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Aberdeen City Council

Middlefield, Heathryfold, Northfield Active Travel Improvement Priorities Report

January 2018

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January 2018

Client Commission			
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LTP PROJECT TEAM

As part of our commitment to quality the following team of transport professionals was assembled specifically for the delivery of this project. Relevant qualifications are shown and CV's are available upon request to demonstrate our experience and credentials.

Team Member	LTP Designation	Qualifications
Andy Mayo	*Director (Project Manager)*	*Ba(Hons) MSc FIHE CMILT FCIHT*
Nigel Wilson	*Technical Director*	*CEng FICE FIHE CMIHT*
Aimee Dunne	*Senior Highway & Traffic Engineer*	*MEng BA(Hons) MIHE*

MIDDLEFIELD, HEATHRYFOLD, NORTHFIELD ACTIVE TRAVEL IMPROVEMENT PRIORITIES REPORT

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1.0 INTRODUCTION

1.1 Background

1.1.1 Local Transport Projects Ltd (LTP) have been commissioned by Aberdeen City Council (ACC) to undertake a study on the active travel improvement priorities which will benefit the Middlefield/Heathryfold/Northfield locality of Aberdeen. The primary aim of this study is to provide a clear evidence based approach towards identifying and prioritising infrastructure upgrades that will improve travel by active modes in and around the locality. To achieve this, the study has sought to identify and address current issues and capitalise on potential opportunities.

1.1.2 This study has been initiated as part of the ongoing regeneration work being carried out by ACC, part of which seeks to:

- improve the quality and accessibility of Heathryfold, Northfield and Middlefield by active modes,
- improve the walking and cycling connections to the existing city-wide core cycle network and core paths; and
- increase the number of journeys made by bicycle and on foot.

1.1.3 It is anticipated that the provision of a more connected walking and cycling network will link the various regeneration projects and public facilities within the locality. This in turn supports the momentum of change to this regeneration area, whilst also reducing resident's reliance on motorised forms of transport to access these facilities (ACC, 2017d).

1.1.4 During the previous year, funding towards environmental and active travel infrastructure improvements has been obtained from ACC, Scottish Natural Heritage (SNH), Sustrans and Nestrans. It is envisioned that the findings of this study will inform future grant applications for additional funding towards improvements to active travel connections between Middlefield, Northfield and the wider area.

1.2 Scope

1.2.1 This study provides a review of current planning and transport strategy proposals for the locality and has been informed through the collection of data, evidence and local views gathered through public consultation. Existing topography and site constraints have also been identified and considered when identifying potential active travel improvement priorities.

1.2.2 The study has been prepared in accordance with the above scope and reference has been made to the following documents where appropriate:

- Aberdeen Active Travel Action Plan 2017-2021 (ACC, 2017a);
- Aberdeen City Core Paths Plan Study Report (ACC, 2009);
- Aberdeen Local Transport Strategy (LTS) 2016-2021;
- Community Street Audit Report; Middlefield, Aberdeen City (Living Streets, 2016);

- Cummings Park, Heathryfold, Northfield, Mastrick and Middlefield Draft Locality Plan 2017 – 27 (ACC, 2017b); and
- Greenferns, Aberdeen; Development Framework (Draft) (ACC, 2017c).

1.3 Report Structure

1.3.1 The structure of the study is outlined below;

- Existing Transport Environment:
  - Outline of the extents of the study area including a description of the current highways and transport environment in terms of road network, walking and cycling and road safety.
  - Summary of feedback received during the public consultation event regarding existing issues/concerns and potential opportunities in terms of walking and cycling infrastructure.
- Future Committed Development:
  - A description of future committed transport infrastructure projects and committed development projects affecting the study area.
- Active Travel Improvement Objectives:
  - A set of objectives chosen to guide the development of the active travel improvement options and reflective of the issues identified.
- Potential Route Options:
  - Description of potential improvement options.
- Option Evaluation:
  - Evaluation of the potential improvement options against the study objectives resulting in prioritised ranking of options. Identification of timeframes, indicative costs and magnitude of deliverability issues.
- Conclusions & Recommendations:
  - Summary of study findings and recommendations regarding the improvement options which best address the issues identified and align with the study objectives.

2.0 EXISTING TRANSPORT ENVIRONMENT

2.1 Study Area

2.1.1 The study area comprises the Middlefield, Heathryfold and Northfield localities of Aberdeen. The study area is bound by Auchmill Road (A96) to the north, North Anderson Drive (A90) to the east, Provost Fraser Drive to the south and the future Greenferns development to the west. An overview of the study area extents and locations of key movement attractors is shown in Figure 1.

2.2 Key Movement Attractors

2.2.1 The Middlefield, Heathryfold and Northfield locality comprises predominantly residential development with some pockets of commercial and light industrial activity. The key movement attractors in the locality are detailed as follows:

- **Commercial centre** – The main retail activity is located off Byron Square in Northfield. This retail offering is a mix of convenience stores and independently owned shops. There's also a post office, public house and public library in this area. Smaller areas of commercial activity are also found off Bryon Crescent, Lintmill Terrace and in the Cummings Park area off Moir Green.
- **Community facilities** – There are a number of community centres throughout the study area. The Lord Provost Henry Rae Community Centre or 'The Hub', located off Manor Avenue is the main community facility within the locality. Other smaller centres include the Northfield Community Centre off Byron Avenue, Cummings Park Centre of Cummings Park Crescent.
- **Employment** – A light industrial area on Granitehill Road and Quarry Road generates a moderate level of employment activity. Other key commuter destinations outside of the locality include Bucksburn, Dyce, Aberdeen City Centre, Bridge of Don and Altens industrial estate.
- **Education** – There are five primary schools within the study area, including Heathryburn School, Orchard Brae School, Bramble Brae School, Manor Park School and Westpark School. There is also one secondary school, Northfield Academy, located off Provost Fraser Drive.
- **Healthcare** – The main healthcare facilities in the study area are the Northfield & Mastrick Medical Practice and Northfield Dental Centre, both of which are located off Byron Square. There is also a care home located on the corner of Granitehill Road and Marchburn Drive.
- **Leisure** – Sunnybank Football Club located off Heathryfold Circle, Auchmill Golf Club located to the northwest, Northfield Swimming Pool and Northfield 3G sports pitch. There are a number of smaller parks and playgrounds located throughout the study area.

Figure 1: Overview of Study Area & Key Attractors

Source: © Google Earth Pro License Key JCPMR5M58LXF2GE

2.3 Road Network

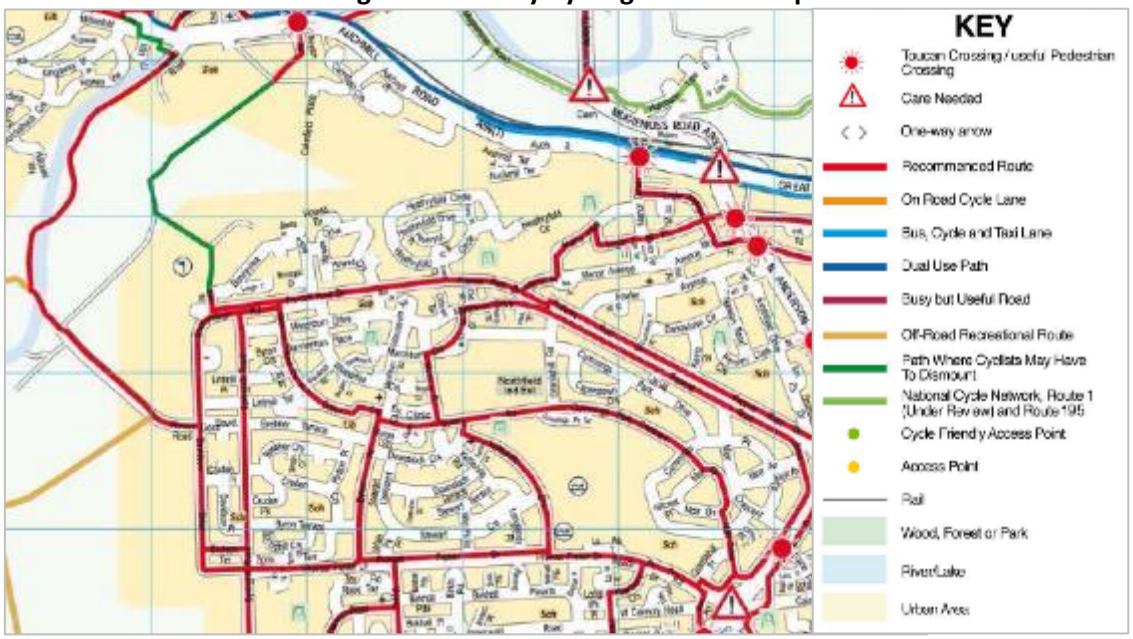
2.3.1 The A96 (Auchmill Road) forms part of the wider strategic highway network in the north east of Scotland, linking Aberdeen and Inverness. In the vicinity of the Haudagain Roundabout it can experience significant levels of congestion during peak times. The A90 (North Anderson Drive) forms part of the wider north-south strategic network. In the vicinity of the study area, North Anderson Drive can also experience high levels of congestion during peak times.

2.3.2 Provost Rust Drive and Provost Fraser Drive form the primary routes through the study area. These roads have wide carriageways catering for residential car trips and local bus routes, with wide grass verges and residential access roads on either side. Provost Rust Drive has some traffic calming measures including ramps, pedestrian crossings, bus stops and on-street parking. They are generally free of congestion, although there may be short delays experienced by motorists when joining the A90 during peak times.

2.4 Walking and Cycling Network

2.4.1 The current cycling network map for the study area is shown in Figure 2. Whilst this shows an extensive network of recommended routes through the locality, these comprise almost entirely of on-road routes with no dedicated cycle facilities. A shared use path runs along the northern side of Auchmill Road (A96) and short sections of bus lanes are also available for cyclists to use in either direction.

Figure 2: Locality Cycling Network Map

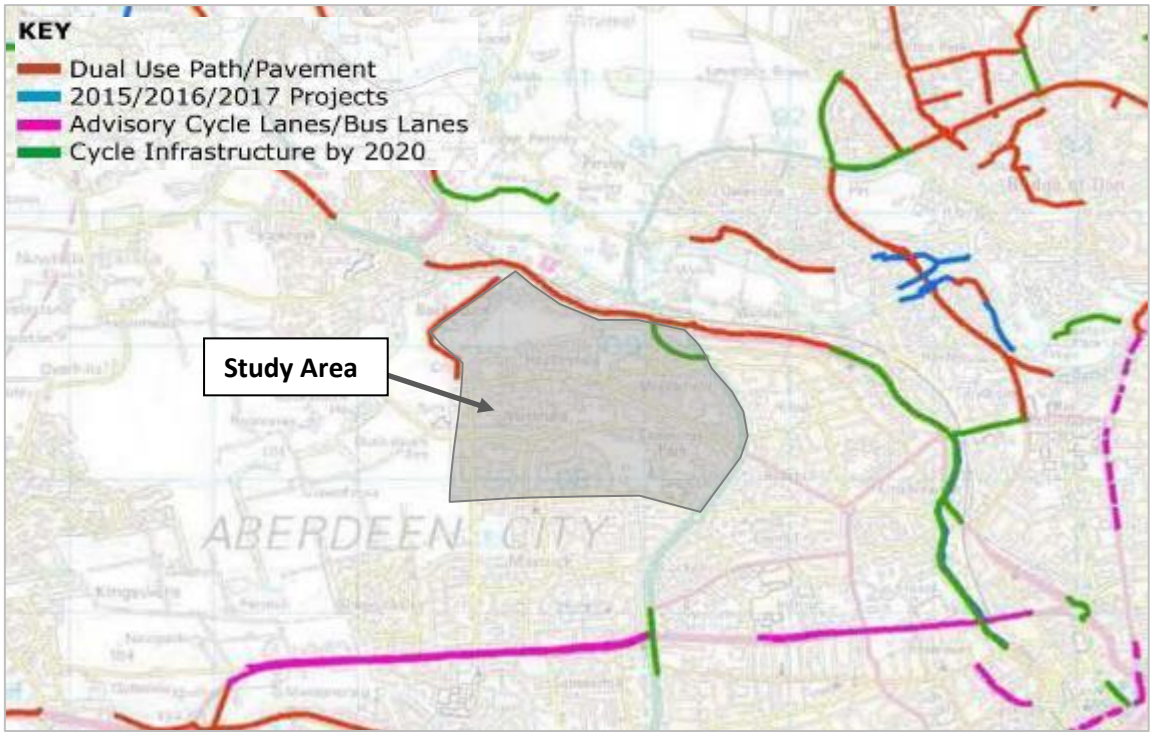


Source: Aberdeen City Council Cycling Maps

2.4.2 To the north of the study area, National Cycle Network (NCN) Route 1 runs on-road along Mugiemoss Road. Within a local context this provides a connection to Bucksburn and Dyce to the Northwest and Aberdeen City Centre to the southeast. It also provides wider regional connections to Inverness and Edinburgh. However, there are currently no direct cycle connections from the existing shared path along the north side of the A96 or to NCN Route 1 from the study area.

2.4.3 The Aberdeen Active Travel Action Plan provides a map of the current and proposed cycle network, as shown in Figure 3. This demonstrates a disjointed network with significant gaps, particularly an absence of north-south connections to the wider cycle network from the study area. The focus of the current and proposed network is more towards the provision of east-west links to/from the city centre. The Middlefield, Heathryfold and Northfield locality represents a significant gap in the network.

Figure 3: Current and Proposed Cycle Network



Source: Aberdeen City Council; Aberdeen Active Travel Action Plan 2017-2021

2.4.4 In general, the footways in the locality are of sufficient width to accommodate pedestrian demands and are generally maintained to a reasonable condition. Notwithstanding, there are some isolated sections of the footway network that would benefit from repairs and resurfacing.

2.4.5 The topography of the locality is undulating, with some footways having moderate gradients which may make conditions less favourable for cycling and walking, particularly for the elderly or mobility impaired. Hands Up Scotland (HUS) undertake surveys annually to reveal how children typically travel to and from school. The results for the 2015/16 school year indicate that Aberdeen has the third-highest walk to school rate in Scotland at 49.85% compared to the average of 43.3% (ACC, 2017a).

2.4.6 It is understood that walking rates to the schools within the study area reflect this trend. However, this does not necessarily indicate that the local network is favourable for high walking rates, rather that it is a result of the relatively low rates of car ownership within this area. A high proportion of adults within the study area are understood to rely on public transport as their main mode of transport for accessing employment, education, training and leisure activities (ACC, 2017d). Provision of accessible routes to bus stops is therefore a key component towards increasing accessibility of employment and services, particularly for those with mobility impairments.

2.5 Journey to Work

2.5.1 The 2011 census data provides a breakdown of the mode share for journey to work from the Middlefield, Heathryfold and Northfield locality. Figure 4 and Figure 5 illustrate the proportion of trips made on foot or by bicycle by people travelling to work each day.

Figure 4: Travel To Work On Foot

Source: DataShine Scotland

Figure 5: Travel To Work By Bicycle

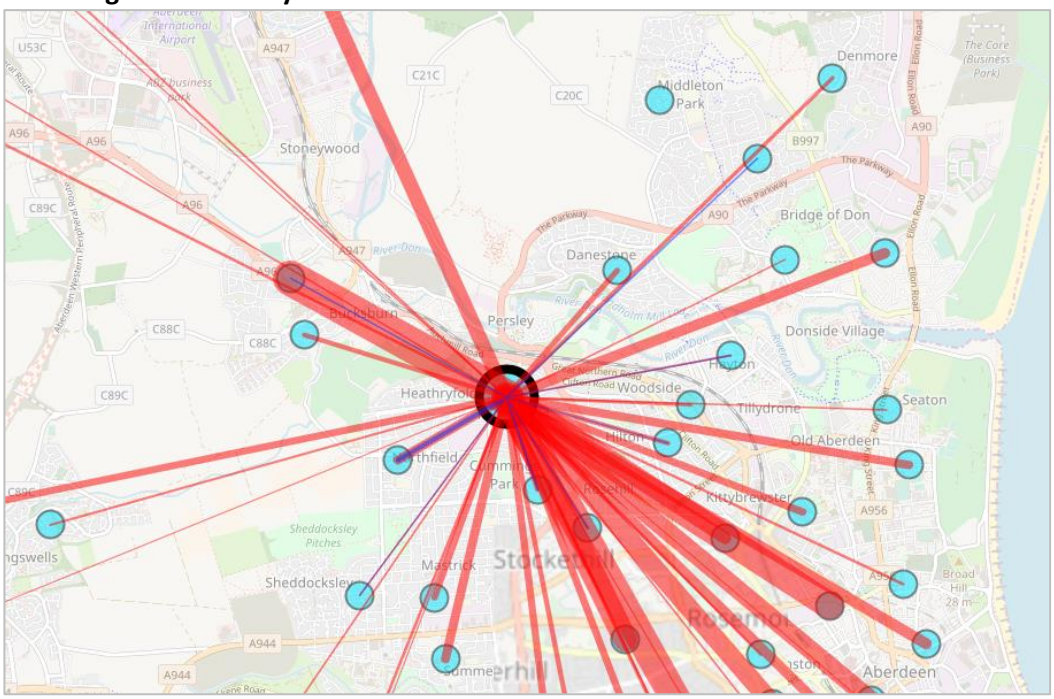
Source: DataShine Scotland

2.5.2 Overall, in the study area the proportion of journey to work trips made on foot can vary from being quite low at approximately 3% to being relatively high at up to 20%, as illustrated in Figure 4.

2.5.3 As Figure 5 indicates, the proportion of journey to work trips made by bicycle from the Middlefield, Heathryfold and Northfield locality is generally quite low being between 0%-4.2%. Although there are small pockets on the southern side of Provost Rust Drive where the proportion of trips by bicycle is quite high at 11.5%.

2.5.4 Origin-destination commuter data for each of the study area is illustrated in Figure 6 to Figure 8. This demonstrates the commuter travel pattern for all modes of transport and the main direction of flows into/out of the area. Blue lines represent flows coming into the selected place that people work in, while red lines show flows out from the selected location to work elsewhere.

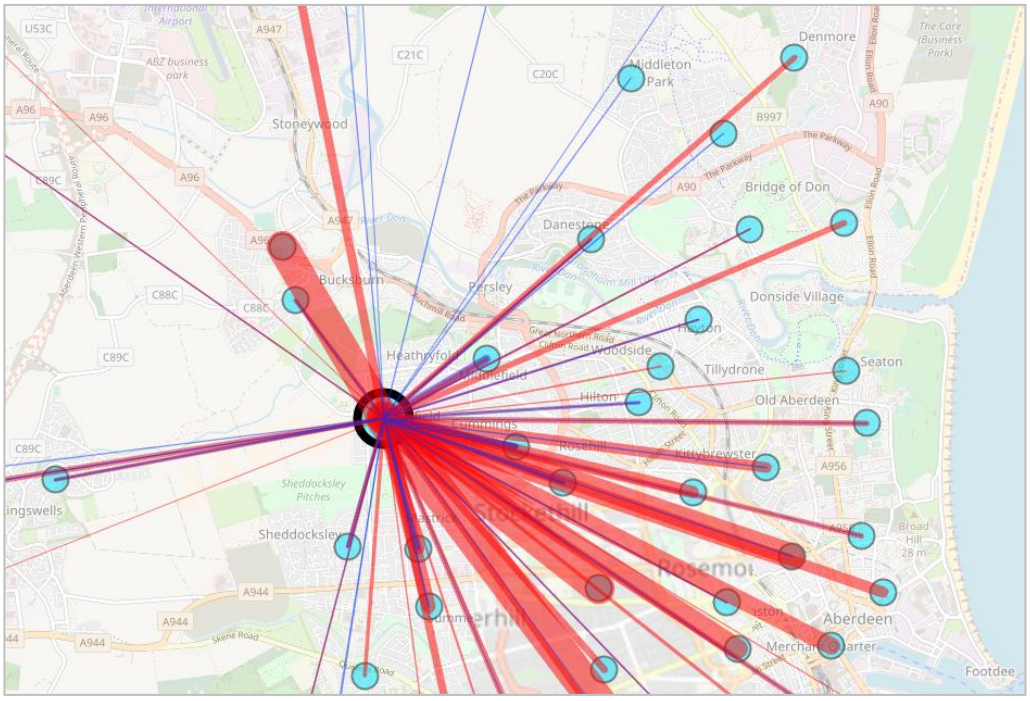
Figure 6: Heathryfold and Middlefield Commuter Travel Patterns



Source: DataShine Scotland Commute

2.5.5 Figure 6 indicates that the main location people commute to from Heathryfold and Middlefield include Dyce, Bucksburn, Aberdeen City Centre and Altens industrial estate. People travelling to Heathryfold and Middlefield generally come from the immediate surrounds including Northfield, Cummings Park or Bucksburn.

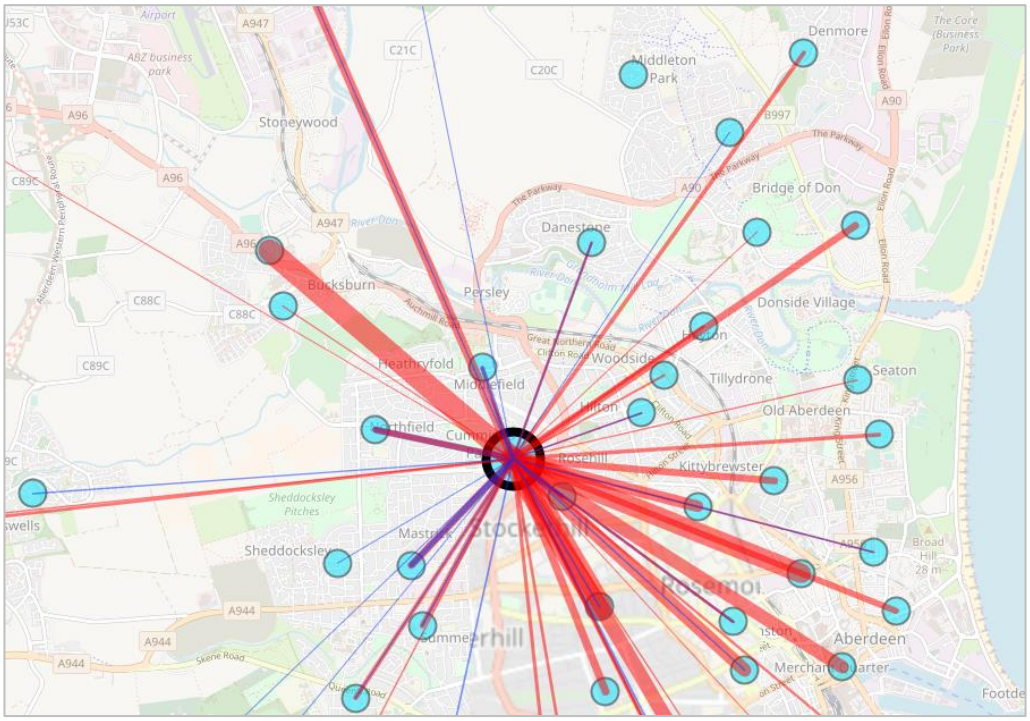
Figure 7: Northfield Commuter Travel Patterns



Source: DataShine Scotland Commute

2.5.6 Figure 7 indicates that the main location people commute to from Northfield include Dyce, Bucksburn, Midstocket, Aberdeen City Centre and Altens industrial estate. Most people travelling to Northfield come from the immediate surrounds of Middlefield, Cummings Park or Bucksburn, Mastrick and Sheddocksley, although there are also notable numbers from the wider city and areas of Kingswells and Westhill.

Figure 8: Cummings Park Commuter Travel Patterns



Source: DataShine Scotland Commute

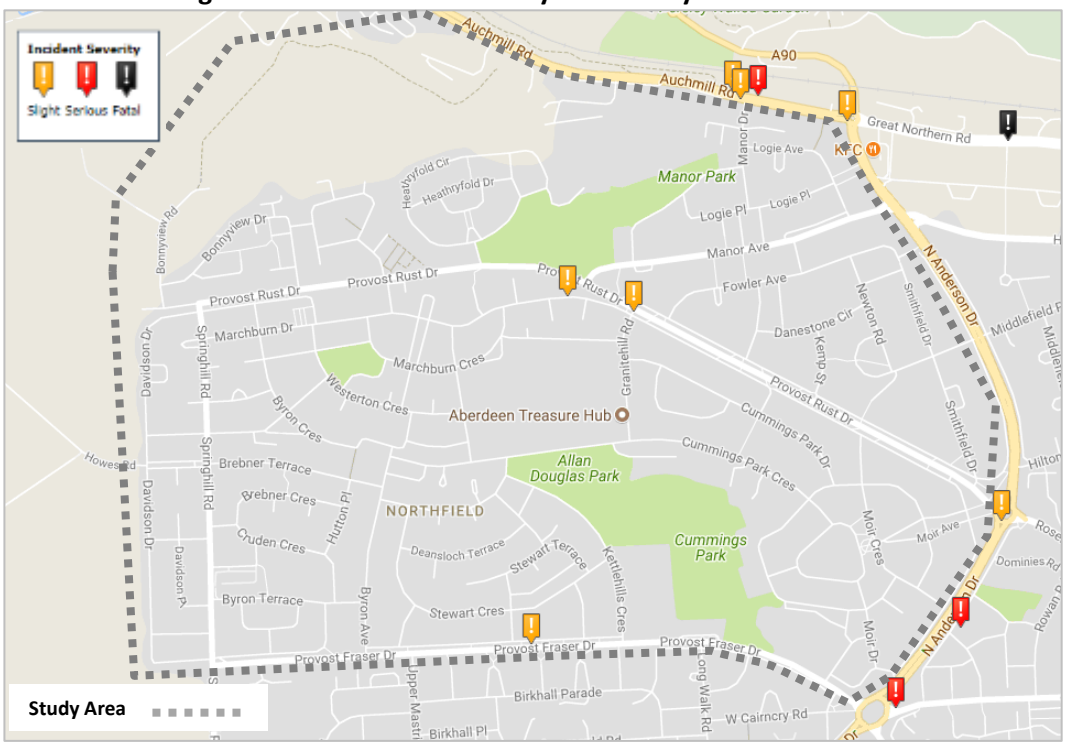
2.5.7 Figure 8 indicates that the main location people commute to from Cummings Park include Dyce, Bucksburn, Midstocket, Aberdeen City Centre and Altens industrial estate. Most people travelling to Cummings Park come from the immediate surrounds of Northfield, Middlefield or Mastrick and a smaller portion from the wider city.

2.6 Road Safety

2.6.1 A high-level review of the collision data, involving pedestrian and cyclist injury collisions, for the previous five years (2012-2016) plus all available collision data for 2017, does not indicate any specific trends. There have been no pedestrian/cyclist fatalities over the last five years within the study area. Nonetheless, there are perceived road safety concerns amongst local residents relating particularly to both vehicle speeds and driver behaviour in the locality. The location of collisions involving pedal cyclist and pedestrian causalities are indicated in Figure 9 and Figure 10 respectively.

2.6.2 In terms of collisions resulting in cyclist casualties, Figure 9 indicates that three collisions were recorded within the study area, all of which resulted in slight injuries. This low number of collisions does not necessarily indicate an absence of perceived or actual road safety issues regarding cyclists and may be more indicative of the relatively low number of cyclists travelling on the network.

Figure 9: Location and Severity of Pedal Cyclist Casualties

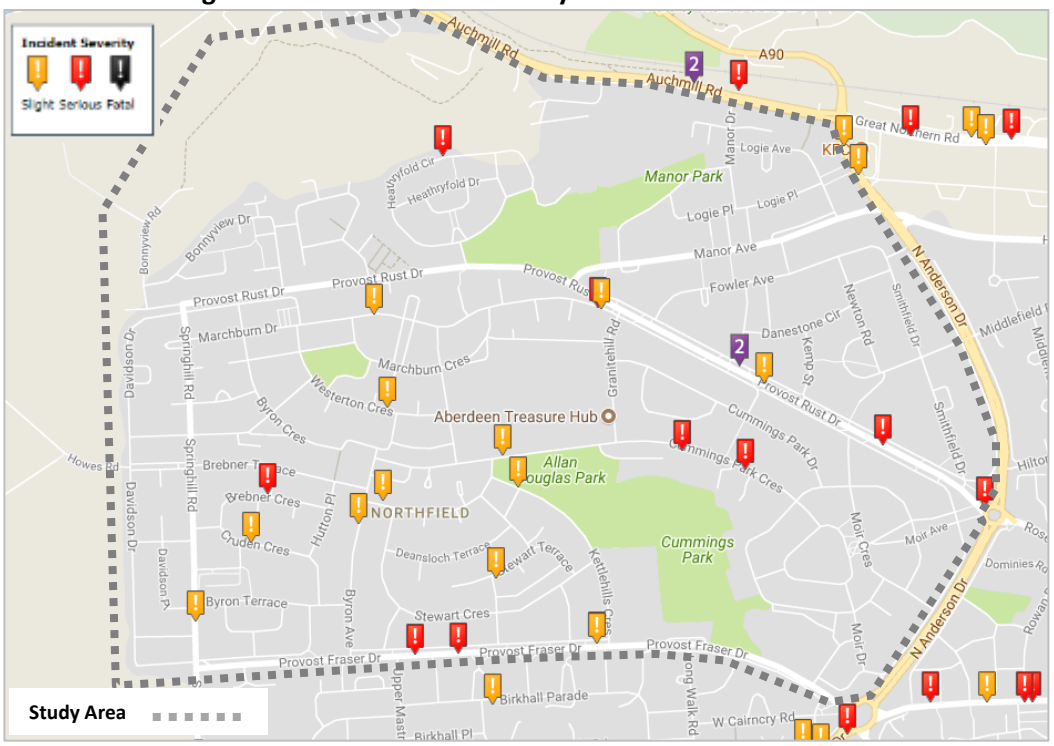


Source: CrashMap

2.6.3 In terms of collisions resulting in pedestrian casualties, Figure 10 indicates that during the study period (2012 – 2017) 23 collisions occurred within the study area, of which 14 resulted in slight severity injuries and 9 resulted in serious severity injuries. Of these 23 collisions, 5 occurred on Provost Rust Drive and 3 occurred on Provost Fraser Drive.

2.6.4 Child causalities represented 61% of the pedestrian casualties recorded. Whereby, 14 of the 23 pedestrian casualties were children, 7 of which resulted in slight severity injuries and 7 resulted in serious severity injuries. To note, the collision marker shown as "*2*" are where two collisions occurred at the same location and both resulted in slight severity injuries.

Figure 10: Location and Severity of Pedestrian Casualties



Source: CrashMap

2.7 Public Perceptions and Consultation

2.7.1 This section explores local resident's views, perceptions and concerns regarding the existing walking and cycling network in Middlefield, Heathryfold and Northfield. This study has been informed by information gathered during two consultation events.

2.7.2 The first consultation event took place at The Hub on the 28th November 2017. During this event existing issues/concerns along with potential opportunities/improvements were discussed with local residents. A questionnaire was provided to those who took part in the consultation and was also made available online on the ACC website, a copy of which is provided in Appendix 1. Further consultation was undertaken with students at the Northfield Academy during the week commencing 4 December 2017, and students were also encouraged to complete the online questionnaire. Feedback received during these consultation exercises can be summarised as follows:

- Inadequate or lack of street lighting along existing footways and alleyways is a significant issue for people, throughout the entire study area, with many residents feeling unsafe to walk/cycle in certain areas when it is dark. Specific areas cited as not having sufficient lighting included Marchburn Drive, Logie Place, Strachan Place, Craigendarroch Place, Deansloch Terrace, Heathryfold and the Auchmill Community Woodland area;
- Many of the existing tracks within the Auchmill Community Woodland area are eroded by the rain, or where there are no formed tracks it can get muddy. It was suggested that these tracks could be formalised, existing track surfaces improved and more recreational walking routes provided;
- Some of the existing tracks within the Auchmill Community Woodland area are not clearly marked or signed and people unfamiliar with the area can find themselves walking out on to the Auchmill Golf Course without realising. It was suggested that better signing of the routes through the woodland would be beneficial;
- A general lack of cycling facilities was cited by local residents and a number of parents said they would like more areas to take their children on bikes;
- The vast majority of respondents noted that car parking on pavements, on grass or on the road was an issue in their area with Heathryfold Park being noted as a particular area of concern;
- The volume and speed of vehicles is perceived to be an issue particularly on Provost Rust Drive, Marchburn areas, North Anderson Drive resulting in people feeling that conditions are unsafe for walking and/or cycling;
- Generally, it was felt that the condition of the footways was poor and becomes slippery during icy weather;
- In terms of suitable places to cross the road, it was a fairly evenly split between those who considered there to be adequate places to cross and those who didn't; and
- Dog fouling and general rubbish on the pavements was also a significant issue for residents occurring generally throughout the study area.

2.7.3 A second consultation event took place once again in The Hub, on Tuesday 13 February. The purpose of this second consultation event was to discuss and obtain feedback on the proposed improvements with the local community. Feedback on the proposed improvements was positive and a small number of additional infrastructure improvements were suggested by attendees. These have been incorporated into the improvements discussed in Section 5.0 of this report.

3.0 FUTURE COMMITTED DEVELOPMENT

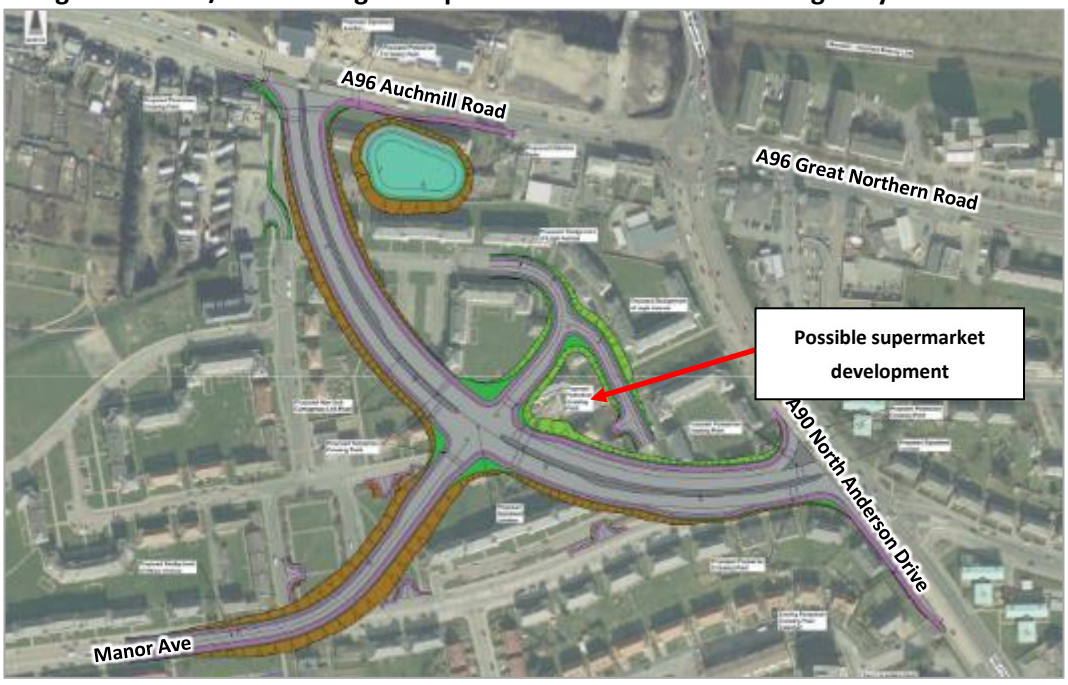
3.1 Haudagain Improvement Scheme

3.1.1 The A90/A96 Haudagain Improvement Scheme comprises a new 500m long dual carriageway link road. This will include construction of three new signal controlled junctions which connect the new link road to the existing road network as shown in Figure 11.

3.1.2 Manor Avenue realigned to tie-in to the new link road with Logie Avenue, Logie Place/Logie Terrace/Manor Terrace closed and stopped up. New footways and/or cycleways are proposed next to the new link road and Manor Avenue with traffic signals to include pedestrian crossings. It is anticipated that upon completion of the new link road or shortly thereafter, the A96 will become de-trunked and come under control of ACC.

3.1.3 There are proposals to market the parcel of land, referred to as 'The Triangle', bound by the realigned section of Logie Avenue for a new supermarket and residential development.

Figure 11: A90/A96 Haudagain Improvements - New Dual Carriageway Link Road



Source: Transport Scotland Public Consultation Drawing No: B1557630/PE/01/002 Rev.0

3.1.4 It is envisaged that the new link road will provide a much more suitable and desirable route option for cyclists travelling from North Anderson Drive to Auchmill Road and vice versa compared to the current situation which requires them to navigate the A90/A96 Haudagain junction.

3.2 Middlefield Greenspace Project

3.2.1 The Middlefield Greenspace project is currently under construction and comprises a range of improvements to the parklands which surround The Hub community facility which serves the communities of Middlefield, Heathryfold and Northfield.

3.2.2 These improvements include de-culverting the Scatter Burn from underground to above ground as part of a flood alleviation scheme, creating new pedestrian and cycle paths throughout the park, improvements to the pavements on adjacent streets beside the development and installing new landscaping to create an attractive park area which will be user friendly to the residents. The proposed new paths through the greenspace area are shown in Figure 12.

Figure 12: Middlefield Greenspace Plan

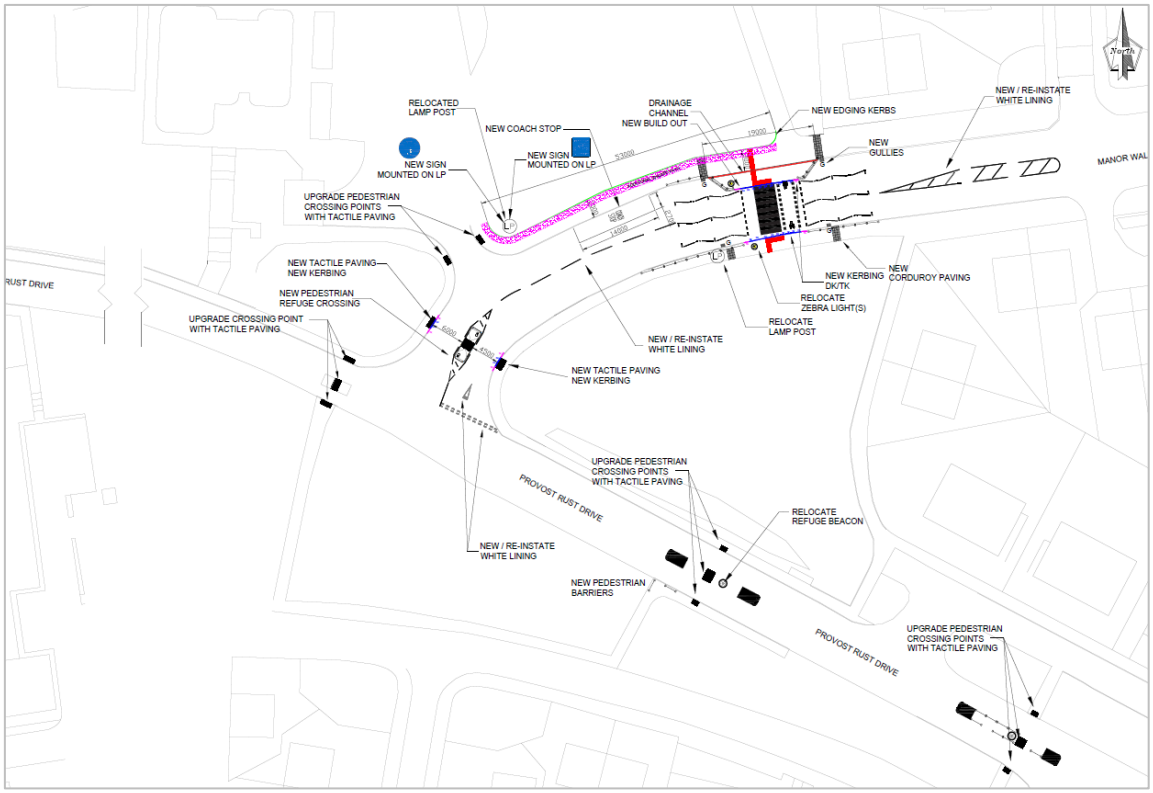
Source: https://news.aberdeencity.gov.uk

3.3 Provost Rust Drive/Manor Avenue Improvements

3.3.1 A highway improvement scheme has been developed by Aberdeen City Council for the Provost Rust Drive/Manor Avenue junction, which seeks to improve the crossings for pedestrians, cyclists and people with disabilities. These improvements, as shown in Figure 13, are anticipated to be completed during April/May 2018 and include:

- Upgraded crossing points on Provost Rust Drive;
- New crossing point on Manor Avenue junction arm with central reserve; and
- New build out to reduce carriageway width and pedestrian refuge point for crossing at approximate location of current zebra crossing on Manor Avenue.

Figure 13: Proposed Provost Rust Drive/Manor Avenue Improvements



Source: Aberdeen City Council; Provost Rust Drive – Manor Ave. Active Travel Improvements (Drawing:SFC-1082-DR-006)

3.4 Greenferns Development

3.4.1 The Greenferns Development is located to the west of the study area and has been designated as a future development area comprising approximately 1,200 dwellings, a business/employment site and neighbourhood centre over 73 hectares (ACC, 2017c). The Greenferns Development Framework provides an outline of the key pedestrian and cycleway links to be included as part of the over development, as shown in Figure 14.

3.4.2 Three key pedestrian/cycleway primary infrastructure connection points are proposed. These will be located at Provost Rust Drive, Davidson Gardens and Provost Fraser Drive and will also form links to Core Path 8 and Core Path 44. Secondary pedestrian links will be provided to Davidson Drive.

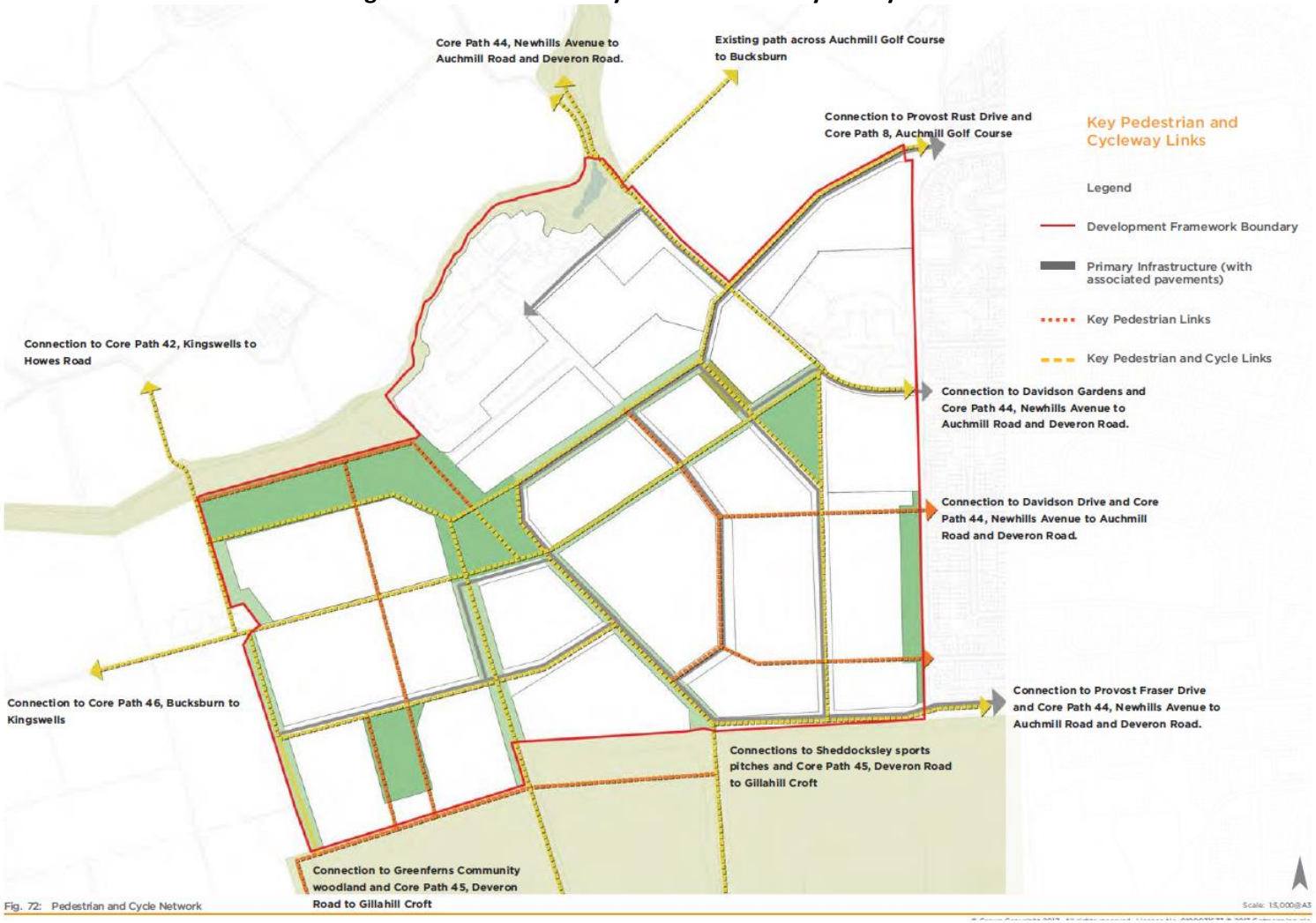
3.4.3 It is envisaged that the proposed pedestrian and cycle links within the Greenferns Development will be designed so as to:

- Make walking and cycling as attractive as possible;
- Create routes which link key destinations in as direct a manner as possible;
- Allow for circular trips for recreation;
- Link into the existing Core Path Network;
- Provide a strategic east-west link through the site connecting Howes Road to the Kingswell path network;

- Provide links to Westhill/Aberdeen cycle route;
- Create safe routes to existing Heathryburn School and Orchard Brae; and
- Provide connections to Northfield, incorporating an east-west link.

3.4.4 Consequently, there are opportunities for active travel improvements implemented within the Middlefield, Heathryfold, Northfield study area to feed into the walking and cycling strategy for the Greenferns Development and provide an overall connected and consistent network between the two areas.

Figure 14: Greenferns Key Pedestrian and Cycleway Links



Source: Greenferns, Aberdeen; Development Framework (ACC, 2017c)

3.5 Active Travel Improvement Plan

3.5.1 The Aberdeen Active Travel Action Plan sets out the policies and design principles that Aberdeen City Council will abide by over the next five-year period, along with the actions and interventions to be carried out in a bid to increase the number of journeys undertaken by active travel.

3.5.2 A number of improvement projects are identified within the Action Plan. While none relate specifically to the study area, an improvement project for the A96 pedestrian and cycle route from Aberdeen to Inverurie seeks to improve access to Bucksburn/Dyce which are close by. The Action Plan does however prioritise local improvements, stating that "*while the purpose of this Action Plan is to set a strategic approach for walking and cycling, it is appreciated that many journeys made on a daily basis are local in nature. As such, improvements are also required at neighbourhood level to make these journeys easier by walking and cycling*".

3.5.3 The policies, design principles and actions are divided into three themes including planning for walking and cycling, active travel infrastructure and awareness raising/promotion. These have been used to inform and guide the development of potential active travel improvement options within the study area, where appropriate.

4.0 ACTIVE TRAVEL IMPROVEMENT OBJECTIVES

4.1 Study Objectives

4.1.1 Based upon the work outlined in Sections 1 to 3 of this report, a set of objectives have been developed to help guide the development of the Active Travel Improvement Priorities Study. These objectives have been drawn up to reflect the issues identified as being locally important through consultation, while also reflecting core design principles for walking and cycling infrastructure. The study objectives, are presented in Table 1.

Table 1: Study Objectives

Objective		Terms of Reference
1	To provide safe walking and cycling routes through the Middlefield, Heathryfold and Northfield	Seeking to ensure that routes promoted for walking and cycling through the study area minimise the potential for both actual and perceived road safety risk for all users, while promoting responsible road user behaviours in terms of vehicle speeds, parking and respect for other road users.
2	To provide routes which are direct and along existing and latent desire lines	Seeking opportunities to design routes which are as direct as possible, minimising detours and delays. The impact of junctions and crossings on journey times should be considered (e.g. school run, local commuters, local short distance trips).
3	To provide coherent routes which are logical and easy to follow	Seeking to design/identify improvement measures which provide a continuous and consistent journey from origin to destination either through improvements to existing facilities or providing new infrastructure.
4	To design routes/facilities which provide users a high level of comfort	Ensuring proposed routes/facilities meet surface width, quality surface (e.g. absence of defects and potholes) and gradient standards and be convenient by avoiding complex manoeuvres (for all users including wheelchair users, mobility scooters and mobility impaired).
5	To design routes which make walking/cycling an attractive option	Ensuring that proposed improvements or new infrastructure is designed so that it complements and enhances its environment in such a way that walking/cycling is attractive. This includes consideration of lighting, personal security, aesthetics, environmental quality and noise.
6	To provide routes which are adaptive to future growth	Design should consider the potential for future expansion and cater for an anticipated rise in the number of people cycling/walking.
7	To provide routes which are accessible for all users including people with mobility impairments.	Ensuring that routes promoted for walking/cycling cater for all non-motorised users, including mobility scooters, wheelchair users and the mobility impaired.
8	To provide measures which contribute to improved socio-economic outcomes	Seeking opportunities whereby local businesses and organisations should benefit from improved access, connectivity and circulation by active modes.

5.0 POTENTIAL ACTIVE TRAVEL IMPROVEMENT OPTIONS

5.1 Introduction

5.1.1 This section sets out a range of potential active travel improvement options based on the feedback and issues raised during the public consultation, identified gaps/opportunities in the existing network and future development improvements. These improvement options have been split into the following categories:

- **Strategic Walking/Cycling Routes:** Possible routes which provide wider strategic links within the study area and to the wider city (and regional) walking and cycling networks.
- **Local Walking/Cycling Routes:** Localised improvements which cater for identified desire lines not currently catered for and/or improve facilities for all users.
- **Recreational Walking/Cycling Routes:** Improvements or extensions to existing or potential leisure walking/cycling routes.

5.1.2 Walking and cycling as modes of transport have many similar benefits in terms of health and well-being, reducing congestion and pollution. The barriers to people travelling on foot or by bike are also similar, for example high traffic speeds and poor or a lack of infrastructure act as barriers.

5.1.3 However, they are distinct modes with important differences to be noted. People walking will travel at different speeds to those cycling and consequently have different needs which should be considered in the planning and design of networks/infrastructure. Generally, pedestrians and cyclists prefer to have their own spaces so they can travel at their own speed and avoid potential conflicts. Therefore, the improvements being proposed for the locality have been developed so as not to improve facilities for one group of users at the expense of others.

5.1.4 The improvement options outlined in the following sections broadly fall into two categories, being improvements to existing infrastructure and/or the introduction of new routes. Where improvements have been suggested to address identified barriers or deficiencies in the network, these have mainly included the following:

- New footway links along desire lines;
- New or improved existing pedestrian and/or cyclist crossings;
- Construction of new or resurfacing of existing footways;
- Increasing capacity for pedestrians and cyclists by widening existing footways and/or reallocation or carriageway space;
- Reducing traffic speeds, e.g. by introducing 20mph limits/zones and providing traffic calming features;
- Providing dropped kerbs and tactile paving; and
- Improving signing and wayfinding, both for individual routes and network wide.

5.1.5 Where there are several minor improvements identified along the same route or in the same area, it is anticipated that these works could be combined into a package of works, to ensure that individual measures can be implemented together and achieve complementary benefits and synergies.

5.1.6 To note, the options discussed in the following sections are considered to be high-level conceptual options and would need to undergo further preliminary and detailed design to identify potential road safety impacts, key risks to deliverability along with consideration of matters such drainage, land ownership, and statutory undertakers' equipment.

5.1.7 Similarly, the associated costs estimates shown are high level indicative costs based on experience of implementing similar infrastructure improvements and walking/cycling facilities and don't include for fees, contingency, any relocation or diversion of Statutory Undertakers equipment, traffic management costs.

5.1.8 An overall map showing the potential active travel route improvement options is provided in Appendix 2 and how these would tie into the existing and future planned walking/cycling infrastructure provision.

5.2 Strategic Walking/Cycling Routes

Route 1 – New Link Road Connection

5.2.1 As part of the A90/A96 Haudagain Improvement scheme, new foot/cycleway facilities will be constructed and appropriate crossing facilities incorporated at the new junctions. The scheme extents terminate approximately halfway along Manor Avenue.

5.2.2 There is an opportunity to connect the path network within the Middlefield Greenspace area to the New Link Road foot/cycleway facilities and potential new supermarket. Given the envisaged level of use it is considered that a shared use facility approximately 280m in length would be sufficient along the northern side of Manor Avenue, as shown in Figure 15.

5.2.3 It is also noted that this proposed shared foot/cycleway facility could link into the proposed improvements at the Provost Rust Drive/Manor Avenue junction.

Figure 15: Manor Avenue Shared Foot/Cycleway Link

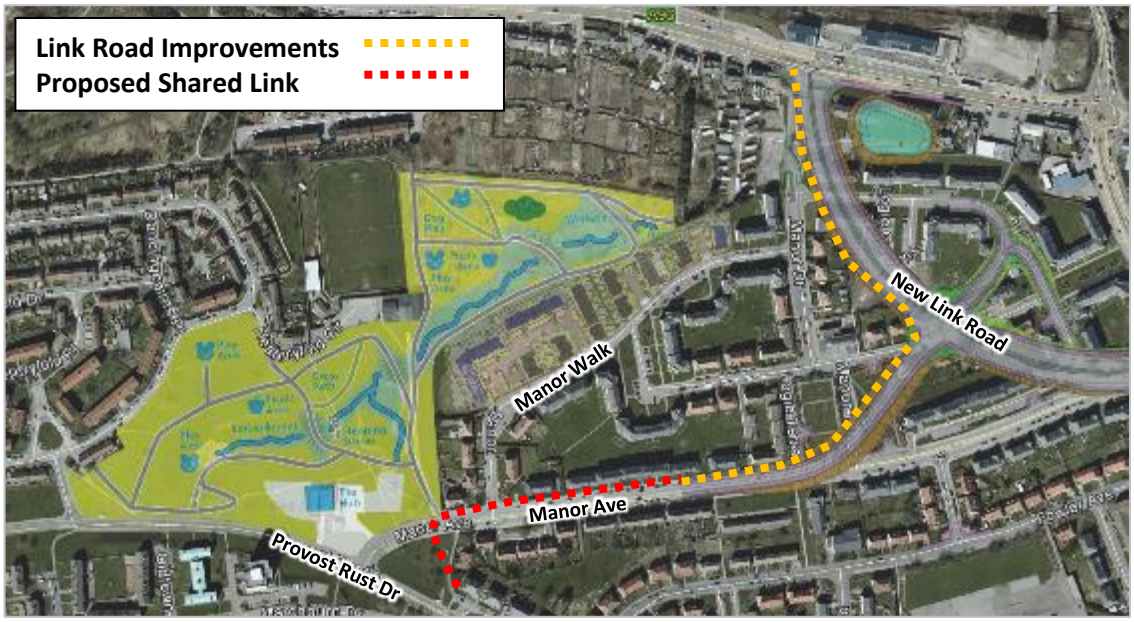
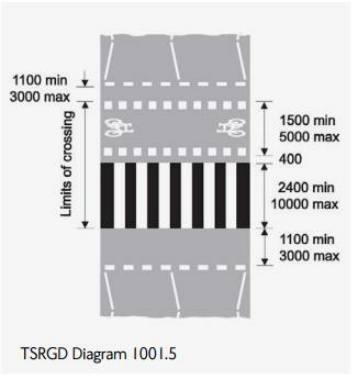


Table 2: Route 1 Improvements Summary

Route Ref.		Photo	Comments	Suggested Improvement	Indicative Costs
1.1	Provost Rust Dr / Manor Avenue Junction		A new build out and pedestrian refuge is proposed at the existing zebra crossing on Manor Avenue as part of the Provost Rust Dr/Manor Ave junction improvements. This could be modified to a parallel pedestrian/cyclist crossing and connect to the proposed new access path to Provost Rust Dr.	Upgrade zebra to parallel pedestrian/cycle crossing (as shown below) and new 3.0m wide access path approx. 53m long to Provost Rust Dr.  Source: London Cycling Design Standards (2016)	£25,000
1.2	Manor Ave/ Manor Walk Junction		The Manor Ave / Manor Walk junction currently has a flat top speed hump set back into the minor arm, where the speed limit changes from 30mph to 20mph zone.	Remove existing speed hump on Manor Walk, provide raised table on Manor Walk junction with priority for cyclists over the minor arm. Shared path signs using Diagram No. 956 with Diagram No. 1057 where required along Manor Ave shared foot/cycleway.	£10,000
1.3	Manor Ave northern footway		Footway along the northern side of Manor Ave is in the region of 4.0m wide. Short sections where there are indented car parking bays, footway narrows to 2.1m wide. Recommend the removal of the parking bays on the north side to provide a 4.0m wide shared foot/cycleway. On-street parking could possibly be retained by removing the central hatching.	Shared path signs using Diagram No. 956 with Diagram No. 1057 where required along Manor Ave shared foot/cycleway. Tie into the New Link Road shared foot/cycleway improvements. Remove parking bays on northern side to provide continuous 4.0m wide foot/cycleway. Relocate lamp columns as required to the rear of the footway. Remove flagged surface and replace with tarmac surface.	£25,000
				Total	**£60,000**

Route 2 - North-South Link via Kettlehills Crescent and Granitehill Road

5.2.4 A north-south foot/cycleway link connecting to the proposed improvements at the Provost Rust Drive/Manor Avenue junction (as discussed in Section 3.3) through to Provost Fraser Drive is recommended.

5.2.5 This route would provide links to key attractors including The Hub community centre, Granitehill Road Industrial Estate, Northfield Swimming Pool, Northfield Academy and the Northfield 3G pitches. It would also tie into proposed Route 1 and Route 3.

Figure 16: North-South Link Via Kettlehills Crescent and Granitehill Road

Table 3: Route 2 Improvements Summary

Route Ref.		Photo	Comments	Suggested Improvement	Indicative Costs
2.1	Existing zebra crossing on Provost Fraser Dr		Upgrade existing zebra crossing to facilitate link to proposed route from the southern side of Provost Fraser Drive and widen existing link onto Beech Road.	Upgrade existing zebra crossing to parallel cycle/pedestrian priority crossing and provide shared 3.5m wide foot/cycleway link over 6.0m to Beech Road.	£50,000
2.2	Granitehill Place junction		Existing footway from zebra crossing to Granitehill Pl junction is approximately 1.5m wide. Uncontrolled crossing currently provided over Granitehill Pl junction comprising dropped kerbs and tactile paving.	Widen existing footway to 3.5m into verge over 15m. Provide raised table junction over Granitehill Place with priority for pedestrians/ cyclists over the minor arm. Shared path signs using Diagram No. 956 with Diagram No. 1057 where required.	£15,000
2.3	Provost Fraser Dr		Existing wide grass verge area adjacent the existing northern footway on Provost Fraser Dr. This is understood to be within the extents of the public highway.	Construct new 3.0m wide, 260m long segregated cycleway along northern side.	£65,000
2.4	Long walk Terrace junctions	 	No existing crossing facilities at either of the existing junctions of Long Walk Terrace. Existing footway is 1.8m with wide adjacent grass verge area. Widening footway could require relocation of two street light columns.	Provide raised tables over both junctions either end of Long Walk Terrace with priority for cyclists/pedestrians. Continue as shared path by widening existing path to 3.0m into grass verge area over approximately 88m.	£35,000

Route Ref.		Photo	Comments	Suggested Improvement	Indicative Costs
2.5	Existing path on north side of Provost Fraser Dr	 	<u>Cyclists</u> Transition cyclists onto existing northern-most path running parallel to footway, 2.1m wide signed for cyclists. Existing surface to be upgraded to provide smooth riding surface for cyclists. Flush dropped kerbs provided to transition cyclists onto Kettlehill Cr. carriageway. <u>Pedestrians</u> Existing footway adjacent to carriageway available for pedestrians.	Cycles route signs using Diagram No. 955. Resurface 2.1m wide path over length of 125m. Dropped kerbs and tactile paving.	£20,000
2.6	Existing pedestrian refuge on Provost Fraser Dr		Upgrade existing pedestrian crossing to facilitate link to proposed improvements outlined in Route 3.4 across Provost Fraser Drive.	Upgrade existing pedestrian refuge to parallel cycle/pedestrian priority crossing.	£50,000
2.7	Kettlehills Crescent		<u>Cyclists</u> This would be an on-road section of the route for cyclists. Lightly trafficked low speed environment with posted 20mph speed limit. Slight to moderate gradient. Speed cushions currently located along route which could be replaced with sinusoidal humps to better facilitate cyclists on road while keeping vehicle speeds low. <u>Pedestrians</u> A 2.0m wide footway is provided on the eastern side for 215m from Provost Fraser Dr. then terminates (no crossing provided) and no footway on east side.	Replace existing speed cushions with cycle-friendly sinusoidal humps (although it is understood ACC prefer speed cushions). Extend 2.0m wide footway construction for distance of 125m on eastern side of Kettlehills Cr. to connect to Allan Douglas Park Link.	£15,000

Route Ref.		Photo	Comments	Suggested Improvement	Indicative Costs
2.8	Allan Douglas Park Link	 	Provide appropriate facility onto Kettlehills Cr. to transition cyclists to/from Allan Douglas Park Link. Existing link through Allan Douglas Park is approx. 2.5m-2.9m wide. Some resurfacing needed towards the Kettlehills Cr. end of the track. Rest of the track surface is in reasonable condition although could be improved to provide smoother surface for cyclists. Sufficient space to accommodate widening and provide a 3.5m wide shared path.	Replace speed cushions with flat topped kerb-to-kerb hump with sinusoidal ramps to transition cyclists from to/from Allan Douglas Park Link. This would help cyclists but also mobility impaired users. Shared path signs using Diagram No. 956 with Diagram No. 1057 where required and resurfacing/widening of existing track over 128m.	£15,000
2.9	Link onto Cummings Park Terrace		Moderate gradient over a short distance where path joins Cummings Park Terrace. Requires resurfacing and widening to provide 3.5m wide shared path.	Shared path signs using Diagram No. 956 with Diagram No. 1057 where required and resurfacing/widening of existing track to 3.5m over 26.0m.	£5,000
2.10	Quarry Road		The route would then cross over Quarry Road onto the northern footway (2.5m-2.8m wide). Quarry Road can be relatively busy and therefore a parallel pedestrian/cyclist priority crossing is suggested. This would be located to the west of the junction with Cummings Park Terrace. May be an opportunity to widen over short length up to Granitehill Road.	Parallel pedestrian/cyclist crossing on Quarry Road. Shared path signs using Diagram No. 956 with Diagram No. 1057 where required on Quarry Road (northern side).	£50,000
2.11	Granitehill Road western footway		The footway along the western side of Granitehill Road is approximately 3.2m wide. A shared foot/cycleway could be facilitated along here. This would cross over approximately five accesses where priority should be given to pedestrians/cyclists.	Shared path signs using Diagram No. 956 with Diagram No. 1057 where required.	£20,000

Route Ref.		Photo	Comments	Suggested Improvement	Indicative Costs
			Partial resurfacing required to provide smooth surface for cyclists. Appropriate visibility splays from accesses to be provided.	At accesses, pedestrian/cyclist priority to be highlighted through the use of a contrasting colour treatment and flush speed tables to be provided. Partial resurfacing required.	
2.12	Provost Rust Drive		The route could then tie into the proposed improvements proposed as part of the Provost Rust Dr / Manor Walk improvements (discussed in Section 3.3). The upgraded crossing point over Provost Rust Drive in this location could potentially be amended to a parallel pedestrian/cyclist crossing.	Parallel pedestrian/cyclist priority crossing provided over Provost Rust Drive. Subject to further assessment of traffic flows and speeds on Provost Rust, a signalled cycle/pedestrian facility may be appropriate.	£50,000 (Parallel Zebra) / £75,000 (Toucan)
				Total	**£390,000 /£415,000**

Route 3: East-West Link via Provost Fraser Drive

5.2.6 This proposed route provides a 1.6km long east-west strategic link along the southern side of Provost Fraser Drive by upgrading the existing footway facility. There is potential to link this to an upgraded crossing facility on North Anderson Drive which could facilitate future expansion of the network towards the city centre.

5.2.7 The route, as shown in Figure 17, would provide links to Northfield Academy and the Northfield 3G pitches. It would also tie into proposed Route 2 and Route 4.

5.2.8 It is noted that in addition to the off-road route, as described below, potentially an on-road route along the northern side of Provost Fraser Drive could also be implemented i.e. on Springhill Terrace and Provost Fraser Drive (residential road).

Figure 17: East-West Provost Fraser Drive Link

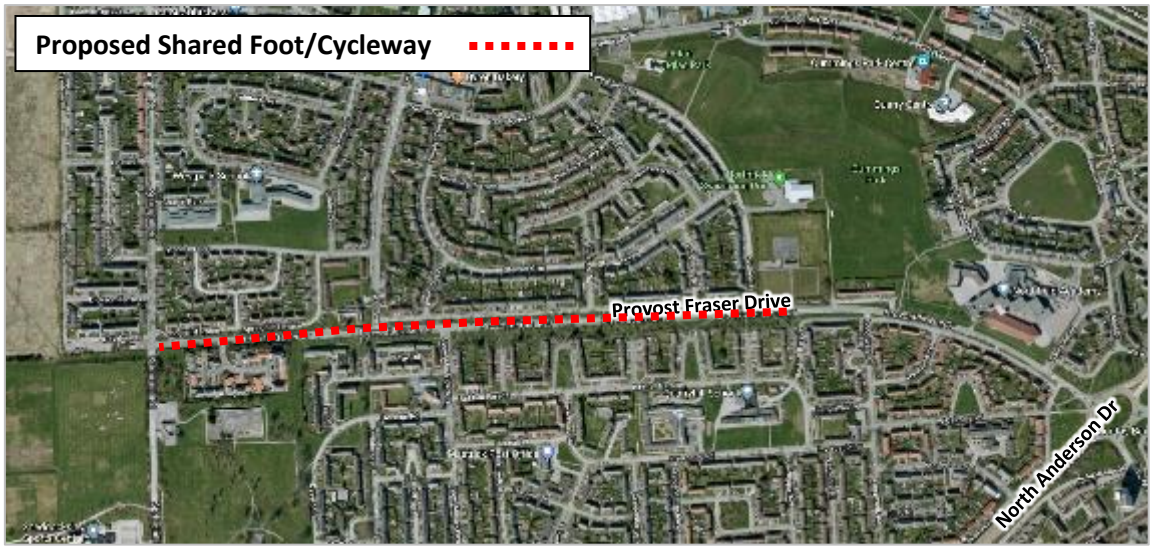


Table 4: Route 3 Improvements Summary

Route Ref.		Photo	Comments	Suggested Improvement	Indicative Costs
3.1	Provost Fraser Drive		The shared path commences at the upgraded crossing point identified in route 2.6 opposite the bowling club. The existing footway along the southern side of Provost Fraser Dr is approx. 2.0m wide. There is sufficient space within the grass verge to widen the path to provide 3.5m shared foot/cycleway. There are numerous connecting links to the terraces to the south which could also be widened to min. 3.0m width.	Existing path widened from 2.0m to 3.5m over 560m to facilitate a shared path, signed using Diagram No 956 with Diagram No 1057 where required.	£65,000

Route Ref.		Photo	Comments	Suggested Improvement	Indicative Costs
3.2	Upper Mastrick Way junction		Priority given to pedestrians/cyclists by constructing a raised crossing with flush kerbs over Upper Mastrick Way and reduction of corner radii.	Raised pedestrian/cyclist priority crossing provided over Upper Mastrick Way junction.	£12,500
3.3	Provost Fraser Dr		Continue shared foot/cycleway along southern side of Provost Fraser Drive. Widening existing 2.0m wide footway to 3.5m. There are numerous connecting links to the terraces to the south which could also be widened to min. 3.0m width.	Existing path widened from 2.0m to 3.5m over 345m to facilitate a shared path, signed using Diagram No 956 with Diagram No 1057 where required.	£30,000
3.4	Donald Dewar Court junction		Priority given to pedestrians/cyclists by constructing a raised crossing with flush kerbs over Donald Dewar Ct. Existing speed hump on Donald Dewar Ct to be removed.	Raised pedestrian/cyclist priority crossing provided over Donald Dewar Ct junction.	£12,500
3.5	Provost Fraser Dr		Continue shared foot/cycleway along southern side of Provost Fraser Drive. Widening existing 1.7m-2.0m wide footway to 3.5m.	Localised widening to ensure continuous 3.5m wide shared path over 100m. Shared path signed using Diagram No 956 with Diagram No 1057 where required.	£20,000
3.6	Springhill Rd / Provost Fraser Dr Junction		Remove the existing pedestrian refuge on Springhill Road (south of Provost Fraser Dr). Implement parallel pedestrian/cyclist crossing on Springhill Road to connect pedestrians/cyclist to new shared path on west side of Springhill Road.	Replace existing pedestrian refuge with parallel pedestrian/cyclist crossing on Springhill Road.	£50,000
				Total	**£190,000**

Route 4: North-South Link via Davidson Drive

5.2.9 This proposed route provides a north-south strategic link between Provost Fraser Drive and Provost Rust Drive along Davidson Drive. This route would provide links to the Heathryburn and Orchard Brae Primary School, although would not be recommended as a cycling route for children given it would be largely on-road. It would also tie-into proposed Route 3 and Route 5.

5.2.10 As part of the Greenferns Development, primary infrastructure connections will be created through to Provost Fraser Drive, Davidson Gardens and Provost Rust Drive. It is anticipated that these connections could be designed to incorporate suitable pedestrian/cyclist facilities. Similarly, depending on what future development occurs to the west of Davidson Drive, potentially a segregated off-road cycle facility could be incorporated into the design which would provide a more suitable facility for children cycling to/from the primary schools.

5.2.11 To note, Springhill Road was discounted as a potential alternative north-south link. This was due to the limited available footway width either side of Springhill Road to accommodate an off-carriageway cycle facility. Widening of the existing footway is likely to impact existing established trees and/or parking, both of which may result in resistance from local residents. Springhill Road is noticeably busier in terms of traffic flows compared to Davidson Drive and is also a bus route.

Figure 18: North-South Link along Davidson Drive

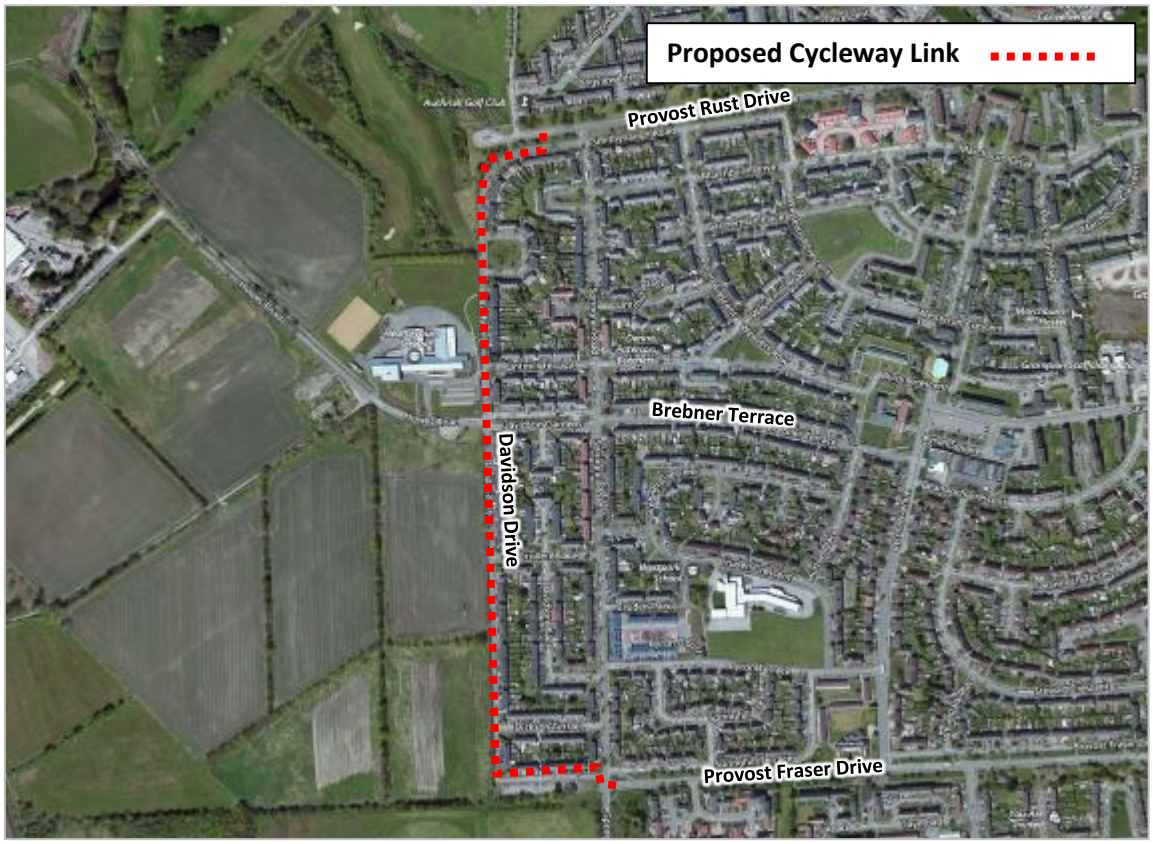


Table 5: Route 4 Improvements Summary

Route Ref.		Photo	Comments	Suggested Improvement	Indicative Costs
4.1	Springhill Rd / Provost Fraser Dr Junction		Commence route at parallel pedestrian/cyclist priority crossing on Springhill Road as proposed for Route 3.9.	-	-
4.2	Davidson Dr (one-way section)		The one-way section of Davidson Drive is approximately 4.2m wide. It appears to be lightly trafficked and some on-street parking occurs (though it was noted that all the properties appear to have off-street parking). A 3.0m wide two-way kerb-segregated cycle lane to be provided on the southern side of Davidson Dr. (land ownership to be confirmed) to connect to the proposed crossing on Springhill Road. Along the north-south one-way section, an advisory cycle lane for contraflow southbound could be provided on the western side (with hatching/1.5m cycle right turn lane at northern end of one-way system) to link up at southern end to two-way segregated off road. Northbound cyclists to use carriageway and install cycle friendly sinusoidal humps to encourage low speeds.	New pedestrian connection on west side of Springhill Road connecting to crossing. New 3.0m wide two-way segregated cycle lane connecting new Springhill Road crossing to Davidson Drive. Advisory southbound contraflow cycle lane provided on western side of north-south one-way section.	£125,000
4.3	Davidson Dr (two-way section)		The two-way section of Davidson Dr is approx. 5.8m wide. On-street parking occurs along the eastern side.	Implement Diagram No. 1057 markings along route. Round-top humps currently located along route to be replaced with sinusoidal humps.	£15,000

Route Ref.		Photo	Comments	Suggested Improvement	Indicative Costs
			Appropriate for on-road route as it is a low speed environment with posted 20mph speed limit.		
4.4	Smithyhaugh Rd to Provost Rust Dr		A raised crossing and shared foot/cycleway link could be constructed to transition cyclists from Smithyhaugh Rd to Provost Rust Dr.	Construct raised crossing on Smithyhaugh Rd and 3.0m wide link to Provost Rust Dr.	£6,000
				Total	**£146,000**

Route 5: East-West Link via Provost Rust Drive

5.2.12 This proposed route provides a 2.0km long east-west link along Provost Rust Drive, as shown in Figure 19. This route would provide links to The Hub community centre and Middlefield Greenspace improvements. It would also tie into the proposed improvements at the Provost Rust Drive/Manor Avenue junction as well as proposed Route 1, Route 2 and Route 4.

Figure 19: East-West Link Along Provost Rust Drive

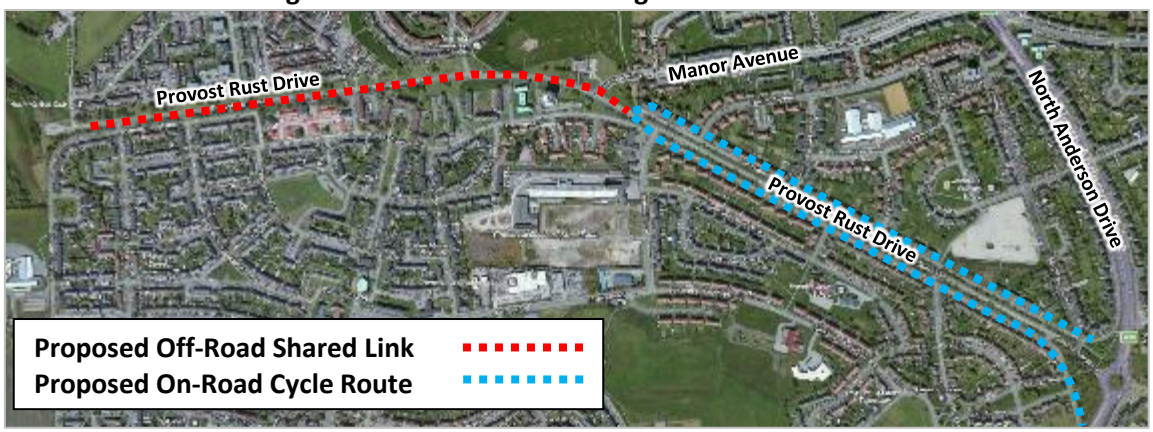


Table 6: Route 5 Improvements Summary

Route Ref.		Photo	Comments	Suggested Improvement	Indicative Costs
5.1	Provost Rust Drive / Smithyhaugh Rd connection		A new crossing could be constructed on Provost Rust Dr (to the east of the Bonnyview Rd junction) which would link to Route 4.4 on Smithyhaugh Rd.	Construct new parallel pedestrian/cyclist priority crossing on Provost Dr.	£50,000
5.2	Provost Rust Dr (Bonnyview Rd to Manor Ave)		Widen existing 2.0m-2.5m wide footway on northern side of Provost Dr to 3.5m to accommodate shared foot/cycleway facility. Would require relocation of some street light columns and possible bus stop shelter amendments. Raised pedestrian/cyclist priority crossings provided at side junctions (Bonnyview Dr, Howes Cres and Heathryfold Rd).	Existing path widened to 3.5m over approx. 950m to facilitate a shared path, signed using Diagram No 956 with Diagram No 1057 where required. Raised pedestrian/cyclist priority crossings at side junctions.	£150,000

Route Ref.		Photo	Comments	Suggested Improvement	Indicative Costs
5.3	Provost Rust Dr/Manor Ave Junction		Appropriate cyclist crossing facility over Manor Ave incorporated in to the Provost Rust Dr/Manor Ave junction improvement scheme (discussed in Section 3.3). Provision of a 3.5m shared path to transition cyclists onto the north access road. Cyclists wishing to access the southern access road could then do so by using the parallel pedestrian/cyclist crossing over Provost Rust Dr (located to the west of Granitehill Rd as proposed in Route 2.8).	Upgraded crossing over Manor Ave, widen existing path on northern side of Provost Rust Dr to 3.5m over 70m to form shared path. Signs using Diagram No 956 with Diagram No 1057 where required.	£75,000
5.4	Provost Rust Drive (northern access road)		Eastern section within 20mph zone and western section subject to speed limit of 30mph. Introducing 20mph zone along western section would create low speed environment along entire route.	Introduce 20mph zone on western section and install sinusoidal humps to help maintain low speeds. Implement Diagram 1057 markings along route.	£20,000
5.5	Provost Rust Drive (southern access road)		The whole of this route section is subject to a 20mph speed limit. Sinusoidal humps could be installed at intervals to encourage low speeds while accommodating cyclists.	Install sinusoidal humps to help maintain low speeds. Implement Diagram 1057 markings along route and appropriate signing.	£25,000
				Total	**£320,000**

5.3 Local Walking/Cycling Route Options

Route 6: Marchburn Drive to Provost Rust Drive Footway

5.3.1 A new footway link could be incorporated in the proposals at the Provost Rust Drive / Manor Avenue area along an identified desire line, as shown in Figure 20. This footway link would also assist in minimising the gradient between Marchburn Dr and Provost Rust Drive.

Figure 20: Marchburn Drive to Provost Drive Footway

Table 7: Route 6 Improvements Summary

Route Ref.		Photo	Comments	Suggested Improvement	Indicative Costs
6.1	Link from Marchburn Dr to Provost Rust Dr		This link is approximately 65m long and would form a connection between Marchburn Dr and the eastbound bus stop on Provost Rust Dr.	Construction of new 2.0m wide footway over 55m.	£12,500

Route 7: Footway Link Along Southern Side of Provost Rust Drive

5.3.2 There is an existing gap in the footway network along the southern side of Provost Rust Drive in the vicinity of the Manor Avenue junction. To improve accessibility to the proposed improved crossing facilities on Provost Rust Drive, a new footway link could be constructed, as identified in Figure 21. This would also tie into the proposed new footway link as described in Route 6.

Figure 21: Provost Rust Drive Southern Footway Link

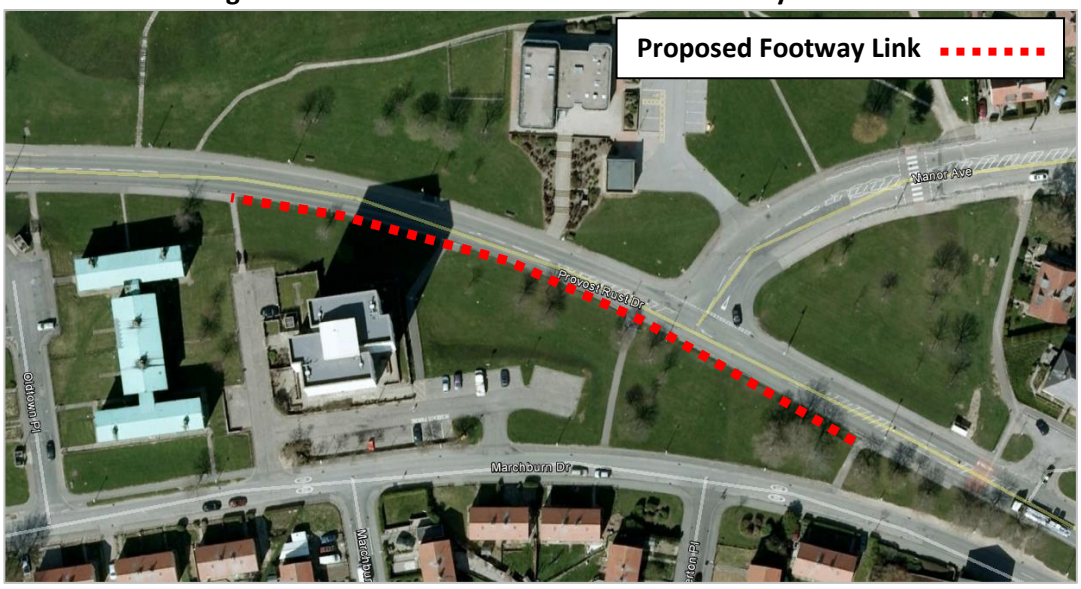


Table 8: Route 7 Improvements Summary

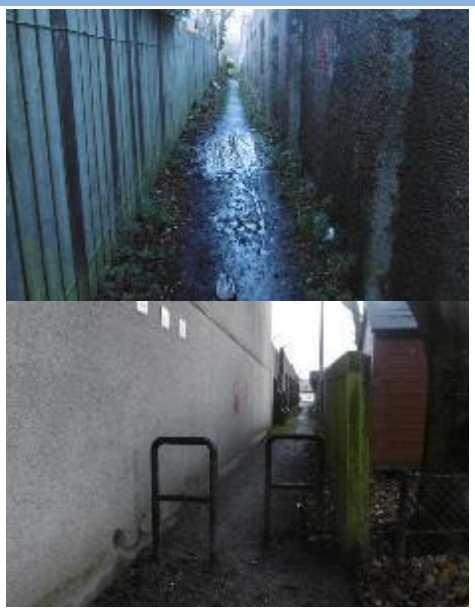
Route Ref.		Photo	Comments	Suggested Improvement	Indicative Costs
7.1	Link south side of Provost Rust Dr		This link is approximately 165m long and would form a connection between two existing footways on the south side of Provost Rust Drive.	Construction of new 2.0m wide footway over 165m.	£27,500

Route 8: Link from Greenspace Area to Auchmill Community Woodland

5.3.3 There is an existing path, located to the west of the Sunnybank Football Club, which provides a link between the Greenspace area and the Auchmill Community Woodland, as shown in Figure 22.

Figure 22: Greenspace Area to Auchmill Community Woodland Link

Table 9: Route 8 Improvements Summary

Route Ref.		Photo	Comments	Suggested Improvement	Indicative Costs
8.1	Link from Greenspace Area to Auchmill Community Woodland		The confined section of path is in a poor condition, with standing water occurring during wet weather. A footway connection could be provided across Heathryfold Circle to tie into the Greenspace Area proposals.	Resurface over 75m, improve drainage and provide footway connection to Greenspace Area. Improved lighting and remove barriers to facilitate wheelchair/pushchair access.	£25,000

Route 9: Pedestrian/Cyclist Crossing Improvements on Provost Rust Drive

5.3.4 There are a six pedestrian refuges on Provost Rust Drive between the junctions with North Anderson Drive and Manor Avenue. There are numerous short footway links to/from existing bus stops and the uncontrolled crossings on Provost Rust Drive.

5.3.5 Given the topography either side of Provost Rust Drive, many of these have moderate to significant gradients, which together with the lack of dropped kerbs is likely to make them undesirable for the elderly, or mobility impaired including wheelchair users or mobility scooter users.

5.3.6 It is understood that many of the existing pedestrian refuges on Provost Rust Drive were installed partly as a speed management measure, by locating them at the bus stops, thereby requiring motorists to wait behind stopped buses. However, anecdotal evidence suggests that some motorists perform risky manoeuvres by overtaking stopped buses and going around the refuges.

5.3.7 Provost Rust Drive is subject to a 30mph speed limit, although a variable 20mph speed limit (over approximately 700m of the easternmost section of Provost Rust Drive) operates during school start/finish times. This encompasses the section where school children are likely to be crossing Provost Rust when walking to/from the nearby schools including Manor Park School, Bramble Brae School and Northfield Academy.

5.3.8 Outlined below are upgraded pedestrian/cyclist crossing arrangements which could be implemented at three key crossing locations as identified in Figure 23. Together with the improvements and on-road facilities outlined as part of Route 5, these crossings would further enhance network connectivity and accessibility for pedestrians and cyclists.

Figure 23: Improved Pedestrian/Cyclist Crossings on Provost Rust Drive

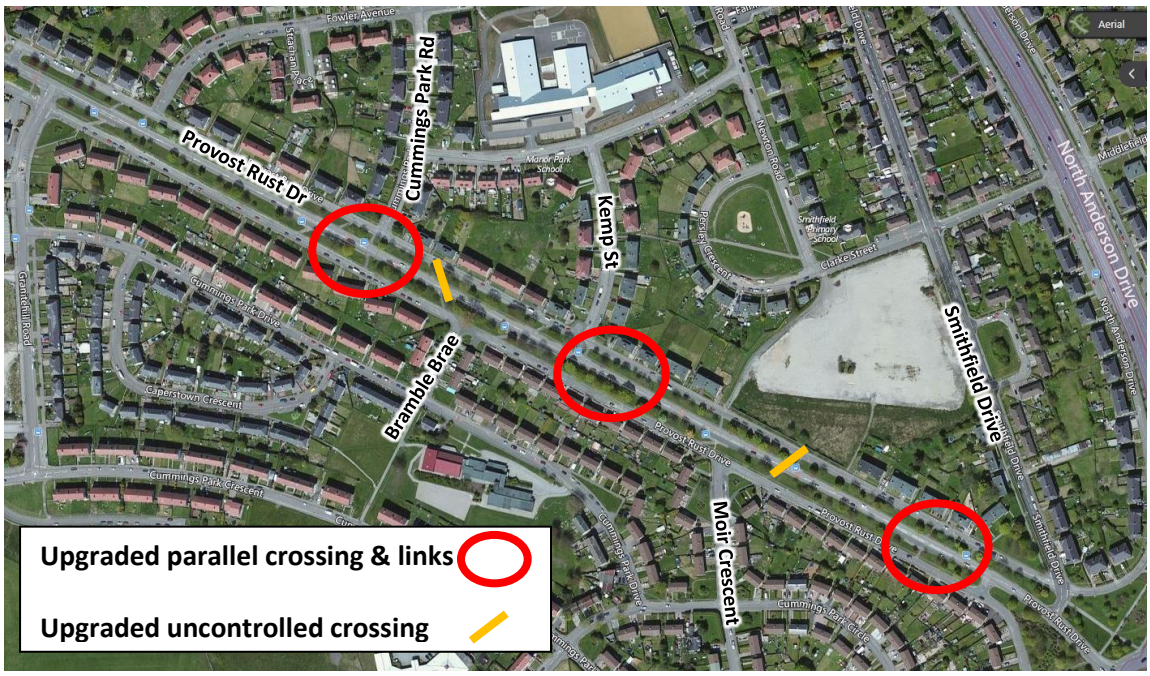


Table 10: Route 9 Improvements Summary

Route Ref.		Photo	Comments	Suggested Improvement	Indicative Costs
9.1	Provost Rust Dr crossing and refuge areas (south of Cummings Park Rd)		The existing pedestrian refuge adjacent to the bus stop, is narrow (approx. 1.5-2.0m wide with guard railing) making it difficult for cyclists or people in wheelchairs/mobility scooters to navigate. Refuges are not necessarily having the desired speed reduction impact and are potentially resulting in risky motorist behaviour as well as providing a pinch-point for any on-road cyclists using the route. Implementing parallel crossing would help highlight crossing ped/cyclists and may assist in reducing speeds.	Remove existing pedestrian refuge and retain in-line bus stops in both directions with associated road markings. Construct parallel pedestrian/cyclist crossing with associated road markings and signs (located approx. at the red coloured surface treatment between bus stops). Upgrade existing or construct new segregated ped/cycle 3.0m wide links connecting to the access roads (on diagonal to minimise gradients). Ensure appropriate footway links provided to bus stops.	£82,000
9.2	Provost Rust Dr crossing and refuge areas (southeast of Kemp St)		Existing pedestrian refuge is approx. 2.0m. No cyclist crossing facilities currently provided. Refuges are not necessarily having the desired speed reduction impact and are potentially resulting in risky motorist behaviour. Implementing parallel crossing, located approx. 250m southeast of crossing outlined above, may assist in reducing speeds.	Remove existing pedestrian refuge. Retain in-line bus stops, although these may need to be relocated slightly southeast. Construct parallel pedestrian/cyclist crossing with associated road markings and signs. Upgrade existing or construct new segregated ped/cycle 3.0m wide links connecting to the access roads (on diagonal to minimise gradients). Ensure appropriate footway links provided to bus stops.	£90,000

Route Ref.		Photo	Comments	Suggested Improvement	Indicative Costs
9.3	Provost Rust Dr crossing and refuge areas (south east end)		As per the previous two proposed crossing points discussed above, there is an opportunity to improve the ped/cycle crossing at the southeast end of Provost Rust Dr. This is adjacent the commencement of the variable 20mphspeed limit. A parallel crossing would assist in highlight the presence of crossing peds/cyclists and may assist in reducing speeds. An upgraded crossing in this location would also tie into the start/end points of the on-road routes along the adjacent access roads.	Remove existing pedestrian refuge and retain in-line bus stops in both directions with associated road markings. Construct parallel pedestrian/cyclist crossing with associated road markings and signs (located approx. at the red coloured surface treatment between bus stops). Upgrade existing or construct new segregated ped/cycle 3.0m wide links connecting to the access roads (on diagonal to minimise gradients). Ensure appropriate footway links provided to bus stops.	£82,000
9.2	Provost Rust Dr uncontrolled crossing points	 	In addition to the link improvements suggested as part of the measures outlined above, there are two uncontrolled crossings on Provost Rust Drive also to be upgraded. Barriers currently in place to prevent cyclists, wheelchair users etc from continuing across Provost Rust without stopping – a suitable similar layout should be retained. Not all crossings have dropped kerbs or tactile paving. Some of the links also have relatively steep gradients.	Widen links to 3.0m to facilitate peds/cyclists. Highlight crossing on Provost Rust Dr through colour contrast surface treatment. Ensure tactile paving and flush dropped kerbs are provided at all crossings. Realign short links with gradients >8%.	£30,000
				Total	**£284,000**

Route 10: Byron Crescent to Byron Square

5.3.9 There is an established pedestrian desire line from Byron Crescent through to Byron Square and from Marchburn Road through to the Medical Centre on Quarry Road as shown in Figure 24.

Figure 24: Route 11 Byron Crescent to Byron Square

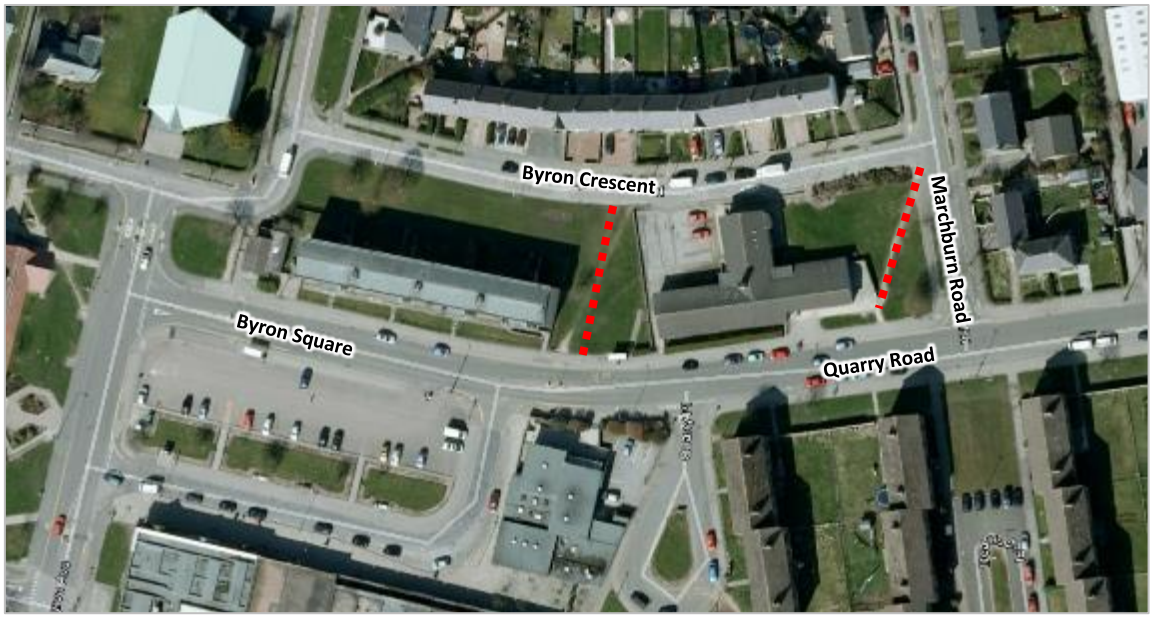


Table 11: Route 10 Improvements Summary

Route Ref.		Photo	Comments	Suggested Improvement	Indicative Costs
10.1	Byron Crescent to Byron Square		An established desire line across the grassed area which links Byron Cr and Byron Sq.	Construction of a 2.0m wide footway approximately 36m in length to align with the existing pedestrian refuge on Quarry Rd.	£8,000
10.2	Marchburn Road to Quarry Road		An established desire line across the grassed area which links Marchburn Rd to the Medical Centre on Quarry Rd.	Construction of a 2.0m wide footway approximately 30m in length.	£6,000
				Total	**£14,000**

5.4 Recreational Walking/Cycling Route Options

Route 11: Auchmill Golf Course Path Improvements

5.4.1 There is currently a network of established paths through the Auchmill Golf Club course which are understood to be well used recreationally by local residents and dog walkers. During the public consultation exercise, it was noted by a number of residents that additional links could be created through the Golf Course land to provide a more connected network of paths. Figure 25 indicates a potential link to connect two points of Core Path 8.

Figure 25: Auchmill Golf Course Path Improvement

Table 12: Route 11 Improvements Summary

Route Ref.		Photo	Comments	Suggested Improvement	Indicative Costs
11.1	Auchmill Golf Course Paths		The proposed path is approximately 310m in length and would provide a link between two disconnected points of Core Path 8 in Heathryfold.	This is currently a grassed area, but a compacted gravel or bonded aggregate type of track could be created.	£40,000

Route 12: Formalised Routes Through Woodland Area

5.4.2 There is a wooded area towards the eastern extents of the Auchmill Golf Course land which has a number of existing paths and links to Auchmill Road (A96). During the public consultation exercise, it was noted by a number of residents that additional links could be created through the Golf Course land to provide a more connected network of paths. The proposed links are shown in Figure 26.

Figure 26: Auchmill Community Woodland Routes

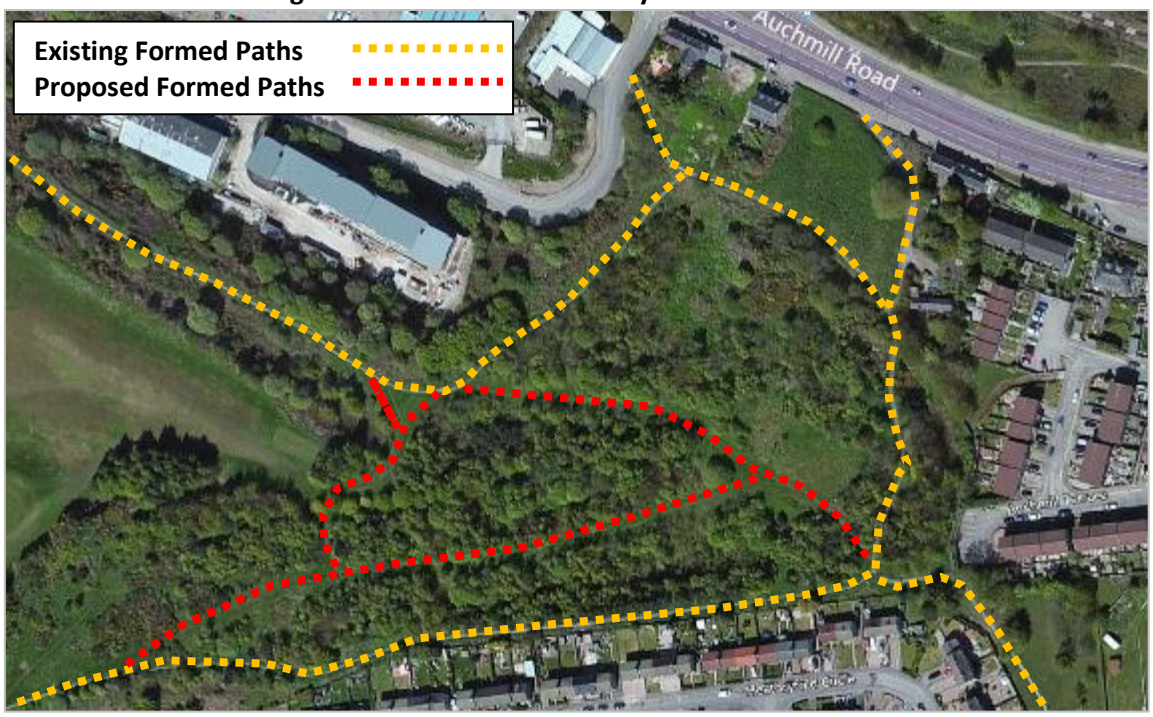


Table 13: Route 12 Improvements Summary

Route Ref.		Photo	Comments	Suggested Improvement	Indicative Costs
12.1	Woodland Paths		The proposed routes are based on existing desire lines/informal routes identified on site. These are currently grass tracks which can become muddy during wet weather.	Construct formal tracks along identified routes with compacted gravel or bonded aggregate including appropriate drainage. The proposed routes cover an approx. distance of 560m.	£75,000

Route 13: Core Path 8 Connection via Blacksmiths Croft

5.4.3 There is potential to create improved links to Core Path 8 which runs through the Auchmill Golf Course. A link could be created via Blacksmiths Croft, as shown in Figure 27, through the caravan park.

Figure 27: Link Through Blacksmiths Croft

Table 14: Route 13 Improvements Summary

Route Ref.		Photo	Comments	Suggested Improvement	Indicative Costs
13.1	Golf Course Access off Blacksmiths Croft		Main barrier on this route is the existing gated access to the Golf Course land. If access can be provided for pedestrians at this point, it would open up links through the Cairnfield Pl, Newton Terrace and Auchmill Rd.	Provide pedestrian access adjacent the gate e.g. kissing gate or stile. Directional signage required.	£5,000
13.2	Blacksmiths Croft		People unfamiliar with this area may not easily find the link onto Newton Terrace as it is not clearly visibility.	Directional signage required to indicate location of footway connection.	£2,500
13.3	Newton Terrace		People unfamiliar with this area may not know which route to take.	Directional signage to Blacksmiths Croft, Newton Terrace/Auchmill Road and Auchmill Golf Club.	£2,500
				Total	**10,000**

6.0 OPTION EVALUATION

6.1 Objective Measurement

6.1.1 For the evaluation of the potential improvement options, an objective measurement scoring approach has been taken. This approach evaluates each of the potential improvement options against each of the study objectives. The potential improvement option is then given a score based on how well it aligns/contributes with the study objective. The scoring and corresponding objective alignment measures are described in Table 15.

Table 15: Objective Measurement Scoring

Score	Measurement
4	The proposed improvement option will provide a major and added value contribution in delivering this objective.
3	The proposed improvement option will provide a major contribution in delivering this objective.
2	The proposed improvement option will provide a moderate contribution in delivering this objective.
1	The proposed improvement option will provide some/minimal contribution in delivering this objective.
0	The proposed improvement option will have a negligible contribution in delivering this objective (contribution could not be measured).

6.1.2 Each of the study objectives have been a given equal weighting. If the study objectives were to be given different weightings based on their importance, then this would affect the ranking of improvement options. However, for the purposes of this study, equal study objective weightings are considered appropriate as each of the objectives are considered to be of equal importance. Once each of the improvement options has been scored against the study objectives, this allows for the improvement options to be given a priority ranking. The results of the option evaluation are set out in Table 17.

6.1.3 Definitions of the cost ranges, indicative timeframes and severity of potential delivery issues used in the option evaluation are shown in Table 16.

Table 16: Costs, Timeframes and Delivery Issue Definitions

	Low	Medium	High
Cost Range	£0 – £50k	£50k- £500k	£500k+
	Short	**Medium**	**Long**
Timeframe	0-2 Years	2-5 Years	5+ Years
	Low	**Moderate**	**Significant**
Delivery Issues	• Minor physical works • No roads consent required • Minor public consultation	• Moderate physical works • Roads consent required • Moderate public consultation • Planning approval	• Extensive physical works • Roads consent required • Extensive public consultation • Planning approval • Land acquisition

Table 17: Option Evaluation

Route	Option	Cost Estimate	Cost Range	Timeframe	Delivery Issues	Alignment with Objectives								Total
						1	2	3	4	5	6	7	8	
1	New Link Road Connection	£60,000	Medium	Medium	Moderate	4	4	4	3	4	4	4	4	**31**
2	North-South Link via Kettlehills Crescent, Granitehill Road and Provost Fraser Dr	£390,000 / £415,000	Medium	Long	Moderate	4	4	4	3	3	4	2	3	**27**
3	East-West Link via Provost Fraser Drive	£190,000	Medium	Long	Moderate	4	4	4	4	4	4	4	3	**31**
4	North-South Link via Davidson Drive	£146,000	Medium	Medium	Low	2	3	3	3	3	4	3	2	**23**
5	East-West Link via Provost Rust Drive	£320,000	Medium	Long	Moderate	4	4	4	4	4	4	4	4	**32**
6	Marchburn Drive to Provost Rust Drive Footway	£12,500	Low	Short	Low	2	4	4	3	3	3	4	2	**25**
7	Footway link along southern side of Provost Rust Drive	£27,500	Low	Short	Low	2	4	4	3	3	3	4	2	**25**
8	Link from Greenspace Area to Auchmill Community Woodland	£25,000	Low	Short	Low	2	2	2	2	2	2	2	2	**16**
9	Pedestrian/Cyclist crossing improvements on Provost Rust Drive	£284,000	Medium	Short	Moderate	4	4	3	4	4	4	4	2	**29**
10	Byron Crescent to Byron Square	£14,000	Low	Short	Low	2	4	3	3	3	3	3	4	**25**
11	Auchmill Golf Course Path Improvements	£40,000	Low	Short	Low	3	4	4	3	4	3	3	2	**26**
12	Auchmill Community Woodland Routes	£75,000	Medium	Medium	Moderate	3	3	3	3	3	3	2	2	**22**
13	Core Path 8 Connection via Blacksmiths Croft	£10,000	Low	Short	Low	3	3	3	2	3	3	2	2	**21**

7.0 RECOMMENDATIONS

7.1.1 Table 17 indicates that the top five improvement options which best align with the objectives are as follows:

- Route 5: East-West Link via Provost Rust Drive (Long Timeframe)
- Route 1: New Link Road Connection (Medium Timeframe)
- Route 3: East-West Link via Provost Fraser Drive (Long Timeframe)
- Route 9: Crossing Improvements on Provost Rust Drive (Medium Timeframe)
- Route 2: North-South Link via Kettlehills, Granitehill Road (Long Timeframe)

7.1.2 In terms of prioritising the active travel improvements which could be implemented in the short term, this includes the pedestrian/cyclist crossing improvements on Provost Rust Drive.

7.1.3 In the medium term, the New Link Road connection could be programmed to take place in parallel with the New Link Road construction and improvements at the Haudagain Roundabout or alternatively could be brought forward and implemented in the short term as part of the proposed improvement scheme at Provost Rust Drive/Manor Avenue junction at an estimated cost of £60,000.

7.1.4 Similarly, in the long term, the implementation of the east-west links on Provost Rust Drive and Provost Fraser Drive (total costs estimated in the region of £510,000) will yield significant benefits in terms of active travel provision. It is understood that part of these routes are likely to be programmed to tie into works linking to the Greenferns Development and the primary infrastructure links from both roads.

7.1.5 The north-south link along Granitehill Road, Kettlehills Crescent and Provost Fraser Drive also offers significant benefits in term of linking key attractors include Northfield Academy and The Hub as well as the potential to tie into future walking and cycling improvements to the east of the study area.

7.1.6 This is not to say that the other options identified should not be pursued or implemented, the evaluation process simply identifies and prioritises where resources would most effectively be used.

7.1.7 The inter-dependencies between some of the options and importance in terms of providing active travel links as part of the overall network development are also likely to affect the sequencing of some improvement options and may also affect whether or not some of the improvement options should be pursued.

7.1.8 For example, while the North-South link via Kettlehills Crescent and Granitehill Road could be implemented in the medium to long term, without assurances that the east-west links could be implemented then the route would have nothing to tie into and consequently be unlikely to achieve the desired increased uptake in active travel.

7.1.9 Furthermore, there are measures which could be developed or implemented across the whole study area which would support the improvement options identified. These include:

- **Street Lighting Improvements:** Review of existing levels of street lighting, particularly along currently unlit lanes and alleyways, and additional/upgraded lighting provided as appropriate. This will assist in overcoming barriers relating to personal security when trying to access improved walking/cycling routes. It is understood that there is a current programme of upgrading to LED street lighting which should also assist in improving existing street lighting and identifying defective street lights.
- **Development of Signing Strategy:** to advertise and increase legibility of the network for all users as it develops and expands ensuring it is easy to use and follow.
- **Localised Network Plan:** developed to indicate route types/hierarchy together with existing and proposed future routes for both cyclists and pedestrians. The localised Network Plan could also highlight suitable crossing locations, 20mph zones, key movement attractors and fit with the wider active travel network. This could then be displayed in key locations on information boards and made available on line.
- **Dropped kerbs and tactile paving:** Area wide scheme to implement dropped kerbs and tactile paving at junctions and/or appropriate mid-block crossing locations. Provision of level or flush access is essential for the majority of wheelchair and mobility scooter users. Currently, there is a lack of appropriate dropped kerbs throughout the study area. This is likely to result in lengthy detours for wheelchair/mobility scooter users or requires them to cross at locations where motorists may not expect them. Ultimately, it may also be a barrier for people with mobility impairments to access services, employment, community facilities, public transport etc.

8.0 CONCLUSIONS

8.1.1 Local Transport Projects Ltd (LTP) have produced an Active Travel Improvement Priorities plan for the locality of Middlefield, Heathryfold and Northfield in Aberdeen. The primary aim of this study is to provide an approach towards identifying and prioritising infrastructure upgrades that will improve travel by active modes in and around the locality.

8.1.2 Through the option identification and evaluation process, the development of medium term measures include improved pedestrian/cyclist crossings on Provost Rust Drive plus a shared foot/cycleway connection to the New Link Road construction and proposed improvement scheme at Provost Rust Drive/Manor Avenue junction.

8.1.3 Along with the implementation of the east-west links on Provost Rust Drive and Provost Fraser Drive and north-south link on Granitehill Road and Kettlehills Crescent will yield significant benefits in terms of active travel provision and could likely be programmed to tie into works linking to the Greenferns Development and the primary infrastructure links from both roads.

8.1.4 The proposed options will significantly contribute to improving the quality and accessibility of Middlefield, Heathryfold and Northfield by active modes, improve connections to existing and future walking/cycling links and support an increase in the number of journeys made by bicycle and on foot.

8.1.5 It is envisioned that the study findings will help to inform the decision-making process regarding the allocation of resources and what transport infrastructure improvements are required to encourage the uptake and provide for future increase in travel by active modes within Middlefield, Heathryfold and Northfield.

9.0 REFERENCES

Aberdeen City Council (ACC) (2017a). Aberdeen Active Travel Action Plan 2017-2021

ACC (2017b). Cummings Park, Heathryfold, Northfield, Mastrick and Middlefield; Draft Locality Plan 2017-27

ACC (2017c). Greenferns, Aberdeen; Development Framework

ACC (2017d). Finance, Policy and Resources; Middlefield/Northfield Place-Making and Active Travel Project (& Environmental and Flood Prevention Works at Heathryfold Park, 2nd report)

ACC (2016) Local Transport Strategy (2016-2021)

ACC (2009). Aberdeen City Core Paths Plan Study Report

Department for Transport (DfT) (2017) Local Cycling and Walking Infrastructure Plans; Technical Guidance for Local Authorities

Living Streets (2016) Community Street Audit Report; Middlefield, Aberdeen City

The Scottish Government (2010) A Policy Statement for Scotland; Designing Streets

Transport for London (TfL) (2016) London Cycling Design Standards

Transport Scotland (2010) Cycling by Design (Revision 1, June 2011)

Appendix 1 – Public Consultation Survey Form

Middlefield/Heathryfold/Northfield
Active Travel Improvement Priorities
Survey Questionnaire

1. **Which of these places do you visit at least once a week? Tick as many as you like:**

- ☐ Manor Park School & Community/Learning Centre
- ☐ Other Schools
- ☐ Northfield swimming pool
- ☐ Ice cream shop on Rosehill Drive
- ☐ Other – where?
- ☐ Northfield Academy
- ☐ Sunnybank FC
- ☐ Haudagain Retail Park
- ☐ Shops within Middlefield

2. **When going places locally, how do you travel? Tick as many as you like and remember that most journeys will involve some walking!**

- ☐ Walk
- ☐ Bicycle
- ☐ Scooter
- ☐ Motorbike
- ☐ Bus
- ☐ Car
- ☐ Other

3. **When you travel to leave Middlefield/Northfield/Heathryburn, how do you travel?**

- ☐ Walk
- ☐ Bicycle
- ☐ Scooter
- ☐ Motorbike
- ☐ Bus
- ☐ Car
- ☐ Other

4. **If you walk or cycle when it is dark, do you feel safe doing so? If no, where do you feel unsafe and why?**

- ☐ Yes
- ☐ No

- ☐ Not enough lighting – where?
- ☐ Traffic too fast – where?
- ☐ Too much traffic – where?
- ☐ Hard to cross roads – where?
- ☐ Feel intimidated by others – where?
- ☐ Path condition is unsafe & I could fall – where?
- ☐ Other – what and where?

5. If you don't walk or cycle locally, what stops you?

☐	It takes too long	☐	I prefer to drive
☐	Pavements are too narrow or have things on them so I can't get past	☐	Paths aren't lit
☐	Pavements are too bumpy or steep	☐	Nowhere interesting to walk to
☐	I get tired and there is nowhere to res t	☐	Nowhere safe to cross the road
☐	Paths are not good enough – where?	☐	Other – what and where?

6. Is parking (on pavements, on grass, on roads) a problem where you live or on your journeys?

☐ Yes ☐ No

7. Is litter or dog fouling a problem where you live or on your journeys?

☐ Yes ☐ No

8. Are you happy for your children to walk to school alone or play outside without you being with them?

☐ Yes ☐ No

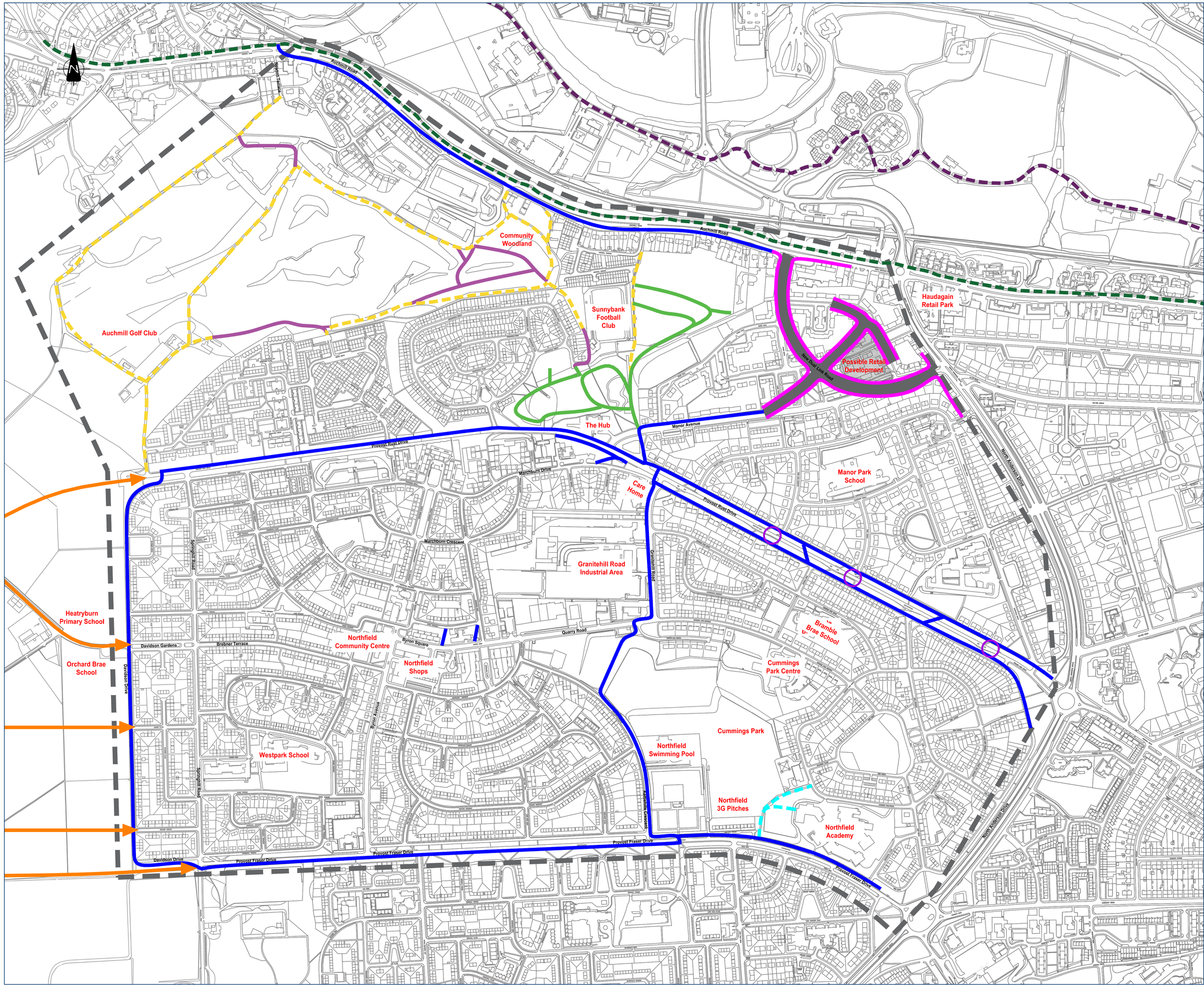
9. Do you find that there are enough places to safely cross roads in Middlefield/Heathryburn/Northfield?

☐ Yes ☐ No

10. Is there anything else you would like to say about walking or cycling routes in the area?

Thank You For Completing the Survey

Appendix 2 – Overview Map of Potential Active Travel Improvements



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A1

Key:-

- Study Area Extents
- National Cycle Network Route 1
- Existing shared use path
- Existing footway
- Existing recreational routes
- Potential connections to Greenferns Development
- Potential Middlefield Greenspace paths
- Potential Footway or Footway/Cycleway Improvements for New Dual Link Road
- Potential Active Travel Improvements
- Auchmill Community Woodland Identified Deficiencies
- Potential Improved Crossing on Provost Rust Drive

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ij. For public consultation purposes only

ik. Conceptual layout only - schemes subject to further preliminary and detailed design

v. Based on Ordnance Survey base mapping supplied by Aberdeen City Council

Rev.	Date	By	Chk	Description
A	14/03/18	AD	AM	Updated as per final report options

Client

Aberdeen City Council

Project

Middlefield, Heatryfold, Northfield
Active Travel Improvement Priorities

Title

Overview Map of Improvement Options

local transport projects
traffic engineering and transport planning
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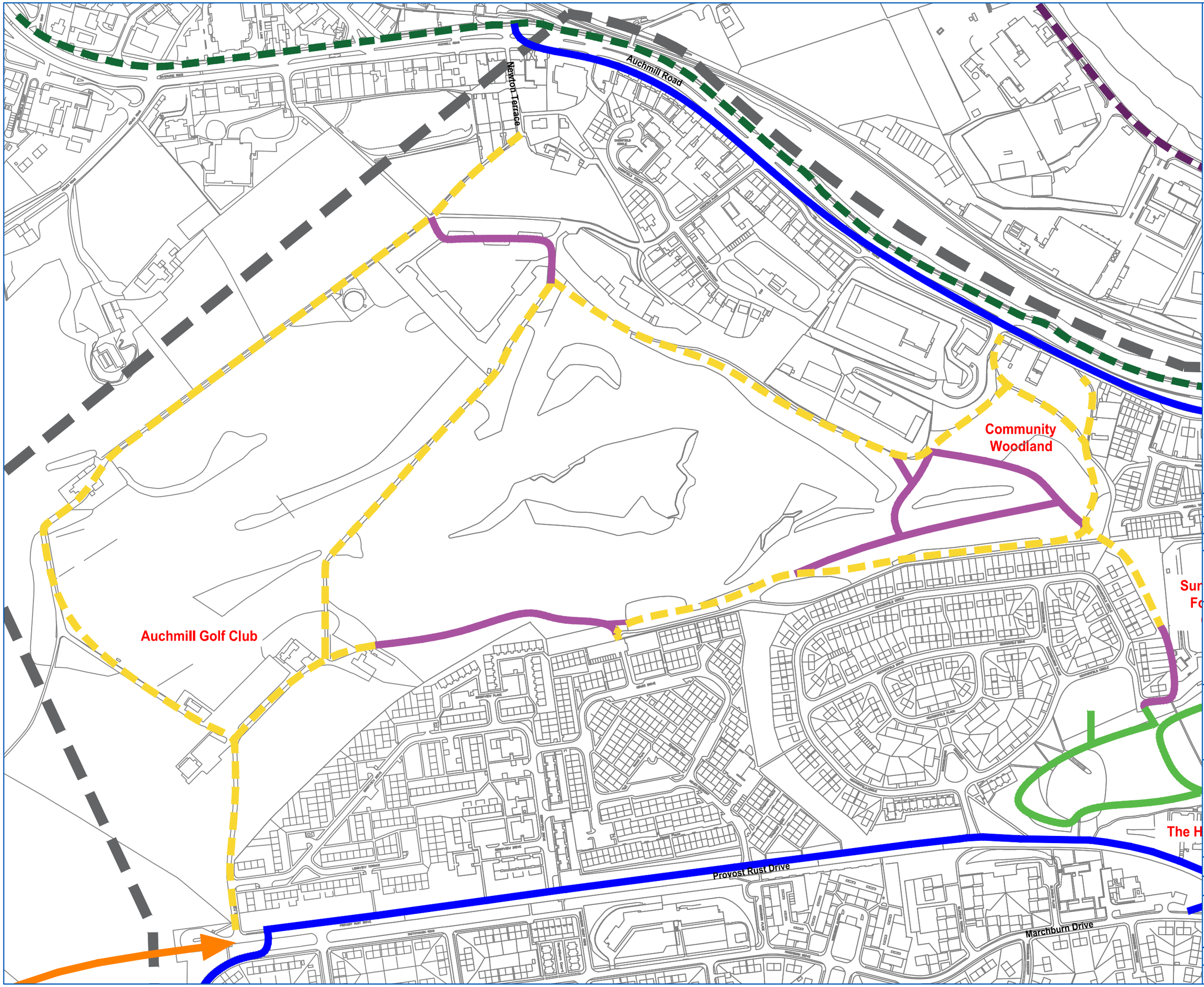

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A3

Key:-

- Study Area Extents
- National Cycle Network Route 1
- Existing shared use path
- Existing footway
- Existing recreational routes
- Potential connections to Greenferns Development
- Potential Middlefield Greenspace paths
- Potential Footway or Footway/Cycleway Improvements for New Dual Link Road
- Potential Active Travel Improvements
- Auchmill Community Woodland Identified Deficiencies

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v. On Ordnance Survey base mapping supplied by Aberdeen City Council

w. Conceptual layout only - schemes subject to further preliminary and detailed design

Rev.	Date	By	Chk	Description
0	.	-	-	.

Client
Aberdeen City Council

Project
Middlefield, Heatryfold, Northfield
Active Travel Improvement Priorities

Title
Auchmill Community Woodland Identified Deficiencies

local transport projects
traffic engineering and transport planning
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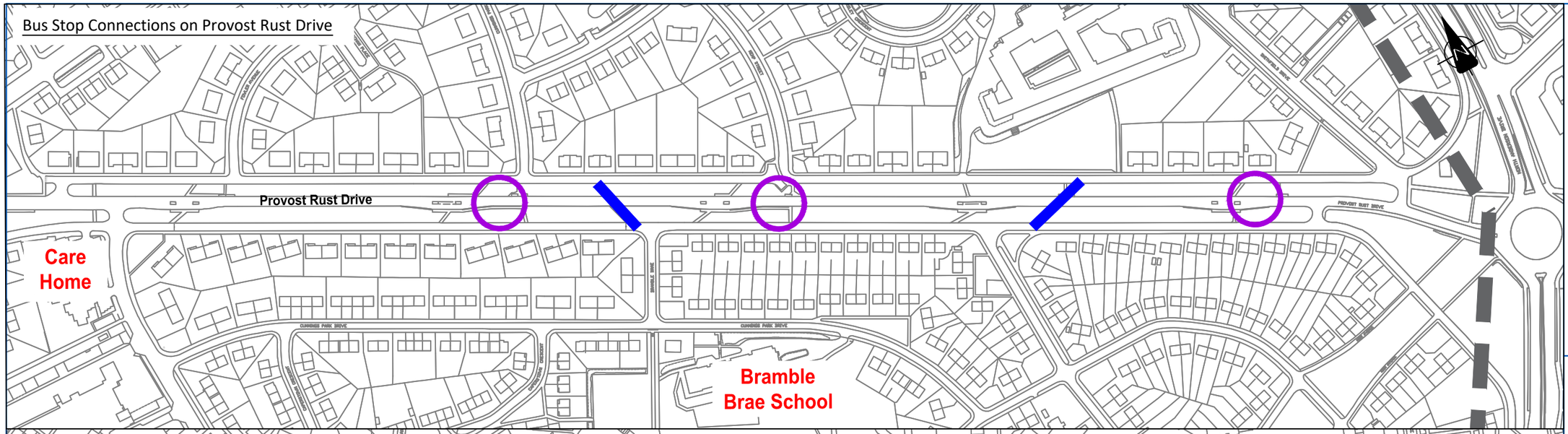

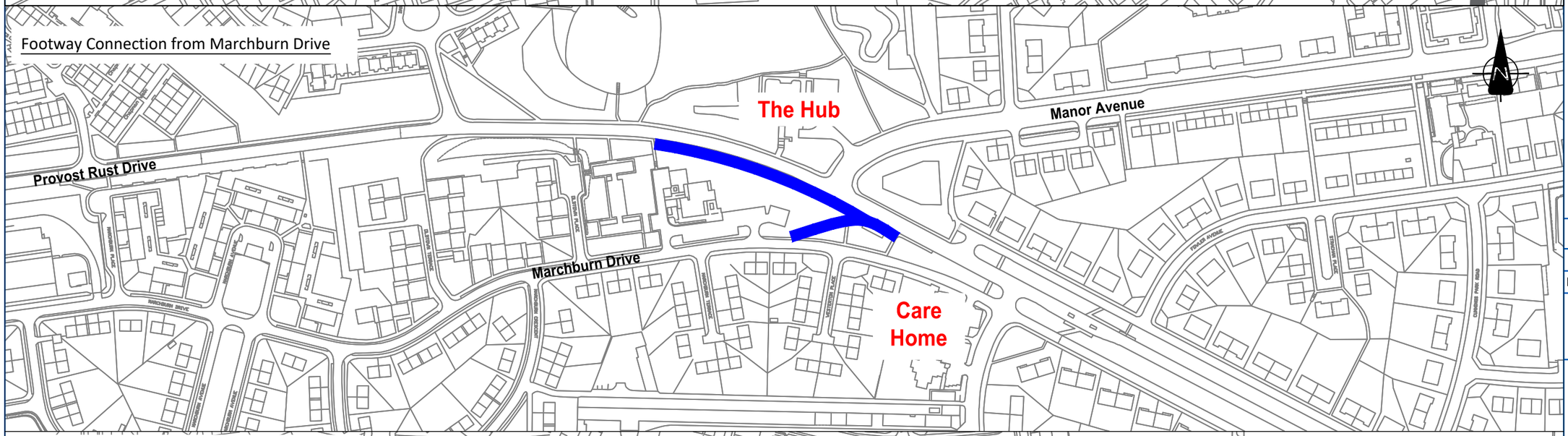

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A3

Key:-

- Study Area Extents
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- Existing footway
- Existing recreational routes
- Potential connections to Greenferns Development
- Potential Middlefield Greenspace paths
- Potential Footway or Footway/Cycleway Improvements for New Dual Link Road
- Potential Active Travel Improvements
- Potential Improved Crossing on Provost Rust Drive

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A	14/03/18	AD	AM	Updated as per final report options

Client

Aberdeen City Council

Project

Middlefield, Heatryfold, Northfield
Active Travel Improvement Priorities

Title

Potential Localised Improvements

local transport projects
traffic engineering and transport planning
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