 slip road junction.
AT2	Improve visibility for cyclists at the B977/A90 slip road roundabout
AT4	Implement measures to give active travel users priority over Burnside Drive when using the shared use path on Riverview Drive
AT8	Reconfigure the Auchmill Road/Oldmeldrum Road junction to improve connections for pedestrians and cyclists
AT10	Widen on-road advisory cycle lane on Riverview Drive
AT11	Implement missing sections of on-road advisory cycle lane on Riverview Drive
AT12	Widen on-road advisory cycle lane on Stoneywood Road at Stoneywood Park junction
AT13	Provide a formal pedestrian crossing point to the north of the A947/Riverview Drive Roundabout to facilitate movements to the F&B Way
AT14	Provide a formal pedestrian crossing point to the east of the A947/Riverview Drive Roundabout
AT16	Implement formal pedestrian crossing facilities on the arms of the Riverview Drive/Stoneywood Road Roundabout
AT20	Conduct a footway review throughout the study area, identifying gaps in provision and considering the width and surfacing of existing footways
AT28	Implement dropped kerbs for cyclists to transfer between the carriageway and pavement at the northbound bus stop on the A947, north of the River Don
AT30	Provide direct active travel link between Dyce Drive and Riverview Drive
AT47	Implement with-flow segregated cycleway on the A947 between AWPR Junction and A947/A96 Junction
AT48	Implement two-way segregated cycleway on the A947 between AWPR Junction and A947/A96 Junction
AT51	Implement with-flow segregated cycleway on Oldmeldrum Road
AT52	Implement two-way segregated cycleway on Oldmeldrum Road
AT55	Implement with-flow segregated cycleway on Gilbert Road
AT56	Implement two-way segregated cycleway on Gilbert Road
AT57	Implement shared use path on the A947 between AWPR Junction and A947/A96 Junction
AT58	Implement shared use path on Dyce Drive between the A947 and Kirkhill Industrial Estate to the north of Aberdeen International Airport
AT59	Widen the shared use path on the east side of the A947 to the north of Riverview Drive
AT60	Provide continuous footways on Riverview Drive for the duration of the route
AT62	Widen the shared use path on the east side of the A947 between the A96 and Beech Manor
AT63	Review alignment of the A947 shared use path to the north of the Oldmeldrum Road Junction where the safety barrier constrains the width of the path
AT64	Implement shared use path on Oldmeldrum Road
AT66	Implement shared use path on Gilbert Road
O3	Review the layout of the Riverview Drive/Balloch Way Junction
O4	Review the layout of the Riverview Drive/Todlaw Walk Junction

O5	Review the layout of the Riverview Drive/Netherview Avenue Junction
O7	Review the layout of the A947/Stoneywood Junction at Co-Op/M&S
O8	Review the layout of the A947/Stoneywood Brae Junction
O10	Review layout of the A947/McDonalds access road junction
O17	Reduce the speed limit along the A947 to support active travel improvements
Active Travel – Leisure Route	
AT31	Improve active travel links between the Riverside Path and housing within Dyce
AT45	Upgrade the Riverside Path to a high quality active travel route, including improvements to the surfacing of the route
AT46	Implement lighting on the Riverside Path
Active Travel – Quiet Route Measures	
AT7	Review signals at Forrit Burn Road bus gate to allow cyclists access
AT24	Improve active travel connectivity between the A947 study area and Aberdeen Airport/Heliport
AT25	Improve active travel connectivity between the A947 study area and Craibstone Park & Ride
AT26	Improve active travel connectivity between the A947 study area and TECA
AT27	Improve active travel connectivity between the A947 study area and Kirkhill Industrial Estate
AT32	Implement footways on the south side of the carriageway on Pitmedden Road
AT35	Implement quiet route measures on the local road network to the west of the A947 via Bankhead Road, Wellheads Drive and Farburn Terrace to Dyce Rail Station
AT37	Implement dropped kerbs between Wellheads Drive shared use path and the carriageway
AT38	Review access restrictions on Market Street to allow for cargo bikes and recumbent cycles
AT39	Remove access controls on off-road path between Waterton Road and Ruthriehill Road
AT41	Improve active travel access to the retail park at the Bucksburn Roundabout
AT43	Implement active travel connection between the A947 and the B977, utilising a section of the old A947 (pre-AWPR)
AT65	Implement streetscape improvements and widened pavements along Mugiemoss Road
AT67	Widen the shared use path on the west side of Howe Moss Drive
O14	Review parking arrangements on Mugiemoss Road
O18	Consider options to reduce vehicle speeds on Bankhead Road
Public Transport – Priority Interventions	
PT2	Conduct a traffic signal review to consider bus priority at all traffic signals along the A947 corridor
PT5	Implement real time passenger information at key bus stops along the study corridor
PT9	Improve public transport connectivity between the A947 study area and Aberdeen Airport/Heliport
PT10	Improve public transport connectivity between the A947 study area and Craibstone Park & Ride
PT11	Improve public transport connectivity between the A947 study area and TECA
PT12	Improve public transport connectivity between the A947 study area and Kirkhill Industrial Estate
AT22	Promote Craibstone Park & Ride as a Park & Pedal facility
Placemaking – Living Streets	
AT3	Review layout of Victoria Street/Pitmedden Road junction for pedestrians
AT17	Implement signalised crossing facility on Victoria Street adjacent to Tesco
AT33	Provide improved active travel links between Dyce Rail Station and the A947 and the eastern section of Dyce, particularly along Station Road
AT61	Implement shared use path on Victoria Street
O1	Increase enforcement of stopping restrictions on Victoria Street, specifically adjacent to Tesco
O2	Review the layout of the Victoria Street/Skene Place Junction
O11	Undertake a review of parking arrangements on Victoria Street
O12	Implement signage to encourage reverse parking at the shops on Victoria Street
O15	Introduce placemaking and gateway features on Victoria Street
O16	Implement package of measures to support implementation of a 20-minute neighbourhood in Dyce
O25	Implement access only restrictions for general traffic on Victoria Street
O26	Implement one-way restrictions for general traffic on Victoria Street

Placemaking – Complementary Measures	
AT21	Implement cycle parking at key trip attractors in the study area
AT23	Implement a bike hire scheme within Dyce
AT42	Review access to the F&B Way from within Dyce
AT68	Conduct a review of wayfinding signage throughout the study area
O24	Implement electric vehicle charging points at key locations within Dyce

6. Summary

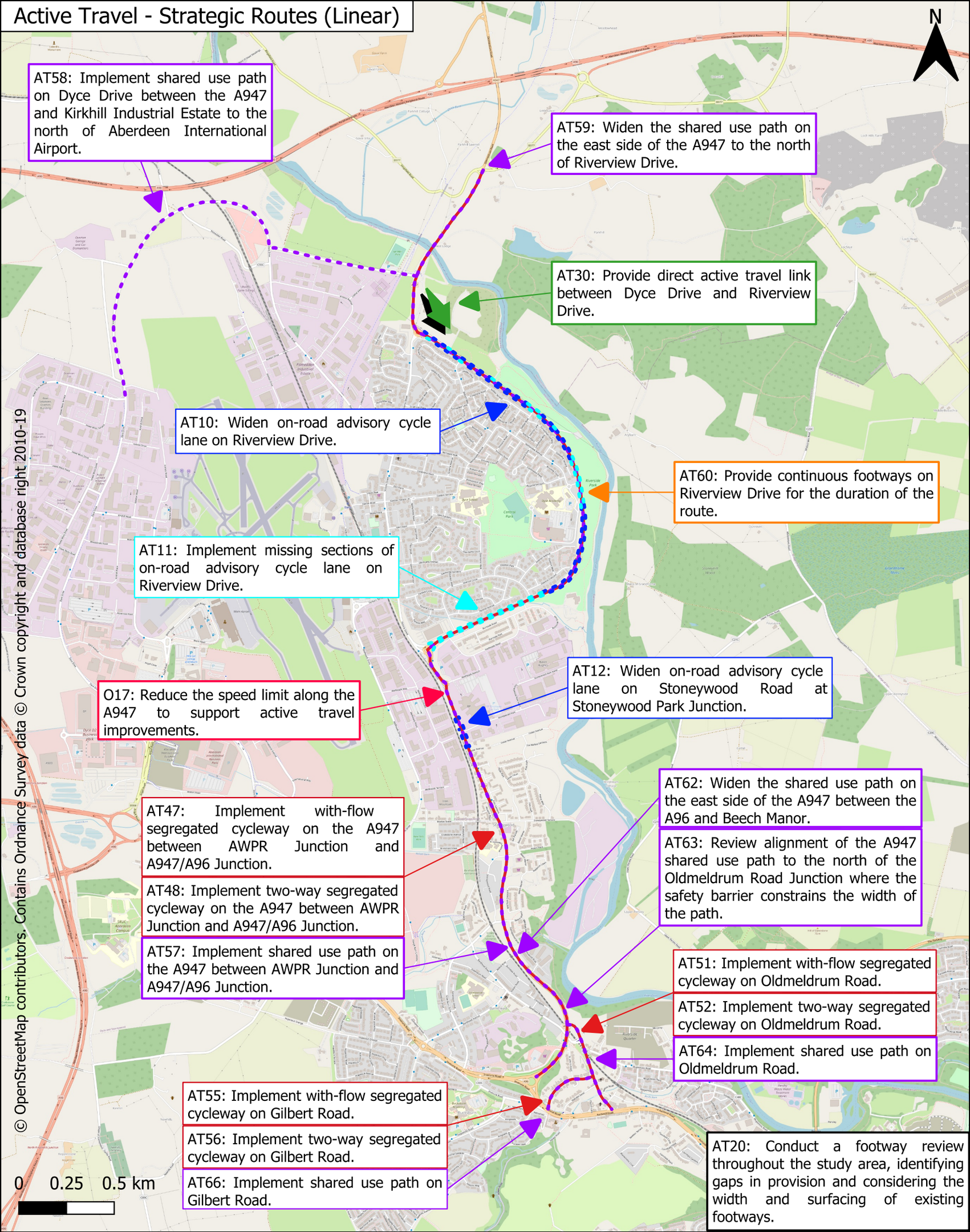
This note has presented an overview of the option generation, sifting and development process that has been undertaken to arrive at a set of options for appraisal for the A947 Multi-Modal Corridor Study.

It has set out the approach to option generation, with 109 options being generated in the long-list across active travel, public transport and other options. It has outlined the approach to option sifting, with options undergoing a high-level assessment against the established TPOs, Deliverability Criteria and the Sustainable Investment Hierarchy. The option sifting process resulted in the removal of 27 options from further consideration.

It has set out dependencies, noting which options should be considered in line with each other to achieve the most appropriate solution in each location and it has summarised the outcomes from the option development process.

The next stage of the study will involve the appraisal of options to identify those which perform best against the established TPOs, STAG Criteria and Deliverability Criteria.

Appendix A – Option Package Drawings


Active Travel - Strategic Routes (Linear)
N
AT58: Implement shared use path on Dyce Drive between the A947 and Kirkhill Industrial Estate to the north of Aberdeen International Airport.
AT59: Widen the shared use path on the east side of the A947 to the north of Riverview Drive.
AT30: Provide direct active travel link between Dyce Drive and Riverview Drive.
AT10: Widen on-road advisory cycle lane on Riverview Drive.
AT60: Provide continuous footways on Riverview Drive for the duration of the route.
AT11: Implement missing sections of on-road advisory cycle lane on Riverview Drive.
AT12: Widen on-road advisory cycle lane on Stoneywood Road at Stoneywood Park Junction.
O17: Reduce the speed limit along the A947 to support active travel improvements.
AT62: Widen the shared use path on the east side of the A947 between the A96 and Beech Manor.
AT47: Implement with-flow segregated cycleway on the A947 between AWPR Junction and A947/A96 Junction.
AT63: Review alignment of the A947 shared use path to the north of the Oldmeldrum Road Junction where the safety barrier constrains the width of the path.
AT48: Implement two-way segregated cycleway on the A947 between AWPR Junction and A947/A96 Junction.
AT57: Implement shared use path on the A947 between AWPR Junction and A947/A96 Junction.
AT51: Implement with-flow segregated cycleway on Oldmeldrum Road.
AT52: Implement two-way segregated cycleway on Oldmeldrum Road.
AT64: Implement shared use path on Oldmeldrum Road.
AT55: Implement with-flow segregated cycleway on Gilbert Road.
AT56: Implement two-way segregated cycleway on Gilbert Road.
AT66: Implement shared use path on Gilbert Road.
AT20: Conduct a footway review throughout the study area, identifying gaps in provision and considering the width and surfacing of existing footways.
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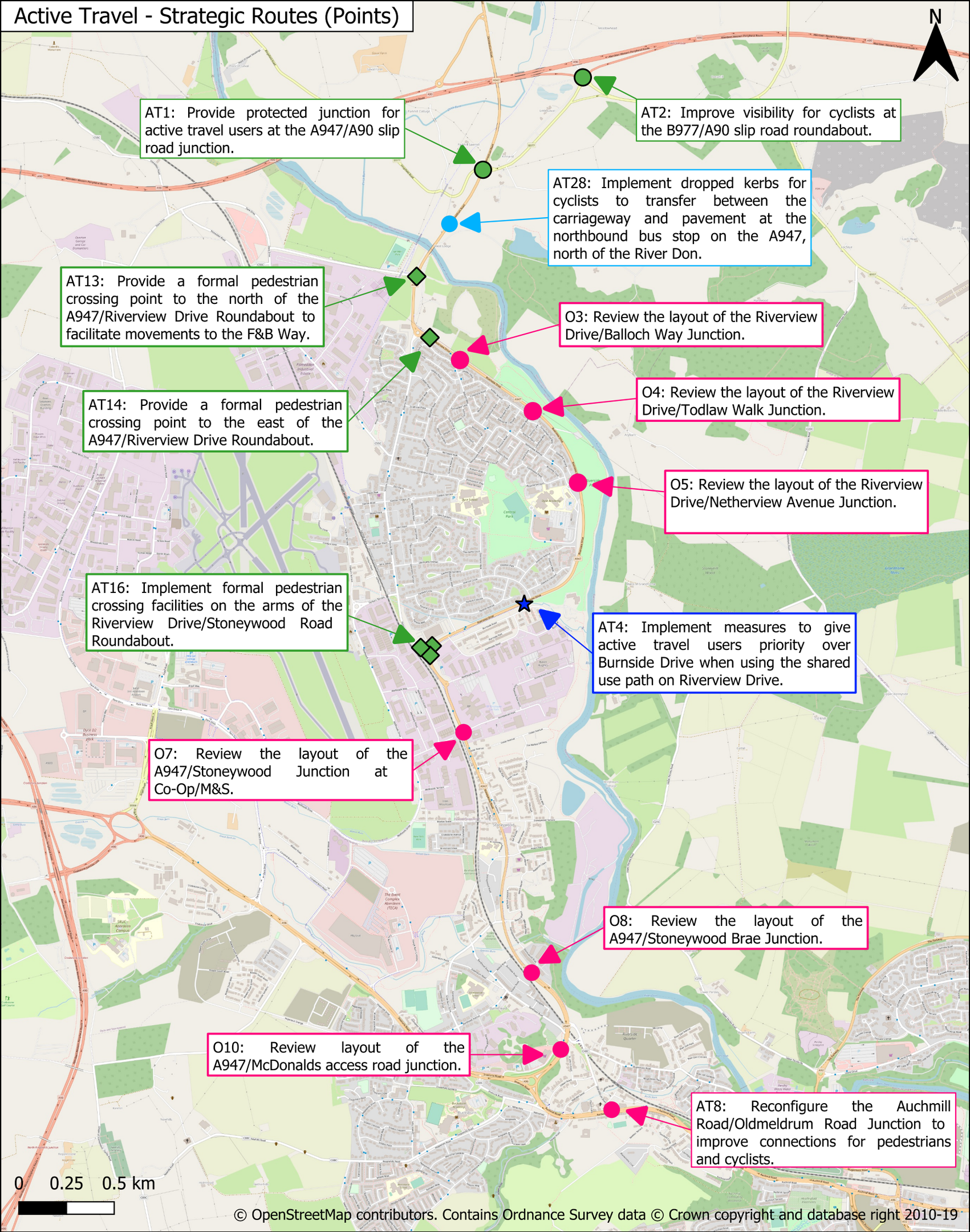
Active Travel - Strategic Routes (Points)
N
AT1: Provide protected junction for active travel users at the A947/A90 slip road junction.
AT2: Improve visibility for cyclists at the B977/A90 slip road roundabout.
AT28: Implement dropped kerbs for cyclists to transfer between the carriageway and pavement at the northbound bus stop on the A947, north of the River Don.
AT13: Provide a formal pedestrian crossing point to the north of the A947/Riverview Drive Roundabout to facilitate movements to the F&B Way.
O3: Review the layout of the Riverview Drive/Balloch Way Junction.
AT14: Provide a formal pedestrian crossing point to the east of the A947/Riverview Drive Roundabout.
O4: Review the layout of the Riverview Drive/Todlaw Walk Junction.
O5: Review the layout of the Riverview Drive/Netherview Avenue Junction.
AT16: Implement formal pedestrian crossing facilities on the arms of the Riverview Drive/Stoneywood Road Roundabout.
AT4: Implement measures to give active travel users priority over Burnside Drive when using the shared use path on Riverview Drive.
O7: Review the layout of the A947/Stoneywood Junction at Co-Op/M&S.
O8: Review the layout of the A947/Stoneywood Brae Junction.
O10: Review layout of the A947/McDonalds access road junction.
AT8: Reconfigure the Auchmill Road/Oldmeldrum Road Junction to improve connections for pedestrians and cyclists.
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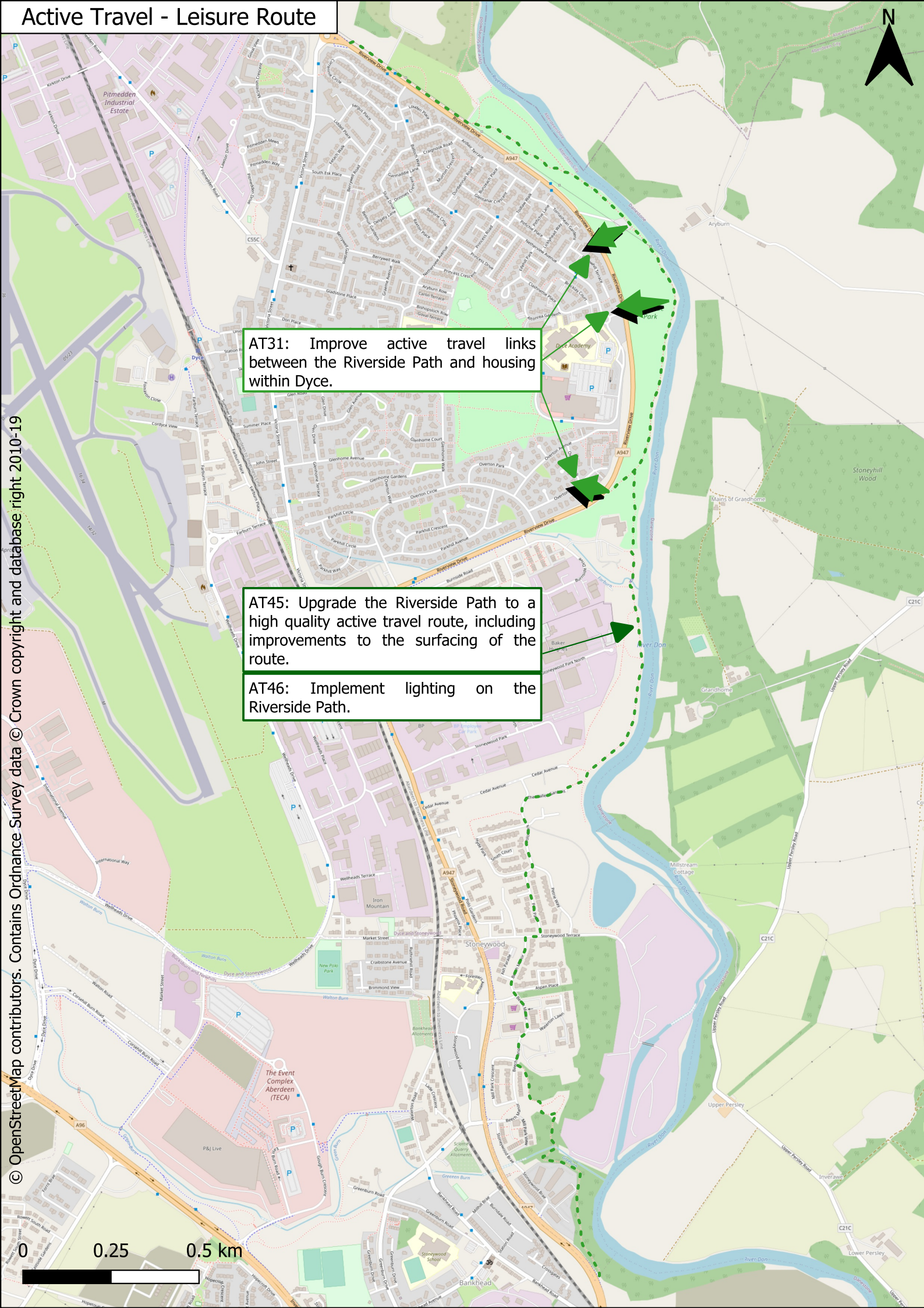
Active Travel - Leisure Route
N
AT31: Improve active travel links between the Riverside Path and housing within Dyce.
AT45: Upgrade the Riverside Path to a high quality active travel route, including improvements to the surfacing of the route.
AT46: Implement lighting on the Riverside Path.
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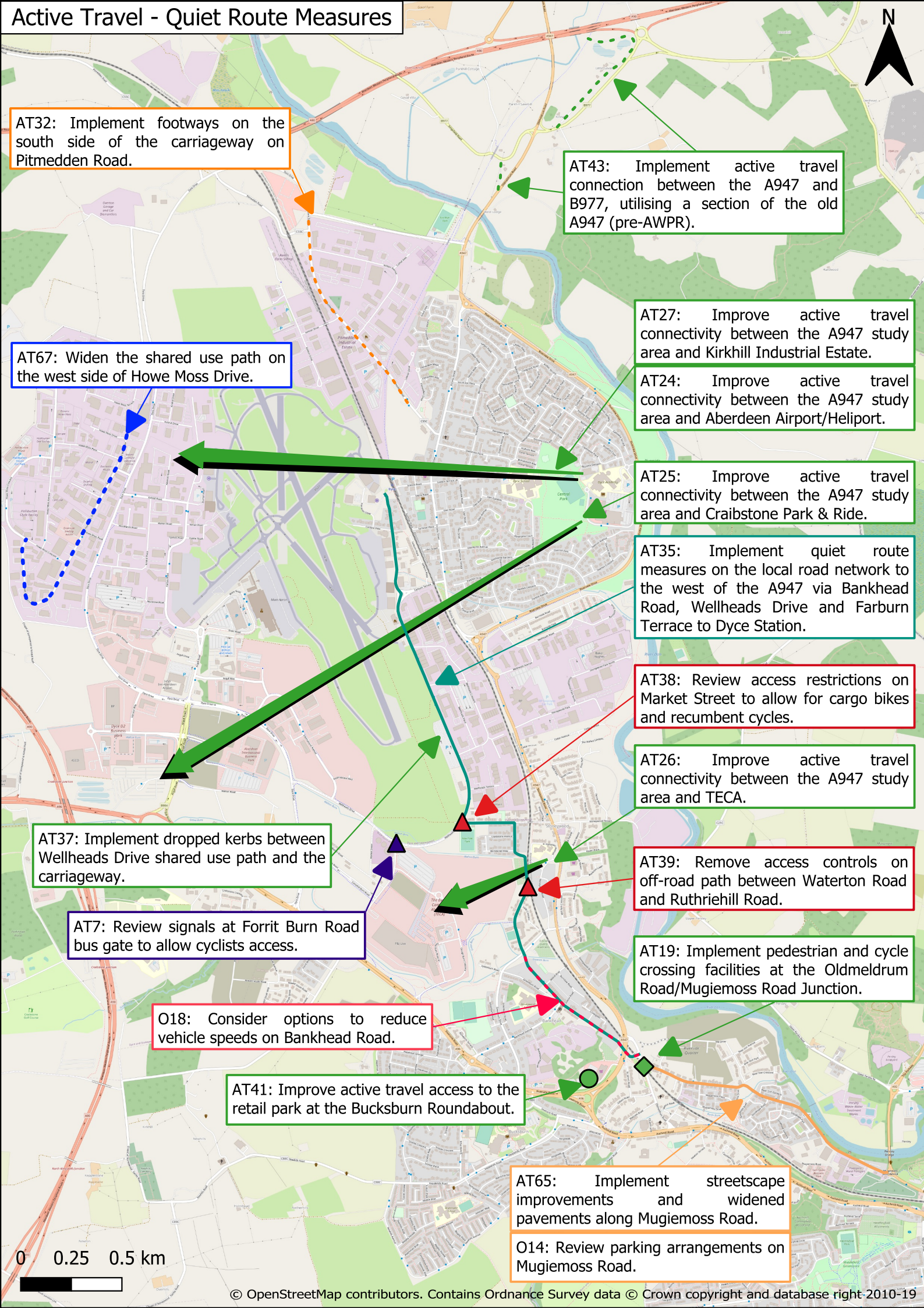
Active Travel - Quiet Route Measures
N
AT32: Implement footways on the south side of the carriageway on Pitmedden Road.
AT43: Implement active travel connection between the A947 and B977, utilising a section of the old A947 (pre-AWPR).
AT27: Improve active travel connectivity between the A947 study area and Kirkhill Industrial Estate.
AT67: Widen the shared use path on the west side of Howe Moss Drive.
AT24: Improve active travel connectivity between the A947 study area and Aberdeen Airport/Heliport.
AT25: Improve active travel connectivity between the A947 study area and Craibstone Park & Ride.
AT35: Implement quiet route measures on the local road network to the west of the A947 via Bankhead Road, Wellheads Drive and Farburn Terrace to Dyce Station.
AT38: Review access restrictions on Market Street to allow for cargo bikes and recumbent cycles.
AT26: Improve active travel connectivity between the A947 study area and TECA.
AT37: Implement dropped kerbs between Wellheads Drive shared use path and the carriageway.
AT39: Remove access controls on off-road path between Waterton Road and Ruthriehill Road.
AT7: Review signals at Forrit Burn Road bus gate to allow cyclists access.
AT19: Implement pedestrian and cycle crossing facilities at the Oldmeldrum Road/Mugiemoss Road Junction.
O18: Consider options to reduce vehicle speeds on Bankhead Road.
AT41: Improve active travel access to the retail park at the Bucksburn Roundabout.
AT65: Implement streetscape improvements and widened pavements along Mugiemoss Road.
O14: Review parking arrangements on Mugiemoss Road.
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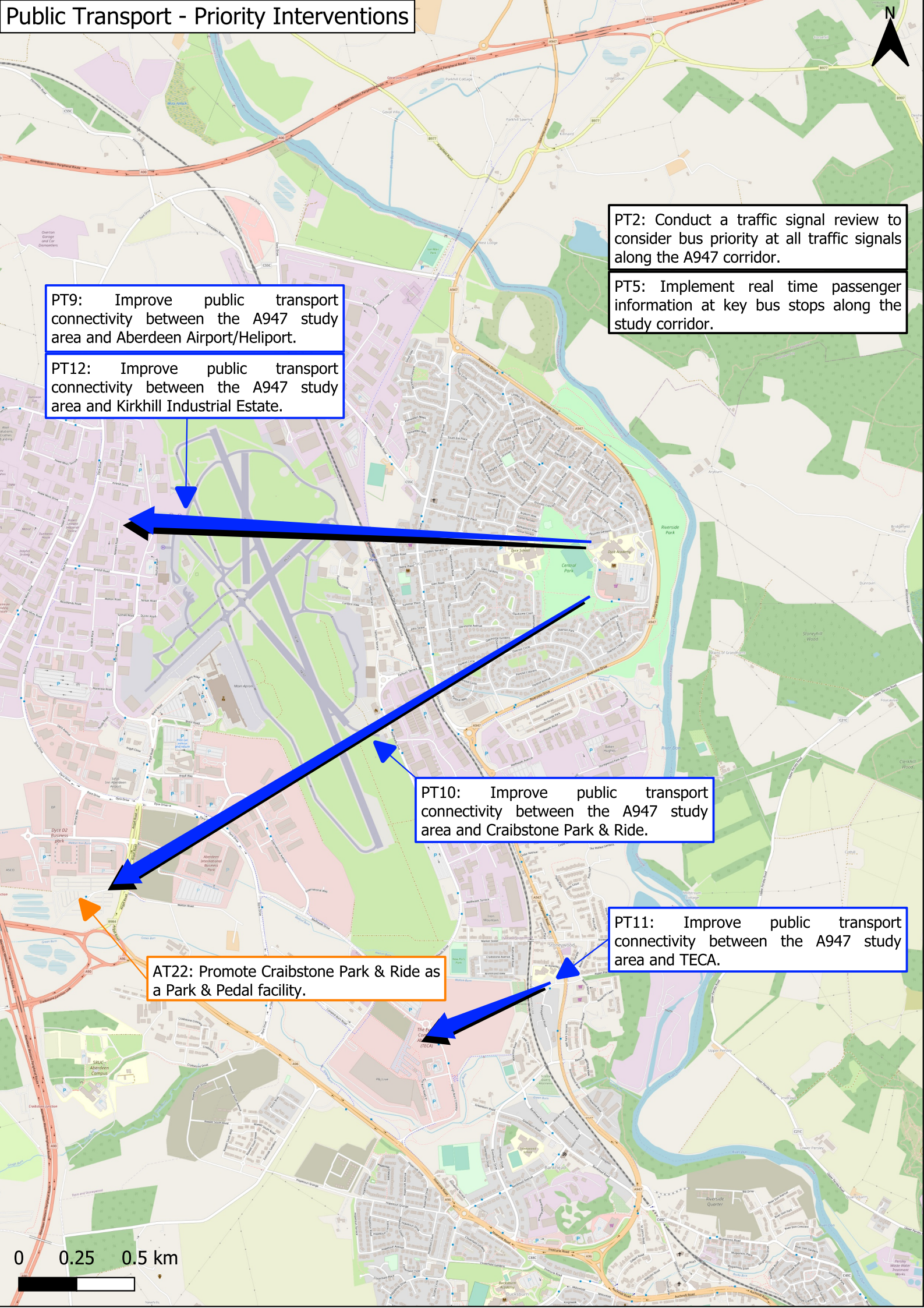
Public Transport - Priority Interventions
N
PT2: Conduct a traffic signal review to consider bus priority at all traffic signals along the A947 corridor.
PT5: Implement real time passenger information at key bus stops along the study corridor.
PT9: Improve public transport connectivity between the A947 study area and Aberdeen Airport/Heliport.
PT12: Improve public transport connectivity between the A947 study area and Kirkhill Industrial Estate.
PT10: Improve public transport connectivity between the A947 study area and Craibstone Park & Ride.
PT11: Improve public transport connectivity between the A947 study area and TECA.
AT22: Promote Craibstone Park & Ride as a Park & Pedal facility.
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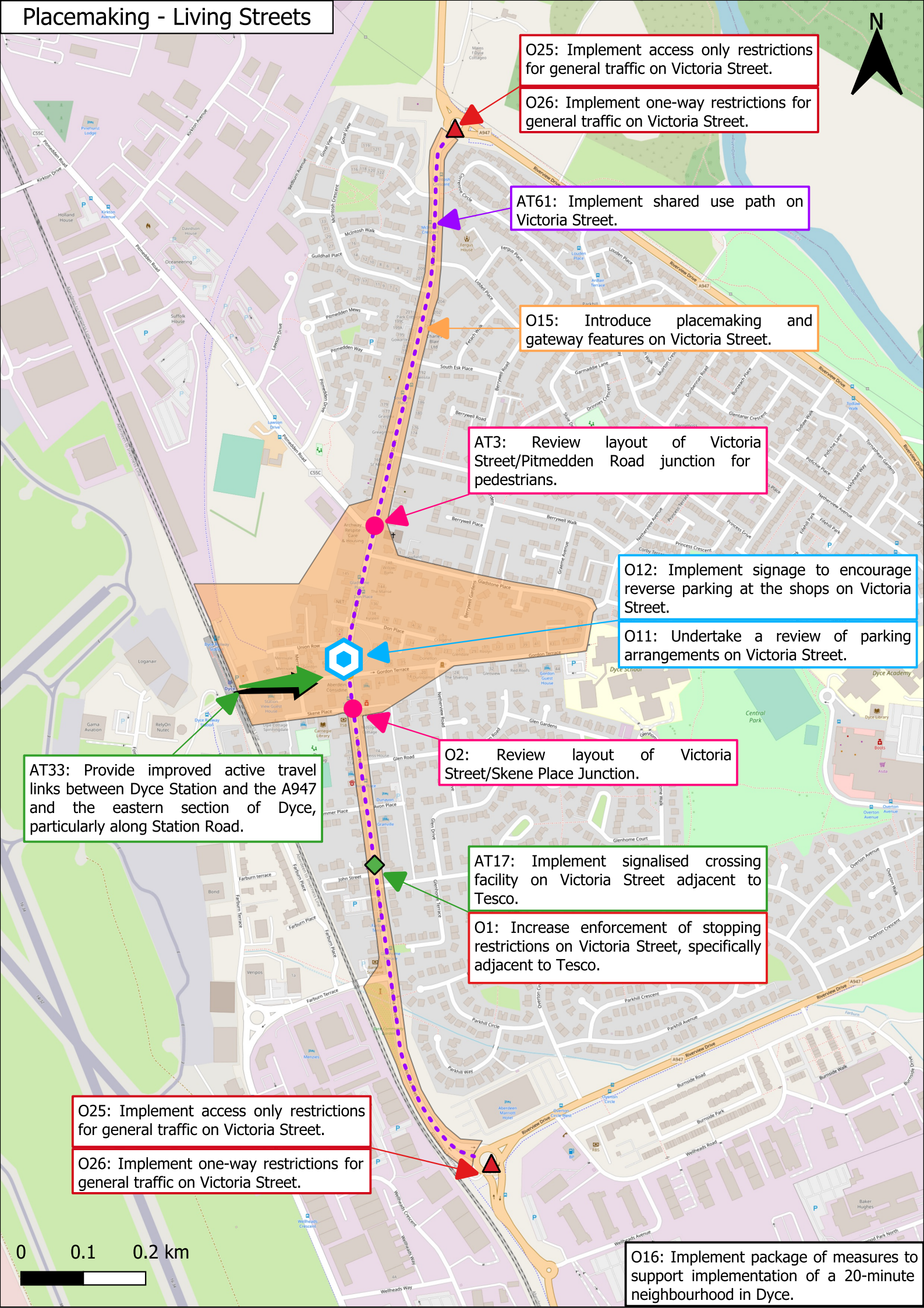
Placemaking - Living Streets
N
O25: Implement access only restrictions for general traffic on Victoria Street.
O26: Implement one-way restrictions for general traffic on Victoria Street.
AT61: Implement shared use path on Victoria Street.
O15: Introduce placemaking and gateway features on Victoria Street.
AT3: Review layout of Victoria Street/Pitmedden Road junction for pedestrians.
O12: Implement signage to encourage reverse parking at the shops on Victoria Street.
O11: Undertake a review of parking arrangements on Victoria Street.
O2: Review layout of Victoria Street/Skene Place Junction.
AT33: Provide improved active travel links between Dyce Station and the A947 and the eastern section of Dyce, particularly along Station Road.
AT17: Implement signalised crossing facility on Victoria Street adjacent to Tesco.
O1: Increase enforcement of stopping restrictions on Victoria Street, specifically adjacent to Tesco.
O25: Implement access only restrictions for general traffic on Victoria Street.
O26: Implement one-way restrictions for general traffic on Victoria Street.
0
0.1
0.2 km
O16: Implement package of measures to support implementation of a 20-minute neighbourhood in Dyce.

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