A92 Murcar North Active Travel Infrastructure STAG-Based Appraisal

Final Report

Aberdeen City Council

December 2023

Delivering a better world

Quality information

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Revision History

Revision	Revision date	Details	Authorized	Name	Position
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1. Introduction

1.1 Introduction

In June 2023, AECOM was commissioned by Aberdeen City Council (ACC) to identify, develop, appraise and design option(s) for the provision of active travel infrastructure along the A92 in Aberdeen from the Murcar Roundabout at Bridge of Don to Blackdog in Aberdeenshire, in accordance with the principles of Scottish Transport Appraisal Guidance (STAG). The aim of the study is to identify an option that can be taken forward to detailed design and implementation.

The study area is shown in **Figure 1.1**.

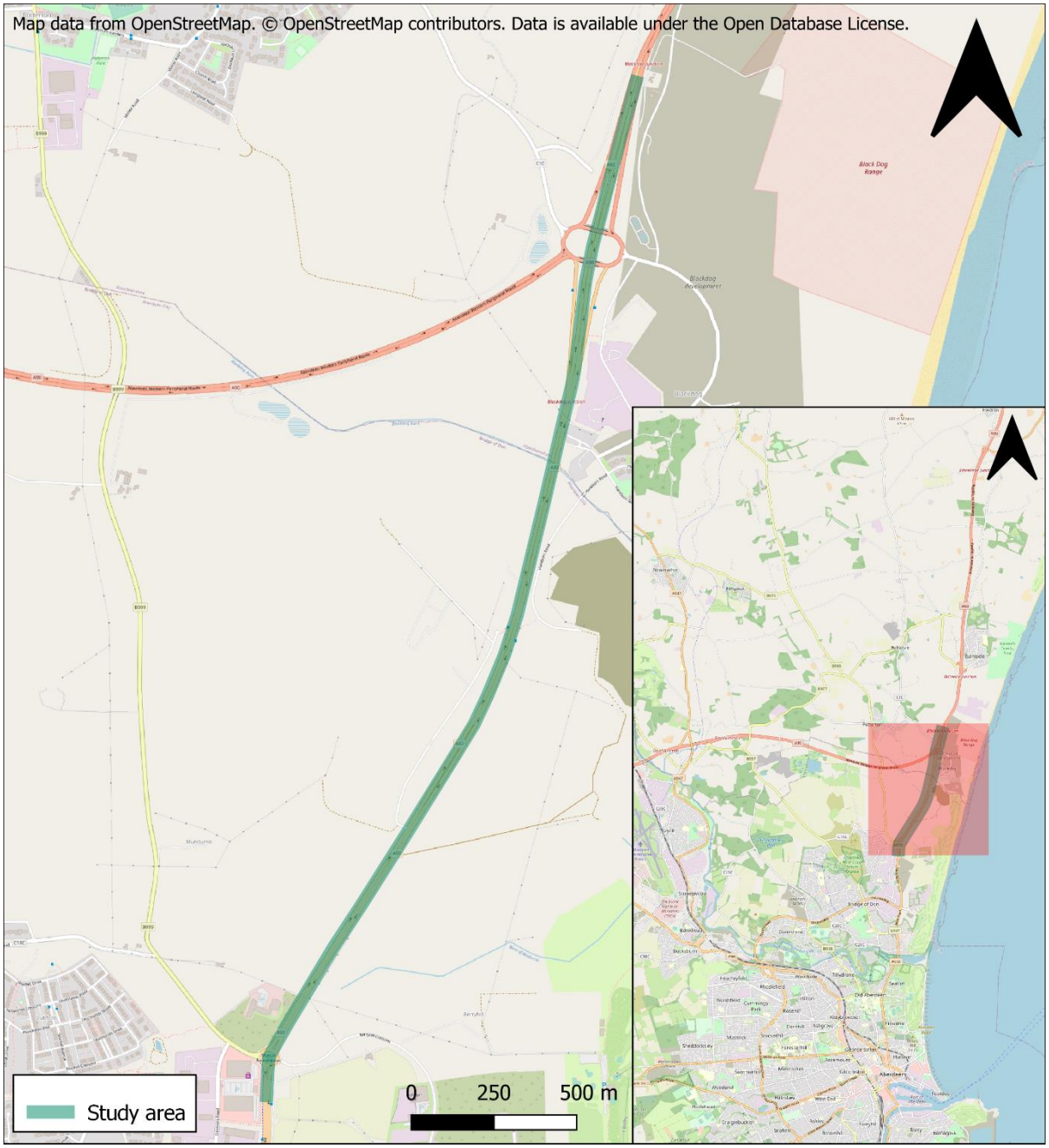


Figure 1.1: Study Area

1.2 Background

Transport Scotland and ACC have a Service Level Agreement to deliver a number of environmental mitigation projects to offset the environmental impact of the Aberdeen Western Peripheral Route (AWPR), which opened fully to traffic in February 2019. Delivery of an active travel route between the Murcar Roundabout and Blackdog is one of the projects covered by the agreement, with an overall objective to improve conditions for people walking, wheeling and cycling in the area.

An active travel route in the Murcar North area has been in development by ACC for a number of years, with initial design work undertaken by the Council in 2015 recommending a 3m shared use path on the east side of the A92. The scheme was then included as a project within the Aberdeen Active Travel Action Plan 2017-2021[1].

Further design work was undertaken and consulted upon in August 2019, with ACC's then City Growth and Resources Committee approving the detailed design of the path in December 2019. Since this time, there have been a number of changes that have taken place meaning that further work is required, including:

- Publication of updated Cycling by Design Guidance[2];
- Progression of the Ellon Park & Ride to Garthdee Transport Corridor Study; and
- Significant progress with land use developments at Blackdog and Cloverhill.

These changes have resulted in the commissioning of this study to take stock of the significant body of work already undertaken by ACC to progress the scheme, but with added opportunity to undertake an objective-led appraisal to support the design of a final proposed option for the active travel link. This work will support ACC in future funding bids necessary to enable the project to be implemented.

The study has been guided by a Client Group comprising officers from various services across ACC, Nestrans and Aberdeenshire Council, noting that the route crosses into the Aberdeenshire boundary in the north where there are aspirations to develop a long-distance active travel route to Ellon.

1.3 Structure of Report

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

- **Chapter 2** – Background and Context;
- **Chapter 3** – Problems and Opportunities;
- **Chapter 4** – Transport Planning Objective;
- **Chapter 5** – Option Generation and Sifting;
- **Chapter 6** – Public and Stakeholder Consultation;
- **Chapter 7** – Option Appraisal Approach;
- **Chapter 8** – Option Appraisal;
- **Chapter 9** – Option Design;
- **Chapter 10** – Conclusions and Next Steps;
- **Appendix A** – Design Widths Technical Note;
- **Appendix B** – Option Designs;
- **Appendix C** – Consultation Boards/Survey Form;
- **Appendix D** – Cost Estimates and Assumptions.

[1] Aberdeen Active Travel Action Plan 2017-2021
[2] Cycling by Design (2021)

2. Background and Context

2.1 Introduction

This chapter provides an overview of the geographic and socio-economic context for the study, summarises the policy context within which the study is being progressed, provides an overview of key developments in the study area, outlines the key aspects of relevant guidance and summarises previous work of relevance to this commission.

2.2 Geographic Context

Figure 2.1 provides a geographic overview of the study area. Key areas of significance are identified including housing developments, employment centres and transport infrastructure (existing and aspirational).

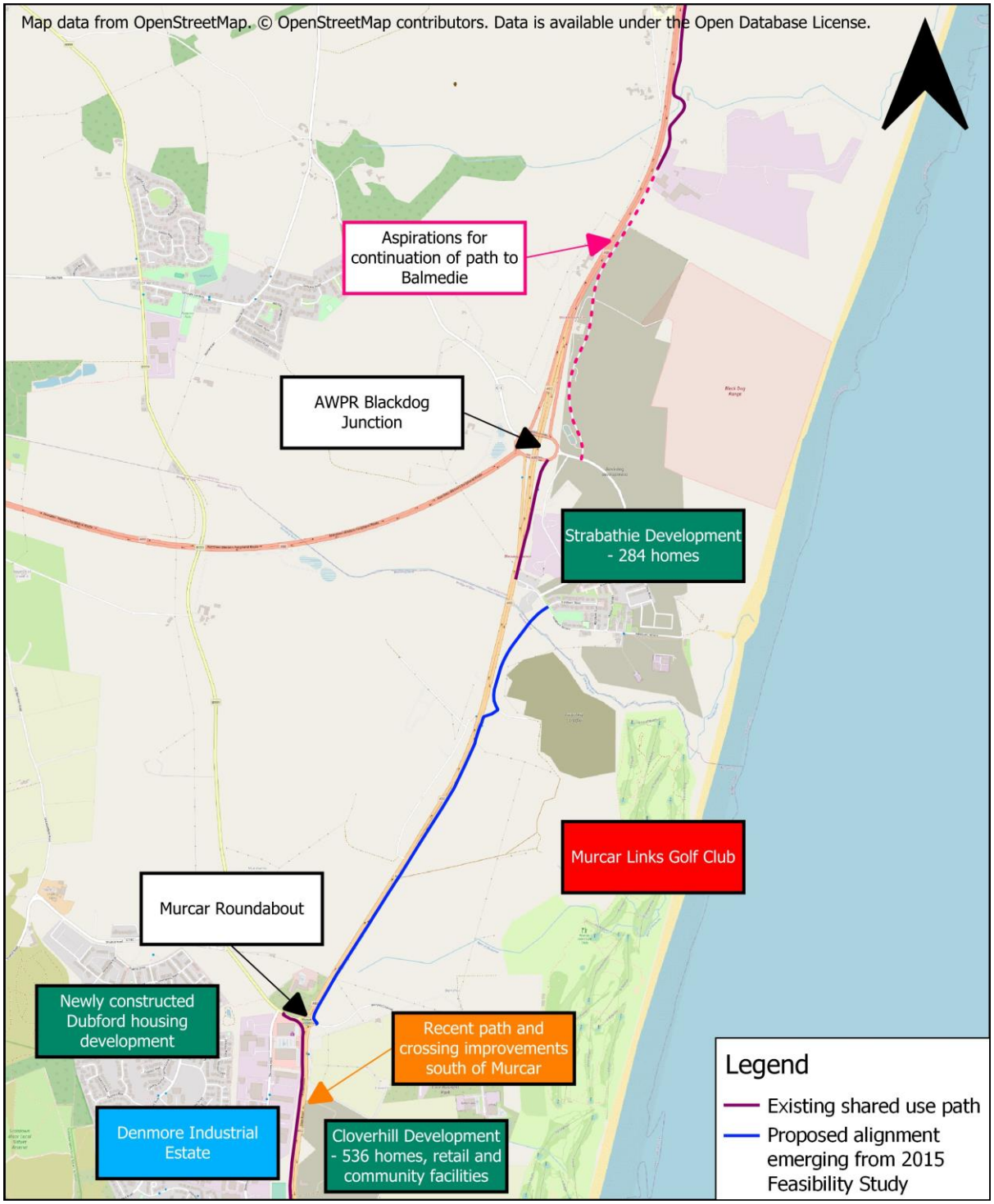


Figure 2.1: Geographic Overview of Study Area

2.3 Socio-Economic Context

This section outlines the demographic profile of the surrounding area. Data for Balmedie and Potterton, Bridge of Don, Aberdeen City and Aberdeenshire have been included within this assessment to aid context setting.

2.3.1 Population

The table below shows the population of the surrounding key settlements between 2001 and 2021. Data has been extracted from the National Records for Scotland[3] for the 2001 and 2011 data and from Scottish Government statistics[4] for the 2021 data.

Table 2.1: Population of Key Settlements (National Records of Scotland)

	2001	2011	2021	% Change
Balmedie and Potterton[5]	3,997	5,290	5,333	+29%
Bridge of Don[6]	19,736	18,472	19,636	-1%
Aberdeen City	211,910	222,460	227,430	+7%
Aberdeenshire	226,940	253,650	262,690	+15%

- Bridge of Don is the largest settlement in the study area with a population of 19,636 in 2021 (a 1% decrease from the population recorded in 2001). This number is anticipated to significantly increase as the Cloverhill Development is progressed, with the construction of 536 homes anticipated to be completed by 2027[7].
- Balmedie and Potterton has seen a significant increase in the population since 2001 (29%), relative to the average for Aberdeenshire (15%). This number is anticipated to significantly increase as the Strabathie Development is progressed, with the construction of 220 homes anticipated to be complete by 2027, with 240 remaining thereafter[8].

2.3.2 Health

The diagram below illustrates the general health of residents in the key settlements.

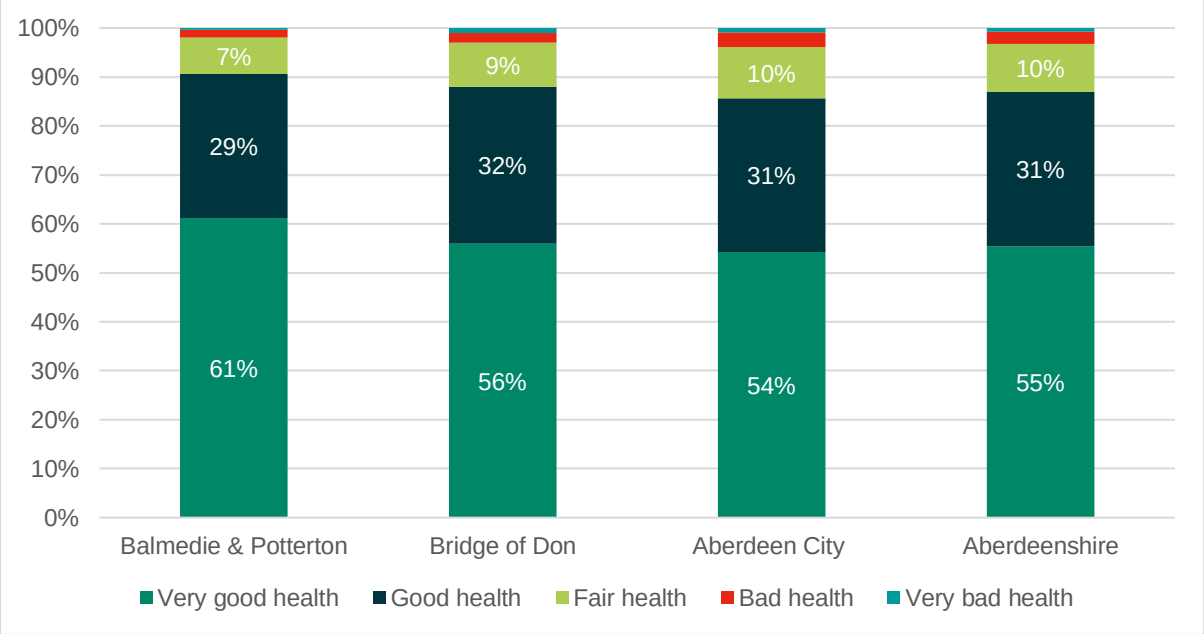


Figure 2.2: General Health (Census 2011)

- General health is shown to be good across the key settlements, with between 88% and 90% reporting very good or good health. This is above the average for Aberdeen City (85%) and Aberdeenshire (86%).

[3] National Records for Scotland
[4] Scottish Government Statistics
[5] Based on Balmedie and Potterton 2011 Intermediate Zone (Code S02001312)
[6] Based on Bridge of Don Electoral Ward (Code S13002836)
[7] Housing Land Audit 2023
[8] Housing Land Audit 2023

2.3.3 Car/Van Availability

The diagram below illustrates the availability of cars or vans in the key settlements.

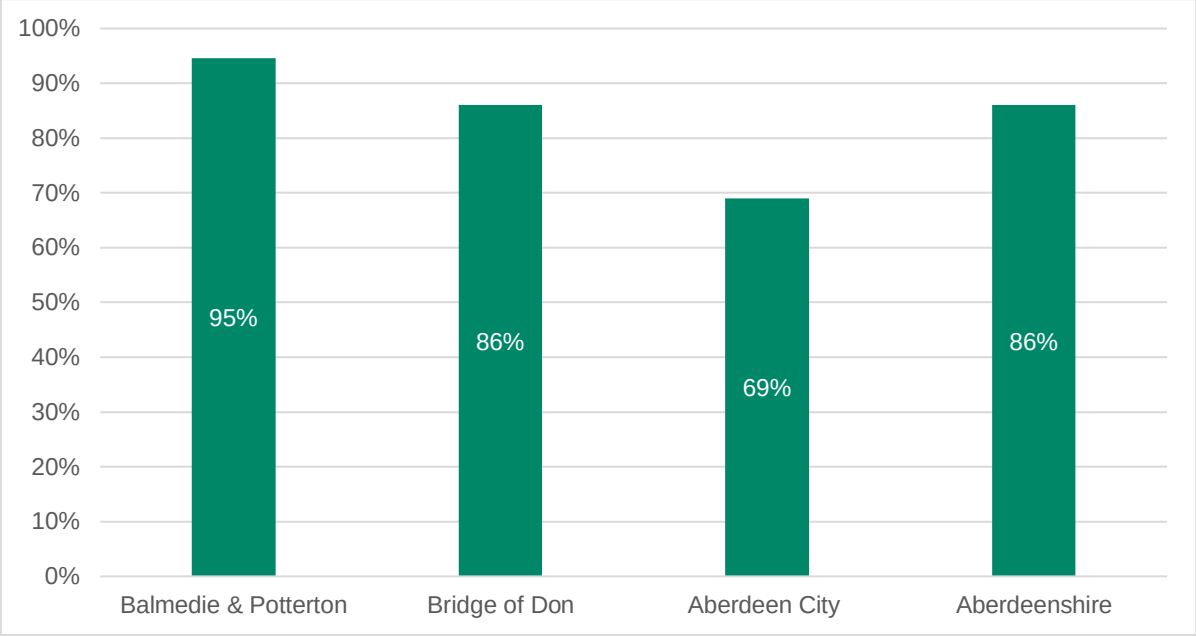


Figure 2.3: Car/Van Availability in Key Settlements (Census 2011)

- There is a high car/van availability in each of the settlements. Balmedie & Potterton report the highest, with 95% of households having access to at least one car or van. This is higher than for Bridge of Don (86%) and the averages for Aberdeen City (69%) and Aberdeenshire (86%).

2.3.4 Employment

The diagram below illustrates economic activity in the key settlements.

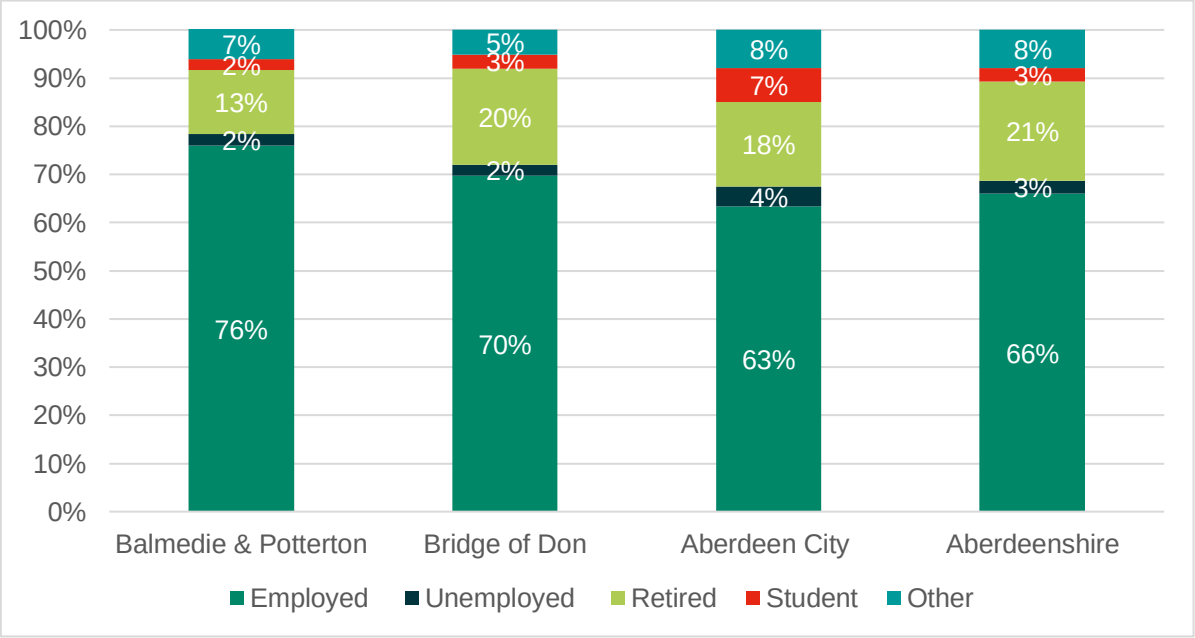


Figure 2.4: Economic Activity and Unemployment Rate (Census 2011)

- Economic activity is high across the key settlements – between 70% and 76%, which is higher than the average for Aberdeen City (63%) and Aberdeenshire (66%). Unemployment rates are low at 2% across the key settlements, which is lower than the averages for Aberdeen City (4%) and Aberdeenshire (3%).
- The proportion of those retired in Balmedie & Potterton (13%) is significantly less than the average for Aberdeenshire (21%); whilst those retired in Bridge of Don (20%) is slightly higher than the average for Aberdeen City (18%).

2.3.5 Travel to Work

The diagram below illustrates distance travelled to work for the key settlements.

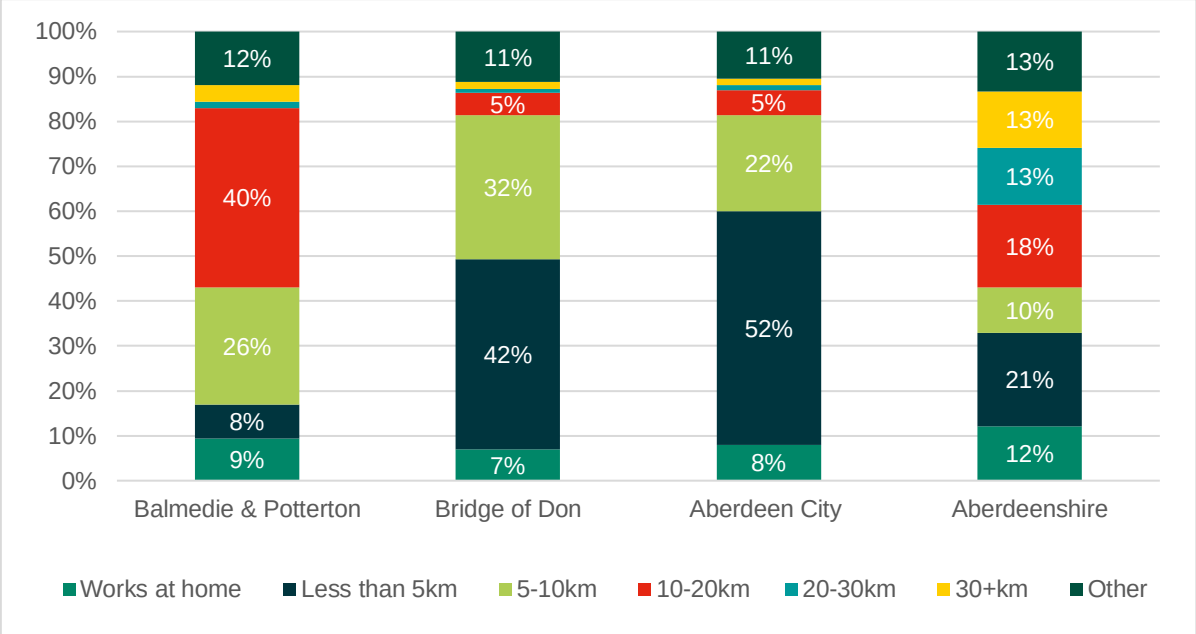


Figure 2.5: Distance Travelled to Work in the Key Settlements (Census 2011)

- The majority of those in Bridge of Don and in Aberdeen City as a whole (74%) travel less than 10km for work, with a significant proportion travelling less than 5km for work – Bridge of Don (42%) and Aberdeen City (52%).
- A higher proportion of residents in Balmedie & Potterton travel a greater distance for work, reflecting the location of these settlements further from key employment centres within Aberdeen City. Only 34% from Balmedie & Potterton travel less than 10km for work and only 8% travel less than 5km.

2.4 Policy Context

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

National

At a national level, Scotland's **National Transport Strategy (NTS2) (2020)**[9] 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 an accompanying NTS Delivery Plan, the **Climate Change Action Plan**[10] and the second **Strategic Transport Projects Review (STPR2)**[11]. 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. It is noted that the Scottish Government is committed to exploring options around encouraging remote working in order to support this reduction and is committed to developing a Work Local Programme which will work to drive the establishment of 20-minute neighbourhoods[12]. STPR2 is a whole-Scotland, evidence-based review of the performance of the strategic transport network across all transport modes and makes recommendations 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. The work undertaken to develop Nestrans' Regional

[9] National Transport Strategy (2020)
[10] Climate Change Action Plan
[11] Strategic Transport Projects Review
[12] The 20 minute neighbourhood concept aims to create places where people can meet the majority of their daily needs within a reasonable distance of their home by walking, wheeling and cycling.

Transport Strategy 2040 (RTS2040) fed into the development of STPR2, thus ensuring key issues for the North East are represented at a national level. This review highlights the increasing focus on active travel, as evidenced through Recommendation #1 – Connected Neighbourhoods; Recommendation #2 – Active Freeways and Cycle Parking Hubs; and Recommendation #3 – Village Town Active Travel Connections. The Scottish Government's **Programme for Government 2023-2024**[13] also outlines the commitment towards delivering on health, economic and environment goals by investing £20m into an Active Travel Transformation Fund which has brought forward the delivery of ambitious local-authority led projects. Furthermore, the Scottish Government has pledged to implement the Active Travel Transformation Project to help raise £320m for investment in future budgets and continue the roll out of 20mph speed limits in built-up areas, supporting physical and mental wellbeing as well as facilitating safety improvements and emissions reduction.

Regional

At a regional level, the Nestrans **Regional Transport Strategy (RTS) 2040**[14] 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.

The RTS 2040 includes an action to *upgrade existing routes and develop a network of high quality and safe active travel routes across the region*. Priority corridors were identified within the RTS and includes a route between Ellon and Aberdeen City Centre. Within the Aberdeenshire section of this corridor, a recent period of public engagement was undertaken, with 400 responses received and the findings indicating a high level of support for the project. The corridor will be subject to a detailed topographic survey in December and the output will be used to prepare landowner plans that will assist with final access agreements, with landowner engagement ongoing and progressing positively. Officers intend to engage legal colleagues in the new year to commence land valuation and assist with title planning.

The Nestrans **Active Travel Action Plan (AcTrAP)**[15] was developed as part of a commitment during the refresh of the previous RTS, with the aim of encouraging increased levels of active travel across the region. Its vision is to: "*create an environment and culture in which walking and cycling are convenient, safe, comfortable, healthy and attractive choices of travel for everyday journeys*." The plan sets out to develop a strategic active travel network, ensuring that appropriate connections to new developments are made to ensure that cycling and walking provision links to long term plans for the region. The purpose of the network is to provide attractive and safe routes for cyclists and pedestrians for both long and short distance trips and to cater for a wider range of journey purposes such as commuting trips, travel to school, tourism and leisure journeys.

Work is ongoing to develop proposals for an active travel network for North East Scotland, including consideration of primary routes, secondary routes, local access routes and long-distance routes across three geographies of (i) Aberdeen City Council, (ii) Aberdeenshire's main towns and (iii) strategic regional active travel routes across the Nestrans area. The identified scheme for the Murcar to Blackdog link will form part of the active travel proposals currently being progressed as part of the work.

Local

Locally, the **Aberdeen City Local Transport Strategy (2016-2021)**[16] and **Aberdeenshire Local Transport Strategy (2012)**[17] aim to reduce non-sustainable journeys, increase the modal share of active travel and make travel more effective. Both Aberdeenshire and ACC are currently updating their Local Transport Strategies. The Draft Aberdeen LTS (2023-2030) was reported to the Net Zero, Environment and Transport Committee on 29th August 2023. It is currently being subject to an eight-week period of public consultation following which a final LTS will be produced and reported to committee in Spring 2024. In Aberdeenshire, public engagement on the main issues associated with an updated LTS was undertaken throughout 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 in the coming months with a view to being published in June 2024 following a further period of public consultation on the draft document.

[13] Programme for Government 2023/24
[14] Nestrans Regional Transport Strategy 2040
[15] Nestrans Active Travel Action Plan
[16] Aberdeen Local Transport Strategy
[17] Aberdeenshire Local Transport Strategy

The **Sustainable Urban Mobility Plan (2019)**[18] identifies the need to improve connectivity both within and to the city of Aberdeen. These objectives are aimed at locking in the benefits of the Aberdeen Western Peripheral Route (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. In addition, the **Aberdeen City Active Travel Action Plan**[19] aims to identify policies and design principles that ACC will abide by over the next five years (and in some cases beyond) and contains a series of actions and interventions that will be pursued in order to increase the proportion of journeys undertaken actively. The Plan aligns with the Nestrans Active Travel Action Plan.

In 2021, ACC adopted a refreshed **Local Outcome Improvement Plan (LOIP)**[20]. The collective vision for Aberdeen remains 'a place where all people can prosper', reflecting the desire of Community Planning partners to help all people, families, businesses, and communities to do well, succeed and flourish in every aspect, regardless of their background or circumstances.

2.5 Development Context

The Aberdeen Local Development Plan (LDP) 2023 was formally adopted in June 2023. The Plan represents ACC's land use strategy for the next 10 years from 2022. The main allocation of relevance to the A92 Murcar North Active Travel Infrastructure STAG study area is the OP2 Cloverhill development to the east of the A92 south of Murcar Roundabout. The development will comprise 536 homes, together with retail units and community facilities and construction is expected to be complete in 2026. There are a number of changes to the local road network associated with this development, including:

- New vehicle junctions providing access to the site along the A92 Ellon Road. The primary access is a centrally located signalised junction incorporating toucan crossing facilities at a core path/pedestrian crossing point of the A92 Ellon Road. A secondary access will be provided to the south of the site via a left-in/left-out arrangement.
- An additional toucan crossing to the south of Murcar Roundabout.
- Reduction of the speed limit on A92 Ellon Road from 70mph to 40mph to replicate the character of the A956 Ellon Road to the south of the site.
- Temporary 20mph speed limit on the A92 Ellon Road via the provision of 20mph flashing signs during times that children are travelling to and from school.

The Aberdeenshire LDP 2023 was formally adopted in January 2023. The LDP covers the Aberdeenshire area excluding the Cairngorms National Park. The main allocation of relevance to the A92 Murcar North Active Travel Infrastructure STAG study area is the OP1 development at Blackdog, which is allocated for 600 homes, 4ha employment land and 7ha strategic reserve. As part of this development, 284 homes are currently being constructed at Strabathie Village.

2.6 Guidance

Design Guidance applicable for walking, wheeling, and cycling infrastructure includes:

- Design Manual for Roads and Bridges (DMRB)[21];
- Roads for All[22];
- Cycling by Design (2021)[23];
- Designing Streets[24];
- National Roads Development Guide[25]; and
- Inclusive Mobility[26].

The following sections provide an overview of the key aspects of these guidance documents, with further detail provided in **Appendix A**.

[18] Sustainable Urban Mobility Plan
[19] Aberdeen Active Travel Action Plan 2021-2026
[20] Local Outcome Improvement Plan 2016-2026
[21] Design Manual for Roads and Bridges
[22] Roads for All (2013)
[23] Cycling by Design Update (2021)
[24] Designing Streets (2010)
[25] National Roads Development Guide (2017)
[26] Inclusive Mobility (2021)

2.6.1 DMRB

DMRB provides design guidance for development of the trunk road network in the UK. The section of the A92 between Murcar Roundabout and Blackdog was de-trunked following the opening of the AWPR. However, as the section was formally trunk road alongside the current layout and there is a speed limit of 70mph, consideration of the DMRB has been taken as part of the design development.

The key findings from a review of DMRB include:

- Traffic lanes should be 3.65m for dual carriageways;
- Any active travel path should be at least 1.5m from the carriageway edge;
- Footway widths should be a minimum of 2.0m; and
- Shared footways / cycleways should only be used where expected flows are low.

2.6.2 Cycling by Design

Cycling by Design 2021 provides updated guidance for the introduction of cycle infrastructure in Scotland, replacing the 2010 version. The key updates to the guidance include:

- Further guidance on core design principles;
- Updates to absolute and desirable minimum widths for footways and cycle tracks (shared and segregated);
- Revised buffer width requirements related to adjacent carriageway speed limit; and
- Introduction of level of service parameters for active travel infrastructure.

The guidance notes that cycleways shared with pedestrians require to have a width between 2.5m and 4.0m and active travel facilities should be 3.5m away from the carriageway edge if located adjacent to a 70mph carriageway.

2.6.3 Designing Streets & National Roads Development Guide

Designing Streets was developed for the Scottish Government and provides technical guidance on designing streets. The National Roads Development Guide supports the Designing Streets document. These documents note that national speed limit roads should adopt standards in DMRB and Cycling by Design should be adopted for active travel facilities.

2.6.4 Inclusive Mobility

Inclusive Mobility from the Department for Transport provides guidance specific to removing barriers for disabled people to support equitable access and inclusive design. The guidance highlights the required footway widths for people with a mobility or visual impairment, noting that a footway width of 2.0m is recommended, allowing two wheelchair users to pass each other.

2.7 Previous Work

2.7.1 A90 Cycle Routes Feasibility Study

In 2015, a feasibility study was carried out for a path between Murcar and Balmedie, associated with Transport Scotland's requirement to give consideration to measures for encouraging journeys by bicycle between Balmedie and Aberdeen, taking cognisance of the AWPR/B-T scheme. The study identified existing land constraints; existing utilities and the extent of provision required for new utilities; existing drainage details and a possible solution for drainage; and the extent of topographical survey that would be required to influence detailed design.

The study recommended a 3.0m shared use path on the east side of the A92 between Murcar Roundabout and Blackdog. Two locations were noted as being particularly constrained where it would not be possible to accommodate a 3.0m wide path – alongside the existing property and directly north of the watercourse.

Following this study, the scheme was included within Aberdeen's Active Travel Action Plan 2017-2021.

2.7.2 Consultation in 2019

ACC conducted a consultation in August 2019 to gain feedback from the public on the proposed design for the scheme, with the proposed route shown in **Figure 2.6**.

The survey received 203 responses, with 132 (65%) respondents providing comments on the scheme. Of those who provided comments, 127 (96%) were in support of the scheme and 5 were not (4%). Other key findings from the consultation can be summarised as follows:

- 14% of respondents noted that cycling was their main means of transport for their most frequent journey undertaken between Murcar and Blackdog and 2% noted that walking was their main means of transport.
- Selected responses to how the path would benefit user journeys included:
    - Provision of a safe route for cycling to and from Aberdeen for both commuter and leisure journeys;
    - Increased opportunities to access local services by active travel modes rather than by vehicle;
    - Would open up the area north of Aberdeen City for active travel recreational users;
    - Would support modal shift to active travel modes; and
    - Would support healthier lifestyles.
- Selected responses to the design considerations and proposal in general are outlined below:
    - Supportive as it connects to existing active travel infrastructure;
    - Concerns with how the proposed route would integrate with the existing shared use path to the west of the A92, south of Murcar roundabout;
    - Support for implementation of segregated cycling and walking paths rather than shared use; and
    - Ensuring sufficient width to allow for walkers and cyclists to use the route at the same time, i.e. can pass one another without one having to pull over.

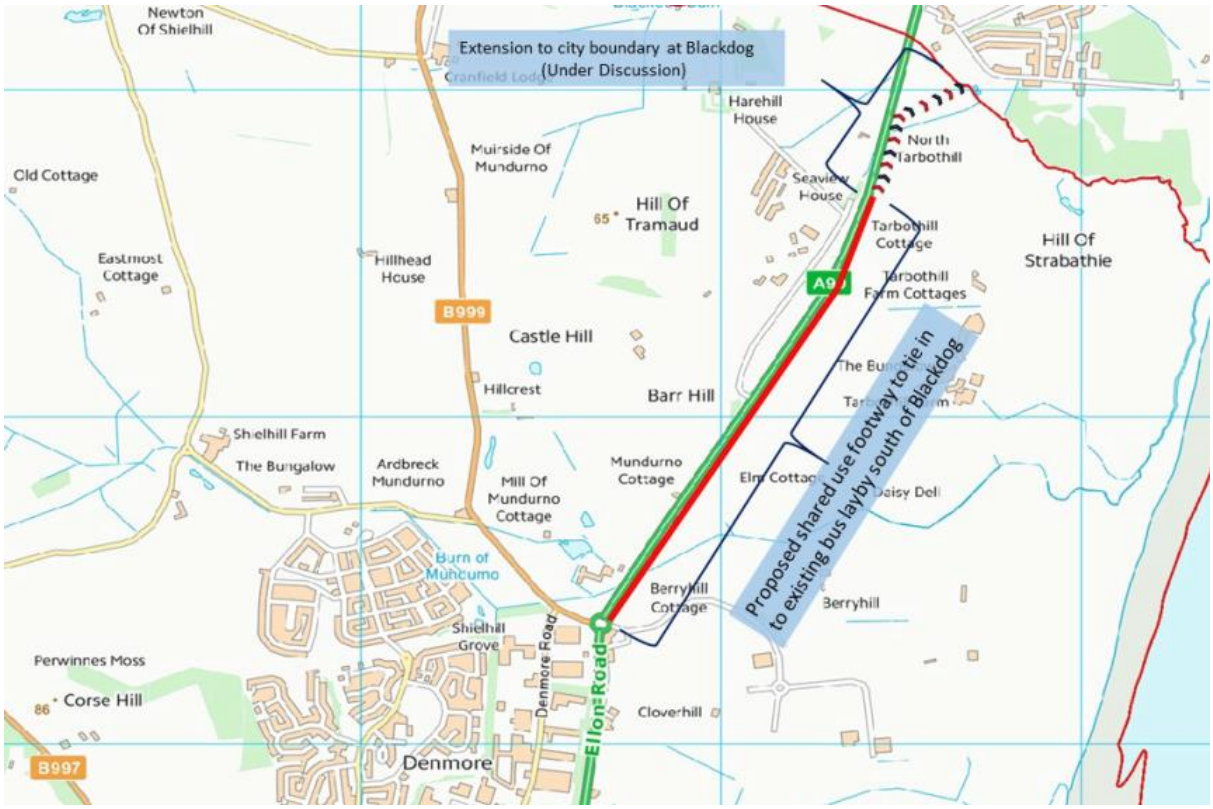


Figure 2.6: Proposed Shared Use Path Route as per previous ACC Study

2.7.3 Ellon P&R – Garthdee Multi-Modal Corridor Study

In 2020, ACC commissioned AECOM to develop a STAG-based appraisal of options for improving transport connections (particularly public transport and active travel connections) from the Park & Ride in Ellon, Aberdeenshire to the Garthdee Road corridor in Aberdeen City, and on related public transport routes. This work was concluded in October 2021 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 Preliminary Appraisal.

Following this, a Detailed Appraisal and Outline Business Case (OBC) has been progressed by AECOM on behalf of ACC, with four packages under consideration as part of the work – Active Travel Priority (Package 1); Public Transport Priority (Package 2); Multi-Modal Transport and Travel (Package 3); and Public Transport Priority and Active Travel Parallel Routes (Package 4).

The Detailed Appraisal has demonstrated that each of the four packages have (to varying extents) positive impacts across the suite of appraisal criteria. However, it considered that Package 4 (Public Transport Priority and Active Travel Parallel Routes) provides a viable option to deliver both public transport and active travel infrastructure at a lower level of risk to ACC than Package 3 (Multi-Modal Transport and Travel Package).

While performing well against the appraisal criteria in the context of their respective modes, neither Package 1 (Active Travel Priority) or Package 2 (Public Transport Priority) cater in full for the ultimate requirements of the study, namely to deliver improved active travel and public transport connections along the study corridor.

With significant deliverability issues associated with Package 3, the study recommended that Package 4 is progressed as the preferred package to OBC given its strong performance against the objectives, particularly in relation to the bus priority elements (this will support the vision of Aberdeen Rapid Transit which Nestrans and partners are taking forward).

Package 4 recommends a new active travel route between Murcar and Blackdog, forming part of a long-distance active travel route to Ellon. To the south of Murcar, Package 4 recommends segregated cycle lanes in both directions on Ellon Road and a southbound bus lane, meaning the loss of a general traffic lane southbound between Murcar and The Parkway.

2.7.4 Street Lighting and Road Restraint Design

In December 2020, ACC commissioned the undertaking of street lighting design, Road Restraint Risk Assessment Process (RRRAP) and subsequently Road Restraint Systems (RRS) design within the extent of the proposed shared use path on the A92 southbound carriageway verge. Simultaneously, further design work, preparation of road signage proposals and road safety audit reports were completed by ACC.

This work was completed in summer 2021, with a number of issues identified in relation to vehicle restraint systems (VRS), passively safe poles for road signage, lighting and overhead cables.

2.7.5 Aberdeenshire Active Travel Route

In August 2023, Aberdeenshire Council consulted on a new active travel route linking Ellon, Foveran and Newburgh. The aim of the project is to provide a safe route which will help accessibility between nearby settlements in the Formartine area and encourage a shift in travel choices to increased walking, wheeling and cycling. It will form a key part of the longer distance route into Aberdeen, with works already having been delivered to improve access between Balmedie and Blackdog where a shared use path has been implemented to offer active travel connectivity to the east of the A92 carriageway between Balmedie and Taylors Recycling Centre.

2.8 AWPR Service Level Agreement

The Murcar active travel route is one of the routes identified in the AWPR Service Level Agreement as a Strategic Cycle Project, which meets the AWPR Vision Statement's objective to create new access routes, improve the existing network and offset any potential loss of footways and cycle routes. It would also assist in compensating for the various moderate severance and other impacts of the AWPR in the north of the city.

The Service Level Agreement notes that the access of pedestrians, cyclists and others to local facilities and countryside areas is likely to be adversely affected by the AWPR due to increased journey times as a result of diversions and decreased amenity value along sections of existing routes owing to traffic noise and visual intrusion. It notes that mitigation measures could include the creation of new, safe links between existing population centres or places of interest/recreation for commuter, recreation and utility trips. It may also be provided by the consideration of public access to and involvement in specific sites by, for example, providing additional visitor facilities or opportunities for recreation and interaction with the natural environment.

The aim of the Service Level Agreement is *'to provide safe access to pedestrians and cyclists around the proposed route corridor and address issues of Non-Motorised Users (NMU) fragmentation.'*

The objectives of the Service Level Agreement are:

- *To upgrade/provide new paths to allow safe, improved access between local communities and recreational areas;*

- *To enable opportunities for a range of different users to undertake commuter, recreational and utility trips; and*
- *To increase the amenity value by better access to cultural heritage sites and the countryside.*

3. Problems and Opportunities

3.1 Introduction

This chapter identifies actual and perceived problems, opportunities and constraints within the study area to support the case for intervention. The STAG guidance describes these as follows:

Problems	are undesirable or harmful circumstances with the transport system.
Opportunities	are where a change to the transport system may lead to a positive outcome.
Constraints	circumstances which may impact on the delivery of the potential interventions or option generation and development

3.2 Problems

The key problem identified as part of the work relates to the missing link in the active travel network between Murcar and Blackdog.

Missing Link

In recent years, ACC has invested in the active travel network south of Murcar through the implementation of a shared use path on the west side of the carriageway that runs adjacent to Ellon Road, meaning there is consistent provision of shared use infrastructure for approximately 2.5km between Murcar and Hutcheon Gardens. Recent improvements have also been implemented on the east side of the carriageway, with implementation of a shared use path and new toucan crossings to the south of Murcar associated with the Cloverhill Development.

To the north within Aberdeenshire, a shared use path has been implemented to offer active travel connectivity to the east of the A92 carriageway between Balmedie and Taylors Recycling Centre. It is understood that there are plans for the shared use path to be extended further south to provide a continuous active travel connection between Balmedie and Blackdog. A short new section of path has also been completed at Blackdog to connect residents to the bus stop on the southbound A92 slip road.

Existing active travel infrastructure between Murcar and Blackdog is lacking and in sections where there is path provision, it is substandard as shown in **Figure 3.1**.

Figure 3.1: Current lack of / narrow path provision

Therefore, the section between Murcar and Blackdog is a key missing link in the active travel network, which is preventing the completion of a long-distance active travel route to the north of the city and is likely to act as a constraint on the uptake of walking, wheeling and cycling within the study area for long-distance journeys as well as shorter trips (i.e. between Blackdog and nearby Industrial Estates in Aberdeen City) and recreational journeys.

As highlighted during consultation (see **Chapter 6**), the missing link prevents people from making a range of active travel journeys, including for commuting, for leisure purposes and exercise, and to access shops and services at Murcar. Consultation feedback indicated that many local people currently drive short journeys because there is not adequate and safe provision to allow them to undertake such journeys actively.

3.3 Opportunities

The key opportunities identified as part of the work include:

Missing Link

The implementation of active travel infrastructure between Murcar and Blackdog would enable consistent active travel provision between Bridge of Don and Blackdog, extending to Balmedie if Aberdeenshire Council progress the shared use path between Taylors Recycling Centre and Blackdog.

Growing Population

As set out in the Aberdeen City and Shire Strategic Development Plan[27], the A90 corridor between Aberdeen and Peterhead is a designated Strategic Growth Area. These designated areas provide the main focus for development in the North East region up to 2040.

Significant live developments are located in close proximity to the A92 Murcar North study area. These developments include:

- Strabathie Village located at Blackdog where 284 homes are currently being built, with the full site allocated for 600 homes; and
- Cloverhill Development situated south of Murcar Roundabout, comprising construction of 536 homes, together with retail units and community facilities.

The new population that the above developments will bring to the area provides a key opportunity to instil new sustainable travel habits. Promoting the use of active travel instead of private vehicles from the outset will drive demand for more sustainable travel, but these benefits can only be realised if there is a comprehensive and well-integrated active travel network in place to facilitate these journeys.

Promoting Active Travel

The Aberdeen City and Shire Strategic Development Plan states that Strategic Growth Areas should ensure housing, employment and services are in close proximity to each other and are connected by high quality active travel networks. Therefore, investment in quality active travel infrastructure within the A90 Strategic Growth area is essential to ensure there is an integrated and complete active travel network for residents to use for everyday journeys.

Furthermore, the generally flat topography of the A92 Murcar North study area will further promote the use of active travel as the route would be easily cyclable and suitable for a variety of different users.

Travel to Work

The relatively short distance between residential areas (Potterton, Blackdog etc.) and key employment areas (Bridge of Don and Denmore Industrial Estates) provides a significant opportunity for active travel to be used for commuting to work.

The approximate distances from Blackdog to Denmore Industrial Estate and Bridge of Don Industrial Estate are around 2km and less than 4km respectively. Both of these locations are therefore within a realistic cycling distance for commuting to work with approximate journey times of 12 minutes to the former and 15 minutes to the latter.

Strong Policy Alignment

From locking in the benefits of the AWPR to supporting wider policy objectives around climate change and health and wellbeing, the development of active travel infrastructure between Murcar and Blackdog aligns strongly with policy framework at a national, regional and local level.

STPR2, developed to support delivery of NTS2, contains a number of recommendations focussed on promoting active travel, including:

- Recommendation #1 – Connected Neighbourhoods: focussing on delivering comprehensive, cohesive networks of high-quality active travel routes radiating for approximately 800m from key locations in towns or neighbourhood centres, better connecting them with nearby residential areas.
- Recommendation #2 – Active Freeways and Cycle Parking Hubs: focussing on providing active freeways to connect city and town centres to outlying neighbourhoods, and to key trip attractors. They focus on high-demand corridors in large urban areas and on improving connections to communities through delivering high-quality, direct, and segregated routes for active travel.
- Recommendation #3 – Village-Town Active Travel Connections: focussing on delivering short and medium-distance active travel routes linking villages with nearby towns in locations where these connections are not made by existing networks or new longer-distance routes. It would connect town and village communities for people walking, wheeling and cycling, through the delivery of high-quality infrastructure on direct routes away from busy roads, improving access between neighbouring settlements and facilitating access to key trip attractors.

[27] Aberdeen City and Shire Strategic Development Plan

Support from General Public

As outlined in **Section 2.7.2**, there is a clear appetite from the general public for this scheme to be implemented to provide the missing link and thus offer a fully integrated active travel route separated from vehicles. Previous consultation highlighted that this route would provide benefits for a range of northbound and southbound journeys including commuting to Aberdeen City, everyday journeys to local shops and services and leisure journeys for both local residents and those from further afield wanting to travel to the area by active travel modes. The consultation highlighted that the absence of a fully integrated route prevents the aforementioned journeys from taking place as users highlighted safety concerns associated with travelling alongside vehicular traffic travelling at 70mph on the A92. Similar feedback was received during the consultation undertaken as part of this work, as summarised in **Chapter 6**.

Recreational Potential

Several recreational paths are located within the area, including Balmedie Country Park Pathways and the Aberdeenshire Coastal Trail. There is an opportunity for the A92 Murcar North active travel route to link with these existing recreational paths to provide an integrated active travel network allowing for recreational visitors to travel actively when visiting these locations.

3.4 Constraints

The key constraints identified as part of the work include:

Land Availability

A key constraint in the delivery of active travel facilities along this section relates to the land available within ACC ownership. On both sides of the carriageway there is farmland owned by third parties that would require landowner agreement and land purchase to deliver facilities to a desirable minimum standard outlined in Cycling by Design 2021.

Gradient

Steep gradients are located adjacent to the existing path for sections providing differentiation between ACC and privately owned land. Permission would need to be sought from landowners if these were to be regraded for delivery of an active travel facility.

Utilities

A utilities search was undertaken as part of the previous work, which outlined a number of existing utilities within the study area, including a gas main line along the eastern side of the carriageway. This varies between under the existing footway and within the sloped verge and therefore depth of the asset will require to be confirmed during subsequent stages of design.

The study area also has overhead power lines which should be taken into account during the development of lighting proposals and access for site equipment during construction.

Flooding

There are a several watercourses identified in proximity to the study area. These are located to the north of Murcar Roundabout and to the south of Blackdog and flow under the A92 carriageway. As shown in **Figure 3.2**, there is a high likelihood of flooding in proximity to these areas alongside some areas of surface water accumulation.

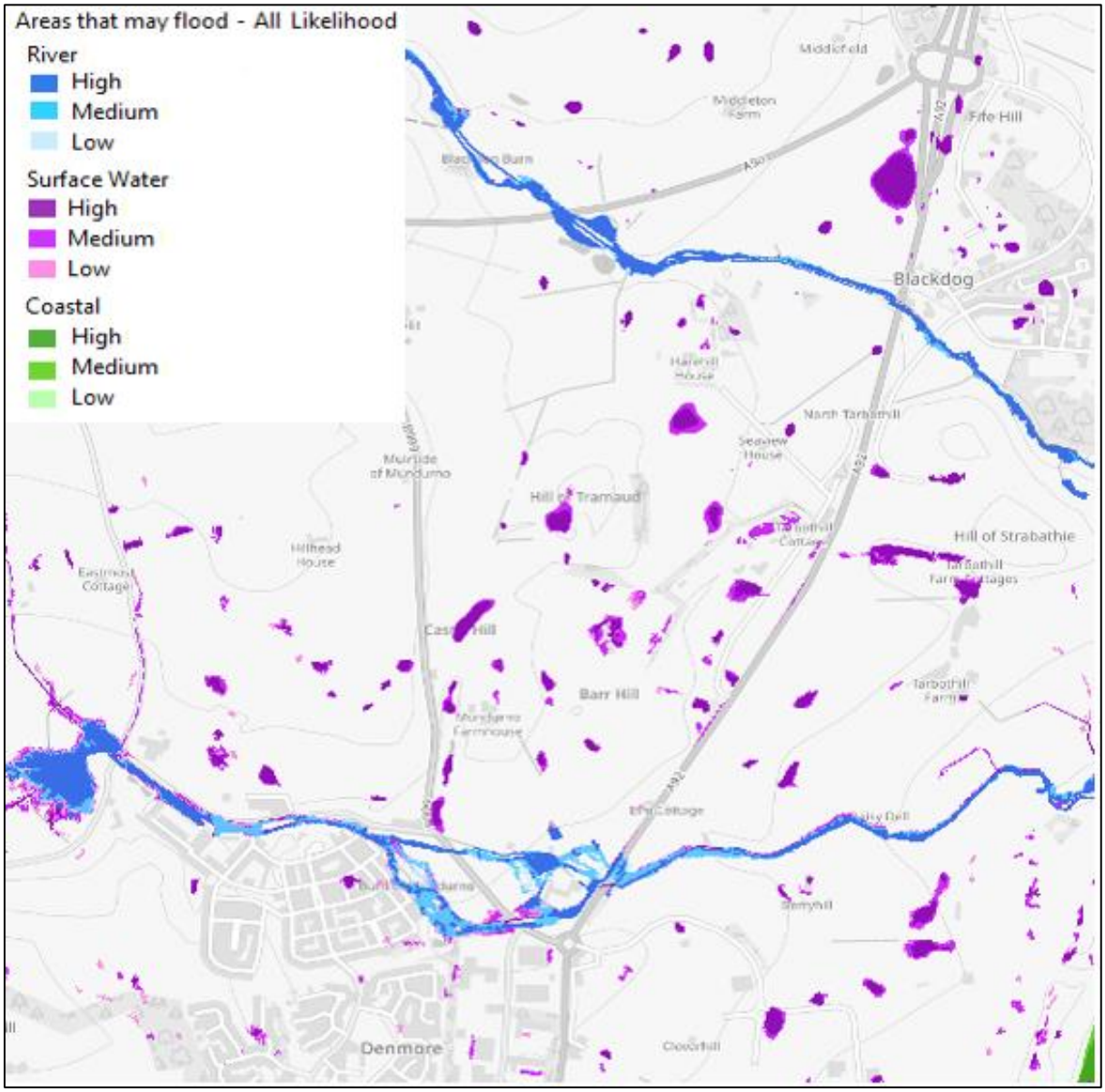


Figure 3.2: Study Area Flood Map

3.5 Case for Change

The problems and opportunities analysis outlined above presents a clear rationale for intervention on this route. The Murcar to Blackdog link is a key piece of missing infrastructure that has the potential to support a wide range of journeys. It could support localised journeys within the study area i.e. between Blackdog and industrial or shopping areas at Murcar; medium distance journeys between Blackdog and key trip attractors within Aberdeen City; and it could form part of a longer distance route between Aberdeen and Aberdeenshire communities in the north including Ellon, Foveran, Newburgh and Balmedie.

The case for intervention is strengthened by the developments that are under construction adjacent to the A92, which will significantly increase the population within the study area and it is important that active travel is promoted from the outset for people moving into the area by providing a realistic alternative to journeys undertaken by car.

There is clear public support for the scheme based on findings from initial consultation work undertaken in 2019 and reinforced by the consultation exercise undertaken as part of the current study, with 92% of respondents to the online survey indicating support for the development of an active travel link between Murcar and Blackdog.

4. Transport Planning Objective

4.1 Introduction

This chapter presents the Transport Planning Objective (TPO) that has been developed for the study. Central to the appraisal of options in a STAG-based approach is that the process should be objective-led rather than solution-led. In line with the guidance, a single TPO has been developed to reflect the identified problems and opportunities, including those identified through stakeholder consultation, professional judgement and to reflect synergy with established policy directives. The TPO reflects the outcomes sought from the study and will play an integral role in assessing the performance of each option as the appraisal progresses.

4.2 Approach

As outlined in the STAG Managers Guide, the analysis of problems and opportunities is central in supporting the setting of robust TPOs. A bottom-up, top-down approach has been taken to develop a single TPO for the A92 Murcar North Active Travel Infrastructure STAG Study.

4.2.1 SMART Objectives

The STAG guidance notes that it is imperative that TPOs are developed with 'SMART' principles in mind, which will enable the TPOs to be sharpened and refined as the study progresses and more information becomes available.

A SMART objective will be:

- **Specific** – it will say in precise terms what is sought;
- **Measurable** – it will set out the metrics that will be used as an indicator of success;
- **Achievable** – there is general agreement that the objective set can be reached;
- **Realistic** – the objective is a sensible indicator or proxy for the change which is sought; and
- **Time bound** – the objective will be associated with an agreed timeframe.

4.3 Final Transport Planning Objective

The single TPO developed for the study, which has been developed to complement the strategic TPO identified for the Ellon Park and Ride to Garthdee transport corridor study, is outlined below.

TPO1	By 2030, increase the level of walking by 10% and cycling five-fold from 2027 for all journey types on the Blackdog to Murcar corridor.

4.4 SMART Objective Table

The table below highlights how the developed TPO relates to the SMART principles.

Table 4.1: SMART TPO Table

TPO	Specific	Measurable	Achievable	Realistic	Timebound
By 2030, increase the level of walking by 10% and cycling five-fold from 2027 for all journey types on the Blackdog to Murcar corridor.	TPO identifies the need to provide active travel infrastructure to facilitate an increase in the level of walking and cycling for all journey types between Blackdog and Murcar.	Based on the previous consultation undertaken, the modal split in 2019 was as follows: • Car (n=155; 77%) • Cycle (n=29; 14%) • Public Transport (n=11; 5%) • Walk (n=4; 2%) • Other (n=2; 1%) Given the small sample size that this was based on, this modal split is unlikely to be representative. The modal split[28] based on Census 2011 data was as follows: • Car (60%) • Walk (15%) • Public Transport (13%) • Cycle (1%) • Other (3%) • Work/study at home (8%) Pedestrian and cycle counters can monitor changes in those travelling actively, supported by targeted community engagement, including 'before implementation' and 'after implementation' surveys.	Delivery of TPO will require modal shift from car to active travel (walking and cycling) – the options subject to appraisal would encourage an increase in modal share of walking and cycling.	TPO is consistent with the overall aim of the A92 Murcar North Active Travel Infrastructure STAG Study. Problems and opportunities highlighted a missing link connecting newly implemented active travel infrastructure to the north and south of the study corridor. Consultation highlighted the importance of infrastructure to promote active travel as a safe and reliable mode of transport for everyday journeys.	2030

[28] Modal split is based on 'Method of travel to work or study' census table QS702SC for data zones that make up the study area (Bridge of Don and Balmedie & Potterton).

5. Option Generation and Sifting

5.1 Introduction

This chapter 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 A92 Murcar North Active Travel Infrastructure STAG Study. The aim is to identify a set of options that could potentially deliver the TPO and in turn, help to address the problems and constraints identified while helping to realise the opportunities in the study area.

5.2 Transport Projects in Development

There are a number of transport projects in development in the study area, as shown in the table below.

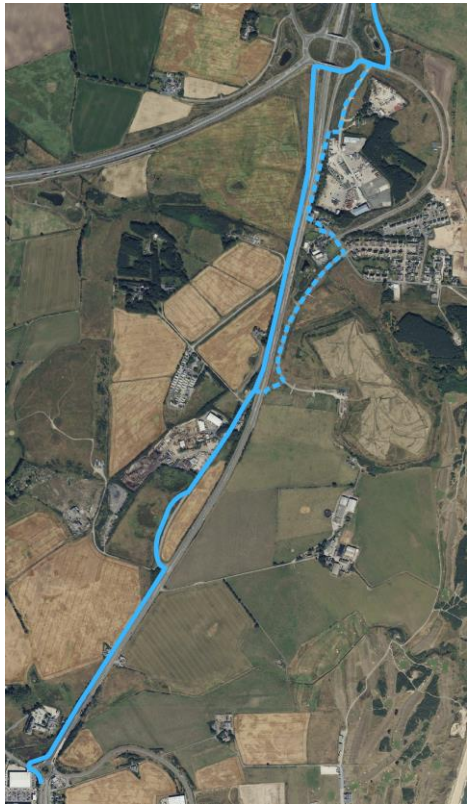
Table 5.1: Transport Projects in Development in the Study Area

Scheme	Description
Ellon to Balmedie Strategic Cycle Route	As outlined in **Section 2.7.5**, Aberdeenshire Council recently consulted on a new active travel route linking Ellon, Foveran and Newburgh. The aim of the project is to provide a safe route which will help accessibility between nearby settlements in the Formartine area and encourage a shift in travel choices to increased walking, wheeling and cycling. It will form a key part of the longer distance route into Aberdeen, with works already having been delivered to improve access between Balmedie and Blackdog where a shared use path has been implemented to offer active travel connectivity to the east of the A92 carriageway between Balmedie and Taylors Recycling Centre.
Ellon P&R to Garthdee Study	As outlined in **Section 2.7.3**, ACC is progressing a Detailed Appraisal of options and Outline Business Case for the Ellon P&R to Garthdee Corridor. This study is recommending progression of a package of measures that includes a long-distance active travel route between Ellon and Murcar and segregated cycle lanes and peak hour bus lanes in both directions on Ellon Road to the south of Murcar.
Cloverhill Development	As outlined in **Section 2.5**, the Cloverhill Development, located to the east of the A92 south of Murcar Roundabout, consists of 536 plots together with three retail units, a community hall and recreational space. There are a number of changes to the local road network associated with this development, including: • New vehicle junctions providing access to the site along the A92 Ellon Road. The primary access is a centrally located signalised junction incorporating toucan crossing facilities at a core path/pedestrian crossing point of the A92 Ellon Road. A secondary access will be provided to the south of the site via a left-in/left-out arrangement. • An additional toucan crossing to the south of Murcar Roundabout. • Reduction of the speed limit on A92 Ellon Road from 70mph to 40mph to replicate the character of the A956 Ellon Road to the south of the site. • Temporary 20mph speed limit on the A92 Ellon Road via the provision of 20mph flashing signs during times that children are travelling to and from school.

5.3 Option Generation

The options generated for the A92 Murcar North Active Travel Infrastructure STAG Study are set out below.

Table 5.2: Option Generation

Option	West	Central	East
Description	From Murcar Roundabout, the route follows the western side adjacent to the A92 and then alongside Tarbothill Farm Cottages. Options then exist to cross to the east side to provide connection into Blackdog or continue north to Blackdog Junction. 	Routes along the A92 carriageway via redistribution of carriageway space. Dependent on the alignment, this could tie into Blackdog via a new path link to Hareburn Road or at Blackdog Junction. 	From Murcar Roundabout, the route follows the eastern side adjacent to the A92 and around the rear of existing properties to tie into Hareburn Road. 

5.4 Option Sifting

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)."*

Given the small number of options under consideration as part of the study, no options were sifted from consideration and all three options were progressed through the appraisal process.

6. Public and Stakeholder Consultation

6.1 Introduction

This chapter sets out the consultation programme undertaken as part of the A92 Murcar North Active Travel Infrastructure STAG Study.

Engagement has built on work undertaken by ACC in 2019 to support the public acceptability appraisal of the three route options under consideration (see **Chapter 8**).

6.2 Consultation Approach

The following activities were progressed as part of consultation on the study:

- Development of a Stakeholder Plan in July 2023 to inform officers, Elected Members, stakeholders and members of the public that ACC has commenced work on this stage of the study.
- Development of a Stakeholder Briefing Paper in support of the above to serve as an update to work concluded by ACC in 2021 and inform stakeholders of the process now being taken to identify a recommended active travel option for the study corridor. This was circulated to ACC members, Aberdeenshire Council members, local MPs and MSPs, Belhelvie Community Council and Bridge of Don Community Council. The paper – provided to ACC separately – outlined the key study activities and phases of work before setting out how stakeholders could get involved through various means of engagement.
- Engagement with landowners potentially affected by the proposals.
- Engagement with local cycle stakeholders, as potential future users of the scheme.
- A public exhibition to allow members of the public to view the process taken to identify, develop and appraise the route options, and to view the recommended option to progress to further design.
- An online survey outlining the material presented at the public exhibition for review and comment by members of the public, organisations and other stakeholders.

The sections below detail the key outcomes of these targeted engagement activities.

6.3 Landowner Engagement

To ensure landowners affected by the proposals could be consulted with effectively, a review of land areas was undertaken by AECOM with support from the ACC client team. This focussed on identifying residential, agricultural and industrial land areas located on the study corridor using Scotland's Land Information Service (ScotLIS)[29] before adding these as shapefiles to GIS to create individual land plans for each of the landowner areas. These plans formed the basis for initial contact with local landowners on the study corridor seeking confirmation of ownership and providing early notification that the study was underway.

This exercise facilitated engagement with the landowners of Tarbothill Farm in October 2023. The key outcomes of this discussion are as follows:

- Concern over users potentially coming in to contact with farm machinery;
- Increased need to be aware of pedestrians and cyclists bypassing the farm;
- Concern over pedestrians and cyclists disturbing animals adjacent to the path;
- Clear signage and fencing required to enhance wayfinding and avoid conflicts;
- The farm access is currently impacted by increased traffic speeds since the opening of the AWPR; and
- Concern that access may be impacted further by increased requirement to be aware of pedestrians and cyclists when entering and leaving the farm.

As part of the design process, the AECOM team prepared a detailed note of the discussion to ensure all concerns could be used to inform final designs. Continued engagement with the Council and landowner throughout the process will be sought going forward.

[29]ScotLIS (Search by map - ScotLIS - Registers of Scotland (ros.gov.uk))

6.4 Local Cycle Stakeholder Engagement

In September 2023, a targeted workshop with local cycle stakeholders was undertaken, facilitated by Nestrans, in advance of public consultation. The focus of this discussion was to gain feedback on the route options and the type of facility to be taken forward, either segregated or shared.

In terms of the **alignments**, the east option was described as having the greatest potential in terms of connecting to existing infrastructure and connecting to Balmedie whilst helping to improve safety by taking the link away from the carriageway. Moreover, the increase in population from housing developments was cited as an opportunity for an increase in younger users along with better east/west connections to support school accessibility. Stakeholders noted the limitations of the other alignments, including a lack of cycle priority between communities and the removal of road lanes.

In terms of the **type** of facility, stakeholders were most supportive of segregated infrastructure due to the increase in safety for each user group and opportunities for a range of users with varying abilities and speeds. With regards a shared facility, stakeholders highlighted the potential for meandering between users and constraints on cycle speeds as well as conflicts between users.

6.5 Public Exhibition

A Public Exhibition took place on Thursday 2nd November 2023 at King's Church, Bridge of Don from 16:00-20:00. The event was facilitated by members of the AECOM project team along with a representative from both ACC and Nestrans. There was a total of 17 attendees – 15 members of the public and two Councillors.

The attendees were able to view display boards showing the three options and speak to members of the project team to discuss the plans and ask questions. A hard copy of the survey was also available (and is provided within **Appendix C**). **Figure 6.1** shows the display boards at the event while copies of each board are also presented in **Appendix C**.

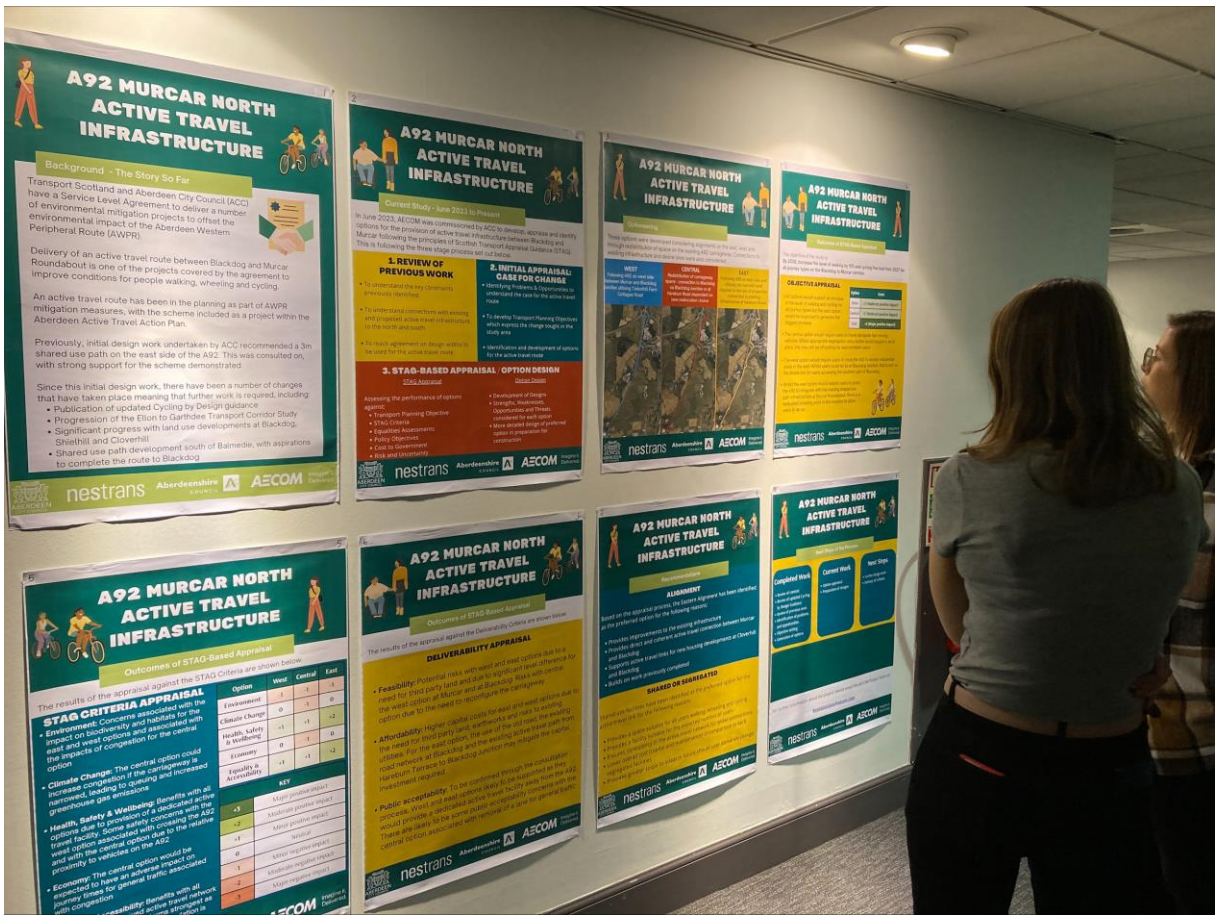


Figure 6.1: Public Exhibition, October 2023

A summary of key points of feedback from the public exhibition are as follows:

- Overwhelmingly positive response with all attendees keen to see a route constructed as soon as possible.
- East generally regarded as the preferred option, with attendees expressing concerns regarding the central option.
- Desire for tarmac surfacing of the route, with attendees noting that gravel surfaces would not be accessible to all users and would present an increased maintenance burden.
- Desire for cycle parking to be introduced at the retail park at Murcar Roundabout.
- The route around Blackdog may be preferable to the currently proposed route for some users.
- The design will need to consider the gate that is in place at Blackdog, to the south of the new shared use path that has been implemented alongside the carriageway.
- Desire for the speed limit on Hareburn Road to be reduced as it is currently a 60mph.
- No support for a speed limit reduction on the A92 between Blackdog Junction and Murcar, with attendees suggesting that it would not be adhered to.
- Desire for inclusion of elements on the active travel route that promote respect between different users e.g. similar to signs included on the Deeside Way – concerns raised that there could be conflict between users sharing the same space, particularly dog walkers and cyclists.

6.6 Online Survey Analysis

The online survey ran from 18th October to 15th November 2023 and received a total of 133 responses. This section presents a breakdown of the results from this survey and associated analysis. As noted above, a copy of the survey form is provided within **Appendix C**.

6.6.1 Respondent Profile

Figure 6.2 below shows respondent profile of each of the 133 respondents, highlighting that 35 (26%) reside in the study area, 52 (39%) are based elsewhere in Aberdeen City, 45 (34%) are based elsewhere in Aberdeenshire and 1 (less than 1%) was a stakeholder response.

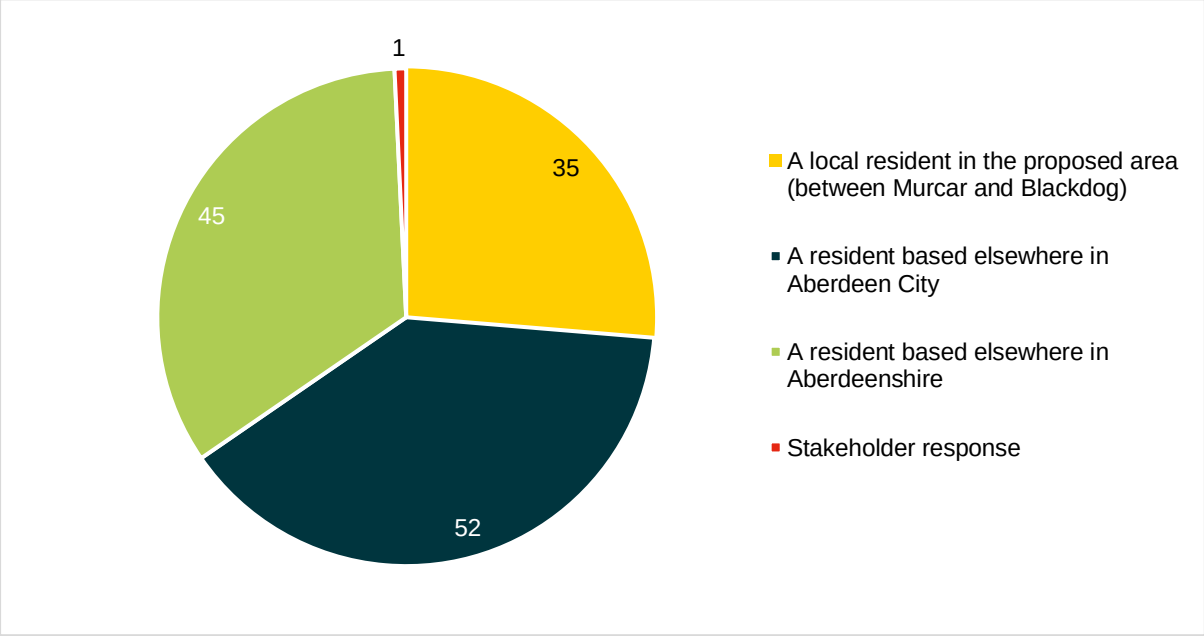


Figure 6.2: Respondent Profile

6.6.2 Q1. Do you support the development of an active travel link between Murcar and Blackdog?

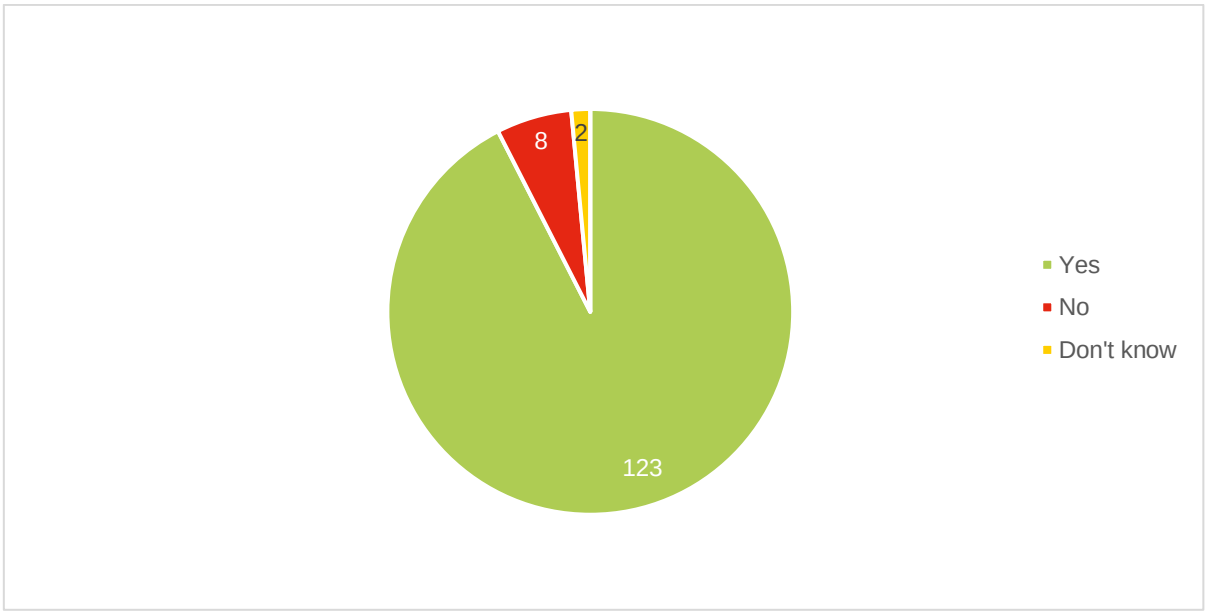


Figure 6.3: Support for Murcar to Blackdog Active Travel Link

The vast majority of respondents (92%) indicated that they support the development of an active travel link between Murcar and Blackdog while 6% do not support the development of an active travel link and 2% indicated that they Don't Know. This suggests that there is clear support for improving walking, wheeling and cycling infrastructure on the corridor.

Respondents who do not support the scheme suggested that other areas may benefit more from investment in active travel infrastructure or noted that redirecting funding to other means would be more valuable.

6.6.3 Q2. Do you agree that the east option should progress as the preferred option?

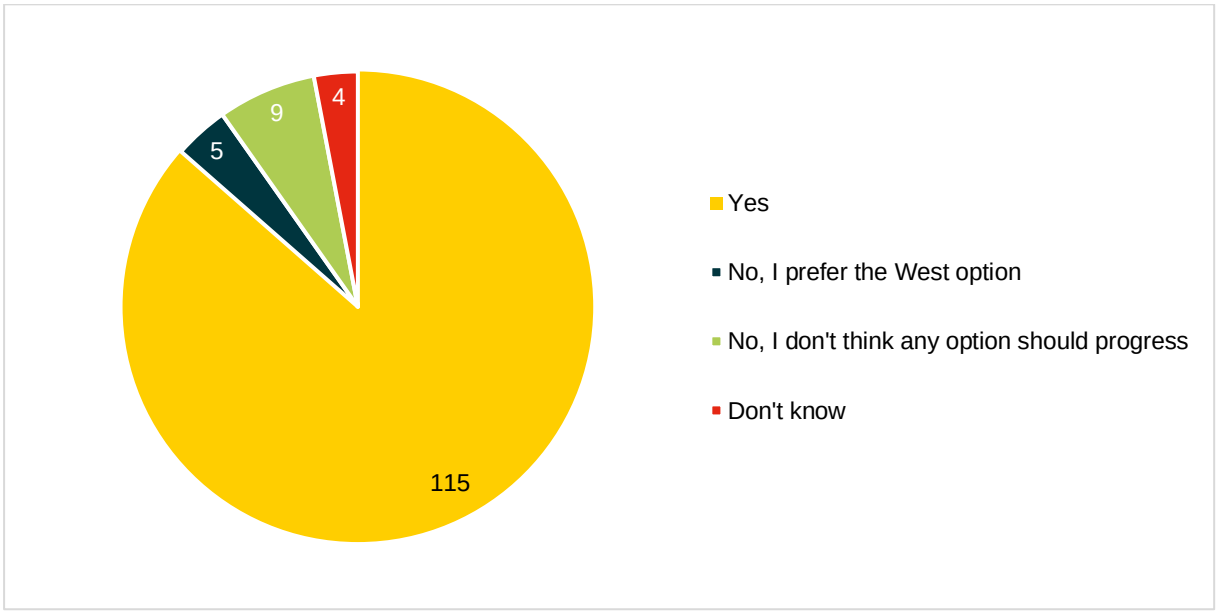


Figure 6.4: Support for the East Option

The majority of respondents (86%) agreed that the east option should progress as the preferred option. Five respondents (4%) indicated a preference for the west option and 9 respondents (7%) do not think that any option should progress. No respondents indicated a preference for the central option.

Of those indicating a preference for the west option, respondents noted the greater potential for connection with existing infrastructure to the south of Murcar and enhanced connections for communities in the west, including Potterton.

6.6.4 Q3. Would implementation of the east option make you more likely to walk, wheel or cycle between Murcar and Blackdog?

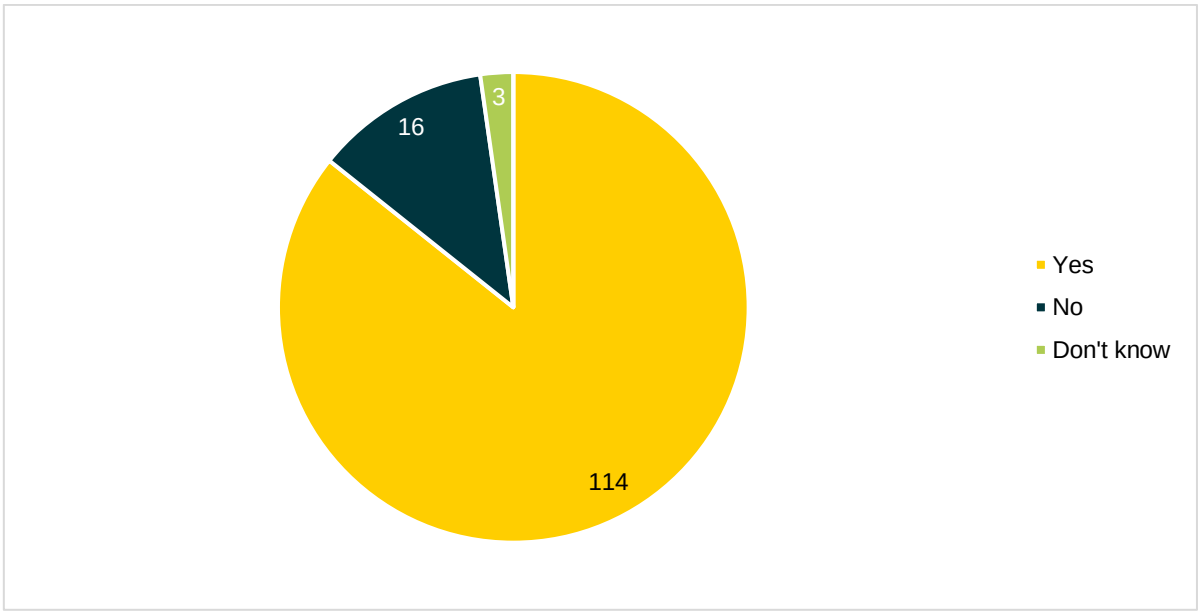


Figure 6.5: Implementation of East Option – Increased Likelihood of Active Travel

114 (86%) respondents noted that the implementation of the east option would make them more likely to travel actively between Murcar and Blackdog while 16 (12%) respondents answered No and 3 (2%) respondents said Don't Know. This suggests further support for the project and highlights that it could encourage modal shift away from private vehicles for journeys on this section of the corridor.

Those who indicated that the east option would not encourage them to travel actively between Murcar and Blackdog noted concerns about proximity to the A92 due to volume and speed of the traffic, the length of time it will take to purchase land, the value for money and one respondent noted that they are unable to walk or cycle that distance.

6.6.5 Q4. Would the west option or central option make you more likely to walk, wheel or cycle between Murcar and Blackdog?

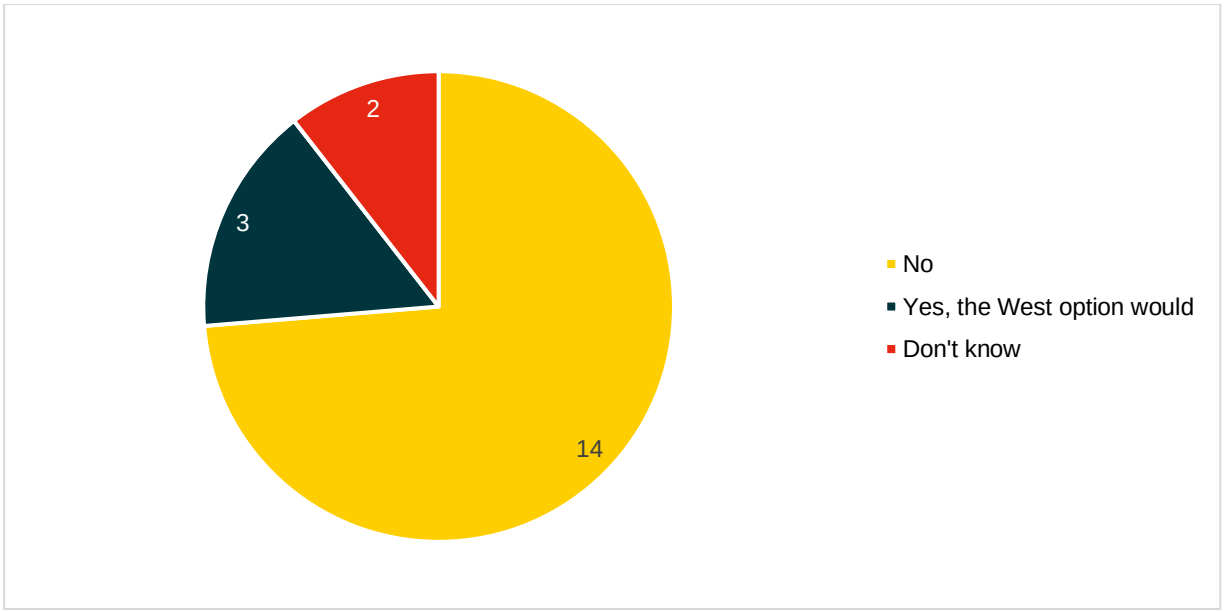


Figure 6.6: Implementation of West/Central Option – Increased Likelihood of Active Travel

The 19 respondents who did not indicate the implementation of the east option would make them more likely to travel actively between Murcar and Blackdog were asked if the west or central option would make them more likely to travel actively on the corridor. 14 (74% of responses to this question) respondents indicated that neither option would; 3 (16%) respondents indicated that the west option would and 2 (11%) didn't know.

6.6.6 Q5. What journeys would you use the Murcar to Blackdog active travel link for and how often would you make these journeys?

Work

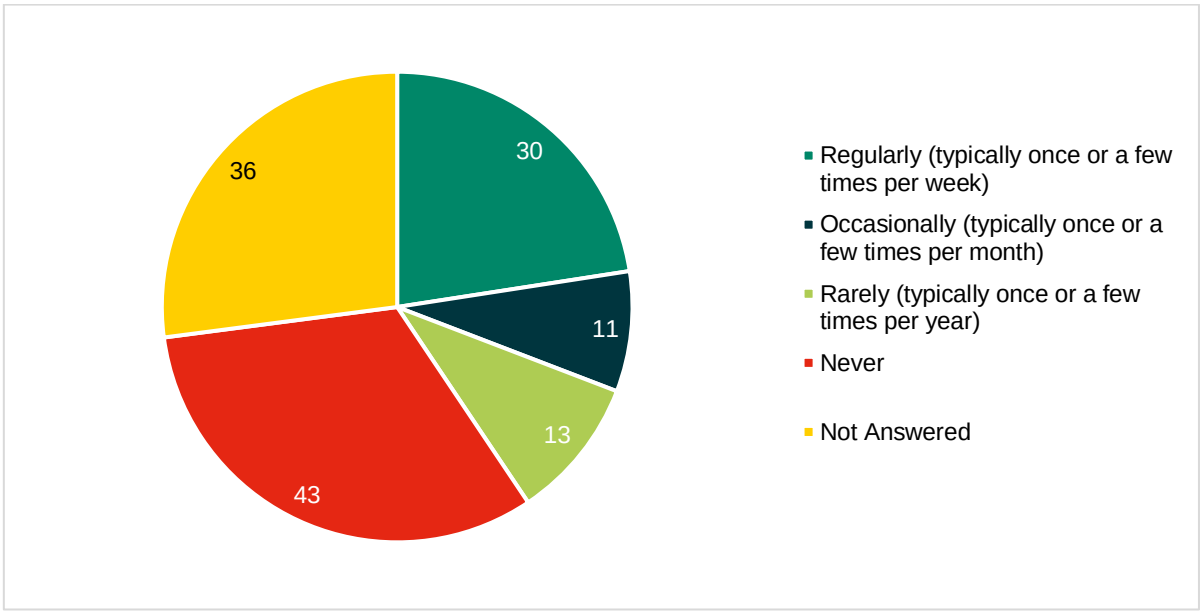


Figure 6.7: Anticipated Use of Murcar to Blackdog Active Travel Link for Journeys to Work

97 (73%) respondents provided an answer to this question. The results show that 54 (41%) respondents would use the Murcar to Blackdog active travel link for journeys to work – 30 (23%) regularly; 11 (8%) occasionally; and 13 (10%) rarely. 43 (32%) respondents indicated that they would never use the Murcar to Blackdog active travel link for journeys to work.

Study

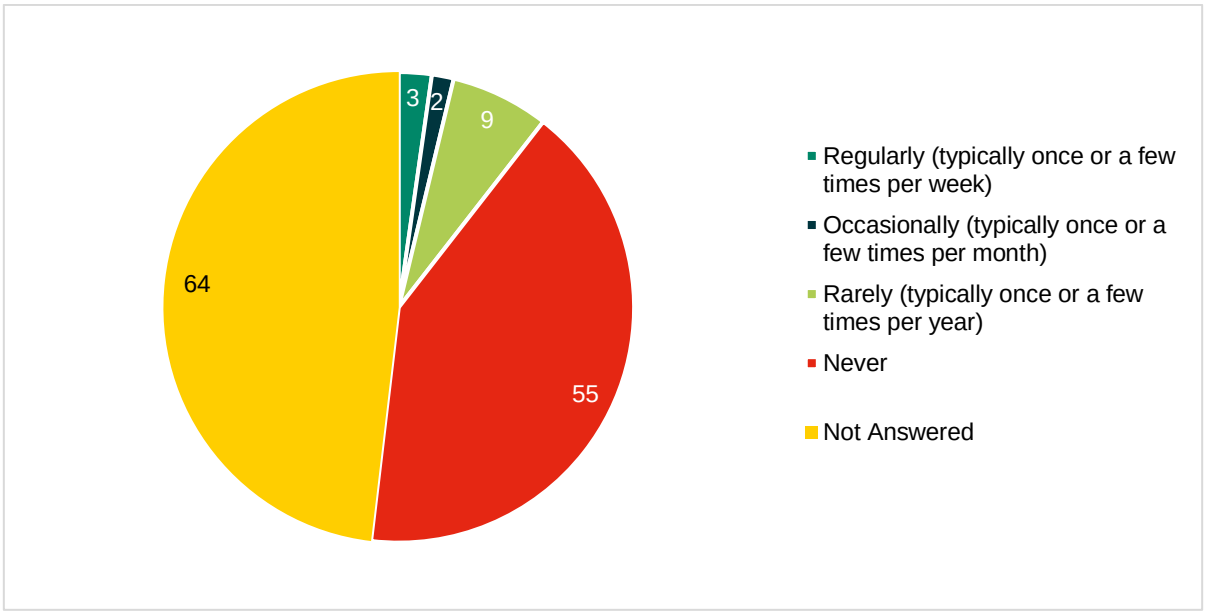


Figure 6.8: Anticipated Use of Murcar to Blackdog Active Travel Link for Journeys to Study

69 (52%) respondents provided an answer to this question. The results show that 14 (11%) respondents would use the Murcar to Blackdog active travel link for journeys to study – 3 (2%) regularly; 2 (2%) occasionally; and 9 (7%) rarely. 55 (41%) respondents indicated that they would never use the Murcar to Blackdog active travel link for journeys to study.

Business

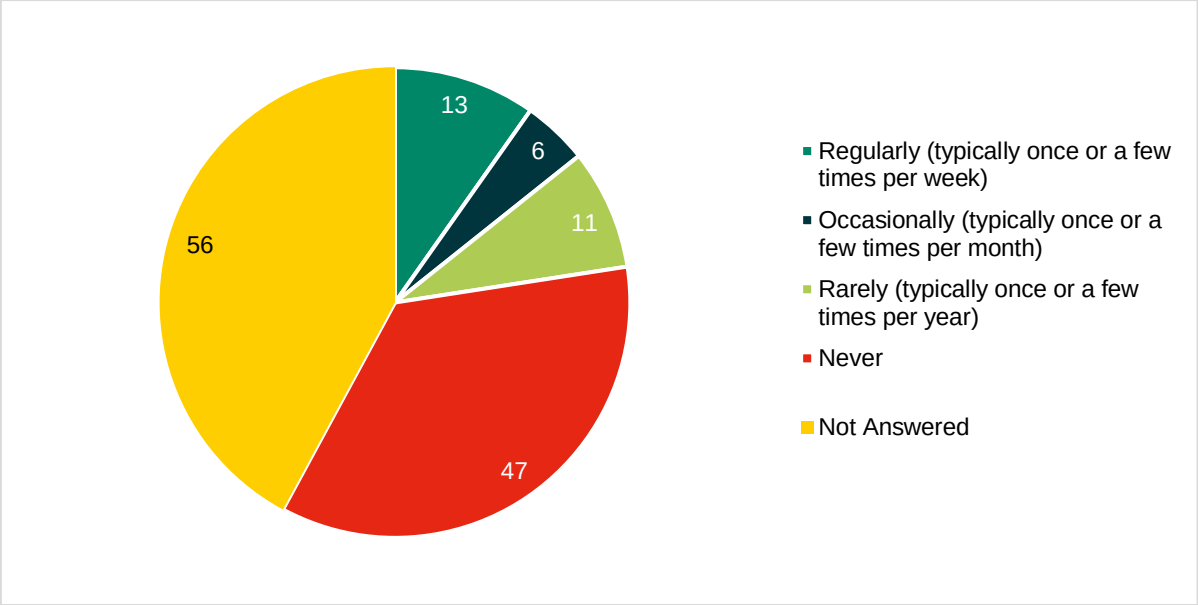


Figure 6.9: Anticipated Use of Murcar to Blackdog Active Travel Link for Business Journeys

77 (58%) respondents provided an answer to this question. The results show that 30 (23%) respondents would use the Murcar to Blackdog active travel link for business journeys – 13 (10%) regularly; 6 (5%) occasionally; and 11 (8%) rarely. 47 (35%) respondents indicated that they would never use the Murcar to Blackdog active travel link for business journeys.

Leisure Journeys/Exercise

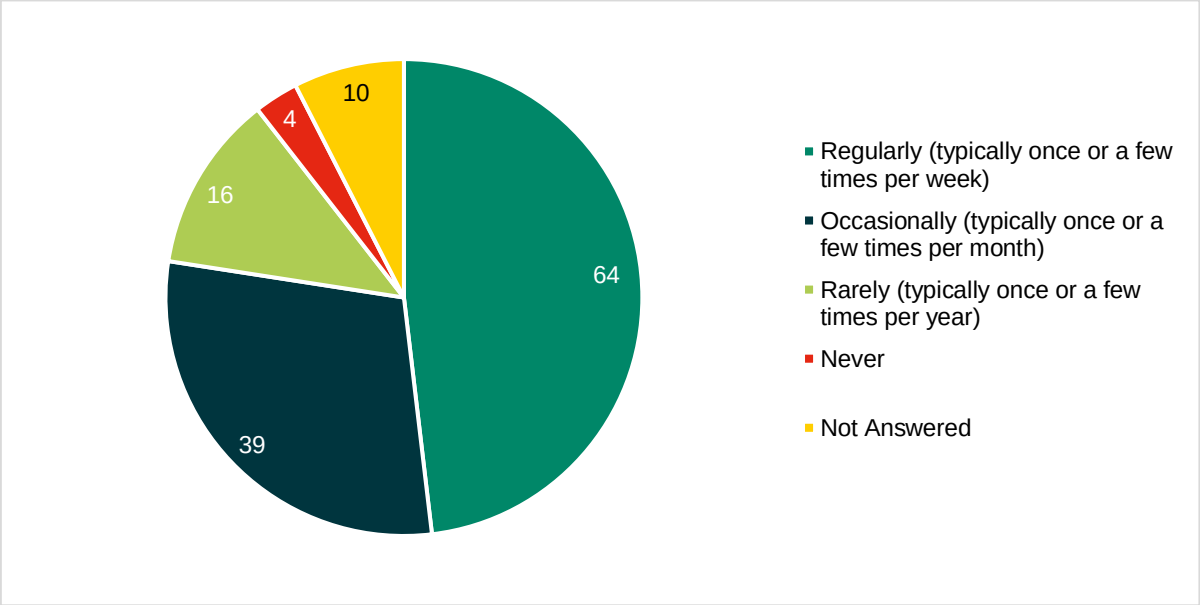


Figure 6.10: Anticipated Use of Murcar to Blackdog Active Travel Link for Leisure Journeys/Exercise

123 (92%) respondents provided an answer to this question. The results show that 119 (89%) respondents would use the Murcar to Blackdog active travel link for leisure journeys or exercise – 64 (48%) regularly; 39 (29%) occasionally; and 16 (12%) rarely. 4 (3%) respondents indicated that they would never use the Murcar to Blackdog active travel link for leisure journeys or exercise.

Other Journey Purposes

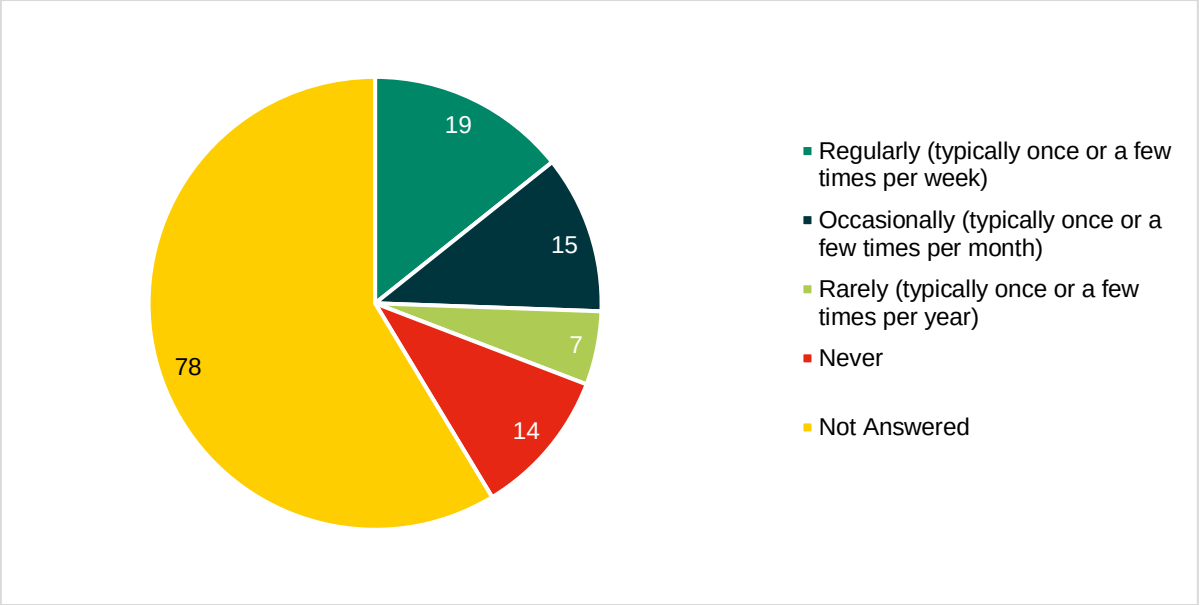


Figure 6.11: Anticipated Use of Murcar to Blackdog Active Travel Link for Other Journey Purposes

55 (41%) respondents provided an answer to this question. The results show that 41 (31%) respondents would use the Murcar to Blackdog active travel link for other journeys – 19 (14%) regularly; 15 (11%) occasionally; and 7 (5%) rarely. 14 (11%) respondents indicated that they would never use the Murcar to Blackdog active travel link for other journeys. Other journeys noted by respondents included shopping, dog walking and journeys to visit family and friends.

6.6.7 Q7. Please provide any further comments on the study

62 (47%) respondents provided additional comments at the end of the survey, with responses categorised into themes as shown in **Figure 6.12**.

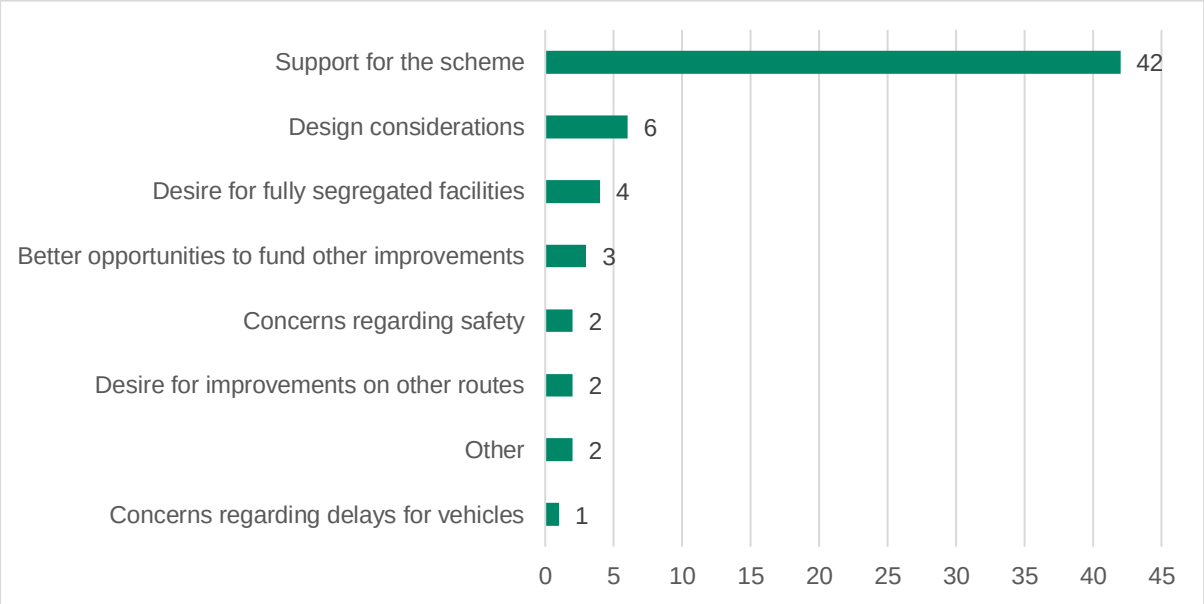


Figure 6.12: Further Comments on the Study

The majority of comments (68%) indicated support for the scheme and expressed a keenness to see its implementation as soon as possible – a selection of comments are provided in **Figure 6.13**. A further 10 comments (16%), whilst indicating support for the scheme, outlined design considerations that should be adhered to as the study progresses or expressed a desire for a fully segregated facility to be implemented, as opposed to a shared facility. Comments provided in opposition to the scheme noted that they would prefer to see funding targeted towards other improvements (5%) or active travel improvements on other routes (3%). 2 respondents (3%) noted concerns regarding safety and one respondent (2%) noted concerns regarding delays for vehicles.

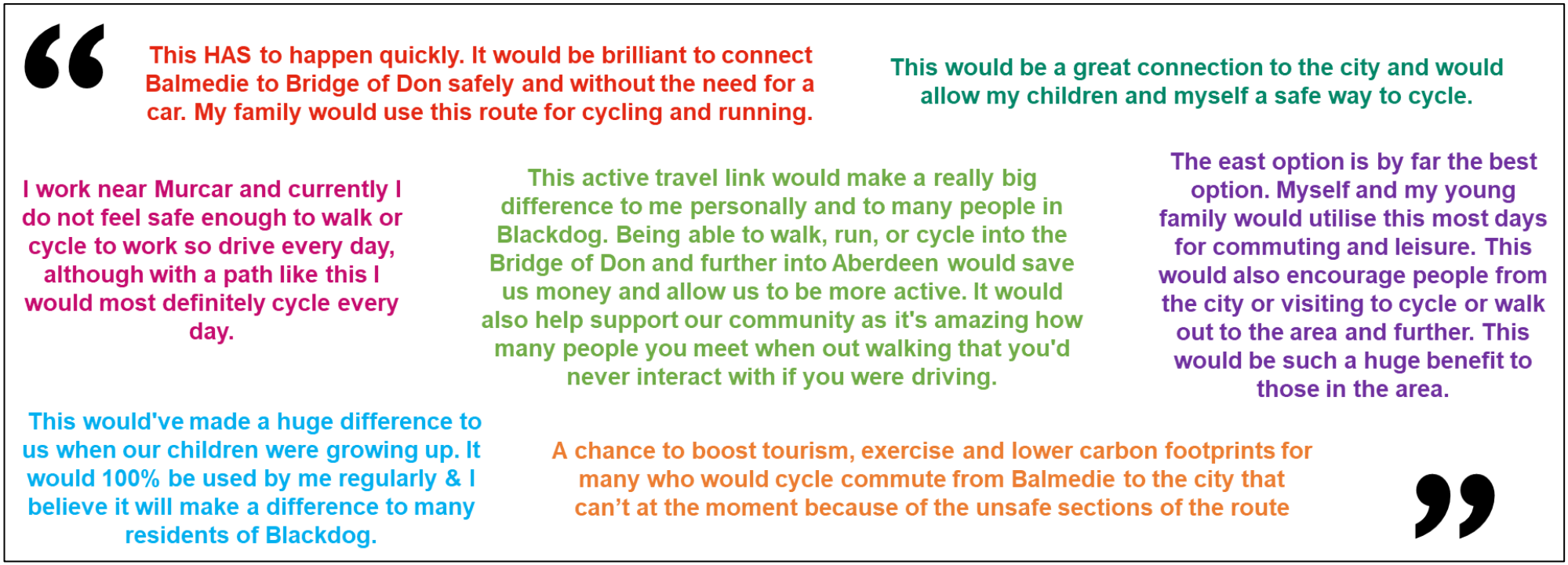


Figure 6.13: Support for Murcar to Blackdog Active Travel Scheme

6.7 Summary

This chapter has provided an overview of the consultation programme associated with the A92 Murcar North Active Travel Infrastructure STAG Study. The results of the online survey indicate significant support for progression of an active travel link between Murcar and Blackdog and 86% of respondents agreed that the east alignment is the preferred option for implementation. The findings from the online survey have been used to inform the appraisal in terms of public acceptability in **Chapter 8**.

7. Option Appraisal Approach

7.1 Overview

In line with STAG, a seven-point scale assessment has been undertaken for each option against the TPO and STAG Criteria. This considers the relative size and scale of the likely impacts, in qualitative terms.

Table 7.1: STAG Seven-Point Scale

Impact	Description
Major positive impact (+3)	These are positive impacts which, depending on the severity of impact, should be a principal consideration when assessing an option.
Moderate positive impact (+2)	The option is anticipated to have a moderate positive impact which, when taken in isolation may not determine the appraisal of an option but would form a key consideration when considered alongside other factors.
Minor positive impact (+1)	The option is anticipated to have a minor positive impact. Minor positive impacts are those which are worth noting but are not likely to contribute materially to determining whether an option is taken forward.
Neutral impact (0)	The option is anticipated to have a neutral impact.
Minor negative impact (-1)	The option is anticipated to have a small negative impact. Small impacts are those which are worth noting but are not likely to contribute materially to determining whether an option is taken forward.
Moderate negative impact (-2)	The option is anticipated to have a moderate negative impact which, when taken in isolation may not determine the appraisal of an option but would form a key consideration when considered alongside other factors.
Major negative impact (-3)	These are negative impacts which, depending on the severity of impact, should be a principal consideration when assessing an option.

7.2 Transport Planning Objective

Each of the three options will be subject to a qualitative appraisal against the study TPO.

Table 7.2: Study TPO

TPO1	By 2030 increase the level of walking by 10% and cycling five-fold from 2027 for all journey types on the Blackdog to Murcar corridor.

7.3 STAG Criteria

Each of the three options will be subject to a qualitative appraisal against each of the STAG Criteria.

Table 7.3: STAG Criteria

STAG Criteria	Description
Environment	The Environment Criterion includes eight sub-criteria, although some may not be relevant to the study area or the options proposed. The Environment sub-criteria are biodiversity and habitats; geology and soils; land use (including agriculture and forestry); water, drainage and flooding; air quality; historic environment; landscape; and noise and vibration.
Climate Change	The Climate Change Criterion comprises three sub criteria: greenhouse gas emissions; vulnerability to the effects of climate change; and potential to adapt to the effects of climate change.
Health, Safety and Wellbeing	The Health, Safety and Wellbeing Criterion comprises five sub-criteria: accidents; security; health outcomes; access to health and wellbeing infrastructure; and visual amenity.
Economy	The Economy Criterion comprises two sub-criteria: Transport Economic Efficiency (TEE) and Wider Economic Impacts (WEIs). TEE covers the benefits ordinarily captured by standard cost-benefit analysis including traffic volumes, journey times, driver frustration, travel time reliability etc. WEIs refer to any economic impacts which are additional to transport user benefits.
Equality and Accessibility	The Equality and Accessibility Criterion comprises five sub-criteria: public transport network coverage; active travel network coverage; comparative access by people group; comparative access by geographic location; and affordability.

7.4 Implementability Criteria

Each of the three options will be assessed in terms of their implementability, covering Feasibility, Affordability and Public Acceptability. The Implementability Criteria have been assessed based on the extent of risk (low, medium and high).

Affordability takes account of the anticipated cost of the option; whilst high-level cost estimates have been provided as part of the option appraisal, further work will be required to develop costs during further stages of option development. Cost estimates and assumptions are set out within **Appendix D**.

Table 7.4: Implementability Criteria

Criteria	Description
Feasibility	The feasibility of construction or implementation and operation of an option and the status of its technology (e.g. proven, prototype, in development, etc.) as well as any cost, timescale or deliverability risks associated with the construction or operation of the option, including consideration of the need for any departure from design standards that may be required.
Affordability	The scale of the financing burden on the promoting authority and other possible funding organisations and the risks associated with these. The level of risk associated with an option's ongoing operating or maintenance costs and its likely operating revenues (if applicable).
Public Acceptability	An assessment of the likely public response to an option, including consideration of the outcomes of consultation thus far.

7.5 Established Policy Objectives

STAG notes the importance of assessing options in terms of their contribution to meeting established Scottish Government policy objectives and highlights the use of the Policy Assessment Framework (PAF) Tool to support this assessment. At the time of writing, the PAF remains outdated and therefore the assessment undertaken has focussed on the alignment of options in terms of supporting key local, regional and national transport policies, notably the NTS2 Strategic Outcomes, Scotland's target for net zero greenhouse gas emissions by 2045 (as per the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019), and the Scottish Government's Climate Change Plan update commitment to reduce car kilometres by 20% by 2030.

7.6 Position in Sustainable Travel and Investment Hierarchies

As part of the appraisal, a statement is provided on where each option sits within the Sustainable Travel Hierarchy and Sustainable Investment Hierarchy, alongside supporting narrative.

7.7 Rationale for Selection or Rejection

Based on the results of each option's performance against the appraisal criteria, a statement is provided to document whether or not the option is recommended to progress to Technical Design.

8. Option Appraisal

8.1 Introduction

This chapter outlines the findings of the appraisal of the route options. As outlined in **Section 5.3**, three options have been developed for appraisal.

8.2 Option Overview

The table below provides an overview of options under consideration as part of the appraisal.

Table 8.1: Option Overview

Option	Description	Estimated Cost[30]
West Option	The west option follows the A92 north of Murcar adjacent to the carriageway on the west side until the Tarbothill Farm Cottages access, where this road can be utilised as a quiet route to continue. Following this, options then exist to cross to the east side to provide connection into Blackdog or continue north to Blackdog Junction.	£3.6m
Central Option	The central option routes along the A92 carriageway via redistribution of carriageway space. Dependent on the alignment, this could tie into Blackdog via a new path link to Hareburn Road or at Blackdog Junction.	£4.9m
East Option	The east option follows the eastern side adjacent to the A92 and around the rear of existing properties to tie into Hareburn Road.	£2.8m

8.3 Transport Planning Objective

The table below outlines the performance of options against the study TPO: *'By 2030, increase the level of walking by 10% and cycling five-fold from 2027 for all journey types on the Blackdog to Murcar corridor'.*

Table 8.2: TPO Appraisal

Option	Score	Commentary
West Option	**+2**	The west option is considered to have a moderate positive impact on the study TPO. Implementation of a dedicated active travel route between Murcar and Blackdog would support an increase in the level of walking and cycling for all journey types. However, the west option would require users to cross over the A92 carriageway adjacent to Hareburn Road or continue north to Blackdog Junction to access residential areas in the east. The crossing of the A92 at Hareburn Road may discourage some potential users due to safety concerns, whilst crossing at Blackdog Junction would not be convenient for those travelling to/from the southern part of Blackdog.
Central Option	**+2**	The central option is considered to have a moderate positive impact on the study TPO. Implementation of a dedicated active travel route between Murcar and Blackdog would support an increase in the level of walking and cycling for all journey types. However, the central option would require users to travel on the A92 carriageway alongside fast moving vehicles. Whilst appropriate segregation and a buffer would be in place, this may act as a barrier for some potential users of the facility, particularly less confident users.
East Option	**+3**	The east option is considered to have a major positive on the study TPO. Implementation of a dedicated active travel route between Murcar and Blackdog would support an increase in the level of walking and cycling for all journey types. This option supports a consistent, direct and safe route and will have a profound positive impact on providing an alternative active travel mode choice to the private vehicle.

[30] The full list of assumptions is set out in **Appendix D**.

8.4 STAG Criteria

The tables below outline the performance of options against the STAG Criteria.

8.4.1 Environment Criteria

The table below outlines the performance of options against the Environment Criteria.

Table 8.3: Environment Criteria Appraisal

Option	Score	Commentary
West Option	**-1**	The west option is considered to have a minor negative impact on the Environment criteria. The west option would require farmland and/or verge space and therefore, could result in detrimental impacts against multiple sub-criteria including biodiversity and habitats and geology and soils while there are ongoing concerns about the potential flood risk area and ecological impacts on the surrounding watercourse. The west option may encourage modal shift from car to active travel, however, it is not anticipated that numbers would be significant enough to result in a notable improvement in air quality or noise pollution. Further appraisal work would be needed to assess the full extent of the environmental impacts associated with this option.
Central Option	**-1**	The central option is considered to have a minor negative impact on the Environment criteria. The central option would require redistribution of the carriageway, including the removal of one lane for general traffic. This would be anticipated to result in some congestion on the route, with associated negative impacts on air quality and noise pollution. In the longer term, the central option may encourage modal shift from car to active travel, however, it is not anticipated that numbers would be significant enough to result in a notable improvement in air quality or noise pollution. Further appraisal work would be needed to assess the full extent of the environmental impacts associated with this option.
East Option	**-1**	The east option is considered to have a minor negative impact on the Environment criteria. The east option would require farmland and/or verge space and therefore, could result in detrimental impacts against multiple sub-criteria including biodiversity and habitats and geology and soils while there are ongoing concerns about the potential flood risk area and ecological impacts on the surrounding watercourse. The east option may encourage modal shift from car to active travel, however, it is not anticipated that numbers would be significant enough to result in a notable improvement in air quality or noise pollution. Further appraisal work would be needed to assess the full extent of the environmental impacts associated with this option.

8.4.2 Climate Change Criteria

The table below outlines the performance of options against the Climate Change Criteria.

Table 8.4: Climate Change Criteria Appraisal

Option	Score	Commentary
West Option	**0**	**Greenhouse Gas Emissions** – The west option is considered to have a minor positive impact on the Greenhouse Gas Emissions sub-criterion as it is expected that improved walking, wheeling and cycling infrastructure would generate a degree of modal shift from car to active travel, thus leading to reduced levels of greenhouse gas emissions. **Vulnerability to the Effects of Climate Change** – The west option is considered to have a minor negative impact on the Vulnerability to the Effects of Climate Change sub-criterion as there are some concerns about flooding within the immediate vicinity of the proposed route which may increase over time as the effects of climate change become more pronounced. **Potential to Adapt to the Effects of Climate Change** – It is not anticipated that the west option would have a significant impact on the Potential to Adapt to the Effects of Climate Change sub-criterion.
Central Option	**-1**	**Greenhouse Gas Emissions** – The central option is considered to have a minor negative impact on the Greenhouse Gas Emissions sub-criterion as it is expected that removal of a lane for general traffic would result in some congestion on the route, thus leading to increased levels of greenhouse gas emissions. Whilst improved walking, wheeling and cycling infrastructure would be expected to generate a degree of modal shift from car to active travel, it is not anticipated that numbers would be significant enough to offset the impact of congestion that would be anticipated. **Vulnerability to the Effects of Climate Change** – The central option is considered to have a minor negative impact on the Vulnerability to the Effects of Climate Change sub-criterion as there are some concerns about flooding within the immediate vicinity of the proposed route which may increase over time as the effects of climate change become more pronounced. **Potential to Adapt to the Effects of Climate Change** – It is not anticipated that the central option would have a significant impact on the Potential to Adapt to the Effects of Climate Change sub-criterion.
East Option	**0**	**Greenhouse Gas Emissions** – The east option is considered to have a minor positive impact on the Greenhouse Gas Emissions sub-criterion as it is expected that improved walking, wheeling and cycling infrastructure would generate a degree of modal shift from car to active travel, thus leading to reduced levels of greenhouse gas emissions. **Vulnerability to the Effects of Climate Change** – The east option is considered to have a minor negative impact on the Vulnerability to the Effects of Climate Change sub-criterion as there are some concerns about flooding within the immediate vicinity of the proposed route which may increase over time as the effects of climate change become more pronounced. **Potential to Adapt to the Effects of Climate Change** – It is not anticipated that the east option would have a significant impact on the Potential to Adapt to the Effects of Climate Change sub-criterion.

8.4.3 Health, Safety and Wellbeing Criteria

The table below outlines the performance of options against the Health, Safety and Wellbeing Criteria.

Table 8.5: Health, Safety and Wellbeing Criteria Appraisal

Option	Score	Commentary
West Option	+1	**Accidents** – The west option is considered to have a minor positive impact on the Accidents sub-criterion. A dedicated active travel route to the west of the A92 with appropriate segregation from vehicular traffic would be a significant improvement on existing provision and would reduce the perceived and actual accident risk for active travel users between Murcar and Blackdog. However, the west option may require users to cross over the A92 carriageway adjacent to Hareburn Road to access residential areas in the east, which could increase the accident risk in this location. An alternative option exists to continue north to Blackdog Junction to cross from west to east, however, this would not be convenient for those travelling to/from the southern part of Blackdog. **Security** – The west option is considered to have a minor negative impact on the Security sub-criterion. There are sections of the west route alignment that are more remote from the carriageway, which could generate some security concerns, particularly for more vulnerable people travelling alone. Furthermore, it is possible that landscaping would be introduced to create a barrier between the active travel route and vehicles on the A92, which could further contribute to the route feeling more remote and lacking in natural surveillance. **Health Outcomes** – The west option is considered to have a moderate positive impact on the Health Outcomes sub-criterion. It could bring both physical and mental health benefits to its users, particularly those who shift from car travel to active travel, with several physical and mental health benefits associated with walking, wheeling and cycling. Active travel connections to work and school can be one of the easiest ways to incorporate activity into a daily routine and supporting children to be more physically active from a young age also increases the likelihood that they will continue to be physically active as adolescents and adults. **Access to Health & Wellbeing Infrastructure** – The west option is considered to have a minor positive impact on the Access to Health & Wellbeing Infrastructure sub-criterion. Provision of a dedicated active travel route would facilitate access to health care facilities in Bridge of Don and the west option would improve access to blue and green infrastructure via active modes, including to Blackdog beach, albeit crossing of the A92 carriageway may be required depending on the alignment. **Visual Amenity** – It is not anticipated that the west option would have a significant impact on the Visual Amenity sub-criterion.
Central Option	+1	**Accidents** – The central option is considered to have a minor positive impact on the Accidents sub-criterion. A dedicated active travel route adjacent to the A92 with appropriate segregation from vehicular traffic would be a significant improvement on existing provision and would reduce the accident risk for active travel users between Murcar and Blackdog. However, the central option would require users to travel on the A92 carriageway alongside fast moving vehicles. Whilst appropriate segregation and a buffer would be in place, some users may perceive there to be an accident risk. **Security** – It is not anticipated that the central option would have a significant impact on the Security sub-criterion. **Health Outcomes** – The central option is considered to have a moderate positive impact on the Health Outcomes sub-criterion. It could bring both physical and mental health benefits to its users, particularly those who shift from car travel to active travel, with several physical and mental health benefits associated with walking, wheeling and cycling. Active travel

Option	Score	Commentary
		connections to work and school can be one of the easiest ways to incorporate activity into a daily routine and supporting children to be more physically active from a young age also increases the likelihood that they will continue to be physically active as adolescents and adults. **Access to Health & Wellbeing Infrastructure** – The central option is considered to have a minor positive impact on the Access to Health & Wellbeing Infrastructure sub-criterion. Provision of a dedicated active travel route would facilitate access to health care facilities in Bridge of Don and the central option would improve access to blue and green infrastructure via active modes, including to Blackdog beach, albeit crossing of the A92 carriageway may be required depending on the alignment. **Visual Amenity** – It is not anticipated that the central option would have a significant impact on the Visual Amenity sub-criterion.
East Option	**+2**	**Accidents** – The east option is considered to have a moderate positive impact on the Accidents sub-criterion. A dedicated active travel route to the east of the A92 with appropriate segregation from vehicular traffic would be a significant improvement on existing provision and would reduce the perceived and actual accident risk for active travel users between Murcar and Blackdog. Whilst the east option would require users to cross the A92 to integrate with the existing shared use path infrastructure at Murcar Roundabout, there is a dedicated crossing point in this location to allow users to do so. **Security** – The east option is considered to have a minor negative impact on the Security sub-criterion. There are sections of the east route alignment that are more remote from the carriageway, which could generate some security concerns, particularly for more vulnerable people travelling alone. Furthermore, it is possible that landscaping would be introduced to create a barrier between the active travel route and vehicles on the A92, which could further contribute to the route feeling more remote and lacking in natural surveillance. **Health Outcomes** – The east option is considered to have a moderate positive impact on the Health Outcomes sub-criterion. It could bring both physical and mental health benefits to its users, particularly those who shift from car travel to active travel, with several physical and mental health benefits associated with walking, wheeling and cycling. Active travel connections to work and school can be one of the easiest ways to incorporate activity into a daily routine and supporting children to be more physically active from a young age also increases the likelihood that they will continue to be physically active as adolescents and adults. **Access to Health & Wellbeing Infrastructure** – The east option is considered to have a moderate positive impact on the Access to Health & Wellbeing Infrastructure sub-criterion. Provision of a dedicated active travel route would facilitate access to health care facilities in Bridge of Don and the east option would improve access to blue and green infrastructure via active modes, including to Blackdog beach. **Visual Amenity** – It is not anticipated that the east option would have a significant impact on the Visual Amenity sub-criterion.

8.4.4 Economy Criteria

The table below outlines the performance of options against the Economy Criteria.

Table 8.6: Economy Criteria Appraisal

Option	Score	Commentary
West Option	**0**	**Transport Economic Efficiency (TEE)** – It is not anticipated that the west option would have a significant impact on the Transport Economic Efficiency sub-criterion. **Wider Economic Impacts** – It is not anticipated that the west option would have a significant impact on the Wider Economic Impacts sub-criterion.
Central Option	**-1**	**Transport Economic Efficiency (TEE)** – The central option is considered to have a minor negative impact on the Transport Economic Efficiency sub-criterion. The central option would require redistribution of the carriageway, including the removal of one lane for general traffic, which could generate some congestion and increase journey times for vehicle users as a result. **Wider Economic Impacts** – It is not anticipated that the central option would have a significant impact on the Wider Economic Impacts sub-criterion.
East Option	**0**	**Transport Economic Efficiency (TEE)** – It is not anticipated that the east option would have a significant impact on the Transport Economic Efficiency sub-criterion. **Wider Economic Impacts** – It is not anticipated that the east option would have a significant impact on the Wider Economic Impacts sub-criterion.

8.4.5 Equality and Accessibility Criteria

The table below outlines the performance of options against the Equality and Accessibility Criteria.

Table 8.7: Equality and Accessibility Criteria Appraisal

Option	Score	Commentary
West Option	**+1**	**Public Transport Network Coverage** – It is not anticipated that the west option would have a significant impact on the Public Transport Network Coverage sub-criterion. **Active Travel Network Coverage** – The west option is considered to have a moderate positive impact on the Active Travel Network Coverage sub-criterion. The west option would significantly improve the level of service for active travel users on the Murcar to Blackdog corridor and would connect to existing shared use path infrastructure south of Murcar. **Comparative Access by People Group** – The west option is considered to have a minor positive impact on the Comparative Access by People Group sub-criterion. Providing a formalised link between Murcar and Blackdog could support journeys to school (e.g. between Blackdog and the secondary schools in Bridge of Don), which would open up opportunities for more young people to travel actively on a regular basis. It would also provide greater opportunity for low income households to reach destinations without the need for a private car. The requirement to cross the A92 at either Blackdog Junction or adjacent to Hareburn Road may discourage some potential users of the facility. **Comparative Access by Geographic Location** – The west option is considered to have a minor positive impact on the Comparative Access by Geographic Location sub-criterion. Providing a formalised link between Murcar and Blackdog would connect key population centres at Blackdog and Cloverhill to the active travel network, enhancing access for residents of these communities. **Affordability** – The west option is considered to have a minor positive impact on the Affordability sub-criterion due to the focus on enabling and facilitating

Option	Score	Commentary
		active travel. As there is no cost payable by the individual, walking and wheeling are the most equitable forms of transport. The cost barrier to cycling is also significantly lower than for private motor vehicles.
Central Option	**+1**	**Public Transport Network Coverage** – It is not anticipated that the central option would have a significant impact on the Public Transport Network Coverage sub-criterion. **Active Travel Network Coverage** – The central option is considered to have a moderate positive impact on the Active Travel Network Coverage sub-criterion. The central option would significantly improve the level of service for active travel users on the Murcar to Blackdog corridor and may connect to existing shared use path infrastructure south of Murcar depending on the alignment. **Comparative Access by People Group** – The central option is considered to have a minor positive impact on the Comparative Access by People Group sub-criterion. Providing a formalised link between Murcar and Blackdog could support journeys to school (e.g. between Blackdog and the secondary schools in Bridge of Don), which would open up opportunities for more young people to travel actively on a regular basis. It would also provide greater opportunity for low income households to reach destinations without the need for a private car. Whilst appropriate segregation and a buffer would be in place, the requirement to travel relatively close to fast moving vehicles may discourage some potential users of the facility. **Comparative Access by Geographic Location** – The central option is considered to have a minor positive impact on the Comparative Access by Geographic Location sub-criterion. Providing a formalised link between Murcar and Blackdog would connect key population centres at Blackdog and Cloverhill to the active travel network, enhancing access for residents of these communities. **Affordability** – The central option is considered to have a minor positive impact on the Affordability sub-criterion due to the focus on enabling and facilitating active travel. As there is no cost payable by the individual, walking and wheeling are the most equitable forms of transport. The cost barrier to cycling is also significantly lower than for private motor vehicles.
East Option	**+2**	**Public Transport Network Coverage** – It is not anticipated that the east option would have a significant impact on the Public Transport Network Coverage sub-criterion. **Active Travel Network Coverage** – The east option is considered to have a major positive impact on the Active Travel Network Coverage sub-criterion. The east option would significantly improve the level of service for active travel users on the Murcar to Blackdog corridor and would connect to residential areas to the east of the A92, providing enhanced opportunities for people to travel by active means to access employment, education, leisure facilities and other trip attractors in the south. **Comparative Access by People Group** – The east option is considered to have a moderate positive impact on the Comparative Access by People Group sub-criterion. Providing a formalised link between Murcar and Blackdog could support journeys to school (e.g. between Blackdog and the secondary schools in Bridge of Don), which would open up opportunities for more young people to travel actively on a regular basis. It would also provide greater opportunity for low income households to reach destinations without the need for a private car. The east option would provide a direct link to the key population centres at Blackdog and Cloverhill. Whilst it would require users to cross the A92 to integrate with existing shared use path infrastructure at Murcar Roundabout, there is a dedicated crossing point in this location to allow users to do so.

Option	Score	Commentary
		Comparative Access by Geographic Location – The east option is considered to have a minor positive impact on the Comparative Access by Geographic Location sub-criterion. Providing a formalised link between Murcar and Blackdog would connect key population centres at Blackdog and Cloverhill to the active travel network, enhancing access for residents of these communities. **Affordability** – The east option is considered to have a minor positive impact on the Affordability sub-criterion due to the focus on enabling and facilitating active travel. As there is no cost payable by the individual, walking and wheeling are the most equitable forms of transport. The cost barrier to cycling is also significantly lower than for private motor vehicles.

8.5 Implementability

The tables below outline the performance of options against the Implementability Criteria.

8.5.1 Feasibility

The table below outlines the performance of options against the Feasibility Criterion.

Table 8.8: Feasibility Criterion Appraisal

Option	Score	Commentary
West	**-3**	The west option is considered to have a major negative impact on the Feasibility Criterion. Delivery of this option would require third party land. Discussions with landowners would be required to understand the full risks to deliverability of a western alignment option, including the potential requirement for compulsory purchase orders. Sections of the route have considerable level differences between the existing carriageway and adjacent fields, which may affect constructability and increase land requirements subject to earthworks or alternative routeing. This is particularly relevant in proximity to Murcar Roundabout and Blackdog Junction. Should additional land not be attainable, Departures from Standard may be required to deliver a western active travel facility.
Central	**-2**	The central option is considered to have a moderate negative impact on the Feasibility Criterion. Whilst third party land would not be required for delivery of this option, redistribution of the carriageway would be required, which increases the feasibility risk due to the scale of construction works that would be required. Furthermore, delivery of this option would require removal of a lane for general traffic, which could cause traffic congestion on the corridor. Departures from Standard may need to be considered at pinch points along the route. These primarily exist where the new infrastructure would tie in at the northern and southern extents and would vary based on the chosen alignment.
East	**-2**	The east option is considered to have a moderate negative impact on the Feasibility Criterion. Delivery of this option would require third party land. Initial landowner discussions have intimated that third party ownership may not preclude deliverability of this option. However, further discussions are required as the design process moves forward as confirmation of ownership in the south of the study area is still pending and this may raise feasibility risks that are unclear at this time. Sections of the route have level differences between the existing carriageway and adjacent fields, which may affect constructability and increase land requirements subject to earthworks or alternative routeing.

Option	Score	Commentary
		Should additional land not be attainable, Departures from Standard may be required to deliver an eastern active travel facility.

8.5.2 Affordability

The table below outlines the performance of options against the Affordability Criterion.

Table 8.9: Affordability Criterion Appraisal

Option	Score	Commentary
West	**-2**	The west option is considered to have a moderate negative impact on the Affordability Criterion. The requirement for third party land, earthworks, and risk to existing utilities may increase overall capital cost requirements (currently estimated at £3.6m). The use of Tarbothill Farm Cottages Road will support mitigation of capital investment. Level differences in proximity to Murcar Roundabout and Blackdog Junction are considerable and as such, will require extensive earthworks or a retaining wall to deliver active travel facilities which will increase capital investment costs. The existing utility searches conducted to date have focussed on the east side of the corridor based on the previous work undertaken. This has shown gas and high voltage electricity assets crossing the carriageway. There may be a risk to utilities in proximity to the proposed works however this requires further investigation. Should any diversions be required this will increase capital costs. External funding may be available for the next project stages subject to the funding application process.
Central	**-2**	The central option is considered to have a moderate negative impact on the Affordability Criterion. Capital costs for this option are expected to be high (currently estimated at £4.9m) due to carriageway reconfiguration works alongside the active travel facility. Potential earthwork requirements at the northern and southern extents may increase capital costs dependent on whether a north or south carriageway lane is to be reallocated to active travel. The existing utility searches conducted to date have focussed on the east side of the corridor based on the previous works alignment. This has shown gas and high voltage electricity assets crossing the carriageway. There may be a risk to utilities in proximity to the proposed works however this requires further investigation. Should any diversions be required this will increase capital costs. External funding may be available for the next project stages subject to the funding application process. Removal of a lane shows a strong commitment to modal shift and the Sustainable Travel Hierarchy which would support the case for funding.
East	**-1**	The east option is considered to have a minor negative impact on the Affordability Criterion. The requirement for third party land, earthworks, and risk to existing utilities may increase overall capital cost requirements (currently estimated at £2.8m). The use of the previous A90, existing road network at Blackdog and the existing active travel path from Hareburn Terrace to Blackdog Junction will support mitigation of capital investment. The existing gas main pipe in proximity to the proposed works requires further investigation, however, should a diversion be required this will increase capital costs. External funding may be available for the next project stages subject to the funding application process.

8.5.3 Public Acceptability

The table below outlines the performance of options against the Public Acceptability Criterion.

Table 8.10: Public Acceptability Criterion Appraisal

Option	Score	Commentary
West	+1	The west option is considered to have a minor positive impact on the Public Acceptability Criterion. Results from the online survey undertaken in October 2023 found that the vast majority of respondents (92%) indicated support for the development of an active travel link between Murcar and Blackdog. Whilst only 4% indicated a preference for the west option over the eastern alignment, it is anticipated that a western alignment would still be supported as it would provide a considerable improvement on existing facilities for active travel between Murcar and Blackdog. The requirement to cross the A92 adjacent to Hareburn Road or to continue north to Blackdog Junction to access Blackdog may generate some public acceptability concerns.
Central	-3	The central option is considered to have a major negative impact on the Public Acceptability Criterion due to the loss of a lane for general traffic that would be required for delivery of this option. The loss of a vehicular lane may lead to congestion and delays for general traffic, which is likely to lead to driver frustration. Furthermore, the requirement to travel relatively close to fast moving vehicles may generate some public acceptability concerns. No respondents indicated a preference for the central option as part of the online survey undertaken in October 2023.
East	+2	The east option is considered to have a moderate positive impact on the Public Acceptability Criterion. Results from the online survey undertaken in October 2023 found that the vast majority of respondents (92%) indicated support for the development of an active travel link between Murcar and Blackdog and 86% of respondents agreed that the east alignment is the preferred option for implementation. Furthermore, 86% of respondents noted that implementation of the east option would make them more likely to travel actively between Murcar and Blackdog.

8.6 Established Policy Objectives

All options would align with the following areas of local, regional and national policy:

- **Local Transport Strategies** – the Aberdeenshire Local Transport Strategy (2012) and Aberdeen City Local Transport Strategy (2016-2021) aim to reduce non-sustainable journeys, increase the modal share of active travel and make travel more effective.
- **Nestrans Regional Transport Strategy 2040** – all options would support a number of the key priorities contained in the RTS 2040 including reduced carbon emissions to support net zero; a step change in public transport and active travel enabling a 50:50 mode split; and zero fatalities on the road network.
- **Nestrans Active Travel Action Plan** – all options would support the vision of the AcTrAP (2014-2035) to create an environment in which walking and cycling are convenient, safe, comfortable, healthy and attractive travel choices for everyday journeys by providing dedicated active travel infrastructure alongside the A92 between Murcar and Blackdog.
- **National Transport Strategy** – all options would support the vision of the NTS2 for a sustainable, inclusive, safe and accessible transport system which helps to deliver a healthier, fairer and more prosperous Scotland for communities, businesses and visitors. The NTS2 also 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. Furthermore, the NTS Delivery Plan 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. By encouraging an increase in active travel use along the corridor, this option is therefore anticipated to positively contribute to these policy directives.
- **STPR2** – all options align closely with the active travel recommendations emerging from STPR2, focussing on providing active travel routes that connect residential areas to key trip attractors and nearby communities.

- **Climate Change (Emissions Reduction Targets) (Scotland) Act 2019** – this option would support Scotland's target for net zero greenhouse gas emissions by 2045 by encouraging an increase in active travel use along the corridor.

8.7 Position in Sustainable Travel and Investment Hierarchies

Table 8.11: Option Position in Sustainable Travel and Investment Hierarchies

Hierarchy	Commentary
Sustainable Travel Hierarchy	All options are focussed on providing active travel infrastructure between Murcar and Blackdog and therefore sit at the top of the Sustainable Travel Hierarchy.
Sustainable Investment Hierarchy	All options would reduce the need to travel unsustainably, and therefore sit at the top of the Sustainable Investment Hierarchy.

8.8 Rationale for Selection or Rejection

Table 8.12: Rationale for Selection or Rejection of Options

Option	Recommendation	Rationale
West	**Reject**	Based on the appraisal, it is not recommended that the west option is progressed to Technical Design. Whilst this option supports delivery of the study TPO and STAG Criteria to an extent, the west option would require users to cross over the A92 carriageway adjacent to Hareburn Road or continue north to Blackdog Junction to access residential areas in the east. The crossing of the A92 at Hareburn Road may discourage some potential users due to safety concerns, whilst crossing at Blackdog Junction would not be convenient for those travelling to/from the southern part of Blackdog.
Central	**Reject**	Based on the appraisal, it is not recommended that the central option is progressed to Technical Design. Whilst this option supports delivery of the study TPO and STAG Criteria to an extent, the central option would require users to travel on the A92 carriageway alongside fast moving vehicles. Whilst appropriate segregation and a buffer would be in place, this may act as a barrier for some potential users of the facility, particularly less confident users. Furthermore, there are significant public acceptability risks with this option associated with the loss of a lane for general traffic. This may lead to congestion and delays for general traffic, which is likely to lead to driver frustration. No respondents indicated a preference for the central option as part of the online survey undertaken in October 2023.
East	**Select**	Based on the appraisal, it is recommended that the east option is progressed to Technical Design. This option is considered to fully support the study TPO, supporting an increase in the level of walking and cycling for all journey types. It also performs well against the STAG Criteria, particularly in terms of Health, Safety and Wellbeing and Equality and Accessibility. Furthermore, this option is associated with the least Feasibility and Affordability risks and it received widespread support as part of the consultation undertaken in October 2023.

8.9 Appraisal Summary

The table below provides a summary of the appraisal of the three route options for the Murcar to Blackdog corridor.

Table 8.13: Appraisal Summary

	West Option	Central Option	East Option
Transport Planning Objective			
TPO1	+2	+2	+3
STAG Criteria			
Environment Criteria			
Biodiversity and Habitats	-1	0	-1
Geology and Soils	-1	0	-1
Land Use	-1	0	-1
Water, Draining & Flooding	-1	0	-1
Air Quality	0	-1	0
Historic Environment	0	0	0
Landscape	0	0	0
Noise and Vibration	0	-1	0
Climate Change Criteria			
Greenhouse Gas Emissions	+1	-1	+1
Vulnerability to the Effects of Climate Change	-1	-1	-1
Potential to Adapt to the Effects of Climate Change	0	0	0
Health, Safety and Wellbeing Criteria			
Accidents	+1	+1	+2
Security	-1	0	-1
Health Outcomes	+2	+2	+2
Access to Health and Wellbeing Infrastructure	+1	+1	+2
Visual Amenity	0	0	0
Economy Criteria			
Transport Economic Efficiency	0	-1	0
Wider Economic Benefits	0	0	0
Equality and Accessibility Criteria			
Public Transport Network Coverage	0	0	0
Active Travel Network Coverage	+2	+2	+3
Comparative Access by People Group	+1	+1	+2
Comparative Access by Geographic Location	+1	+1	+1
Affordability	+1	+1	+1
Deliverability Criteria			
Feasibility	-3	-2	-2
Affordability	-2	-2	-1
Public Acceptability	+1	-3	+2

9. Option Design

9.1 Introduction

Based on the appraisal undertaken above, the east option was selected to be taken forward to Developed Design. Option Design drawings are included as **Appendix B**. This includes the design risk register.

9.2 Infrastructure Provision

The proposed provision for this scheme has been identified as a shared footway / cycle track to support people walking, wheeling and cycling along the route.

9.2.1 Active Travel Facility Type

Whilst shared and segregated footways and cycle tracks were considered during the concept design stage; shared provision has been progressed to the developed design stage to create a coherent network in line with the shared facilities already in place at the northern and southern extents of the scheme.

It is noted that shared facilities can create greater risks of conflict between users due to the lack of segregation however this risk is lowered given the anticipated volume of users of the scheme.

Shared facilities create a flexible space for all user types and have a reduced maintenance requirement in comparison to segregated facilities.

9.2.2 Cross Section Summary

Proposed designs have been produced to Cycling by Design standard as summarised in the table below.

Table 9.1 Cycling by Design Width Requirements

Infrastructure Type	Required Widths	
Shared Footway / Cycle Track	Desirable Minimum	4.0m
	Absolute Minimum	2.5m
Footway	Desirable Minimum	2.0m
	Absolute Minimum	1.5m
Buffer	30mph	0.5m
	40mph	1.0m
	70mph	3.5m

The diagram below outlines a cross section of the proposed shared footway and cycle track.

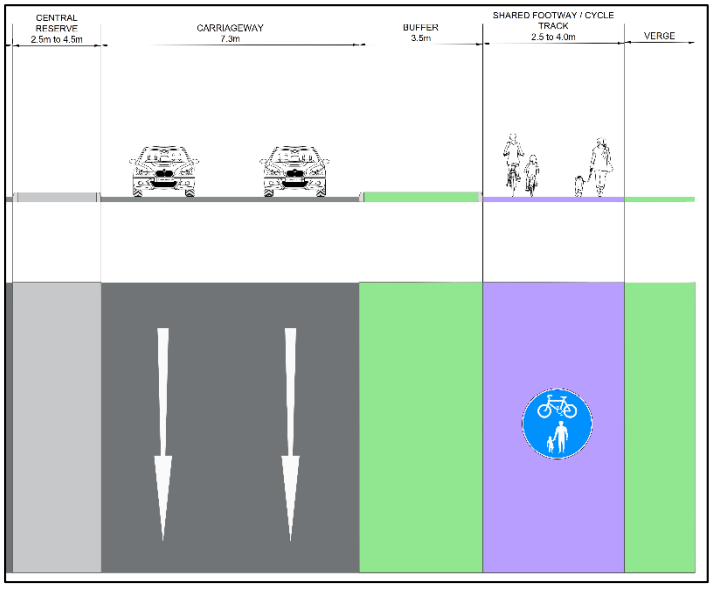


Figure 9.1 Shared Footway / Cycle Track Cross Section

For the majority of the route, the desirable minimum widths are achievable however where space is limited this has been reduced to the absolute minimum for short sections. For example, on approach to Murcar Roundabout, widths become constrained which requires the footway width to be reduced to absolute minimum; an alternative option exists to utilise the existing road network to the east to access Berryhill Crescent.

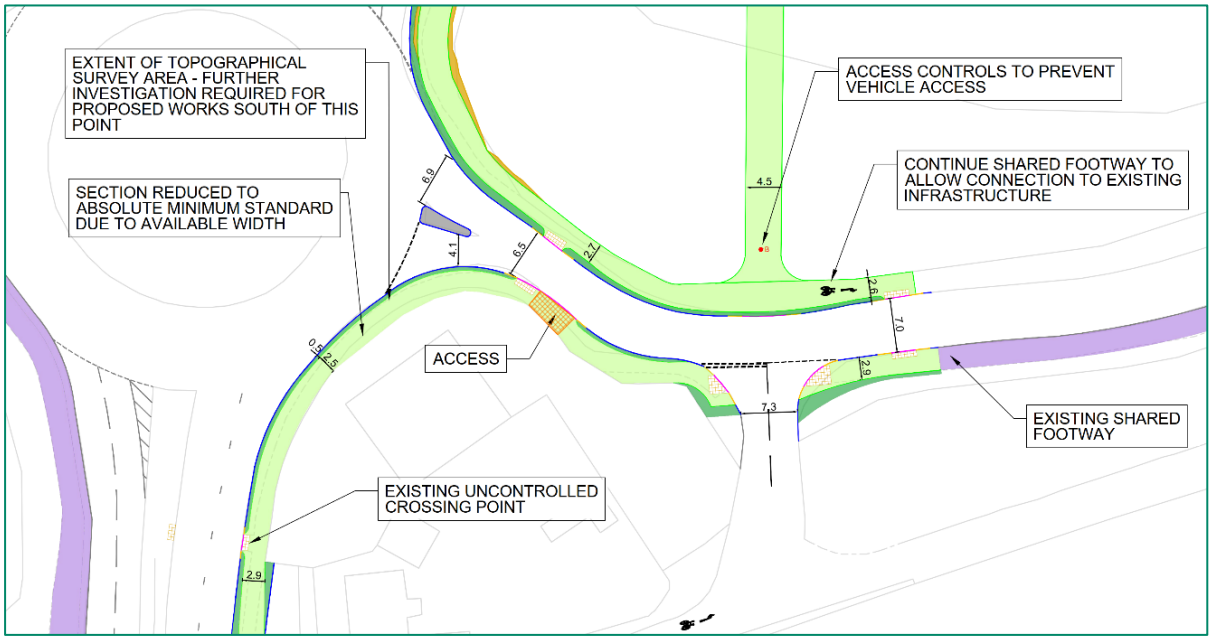


Figure 9.2: Berryhill Crescent Proposals

9.3 Design Considerations

The design has taken into account feedback from the client group, stakeholders and the public to ensure it would best meet the needs of the local community. Further design work will be required as the proposals progress into technical design – this will include consideration of value engineering opportunities.

9.3.1 Surveys

Topography

A topographical survey was previously undertaken which has been utilised as part of the design process. As sections of the proposals are outwith the survey extents, an update will be required to support the design in the next stages.

Utilities

A utility search was previously undertaken and identified utilities have been marked on the general arrangement drawings. Similar to the topographical survey, some of the proposals are outwith the search extents and therefore require further investigation. BT cables, foul water pipes, gas pipes, high voltage cables, mains water pipes and surface water pipes have all been identified in proximity to the proposals. As noted in the constraints above, a gas pipe runs through much of the site, the depth of which is required to be determined during technical design to understand any potential requirements for diversions. As the design progresses into the next stage, engagement with asset owners will need to be undertaken through the C3 and C4 process.

9.3.2 Land Ownership

Land ownership engagement was undertaken as part of the consultation exercise which facilitated initial engagement with Tarbothill Farm who own a large proportion of the land that will be required for the proposals to be constructed.

There are areas where the land owner has not been able to be contacted to date, including between Murcar Roundabout and Elm and Ash Cottages. To enable the designs to progress, the landowner of this plot will need to be engaged. Correspondence was issued based on the address detailed in the Title Sheet obtained from ScotLIS, however, it is recognised that the address of the landowner may have changed since the purchase of the land and therefore requires further investigation.

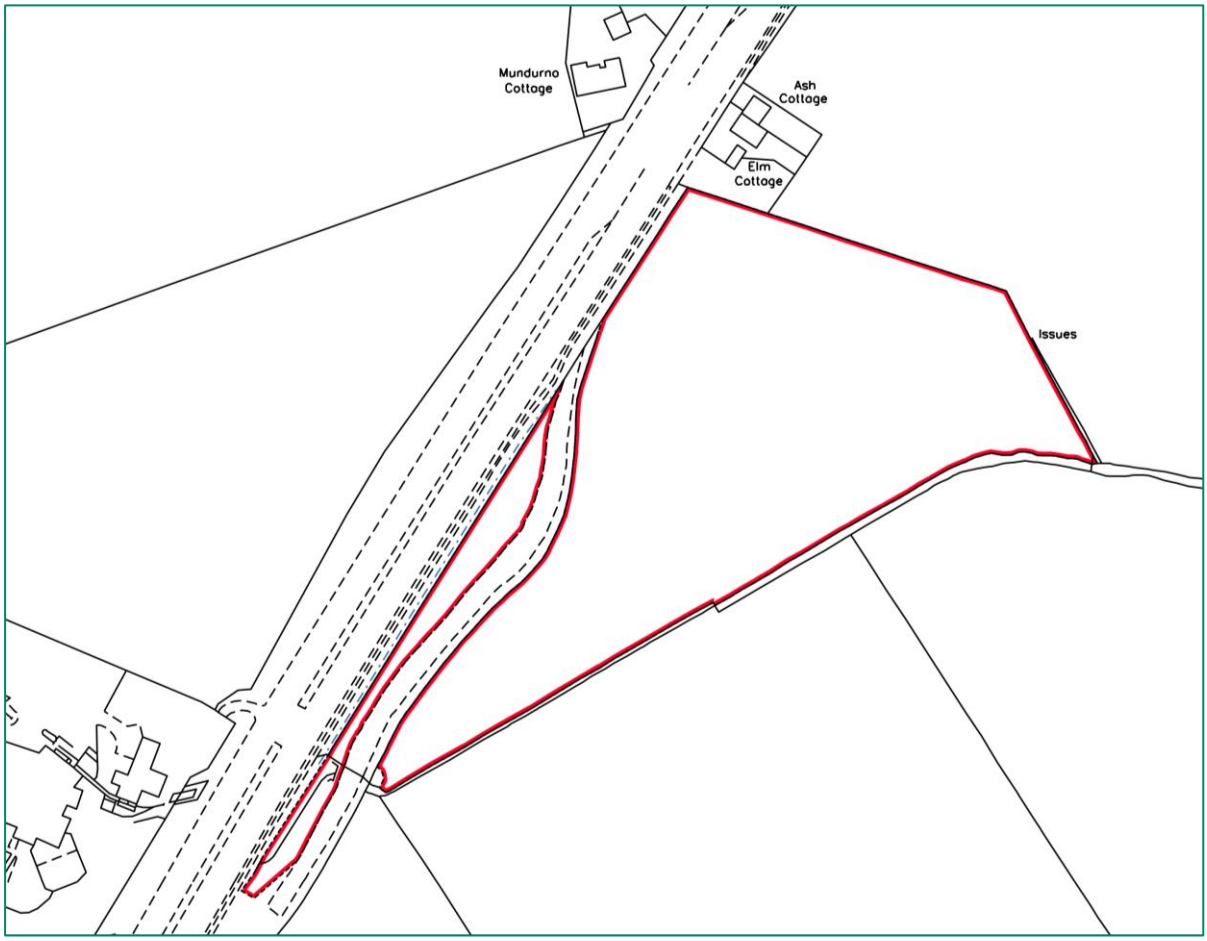


Figure 9.3 Title Plan ABN41512

Should the option of the path link direct from Berryhill Crescent be adopted as part of the final design, consultation will also be required with the affected landowner which has currently been identified as Berryhill Farm. Initial correspondence has been sent to confirm land ownership and as notification of the consultation launch.

9.3.3 Lighting

The study area currently has sections which are lit and unlit along the route primarily at the northern and southern extents. The path recently constructed to the north of the study area includes street lighting to support users.

Due to the rural nature of the route, a lack of lighting provision would likely reduce uptake due to personal security concerns particularly during the winter months when daylight hours are reduced.

The proposed alignment diverts away from the main carriageway and is set back at least 3.5m from the carriageway edge for the majority of the route. This includes the path alignment to the rear of Elm and Ash Cottages. Traditional lighting columns may interact with overhead cables based on this proposal and may not be desirable to adjacent property and landowners. Lighting is still to be discussed with the affected landowners to ensure the proposed design best meets their requirements – this should be undertaken during the technical design process.

As there is not existing lighting for the majority of the route, installation of lighting columns and ducts will be an additional capital cost and maintenance burden going forward.

Alternative lighting options away from traditional street lighting columns could be adopted such as low-level lighting, solar powered lighting or surface mounted lighting. Options such as this can reduce impact on neighbouring properties and dependent on the type chosen, could also reduce capital / maintenance costs.

9.3.4 Drainage

Existing drainage provision consists of filter drains along the length of the carriageway. The creation of additional hard spaces will increase the volume of surface water run-off draining to the existing highway drainage system. The buffer space proposed will provide the opportunity to provide additional storage and / or attenuation capacity for the surface water run-off associated with both the carriageway and proposed active travel facilities, i.e. by providing an increase in capacity of the existing filter drain.

At this stage, it is not anticipated that the requirements will change significantly due to the proposed designs. Cognisance will also be taken of the drainage requirements of any affected landowner.

9.3.5 Ecology & Landscaping

Ecological and landscape impacts require assessment to ensure any potential negative impacts are mitigated for the proposed design.

An ecological review will be required prior to construction to understand any possible impacts of introducing the proposed shared footway facility. The proposals will affect the existing verge space which takes the form of grass primarily, with sections of trees and hedgerow which may form habitats for some species.

The proposed buffer / verge space identified as part of the design provides the opportunity to support the maintenance and improvement of biodiversity in the area alongside drainage and mitigation of road noise for active travel users.

To the north of Murcar Roundabout where the path diverges away from the carriageway, to avoid impacts on the culvert and utilise the old road, it is recommended that the existing vegetation be retained as far as possible to avoid any negative impacts.

North of Ash and Elm Cottages the active travel facility is typically set 3.5m away from the carriageway and will require regrading, therefore impacts on the existing vegetation are more likely. Planting of trees and / or hedgerow plants will support the reduction of road noise and re-establish habitats that may have been lost as part of the construction works.

9.3.6 Geotechnical

Geotechnical and Geo-environmental factors will require further consideration to understand the existing site conditions. This will require desk study and a ground investigation to be undertaken.

It will be necessary to carry out a Geotechnical and Geo-Environmental Desk Study to gather and assess geotechnical and geo-environmental data for the site. This will summarise anticipated ground conditions, site history including historical contaminative land use and identify any site sensitivities within the area, potential current and historical contamination sources and any issues that could potentially introduce constraints to the proposals. An Envirocheck or Groundsure Report should be purchased to inform the desk study. This would be used to produce a preliminary Conceptual Site Model (CSM) for the route in addition to informing any requirements for intrusive ground investigation and sampling exercises.

Intrusive ground investigation will be required to investigate the existing geotechnical and geo-environmental conditions along the proposed route. This will be necessary to inform the detailed design including formation conditions, embankment widening, suitability of re-use of site won material, inform the likely waste classification for any material required for off-site disposal and to investigate any potential contamination sources identified within the desk study review. Ground investigation should be undertaken in accordance with the recommendations of Eurocode 7 and the ICE UK Specification for Ground Investigation, 3rd Edition.

It is anticipated that several trial pits and slit trenches will be required to investigate formation conditions and potential for material re-use across the scheme, for example at the location of the existing bund adjacent to the A92 where excavation of material will be required to form the shared path. Geotechnical and geo-environmental testing would be required to assess material characteristics and determine suitability for re-use within the scheme or any requirements for removal of material off-site.

Where widening of the existing A92 embankment is required locally, it is anticipated that boreholes at the crest and toe of the existing embankment will be required to inform the geotechnical design of the embankment widening including stability and settlement assessments. These would investigate the nature of the existing embankment fill material and the underlying natural deposits. It is noted that peat layers are recorded within historical boreholes to the north of the embankment widening location and the potential presence of peat should be investigated at the widening location. Geotechnical in-situ and laboratory testing will be required to determine characteristics of material for design.

If peat or soft soils are recorded as present at the location of proposed widening of the A92 embankment this would present geotechnical design challenges. In addition, Transport Scotland should be consulted to determine if Geotechnical Certification of the scheme is required in accordance with CD 622 Managing Geotechnical Risk.

9.3.7 Structures

The proposed path alignment will utilise the existing bridge structure to cross the watercourse which leads to the culvert located between Murcar Roundabout and Ash and Elm Cottages. This bridge has been out of use for a number of years and currently has vegetation growth across its deck. A Bridge Assessment is proposed to be undertaken to assess the structural integrity of the bridge and to confirm suitability for active travel use.

An assessment should be undertaken in accordance with CS 454 Assessment of Highway Bridges and Structures. This will investigate the existing form, geometry and condition of the structure. The results of this assessment will feed into the design of the path and identify any concerns which will require remediation or alterations to alignment.

10. Conclusions and Next Steps

10.1 Introduction

This report has assessed three options that were developed for the A92 Murcar North Active Travel Infrastructure Study. In line with STAG, it has considered the performance of options against the TPO developed for the study and the STAG Criteria. It has also considered the performance of options against Feasibility, Affordability and Public Acceptability and the fit of options against Established Policy Objectives.

This report has included consideration of the following options:

- West option – from Murcar Roundabout, the route follows the western side adjacent to the A92 and then alongside Tarbothill Farm Cottages. Options then exist to cross to the east side to provide connection into Blackdog or continue north to Blackdog Junction.
- Central option – routes along the A92 carriageway via redistribution of carriageway space. Dependent on the alignment, this could tie into Blackdog via a new path link to Hareburn Road or at Blackdog Junction.
- East option – From Murcar Roundabout, the route follows the eastern side adjacent to the A92 and around the rear of existing properties to tie into Hareburn Road.

10.2 Appraisal Outcomes

The appraisal of options indicates that the east option should be taken forward for Technical Design. It is considered that this option fully supports the study TPO to increase the level of walking and cycling for all journey types on the Murcar to Blackdog corridor. It additionally performs well against the STAG Criteria and received the greatest support as part of the public consultation undertaken in October 2023. Early landowner engagement has also expressed a willingness for collaboration with ACC to enable the scheme to progress. Continued engagement between the Council and landowner will be key going forward.

10.3 Next Steps

This study has produced a developed design general arrangement for the east option alignment. Next steps to progress this to construction include the production of a technical design tender pack; further engagement with affected landowners on the proposed design; undertaking of a topographical survey for missing sections; undertaking the necessary geotechnical studies and investigations; undertaking the required bridge assessment and engagement with utility asset owners.

Appendix A – Design Widths Technical Note

Design Widths Technical Note

Client name	Project name	Date	Project number
Aberdeen City Council	A92 Murcar North Study	8th August 2023 (Update)	60710073

Prepared by	Checked by	Verified by	Approved by
John Thomson	Fiona Bebbington	Peter Leslie	Andrew Robb

Introduction & Existing Conditions

This Technical Note on Design Widths has been prepared to inform the development option design for the A92 Murcar North study. This note summarises the outcomes of the design guidance and standards review for shared footway / cycle track and segregated walking and cycling infrastructure. The study area for this commission follows the A92 from the Murcar Roundabout (in Aberdeen City) to Blackdog (at the Aberdeenshire boundary) and will consider connections into wider infrastructure including existing and proposed developments.

The current study corridor is a dual carriageway subject to the national speed limit (70mph). There is an existing footway running along part of the eastern side however this is particularly narrow with no vertical difference from the carriageway.

Based on OS map data, the existing carriageway width is approximately 9.3m accounting for 3.65m lanes and 1.0m hard strip on either side of the carriageway. The footway in place from Murcar Roundabout to the Tarbothill Farm Cottages access road is approximately 1.2m with a 0.9m – 1.0m filter drain acting as a buffer. However, this can feel narrower due to the presence of Vehicle Restraint Barriers (VRS) overgrown vegetation and the speed of passing traffic.

Figure 1 Existing Footway Condition - VRS

Figure 2 Existing Footway Condition - Overgrown Vegetation

Design Guidance

Design Guidance applicable for walking, wheeling, and cycling infrastructure includes:

- Design Manual for Roads and Bridges (DMRB)[1];
- Roads for All[2];
- Cycling by Design (2021)[3];
- National Roads Development Guide[4];
- Designing Streets[5]; and
- Inclusive Mobility[6].

DMRB

The DMRB provides design guidance for development of the trunk road network in the UK. The section of the A92 between Murcar Roundabout and Blackdog was de-trunked following the introduction of the Aberdeen Western Peripheral Route (AWPR). However, as the section was formally trunk road alongside the current layout and speed limit of 70mph, consideration of the DMRB has been taken as part of the design development.

CD109 'Highway Link Design' and CD127 'Cross Sections and Headrooms' specifies that for a single two-lane carriageway, traffic lanes should be between 3.0m and 3.65m. For dual two-lane all-purpose roads, lane widths should be 3.65m.

CD143 'Designing for walking, cycling and horse-riding' states for Scotland that Roads for All and Cycling by Design shall be used for the design of routes and facilities for walking, cycling and shared use. It also noted that separation from the carriageway on roads with a speed limit greater than 40mph should be a minimum of 1.5m.

Key Findings
Traffic Lanes should be 3.65m for dual carriageways
Any active travel path should be at least 1.5m from the carriageway edge

It states the minimum footway width should be 2.0m in normal circumstances to allow two wheelchair users to pass one another. Where constrained environments exist an absolute minimum of 1.5m may be used without the requirement of a Departure from Standard.

Shared walking and cycling routes can create conflict between different user groups – as such these should be limited in areas where the flow of cyclists and / or pedestrians is low. Shared surfaces can pose a threat to vulnerable road users, including those with physical, sensory or cognitive impairments.

Key Findings
Footway widths should be minimum 2.0m
Shared Footways / Cycle Tracks should only be used where expected flows are low

Cycling by Design

Cycling by Design provides guidance for permanent active travel infrastructure design on all roads, streets and paths in Scotland. This Guidance defines the 'desirable minimum' and 'absolute minimum' widths for various cycling facilities. The Cycling by Design footway and cycle track width requirements for different cycle track types are outlined in **Table 2**.

[1] Standards For Highways
[2] Roads for all - Good practice guide for roads | Transport Scotland
[3] Cycling by Design | Transport Scotland
[4] National Roads Development Guide (scotsnet.org.uk)
[5] Designing Streets: A Policy Statement for Scotland - gov.scot (www.gov.scot)
[6] Inclusive Mobility. A Guide to Best Practice on Access to Pedestrian and Transport Infrastructure (publishing.service.gov.uk)

A buffer is required when a cycle track is adjacent to the carriageway. The required width varies dependent on the speed limit of the carriageway as shown in **Table 1**.

Table 1 - Cycling by Design Buffer Widths

Speed Limit	Minimum Buffer Width
30 mph	0.50 m
40 mph	1.00 m
50 mph	2.00 m (including any hard strip)
60 mph	2.50 m (including any hard strip)
70 mph	3.50 m (including any hard strip)

Table 2 - Cycling by Design Cycle Track Widths

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

Key Findings

Cycle Tracks Shared with Pedestrians require 2.5m to 4.0m path width

Active travel facilities should be 3.5m away from the carriageway edge if adjacent to 70mph carriageway

Designing Streets & National Roads Development Guide

Designing Streets was developed for the Scottish Government and provides technical guidance on designing streets. The National Roads Development Guide supports the Designing Streets document.

Within the documents it is noted that carriageways in the UK have adopted a standard lane width of 3.65m. However, this should not be preferred in all circumstances. However, on routes subject to national speed limits, 3.65m lanes should be used, and the layout should meet the standards in DMRB.

Both documents reference LTN 2/08 'Cycle Infrastructure Design' which has now been superseded by LTN 1/20 and has been included in the Summary Table (see **Table 3** below) for reference. LTN 1/20 however was produced to cover England and Northern Ireland and therefore is not applicable in Scotland. Cycling by Design (2021) was published after LTN 1/20 and should be the standards adopted in Scotland.

Key Findings
National speed limit roads should adopt standards in DMRB
Cycling by Design should be adopted for active travel facilities

Inclusive Mobility

Inclusive Mobility from the Department for Transport provides guidance specific to removing barriers for disabled people to support equitable access and inclusive design.

This document highlights the required footway widths for people with a mobility or visual impairment. A footway width of 2.0m is recommended, allowing two wheelchair users to pass each other. Where physical constraints exist, a minimum width of 1.5m should be provided to allow a wheelchair user and a walker to pass each other. This width also provides suitable space for people who use crutches or a walking frame or walk with an assistance dog or guide.

Key Findings
Footway widths should be minimum 2.0m

Table 3 - Design Guidance Summary

Design Guidance	Roads for All		Cycling by Design (2021)		DMRB	Designing Streets	Roads Development Guide	LTN 1/20		Inclusive Mobility	
Required Widths	**Absolute Minimum**	**Desirable Minimum**	**Absolute Minimum**	**Desirable Minimum**				**Absolute Minimum**	**Desirable Minimum**	**Absolute Minimum**	**Desirable Minimum**
Traffic Lane			3.0 - 3.25		3.0 - 3.65	3.0	3.0 - 3.65	3.0	3.2		
Footway	1.5	2.0	1.5	2.0	See Roads for All / Cycling by Design	1.5 - 2.0	2.0 - 3.0	1.5	2.0	1.5	2.0
Cycle Track (With-Flow)			1.5	2.0		See LTN 1/20	See LTN 1/20			1.5	2.0
Cycle Track (Two-Way)			2.0	3.0						See LTN 1/20	
Separation Buffer (40mph)			1.0		1.5 / See Cycling by Design			0.5	1.0		
Separation Buffer (50mph)			2.0					1.5	2.0		
Separation Buffer (60mph)			2.5					2.0	2.5		
Separation Buffer (70mph)			3.5					3.0	3.5		
Shared Footway	Not Recommended except in case of expected low user volumes.		2.5	4.0	See Roads for All / Cycling by Design			3.0	4.5	See LTN 1/20	

Appendix B – Option Designs

ISO A1 594mm x 841mm
Approved: PL
Checked: LG
Designer: FB
Project Management Initials:

KEY:

- PROPOSED SHARED FOOTWAY - FULL CONSTRUCTION
- PROPOSED SHARED FOOTWAY - RESURFACING
- EXISTING SHARED FOOTWAY
- PROPOSED FOOTWAY
- PROPOSED BUFFER / LANDSCAPING
- PROPOSED EARTHWORKS (1:2 SLOPE)
- EXISTING FOOTWAY
- EXISTING ACCESS TO BE RETAINED
- PROPOSED CATTLE GRID
- PROPOSED ROAD MARKINGS WHITE
- PROPOSED ROAD MARKINGS YELLOW
- EXISTING ROAD MARKINGS
- PROPOSED ROAD KERB
- PROPOSED TRANSITION KERB
- PROPOSED DROPPED KERB
- PROPOSED KASSEL KERB
- B PROPOSED BOLLARD
- PROPOSED BUFF BLISTER TACTILES
- PROPOSED CORDUROY HAZARD WARNING TACTILES
- EXISTING VRS TO BE RETAINED
- PROPOSED NEW FENCELINE
- EXISTING WALL TO BE RETAINED

EXTENT OF TOPOGRAPHICAL SURVEY AREA - FURTHER INVESTIGATION REQUIRED FOR PROPOSED WORKS SOUTH OF THIS POINT

ACCESS CONTROLS TO PREVENT VEHICLE ACCESS

CONTINUE SHARED FOOTWAY TO ALLOW CONNECTION TO EXISTING INFRASTRUCTURE

SECTION REDUCED TO ABSOLUTE MINIMUM STANDARD DUE TO AVAILABLE WIDTH

ACCESS

SHEET 1 VIEWPORT 2

EXISTING UNCONTROLLED CROSSING POINT

DROPPED KERBS PROVIDED TO REAR OF SHARED PATH TO ALLOW CYCLISTS TO TRAVEL ON CARRIAGEWAY TO THE EAST.

BUS STOP

BUS SHELTER MAY BE UPGRADED AS PART OF PROPOSED WORKS. SHELTER LOCATION TO BE RETAINED TO ENSURE 2m WAITING ARE TO FRONT OF SHELTER AND MINIMUM 2.5m SHARED PATH WIDTH TO THE REAR.

FIELD ACCESS TO BE RETAINED

LEVELS TO BE CONFIRMED

EXISTING VRS TO BE RETAINED WITH MINIMUM 1.0m CLEAR PATH BEHIND

EXISTING FIELD ACCESS TO BE RETAINED

EXISTING VARIABLE MESSAGE SIGN - HEIGHT CLEARANCE TO BE CONFIRMED

NEW FOOTWAY TO TIE INTO RECENTLY CONSTRUCTED SHARED FOOTWAY AS PART OF THE CLOVERHILL DEVELOPMENT

INDUSTRIAL ESTATE EXISTING ACTIVE TRAVEL LINK (INDICATIVE ALIGNMENT)

EXISTING STAGGERED TOUCAN CROSSING

ELLON ROAD

SCHEME EXTENTS

Scale 0 1 2 4 8m

Original Size (A1) 1:100 @ A1 1:200 @ A3

KEY:

- PROPOSED SHARED FOOTWAY - FULL CONSTRUCTION
- PROPOSED SHARED FOOTWAY - RESURFACING
- EXISTING SHARED FOOTWAY
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- PROPOSED BUFF BLISTER TACTILES
- PROPOSED CORDUROY HAZARD WARNING TACTILES
- EXISTING VRS TO BE RETAINED
- PROPOSED NEW FENCELINE
- EXISTING WALL TO BE RETAINED

SHEET 2 VIEWPORT 1

EXISTING PATH TO BE BROKEN UP AND REPLACED BY VERGE

PATH DIVERTS AWAY FROM CARRIAGEWAY TO AVOID IMPACT ON CULVERT

LAND OWNERSHIP TO BE CONFIRMED

OPTION TO PROVIDE A DIRECT ROUTE THROUGH EXSITING FIELDS TO AVOID PINCH POINTS.

LAND OWNERSHIP TO BE CONFIRMED AND TOPOGRAPHICAL SURVEY TO BE COMPLETED

EXTENT OF TOPOGRAPHICAL SURVEY AREA - FURTHER INVESTIGATION REQUIRED FOR PROPOSED WORKS SOUTH OF THIS POINT

ACCESS CONTROLS TO PREVENT VEHICLE ACCESS

CONTINUE SHARED FOOTWAY TO ALLOW CONNECTION TO EXISTING INFRASTRUCTURE

SECTION REDUCED TO ABSOLUTE MINIMUM STANDARD DUE TO AVAILABLE WIDTH

ACCESS

SHEET 1 VIEWPORT 1

UNCONTROLLED CROSSING POINT

EXISTING SHARED FOOTWAY

Scale 0 1 2 4 8m

Original Size (A1) 1:100 @ A1 1:200 @ A3

AECOM

PROJECT

A92 MURCAR NORTH

CLIENT

ABERDEEN CITY COUNCIL

CONSULTANT

AECOM
177 Bothwell Street
GLASGOW, G2 7ER
+44 (0) 141 248 0300 tel
www.aecom.com

NOTES

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ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	24/11/2023	First Issue

KEY PLAN

PROJECT NUMBER

60710073

SHEET TITLE

A92 Murcar North
East Option - Developed Design
Sheet 1 of 6

SHEET NUMBER

60710073-SHT-C-DD-EAST-0001

Filename: Y:\60710073_A92_MURCAR_NORTH\900_CAD_GIS\910_CAD\SHEETS\60710073-SHT-C-DD-EAST.DWG
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ISO A1 594mm x 841mm

Approved: PL

Checked: LG

Designer: FB

Project Management Initials:

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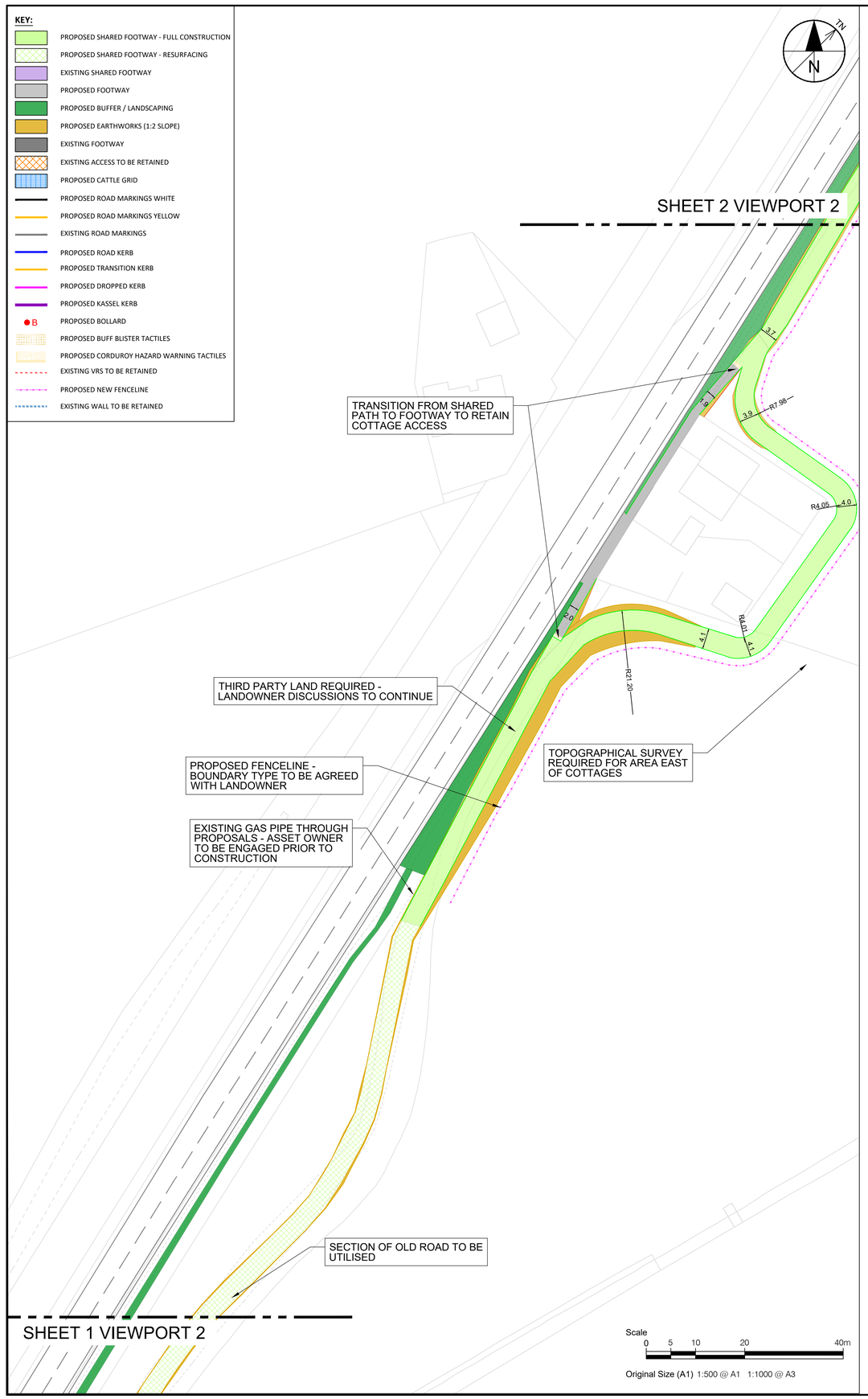

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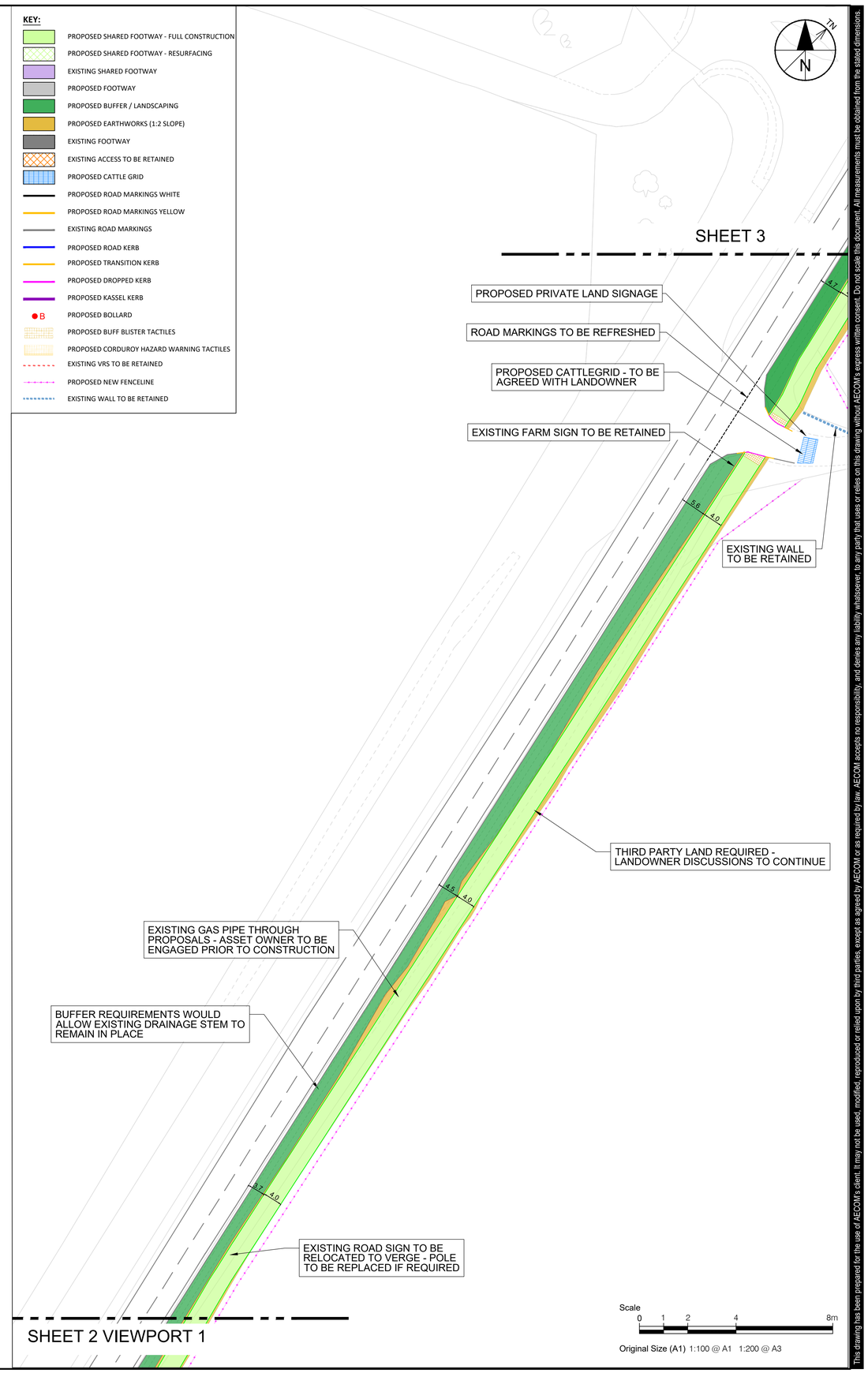

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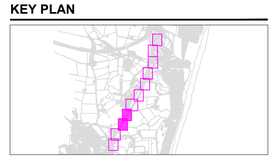

PROJECT NUMBER

60710073

SHEET TITLE

A92 Murcar North
East Option - Developed Design
Sheet 2 of 6

SHEET NUMBER

60710073-SHT-C-DD-EAST-0002

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Approved: PL

Checked: LG

Designer: FB

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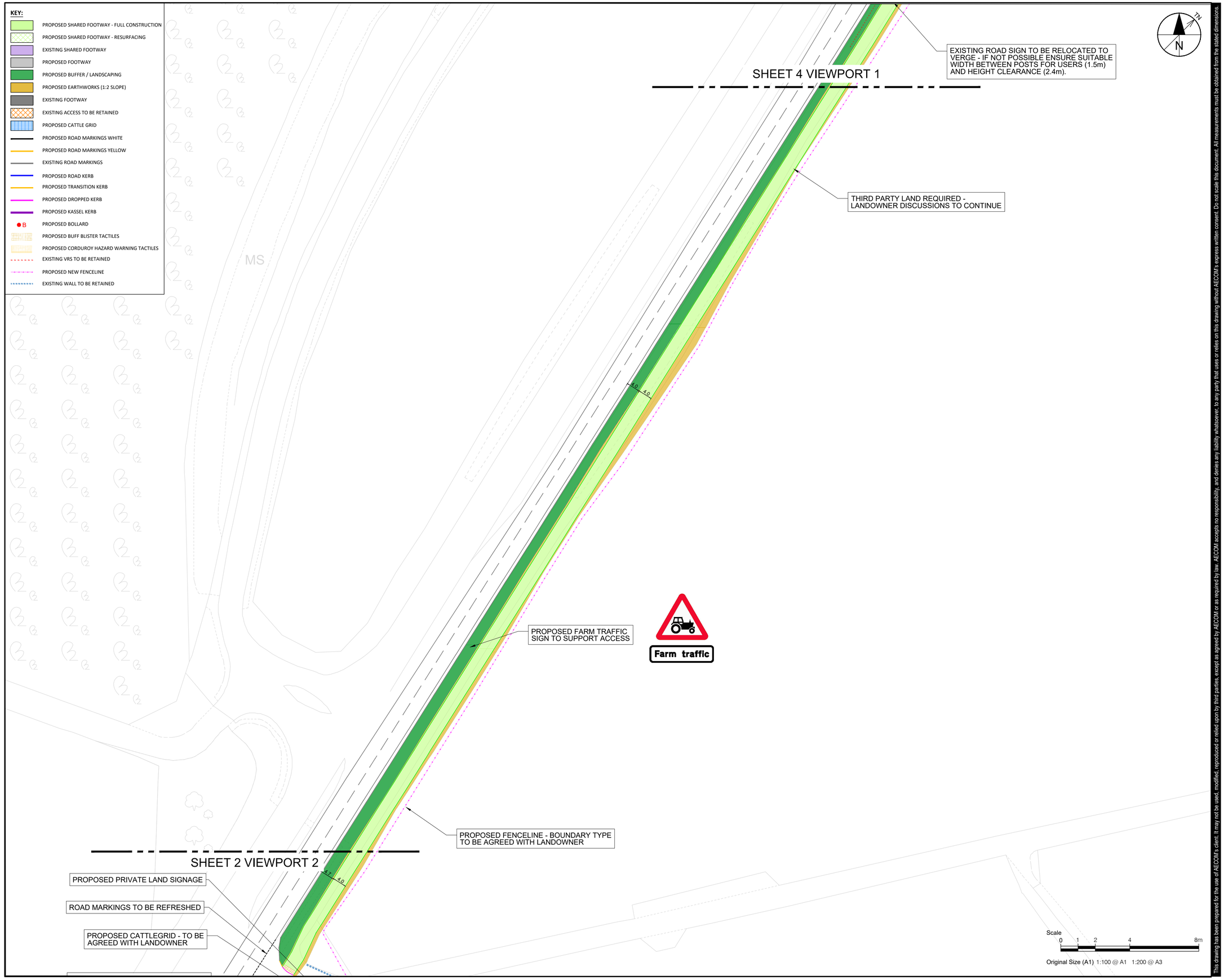

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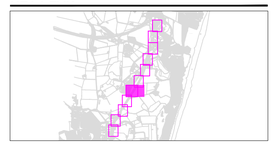

PROJECT NUMBER

60710073

SHEET TITLE

A92 Murcar North
East Option - Developed Design
Sheet 3 of 6

SHEET NUMBER

60710073-SHT-C-DD-EAST-0003

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Designer: FB

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SHEET 4 VIEWPORT 2

EXISTING ROAD SIGN TO RETAINED

POTENTIAL TO INTRODUCE PEDESTRIAN CROSSING WARNING SIGN

Pedestrians crossing

EXISTING ROAD SIGN TO BE RELOCATED TO VERGE

EXISTING VRS TO BE RETAINED

EXISTING ROAD SIGN TO BE RELOCATED TO VERGE - IF NOT POSSIBLE ENSURE SUITABLE WIDTH BETWEEN POSTS FOR USERS (1.5m) AND HEIGHT CLEARANCE (2.4m).

SHEET 3

Scale 0 5 10 20 40m

Original Size (A1) 1:500 @ A1 1:1000 @ A3

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SHEET 5 VIEWPORT 1

CARRIAGE BE REDUC SUPPORT

CYCLISTS TO REJOIN CARRIAGEWAY

BUS STOP

OPPORTUNITY TO CONSIDER LOCALISED BUS STOP IMPROVEMENTS

NEW PATH CONSTRUCTION TO FOLLOW EXISTING DESIRE LINE

UTILITY ASSET OWNERS TO BE ENGAGED WITH PRIOR TO CONSTRUCTION

CYCLISTS TO DISMOUNT

EXISTING CROSSING POINT

EXISTING BUS STOP LAYBY TO BE RETAINED - ROAD MARKINGS REFRESHED

OPPORTUNITY TO ENHANCE BUS STOP FACILITIES E.G. BUS SHELTER. FOOTWAY TO BE WIDENED AS NEEDED TO ALLOW SUITABLE WIDTH TO BE RETAINED TO FRONT AND REAR OF BUS SHELTER.

SHEET 4 VIEWPORT 1

Scale 0 1 2 4 8m

Original Size (A1) 1:100 @ A1 1:200 @ A3

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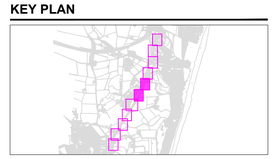

PROJECT NUMBER

60710073

SHEET TITLE

A92 Murcar North
East Option - Developed Design
Sheet 4 of 6

SHEET NUMBER

60710073-SHT-C-DD-EAST-0004

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Checked: LG

Designer: FB

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SHEET 5 VIEWPORT 2

PROPOSED CONTINUOUS FOOTWAY OVER ACCESS TO BALANCING POND

EXTENT OF TOPOGRAPHICAL SURVEY AREA - FURTHER INVESTIGATION REQUIRED FOR PROPOSED WORKS NORTH OF THIS POINT

POTENTIAL TO INTRODUCE PEDESTRIAN CROSSING WARNING SIGN

Pedestrians crossing

2.0 7.0

FOOTWAY PROPOSED TO BE CONSTRUCTED IN EXISTING GREENSPACE

SHEET 4 VIEWPORT 2

CARRIAGEWAY SPEED LIMIT PROPOSED TO BE REDUCED FROM NATIONAL TO 30mph TO SUPPORT ON ROAD CYCLING

Scale 0 5 10 20 40m

Original Size (A1) 1:500 @ A1 1:1000 @ A3

SHEET 6 VIEWPORT 1

2.4

CONNECTION TO EXISTING PATH

EXISTING UTILITY CABINET

2.0 0.5 1.5 6.8

ACCESS CONTROL TO BE AGREED WITH THE LOCAL COMMUNITY

EXISTING FOOTWAY TO BE WIDENED TO SUPPORT SHARED USE

Balancing Pond

NEW FOOTWAY PROPOSED IN EXISTING GREENSPACE

2.0 4.8

NEW CROSSING POINT

2.0 6.4

NEW SPEED LIMIT SIGNAGE

SHEET 5 VIEWPORT 1

Scale 0 1 2 4 8m

Original Size (A1) 1:100 @ A1 1:200 @ A3

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60710073

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A92 Murcar North
East Option - Developed Design
Sheet 5 of 6

SHEET NUMBER

60710073-SHT-C-DD-EAST-0005

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SHEET 6 VIEWPORT 2

SHEET 5 VIEWPORT 2

2.4

CONNECTION TO EXISTING PATH

Scale
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Original Size (A1) 1:500 @ A1 1:1000 @ A3

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TN

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SCHEME EXTENTS

OPPORTUNITY TO UPGRADE EXISTING PEDESTRIAN CROSSING TO A TOUCAN CROSSING

SHEET 6 VIEWPORT 1

Scale
0 1 2 4 8m

Original Size (A1) 1:100 @ A1 1:200 @ A3

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A92 Murcar North
East Option - Developed Design
Sheet 6 of 6

SHEET NUMBER

60710073-SHT-C-DD-EAST-0006

Filename: Y:\60710073_A92_MURCAR_NORTH\900_CAD_GIS\910_CAD\SHEETS\60710073-SHT-C-DD-EAST.DWG
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Design Risk Management Tool

Print Summary | Spell Check

Project Name	A92 Murcar North
Brief Project Description	Developed Design of active travel improvements between Murcar Roundabout and Blackdog
Project Number	60710073
Issue Number	2
Change Description	

Technical and Quality Review Record				
	Originator	Checker	Lead Verifier	Approver
Name:	Fiona Bebbington	Leanne Gordon	Peter Leslie	Andrew Robb
Signature				
Date:	19/12/2023	19/12/2023	19/12/2023	19/12/2023

Distribution Record		
Revision	1	2
Date Issued	24/11/2023	20/12/2023
Issued to	ACC	ACC

Item Identification					Step 2 - Hazard / Risk Identification				Step 3 - Pre - Mitigation Assessment			Step 4 - Mitigation		Step 5 - Post - Mitigation Assessment			Step 6 - Post Mitigation Owner and Close	
Item Ref	Pre Mitigation Owner Discipline	Feature / Element / Location	Client or Other H&S Information	Project Stage	Significant Design Hazards	Optional Additional Information to Describe Significant Design Hazard or Activity	Design Risks	Environment / Persons at Risk	Severity	Probability	Pre-mitigation Risk score	Risk Mitigation Design Input	Residual Design Risk	Severity	Probability	Residual Risk Score	Post Mitigation Risk Owner	Comments
FIXED	FIXED	SET FOR EACH PROJECT	FREE TEXT	FIXED	FIXED	FREE TEXT	FIXED	FIXED	FIXED	FIXED	AUTOMATIC	FREE TEXT	FIXED	FIXED	FIXED	AUTOMATIC	FIXED	FREE TEXT
1	Civil Engineer	OS Mapping	OS Mapping provided by emapsite contractor link	Investigation Construction Works	Constructability / De-constructability	Although a topographical survey has been completed sections within the proposals are outwith the study extents. Therefore inaccuracies may occur in the design.	Other	Infrastructure	4 - Critical	2 - Remote	8	Topographical survey to be commissioned for the areas outwith the existing survey extents to inform the next stages of design.	Other	3 - Major	1 - Improbable	3	Civil Engineer	
2	Civil Engineer	Topographical Survey	Client provided existing Topographical Survey	Investigation Construction Works	Constructability / De-constructability	A topographical survey was completed by others. This was completed several years ago therefore risks associated in accuracy of the information	Other	Infrastructure	3 - Major	2 - Remote	6	Topographical survey to be checked for accuracy to ensure information is still valid	Other	2 - Moderate	1 - Improbable	2	Civil Engineer	
3	Civil Engineer	Land Ownership	Landownership information provided by Client and Scot LIS	Investigation Construction Works	Constructability / De-constructability	Land required for the proposals is in ownership of third parties and therefore requiring agreement and purchase of the land for works to proceed	Other	Infrastructure	4 - Critical	4 - Probable	16	Landowners to be engaged early and regularly updated about the design to allow input into the process. If agreement cannot be met, consideration to be given to design alterations of CPO issued	Other	3 - Major	3 - Occasional	9	Client	
4	Civil Engineer	Existing Services / Utilities	Utility locations provided by Client	Construction	Services / release of energy	Risk of impact to existing services during construction of the proposed scheme.	Other	Construction Worker	4 - Critical	4 - Probable	16	Utility search to be updated prior to construction works and asset owners to be engaged with through C4 process to identify where any diversions are required.	Other	3 - Major	2 - Remote	6	Civil Engineer	
5	Civil Engineer	Ecological		Investigation Construction Works	Environment	Risk of disruption to biodiversity and habitats	Flora / fauna	Environment	3 - Major	4 - Probable	12	Ecological Assessment to be undertaken prior to works to understand any potential impacts. Opportunity to encompass enhancements to biodiversity within proposals	Flora / fauna	3 - Major	3 - Occasional	9	Civil Engineer	
6	Civil Engineer	Ecological		Construction	Environment	Risk of commitation of nearby water course during construction	Groundwater	Environment	2 - Moderate	4 - Probable	8	Proposed works and storage of materials to be kept at a suitable distance from water course during construction activities	Groundwater	2 - Moderate	3 - Occasional	6	Contractor	
7	Civil Engineer	Construction works adjacent to live road		Construction	Access and Egress	Risks associated with working adjacent to national speed limit road during construction	Impact from a vehicle	Construction Worker	4 - Critical	4 - Probable	16	Traffic management to be developed to ensure safety of all construction workers throughout duration of the works.	Impact from a vehicle	4 - Critical	2 - Remote	8	Contractor	
8	Civil Engineer	Working in proximity to bus stops		Construction	Access and Egress	Bus stops exist along the route where there may be limited alternative options for temporary provision. May result in members of the public in proximity to works to access or reroute to access alternative provision.	Other	Public	2 - Moderate	5 - Frequent	10	Wherever possible access to the bus stops should be maintained for members of the public. Should the bus stop need to be closed temporary bus stop should be provided at a suitable location.	Other	2 - Moderate	3 - Occasional	6	Contractor	
9	Civil Engineer	Drainage		Operation	Water	Increase in hard surfaces will increase the volume of run off entering the drainage system which may not be able to support the additional flows. This may result in an increase in surface water on the A92 carriageway creating a hazard for users.	Flooding	Environment, Public	3 - Major	3 - Occasional	9	Drainage assessment should be completed on the proposed design to asses if any drainage enhancements are required. Design changes could encompass Suds based measures to avoid significant drainage works.	Flooding	3 - Major	2 - Remote	6	Civil Engineer	
10	Civil Engineer	Working in proximity to local residents		Construction	Access and Egress	Residents will require access to their properties throughout the construction period.	Slips, trips and falls	Public	3 - Major	3 - Occasional	9	Construction plan and traffic management should ensure access routes are maintained for residents of the local area and works are fenced off to prevent pedestrians walking into live construction works	Slips, trips and falls	2 - Moderate	3 - Occasional	6	Contractor	
11	Civil Engineer	Bridge Structure		Operation	Structural	The proposed alignment will utilise the existing bridge structure over the watercourse leading to the culvert on the east side of the A92. Risk of bridge being unsuitable for purpose due to being out of use for a number of years.	Instability/Collapse of structure	Public, Construction Worker, Operation and Maintenance Worker	4 - Critical	2 - Remote	8	Structural assessment of bridge to be undertaken to assess suitability for proposed loads.	Instability/Collapse of structure	3 - Major	1 - Improbable	3	Civil Engineer	
12	Civil Engineer	Temporary Traffic management		Construction	Access and Egress	Temporary Traffic Management may not be suitable resulting in conflict between road users and construction activities.	Slips, trips and falls	Public	3 - Major	3 - Occasional	9	Construction plan and traffic management should ensure access routes are maintained for residents of the local area and suitable where appropriate for on / adjacent to the A92	Slips, trips and falls	2 - Moderate	3 - Occasional	6	Contractor	
13	Civil Engineer	Shared Footway		Operation	Access and Egress	Shared footways can create a risk of conflict between users	Impact	Public	2 - Moderate	3 - Occasional	6	Shared footway to be design in accordance with Cycling by Design and ensure forward visibility is suitable to prevent potential conflicts. Tactile paving should be provided at areas where the route changes from footway to shared.	Impact	2 - Moderate	2 - Remote	4	Civil Engineer	

Design Risk Management Tool

Item Identification					Step 2 - Hazard / Risk Identification				Step 3 - Pre - Mitigation Assessment			Step 4 - Mitigation		Step 5 - Post - Mitigation Assessment			Step 6 - Post Mitigation Owner and Close	
Item Ref	Pre Mitigation Owner Discipline	Feature / Element / Location	Client or Other H&S Information	Project Stage	Significant Design Hazards	Optional Additional Information to Describe Significant Design Hazard or Activity	Design Risks	Environment / Persons at Risk	Severity	Probability	Pre-mitigation Risk score	Risk Mitigation Design Input	Residual Design Risk	Severity	Probability	Residual Risk Score	Post Mitigation Risk Owner	Comments
FIXED	FIXED	SET FOR EACH PROJECT	FREE TEXT	FIXED	FIXED	FREE TEXT	FIXED	FIXED	FIXED	FIXED	AUTOMATIC	FREE TEXT	FIXED	FIXED	FIXED	AUTOMATIC	FIXED	FREE TEXT
14	Civil Engineer	Conflicts at farm access road	Landowners indicated existing issues at the farm access road in accessing the A92 and members of the public travelling onto their land.	Operation	Access and Egress	Existing issues at the Tarbothill Farm access have been identified by the landowner. Including vehicle access onto the A92 and members of the public coming into contact with farm vehicles. Risks may be increased with an increase in active travel users over the junction.	Impact from a vehicle	Public	3 - Major	3 - Occasional	9	Farm access design to take into account risks noted by landowner and engage at the next stages of design to ensure suitability.	Impact from a vehicle	2 - Moderate	2 - Remote	4	Civil Engineer	
15	Civil Engineer	Working with Hot Materials		Construction	Hazardous substances	During construction workers will be required to work with hot materials to construct proposed path.	Chemical damage/burns	Construction Worker, Operation and Maintenance Worker	3 - Major	3 - Occasional	9	Task Hazard Assessment to be completed to prior to task being undertaken and insure all appropriate PPE is provided	Chemical damage/burns	2 - Moderate	2 - Remote	4	Contractor	
16	Civil Engineer	Manual Labour		Construction	Manual handling / Posture	Manual handling during construction of materials and equipment.	Other	Construction Worker, Operation and Maintenance Worker	2 - Moderate	3 - Occasional	6	Task Hazard Assessment to be completed to prior to task being undertaken and insure all appropriate PPE is provided	Other	2 - Moderate	2 - Remote	4	Contractor	
17	Civil Engineer	Operation of Work		Operation	Other	Conflicts between users during operation of the scheme	Slips, trips and falls	Public	2 - Moderate	3 - Occasional	6	Road Safety Audit to be undertaken prior and post construction to ensure design suitability.	Other	2 - Moderate	2 - Remote	4	Client	
18	Civil Engineer	Manual Labour		Construction	Hazardous substances	Silica Dust from Cutting Concrete, Concrete Kerbs and Asphalt	Chemical damage/burns	Construction Worker, Operation and Maintenance Worker	2 - Moderate	3 - Occasional	6	Task Hazard Assessment to be completed to prior to task being undertaken and insure all appropriate PPE is provided	Other	2 - Moderate	2 - Remote	4	Contractor	
19	Civil Engineer	Manual Labour		Construction	Exposure high noise volumes	Exposure to noise from machinery for long period can result in hearing damage	Hearing damage	Construction Worker, Operation and Maintenance Worker	2 - Moderate	3 - Occasional	6	Task Hazard Assessment to be completed to prior to task being undertaken and insure all appropriate PPE is provided	Hearing damage	2 - Moderate	2 - Remote	4	Contractor	
20	Civil Engineer	Geotechnical		Investigation Construction Works	Constructability / De-constructability	Ground conditions are still required to be established there is a potential risk of peat or soft soils being present which will affect the constructability of the proposed path.	Settlement/subsidence	Public, Environment, Operation and Maintenance Worker, Construction Worker	4 - Critical	3 - Occasional	12	Geotechnical and Geo-Environmental Desk Study and Survey to be undertaken to understand existing ground conditions. Ground investigation to be undertaken to confirm current condition	Settlement/subsidence	3 - Major	2 - Remote	6	Civil Engineer	
21	Civil Engineer	Geotechnical		Construction	Hazardous substances	Risk of contaminated ground conditions in construction area	Ground pollution	Construction Worker, Environment	3 - Major	3 - Occasional	9	Geo-Environmental survey to be undertaken to understand if any contamination is present in proximity to proposed works. Handling and disposal plan to be developed if so to mitigate any negative risks to the environment.	Ground pollution	2 - Moderate	3 - Occasional	6	Civil Engineer	
22	Civil Engineer	Geotechnical		Construction	Constructability / De-constructability	Excavated material may not be suitable for reuse as fill	Settlement/subsidence	Construction Worker, Operation and Maintenance Worker, Public, Environment, Infrastructure	3 - Major	4 - Probable	12	Geotechnical and Geo-Environmental Survey to be undertaken to understand existing ground conditions and whether exsiting material is suitable for reuse. If not imported fill to be used for all fill requirements to ensure limited negative impacts on the environment and stability of the construction.	Settlement/subsidence	3 - Major	3 - Occasional	9	Civil Engineer	

Appendix C – Consultation Boards/Survey Form

A92 MURCAR NORTH ACTIVE TRAVEL INFRASTRUCTURE

Background - The Story So Far

Transport Scotland and Aberdeen City Council (ACC) have a Service Level Agreement to deliver a number of environmental mitigation projects to offset the environmental impact of the Aberdeen Western Peripheral Route (AWPR).

Delivery of an active travel route between Blackdog and Murcar Roundabout is one of the projects covered by the agreement to improve conditions for people walking, wheeling and cycling.

An active travel route has been in the planning as part of AWPR mitigation measures, with the scheme included as a project within the Aberdeen Active Travel Action Plan.

Previously, initial design work undertaken by ACC recommended a 3m shared use path on the east side of the A92. This was consulted on, with strong support for the scheme demonstrated.

Since this initial design work, there have been a number of changes that have taken place meaning that further work is required, including:

- Publication of updated Cycling by Design guidance
- Progression of the Ellon to Garthdee Transport Corridor Study
- Significant progress with land use developments at Blackdog, Shielhill and Cloverhill
- Shared use path development south of Balmedie, with aspirations to complete the route to Blackdog

A92 MURCAR NORTH ACTIVE TRAVEL INFRASTRUCTURE

Current Study - June 2023 to Present

In June 2023, AECOM was commissioned by ACC to develop, appraise and identify options for the provision of active travel infrastructure between Blackdog and Murcar following the principles of Scottish Transport Appraisal Guidance (STAG). This is following the three stage process set out below.

1. REVIEW OF PREVIOUS WORK

- To understand the key constraints previously identified
- To understand connections with existing and proposed active travel infrastructure to the north and south
- To reach agreement on design widths to be used for the active travel route

2. INITIAL APPRAISAL: CASE FOR CHANGE

- Identifying Problems & Opportunities to understand the case for the active travel route
- To develop Transport Planning Objectives which express the change sought in the study area
- Identification and development of options for the active travel route

3. STAG-BASED APPRAISAL / OPTION DESIGN

STAG Appraisal

Assessing the performance of options against:

- Transport Planning Objective
- STAG Criteria
- Equalities Assessments
- Policy Objectives
- Cost to Government
- Risk and Uncertainty

Option Design

- Development of Designs
- Strengths, Weaknesses, Opportunities and Threats considered for each option
- More detailed design of preferred option in preparation for construction

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A92 MURCAR NORTH ACTIVE TRAVEL INFRASTRUCTURE

Optioneering

Three options were developed considering alignments on the east, west and through redistribution of space on the existing A92 carriageway. Connections to existing infrastructure and desire lines were also considered.

WEST

Following A92 on west side between Murcar and Blackdog Junction utilising Tarbothill Farm Cottages Road

CENTRAL

Redistribution of carriageway space - connection to Blackdog via Blackdog Junction or at Hareburn Road dependent on lane reallocation choice

EAST

Following A92 on east side and utilising old road with land required to the rear of properties - connection to existing infrastructure at Hareburn Road

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A92 MURCAR NORTH ACTIVE TRAVEL INFRASTRUCTURE

Outcomes of STAG-Based Appraisal

The objective of the study is:
By 2030, increase the level of walking by 10% and cycling five-fold from 2027 for all journey types on the Blackdog to Murcar corridor.

OBJECTIVE APPRAISAL

- All options would support an increase in the level of walking and cycling for all journey types but the east option would be expected to generate the biggest increase

Option	Score
West	+2 (Moderate positive impact)
Central	+2 (Moderate positive impact)
East	+3 (Major positive impact)

- The central option would require users to travel alongside fast moving vehicles. Whilst appropriate segregation and a buffer would require to be in place, this may still be off-putting for less confident users
- The west option would require users to cross the A92 to access residential areas in the east. Whilst users could do so at Blackdog Junction, that is not on the desire line for users accessing the southern part of Blackdog
- Whilst the east option would require users to cross the A92 to integrate with the existing shared use path infrastructure at Murcar Roundabout, there is a dedicated crossing point in this location to allow users to do so

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Outcomes of STAG-Based Appraisal

The results of the appraisal against the STAG Criteria are shown below.

STAG CRITERIA APPRAISAL

- **Environment:** Concerns associated with the impact on biodiversity and habitats for the east and west options and associated with the impacts of congestion for the central option
- **Climate Change:** The central option could increase congestion if the carriageway is narrowed, leading to queuing and increased greenhouse gas emissions
- **Health, Safety & Wellbeing:** Benefits with all options due to provision of a dedicated active travel facility. Some safety concerns with the west option associated with crossing the A92 and with the central option due to the relative proximity to vehicles on the A92
- **Economy:** The central option would be expected to have an adverse impact on journey times for general traffic associated with congestion
- **Equality & Accessibility:** Benefits with all options due to improved active travel network coverage. East option performs strongest as the majority of the study area population is located to the east of the A92

Option	West	Central	East
Environment	-1	-1	-1
Climate Change	0	-1	0
Health, Safety & Wellbeing	+1	+1	+2
Economy	0	-1	0
Equality & Accessibility	+1	+1	+2

KEY	
+3	Major positive impact
+2	Moderate positive impact
+1	Minor positive impact
0	Neutral
-1	Minor negative impact
-2	Moderate negative impact
-3	Major negative impact

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A92 MURCAR NORTH ACTIVE TRAVEL INFRASTRUCTURE

Outcomes of STAG-Based Appraisal

The results of the appraisal against the Deliverability Criteria are shown below.

DELIVERABILITY APPRAISAL

- **Feasibility:** Potential risks with west and east options due to a need for third party land and due to significant level difference for the west option at Murcar and at Blackdog. Risks with central option due to the need to reconfigure the carriageway

- **Affordability:** Higher capital costs for east and west options due to the need for third party land, earthworks and risks to existing utilities. For the east option, the use of the old road, the existing road network at Blackdog and the existing active travel path from Hareburn Terrace to Blackdog Junction may mitigate the capital investment required

- **Public acceptability:** To be confirmed through the consultation process. West and east options likely to be supported as they would provide a dedicated active travel facility away from the A92. There are likely to be some public acceptability concerns with the central option associated with removal of a lane for general traffic

A92 MURCAR NORTH ACTIVE TRAVEL INFRASTRUCTURE

Recommendations

ALIGNMENT

Based on the appraisal process, the Eastern Alignment has been identified as the preferred option for the following reasons:

- Provides improvements to the existing infrastructure
- Provides direct and coherent active travel connection between Murcar and Blackdog
- Supports active travel links for new housing developments at Cloverhill and Blackdog
- Builds on work previously completed

SHARED OR SEGREGATED

Shared use facilities have been identified as the preferred option for the active travel link for the following reasons:

- Provides a space suitable for all users walking, wheeling and cycling
- Provides a facility suitable for the expected number of users
- Ensures consistency in the active travel network for wider connections
- Lower overall cost (capital and maintenance) in comparison to kerb segregated facilities
- Provides greater scope to adapt in future should user demands change

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Next Steps of the Process

Completed Work

- Review of context
- Review of updated Cycling by Design Guidance
- Review of previous work
- Identification of problems and opportunities
- Objective setting
- Generation of options

Current Work

- Option appraisal
- Preparation of designs

Next Steps

- Further design work
- Delivery of scheme

For further information about the project, please email the AECOM Project Team at:

RoadsScotland@aecom.com

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A92 MURCAR NORTH ACTIVE TRAVEL INFRASTRUCTURE

Feedback Questionnaire

Q1: Do you support the development of an active travel link between Murcar and Blackdog? *Please select one option.*

Response	Select
Yes	
No	
Don't know	

Please provide any further comments you have (optional)

Q2: Do you agree that the East option should progress as the preferred option? *Please select one option.*

Option	Select
Yes	
No, I prefer the West option	
No, I prefer the Central option	
No, I don't think any option should progress	
Don't know	

Please provide any further comments you have (optional)

A92 MURCAR NORTH ACTIVE TRAVEL INFRASTRUCTURE

Feedback Questionnaire

Q3: Would implementation of the East option make you more likely to walk, wheel or cycle between Murcar and Blackdog?
Please select one option.

Option	Select
Yes	
No	
Don't know	

Please provide any further comments you have (optional)

Q4: If you responded 'No' to Q3, would the West option or Central option make you more likely to walk, wheel or cycle between Murcar and Blackdog? *Please select one option.*

Option	Select
No	
Yes, the West option would	
Yes, the Central option would	
Don't know	

Please provide any further comments you have (optional)

A92 MURCAR NORTH ACTIVE TRAVEL INFRASTRUCTURE

Feedback Questionnaire

Q5: If you responded 'Yes' to Q3 or Q4, what journeys would you use the Murcar to Blackdog active travel link for and how often would you make these journeys? *Please select all that apply.*

Journey Type	Regularly*	Occasionally**	Rarely***	Never
Work				
Study				
Business				
Leisure/exercise				
Other journey purpose (please specify below)				

* Typically once or a few times per week

** Typically once or a few times per month

*** Typically once or a few times a year

Please provide any further comments you have (optional)

A92 MURCAR NORTH ACTIVE TRAVEL INFRASTRUCTURE

Feedback Questionnaire

Q6: Tell us who is responding

Please select one option.

Option	Select
A local resident in the proposed area (between Murcar and Blackdog)	
A resident based elsewhere in Aberdeen City	
A resident based elsewhere in Aberdeenshire	
A resident of another location (please specify below)	

A92 MURCAR NORTH ACTIVE TRAVEL INFRASTRUCTURE

Feedback Questionnaire

Q7: Please provide any further comments on the study below *(optional)*

Please provide any further comments you have on the study

Appendix D – Cost Estimates and Assumptions

West Option - Outline Cost Estimate

Item	Quantity	Unit	Unit Cost	Cost	Source
Preliminaries				£136,752.49	Assumed at 10% of construction works
Site clearance	5.0	ha	Variable	£12,239.50	SPONS 2023 - Urban Area / Open Field
Take up or down and remove to tip off site precast concrete kerbs	2117	m	£11.71	£24,790.07	SPONS 2023
Precast concrete road kerb	2117	m	£35.40	£74,941.80	Similar Local Authority Framework Rates
Cycle track - precast concrete road kerb	0	m	£35.40	£0.00	Similar Local Authority Framework Rates
Cycle track - Precast concrete edging kerb	0	m	£18.90	£0.00	Similar Local Authority Framework Rates
Hot applied red resin based surface treatment (Cycle Lane)	0	m^2	£15.00	£0.00	Similar Local Authority Framework Rates
Cycle track - Bitumen emulsion tack coat	0	m^2	£1.40	£0.00	SPONS 2023
Cycle track - paved area with 150mm thick Type 1 unbound mixture sub-base, 50mm thick dense asphalt concrete AC 20 dense bin 40/60 rec binder course, 30mm thick hot rolled asphalt HRA 15/10 F surf 40/60 surface course with surface dressing of 10mm red or white chippings	0	m^2	£69.37	£0.00	SPONS 2023
Footway - paved area with 150mm thick Type 1 unbound mixture sub-base, 50mm thick dense asphalt concrete AC 20 dense bin 40/60 rec binder course, 30mm thick hot rolled asphalt HRA 15/10 F surf 40/60 surface course with surface dressing of 10mm red or white chippings	18726	m^2	£69.37	£1,299,022.62	SPONS 2023
Hot rolled asphalt (HRA 15/10F surf 40/60) surface course 30mm thick with 6mm white limestone chippings in footway or paved area.	0	m^2	£28.12	£0.00	SPONS 2023
Bitumen emulsion tack coat	19785	m^2	£1.40	£27,698.30	SPONS 2023
Footway - Precast concrete edging kerb	2560	m	£18.90	£48,384.00	Similar Local Authority Framework Rates
Breaking out pavement or footways exceeding 40mm depth but not exceeding 100mm	0	m^2	£9.27	£0.00	SPONS 2023
Excavation	1779	m^2	£4.64	£8,254.42	SPONS 2023
Mill out Carriageway	1059	m^2	£2.04	£2,159.34	SPONS 2023
Carriageway Resurfacing	0	m^2	£28.12	£0.00	SPONS 2023
Carriageway Reconstruction	1059	m^2	£144.22	£152,656.87	SPONS 2023
Traffic Signs & Road Marking				£81,895.37	Assumed at 5% of works
Construction Sub-Total				***£1,868,794.78***	
Optimism Bias	44%	%	-	£822,269.70	
Construction Sub-Total (Inclusive of Optimism Bias)				***£2,691,064.48***	
Design	10%	%	-	£269,106.45	
Placemaking and Landscaping	5%	%	-	£134,553.22	
Site Supervision and Project Management	5%	%	-	£134,553.22	
Traffic Management	10%	%	-	£269,106.45	
Monitoring and Evaluation	5%	%	-	£134,553.22	
Total				***£3,632,937.05***	

Items are based on AECOM drawing number: **60710073-SHT-C-WEST-0001 to 0009**
Costs do not include price of further investigation / survey, land purchase, relocation of utilities, structures, retaining walls, enhanced drainage or path lighting etc.
Please review the risk register to see the status of these risks.

Notes:

Assume central reserve and buffers priced as footway construction

Assume shared facility is adopted

Central Option - Outline Cost Estimate

Item	Quantity	Unit	Unit Cost	Cost	Source
Preliminaries				£231,317.64	Assumed at 10% of construction works
Site clearance	5.3	ha	Variable	£12,896.49	SPONS 2023 - Urban Area / Open Field
Take up or down and remove to tip off site precast concrete kerbs	2695	m	£11.71	£31,558.45	SPONS 2023
Precast concrete road kerb	2710	m	£35.40	£95,934.00	Similar Local Authority Framework Rates
Cycle track - precast concrete road kerb	0	m	£35.40	£0.00	Similar Local Authority Framework Rates
Cycle track - Precast concrete edging kerb	0	m	£18.90	£0.00	Similar Local Authority Framework Rates
Hot applied red resin based surface treatment (Cycle Lane)	0	m^2	£15.00	£0.00	Similar Local Authority Framework Rates
Cycle track - Bitumen emulsion tack coat	0	m^2	£1.40	£0.00	SPONS 2023
Cycle track - paved area with 150mm thick Type 1 unbound mixture sub-base, 50mm thick dense asphalt concrete AC 20 dense bin 40/60 rec binder course, 30mm thick hot rolled asphalt HRA 15/10 F surf 40/60 surface course with surface dressing of 10mm red or white chippings	0	m^2	£69.37	£0.00	SPONS 2023
Footway - paved area with 150mm thick Type 1 unbound mixture sub-base, 50mm thick dense asphalt concrete AC 20 dense bin 40/60 rec binder course, 30mm thick hot rolled asphalt HRA 15/10 F surf 40/60 surface course with surface dressing of 10mm red or white chippings	18600	m^2	£69.37	£1,290,282.00	SPONS 2023
Hot rolled asphalt (HRA 15/10F surf 40/60) surface course 30mm thick with 6mm white limestone chippings in footway or paved area.	0	m^2	£28.12	£0.00	SPONS 2023
Bitumen emulsion tack coat	19955	m^2	£1.40	£27,937.00	SPONS 2023
Footway - Precast concrete edging kerb	5355	m	£18.90	£101,209.50	Similar Local Authority Framework Rates
Breaking out pavement or footways exceeding 40mm depth but not exceeding 100mm	10284	m^2	£9.27	£95,332.68	SPONS 2023
Excavation	1767	m^2	£4.64	£8,198.88	SPONS 2023
Mill out Carriageway	1355	m^2	£2.04	£2,764.20	SPONS 2023
Carriageway Resurfacing	12166	m^2	£28.12	£342,107.92	SPONS 2023
Carriageway Reconstruction	1355	m^2	£144.22	£195,418.10	SPONS 2023
Traffic Signs & Road Marking				£109,537.14	Assumed at 5% of works
Construction Sub-Total				***£2,544,493.99***	
Optimism Bias	44%	%	-	£1,119,577.36	
Construction Sub-Total (Inclusive of Optimism Bias)				***£3,664,071.35***	
Design	10%	%	-	£366,407.13	
Placemaking and Landscaping	5%	%	-	£183,203.57	
Site Supervision and Project Management	5%	%	-	£183,203.57	
Traffic Management	10%	%	-	£366,407.13	
Monitoring and Evaluation	5%	%	-	£183,203.57	
Total				***£4,946,496.32***	

Items are based on AECOM drawing number: **60710073-SHT-C-CENTRAL-0001 to 0009**
Costs do not include price of further investigation / survey, land purchase, relocation of utilities, structures, retaining walls, enhanced drainage or path lighting etc.
Please review the risk register to see the status of these risks.

Notes:
Assume central reserve and buffers priced as footway construction
Assume shared facility is adopted

East Option - Outline Cost Estimate

Item	Quantity	Unit	Unit Cost	Cost	Source
Preliminaries				£122,630.99	Assumed at 10% of construction works
Site clearance	3.5	ha	Variable	£12,896.49	SPONS 2023 - Urban Area / Open Field
Take up or down and remove to tip off site precast concrete kerbs	2200	m	£11.71	£25,762.00	SPONS 2023
Precast concrete road kerb	2206	m	£35.40	£78,092.40	Similar Local Authority Framework Rates
Cycle track - precast concrete road kerb	0	m	£35.40	£0.00	Similar Local Authority Framework Rates
Cycle track - Precast concrete edging kerb	0	m	£18.90	£0.00	Similar Local Authority Framework Rates
Hot applied red resin based surface treatment (Cycle Lane)	0	m^2	£15.00	£0.00	Similar Local Authority Framework Rates
Cycle track - Bitumen emulsion tack coat	0	m^2	£1.40	£0.00	SPONS 2023
Cycle track - paved area with 150mm thick Type 1 unbound mixture sub-base, 50mm thick dense asphalt concrete AC 20 dense bin 40/60 rec binder course, 30mm thick hot rolled asphalt HRA 15/10 F surf 40/60 surface course with surface dressing of 10mm red or white chippings	0	m^2	£69.37	£0.00	SPONS 2023
Footway - paved area with 150mm thick Type 1 unbound mixture sub-base, 50mm thick dense asphalt concrete AC 20 dense bin 40/60 rec binder course, 30mm thick hot rolled asphalt HRA 15/10 F surf 40/60 surface course with surface dressing of 10mm red or white chippings	12487	m^2	£69.37	£866,218.33	SPONS 2023
Hot rolled asphalt (HRA 15/10F surf 40/60) surface course 30mm thick with 6mm white limestone chippings in footway or paved area.	0	m^2	£28.12	£0.00	SPONS 2023
Bitumen emulsion tack coat	12925	m^2	£1.40	£18,094.90	SPONS 2023
Footway - Precast concrete edging kerb	4529	m	£18.90	£85,598.10	Similar Local Authority Framework Rates
Breaking out pavement or footways exceeding 40mm depth but not exceeding 100mm	430	m^2	£9.27	£3,986.10	SPONS 2023
Excavation	1186	m^2	£4.64	£5,504.24	SPONS 2023
Mill out Carriageway	438	m^2	£2.04	£893.52	SPONS 2023
Carriageway Resurfacing	0	m^2	£28.12	£0.00	SPONS 2023
Carriageway Reconstruction	1103	m^2	£144.22	£159,074.66	SPONS 2023
Traffic Signs & Road Marking				£62,161.21	Assumed at 5% of works
Construction Sub-Total				***£1,440,912.95***	
Optimism Bias	44%	%	-	£634,001.70	
Construction Sub-Total (Inclusive of Optimism Bias)				***£2,074,914.65***	
Design	10%	%	-	£207,491.46	
Placemaking and Landscaping	5%	%	-	£103,745.73	
Site Supervision and Project Management	5%	%	-	£103,745.73	
Traffic Management	10%	%	-	£207,491.46	
Monitoring and Evaluation	5%	%	-	£103,745.73	
Total				***£2,801,134.77***	

Items are based on AECOM drawing number: **60710073-SHT-C-EAST-0001 to 0009**
Costs do not include price of further investigation / survey, land purchase, relocation of utilities, structures, retaining walls, enhanced drainage or path lighting etc.
Please review the risk register to see the status of these risks.

Notes:

Assume central reserve and buffers priced as footway construction

Assume shared facility is adopted

East Option Developed Design - Outline Cost Estimate

Item	Quantity	Unit	Unit Cost	Cost	Source
Preliminaries				£126,552.44	Assumed at 10% of construction works
Site clearance	5.2	ha	Variable	£12,896.49	SPONS 2023 - Urban Area / Open Field
Take up or down and remove to tip off site precast concrete kerbs	1190	m	£11.71	£13,935.60	SPONS 2023
Precast concrete road kerb	1081	m	£35.40	£38,278.37	Similar Local Authority Framework Rates
Cycle track - precast concrete road kerb	0	m	£35.40	£0.00	Similar Local Authority Framework Rates
Cycle track - Precast concrete edging kerb	3394	m	£18.90	£64,140.36	Similar Local Authority Framework Rates
Hot applied red resin based surface treatment (Cycle Lane)	0	m^2	£15.00	£0.00	Similar Local Authority Framework Rates
Cycle track - Bitumen emulsion tack coat	8343	m^2	£1.40	£11,680.75	SPONS 2023
Cycle track - paved area with 150mm thick Type 1 unbound mixture sub-base, 50mm thick dense asphalt concrete AC 20 dense bin 40/60 rec binder course, 30mm thick hot rolled asphalt HRA 15/10 F surf 40/60 surface course with surface dressing of 10mm red or white chippings	8343	m^2	£69.37	£578,780.96	SPONS 2023
Footway - paved area with 150mm thick Type 1 unbound mixture sub-base, 50mm thick dense asphalt concrete AC 20 dense bin 40/60 rec binder course, 30mm thick hot rolled asphalt HRA 15/10 F surf 40/60 surface course with surface dressing of 10mm red or white chippings	4609	m^2	£69.37	£319,725.64	SPONS 2023
Tactile Paving	56	m^2	£25.25	£1,421.58	SPONS 2023
Hot rolled asphalt (HRA 15/10F surf 40/60) surface course 30mm thick with 6mm white limestone chippings in footway or paved area.	133	m^2	£28.12	£3,739.96	SPONS 2023
Bitumen emulsion tack coat	5333	m^2	£1.40	£7,466.04	SPONS 2023
Footway - Precast concrete edging kerb	580	m	£18.90	£10,962.00	Similar Local Authority Framework Rates
Breaking out pavement or footways exceeding 40mm depth but not exceeding 100mm	1340	m^2	£9.27	£12,419.95	SPONS 2023
Excavation	5376	m^2	£4.64	£24,945.21	SPONS 2023
Earthwork Fill Material	3100	m^3	£31.52	£97,712.00	SPONS 2023
Compaction	10776	m^3	£1.16	£12,500.16	SPONS 2023
Mill out Carriageway	591	m^2	£2.04	£1,205.43	SPONS 2023
Carriageway Resurfacing	0	m^2	£28.12	£0.00	SPONS 2023
Carriageway Reconstruction	595	m^2	£144.22	£85,815.23	SPONS 2023
Fencing	1342	m	£27.40	£36,770.80	SPONS 2023
Cattle Grid	1	No.	£5,000.00	£5,000.00	GST Fabrication
Land Purchase	1.1	Ha	£65,000.00	£71,500.00	ACC Estimate
Traffic Signs & Road Marking				£32,118.23	Assumed at 2.5% of works
Construction Sub-Total				***£1,537,448.95***	
Optimism Bias	44%	%	-	£676,477.54	
Construction Sub-Total (Inclusive of Optimism Bias)				***£2,213,926.49***	
Design	6.0%	%	-	£132,835.59	10% would normally be allowed - due to current status of design work, 4% has been removed to reflect spend to date.
Drainage	7.5%	%	-	£166,044.49	
Geotechnical	7.5%	%	-	£166,044.49	
Bridge	2.5%	%	-	£55,348.16	
Placemaking and Landscaping	5.0%	%	-	£110,696.32	
Site Supervision and Project Management	2.5%	%	-	£55,348.16	
Traffic Management	5.0%	%	-	£110,696.32	
Monitoring and Evaluation	1.0%	%	-	£22,139.26	
Total				***£3,033,079.29***	

Items are based on AECOM drawing number: **60710073-SHT-C-DD-EAST-0001 to 0006**
Optimism bias is considered to cover any costs associated with further investigation / survey, relocation of utilities, structures, retaining walls, or path lighting etc.

Indicative costs have been provided regarding drainage, geotechnical and bridge risks. These are all subject to change following further assessment of the site.
Please review the risk register to see the status of these risks.

Notes:

Assume central reserve and buffers priced as footway construction
Assume optional path to the north of Murcar Roundabout is adopted
Assume existing kerbs along the A90 are suitable and not required to be replaced
Assume additional costs for drainage, geotechnical and bridges are required
Assume the previously calculated land value per hectare is still valid

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