



Aberdeen City Council

BRIDGE OF DEE WEST - ACTIVE TRAVEL CORRIDOR

Options Appraisal Study



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Options Appraisal Study

WSP

7 Lochside View
Edinburgh Park
Edinburgh, Midlothian
EH12 9DH

Phone: +44 131 344 2300

Fax: +44 131 344 2301

WSP.com



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Checked by	Chris Harris	Paul White	Paul White
Signature			
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EXECUTIVE SUMMARY

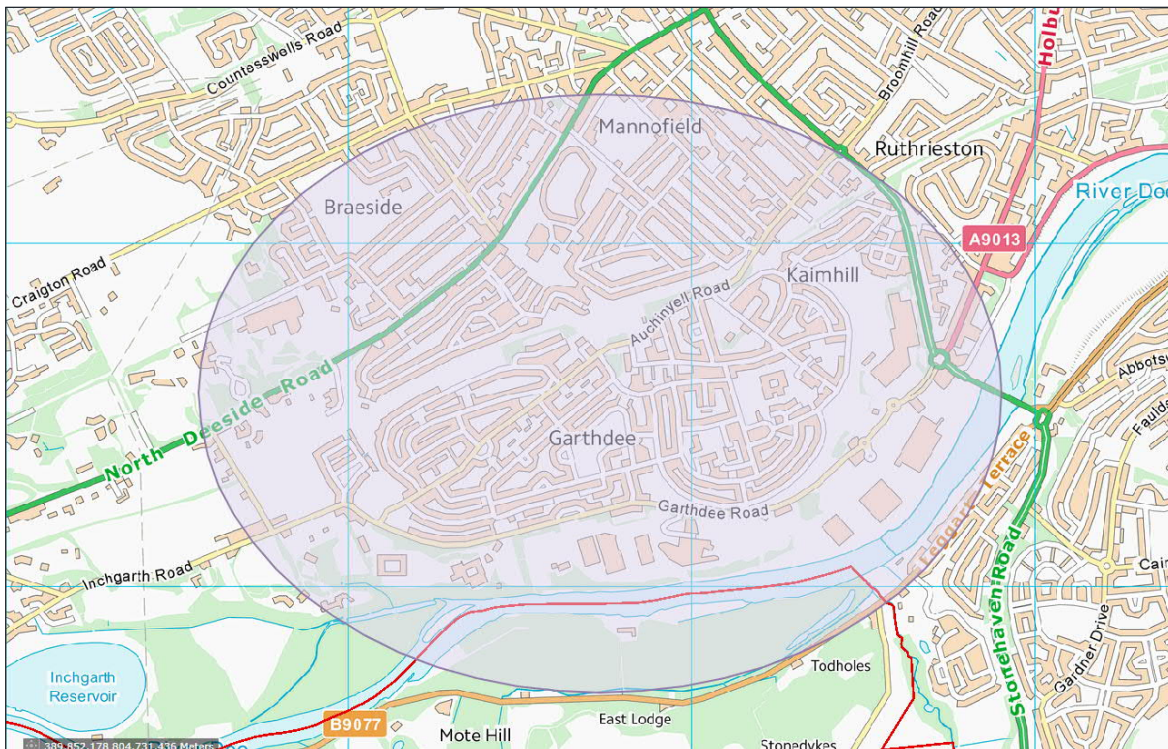
WSP UK Ltd. (WSP) has been commissioned by Aberdeen City Council (ACC) to undertake an active travel feasibility study for the Garthdee area of Aberdeen based on the principles set out in Transport Scotland’s Scottish Transport Appraisal Guidance (STAG).

This Executive Summary presents an overview of the different phases of the study, together with the key findings and recommended next steps.

The study area

The study area was defined at the project inception by ACC and is shown in Figure ES-1 below. It centres on the Garthdee area, and also includes Kaimhill, Mannofield and Braeside.

Figure ES-1 - Study Area



Why is this study required?

The construction of the Aberdeen Western Peripheral Route (AWPR) has addressed some of Aberdeen’s transport challenges, including diverting strategic vehicular traffic away from the central city transport network. This change in transport conditions has allowed more focus on delivering the

actions set out by ACC within their *Local Transport Strategy* and *Active Travel Action Plan*. Specific to the study area are actions including improving leisure access to the riverside along the River Dee and also improving active travel (walking, wheeling and cycling) connections to the Robert Gordon University (RGU) Garthdee campus.

What studies have been undertaken?

The main study has focussed around undertaking a STAG-based options appraisal for improving active travel connections within the study area. The STAG-based process involves the following steps:

- Determine the constraints which bind the study and issues which may have an effect on the study area.
- Establish the problems and opportunities related to transport within the study area.
- Develop Transport Planning Objectives (TPOs) which specify the aims of the study and will allow testing of options or intervention packages.
- Identify the long list of options to address the identified problems.
- Undertake sifting of options to exclude those which are not viable for further consideration under the appraisal process.
- Engage with stakeholders and the public to inform the study and provide feedback on developed options.
- Appraise options against TPOs and STAG criteria to evaluate their suitability for implementation.
- Undertake a cost / benefit analysis of the short-listed options.
- Present the recommended package of measures for the study area.

To support the main study the following supporting studies have been undertaken:

- Ecological Assessments
- Flood Risk Assessment
- Traffic modelling of potential interventions
- Stakeholder engagement
- Public consultation
- Engineering design and preliminary costings

What problems have been identified within the study?

The following existing or potential problems have been identified which have been considered when developing the long-list of options for the study:

- There is currently poor active travel mobility within the study area, especially along Garthdee Road and connecting to / from the RGU campus
- Implementing active travel options on Garthdee Road may impact on bus journey times
- Active travel options may impact on environmentally sensitive areas, such as the River Dee corridor and Deeside Way.
- The topography of the study area presents challenges to people moving on foot, wheel or by cycle.

What potential opportunities have been identified within the study

The following potential opportunities have been identified which have either informed the study or could complement the study outcomes:

- Improving active travel connection within and through the study area could help to address the existing social isolation.
- There are areas within the study area where route options could be used to enhance the existing conditions for biodiversity.
- Alternatives to infrastructure solutions could support an increase in cycling within the study area. This includes the roll-out of affordable electric bike hire / purchase for local residents and / or RGU students. This would address the issue of challenging longitudinal gradients along Garthdee Road.

What are the TPOs which guide the study?

Following a detailed review of all available evidence, four study-specific Transport Planning Objectives (TPOs) were identified. These were validated and agreed through discussions with the Core Project Group (which included invited officers from ACC, Aberdeenshire Council, Nestrans and Sustrans), as well as engagement with key stakeholders. The four TPOs were:

- **TPO 1** - To increase the modal share of trips made by active travel (walking, wheeling and cycling) along the strategic corridor
- **TPO 2** - Enhance the social inclusion of the Garthdee area.
- **TPO 3** - Ensure connectivity for walking, wheeling, cycling and public transport to the retail parks, existing cycle infrastructure, places of work and leisure trip generators in the area.
- **TPO 4** - Ensure transportation proposals enhance conditions for biodiversity along each linear route corridor where interventions are proposed.

What are the short-listed options?

Following the development of a long-list of over twenty design options, these were refined through a number of review sessions with the Core Project Group, engagement with stakeholders and the public and a preliminary appraisal of options against a wide range of social, environmental and technical criteria. This process resulted in three potential options being taken forward for more detailed consideration.

The three options are presented in detail within Appendix G, and are summarised as:

Option A – A new shared path connection between the Bridge of Dee and the RGU campus, running along the north bank of the River Dee. This option includes a supporting path connection from the riverside path to Garthdee Road via the Sainsbury's store and B&Q store access road.

Option B – Pedestrian improvements and a segregated cycleway between Bridge of Dee and the RGU campus running along Garthdee Road. In addition, traffic calming measures on the western section of Garthdee Road, between the RGU campus and Garthdee Farm Gardens, are proposed to permit on-street cycling.

Option C – New path connections between the RGU campus and the Deeside Way to provide safer and more attractive routes for people connecting between the Garthdee area and the City Centre.

Option C also originally included improvements to the Deeside Way, however following the outcomes of the more detailed appraisal, these interventions were subsequently excluded.

What are the study outcomes and proposed way forward?

The outcomes of the options appraisal and cost benefit analysis were considered together to identify a recommended way forward for the project's next stages. These recommendations were phased to

allow for a period of monitoring and evaluation prior to developing the business case/s for more capital intensive interventions.

Phase 1 Recommendations

The Deeside Way corridor is very well aligned with the main regular movement patterns between the study area and City Centre. Therefore, it was considered that investment in improving linkages between the study area and this route would provide significant active travel benefits. In addition, compared to delivering on-road infrastructure on Garthdee Road (Option B), or a new path along the north bank of the River Dee (Option A), Option C was considered relatively good value for money.

On this basis it is recommended that in Phase 1 **Option C (excluding any interventions on the Deeside Way)** should be taken forward.

Phase 2 Recommendations

The package of measures included under Phase 1 (Option C) should be implemented and post-construction monitoring and user surveys undertaken to determine the extent to which the Phase 1 measures achieve the TPOs.

In the event that minimal progress is made towards achieving the TPOs results from the Phase 1 measures it is recommended that further investment in active travel infrastructure should be made within the study area. It was considered that **Option B**, which involves the delivery of improvements for walking, wheeling and cycling along Garthdee Road, between the Bridge of Dee and the Deeside Way, should be taken forward in Phase 2.

By bringing forward Option B as a second phase scheme, it would enable sufficient scheme justification to have been established to overcome the expected political challenges and increased capital costs (relative to Option C) of implementing the scheme.

Phase 3 recommendations

It should be noted for Option B, on the western section of Garthdee Road, on-street traffic calming measures are proposed to affect a reduction in motor vehicle speeds to an average speed which is considered suitable for on-carriageway cycling (20 – 25mph)¹. It was considered that these measures could be taken forward in Phase 2 as temporary (removable) measures which could be trialled over a period of 12 months and their effectiveness monitored.

If at the end of this trial period, it is considered that traffic calming measures would be sufficient to support on-carriageway cycling by the majority of potential users then more permanent traffic calming features could be installed.

However, if at the end of this trial period it is considered that traffic calming measures will not be an effective long-term solution to support on-carriageway cycling, an alternative approach could be taken forward as Phase 3. This could involve converting the existing 3 metre wide footway on the south side of Garthdee Road to a shared footway/cycleway.

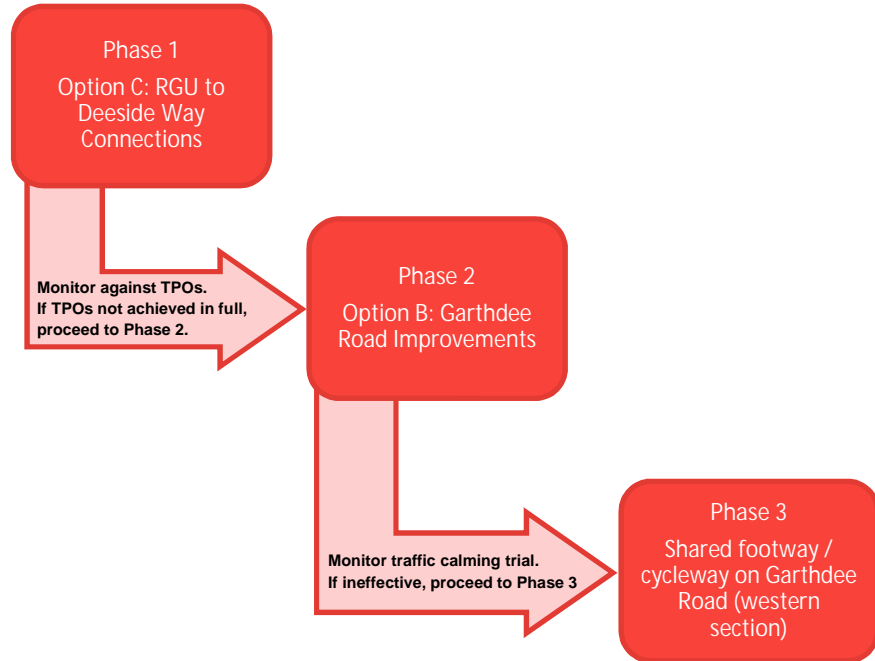
In line with *Places for Everyone* guidance, this proposal has not been presented within the design for this Option B, as shared-use footway / cycleways are not a preferred design solution. Shared-use footway / cycleways can have detrimental impacts on pedestrians, especially sensory-impaired

¹ Cycling By Design, Transport Scotland (2011)

pedestrians. On this basis, and in line with the Equality Act 2010, these measures should only be implemented where it has been demonstrated that no alternative reasonable solution is available.

With regards to Option A (Riverside Path), it was considered that the ecological and hydrological constraints, together with the forecast construction costs and land agreements made it the least suitable option to implement within the context of this study.

The proposed three phase recommendation strategy is summarised below:



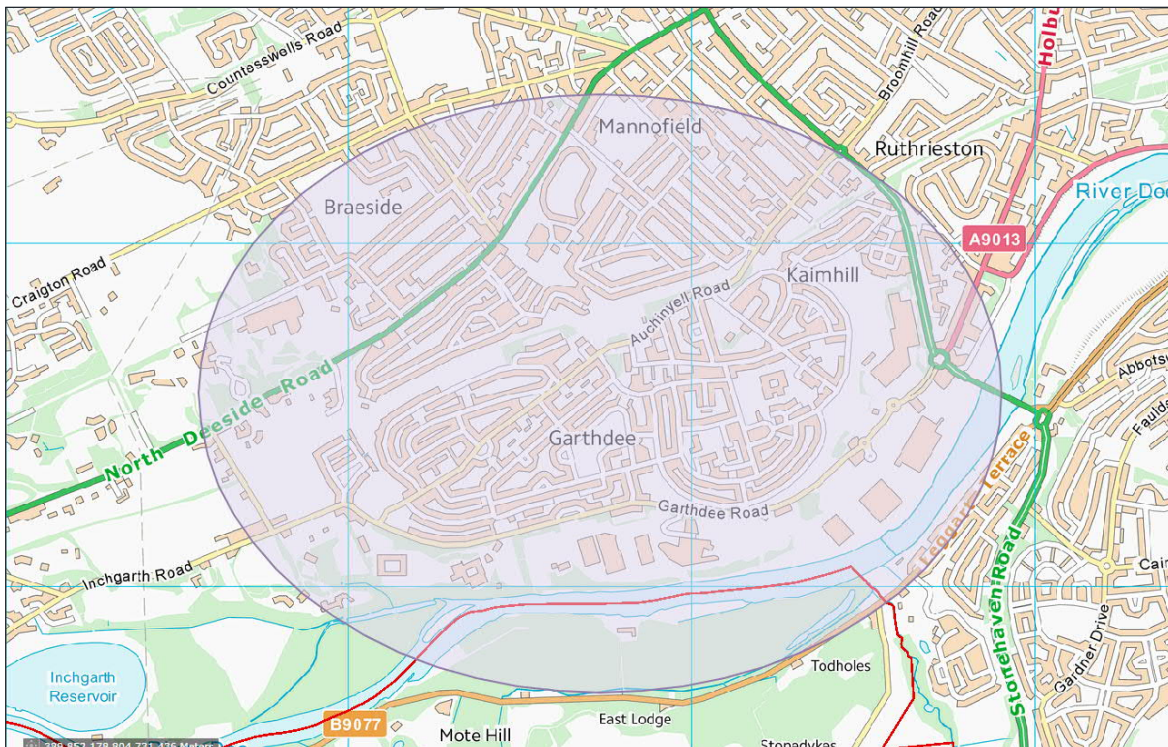
The monitoring and evaluation process required to inform the inter-phase decision making has been set out within the study. This includes a combination of baseline and post-construction surveys, as well as incorporating existing data sources, where possible.

1 INTRODUCTION

1.1 STUDY OVERVIEW

1.1.1. WSP UK Ltd. (WSP) has been commissioned by Aberdeen City Council (ACC) to undertake an active travel feasibility study for the Garthdee area (from here referred to as ‘the study area’) of Aberdeen based on the principles set out in Transport Scotland’s Scottish Transport Appraisal Guidance (STAG). The study area is presented in Figure 1-1.

Figure 1-1 - Study Area



1.1.2. The primary aim of the study is to investigate opportunities to improve and enhance conditions for walking, wheeling and cycling within the study area to increase the level of active travel use and help produce the associated health, environmental and social benefits for current and future generations.

1.2 APPRAISAL PROCESS SUMMARY

1.2.1. This study has been developed in accordance with STAG principles and has includes the following tasks to develop and appraise suitable options for the study area:

- Determine the constraints which bind the study and issues which may have an effect on the study area.
- Establish the problems and opportunities related to transport within the study area.
- Develop Transport Planning Objectives (TPOs) which specify the aims of the study and will allow testing of options or intervention packages.
- Identify the long list of options to address the identified problems.

- Undertake sifting of options to exclude those which are not viable for further consideration under the appraisal process.
- Engage with stakeholders and the public to inform the study and provide feedback on developed options.
- Appraise options against TPOs and STAG criteria to evaluate their suitability for implementation.
- Undertake a cost / benefit analysis of the short-listed options.
- Present the recommended package of measures for the study area.

1.2.2. Throughout the project WSP has regularly reported progress and findings to the Core Project Group, which consisted of representatives of ACC, Aberdeenshire Council, Nestrans and Sustrans. The conclusions and feedback from these project meetings were incorporated into the study as it progressed.

1.2.3. This report and appendices provide a full review of the tasks undertaken as part of this study and the relevant outcomes.

2 POLICY CONTEXT AND BACKGROUND INFORMATION

2.1 INTRODUCTION

2.1.1. This chapter sets out the policy context which informs the study, including a summary of key policy documents from all levels of governance.

2.2 POLICY CONTEXT

NATIONAL POLICY

National Transport Strategy (NTS2)

2.2.1. Transport Scotland's second, National Transport Strategy, NTS 2 was published in February 2020. NTS 2 outlines its vision as follows:

"We will have a sustainable, inclusive and accessible transport system, helping deliver a healthier, fairer and more prosperous Scotland for communities, businesses and visitors."

2.2.2. The High-Level Objectives set out in NTS 2 are presented below:

- Reduces inequalities
- Takes climate action
- Helps deliver economic growth
- Improves our health and wellbeing

2.2.3. NTS 2 highlights that Scottish Government has acknowledged the global climate emergency. The impact has been the Scottish Government's new statutory target of net-zero emissions by 2045. This has a downstream impact on the transport sector as one of the largest net contributors to CO₂ emissions and will be reflected in both new regional and local transport strategies.

2.2.4. NTS2 sets out the sustainable travel hierarchy which should be considered for all transport-related policies and schemes in Scotland. This is reproduced in Figure 2-1 and makes clear that walking and wheeling should be given the highest priority followed by cycling and then motorised forms of transport.

Figure 2-1 - NTS 2 Transport Hierarchy



REGIONAL POLICY

Nestrans Regional Transport Strategy Refresh 2013-2040

2.2.5. The objectives of the National Transport Strategy can be seen reflected in the Nestrans vision and objectives the period up to 2040:

- Increase access to a sustainable transport system for all, recognizing specific needs of disadvantaged and vulnerable users.
- Reduce the business costs of transport for all sectors of the economy to realize the aspirations of the Regional Economic Strategy.
- Reduce the adverse impacts of transport on public health and the natural and built environment.
- Improve the integration of transport and land use to reduce the need to travel by private car.
- Improve the relative competitiveness of public transport compared to the private car.
- Maintain and enhance a safe, resilient and reliable transport network.

Nestrans Active Travel Action Plan 2014-2035

2.2.6. The Nestrans Active Travel Action Plan (ATAP) looks to increase the proportion of trips undertaken by foot and by bicycle, its policies include:

- Considering the needs of pedestrians and cyclists first and integrating them into the planning and design of all new developments and infrastructure.
- Businesses and other organisations, including schools and public-sector organisations, do their part to support and encourage walking, wheeling and cycling.

- Provision of new cycle and pedestrian infrastructure meets desired standards.
- New infrastructure and initiatives to be supported by appropriate information and promotion to encourage a change in attitudes and behaviour.

2.2.7. The ATAP also acknowledges the importance of improving access to rural communities in Aberdeenshire. Section 7 of the Nestrans ATAP focuses on the development of a strategic network of active travel routes linking Aberdeen City and the main towns of Aberdeenshire. This project looks to contribute towards meeting these aims by providing improved accessibility to the Deeside Way which links Aberdeen City and the Deeside area of Aberdeenshire.

LOCAL POLICY

Aberdeen Local Transport Strategy 2016-2021

2.2.8. The high level aims of LTS are again transposed and filtered down from the wider aims set by both the National and Regional Transport Strategies. The main objectives are presented below:

- A transport system that enables the efficient movement of people and goods.
- A safe and more secure transport system.
- A cleaner, greener transport system.
- An integrated, accessible and socially inclusive transport system.
- A transport system that facilitates healthy and sustainable living.

2.2.9. The LTS also states its overarching aim is to encourage modal shift from private car to more sustainable transport modes. To reinforce this aim, a key objective of the LTS is ensuring that the benefits of the Aberdeen Western Peripheral Route (AWPR), specifically the reduced traffic flow into and through the City Centre, are maintained for the long term. This includes the reallocation of road space to better support and encourage travel by more sustainable transport modes than private motor vehicles.

Aberdeen Active Travel Action Plan 2017 - 2021

2.2.10. ACC developed the Active Travel Action Plan in response to the strategic aim of increasing the number of people walking and wheeling, both as a means of travel and for recreation.

2.2.11. Of particular relevance to this study, ACC has also identified the following actions in its Active Travel Action Plan:

- Improving access to the Robert Gordon University campus on foot and by bicycle.
- Improving walking, wheeling and cycling opportunities alongside the River Dee.

Aberdeen City Centre Master Plan

2.2.12. In 2015 ACC adopted the City Centre Masterplan with the vision of transforming the City Centre through a variety of measures:

“A dramatic reorganisation of roads will have reduced the current dominance of the car in the City Centre and empowered residents and visitors to make sustainable travel choices.....Cycling and bus transport will be popular forms of transport.”

2.2.13. These ideas are continued in the goals set in the City Centre Masterplan:

“Goal 3 - Ensuring the City Centre meets the needs of the wider population of Aberdeen City and Shire and beyond and is specifically planned and governed to reflect this wider metropolitan role.

“Goal 6 - Exploiting the varied waterscapes of Aberdeen City Centre, creating attractive settings and opportunities for interest and activity.”

2.3 BACKGROUND INFORMATION

2.3.1. The purpose of this STAG-based options appraisal is to identify a preferred route for walking, wheeling and cycling provision along the corridor between the existing infrastructure at the Bridge of Dee westwards to connect with the Deeside Way west of the Robert Gordon University. The appraisal will incorporate connections to the National Cycle Network, NCN Route 195 Map - Sustrans, adjacent Core Paths Core Paths Plan - Aberdeen and any other suitable paths.

2.3.2. The overall aim of the project is to inform preferred and specific footway/cycleway measures which will result in modal shift from everyday journeys using the private car whilst expanding leisure opportunities for walking, wheeling, cycling and horse-riding in the surrounding area.

2.3.3. The opening of the Aberdeen Western Peripheral Route (AWPR) in February 2019, has already had a positive impact on traffic levels within the city although these changes have yet to stabilise and be quantified. ACC is already working with North East Scotland Transport Partnership (Nestrans) to look at how best to ‘lock in the benefits’ of the AWPR, including opportunities for improving internal connectivity, especially for active travel, with the road now open.

2.3.4. The study should also take into consideration the longer term aims and objectives for the entire Aberdeen City and Aberdeenshire area, contained within the following:

- Nestrans Regional Transport Strategy;
- Nestrans Freight Action Plan;
- Aberdeen Local Transport Strategy;
- The Proposed Aberdeen City and Shire Strategic Development Plan;
- Aberdeen Strategic Infrastructure Plan
- Locking in the Benefits Study;
- Aberdeen Air Quality Action Plan;
- Regional and the two local active travel action plans (Regional, Aberdeen, Aberdeenshire);
- Aberdeen Core Paths Plan;
- Aberdeen Open Space Strategy.

3 REVIEW OF ISSUES AND CONSTRAINTS

3.1 INTRODUCTION

- 3.1.1. The STAG guidance defines ‘constraints’ as the bounds within which a study is being undertaken. These may include the fiscal and legislative framework for the study as well as the physical constraints which bind the study area, including ecology, landscape, heritage, topography and geography.
- 3.1.2. The STAG guidance defines ‘issues’ as uncertainties that the study may not be able to resolve but must work within the context of. Where there are uncertainties, there is a responsibility to develop an option that is either robust under different possible out-turns or, alternatively, is flexible enough to be adapted in response to changed circumstances.
- 3.1.3. This chapter presents the identified issues and constraints which are relevant to the study. The most significant issues and constraints have been carried forward as project specific ‘problems’ and ‘opportunities’ in Chapter 4.

3.2 ISSUES IDENTIFIED BY ACC

- 3.2.1. This section presents relevant issues which ACC have identified within planning documents or within information provided at the project inception.

ACC PROPOSAL MAP

- 3.2.2. The study area is predominantly Residential Areas (H1), this is surrounded by Green Space Network (NE1), Green Belt (NE2) and Urban Green Space (NE3). Scottish Planning Policy states that planning system should protect and enhance green infrastructure in and around Scotland’s cities. Aberdeen’s Green Space Network is a strategic network that connects natural green spaces and habitats to each other and the communities around them.

“Policy NE1 – Green Space Network: The Council will protect, promote and enhance the wildlife, access, recreation, ecosystem services and landscape value of the Green Space Network, which is identified on the Proposal Map.

“Proposals for development that are likely to destroy or erode the character and/or function of the Green Space Network will not be permitted.

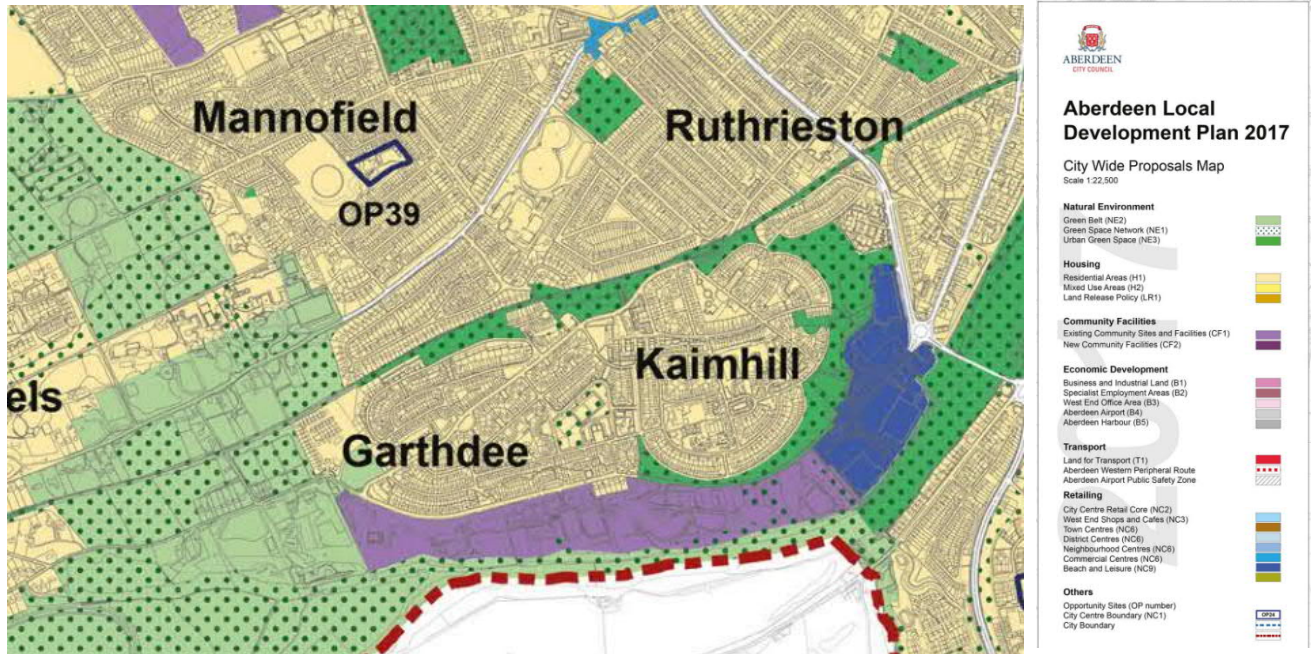
“Policy NE2 – Green Belt: No development will be permitted in the Green Belt for purposes other than those essential for agriculture; woodland and forestry; recreational uses compatible with an agricultural or natural setting; mineral extraction/quarry restoration; or landscape renewal.

“Policy NE3 – Urban Green Space: Permission will not be granted to redevelop any parks, playing fields, sports pitches, woods, allotments or all other areas of urban green space (including smaller spaces not identified on the Proposals Map) for any use other than recreation and sport.”

- 3.2.3. There are some exceptions to the above policies however the objective of this policy is to safeguard the natural and open spaces which will positively impact the local air and water

quality. An extract from the Aberdeen City Local Development Plan from 2017 is shown in Figure 3-1 below:

Figure 3-1 - Extract from City Wide Proposal Map



3.2.4. The following specific issues have been identified by ACC:

- There is currently no safe and direct option for pedestrians and cyclists to travel the 1.2km (approx.) from Bridge of Dee to the RGU campus.
- Land acquisition will be required from several landowners to deliver a path along the riverside.
- Topographical issues – there is a significant level difference between the Bridge of Dee and the river side.
- Potential public utility issues in the existing footway/carriageway/grass verge on Garthdee Road.
- There are conflicts between motorised vehicles and vulnerable road users at crossing points.
- Road safety issues exist along Garthdee Road.
- There are existing personal safety issues, real or perceived, when using a remote foot/cycle path.
- Existing substandard footway construction along the riverside path - (narrow/uneven/wet/overgrown in summer – wet/muddy/slippery in winter).
- Existing substandard footway construction (very narrow) along a section (approx. 250m) of Garthdee Road.
- Flooding recorded on the north bank of the River Dee within the study area.
- General and winter maintenance will be high for remote paths with tree cover.
- Major disruption to the public, including cars/buses/deliveries, is predicted during the construction phase of project.
- Adherence to national legislation for planning/ecology/environment.
- Cost and length of time to complete.

- Proximity, in both location and time, to other major projects i.e. Bridge of Dee replacement crossing, roads hierarchy project.

3.3 LISTED BUILDINGS AND STRUCTURES

3.3.1. Figure 3-2 and Table 3-1 present the listed buildings and structures that could potentially be impacted within the study area along with the classification it has been designated. Listed buildings are categorised as either A, B or C, as defined below.

- Category A - Buildings of national or international importance, either architectural or historic, or fine little-altered examples of some particular period, style or building type.
- Category B - Buildings of regional or more than local importance, or major examples of some particular period, style or building type which may have been altered.
- Category C - Buildings of local importance, lesser examples of any period, style or building type, as originally constructed or moderately altered; and simple, traditional buildings which group well with others in categories A and B or are part of a planned group such as an estate or an industrial complex.

Figure 3-2 - Listed Buildings and Structures



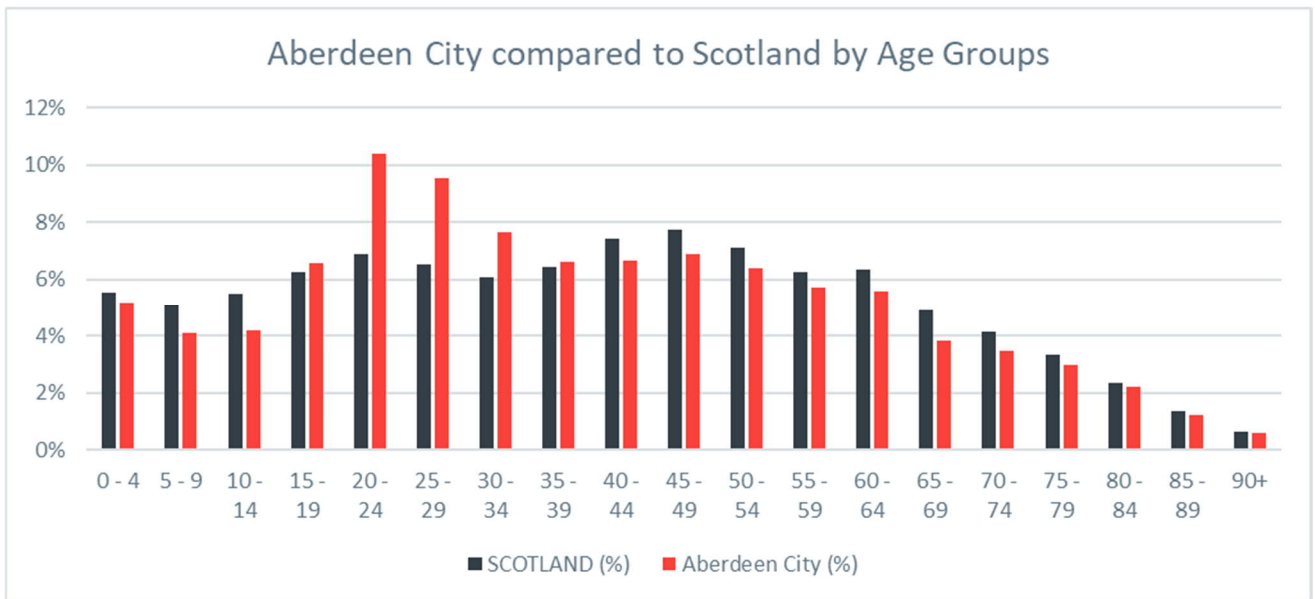
Table 3-1 - Listed Buildings and Structures

Building/Structure	Category
Stonehaven Road and Anderson Drive South, Bridge of Dee, including sundial	Category A
Garthdee Road, Fountain House	Category C
Holburn Street at South Anderson Drive, Privies and Pantries	Category C
Kaimhill Road, Kaimhill Funeral Home	Category B
Kaim House Robert Gordon University	Category C
East Lodge including gate piers, Robert Gordon University	Category C
Garthdee House	Category B
West Lodge including gate piers, Robert Gordon University	Category C
Norwood Hall Hotel, excluding 2 story extensions to West and East	Category B
Windmill, Drumgarth, Inchgarth Road	Category C
Inchgarth House including garden terrace, Inchgarth Road	Category C
Pitfodels Station House excluding 2012-13 extension to northwest, Pitfodels Station Road	Category C
Ruthrieston West Church, Broomhill Road	Category B
Broomhill Road, K6 Telephone Kiosk	Category B
Cranford Road, Cranford House, including lounge, gate piers and boundary wall	Category C
March Stone No.6, within the back garden of No.11 Hammerfield Avenue	Category B

3.4 LOCAL DEMOGRAPHICS

- 3.4.1. Aberdeen is located on the North-East coast of Scotland with a population of 214,610 making it the third largest city in Scotland and the largest city outside of the central belt².
- 3.4.2. A review of age distribution of Aberdeen residents has been undertaken. The census data indicates that the Aberdeen has a younger population profile compared to the Scottish average. In particular there is a significant difference seen in the 16-29 age group compared to the national average. This is shown in Figure 3-3 and is consistent with what is expected as Aberdeen has two universities resulting in a large student population.

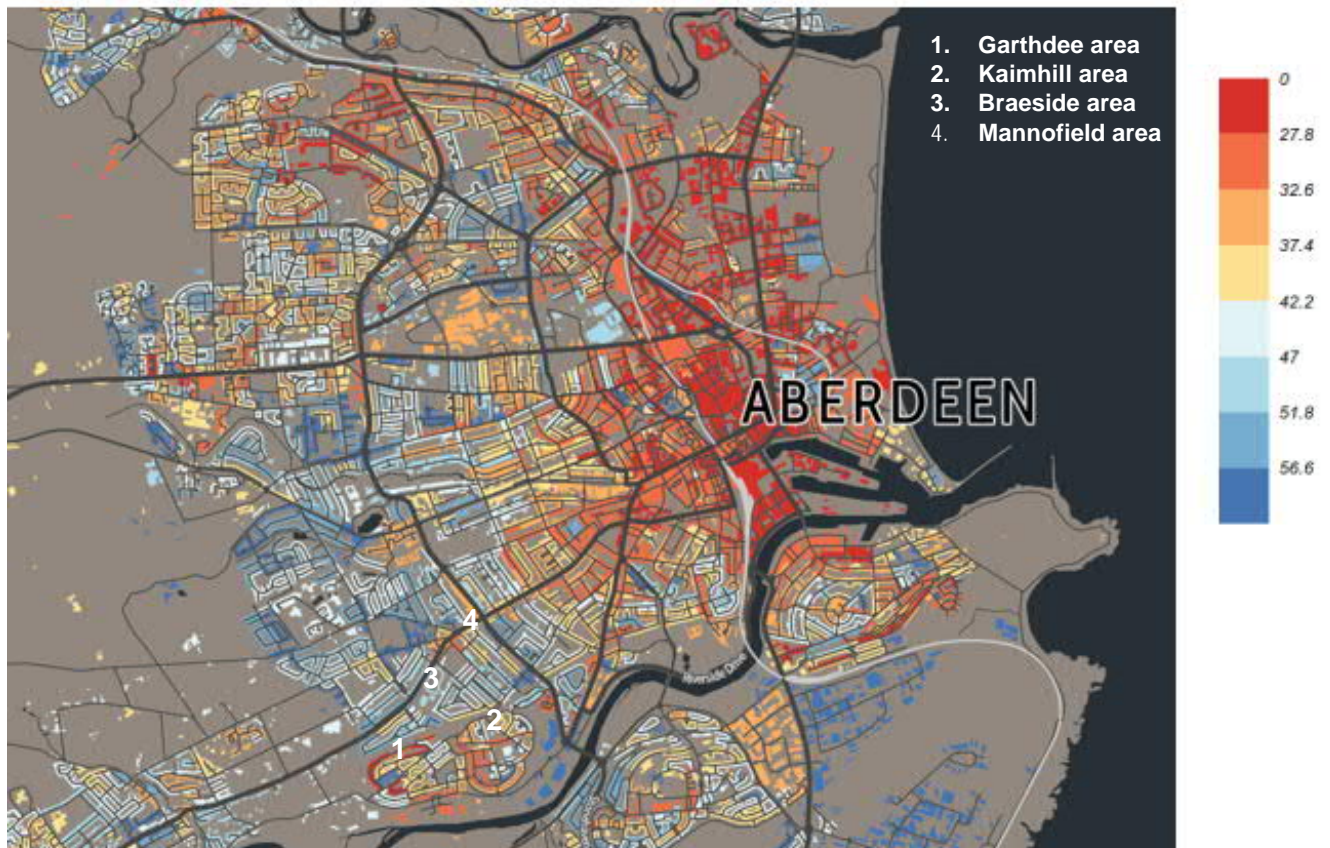
Figure 3-3 - Comparison of age of population between Aberdeen and Scotland (2011 Census)



- 3.4.3. Context can be given to the data presented in Figure 3-3 by reviewing the median age variation across Aberdeen. This data is presented in Figure 3-4 which shows clear differences across the city. The City Centre has a predominantly young population (28 years or younger) particularly in the areas surrounding the Aberdeen University central campus and the student halls accommodation. Moving north, south or west from the City Centre the population gradually increases in age as away from the City Centre with a significantly older population (57 years and older) at the edges of the city.

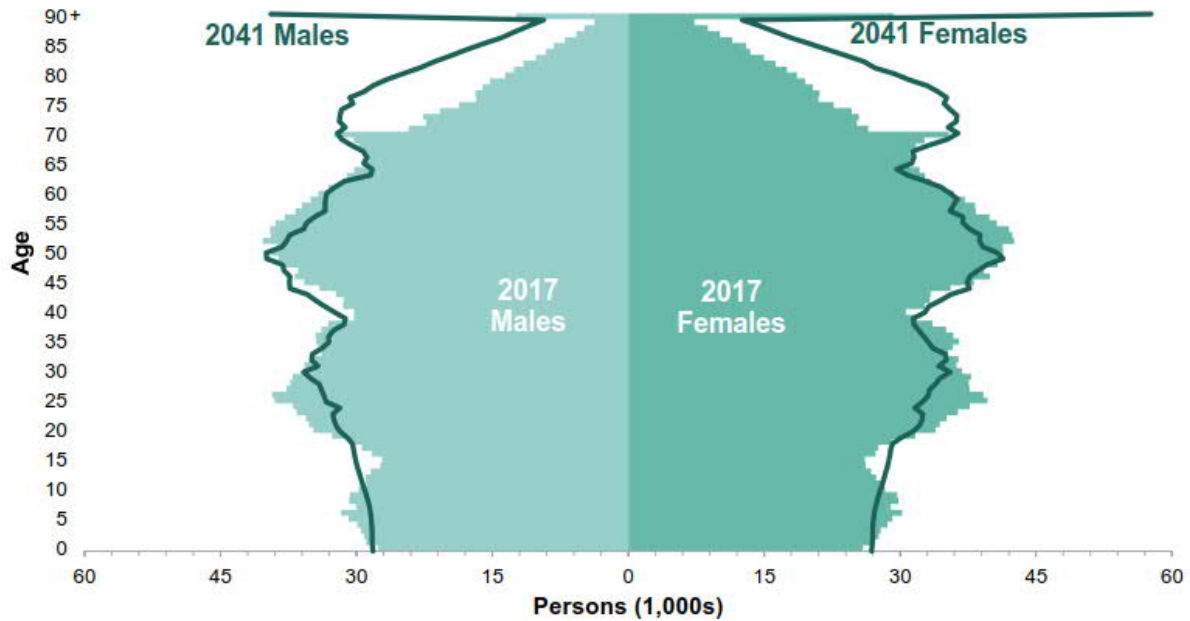
² Mid-2016 Population Estimates for Settlements and Localities in Scotland (National Records of Scotland, 2017)

Figure 3-4 - Median Age of Population by Area



- 3.4.4. Within the study area itself, it can be seen in Figure 3-4, that the Garthdee and Kaimhill areas have a lower median age than the neighbouring areas of Braeside and Mannofield. This is primarily a result of the RGU campus and prevalence of student accommodation in the local area.
- 3.4.5. There are no predicted large changes to Aberdeen’s geographic variation in age distribution in the long term. Aberdeen has recently seen a negative net migration with a population decrease of 1,040 from mid-2016 to mid-2017, this loss has happened over consecutive years.
- 3.4.6. However, there is uncertainty related to future trends of age distribution across Scotland and locally within Aberdeen, as this is linked to macro-economic, social and political factors such as immigration and birth rates which are out-with the control of the local authorities. In addition, whilst life expectancy has shown an increasing trend over the last 30 thirty years, this trend has recently stalled.
- 3.4.7. The most recent forecast of age distribution across Scotland indicates a greater proportion of the population will be older (see Figure 3-5). For example, by 2037, 25% of the population will be over 65 years of age (currently 19%). This may influence travel behaviour in the medium to long-term with a greater demand for mobility assistance, including for shorter journeys.

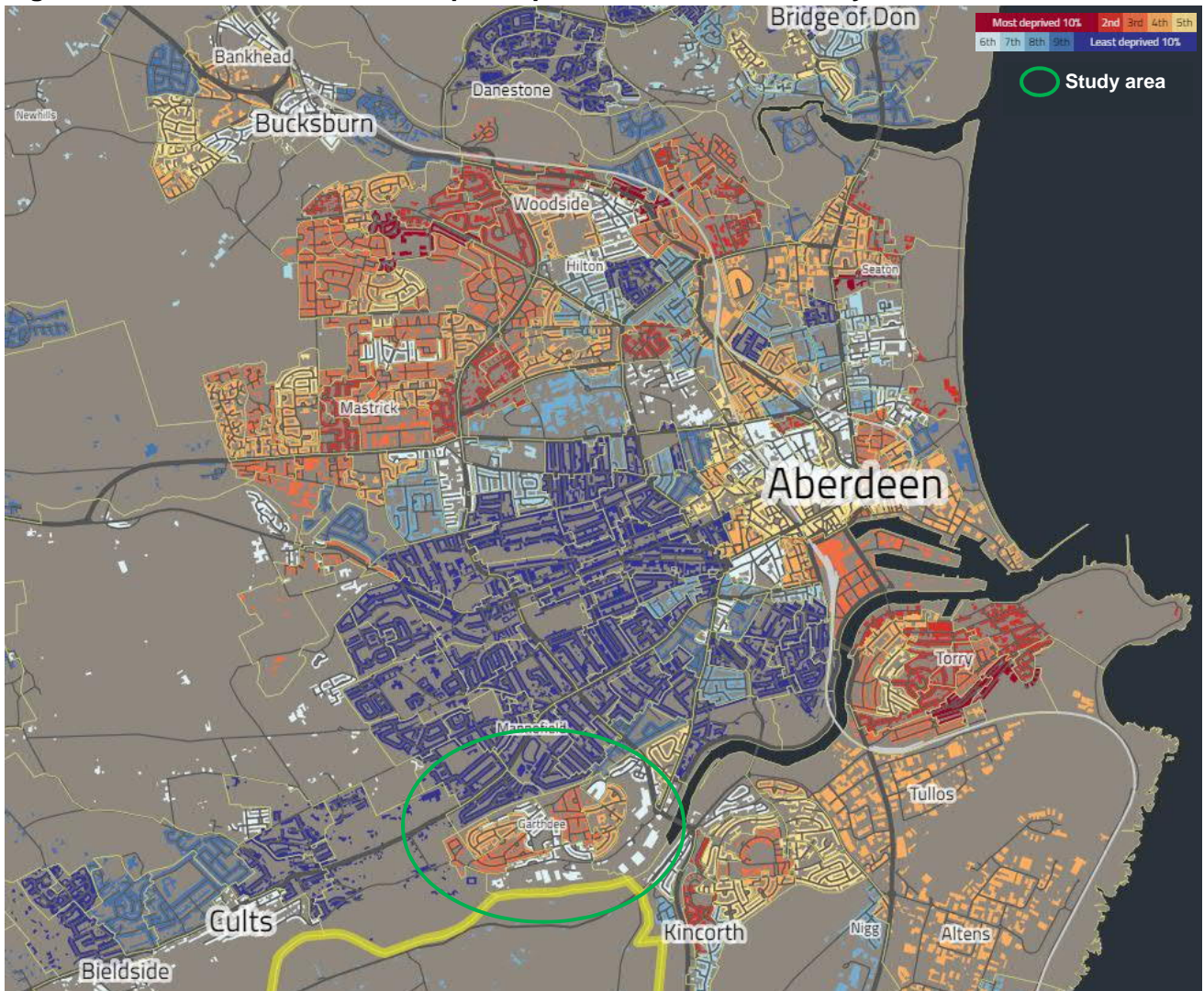
Figure 3-5 - Projected Age Distribution of the Population in Scotland to 2041 (by Sex)



3.5 SOCIAL DEPRIVATION & HEALTH

3.5.1. The level of social deprivation and quality of health varies significantly across Aberdeen. The north-west of the city hosts some of the most deprived areas including Mastrick and Northfield, while the South-West includes some of the least deprived areas in Scotland including Rubislaw, Ruthrieston and Hazlehead. However, the study area represents an area of relatively high social deprivation compared to surrounding area. This is displayed in Figure 3-6.

Figure 3-6 – Scottish Index of Multiple Deprivation Classification by Area



(Source: Scottish Index of Multiple Deprivation 2020)

3.6 CAR OR VAN OWNERSHIP

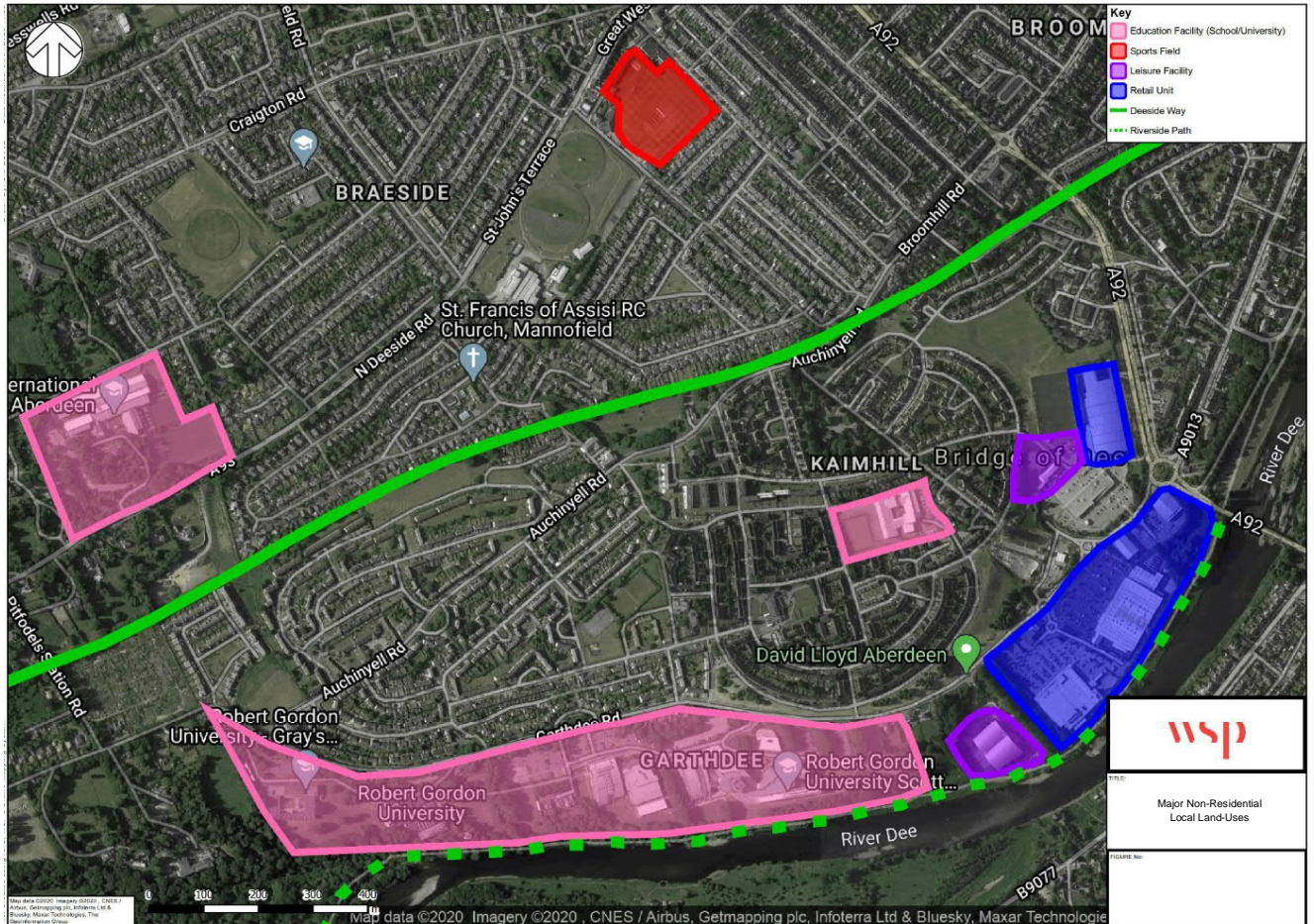
- 3.6.1. A review of car ownership levels has been undertaken using Scottish Census data (2011). This review has considered the proportion of households reporting that they do not own a car or van.
- 3.6.2. Within the study area 34% of homes did not own a private car or van. This value increases to 38% for the Garthdee and Kaimhill areas only, indicating the variation within the study area. For reference 33% of households across the whole of Aberdeen do not own a private car or van.

3.7 LOCAL LAND-USES

- 3.7.1. The study area is a significant trip generator relative to its size which is mainly due to its education and retail facilities. Garthdee is home to the RGU campus and at the eastern section of Garthdee Road are located a number of large retail units which cater for the local and wider community.

3.7.2. There are also unique facilities that draw users from a wider area, the facilities include a dry ski slope, Aberdeen International School and the Aberdeenshire Cricket Club. As there are few alternatives within the Aberdeenshire area these facilities will have a much wider range in terms of where trips are generated from. The existing major non-residential land use land-use planning is displayed in Figure 3-7 below:

Figure 3-7 – Major Non-Residential Local Land-Uses



ROBERT GORDON UNIVERSITY GARTHDEE CAMPUS

3.7.3. The Robert Gordon University (RGU) campus is located on Garthdee Road and is host to over 16,500 students³ and 950 staff⁴. The university has a number of student accommodation buildings (908 student beds) near the campus and in the City Centre. However, the majority of students commute from private accommodation to the campus.

3.7.4. As shown, in Figure 3-4, the low median age of the City Centre population indicates that there is a high proportion of students living within the City Centre who are likely to travel regularly to the RGU campus to study.

³ Source: <https://www.rgu.ac.uk/about/facts-figures> (Accessed 20/5/2020)

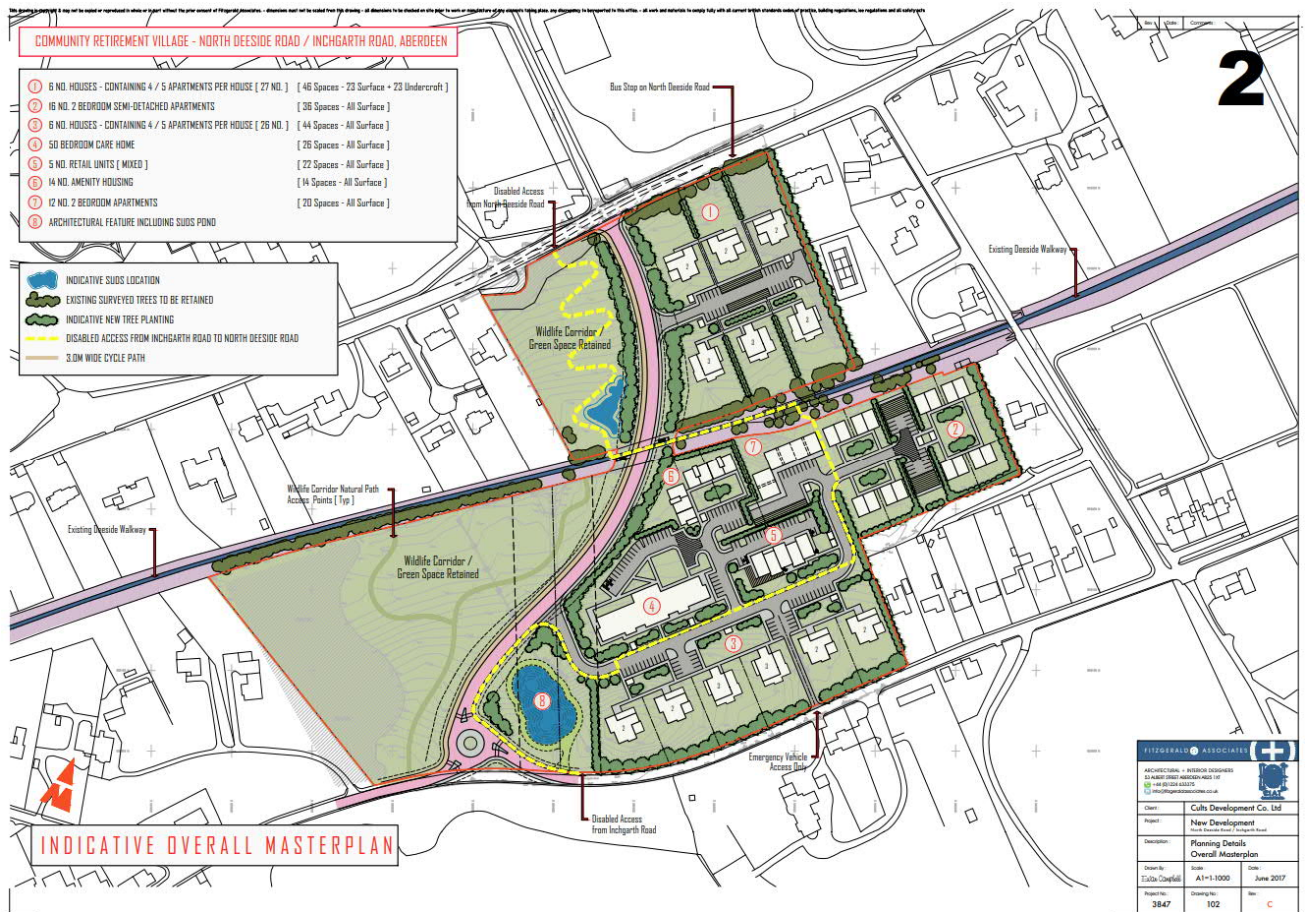
⁴ Source: <https://www3.rgu.ac.uk/46B46730-089A-11E2-A92F000D609CB064> (Accessed 20/5/2020)

- 3.7.5. RGU travel advice recommends that cyclists use the Deeside Way to access the Garthdee campus and caution that other routes may only appeal to more experienced cyclists.
- 3.7.6. The RGU campus is accessible from the City Centre by regular bus services (see Section 3.9). Parking on-campus is controlled by a parking permit scheme, with priority given to disabled users and car share trips.

3.8 LAND-USE PLANNING

3.8.1. Reviewing the Planning Portal for Aberdeen City, there is one proposed development which may impact on the study area. A residential development for retired/elderly (including affordable housing), a 50-bedroom care home with approximately 500sqm for ancillary retail/community use. The site will include public open space and associated infrastructure including a link road seen in Figure 3-8 below.

Figure 3-8 - Community Retirement Village Plan



(Source: ACC)

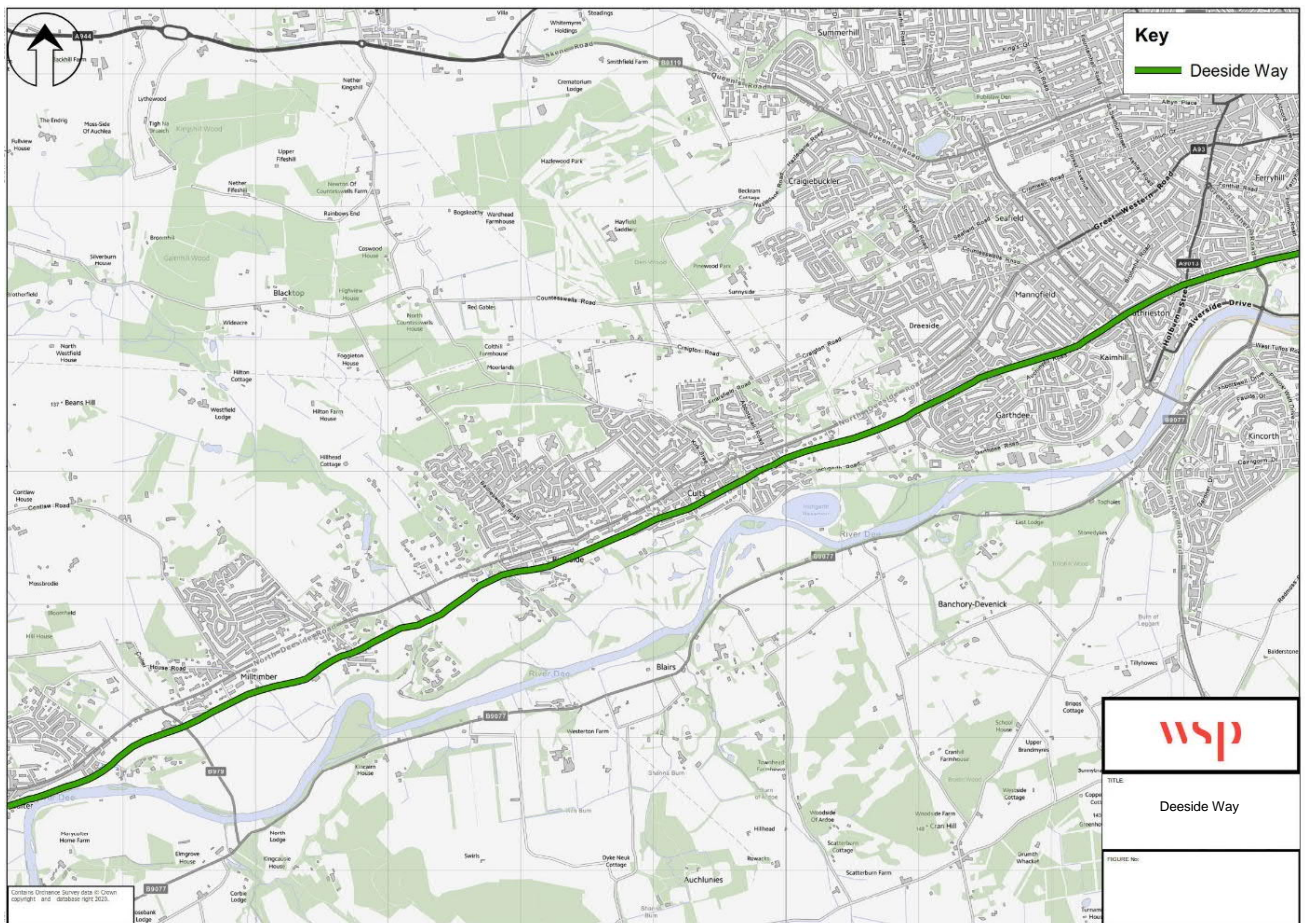
3.8.2. This development would also potentially result in an increase in more vulnerable road users within the study area.

3.9 EXISTING ACTIVE TRAVEL CONDITIONS

DEESIDE WAY

- 3.9.1. The main active travel route in the study area is the Deeside Way, the alignment of the route within the vicinity of the study area is shown in Figure 3-9. The Deeside Way uses a decommissioned railway line that has been repurposed as an active travel route.
- 3.9.2. The path is well used by the public bringing people from the more peripheral parts of the city towards the City Centre. The Deeside Way also provides a connection west into Aberdeenshire, terminating at Ballater.

Figure 3-9 - Deeside Way



- 3.9.3. The Deeside Way is currently a 2.7 to 3 metre wide shared use asphalt path. Path usage data provided by ACC indicates that there is a weekday average of 392 pedestrian and 212 cycle journeys on the path. Based on the standards set out within Cycle By Design⁵, the existing path width is sufficient to accommodate the current user volumes.
- 3.9.4. A typical section of the Deeside Way is shown in Figure 3-10.

⁵ Cycling By Design, Transport Scotland, 2011

Figure 3-10 - Deeside Way Current Condition



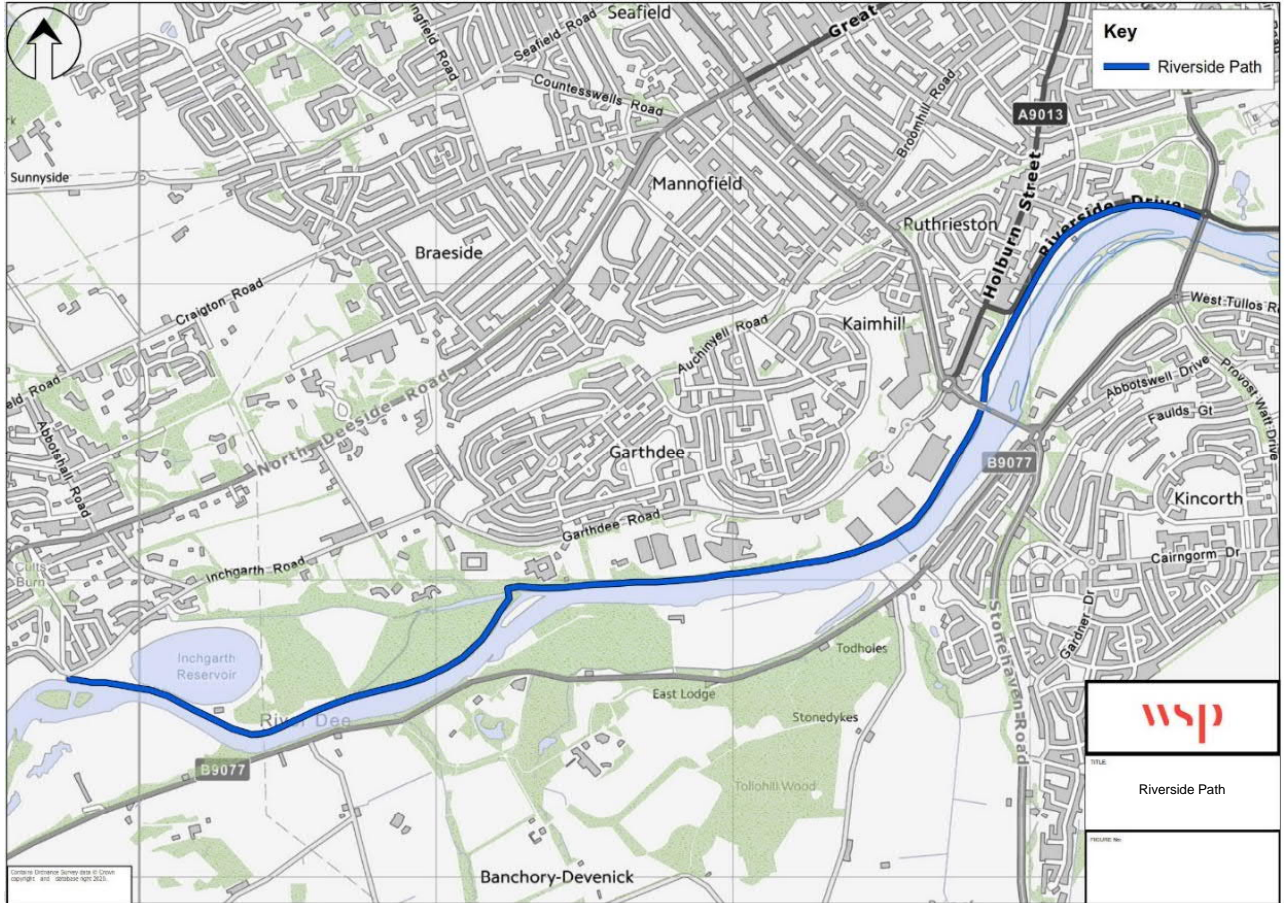
3.9.5. Information provided by ACC indicates that there have been reports from the public of user conflicts and safety concerns on the Deeside Way as well as incidents of anti-social behaviour. To investigate this further, specific questions were included in the engagement phase public questionnaire and path users were directly canvassed to on-site to discuss their experiences using the path (see Chapter 9 for details). The reported user issues on the path included:

- Increased volume of cyclists at peak times.
- Cyclists passing too close to walkers, wheelers and dogs, and travelling at too high a speed.
- Users receiving verbal abuse as a result of actual or perceived conflicts.
- Lack of path lighting and related personal security concerns.

RIVERSIDE PATH

3.9.6. The Riverside Path connects between Inchgarth Road and Duthie Park and runs along the north bank of the River Dee. The full extent of the path is illustrated in Figure 3-11

Figure 3-11 – Riverside Path



3.9.7. The path is currently bisected by the A92. The western section Riverside Path (west of the A92) is informal and largely overgrown with very few observed existing users. The typical condition of the path in this location is illustrated in Figure 3-12

Figure 3-12 - Current Condition of the Western Section of the Riverside Path



- 3.9.8. The eastern section of the Riverside Path (east of the A92) is a circa 2.5 to 3 metre wide shared use asphalt path. Path usage data provided by ACC indicates that there is a weekday average of 361 pedestrian and 63 cycle journeys on the eastern section of the path. The typical condition of the eastern section of the path is illustrated in Figure 3-13.

Figure 3-13 - Current Condition of the Eastern Section of the Riverside Path



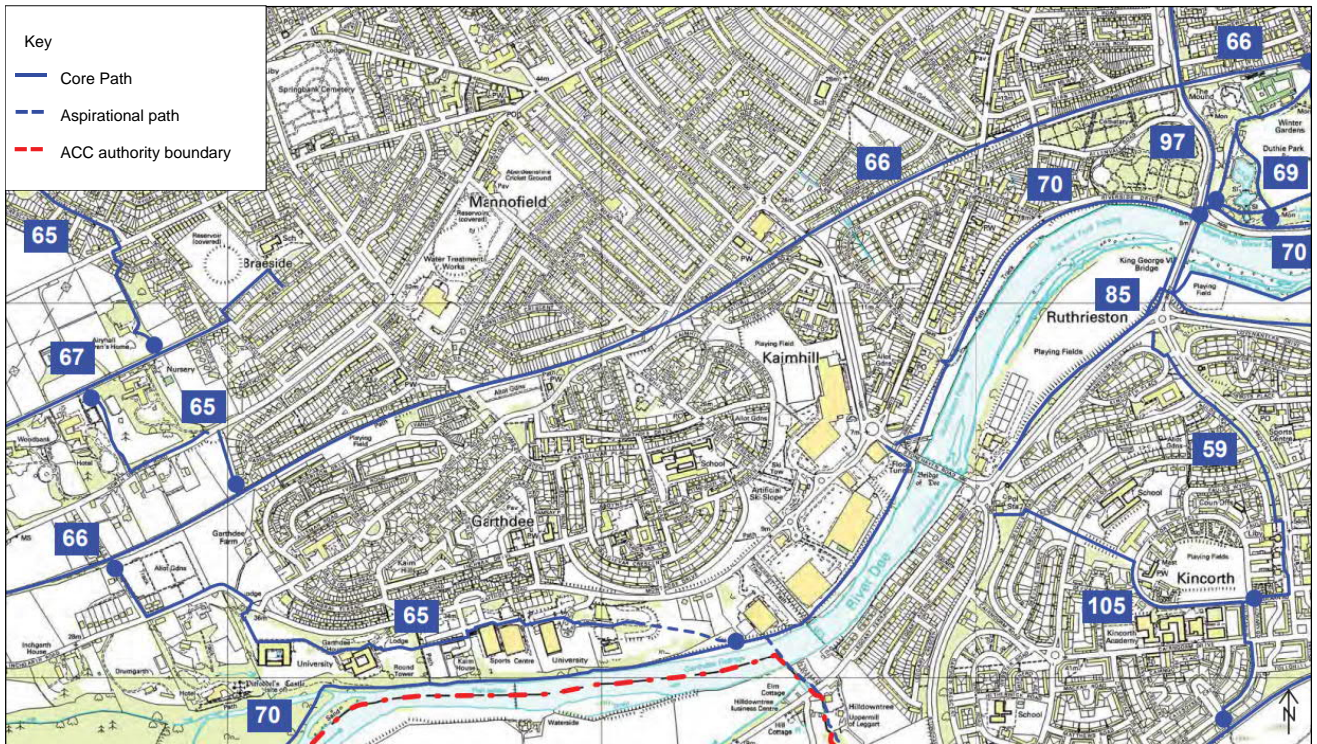
GARTHDEE ROAD

3.9.9. The eastern section of Garthdee Road is currently motor vehicle dominated as the road has been designed to accommodate motor vehicle access to the large retail units. The road is not so well designed to accommodate for pedestrians or cyclists, there is inconsistent footway provisions (less than 1m width in sections), steep gradients and no provision for cyclists. The least suitable section of the route is the three roundabouts to the east which create barriers to the movement of both pedestrians and cyclists.

CORE PATHS

3.9.10. Core paths are protected under Policy T3 – Sustainable and Active Travel. During new developments core path access must be maintained always by the developer through suitable alternatives. Policy NE9 – Access and Informal Recreation also protects Core Paths stating that new development should not compromise the integrity of existing or potential recreational opportunities, including access during construction. Figure 3-14 below shows the locations of existing and aspirational Core Paths.

Figure 3-14 – Local Core Paths

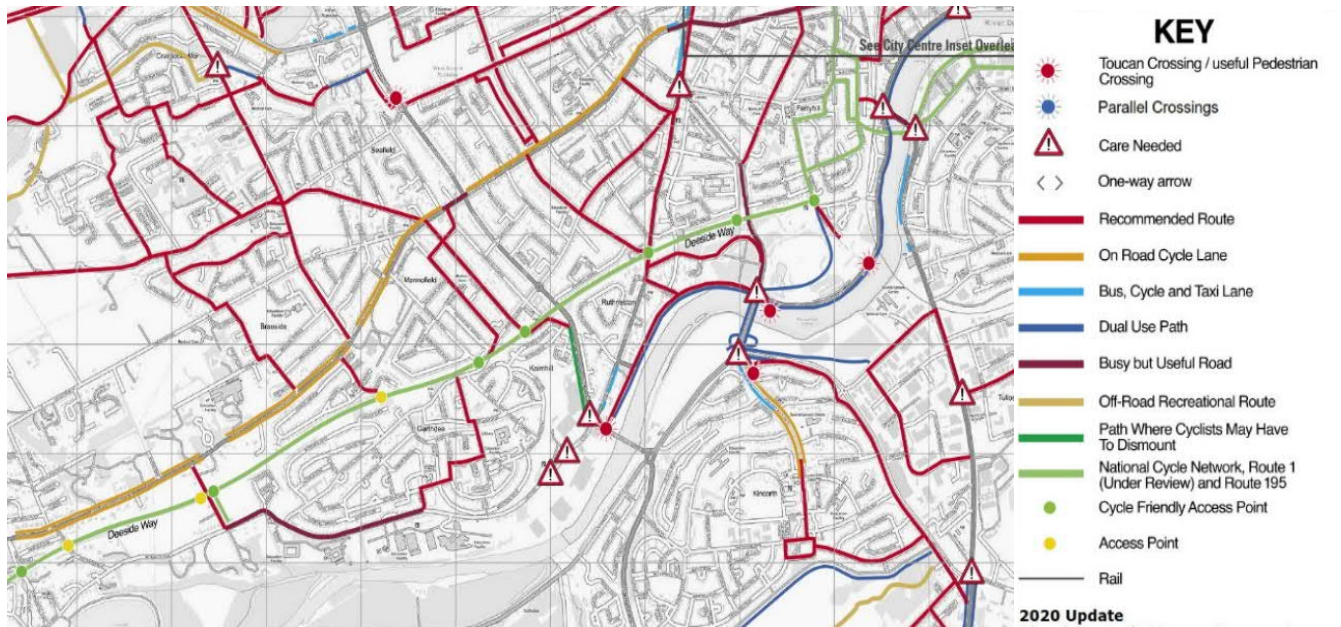


(Source: ACC)

WIDER CONNECTIONS

3.9.11. The ACC recommended cycling routes within and through the study area are reproduced in Figure 3-15. As shown, the section of Garthdee Road which serves the major retail land uses is not considered as suitable for all cyclists.

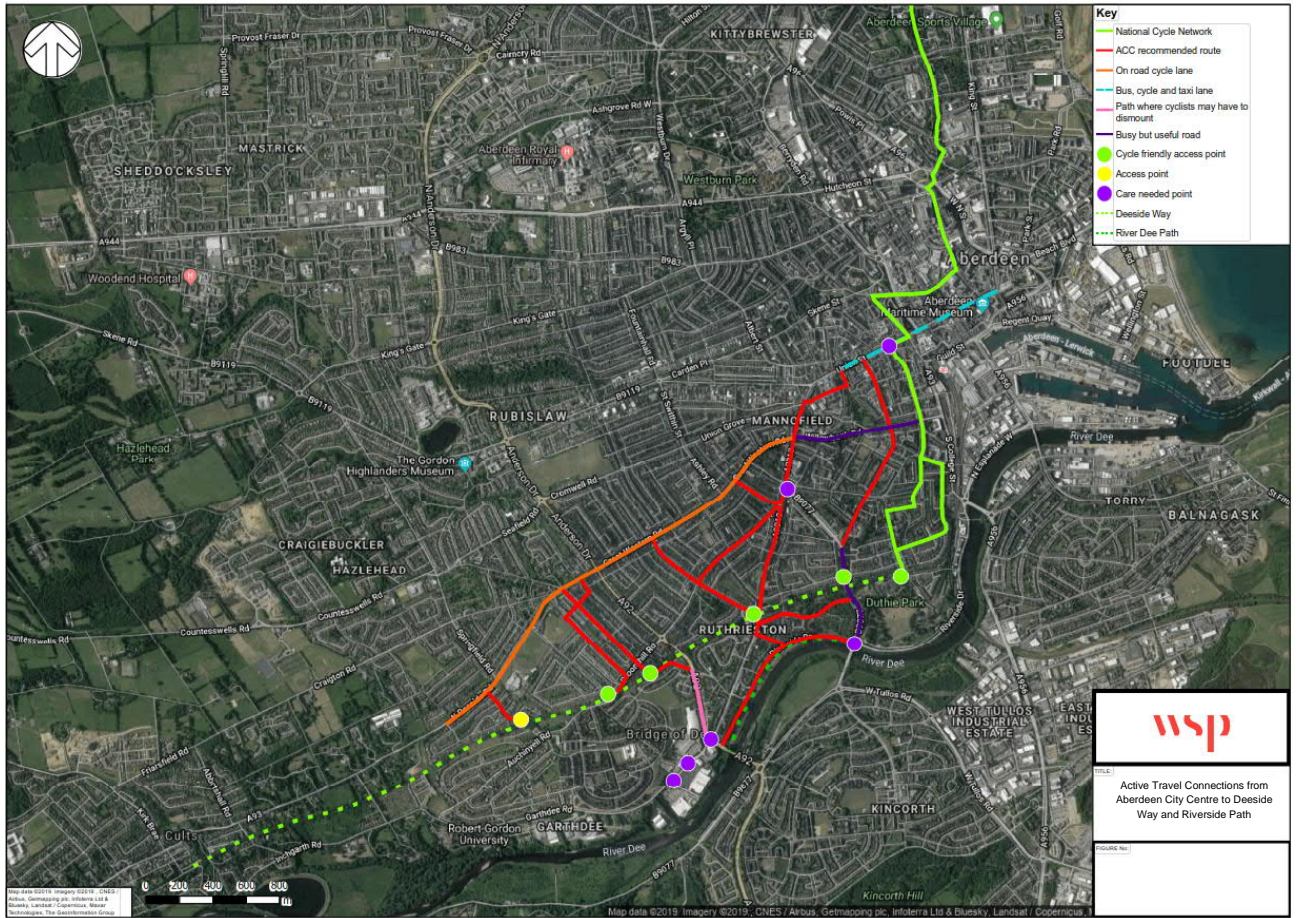
Figure 3-15 - Map of Recommended Cycling Routes Provided by ACC



(Source: ACC)

3.9.12. Figure 3-16 shows the key active travel connection options from the study area to Aberdeen City Centre. The figure indicates that the Deeside Way and Riverside Path are the two main off-road routes from connecting between the study area and the core trip origin/destination area of Aberdeen.

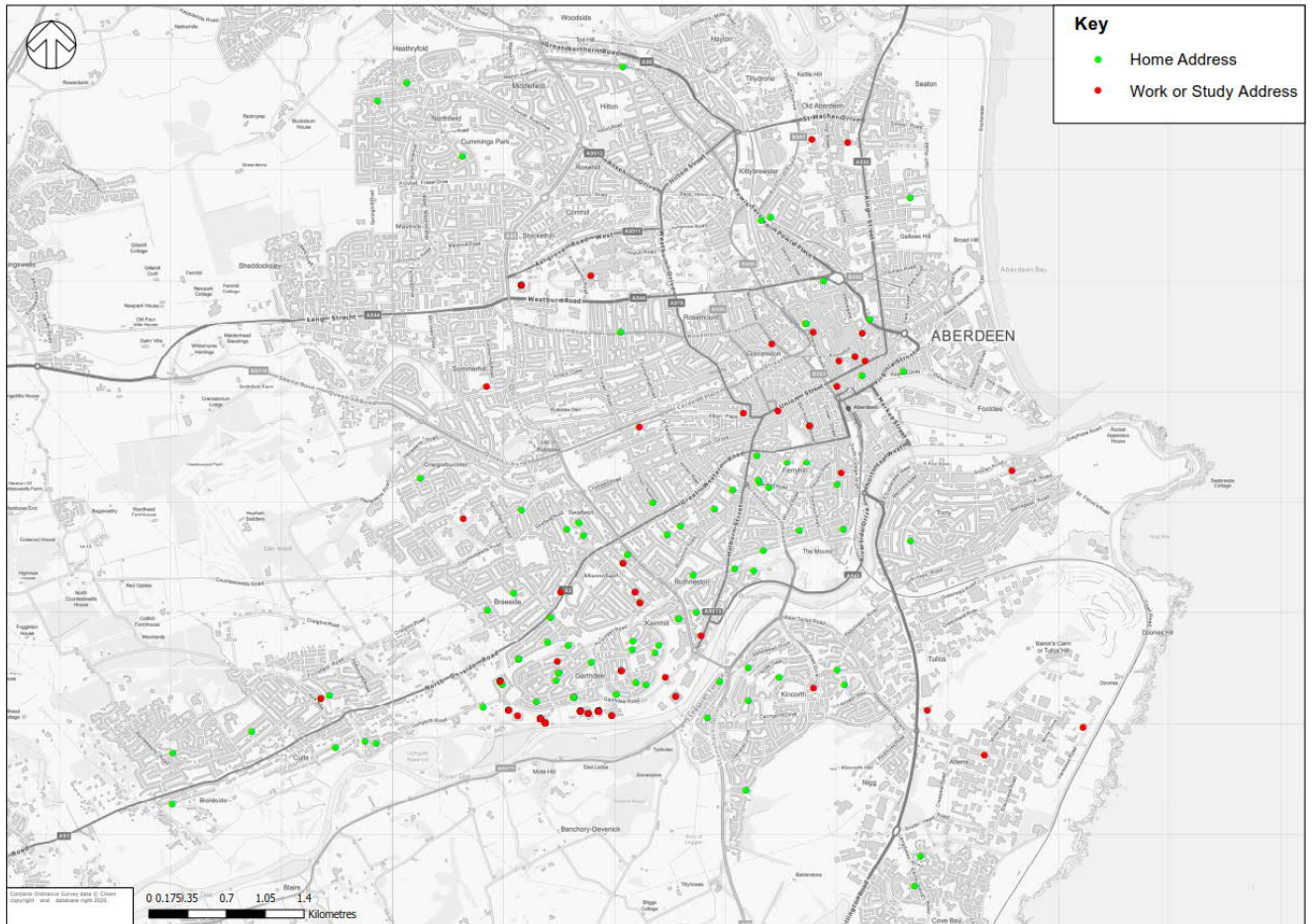
Figure 3-16 – Active Travel Connections from Aberdeen City Centre to Deeside Way and Riverside Path



ORIGIN – DESTINATION ANALYSIS

3.9.13. Information on regular origin-destination travel patterns across the study area was extracted from engagement with the local community through the engagement phase (see Appendix F for details). This was based on postcode locations for work and home addresses as illustrated in Figure 3-17.

Figure 3-17 Location of Respondents' Home and / or Work and Education Addresses

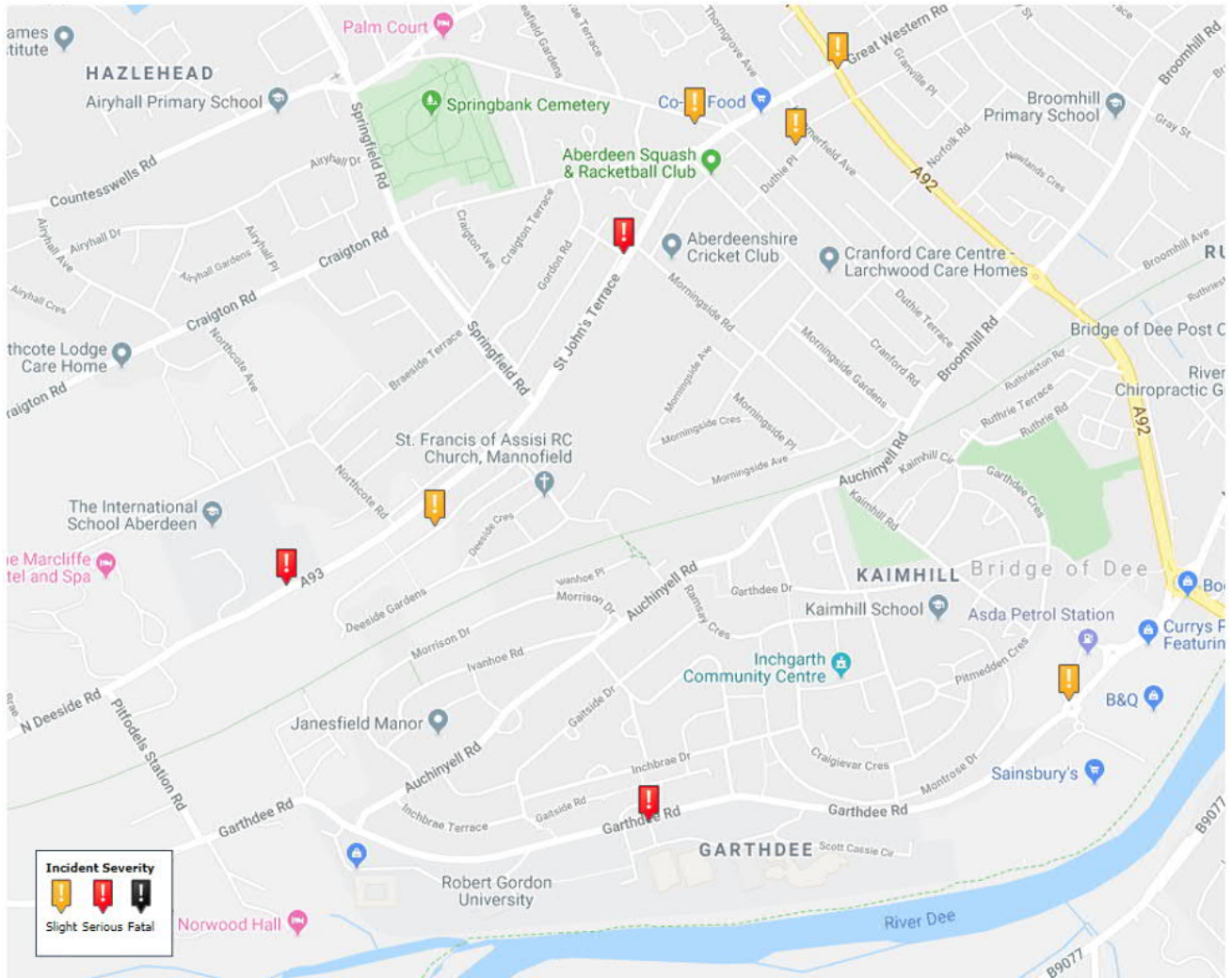


3.9.14. Additional origin-destination analysis was undertaken based on home and work /education locations to identify the principle desire lines for movement within and through the study area. This animated analysis cannot be presented within a static report; however, video files of the analysis were presented to the Core Project Group. The analysis indicated that, as expected, there was strong demand for improving connections between the study area and the city centre.

CYCLING INJURY ACCIDENT RECORDS

3.9.15. The recorded on-road cycling injury incidents between 2014-2018 within the study area were reviewed to gain an understanding of potential conflict points within the study area. Incidents have been noted on the main road corridors as shown in Figure 3-18 below.

Figure 3-18 - Cycling Injury Accident within the Study Area (2014-2018)



(Source: Crashmap.co.uk)

ACC ACTIVE TRAVEL ACTION PLAN (2017-2021)

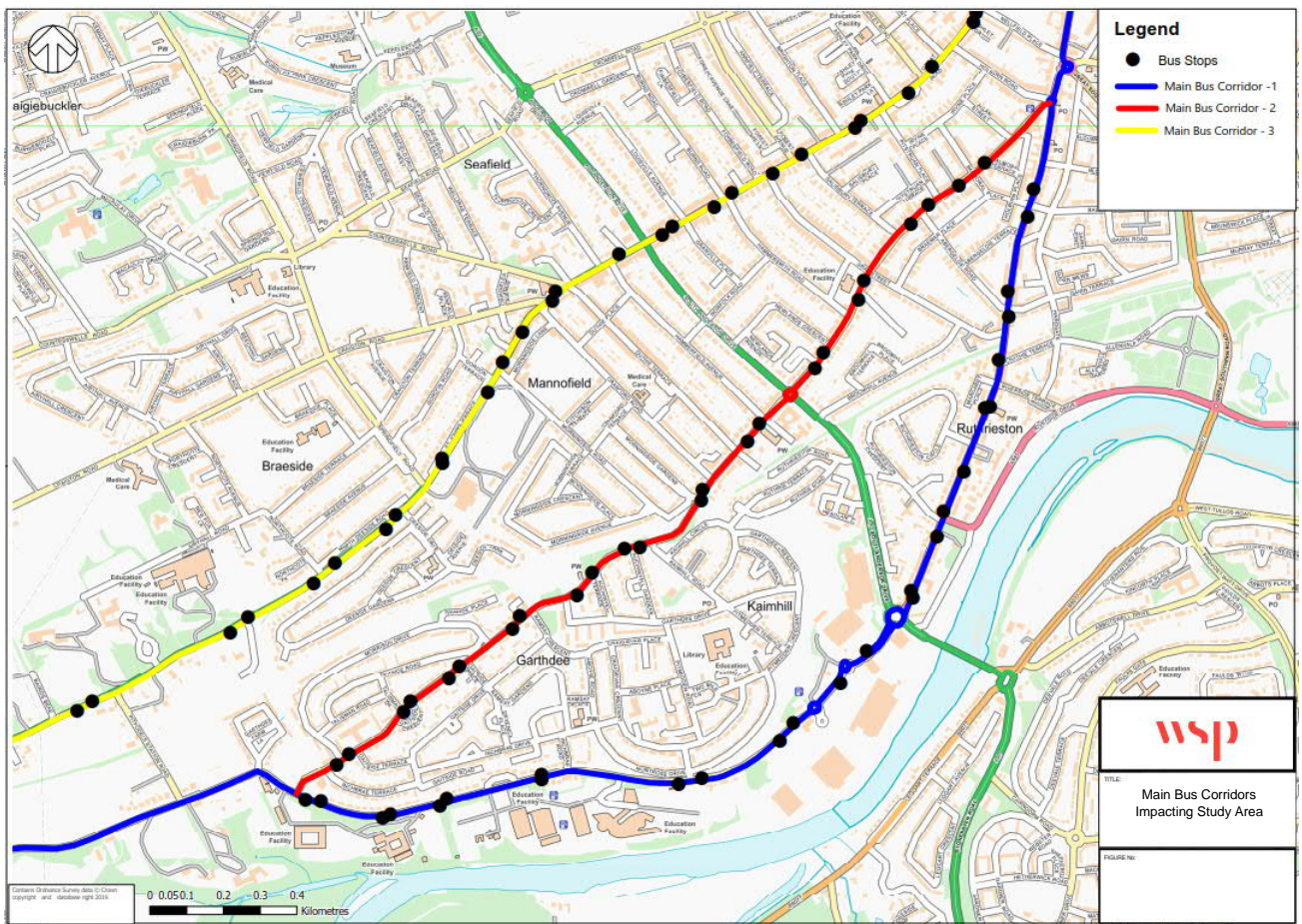
3.9.16. The plan looks to achieve an improved environment and therefore increased levels of walking, wheeling and cycling in Aberdeen. The A93 has been highlighted as a route requiring specific improvements as it is a key corridor providing access to schools, universities, leisure and the Deeside corridor. Improvements made to the A93 would have an impact on the study area and should be noted as it is acknowledged in the City Councils action plan.

3.10 EXISTING PUBLIC TRANSPORT SERVICES

BUS

3.10.1. Many bus services operate within the study area, the main bus corridors are Garthdee Road, Auchinyell Road and St John’s Terrace (A93). One bus service (119) operates between Auchinyell Road and Garthdee Road however the service only runs once a day and therefore it has a negligible impact on the route. The A92 is another main road however the bus services run perpendicular to this road as the routes are focused on taking passengers from the peripheral of the city to the City Centre. The main bus corridors are shown in Figure 3-19 below.

Figure 3-19 - Main Bus Corridors Impacting Study Area



Bus Service Information

3.10.2. The bus services on the main corridors are operated by Stagecoach, First Group and Bains Group. The frequency of these services is displayed below in Table 3-2.

Table 3-2 - Bus Service Information

Service	Operator	Route	Frequency		
			Mon-Fri	Sat	Sun
1 (The Bridges)	First Group	RGU Garthdee - Auchinyell Road - Broomhill Road - Union Street - King Street - Ellen Road - Danestone (Bridges)	Approx. 4 services per hour	Approx. 4 services per hour	Approx. 4 services per hour
1B (The Bridges)	First Group	RGU Garthdee/Bridge Street - Union Street - Bridge of Don Park & Ride - Greenbrae Drive - Dubford (Bridges)	Approx. 2 services per hour	Approx. 2 services per hour	No Service
2 (The Bridges)	First Group	RGU Garthdee - Ellon Road - King Street - Union Street - Broomhill Road - Auchinyell Road - Ashwood (Bridges)	Approx. 4 services per hour	Approx. 4 services per hour	Approx. 4 services per hour
19	First Group	Culter - Tillydrone	Approx. 4 services per hour	Approx. 4 services per hour	Approx. 2 services per hour
N19	First Group	Broad Street - Union Street - Great Western Road - North Deeside Road - Culter	1 service per hour	1 service per hour	No Service
N20	First Group	Hillhead of Seaton -Garthdee	2 services per hour (Friday only during term time), 1 service per hour (Friday only not during term time)	2 services per hour (Friday only during term time)	No Service
62 (School Service)	First Group	Harlaw Academy - Garthdee & Auchinyell	2 services per day	No Service	No Service
119	Stagecoach	Aberdeen - Garthdee - Peterculter	1 service per day	No Service	No Service
201	Stagecoach	Aberdeen - Banchory - Ballater - Braemar	1 service per hour	1 service per hour	1 service every 2 hours
202	Stagecoach	Aberdeen - Banchory - Ballater	1 service per hour	1 service per hour	1 service every 2 hours
203	Stagecoach	Aberdeen - Banchory - Ballater - Braemar	1 Service per day	No Service	No Service

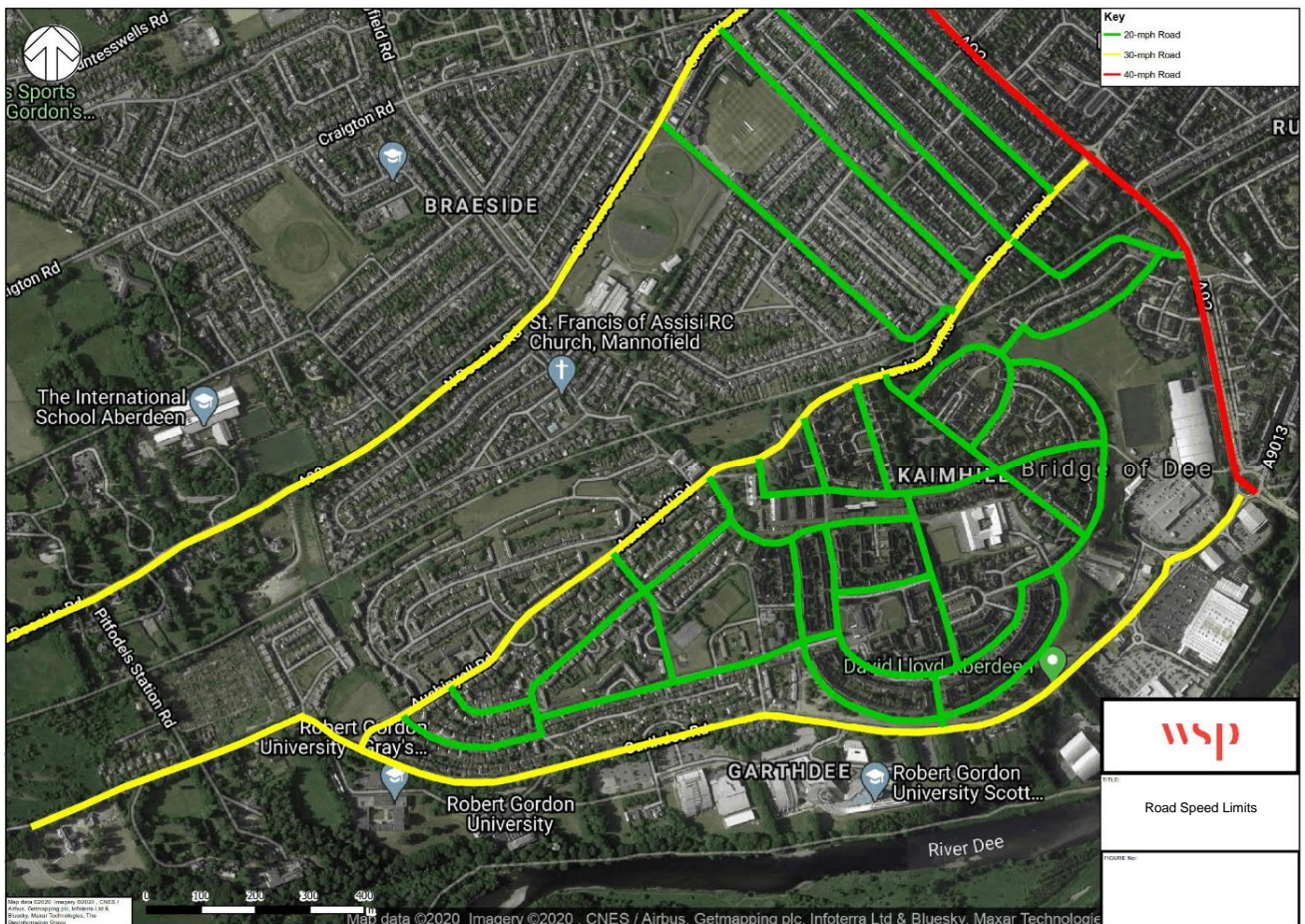
RAIL

- 3.10.3. The closest rail station is Aberdeen train station and is located approximately 4km from the study area. It is possible to walk, cycle, take public transport to the station; however, provision for walking and cycling on the existing routes from the study area to the station are variable in their quality for users.
- 3.10.4. The station provides access to hourly train services to Edinburgh and Glasgow via Dundee; as well as services to Inverurie and Inverness. Additionally, daily cross-border services provide access to destinations in England.

3.11 MOTOR VEHICLE CONDITIONS

- 3.11.1. Garthdee has a series of high traffic volume road corridors interconnected by lower speed roads with lower traffic flows. The main road corridors as displayed in Figure 3-19 are Garthdee Road (30-mph), Auchinyell Road (30-mph), North Deeside Road (30-mph) and A92 - South Anderson Drive (40-mph). The interconnecting lower traffic flow roads have a 20-mph speed limit as displayed in Figure 3-20.

Figure 3-20 - Road Speed Limits



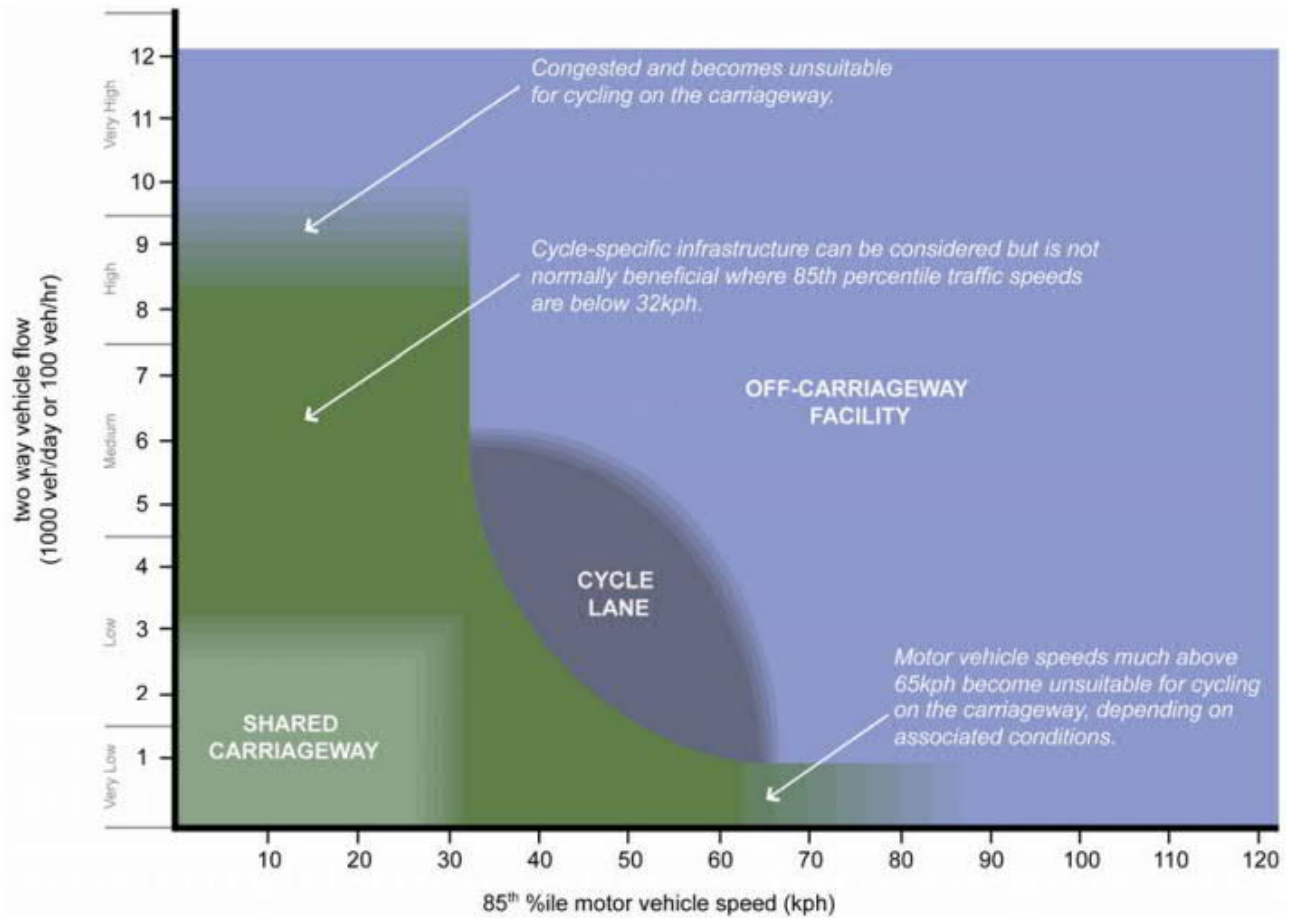
- 3.11.2. Table 3-3 below presents the peak traffic flows on both the A92 and Garthdee Road for the AM, PM and weekend peak hour scenarios. These roads take most of the traffic throughout the day and do not currently have any dedicated cycling infrastructure.

Table 3-3 - Vehicle Counts

Road Section	AM Peak Hour	PM Peak Hour	Weekend Peak Hour
Garthdee Road (East)	680	1197	1299
Garthdee Road (West)	1212	1045	1230
A92 - South Anderson Drive (North)	1297	1102	942
A92 - South Anderson Drive (South)	1022	944	898

3.11.3. The residential streets within the study area have been assessed on-site to consider their suitability for active travel. The street network between Garthdee Road and Auchinyell Road, and between Auchinyell Road and the A93 has been observed to be low traffic volume, low speed (20-mph) roads. In line with the guidance set out in *Cycling by Design* (and reproduced in Figure 3-21) these streets are considered suitable for on-carriageway cycling without the need for segregated cycling facilities.

Figure 3-21 – Link Specification Guide Criteria (extract from *Cycling By Design*⁶)



- 3.11.4. The focus of cycling improvements should therefore be on the direct corridors that have, higher motor vehicle speeds and volumes and a proven demand for cycling. Garthdee Road provides many benefits and caters to a wide range of needs within the wider community, allowing users to navigate Garthdee Road safely by bike would potentially increase cycling uptake in the local area.
- 3.11.5. Where existing roads function as bus corridors, such as Garthdee Road, a minimum carriageway width of 6m is considered necessary to maintain two-way vehicles movements.

⁶ Cycling By Design , Transport Scotland 2011

3.12 TRAVEL PATTERNS

TRAVEL MODE SHARE

- 3.12.1. Scottish Census data⁷ has been reviewed to provide an indication of travel mode choice to places of work or study. This is shown in Table 3-4.
- 3.12.2. Driving (including passengers) takes up the largest modal share in the study area (53.7%), this is greater than share compared to Aberdeen (49.2%) however it is below the national average (56.3%). Walking to work in the study makes up 24% of the modal share which is over greater than the national average (20.8%).

Table 3-4 – Study Area Travel to Work or Study Mode Share (2011 Scottish Census)

Bus/Minibus/Coach	Driving	Passenger	Bicycle	On Foot	Other
16.2%	45.9%	7.9%	2.3%	24.0%	3.7%

- 3.12.3. Cycling does not make up a large portion of the local modal share (2.3%) however it is greater than the average across Aberdeen (1.9%), both these percentages are greater than the national average (1.5%).

ACTIVE TRAVEL DATA

- 3.12.4. An active travel count was carried out on Morrison Drive on Wednesday 24 October 2018 during term time, the purpose was to collect data on walking, wheeling and cycling. It was noted that there was a low cycling count at this location which aimed to capture students entering RGU at the eastern entrance during term time. From 7:00 to 11:30 only 35 cyclists were noted entering from the east and 7 from the west. Walking has a much larger modal share in active travel with 981 people in the same time frame.
- 3.12.5. Following this WSP conducted a walking, wheeling and cycling count along Garthdee Road on the 19th September 2019 within the same time frame to compare results to those observed in 2018 levels. Between 7:00 and 11:30, 40 cyclists were observed travelling west on Garthdee Road and 9 cyclists were observed travelling east. Walking / wheeling again had a much larger modal share with 1110 people observed walking or wheeling on Garthdee Road within the same timeframe. The numbers are similar to those observed in 2018 with a very similar modal split between walking / wheeling and cycling.
- 3.12.6. The ACC provided pedestrian and cyclists counter data from specific points on the Deeside Way collected between 1st March 2018 and 1st March 2020. For the purposes of this study the locations at Duthie Park and Peterculter were reviewed as Garthdee is located between these two counters. Duthie Park experiences weekday daily average of 392 pedestrians and 212 cyclists compared to a weekend daily average of 555 pedestrians and 105 cyclists.

⁷ Scotland's Census 2011 - National Records of Scotland Table QS702SC - Method of travel to work or study (1) All people aged 4 and over who are studying or aged 16 to 74 in employment in the week before the census: <https://www.scotlandscensus.gov.uk/ods-web/area.html>

Peterculter experiences weekday daily average of 150 pedestrians and 49 cyclists compared to a weekend daily average of 236 pedestrians and 66 cyclists.

3.13 STREET USER CONSTRAINTS

- 3.13.1. The project team undertook a detailed site review to help inform their understanding of the study area and identify potential constraints to people walking, wheeling or cycling within or through the study area. The main constraints identified are presented in Figure 3-22 below, the reference numbers shown are summarised in the accompanying Table 3-5.

Figure 3-22 - Constraints Identified by Site Review

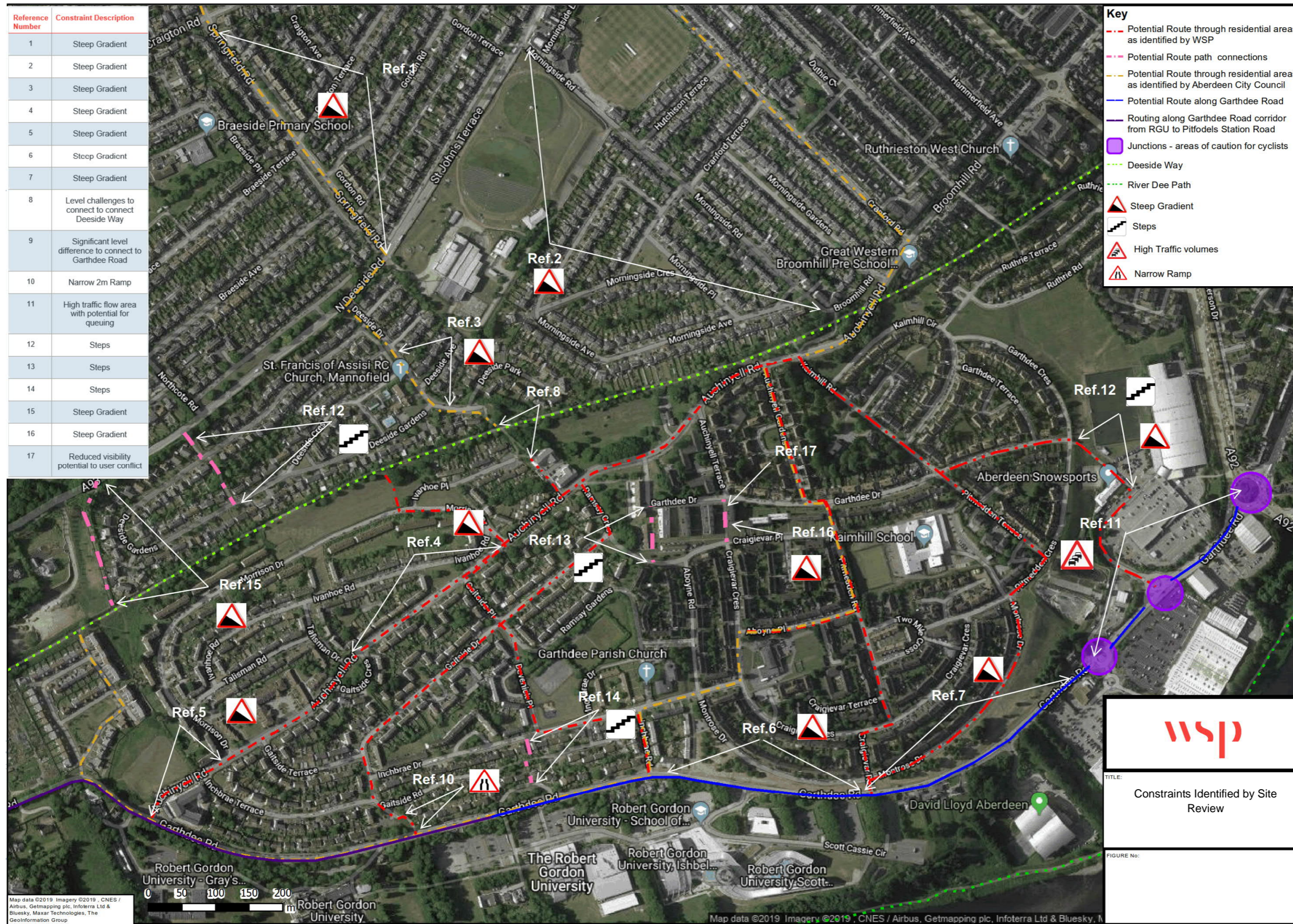


Table 3-5 - Reference Number by Constraint Description

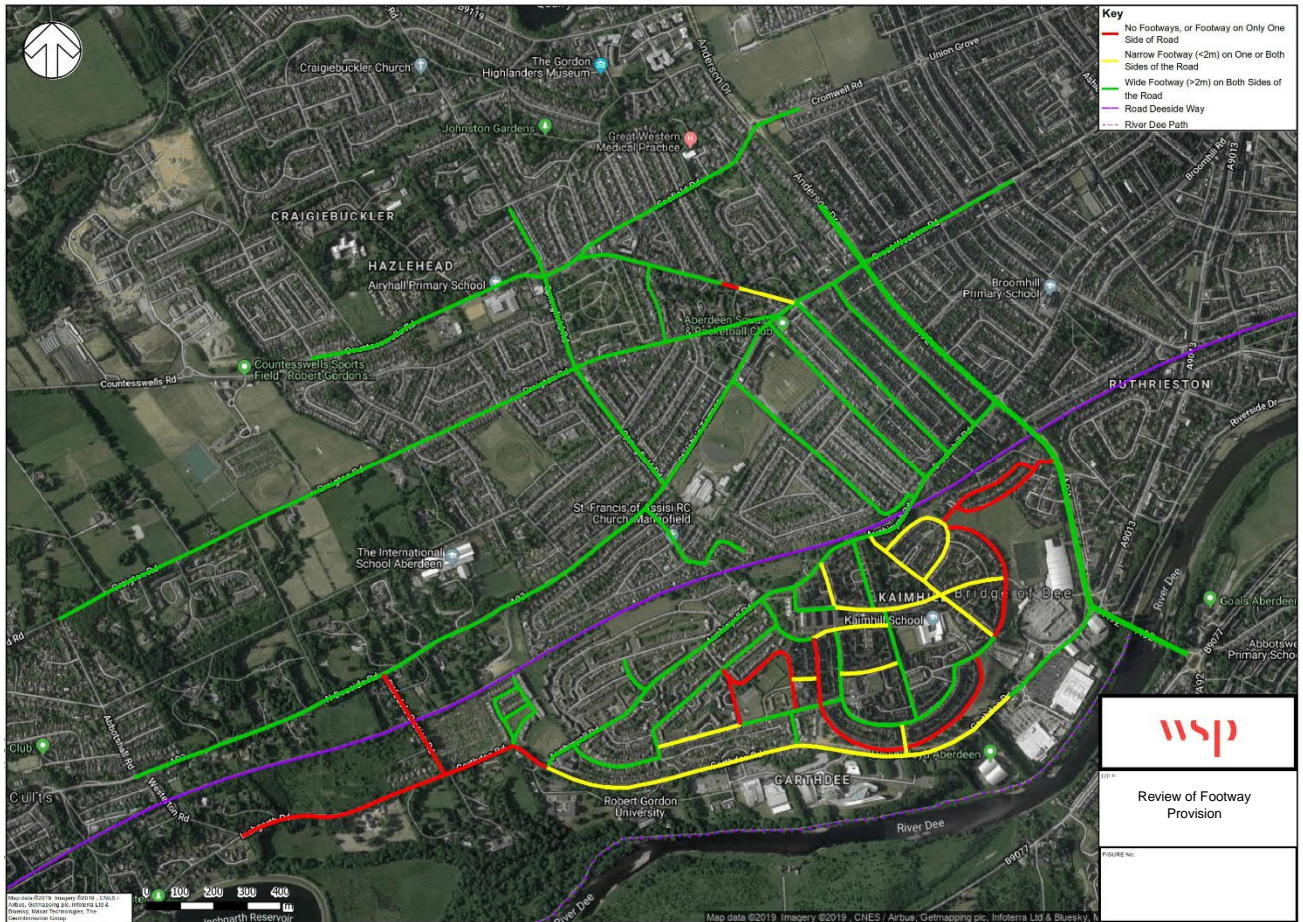
Reference Number	Constraint Description
1 to 7, 15 & 16	Steep Gradient
8	Level challenges to connect to the Deeside Way
9	Significant level difference to connect to Garthdee Road
10	Narrow 2m Ramp
11	High traffic flow area with potential for queuing
12	Steps and steep gradient path
13 & 14	Steps
17	Reduced visibility potential for path and footway user conflict

3.13.2. The findings presented in Figure 3-22 demonstrate that the topography of the study area presents significant constraints to active mobility across the site in both a west-east direction and a north-south direction. This topography has necessitated the use of steps on many of the north-south path connections which create a barrier to movement by people with impaired mobility including wheelchair users and people pushing buggies, prams or pushchairs.

3.13.3. The map shown in Figure 3-23 presents a review of the current footway network, as displayed the following criteria have been used:

- Green sections have c. 2m wide footways on both side of the carriageway.
- Yellow sections have footways on both sides of the carriageway, however at least one footway is below 2m in width.
- Red sections have either no footways at all or only one footway.

Figure 3-23: Review of Footway Provision



- 3.13.4. As shown in Figure 3-23 despite Garthdee Road being one of the main corridors for both pedestrians and traffic within the study area, large sections do not have adequate provisions for pedestrians.
- 3.13.5. In addition to footway widths, an assessment of conditions for pedestrians with disabilities has been undertaken. This included reviewing the provision of dropped kerbs at signalised and non-signalised crossing points on the main roads within the study area. A summary of the findings of this review is presented in Figure 3-24 and shows a number of locations where existing infrastructure could be improved if a wider package of improvement measures for pedestrians is being taken forward on a road corridor.

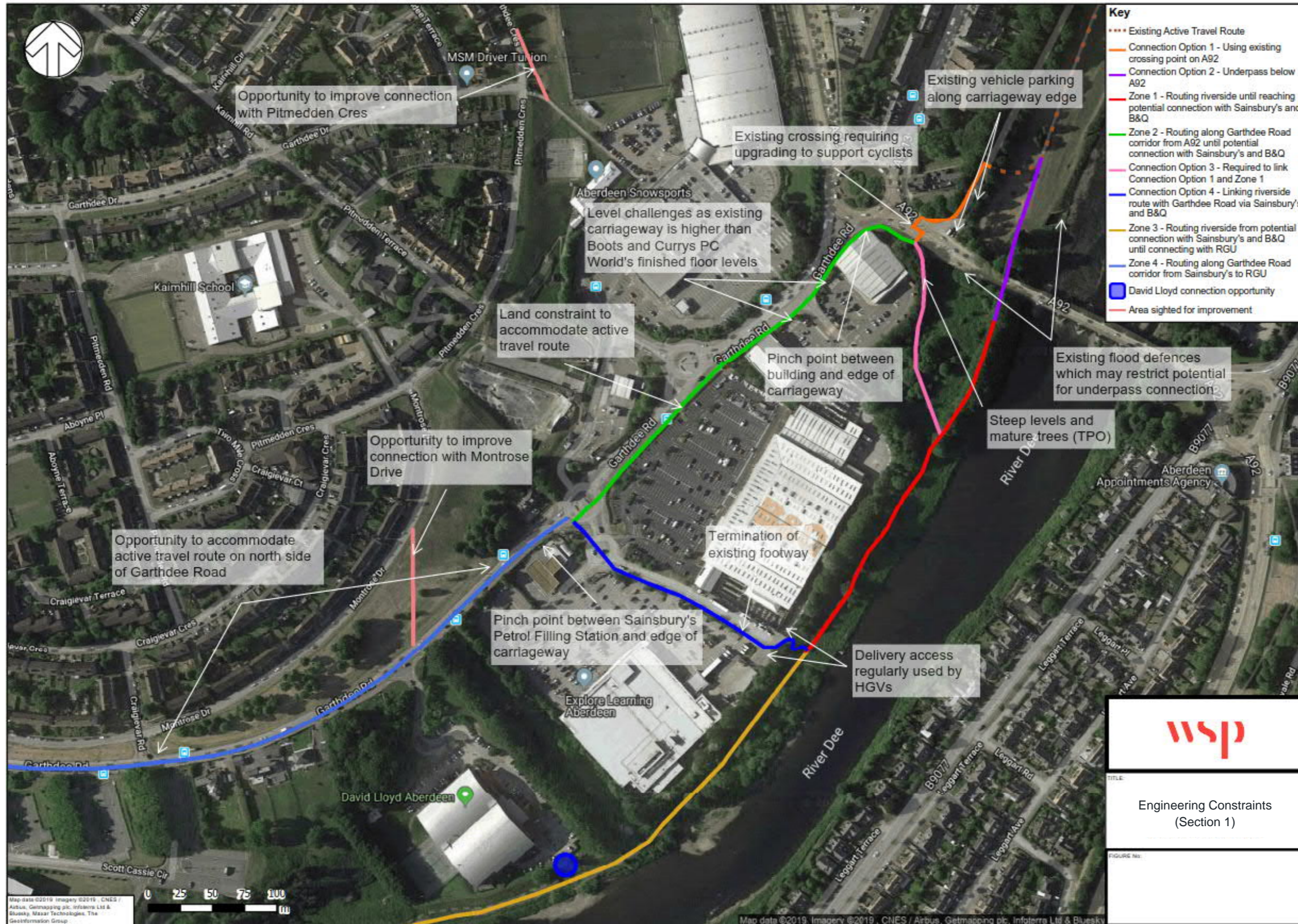
Figure 3-24 - Accessible Crossing Facilities Review



3.14 ENGINEERING CONSTRAINTS

3.14.1. Further to the existing street user constraints identified previously, the potential engineering constraints have also been considered within the study area. The engineering constraints review have been focussed on the principal sections of the study covered by the project brief, namely, Garthdee Road and the north bank of the River Dee. The outcomes of this engineering constraints review are presented in Figure 3-25, 3-26 and 3-27.

Figure 3-25 - Engineering Constraints (Section 1)



TITLE
 Engineering Constraints
 (Section 1)

FIGURE No.

Figure 3-26 - Engineering Constraints (Section 2)

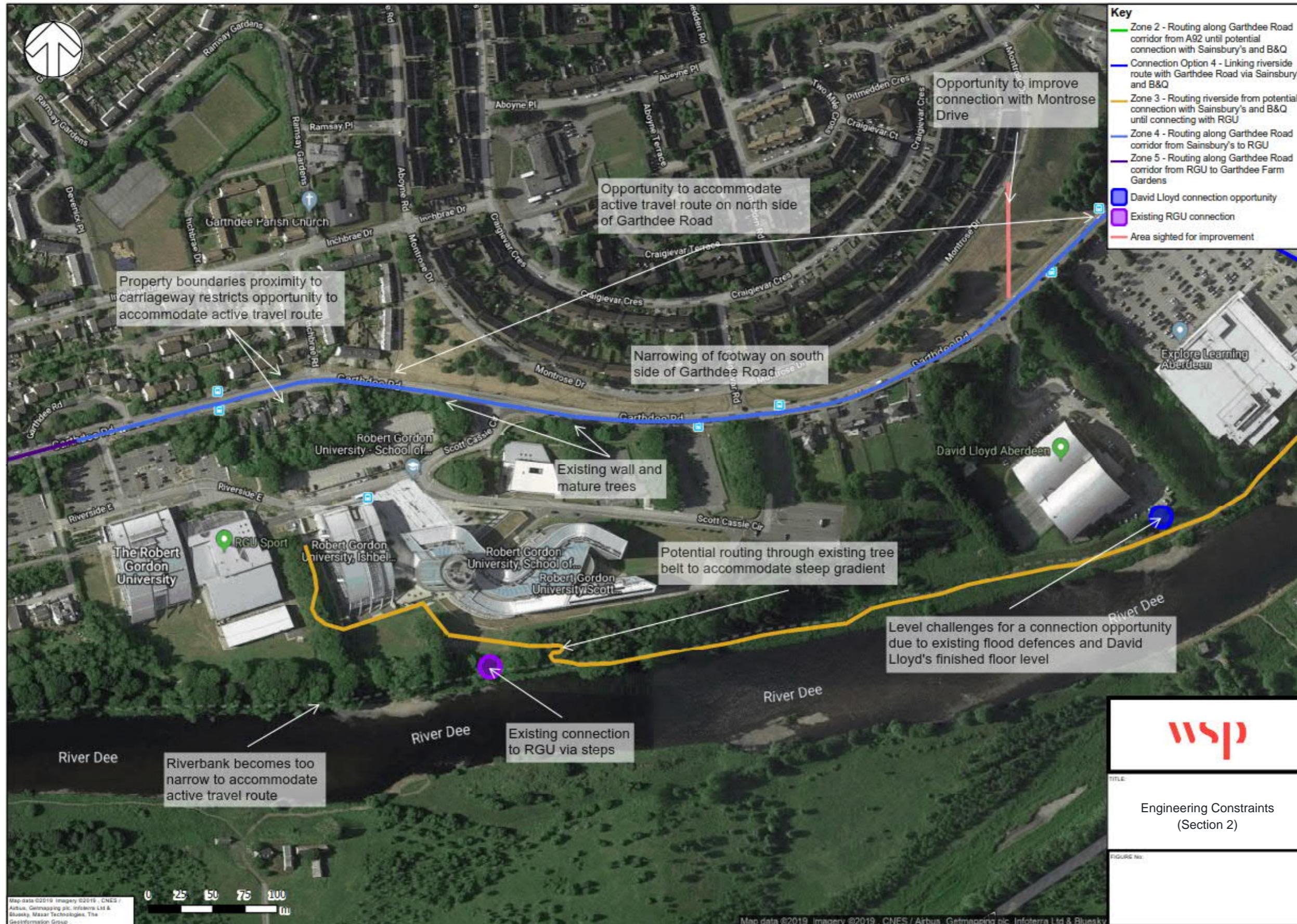


Figure 3-27 - Engineering Constraints (Section 3)



3.15 ECOLOGICAL REVIEW

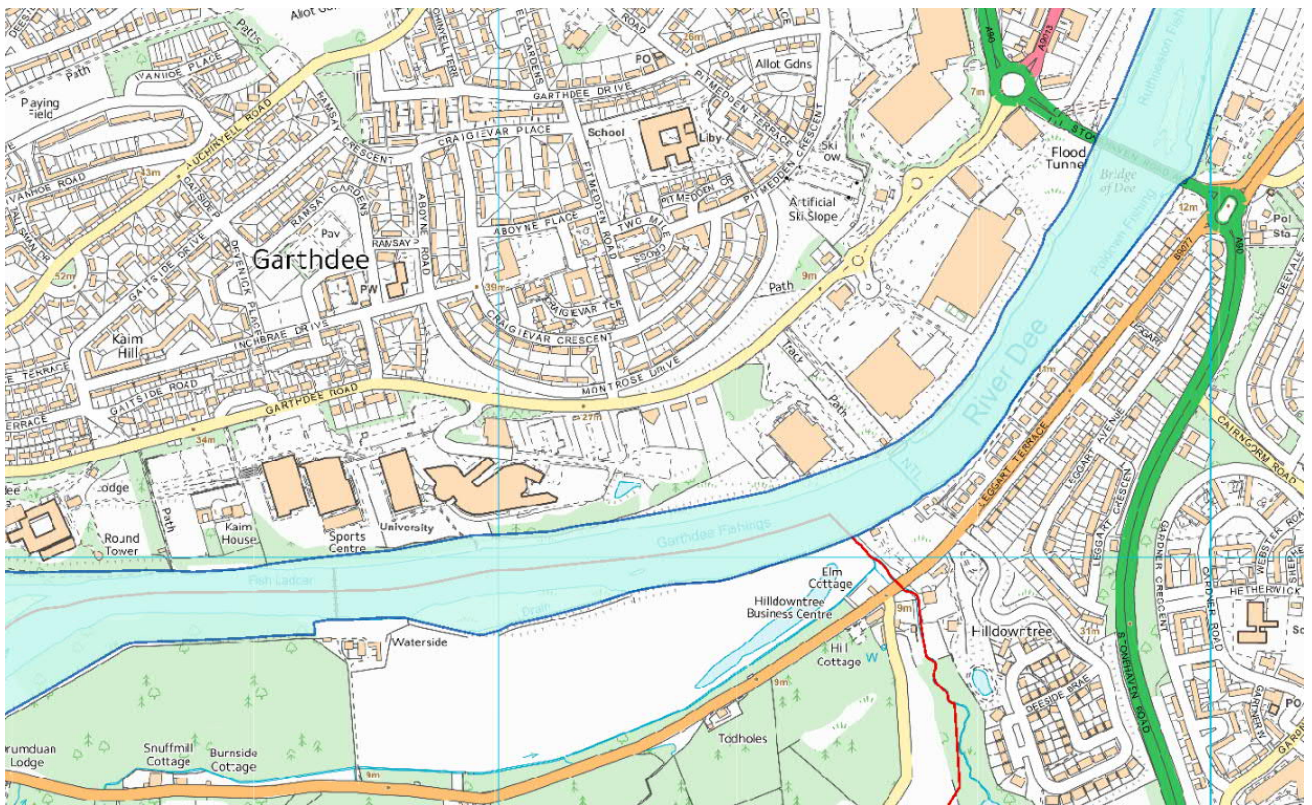
3.15.1. It is important to note that the study area includes areas on particular ecological sensitivity. On this basis, the project team includes specialist ecologists who have undertaken desktop and on-site studies to identify the ecological issues which are relevant to this study. The findings of these studies are summarised in this section and presented in full in Appendix A.

THE RIVER DEE: SPECIAL AREA OF CONSERVATION (SAC)

3.15.2. The River Dee is a Special Area of Conservation and the designation includes the estuary, which is the only Natura site (European Designation) in the ACC area. A SAC protects one or more special habitats and/or species – terrestrial or marine – listed in the Habitats Directive.

3.15.3. Any activities near the River Dee must take account of the SAC status that the River Dee holds and must make appropriate considerations for works near the site. Figure 3-28 below highlights the River Dee identified SAC.

Figure 3-28 - The River Dee: Special Area of Conservation (SAC)



3.15.4. An ecological report was completed that considered a 2km radius around the study area. The River Dee holds SAC (Special Area of Conservation) status, the primary reason for this is the presence of the following:

- Freshwater pearl mussels (*Margaritifera margaritifera* – 1029)
- Atlantic salmon (*Salmo salar* – 1106)
- Otters (*Lutra lutra* – 1355)

3.15.5. Key species also for consideration that exist in this area are included in the Table 3-6 below.

Table 3-6 - Key Species for Consideration

Species	Concern
Eurasian Badger (<i>Meles meles</i>)	Protection of Badgers Act (1992)
Common Tern (<i>Sterna hirundo</i>) Kingfisher (<i>Alcedo atthis</i>) Osprey (<i>Pandion haliaetus</i>) Peregrine (<i>Falco peregrinus</i>) Whooper Swan (<i>Cygnus cygnus</i>)	Annex 1 (EC Birds Directive) <ul style="list-style-type: none"> ■ In danger of extinction; ■ vulnerable to specific changes in their habitat; ■ considered rare because of small populations or restricted local distribution; ■ requiring particular attention for reasons of the specific nature of habitat.
Japanese Knotweed (<i>Fallopia japonica</i>) Rhododendron (<i>Rhododendron ponticum</i>) Indian Balsam (<i>Impatiens glandulifera</i>) Giant Hogweed (<i>Heracleum mantegazzianum</i>) American Skunk-cabbage (<i>Lysichiton americanus</i>) Himalayan Balsam (<i>Impatiens glandulifera</i>)	Invasive Non-Native Plant Species: care must be taken during development not to alter local ecosystem through spreading of invasive species.

3.15.6. There is a map containing the badger records however this information is confidential and can be provided separately upon request.

TREE PRESERVATION ORDERS IN STUDY AREA

3.15.7. Tree Preservation Orders are administered by Local Planning Authorities, such an order makes it a criminal offence to cut down, top, lop, uproot, wilfully damage or wilfully destroy a protected tree. In serious cases, anyone liable can be imposed an unlimited fine by the Crown Court. The study area has several areas with trees protected under a preservation order shown in Figure 3-29 and Figure 3-30 below.

Figure 3-29 - Tree Preservation Orders in Study Area 1

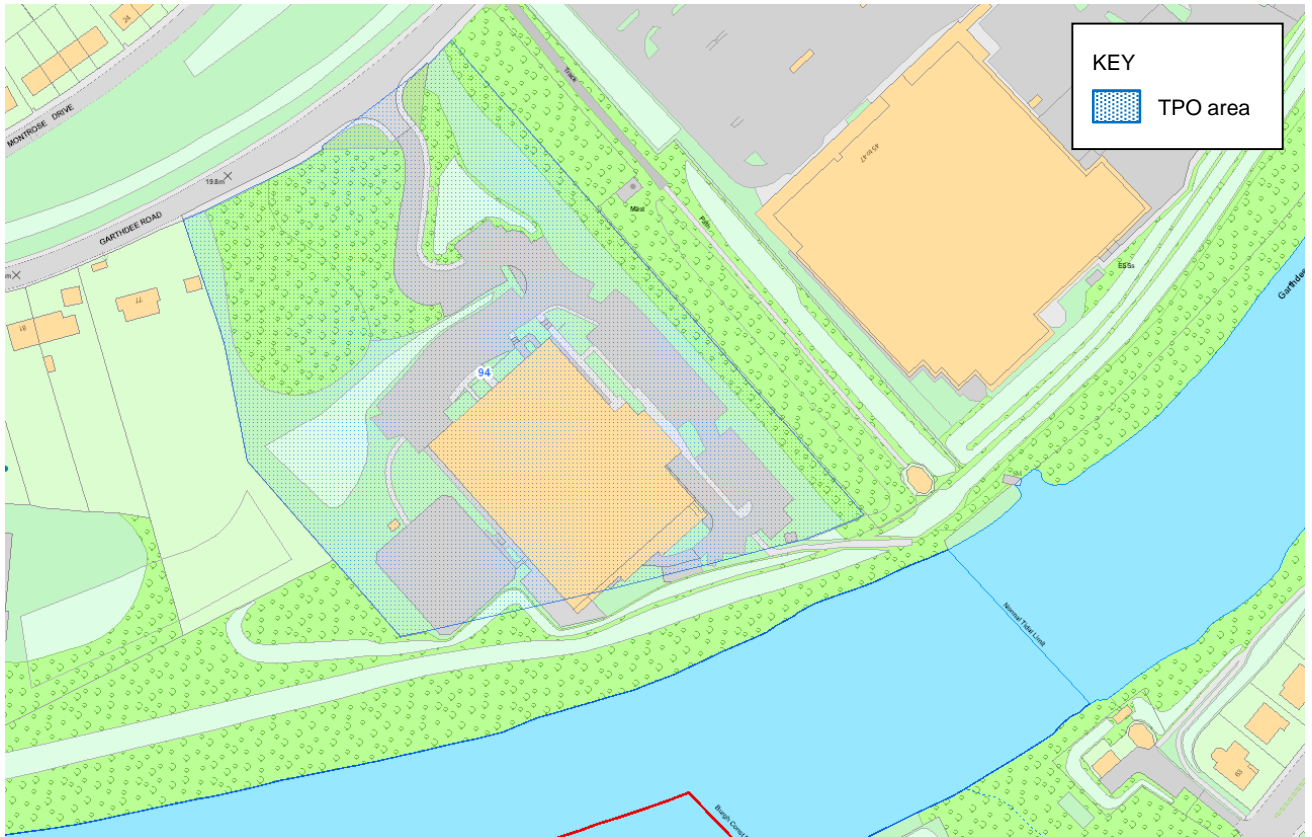


Figure 3-30 - Tree Preservation Orders in Study Area 2



Local Nature Conservation Sites

3.15.8. Local Nature Conservation Sites (LNCSs) identify locally important natural heritage that could be damaged by development. LNCSs identify features of merit and encourage planners to consider sensitive sites and opportunities to enhance the local environment.

3.15.9. Aberdeen/Aberdeenshire has 8 Local Nature Conservation Sites listed below:

- River Dee
- Kincorth Hill
- River Dee Corridor
- Den of Leggart
- Westburn of Rubislaw
- Walker Dam & Rubislaw Link
- Deeside Old Railway
- Rubislaw Quarry

3.15.10. The full study is included in Appendix A and contains further recommendations.

3.16 FLOOD RISK ASSESSMENT SUMMARY

3.16.1. A Flood Risk Assessment has been undertaken to determine whether potential active travel route options can be developed safely, without exposing the development to an unacceptable degree of flood risk or increasing the flood risk to third parties. The objectives are to:

- Confirm the sources of flooding which may affect the site;
- Provide an appraisal of the availability and adequacy of existing information; and
- Undertake an appraisal of the flood risk posed to the site and potential impact of the development on flood risk elsewhere.

3.16.2. It should be noted that the transport appraisal study explores a larger area, looking to improve links for the wider region. The proposed infrastructure development in the form of a pedestrian/cycle corridor will be situated within the aforementioned area and is the focus of this FRA.

3.16.3. Having completed site inspections and desk-based assessments, the possible flooding mechanisms at the site are summarised in Table 3-7 below:

Table 3-7 - Flood Risk Overview

Mechanism	Risk	Comment
Fluvial	Medium / High	The area of interest is adjacent to The River Dee. A cycleway along the north bank of the river would be exposed to Medium to High risk from flooding according to SEPA. The B&Q store and its surrounding area, including a small section of Garthdee Road have medium likelihood of flooding from pluvial sources.
Tidal	Low	The River Dee is tidally influenced and as aforementioned, it is near the site. The site is in close proximity to the upstream end of the tidal influence and is exposed to low risk of tidal flooding, according to the SEPA flood maps.
Surface Water	Low / Medium	The SEPA flood maps show a low risk of flooding for the majority of the site area. A large area within the B&Q car park, and the section of Garthdee Road adjacent, are exposed to medium surface water flood risk. According to the provided information by SEPA, ACC and Scottish Water, the wider area around Garthdee has been a subject to localised surface water flooding.
Ground Water	Low	The borehole records in the vicinity of the site advise limited potential for ground water flooding to occur
Sewers	Low/Medium	The adjacent surface water sewers are owned and operated by Scottish Water who have a responsibility to maintain them and ensure flood risk is not increased. There are a number of recorded flood incidents due to sewer surcharge resulting from blockages or defects as reported by ACC and Scottish Water
Artificial Sources	Low	The area along the north bank of The River Dee is within a high risk zone if an uncontrolled release occurs by the Inchgarth Reservoir and Invercarnie Water Works. The flood risk depends on the maintenance and inspection protocols of the reservoirs. If they are regularly maintained and inspected the risk is considered to be low

3.16.4. The full FRA Report can be found in Appendix B which includes the impacts on potential route alignment options and provides a more detailed description of the flood risks associated with the study area.

4 PROBLEMS AND OPPORTUNITIES

4.1 INTRODUCTION

4.1.1. Chapter 4 sets out the existing and potential future transport problems associated with the study area. In addition, this Chapter presents the range of opportunities which if taken forward through specific measures could improve the transport conditions or mitigate predicted problems.

4.2 IDENTIFIED PROBLEMS

4.2.1. The STAG guidance states that the problem identification stage should not be limited to just the identification of problems that can be quantified through the analysis of data or the use of a transport model. It should also consider perceived problems, that is problems that are experienced but cannot be easily encapsulated through data analysis.

4.2.2. WSP has undertaken a detailed review of all available evidence to identify a number of main problems which the study should focus on addressing. These problems have been validated through discussions with the Core Project Group, as well as engagement with key stakeholders and the wider public.

PROBLEM (P1): POOR ACTIVE TRAVEL MOBILITY WITHIN THE STUDY AREA

4.2.3. A review of the existing conditions, as well as supporting evidence including ACC's cycling maps, it has been concluded that the existing connections between Bridge of Dee, RGU campus and the Deeside Way are not suitable for all pedestrians and cyclists. The geography of the study area does not accommodate to all users without appropriate provisions given the gradient of some of the routes. In addition, the Garthdee Road corridor has significant motor vehicle flows and no segregated infrastructure for cyclists. It is considered that this creates an unsafe environment for cyclists, in particular.

4.2.4. The consequences of this problem are that some users may be choosing to travel by motorised modes, including private car, rather than walking, wheeling or cycling. Resulting in increased air and noise pollution, congestion on the road network, reduced health outcomes and contributing to the perception that local streets have high volumes of motor vehicles.

4.2.5. An ageing population and planned local increase in later-life accommodation will increase the number and proportion of more vulnerable and potentially more mobility, sensory and / or cognitively impaired street users.

4.2.6. The study area does benefit from RGU which provides a consistently young population of incoming users to the study area. The student population area group that is more likely to be flexible with their mode choice and therefore increase the potential of achieving the desired number of active travel journeys made. This is reliant on quality infrastructure that provides a viable alternative to both experienced and unexperienced users.

PROBLEM (P2): ACTIVE TRAVEL OPTIONS ON GARTHDEE ROAD MAY IMPACT ON BUS JOURNEY TIMES

- 4.2.7. Garthdee Road is an important bus corridor, with regular bus services connecting the RGU campus and local area with the City Centre. Any active travel improvement options routed along Garthdee Road may result in reduced operational capacity for all motor vehicles. This could therefore have a consequential impact on bus journey times through this area.
- 4.2.8. Reducing accessibility to public transport may have the negative effect of increasing reliance on private motor vehicles rather than the intended objective of increasing journeys by more sustainable modes.
- 4.2.9. The impacts on bus journey times along Garthdee Road will need to be considered as part of an assessment of the viability of any options proposed for Garthdee Road.

PROBLEM (P3): ACTIVE TRAVEL OPTIONS MAY IMPACT ON ENVIRONMENTALLY SENSITIVE AREAS

- 4.2.10. The River Dee corridor is a highly sensitive ecological and hydrological environment. Careful consideration of the suitability and impact of any active travel options routed through this area is required. In addition, the Deeside Way is a designated Local Nature Conservation Site and therefore proposals for any enhancements to the existing active travel conditions should consider the sensitivity of biodiversity in this area.

PROBLEM (P4): TOPOGRAPHY OF THE STUDY AREA

- 4.2.11. There are topographical challenges across the study area. These present barriers to active travel mobility in both a north-south direction and west-east direction. This is particularly relevant to pedestrians with impaired mobility or manual wheelchair users as there may be certain routes which are either too steep for them to comfortably use, or which have stepped access.

4.3 OPPORTUNITIES

- 4.3.1. Whilst a number of significant transportation problems have been identified within the study area, there also exist opportunities to improve the existing conditions. Capitalising on these opportunities, either separately or in combination, is expected to have a positive impact on the problems identified above.

- **Opportunity 1 (OP1):** Improving active travel connection within and through the study area could help to address the existing social isolation.
- **Opportunity 2 (OP2):** There are areas within the study area where route options could be used to enhance the existing conditions for biodiversity.
- **Opportunity 3 (OP3):** Alternatives to infrastructure solutions could support an increase in cycling within the study area. This includes the roll-out of affordable electric bike hire / purchase for local residents and / or RGU students. This would address the issue of challenging longitudinal gradients along Garthdee Road.

5 TRANSPORT PLANNING OBJECTIVES

- 5.1.1. WSP has undertaken a detailed review of all available evidence to identify specific Transport Planning Objectives (TPOs) to be taken forward by the study. These TPOs have been validated through discussions with the Core Project Group, as well as engagement with key stakeholders. Acceptance of the TPOs was unanimously agreed at the Stakeholder Workshop held in January 2020 (see Chapter 8 for further details).
- 5.1.2. The TPOs include a Specific Measurable Achievable Realistic and Timebound (SMART) target to allow monitoring and evaluation of the success of recommended interventions:

TRANSPORT PLANNING OBJECTIVE 1 (TPO1):

To increase the modal share of trips made by active travel (walking, wheeling and cycling) along the strategic corridor.

SMART Target:

- 5.1.3. Increase the mode share percentage for active travel journeys to / from education and employment undertaken by residents of the Airyhall / Broomhill / Garthdee ward, from the level reported in the last Scottish Census (2011) of 26% to 34% by 2031.

TRANSPORT PLANNING OBJECTIVE 2 (TPO2):

Enhance the social inclusion of the Garthdee area.

SMART Target:

- 5.1.4. Increase the overall SIMD scores for all data zones within the Garthdee area to the 5th decile or greater by 2031.

TRANSPORT PLANNING OBJECTIVE 3 (TPO3):

Ensure connectivity for walking, wheeling, cycling and public transport to the retail parks, existing cycle infrastructure, places of work and leisure trip generators in the area.

SMART Target A:

- 5.1.5. Achieve at least an 'Adequate' aggregate score for walking, wheeling and cycling conditions on route sections where interventions are implemented. This should be assessed during the detailed design phase and again following completion of the construction phase.

SMART Target B:

- 5.1.6. Maintain existing bus journey times on the main bus corridors within the study area.

TRANSPORT PLANNING OBJECTIVE 4 (TPO4):

Ensure transportation proposals enhance conditions for biodiversity along each linear route corridor where interventions are proposed.

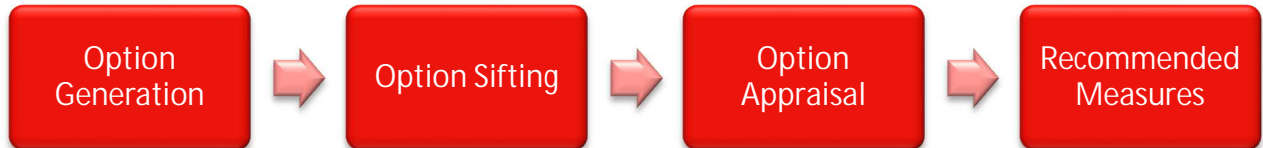
SMART Target:

- 5.1.7. Biodiversity net gain to be achieved by 2031 along each linear route corridor where interventions are proposed, compared to the 2019 biodiversity baseline.

6 APPRAISAL METHODOLOGY

6.1 METHODOLOGY OVERVIEW

6.1.1. Building on the outcomes of the desktop review and site assessments, a multi-stage process to generate, sift and appraise potential options has been undertaken in consultation with the Core Project Group, stakeholders and the public. In line with the STAG appraisal approach, the principal stages in this process are:



6.1.2. The following process was undertaken to fulfil the above steps and reach the final stage of Recommended Measures. The relevant section of the report which details each stage of the appraisal is provided for reference:

- Option Generation (Chapter 7)
 - Initial development of a long list of options.
- Option Sifting (Chapters 8 & 9)
 - Preliminary sifting including traffic modelling and review with the Core Project Group.
 - High level option scoring.
 - Second sifting process and presentation of options at a stakeholder workshop.
 - Third sifting based on outcomes of the stakeholder workshop for the public consultation.
- Option Appraisal (Chapters 10 to 13)
 - Agreement of short-listed options.
 - Options Appraisal of short-listed options.
- Recommended Measures (Chapter 14)

6.1.3. The outcomes of the Options Appraisal are a prioritised and costed package of recommended measures to deliver improved active travel connections across the study area and between trip origins and destinations. These recommendations are presented in Chapter 14.

6.1.4. The approach and outcomes of each stage in the above process are detailed in the following chapters.

7 OPTION GENERATION

7.1 INTRODUCTION

7.1.1. Chapter 7 of the report covers the Option Generation stage of the process, the following chapters cover the Option Sifting, Option Appraisal and Recommended Measures stages.



7.2 INITIAL DEVELOPMENT OF LONG LIST OF OPTIONS

7.2.1. The generation of options to improve existing links are based on the outcomes of the assessment of existing conditions and a multi-stage discussion and review process with the Core Project Group. Where conditions were considered not suitable for walking, wheeling and / or cycling, a wide range of improvement measures have been proposed.

7.2.2. The following options are the initial options generated from the above process:

- Option (a): Localised widening of footway on southside of Garthdee Road only.
 - This option was developed to address the existing sub-standard footway provision on Garthdee Road (see Figure 3-23).
- Option (b): Segregated bi-directional cycleway on Garthdee Road (alternating sections on north and south side of Garthdee Road).
 - This option was developed to address the current inadequate cycling facilities on Garthdee Road (see Figure 3-15) and in response to Priority Action 9 of ACC's Active Travel Action Plan (improving active travel access to universities).
- Option (c): Options (a) and (b) combined.
- Option (d): Shared path connection between Bridge of Dee and Garthdee Road via the Boots store. (Avoiding A92/Garthdee Road roundabout)
 - This option was developed in response to Priority Action 11 of ACC's Active Travel Action Plan (expansion of the River Dee path network).
- Option (e): Shared path connection avoiding eastern section of Garthdee Road via north bank of River Dee and the B&Q/Sainsbury's stores.
 - This option was developed in response to Priority Action 11 of ACC's Active Travel Action Plan (expansion of the River Dee path network).
- Option (f): Shared path connection between Garthdee Road and Pitmedden Crescent.
 - This option was developed in response to Priority Action 9 of ACC's Active Travel Action Plan (improving active travel access to universities).
- Option (g): Widening of Deeside Way path to 4 metres.

- This option was developed in response to Priority Action 9 of ACC's Active Travel Action Plan (improving active travel access to universities).

- Option (h): Additional and improved access points to Deeside Way.

- This option was developed in response to Priority Action 9 of ACC's Active Travel Action Plan (improving active travel access to universities).

- Option (i): Continuous segregated bi-directional cycleway on north side of Garthdee Road.

- Option (j): Continuous segregated unidirectional cycleways on both sides of Garthdee Road and footway widening.

- Option (k): Continuous segregated bi-directional cycleway on south side of Garthdee Road and footway widening.

- Option (l): Footway only on south side of Garthdee Road; shared footway/cycleway on north side of Garthdee Road.

- Option (m): Footway only on north side of Garthdee Road; shared footway/cycleway on south side of Garthdee Road.

- Options (i) to (m) were developed to address the current inadequate cycling facilities on Garthdee Road (see Figure 3-15) and in response to Priority Action 9 of ACC's Active Travel Action Plan (improving active travel access to universities).

- Option (n): Shared path between Bridge of Dee and Garthdee Road via north bank of River Dee and David Lloyd Centre.

- This option was developed in response to Priority Action 11 of ACC's Active Travel Action Plan (expansion of the River Dee path network).

- Option (o): Shared path between Bridge of Dee and RGU campus via north bank of River Dee.

- This option was developed in response to Priority Actions 9 and 11 of ACC's Active Travel Action Plan (improving active travel access to universities, and expansion of the River Dee path network, respectively).

- Option (p): On-street cycle lanes from Pitmedden Crescent to Deeside Way along Pitmedden Ter./Kaimhill Rd.

- This option was developed in response to Priority Action 9 of ACC's Active Travel Action Plan (improving active travel access to universities).

- Option (q): On-street cycle lanes from Garthdee Road to Deeside Way along Auchinyell Road.

- This option was developed in response to Priority Action 9 of ACC's Active Travel Action Plan (improving active travel access to universities).

- Connection (aa): New underpass below Bridge of Dee

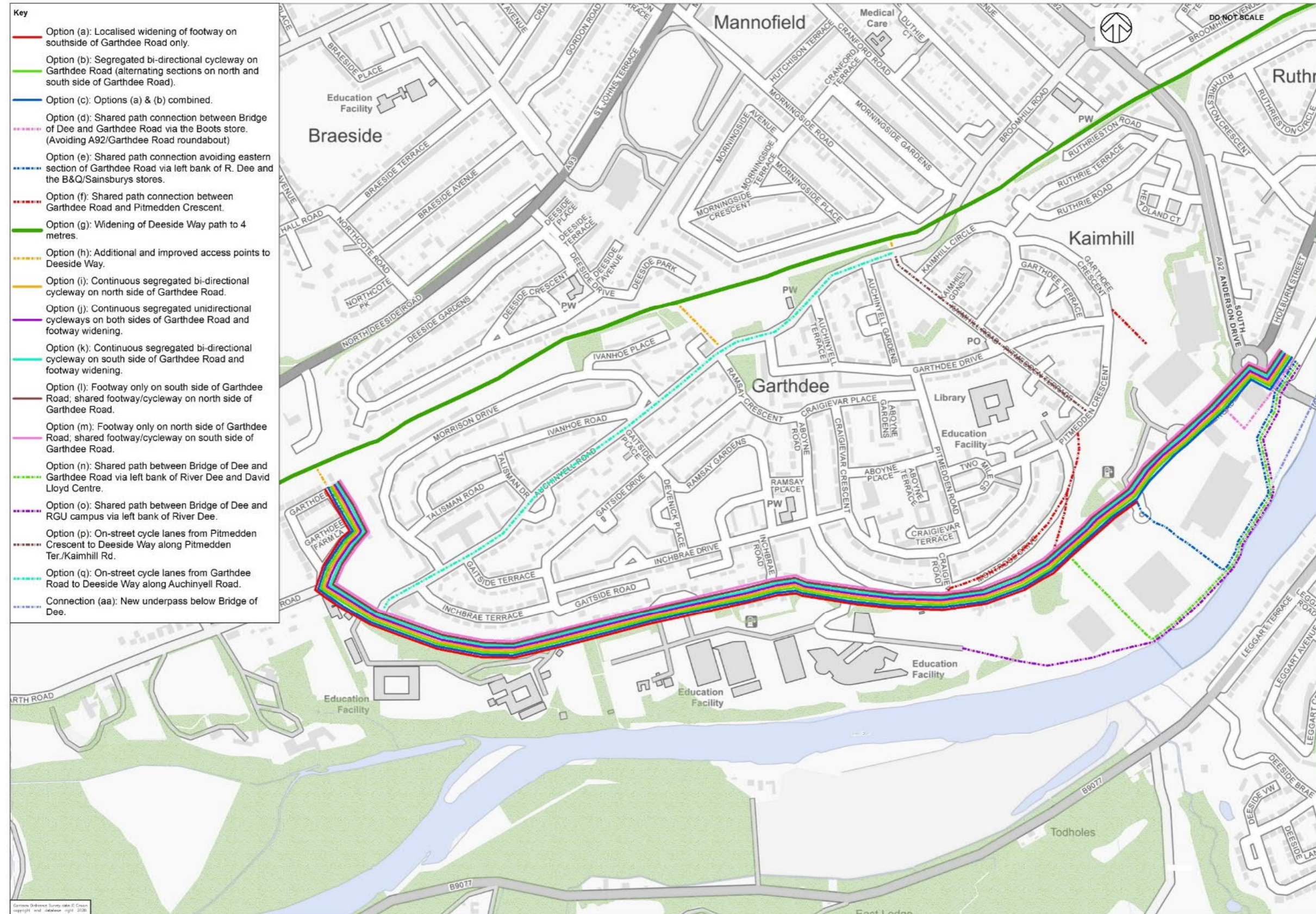
- This option was developed in response to Priority Action 11 of ACC's Active Travel Action Plan (expansion of the River Dee path network).

- Connection (bb): Using existing crossing point on A92



7.2.3. The map shown in Figure 7-1 details the above route options.

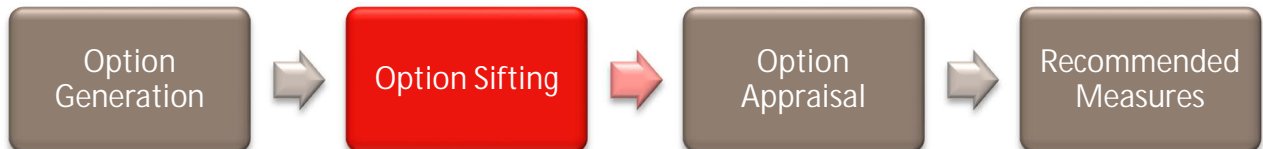
Figure 7-1 - Initial Route Options



8 OPTION SIFTING

8.1 INTRODUCTION

8.1.1. The Option Sifting stage reviews the feasibility of each of the long-list of options. All options are assessed based on the existing conditions and potential to make infrastructure improvements.



8.1.2. The Option Sifting stage was completed using the process outlined in Chapter 6 as follows:

- Preliminary sifting including traffic modelling and review with the Core Project Group (see Appendix C).
- High level option scoring (see Appendix D)
- Second sifting process and presentation of options at the stakeholder workshop (see Appendix E and F)
- Third sifting based on outcomes of the stakeholder workshop for the public consultation (see Appendix F and G)

8.2 PRELIMINARY SIFTING INCLUDING TRAFFIC MODELLING AND REVIEW WITH THE CORE PROJECT GROUP

PRELIMINARY SIFTING

8.2.1. The first stage in the option sifting process involved consulting the ACC Active Travel Action Plan which sets out the aims and expectations of any active travel project within Aberdeen City. The following design principles from ACC's Active Travel Action Plan have been applied to help inform the option sifting process:

- Favour signalised junctions over roundabouts on all new road and road improvement schemes in recognition of their benefits to people walking, wheeling and cycling.
- Improve and increase on-road cycle facilities where this is a safe and practical solution. There will, however, be a presumption against advisory cycle lanes, given their limited usefulness.
- A presumption in favour of segregation between pedestrians and cyclists for all new active travel infrastructure projects.
- In sensitive areas, continue to implement innovative design solutions to reduce negative impacts on biodiversity.
- Continue to implement traffic management and traffic calming measures to encourage walkable and cyclable neighbourhoods and prevent rat-running.

8.2.2. These principles were used to inform option design and ensure options that did not meet the above principles were sifted out at an early stage.

TRAFFIC MODELLING

- 8.2.3. During early project consultation with the Core Project Group, it was established that modifications to the A92 / Garthdee Road roundabout would not be considered feasible. On this basis a traffic modelling exercise was undertaken which focussed on the two roundabouts to the west of the A92 roundabout, which serve the Asda stores and the Sainsbury's/B&Q stores respectively.
- 8.2.4. A traffic data collection exercise was undertaken in September 2019 including MCC surveys at the Garthdee Road / ASDA Access roundabout and Garthdee Road / Retail Park access roundabout respectively. In addition, further site visits and observations were undertaken. This enabled assessment, appraisal and refinement of the proposals under consideration.
- 8.2.5. The traffic modelling has been undertaken using the industry standard Junctions9 ARCADY module software and LinSig V3 software package. A summary of the modelling exercise is presented below, and the full results are presented in Appendix C. The following section outlines the general description and findings from the traffic modelling.
- 8.2.6. The scenarios adopted for testing are as follows:
- **Scenario 1:** Existing Roundabout arrangements
 - **Scenario 2:** As Option (b) (from section 7.2 above) – Modify both roundabouts to incorporate a segregated cycleway on southside of Garthdee Road between A92 roundabout and retail park roundabout.
 - **Scenario 3:** As Option (d) – Route active travel path via the Boots store to retain the Asda roundabout, as existing. New segregated cycleway on south side of Garthdee Road between the Asda roundabout and retail park roundabout. Modify retail park roundabout with necessary lane amendments.
 - **Scenario 4:** As Option (j), compact roundabouts and lane amendments to incorporate segregated cycleways on both sides of Garthdee Road.
 - **Scenario 5:** As Option (j), including junction signalisation with dedicated signal stages for pedestrians and cyclists.
- 8.2.7. The transport modelling results summarised as follows:
- There will be increases in average journey time and queueing for motor vehicles on Garthdee Road and within the internal road networks of adjacent retail land uses associated with all options.
 - It is predicted that the increase in congestion associated with junction signalisation would cause delays of up to 13 minutes within the retail park and 12 minutes on Garthdee Road.
 - It is also predicted that increase in congestion under Scenario 4 traffic conditions would cause delays of up to 14 minutes within the retail park and 13 minutes on Garthdee Road
- 8.2.8. Following presentation of the traffic modelling results to the Core Project Group, it was concluded that options which include completely removing a lane of traffic and providing a cycle lane on both sides of Garthdee Road (Scenario 4) as well as option for signalling one or both of the study roundabouts (Scenario 5) would not be taken forward to the main optioneering stage of the study.

- 8.2.9. It is considered that reallocating road space on either side of Garthdee Road in favour of active modes, whilst retaining both roundabouts, is a viable strategy to improve accessibility of this section of Garthdee Road to people walking, wheeling and cycling. Therefore, design options which include this approach will be taken forward as part of the main optioneering stage of the study and be subject to a more detailed options appraisal against STAG criteria.

REVIEW WITH CORE PROJECT GROUP

- 8.2.10. On the 7th October 2019, a Core Project Group workshop was held to update the relevant members on progress made and confirm that the direction being taken was deemed appropriate by all members.

- 8.2.11. The following topics were presented to the Core Project Group :

- Project Background
- Review of Identified Issues and Constraints
- Options and Opportunities
- Problems
- Opportunities
- Targets and Objectives

- 8.2.12. The following key points were brought up by Core Project Group members that should be considered going forward with the project.

- There is no possibility to alter the bridge structure (Bridge of Dee) as it holds Category A listed structure status.
- Floodplain volumes would provide year-round difficulties with the Riverside Path.
- The Riverside Path is an aspirational core path.
- The River Dee is one of the highest conservation status (SAC) with otters that use the River Dee as their habitat.
- There must be escape options if the Riverside Path option is to be taken forward.
- Tree preservation orders (TPOs) are located beside Riverside Path.
- Roundabout redesign at A92 is outwith the scope of the project.
- A signed connection through Garthdee Farm to the Deeside Way can be established.
- The Deeside Way is designated a Local Nature Conservation Site and is also a path which currently has a high level of reported user conflict, particularly between cyclists and other path users.
- There should be no significant detrimental impact on public transport.

- 8.2.13. The points made by the Core Project Group were taken forward into the following stages and used to inform the design of route options.

8.3 HIGH LEVEL OPTION SCORING

- 8.3.1. Each of the long list of options has been scored against high-level appraisal criteria, based on STAG principles. Specific consideration has been given to the following:

- Whether the option is going to alleviate the identified or perceived transport problems and/or maximise potential opportunities.
- Whether the option is consistent with established policy directives.
- Whether the option is likely to meet the Transport Planning Objectives.

- What the likely impacts against the STAG Criteria are.
- Whether the option is likely to be acceptable to the public, affordable and feasible to construct and operate.
- Whether there is a clear rationale for the rejection of any option at this stage of the appraisal process.

8.3.2. The options have been graded using the following scale on a range of option characteristics.

- Major Positive (+3)
- Moderate Positive (+2)
- Minor Positive (+1)
- No or Negligible Impact (0)
- Minor Negative (-1)
- Moderate Negative (-2)
- Major Negative (-3)

8.3.3. The options were graded on the following characteristics using the above scale;

- | | |
|--|--|
| <ul style="list-style-type: none"> ▪ TPO1 ▪ TPO2 ▪ TPO3 ▪ TPO4 | <ul style="list-style-type: none"> ▪ Safety ▪ Environmental ▪ Economy ▪ Integration & Social Inclusion ▪ Feasibility ▪ Affordability ▪ Public Acceptability ▪ Risk & Uncertainty |
|--|--|

8.3.4. The options were then scored to determine the suitability of taking it forward into the short-list. The long list of options with the associated scores can be found in Appendix D.

8.4 SECOND SIFTING PROCESS

8.4.1. Following the review with the Core Project Group the potential to provide a direct connection from the riverside path on the north side of the Bridge of Dee to the southside was ruled out by ACC's Planning officer. The Bridge of Dee holds Category A listed structure status. This connection would have required creating an underpass on the west side of bridge and would therefore not be permitted.

8.4.2. Additional options were also ruled out based on the outcomes of the high-level option scoring process as they either did not sufficiently well meet the project objectives, or the STAG appraisal criteria (or both).

8.4.3. The options which have been excluded from further assessment are:

- **Option (j)** – (cycle lanes on both sides of Garthdee Road). Traffic modelling indicates that there would be a major negative impact on the road network with significantly increased bus journey times and long delays accessing the retail units by all motorised transport modes.
- **Option (k)** – (continuous cycleway on southside). This requires the whole of Garthdee Road be shifted north. This is not considered to be technically feasible due to the extent

of carriageway realignment required consequential loss of on-street residents' parking on Garthdee Road.

- **Option (l)** – (continuous cycleway on north side). This requires removal of residents parking on the western section of Garthdee which is not considered viable as there is no suitable alternative location for residents' parking and properties do not have driveway access.
- **Option (m)** – (shared footway / cycleway along Garthdee Road). Shared footway / cycleways can create conflicts between users and make some user feel unsafe or uncomfortable. This can result in a reluctance to undertake journeys and increase social isolation. On this basis sections of shared footway/ cycleways should only be considered where no suitable alternatives exist.
- **Option (n)** – (cycle lanes on Kaimhill Road / Pitmedden Terrace). The existing traffic speeds and volumes on this are low (20mph street with physical speed restrictions) and there is good forward visibility therefore in line with *Cycling By Design* and *Places for Everyone* guidance on carriageway cycling is considered suitable and the further interventions included as part of Option (n) are not necessary.
- **Option (o)**: (cycle lanes on Auchinyell Road) – very steep connection between Auchinyell Road and Garthdee which is considered unsuitable for many users, therefore investment in new infrastructure is not expected to achieve the study objectives.
- **Connection (aa)** (Bridge of Dee underpass) – consultation with ACC Planning team confirmed that this option is not viable as the bridge is a listed structure and proposed intervention would not be permitted in any form.

8.5 PRESENTATION OF OPTIONS AT THE STAKEHOLDER WORKSHOP

- 8.5.1. WSP held a Stakeholder Workshop on 8th January 2020 to gain an understanding of the views and opinions of the relevant stakeholders involved in this project. The stakeholders present were made up of representatives of ACC's multidisciplinary client team, with representatives from transport strategy, roads projects, estates and environmental planning. Aberdeenshire Council and the Aberdeen City and 'Shire Strategic Planning team were represented. RGU were represented by staff responsible for overseeing RGU estate management. Stagecoach and First Bus provided representatives responsible for their transport interests as pertains to the study. In addition, a representative from the Aberdeen Outdoor Access Forum was in attendance.

8.5.2. WSP presented on the background and justification of the project, following this the stakeholders were given an opportunity to review and comment on the issues, problems, constraints and opportunities. WSP then presented the emerging design options, and stakeholders were then given opportunity to review and comment on the emerging design options.

8.5.3. Prior to presenting on the initial emerging options, the stakeholders were given the opportunity to comment on the scheme. The following points were made in relation to the study area:

- The Countesswells and Inchgarth developments should be considered, as there is a large movement of people from each to the Garthdee area.
- There have been issues of crime and anti-social behaviour on the Deeside Way.
- Deeside Way is already very busy and would struggle in its current form if it had to take a larger volume of users.
- There are many different types of walking, wheeling and cycling journeys undertaken on the Deeside Way (dog walkers, strollers, commuters, leisure and exercise).
- Deeside Way is not well lit and users have described feeling unsafe during hours of darkness.
- The Riverside Path has issues with flooding and maintenance due to debris and trees.
- The aspects of health and wellbeing rather just than 'A to B travel' should be considered, there is some desire for leisure walking, wheeling and cycling, as shown by the well-used section of Riverside Path to the east of the Bridge of Dee.
- Aberdeen has a poor acceptance of cyclists currently and not many bike users.
- Linking up parks and greenspace would benefit the area.
- Reduction in car-cyclist conflicts is desired.
- Anderson Drive has created a barrier to the Garthdee community as it is perceived as being difficult to cross.
- A circular route would be desirable.
- Narrow pavements and gradients make areas of Garthdee challenging for non-motorised travel.

8.5.4. The stakeholders were presented with a refined set of options as set out below. The full set of option plans presented can be found in Appendix E.

- **Option (aa):** Localised widening of footways on the south side of Garthdee Road where footway provisions are currently not fit for purpose.
- **Option (bb):** Segregated walking / wheeling and cycling provision the length of Garthdee Road with small shared path provisions at the most eastern and western extents of the route.
- **Option (cc):** Option (aa) and Option (bb) combined
- **Option (dd):** Option (cc) combined with an eastbound bus lane on Garthdee Road from the Sainsbury's Roundabout to Craigievar Road.
- **Option (ee):** Short shared use path from Bridge of Dee behind the Boots store.

- **Option (ff):** Shared-use path from Bridge of Dee down to the River Dee bankside, following the river and then connecting to Garthdee Road via the access road between the Sainsbury's and B&Q stores.

8.5.5. The stakeholders remained in their previous groups with members from WSP facilitating each group. In this session the stakeholders discussed and reviewed design options of the project. The key points from this discussion are listed below:

- No support for a segregated bus lane on Garthdee Road.
- Agreement that due to the existing constraints no design would be able to deliver a 'perfect' solution.
- Reiteration of the desire for a 'looped' walking route – Riverside path, through RGU, up to Deeside Way, back down to Riverside Path.
- Well-travelled cycling route along the Deeside Way to Duthie Park, including a large number of leisure users.
- Reiteration of desire for a Riverside Path.
- Large number of students likely use the First Bus 1/2 service which links between the City Centre and Garthdee Road.
- RGU currently has bike storage availability that is not used to its capacity.
- Frustration surrounding the continued use of the Bridge of Dee as it is a historic monument that is not fit for purpose.
- A range of smaller measures may be necessary to allow the project to progress.
- Wayfinding features could be improved.

8.5.6. This information has then been used to inform further stages of the Appraisal, the full Engagement Summary Report can be found in Appendix F.

8.6 THIRD SIFTING PROCESS BASED ON OUTCOMES OF THE STAKEHOLDER WORKSHOP FOR THE PUBLIC CONSULTATION

8.6.1. The information gathered from the stakeholder workshop was used to inform the design options taken forward for the public consultation. The options presented at the public consultation were similar however where points had been raised regarding the presented options alterations were made.

8.6.2. A key point made by the representatives of bus operators, First Bus and Stagecoach, was that the introduction of bus lanes along Garthdee Road was not necessary for the change in journey times on Garthdee Road it would provide, and therefore the proposal under Option (dd) were sifted out.

8.6.3. A similar process was used to alter or eliminate elements of the other routes to ensure that the options presented at the public engagement event were well informed and provided a variety of solutions to the scheme.

8.6.4. Chapter 9 discusses the findings from the public consultation in more detail, the full Engagement Summary Report can be found in Appendix F.

9 PUBLIC CONSULTATION

9.1 INTRODUCTION

- 9.1.1. The public consultation programme and methods of communication were planned and undertaken in collaboration with ACC.
- 9.1.2. The public consultation was held over a two-week period, between Monday 17th February 2020 and Monday 2nd March 2020. The consultation involved the local community and key stakeholders from the local Garthdee area. The purpose of the consultation was to inform all interested parties of the options which remained under consideration and capture their comments. A key focus of the consultation was engagement with local residents, reflecting the nature of existing land uses and the focus of the proposals on supporting walking, wheeling and cycling routes/connections within and through the local area.

9.2 METHODS OF CONSULTATION

- 9.2.1. The following sections summarise the main consultation methods applied through the consultation.

ON-LINE CONSULTATION

- 9.2.2. An on-line consultation questionnaire was hosted on ACC's public consultation website from Monday 17th February 2020 to Monday 2nd March 2020, presenting the potential route options and asking consultees specific questions related to the study.
- 9.2.3. Print media and social media advertising was used to raise public awareness of the on-line consultation. In addition, targeted leafleting on Garthdee Road and the Deeside Way was undertaken to ensure that a wider pool of potential consultees was made aware of the consultation.

PUBLIC DROP-IN SESSION

- 9.2.4. The purpose of the drop-in session was to present the potential design options and provide attendees with an opportunity to find out more about the study. There was also the opportunity to discuss and provide feedback to members of the project team. Attendees were encouraged to comment using the hard-copy or online response forms as appropriate. The questions asked at the public drop-in sessions mirrored those included in the on-line consultation.
- 9.2.5. The feedback from both the on-line and public drop-in session has been collated and analysed to inform the study. The full Engagement Summary Report is present in Appendix F.

9.2.6. Table 9-1 below summarises the interaction via the various methods of consultation.

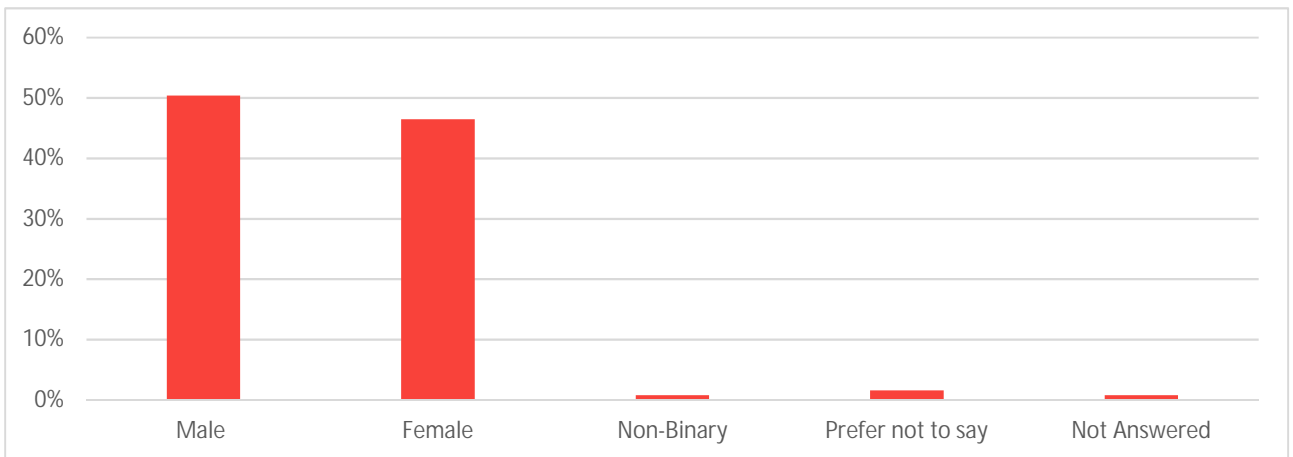
Table 9-1 - Consultation Interaction

	<i>Questionnaire Form (online)</i>	<i>Questionnaire Form (Hard Copy)</i>	<i>Total responses</i>
No. of Contacts/Respondents	125	2	127

9.2.7. The data contained in Table 9-1 demonstrates that there has been a good level of engagement from the local and wider community given the size of the study area. This is largely down to the success of the online survey promoted by Aberdeen City Council and the work of the community council, Robert Gordon University and other groups promoting the survey internally.

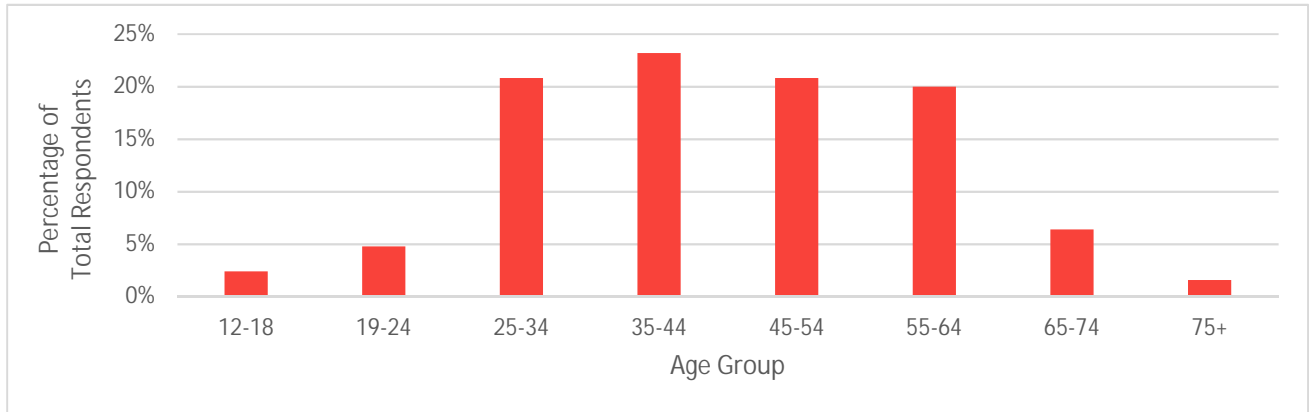
9.2.8. Information extracted and analysed with regards to the gender of respondents is summarised below and in Figure 9-1. 50% of responses to the consultation are from male respondents, 46% are from female respondents, 1% are from non-binary respondents, and the remaining 3% stated they prefer not to answer or did not answer.

Figure 9-1 - Respondents Gender



9.2.9. Figure 9-2 shows the proportion of respondents within each age category. There is a reasonably even spread in the number of respondents in the following age groups 25-34; 35-44; 45-54 and 55-64 which accounted for 85% of respondents. There is a lower response from younger and older age groups, with approximately 7% of respondents being under 24 and 8% of respondents being over 64.

Figure 9-2 - Respondents Age



9.3 OPTIONS PRESENTED AT PUBLIC CONSULTATION

9.3.1. The proposal includes six options for the study area, the full set of option plans presented can be found in Appendix F, descriptions are outlined below:

- Option 1: Localised footway widening on Garthdee Road to achieve a continuous 2m width on both sides of the road, where feasible. This option does not include improvements for cycling.
- Option 2: Walking, wheeling and cycling improvements between the Bridge of Dee and the Deeside Way along Garthdee Road. Where achievable, Option 2 would introduce separate spaces for pedestrians, cycles and vehicles. At the eastern and western ends of the route pedestrians and cyclists would share the same space.
- Option 3: A shared-use path from the Bridge of Dee to Garthdee Road at Sainsbury's via the north bank of the River Dee. Option 3 bypasses the most heavily trafficked eastern section of Garthdee Road. This option could tie into other options, to allow journeys to continue along Garthdee Road towards the Deeside Way.
- Option 4: A shared-use path from the Bridge of Dee to Garthdee Road at the David Lloyd Centre via the north bank of the River Dee. Option 4 bypasses the most heavily trafficked eastern section of Garthdee Road. This option could tie into other options, to allow journeys to continue along Garthdee Road towards the Deeside Way.
- Option 5: A shared-use path from the Bridge of Dee to the Robert Gordon University via the north bank of the River Dee. This option could tie into other options, to allow journeys to continue along Garthdee Road towards the Deeside Way.
- Option 6: Improved walking, wheeling and cycling connections between Garthdee Road and the Deeside Way through Garthdee and Kaimhill. This option includes widening of the Deeside Way to give more space for all users.

9.4 Approach to Analysis

9.4.1. The online response forms submitted were automatically entered into a database and the hard copy responses were manually entered into the same database.

9.4.2. Closed question responses have been graphed and used to gain a clearer understanding of the characteristics of the local population and the key issues.

9.4.3. A comprehensive log of all free text comments made during the consultation has been collated. The purpose of the comments log is to record all comments received to assist in responding to comments and the design development by the project team.

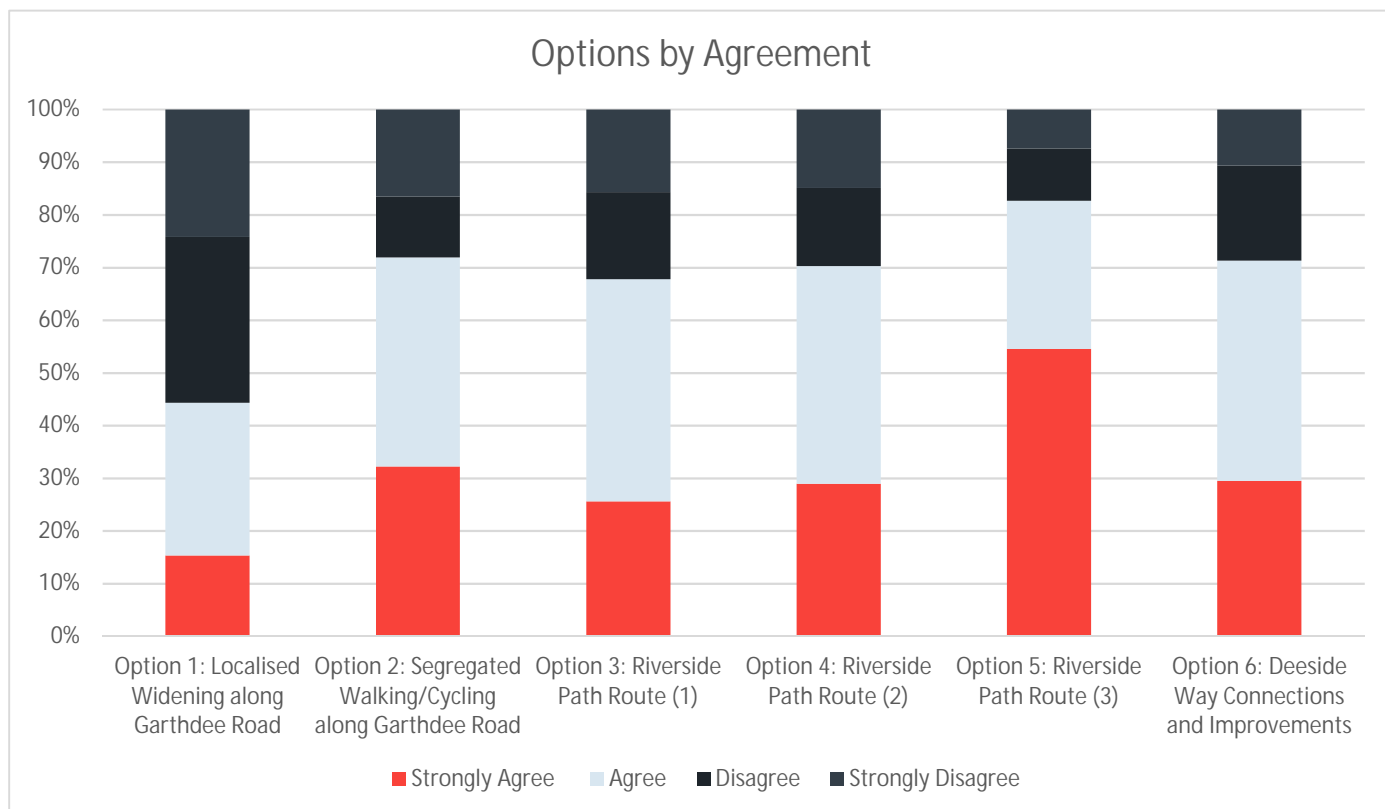
9.4.4. In order to quantify the type of comments that have been made, the comments log categories the comments by topic (e.g. safety, accessibility) and the nature of the comment (i.e. whether they are a suggested improvement or express concern/ support for the proposals). The full comments log has been used by the project team to enable consideration of the greater detail provided. Given the level of detail of the comments received, this report presents a summarised overview of the feedback received.

9.5 CONSULTATION FEEDBACK: SUPPORT FOR OPTIONS

SUPPORT FOR OPTIONS

9.5.1. The online survey displayed the options that were also presented at the public drop-in session alongside text describing each option. This was followed by a question asking whether the user thought that proposed option would make it easier to walk, wheel or cycle along the route, participants were also given the opportunity to comment on the design alongside their response. Figures 9-3 and 9-4 show the responses by participants for each of the six options.

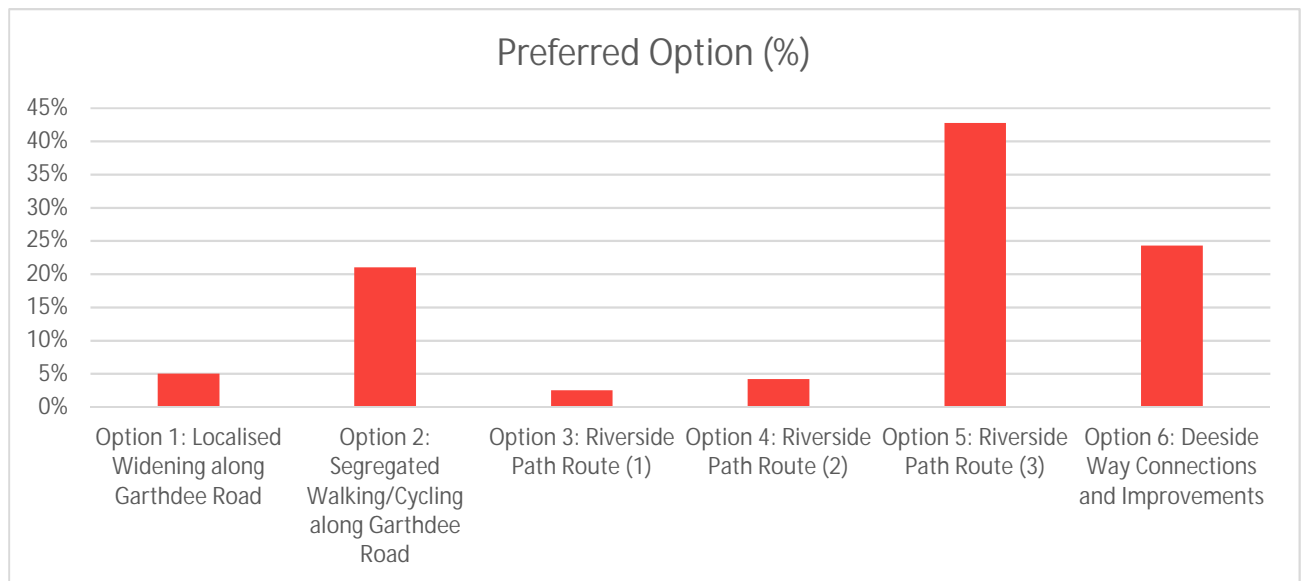
Figure 9-3 - Option Agreement Responses



9.5.2. Figure 9-3 displays the responses graphically showing the surveyed answers to whether the proposed option 'will make it easier for you to walk, wheel or cycle'.

- 9.5.3. Option 1 is the minimum intervention plan which scored the lowest in the survey, respondents stating that it would make little difference in enabling people to walk, wheel or cycle through the study area.
- 9.5.4. The Option 2 involves adding segregated walking / wheeling and cycling infrastructure along the length of Garthdee Road received a majority positive response. There were some concerns expressed regarding how this would impact motor vehicles using Garthdee Road especially for those who need to use it to get to their place of work or study that do not have the option to travel by walking, wheeling or cycling.
- 9.5.5. Options 3, 4 and 5 show gradually increasing measures to extend the Riverside Path. These options received a majority positive response with the most favourable being Option 5, which covers the length of the Riverside Path from Bridge of Dee to RGU. The concerns raised regarding these options were the impact on the ecology and the floodplains given that this path would run alongside the River Dee.
- 9.5.6. Option 6 includes improved connections to the Deeside Way as well as widening of the Deeside Way which received majority positive responses. Respondents expressed concerns about the existing shared use, with many stating that there should be some level of separation between cyclists and other path users. Path users can include walkers including people with disabilities and also equestrians . The lack of lighting on the Deeside Way was also considered to be an issue.

Figure 9-4 - Preferred Option



- 9.5.7. Figure 9-4 shows the responses to ‘which of the options presented do you think would make the most improvement to your ability to travel regularly by walking, wheeling or cycling in the local area?’. Options 5 and 6 have the most responses which highlights the demand for a viable option that does not involve interventions on Garthdee Road.

9.6 Choice Based on Demographic Characteristic

9.6.1. Using the option choice survey data and the demographic survey data further analysis could be done to understand whether there are demographic factors that lead to preferred option selection. Option choice was compared against the following demographic information:

- Age;
- Gender;
- Whether the participant uses the Deeside Way;
- Whether the participant uses the Riverside Path;
- Mode choice to work/education;
- Mode choice within local area;
- Mode choice to Aberdeen City Centre; and
- Car Ownership

9.6.2. From this further analysis there were only a few noticeable outliers based on a demographic characteristic:

- Females were more likely to express concern (26%) relating to lighting of paths within Garthdee compared to males (19%).
- People aged 55+ were less likely (62%) to want any intervention on the Riverside Path than people aged under 55 (72%).
- People who do not own a car were more likely (50%) to prefer an intervention on Garthdee Road over the Riverside Path and the Deeside Way, compared to car owners (23%).

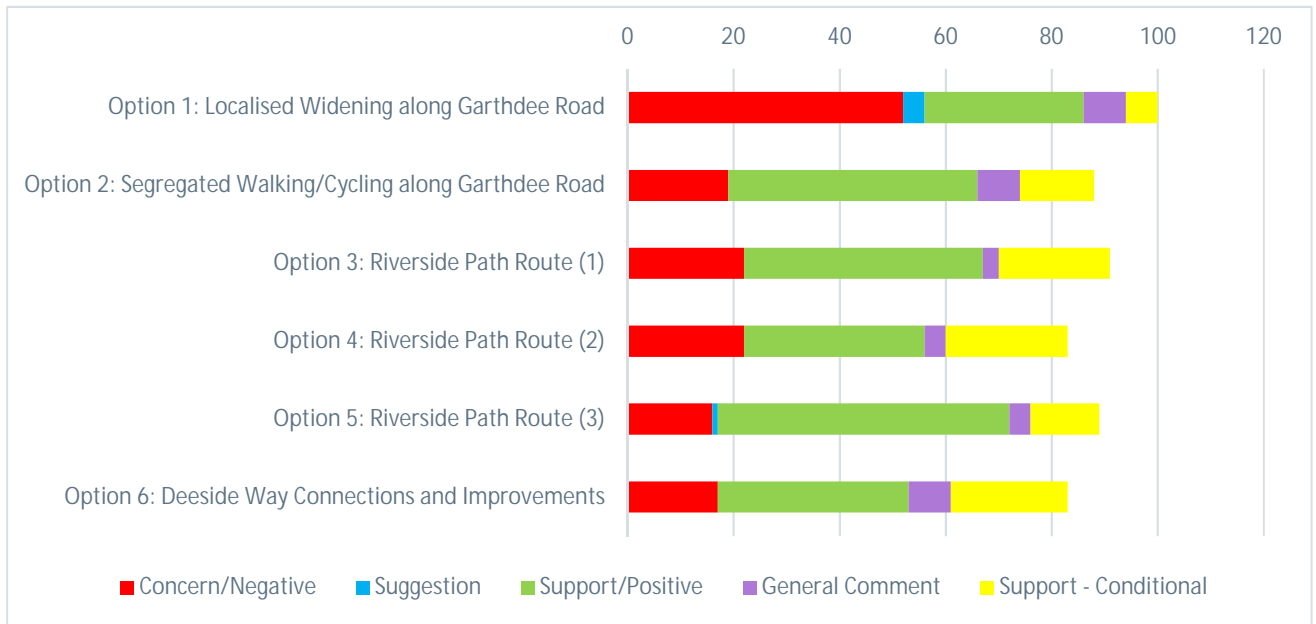
9.7 KEY COMMENTS RECEIVED ON EACH OPTION

GENERAL COMMENTS MADE ON EACH OPTION

9.7.1. The survey allowed for the participants to comment on each of the options. These comments have been aggregated into whether the general tone of the comment was supportive, neutral or raised concerns about a particular option.

9.7.2. Figure 9-5 shows the spectrum of support within comments made on each option. The following colour coding has been used to help interpret the range of opinions within each option's comments: Red – Concern/Negative; Green – Support/Positive; Blue – Suggestion; Purple – General Comment; Yellow – Support – conditional.

Figure 9-5 – Spectrum of support within comments made on each option

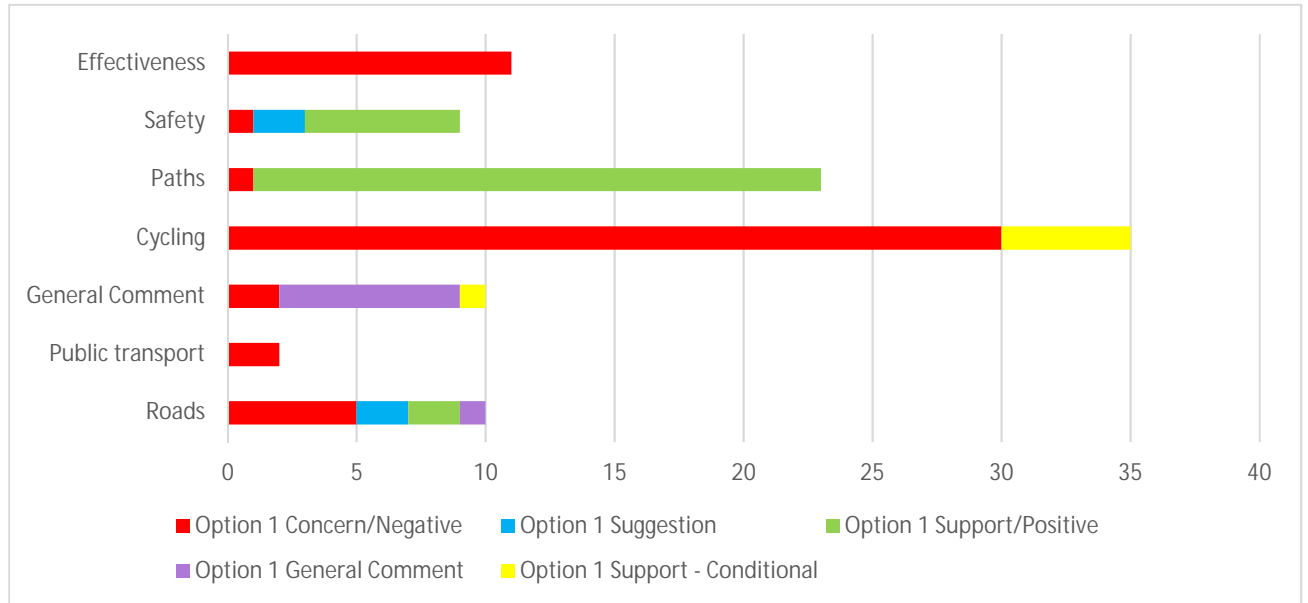


OPTION 1: LOCALISED FOOTWAY WIDENING ALONG GARTHDEE ROAD

COMMENT THEMES

9.7.3. Comment analysis has been undertaken to determine the key themes which survey respondents provided for Option 1. These are summarised in Figure 9-6 together with a selection of extracted quotes which provide a representative summary of opinions made within each theme.

Figure 9-6 – Summary of comment themes made for Option 1



Effectiveness

- 'Does not encourage people to drive less for short journeysIt won't make any difference for walking and won't help for cycling.'
- 'It won't make any difference for walking and won't help for cycling.'

Safety

- 'Narrower road will make it more unsafe for cyclists and pedestrians '

Paths

- 'The current 1m wide pavement does not provide adequate room for more than one or two people to walk in opposite directions at the same time.'
- 'Having both sides of road available to walk would be great.'

Cycling

- 'Doesn't encourage cycling'
- 'Even if these are shared use, there is not adequate space to cycle.'

Public Transport

- 'Making the road narrower would cause more problems with buses'

Roads

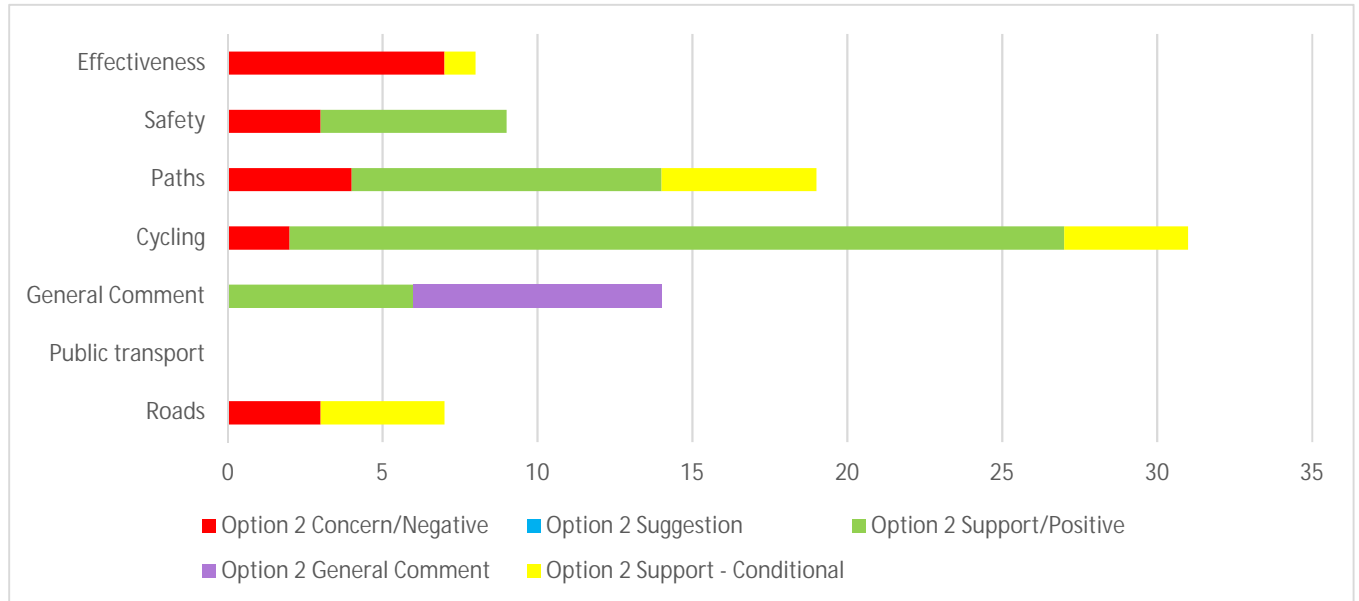
- 'The road is extremely busy with cars and buses and I feel this actually puts me off walking this road no matter if the pavement was wider.'

OPTION 2 :SEGREGATED WALKING/CYCLING ROUTE ALONG GARTHDEE ROAD

COMMENT THEMES

9.7.4. Comment analysis has been undertaken to determine the key themes which survey respondents provided for Option 2. These are summarised in Figure 9-7 together with a selection of extracted quotes which provide a representative summary of opinions made within each theme.

Figure 9-7 - Summary of comment themes made for Option 2



Effectiveness

- 'I don't think there are enough cyclists to make use of this.'

Safety

- 'It is already as thin as it can safely be.'

Paths

- 'When walkers and cyclists share areas it often puts walkers off as the cyclists can go too fast.'
- 'Think the need to separate cyclists and pedestrians really is necessary'

Cycling

- 'Separate spaces would make it more pleasant and might even encourage me to get a bicycle!'
- 'It desperately needs segregated space for cyclists, especially on the hill.'

General Comment

- 'I strongly agree with the implementation of Option 2 as it provides a range of improvements for walking, cycling and wheeling the along the full length of Garthdee Road. I am particularly supportive of the installation of a crossing at the western end of the route which would link the Den of Pitfodels development (where I live) with the rest of the proposed route.'

Roads

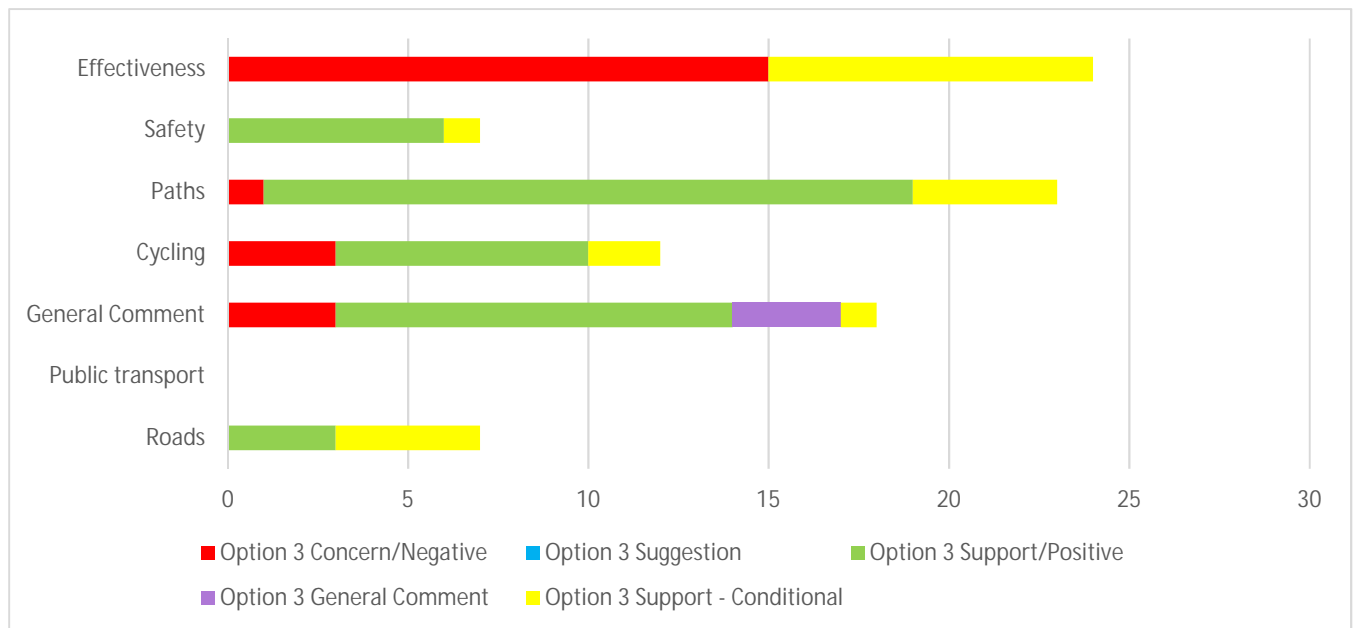
- 'Anything that removes any width of any section of road on Garthdee Road to create a cycle, wheeling lane, is not acceptable.'

OPTION 3: RIVERSIDE PATH ROUTE (1) – TO GARTHDEE ROAD AT SAINSBURY’S STORE

COMMENT THEMES

9.7.5. Comment analysis has been undertaken to determine the key themes which survey respondents provided for Option 3. These are summarised in Figure 9-8 together with a selection of extracted quotes which provide a representative summary of opinions made within each theme.

Figure 9-8 - Summary of comment themes made for Option 3



Effectiveness

- 'It would only be resolving a small part of the issue'
- 'This needs to go all the way along the river side.'

Safety

- 'Great idea! But need to give lots of consideration to how it can be made safe.'

Paths

- 'Safer to walk away from heavy traffic'

Cycling

- 'I prefer this option as it would take walkers and cyclists away from the busy road'

General Comment

- 'I use this whole path up the river to run on regularly and starting behind boots you have a steep hill behind boots which would need steps or something like that the ground would need regular cleared and maintained as it grows over very quickly during spring summer with nettles brambles etc over head height and what happens when the river is high on a high tide with possible flooding as I've encountered that in all the years I run the path I only see one or two people on it if I'm lucky'

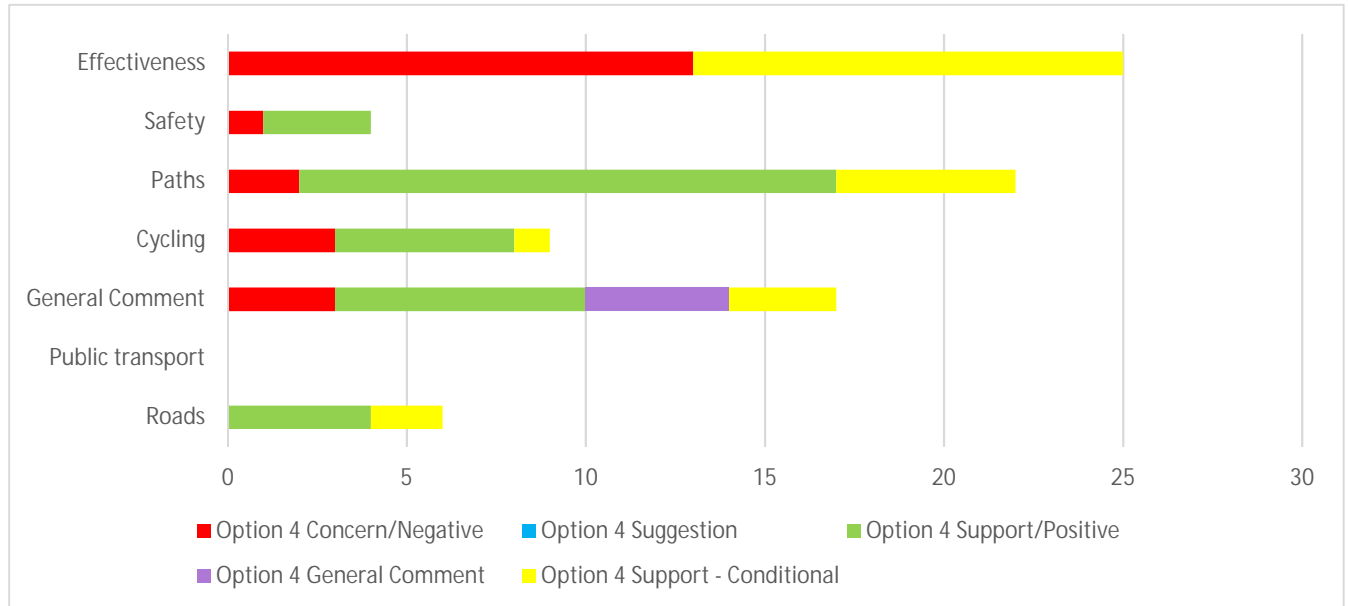
Roads

- 'This option is good because it bypasses all the traffic'

OPTION 4: RIVERSIDE PATH ROUTE (2) TO GARTHDEE ROAD AT DAVID LLOYD CENTRE

9.7.6. Comment analysis has been undertaken to determine the key themes which survey respondents provided for Option 4. These are summarised in Figure 9-9 together with a selection of extracted quotes which provide a representative summary of opinions made within each theme.

Figure 9-9 - Summary of comment themes made for Option 4



Effectiveness

- 'People will naturally always use the most direct route.'
- 'I would like to see this one out of the four to date but would prefer it to continue behind the University by the river.'

Safety

- 'Safer and more attractive option'

Paths

- 'This area of footpath could do with being upgraded.'
- 'I would definitely use this path if it has a better surface'

Cycling

- 'This would definitely encourage me to cycle to work more frequently and would be much safer.'
- 'It is a waste of time unless you extend it and make a proper cycle way all the way into town from Garthdee probably starting at Inshgarth'

General Comment

- 'Interesting idea though seems close to the river - flooding risk?'

Roads

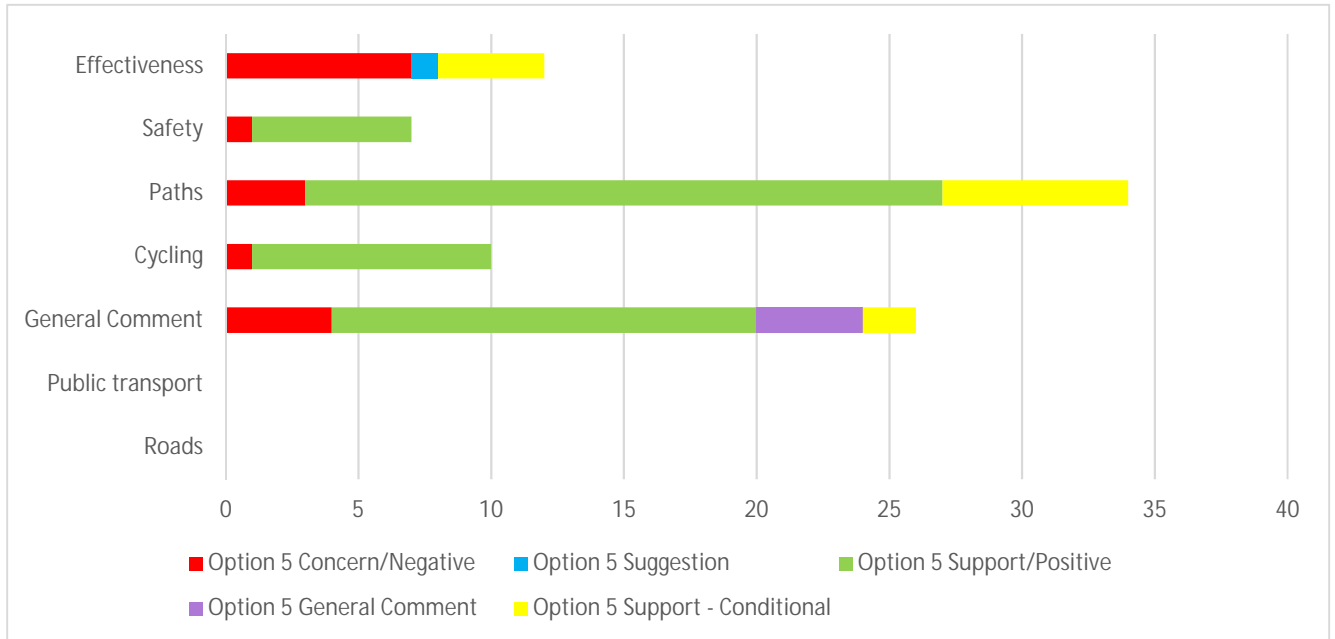
- 'I believe that a riverside walk avoiding traffic is a better option.'

OPTION 5: RIVERSIDE PATH ROUTE (3) – TO RGU CAMPUS

COMMENT THEMES

9.7.7. Comment analysis has been undertaken to determine the key themes which survey respondents provided for Option 5. These are summarised in Figure 9-10 together with a selection of extracted quotes which provide a representative summary of opinions made within each theme.

Figure 9-10 - Summary of comment themes made for Option 5



Effectiveness

- 'Would only be used by students not good option for us that live here permanently'

Safety

- 'Keep it by the river, nice safer, less pollution.'
- 'Safest, most pleasant, compatible with the majority of journeys in the area I would imagine (to RGU) and most suitable for different constituents.'

Paths

- 'If this option could be made to work in relation to the ecology of the river area then this would be by far my preferred option. It would take the opportunity to walk or cycle towards the retail shops and RGU away from heavily trafficked car/bus areas and be a continuation of the excellent existing pathway on the riverside area between the Duthie Park bridge and Bridge of Dee. As well as providing an excellent route for students and staff to RGU it could also provide a lovely walk for leisure purposes for the wider area.'

Cycling

- 'Ability to cycle without traffic is critical'
- 'Take cyclists away from the busy section of road between Bridge of Dee Roundabout and Sainsbury's Roundabout, as well as the steep hill up Garthdee Road.'

General Comment

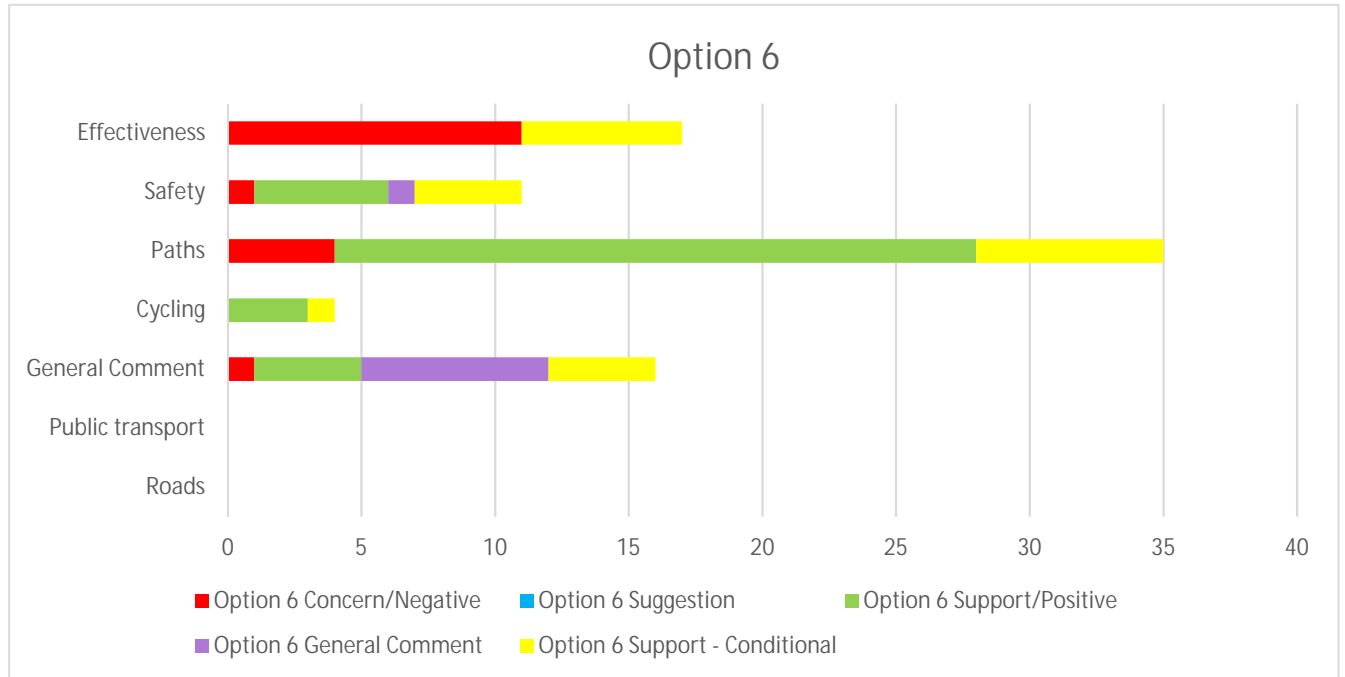
- 'This would open up this part of the river for the community to use; be a direct route to campus for students and staff; and there would need to be improved lighting etc. to consider safety.'

OPTION 6: DEESIDE WAY CONNECTIONS AND IMPROVEMENTS

COMMENT THEMES

9.7.8. Comment analysis has been undertaken to determine the key themes which survey respondents provided for Option 6. These are summarised in Figure 9-11 together with a selection of extracted quotes which provide a representative summary of opinions made within each theme.

Figure 9-11 - Summary of comment themes made for Option 6



Effectiveness

- 'I think it's already wide enough'

Safety

- 'Widening will reduce risk of injury to all user groups.'
- 'Widening and providing dedicated cycle lanes would be good, however I feel better lighting will derfinately be required for winter months.'

Paths

- 'Not sure, but it might encourage fast cyclists to go even faster, frightening walkers and others.'
- 'A great opportunity to segregate walkers and cyclists on this trail'

Cycling

- 'This would provide more space for cyclists.'
- 'In general, walkers, dog walkers and cyclists manage this shared space but there are some problems and it would be improved by widening. If it was widened, having a distinct side for cyclists would improve this.'

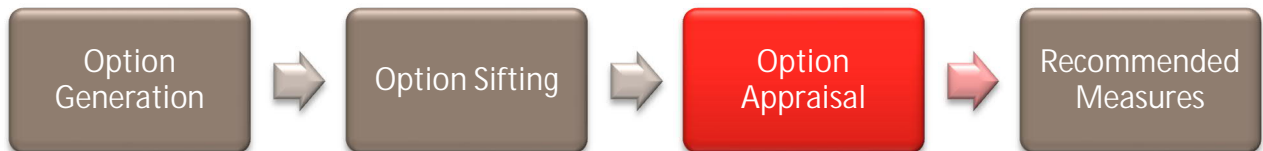
General Comment

- 'This would help but may impact too much on local wild life'
- 'This option could be used in conjunction with Option 5, which also includes my proposals of a lane on the left hand side of Garthdee Road, from Inchbrae Drive.'

10 OPTION APPRAISAL

10.1 OPTION APPRAISAL METHODOLOGY

10.1.1. The information gathered during the desktop review, site assessment, Core Project Group and engagement events has been processed to allow potential options for improving active travel conditions within the study area to be taken forward for further appraisal. The options review has been undertaken in a multi-stage process as follows:



10.1.2. Chapter 6 addressed the full process outlined above, the findings and outcomes of previous chapters have been used to inform the Options Appraisal and Recommended Measures stages of the study.

10.1.3. The outcomes of the Option Appraisal are a prioritised and costed package of recommended measures to deliver active travel improvements within the study area, supporting connections between trip origins and destinations.

10.2 STAG-BASED APPRAISAL

10.2.1. This study has been developed in accordance with STAG principles, with this report presenting the findings from the Appraisal stage.

10.2.2. An appraisal of the options which have been taken forward from previous sifting stage has been undertaken with consideration of the following:

- Transport Planning Objectives: An appraisal of options against the Transport Planning Objectives using quantitative techniques and analysis.
- STAG Criteria: An appraisal of options against the STAG Criteria using qualitative and quantitative techniques and analysis.
- Cost to Government: An analysis of the total public-sector cost of options, including investment costs, operating and maintenance costs and grant/subsidy payments.
- Risk and Uncertainty: An analysis of the risk and uncertainty associated with each option.

10.3 SECOND MEETING WITH CORE PROJECT GROUP

10.3.1. A second meeting with the Core Project Group was held on the 12th March 2020 to inform the team on the progress made following the stakeholder workshop and public consultation. The following topics were presented on:

- Review of Previous Meeting: Stakeholder Workshop
- Review of Public Consultation
- Engagement Phase Findings and Conclusions
- Proposed Next Steps

10.3.2. The Core Project Group were asked to comment throughout to make sure that any final exclusions or alterations can be made to the designs that are taken forward to the Appraisal Stage. The following comments were made that were used to inform further design of the options:

- The Deeside Way is a local nature conservation site, therefore any potential amendments to the Deeside Way should consider ecological impacts, including the impacts of path lighting.
- Third party land implications including landowner title and indicative purchasing costs should be identified in collaboration with ACC.
- Combinations of active travel facilities on an identified route (e.g. segregated, shared, on-road etc) may discourage use compared to more consistent design solutions.
- There is a need to further investigate the potential to create a shared footway / cycleway on the western section of Garthdee Road.
- The proposed path between Garthdee Road and Pitmedden Crescent via Montrose Drive should be extended to provide a complete route to the main RGU entrance.

10.4 OPTIONS APPRAISAL PROCESS

10.4.1. As set out above, the long-list of options has been sifted to identify those options which are considered viable for implementation.

10.4.2. An appraisal of the short-listed options has been undertaken according to the following criteria:

- Technical feasibility grading – as assessed at the Options Sifting stage;
- Third party land requirements – as assessed at the Options Sifting stage;
- Outcomes for walking, wheeling and cycling;
- Infrastructure cost implications;
- Additional risks to delivery.

10.4.3. The short-list of six options which were presented at a public consultation with the opportunity to fill out a survey to provide feedback on preferred options and the scheme.

10.4.4. Finally using the feedback from the public consultation and following meeting with the Core Project Group (12th March 2020) the short-list was limited to three options to take forward to the Appraisal stage. These three options are:

- **Option A:** A Riverside Path from the Bridge of Dee via the north bank of River Dee to the RGU Campus; including an additional connection from the riverside to Garthdee Road between Sainsbury's and B&Q.

- Option A consolidates Options 3, 4 & 5 presented during the public engagement phase. Whilst there are significant constraints to the delivery of a full route connection along the north bank of the River Dee from Bridge of Dee to RGU, this option had significant public support and therefore justified more detailed consideration.
- The intermediary options (Option 3 & 4) received significantly less public support compared to other options and therefore it is not considered viable to proceed with these as standalone route options. However, these options are considered complimentary to the delivery of a route from Bridge of Dee to RGU.

- **Option B:** Segregated walking / wheeling and cycling provision along Garthdee Road. Some sections of shared space where there is not sufficient space for segregated provision.

- Option B is a refined version of Option 2 which was presented during the public engagement phase. The option has reduced areas of shared footway / cycleways compared to Option 2 and traffic calming measures on the western section of Garthdee Road.

- **Option C:** Localised widening of the Deeside Way with additional connections from Garthdee to the Deeside Way to improve connectivity.

- Option C is a refined version of Option 6 which was presented at during the public engagement phase. The option includes a section of segregated cycleway along Garthdee Road to create a stronger link to the RGU campus.

10.4.5. The design options are presented in Appendix G.

10.4.6. Appraisal Summary Table have been undertaken for each of the three design options, in line with STAG guidance⁸.

10.5 COST-BENEFIT ANALYSIS

10.5.1. The DfT's Active Mode Appraisal Toolkit (AMAT) has been utilised to appraise the potential costs and benefits of each of the design options. The tool streamlines the process set out in the DfT's Transport Analysis Guidance (TAG) Unit A5-1 'Active Mode Appraisal'⁹, ensuring that the calculation of benefits is in accordance with DfT guidance and its value for money can be consistently compared against other options.

10.6 RISK & UNCERTAINTY

10.6.1. The risk and uncertainty associated with each option is presented together with the appraisal summary tables for each option in the following chapters.

10.6.2. Our studies to date have considered what is understood to be the known risks and constraints, however we would highlight that until detailed surveys and investigations are undertaken (appropriate at detailed design stage), unknown or unanticipated risks may arise that impact on the outline route assessment undertaken to date.

10.7 SUMMARY

The appraisal outcomes are presented in Chapters 11 to 13 for Options A, B and C, retrospectively.

⁸ The Appraisal Summary Table format based on the STAG-Technical-Database-Appraisal-Summary-Table-Part-1

<https://www.transport.gov.scot/media/11082/stag-technical-database-appraisal-summary-table-part-1.pdf>

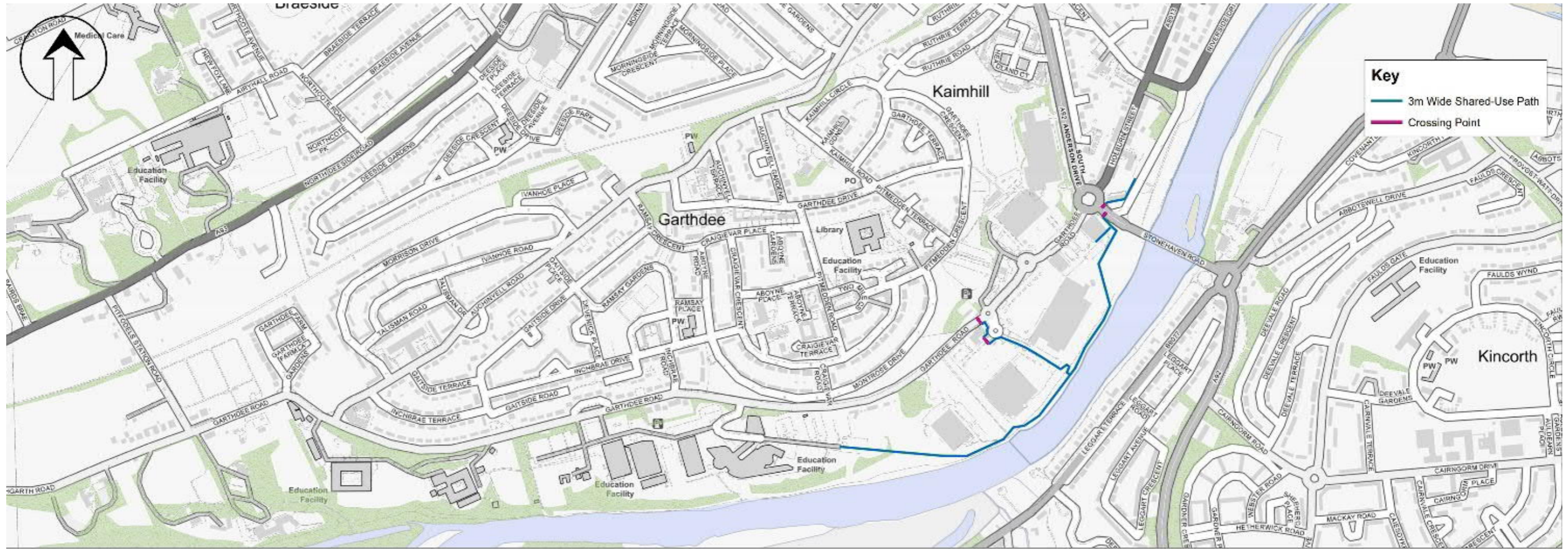
⁹ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/275394/webtag-tag-unit-a5-1-active-mode-appraisal.pdf

11 APPRAISAL: RIVERSIDE PATH ROUTE

11.1 OPTION A OVERVIEW

- 11.1.1. At the public consultation three Riverside Path options were presented each providing a different connection through the study area. The first connected to Garthdee Road between the Sainsbury's and B&Q stores, the second connected to Garthdee Road by the David Lloyd's Centre and the final option linked directly into the RGU campus.
- 11.1.2. On review of the survey responses from the public consultation a decision was made to combine two of the above options given both the demand for the options and the safety of the users on a path of this nature. Additional exit points from the Riverside Path to Garthdee Road would provide more safety in a rapid flood event.
- 11.1.3. The result of this can be seen in Figure 11-1 below which shows a high-level design of Option A presented at the Core Project Group meeting on 12th March 2020. More detailed design drawings for this option are presented in Appendix G.

Figure 11-1 - Option A Overview



11.2 OPTION A APPRAISAL

11.2.1. An appraisal of Option A has been undertaken in line with STAG principles¹⁰. The Appraisal Summary Tables setting out the outcomes of this appraisal are presented in Tables 11-1 to 11-4, covering background information, planning objectives, implementability and STAG criteria, respectively.

Table 11-1 - Option A Appraisal Summary Table 1: Proposal Details

Option A: Riverside Path			
Proposal Details			
Name authority or organisation promoting the proposal.		ACC	
Proposal Name:	Option A: Riverside Path	Name of Planner:	WSP
Proposal Description:	Path from the Bridge of Dee via the north bank of River Dee to the RGU Campus; including an additional connection from the riverside to Garthdee Road between Sainsbury's and B&Q.		
Background Information			
Geographic Context:	<p>Garthdee Road is a well-used transport corridor that functions as the main road for public transport and private vehicles within the local area. The Garthdee area includes residential properties, schools, a university campus and multiple large retail units.</p> <p>The active travel provision for those walking, wheeling and cycling is limited in places and the current conditions on the eastern section of Garthdee Road are considered unsuitable for many cyclists. The site is bound to the south by the River Dee and is otherwise limited by the fact the area is well developed with private residences and businesses.</p> <p>The site has significant topographical constraints for people travelling in both east-west and north-south directions, with steep longitudinal gradients.</p> <p>The study area benefits from the existing Deeside Way path which has been formed from a disused railway line. The Deeside Way provides connection from Duthie Park out into rural Aberdeenshire to the west of Aberdeen City.</p>		
Social Context:	<p>Garthdee constitutes a local community, a large student population that use the area daily and a large retail area that attracts people from surrounding areas, including a high volume of private motor vehicle trips.</p> <p>The levels of deprivation vary across Aberdeen, Garthdee is more deprived than the surrounding areas of Mannofield, Ruthrieston and Cults¹¹.</p>		
Economic Context:	<p>Aberdeen has a strong economy however variable as it is largely dictated by the value of the oil and gas industry. The influence of oil and gas value over the Aberdeen economy results in the economic strength of Aberdeen being determined in part by factors out-with its direct control.</p> <p>The Garthdee area is on average within the lower 50% for economic activity and employment within Scotland. The Mannofield area is on average within the top 10% for economic activity and employment. The eastern section of the study area includes major retail land use which contribute towards the local economy and provide local employment opportunities.¹¹</p>		

¹⁰ The Appraisal Summary Table format based on the STAG-Technical-Database-Appraisal-Summary-Table-Part-1

<https://www.transport.gov.scot/media/11082/stag-technical-database-appraisal-summary-table-part-1.pdf>

¹¹ Source: Scottish Index of Multiple Deprivation 2020

Table 11-2 - Option A Appraisal Summary Table 2: Planning Objectives

Option A: Riverside Path	
Planning Objectives	
Objective:	Performance against planning objective;
TPO 1: To increase the modal share of trips made by active travel (walking, wheeling and cycling) along the strategic corridor.	Option A provides a traffic-free alternative to Garthdee Road however the route is not as direct and requires pedestrians and cyclists to be on a shared path which may reduce the appeal to some users. In addition, the path includes ramped sections at the tie-in to Bridge of Dee and the RGU campus which may be unsuitable for some mobility impaired users. The route alignment was well supported during the public consultation. There was a mixed response to this option during the stakeholder workshop.
TPO 2: Enhance the social inclusion of the Garthdee area.	Option A provides opportunities for both travel for long distance commuting connections as well as leisure trips. The route however is remote from most residents of the Garthdee area and therefore local use may be restricted to leisure journeys. . In addition the path may not be suitable for all users during times of darkness and during winter months due to a lack of opportunity to introduce sufficient path lighting and passive security measures.
TPO 3: Ensure connectivity to the retail parks, existing cycle infrastructure, places of work and leisure trip generators in the area.	Option A provides a link between the existing active travel route, which runs along the north bank of the River Dee to the east of Bridge of Dee, and the RGU campus. In addition, the option provides a connection to the B&Q and Sainsbury's stores. Option A ensures the Garthdee Road operates as existing for motorised vehicles as the intervention does not impact on road link or junction capacity.
TPO 4: Ensure transportation proposals enhance conditions for biodiversity along each linear route corridor where interventions are proposed.	Option A includes intervention along the River Dee and therefore significant mitigation measures would be necessary to ensure that the scheme has no net detriment to existing biodiversity, and where possible achieves a net biodiversity gain.
Rationale for Selection of Proposal	Option A received the most positive response from the public consultation and provides a traffic-free route between the Bridge of Dee and the RGU campus, bypassing the most intensely trafficked section of Garthdee Road.

Table 11-3 - Option A Appraisal Summary Table 3: Implementability Appraisal

Option A: Riverside Path Implementability Appraisal	
Criterion	Performance against criterion
Technical:	Option A has significant technical design, construction and maintenance issues including the construction of a path along a floodplain. Counter measures would be necessary to ensure that the floodplain capacity is not reduced by the intervention.
Operational:	Regular maintenance would be required along this route especially during times of year when river levels are more likely to rise and fall.
Financial:	<p>The funding source/s of the capital costs for the proposal is to be confirmed at later design stages.</p> <p>The provider/s of operating / maintenance costs is to be confirmed at later design stages.</p>
Public Acceptance:	Option A has had a largely positive level of public acceptance. There is likely to be some concern regarding flooding and loss of biodiversity.

Table 11-4 - Option A Appraisal Summary Table 4: STAG Criteria

Option A: Riverside Path		
STAG Criteria		
Criterion	Assessment Summary	Supporting Information
Environment:	-2	<p><u>Biodiversity and Habitats:</u> Given the location of the route next to the River Dee, there are many ecological issues to consider when implementing this option, these are detailed in full within the Preliminary Ecological Appraisal (Appendix A).</p> <p><u>Landscape and Visual Impact:</u> To implement a path on the riverside will require the removal of vegetation and the introduction of a tarmacked path and associated earthworks. This is expected to result in a negative landscape and visual impact. In addition, it would require the removal of mature trees which are subject to a Tree Preservation Order.</p> <p><u>Drainage and Flooding:</u> The development of this option along the north bank of the River Dee presents significant issues relating to flooding and drainage. These are detailed in full in the Flood Risk Assessment (Appendix B), however fluvial flooding is expected to have a major negative impact on the viability of this route option.</p> <p><u>Noise and vibration:</u> Construction noise and vibration can impact habitats of local species which may be disturbed if construction is to take place on the riverside.</p> <p><u>Cultural heritage:</u> Option A is located close to the Bridge of Dee, which is a listed structure, measures will need taken to ensure the protection of the structure.</p>
Safety:	1	Option A provides a traffic-free route parallel to Garthdee Road for pedestrians and cyclists. It is therefore considered to have a positive impact on road safety. However, there is a regularly expressed concern that shared-use paths are points of conflict between pedestrians and cyclists. In addition, the opportunity for path lighting in an environment which is liable to flooding and ecologically sensitive is limited. Therefore, during winter months and other times of darkness, there may be significant reluctance for people to use such a remote path on a regular basis.
Economy:	1	As previously mentioned, this option has value in not disrupting Garthdee Road at the busiest sections around the retail units. A key concern raised has been in maintaining the economy of the Garthdee Area which is largely fuelled by the retail units. The option also however does not provide the most direct route to places of work or retail as it is offset from the busiest sections of Garthdee Road which could reduce the pass-by into the retail units.
Integration:	1	Option A has the potential to integrate into and extend the current Riverside Path. Comments have already been made from neighbouring local council bodies expressing an interest in extending the Riverside Path further west. This route does not provide integration opportunities with other transport modes.
Accessibility and Social Inclusion:	1	<p>Option A has accessibility issues given the steep gradients that allow access to the riverside from Garthdee. Paths will be ramped to accommodate the majority of users; however, some may not be able to use this route.</p> <p>As discussed under TPO2, the path would be remote from most residents of the Garthdee area and therefore local user may be restricted to leisure use. There are potential personal safety issues for some path users during times of darkness and winter months.</p>

11.3 OPTION A COST-BENEFIT ANALYSIS

11.3.1. Preliminary stage construction costings have been developed for Option A using industry standard cost rates and the available scheme information. Please note the related assumptions in the footnote below¹². The full breakdown on costings are presented in Appendix H. The overall estimated costs including a 44% optimism bias is **£868,598**.

11.3.2. The DfT's Active Mode Appraisal Toolkit (AMAT) has been utilised to appraise the potential costs and benefits of each of the design options. The tool streamlines the process set out in the DfT's Transport Analysis Guidance (TAG) Unit A5-1 'Active Mode Appraisal'¹³, ensuring that the calculation of benefits is in accordance with DfT guidance and its value for money can be consistently compared against other options.

11.3.3. The DfT AMAT calculates impacts linked to an increase in cycle use; these benefits relate to three key areas:

- Mode shift,
- Health and;
- Journey quality.

11.3.4. The AMAT uses existing observed active travel data and post-implementation walking / wheeling and cycling uplift values sourced from a review of completed Sustrans *Community Links / Places for Everyone* schemes¹⁴, where appropriate, to predict the values of a wide range factors following the implementation of an active travel scheme, these include:

- Congestion
- Infrastructure costs
- Road accidents
- Local Air Quality
- Noise
- Greenhouse Gases
- Risk of premature death
- Absenteeism
- Journey Ambience
- Indirect Taxation

¹² Basic budget construction costings calculated using SPONS 2016. Budget construction costings include for gang hrs, labour plant and materials where applicable. We would note that as detailed design progresses budget construction costings may vary accordingly. We would also note that this construction cost estimate does not include costings for design fees, traffic management, temporary works, all results from site investigations that are not stated in cost breakdown including capping material, site investigations resulting in the detection of invasive species (allowance for site clearance of invasive species on Route Option A only) or further services, service protection/ realignment (provisional sums included below) and land purchase. There may be other items that are not known or fully appreciated that have not been considered in this cost estimate. In line with standard practise an optimism bias of 44% has been applied to this cost estimate. All construction costings must be checked & verified by a qualified cost consultant.

¹³ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/275394/webtag-tag-unit-a5-1-active-mode-appraisal.pdf

¹⁴ Community Links: 2017 Impact Progress Report, Sustrans, 2018

11.3.5. A number of assumptions are also included within the AMAT where the DfT has provided default values based on DfT defined sources and research, such as:

- The decay rate (0.00%);
- The average walking speed (5km/h);
- The proportions otherwise using a car (11%) and a taxi (8%);
- The percentage of return trips (90%).

11.3.6. The project specific input parameters which have been used for Option A are shown in Table 11-5.

Table 11-5 – Option A AMAT Input Parameters

Parameter	Input Value	Source
Year of Opening	2022	Estimate based on current status of project
Background growth rate in all journeys	0.99% per annum	DfT's Trip End Model Presentation Program (TEMPro) – Aberdeen City
Number of walking/wheeling journeys without the proposed scheme	20	Estimated based on 2 hour on-site user observation (weekday)
Walking uplift factor	N/A	Due to very low base number of journeys, the future usage has been estimated based on Riverside Path (east of Bridge of Dee) usage data provided by ACC.
The average proportion of a walking/wheeling trip which uses the scheme infrastructure	45%	Longest route 900m / average trip length 2km ¹⁵
Number of cycling journeys without the proposed scheme	0	Estimated based on 2 hour on-site user observation (weekday)
Cycling uplift factor	N/A	Due to negligible base number of journeys, the future usage has been estimated based on Riverside Path (east of Bridge of Dee) usage data provided by ACC.
The average proportion of a cycling trip which uses the scheme infrastructure	19%	Longest route 900m / average trip length 4.74km ¹⁵
Maintenance costs	£9k per km per annum	DfT Cost Benefit Analysis Manual 2019 (non-traffic related maintenance)

11.3.7. The AMAT tool reports monetised benefits and costs at 2010 values, in line with the DfT's current base year for economic appraisal. Table 11-6 presents the outputs of the AMAT, setting out the monetised benefits scheme based upon the predicted uplift for walking and cycling trips.

¹⁵ Scottish Transport Statistics, Transport Scotland 2019

Table 11-6 – Options A Scheme Benefits and Costs

Subject	Monetised Value (£s discounted to 2010)
Congestion benefit	107,587
Infrastructure	364
Accident	14,344
Local Air Quality	423
Noise	956
Greenhouse Gases	1,873
Reduced risk of premature death	1,270,218
Absenteeism	334,307
Journey Ambience	4,930
Indirect Taxation	-6,440*

* The negative benefit value for indirect taxation is caused by reduced fuel duty revenue resulting from reduced overall motor vehicle use.

11.3.8. The overall present value benefits and costs as well as Benefit Cost Ratio (BCR) for Option A are presented in Table 11-7. The BCR summarises the relationship between the relative costs and benefits of the proposed scheme. If a BCR is greater than one, this means that the benefits exceed the costs. For example, a BCR of 2 means that for every £1 spent on the scheme, £2 of benefits will be realised.

Table 11-7 – Option A Present Value of Costs and Benefits and Benefit Cost Ratio

Benefit / Cost Component	Monetised Value (£s discounted to 2010)
Present Value of Benefits	1,728,198
Present Value of Costs	710,317
BCR	2.43

11.3.9. It can be seen from the resulting BCRs that the proposals for Option A results in a 'high' value for money category, as defined by the DfT¹⁶.

¹⁶ Value for Money Assessment: Advice Note for Local Transport Decision Makers, DfT, 2013.

11.4 OPTION A RISK AND UNCERTAINTY

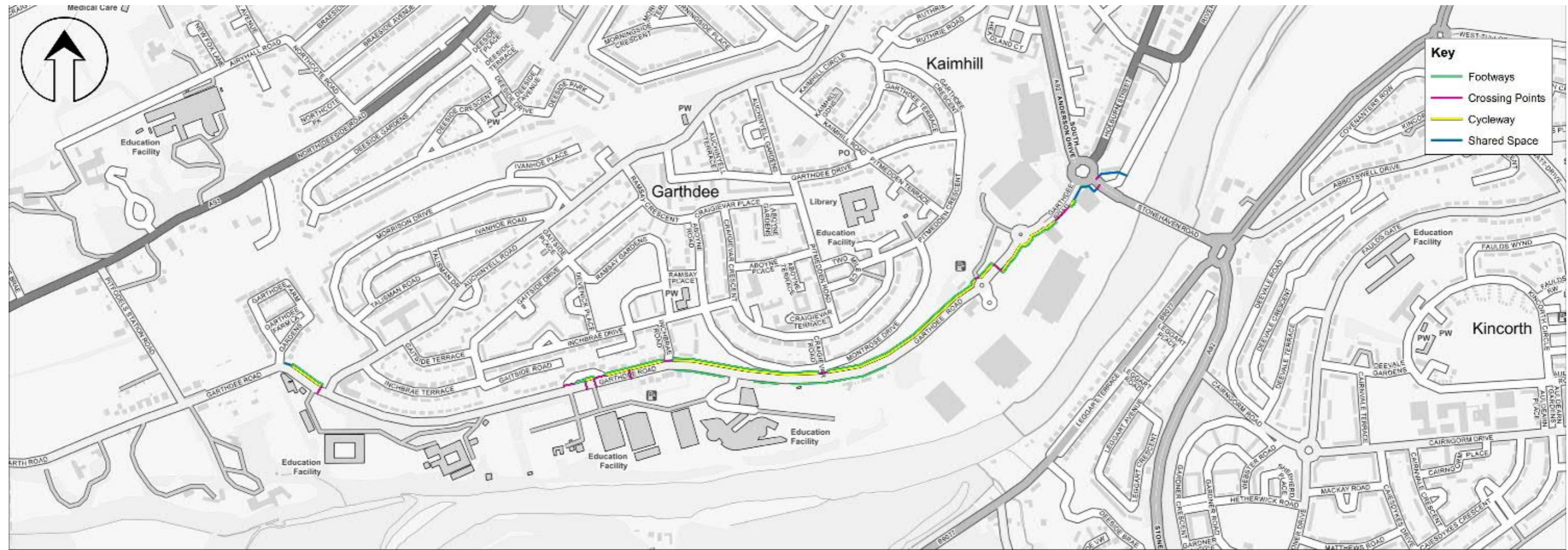
- 11.4.1. There are significant risks and uncertainty associated with the delivery of this option. The primary risk being that this option requires agreement to use land out-with ACC's control for extensive sections of the route. Land agreements can result in delays to programme delivery and at this stage the risk of securing the required land to deliver this option should be recorded as 'medium/high' and assessed in detail at the subsequent design stage.
- 11.4.2. Land agreements can require significant funds to secure an agreement with the existing landowner/s. On this basis, an additional uplift to the capital costs would be required to facilitate the delivery of Option A.
- 11.4.3. Option A also presents a significant level of risk related to delivering the necessary infrastructure along the bank of the River Dee. This is a highly sensitive ecological environment with limited points of access/egress for plant and materials. Therefore, there will be significant challenges to the Contractor in constructing Option A whilst respecting and protecting the existing natural environment.
- 11.4.4. A further risk to Option A, relates to the bank of the River Dee being a flood plain. Appropriate consideration would have to be taken during the Construction Phase. The path in this location would be constructed as to not reduce the existing flood envelope, however future use and maintenance in light of this zone being a functional flood plain would require consideration in the determination of whether this option is suitable.
- 11.4.5. It should also be noted that the predicted uplifts in usage which results from the implementation of Option A is a forecast estimate based on the adjacent tarmacked path on the east side of the Bridge of Dee. In practice, there are a wide range of factors beyond the scope of this study which may influence the way people travel in the future. Therefore, forecast BCRs should be treated as indicative and used for option comparison purposes only at this stage. A full Transport Business Case should be undertaken as part of the next stage of the design process, if this option is being considered further, to provide greater certainty to the economic forecasts.

12 APPRAISAL: GARTHDEE ROAD

12.1 OPTION B OVERVIEW

- 12.1.1. At the public consultation a design for significant improvements to the active travel conditions on Garthdee Road was presented. This option received a range of feedback given the potential impact on motorised traffic and congestion on Garthdee Road as a result of reallocating road space for increased safety for pedestrians and cyclists.
- 12.1.2. On review of the survey responses from the public consultation a decision was made to remove the shared space measures proposed at the western extent of Garthdee Road in place of traffic calming measures. This reflects the consideration that shared-use footways adjacent to carriageways in urban areas present potential issues for pedestrians including disabled users and should only be considered where no other options are available.
- 12.1.3. The result of this design revision can be seen in Figure 12-1 below which shows a high-level design of Option B. More detailed design drawings for this option are presented in Appendix G.

Figure 12-1 - Option B Overview



12.2 OPTION B APPRAISAL

An appraisal of Option B has been undertaken in line with STAG principles. The Appraisal Summary Tables setting out the outcomes of this appraisal are presented in Tables 12-1 to 12-4, covering background information, planning objectives, implementability and STAG criteria, respectively.

Table 12-1 - Option B Appraisal Summary Table 1

Option B: Garthdee Road			
Proposal Details			
Name and address of authority or organisation promoting the proposal.		ACC	
Proposal Name:	Option B: Garthdee Road	Name of Planner:	WSP
Proposal Description:	Segregated walking, wheeling and cycling provision on Garthdee Road. Some sections of shared space are required where there is insufficient space for segregation.		
Background Information			
Geographic Context:	<p>Garthdee Road is a well-used transport corridor that functions as the main road for public transport and private vehicles within the local area. The Garthdee area includes residential properties, schools, a university campus and multiple large retail units.</p> <p>The active travel provision for those walking, wheeling and cycling is limited in places and the current conditions on the eastern section of Garthdee Road are considered unsuitable for many cyclists. The site is bound to the south by the River Dee and is otherwise limited by the fact the area is well developed with private residences and businesses.</p> <p>The site has significant topographical constraints for people travelling in both east-west and north-south directions, with steep longitudinal gradients.</p> <p>The study area benefits from the existing Deeside Way path which has been formed from a disused railway line. The Deeside Way provides connection from Duthie Park out into rural Aberdeenshire to the west of Aberdeen City.</p>		
Social Context:	<p>Garthdee constitutes a local community, a large student population that use the area daily and a large retail area that attracts people from surrounding areas, including a high volume of private motor vehicle trips.</p> <p>The levels of deprivation vary across Aberdeen, Garthdee is more deprived than the surrounding areas of Mannofield, Ruthrieston and Cults¹⁷.</p>		
Economic Context:	<p>Aberdeen has a strong economy however variable as it is largely dictated by the value of the oil and gas industry. The influence of oil and gas value over the Aberdeen economy results in the economic strength of Aberdeen being determined in part by factors out-with its direct control.</p> <p>The Garthdee area is on average within the lower 50% for economic activity and employment within Scotland. The Mannofield area is on average within the top 10% for economic activity and employment. The eastern section of the study area includes major retail land use which contribute towards the local economy and provide local employment opportunities.¹⁷</p>		

¹⁷ Source: Scottish Index of Multiple Deprivation 2020

Table 12-2 - Option B Appraisal Summary Table 2: Planning Objectives

Option B: Garthdee Road Planning Objectives	
Objective:	Performance against planning objective;
TPO 1: To increase the modal share of trips made by active travel (walking, wheeling and cycling) along the strategic corridor.	Option B provides a segregated route on Garthdee Road which is the most direct on-road route between the Bridge of Dee, the RGU campus and Deeside Way (to the west of the study area). The segregated section focussed on the areas of highest potential demand would likely encourage less confident cyclists to use the route.
TPO 2: Enhance the social inclusion of the Garthdee area.	Option B provides increased opportunity for people living or working in the Garthdee area to connect on foot or by bike to other areas in Aberdeen. This includes providing a connection to the existing riverside path on the east side of Bridge of Dee, which provides a suitable leisure route and longer distance strategic connection.
TPO 3: Ensure connectivity to the retail parks, existing cycle infrastructure, places of work and leisure trip generators in the area.	Option B ensures connectivity for active travel users to places of work, study and leisure without the need for a detour. The option would however require lane modification and roundabout reconfiguration on the eastern section of Garthdee Road. Traffic modelling undertaken as part of this study indicates this would have a moderate negative impact on journey time for motor vehicles on Garthdee Road.
TPO 4: Ensure transportation proposals enhance conditions for biodiversity along each linear route corridor where interventions are proposed	Option B includes removal of existing greenspace on the north side of Garthdee Road. This is primarily neutral grassland and therefore does not have a high biodiversity value. However, it is considered that as part of implementing Option B, improvements to the retained greenspace could be made to enhance its value for biodiversity and community amenity.
Rationale for Selection of Proposal	Option B provides the most direct on-road route between the Bridge of Dee, RGU campus and the Deeside Way (to the west of the study area).

Table 12-3 - Option B Appraisal Summary Table 3: Implementability Appraisal

Option B: Garthdee Road Implementability Appraisal	
Criterion	Performance against criterion
Technical:	<p>Option B presents moderate technical challenges as it would involve road closures and coordination with local residents, education facilities and the businesses in the local area to minimise disruption.</p> <p>At the detailed design stage, topographical data, detailed utilities tracing would be required.</p>
Operational:	<p>Option B would require maintenance it is expected that this would be undertaken under the existing road maintenance programme. Active travel infrastructure typically has much lower wear and tear than asphalt which is located on the main carriageway.</p>
Financial:	<p>The funding source/s of the capital costs for the proposal is to be confirmed at later design stages.</p> <p>The provider/s of operating / maintenance costs is to be confirmed at later design stages.</p>
Public Acceptance:	<p>Option B has had a mixed reception from the public, it is the most direct option for pedestrians and cyclists. It should be noted that Garthdee Community Council stated their opposition to this option, or any option that would have an impact on capacity for motor vehicles on Garthdee Road.</p>

Table 12-4 - Option B Appraisal Summary Table 4: STAG Criteria

Option B: Garthdee Road		
STAG Criteria		
Criterion	Assessment Summary	Supporting Information
Environment:	0	<p><u>Biodiversity and Habitats:</u> There will be some loss of neutral grassland as part of this Option, however this has limited biodiversity value.</p> <p><u>Landscape and Visual Impact:</u> Option B will have a limited impact on the visual impact or the landscape as it follows the already established Garthdee Road corridor.</p> <p><u>Drainage and Flooding:</u> Option B should have no significant additional impact to the drainage or flooding risks that are already applied to Garthdee Road.</p> <p><u>Noise and vibration:</u> Construction noise and vibration will impact local residents that live along Garthdee Road. This will be a temporary effect.</p> <p><u>Cultural heritage:</u> Option B is located close to the Bridge of Dee, which is a listed structure, measures will need taken to ensure the protection of the structure.</p>
Safety:	2	Option B removes cyclists from the carriageway and also provides pedestrian with more functional walking space on the south side of Garthdee Road. The short lengths of shared-use path to the eastern section of the route may cause some user conflicts.
Economy:	0	Option B would result in moderate negative impacts on journey delay of motor vehicles. This may result in minor negative impact on access to retail units. In practice it is expected that traffic levels may rebalance to use the primary road network including the A93 and A92 to connect to and from the retail units, rather than routing along Garthdee Road from the west. In addition, enabling a greater proportion of shorter journeys to be undertaken on foot or by cycle will reduce the total number of motor vehicle trips on the local road network.
Integration:	2	As Option B follows the main carriageway integration is possible with the local bus network as well as linking to retail, work, leisure and educational facilities by making use of existing infrastructure.
Accessibility and Social Inclusion:	2	Option B increases the accessibility of Garthdee Road by providing additional space for mobility impaired users. Sections of Garthdee Road are currently not fit for purpose for all user groups and do not meet the necessary standards to be effectively used as an active travel corridor.

12.3 OPTION B COST-BENEFIT ANALYSIS

- 12.3.1. Preliminary stage construction costings have been developed for Option B using industry standard cost rates and the available scheme information. Please note the related assumptions in the footnote below.¹⁸ The full breakdown on costings are presented in Appendix H. The overall estimated costs including a 44% optimism bias is **£1,541,220**.
- 12.3.2. The same AMAT approach has been undertaken to assess the monetised costs and benefits of Option B as set out in Chapter 11. However, a number of Option B specific input parameters have been used, these are shown in Table 12-5.

Table 12-5 – Option B AMAT Input Parameters

Parameter	Input Value	Source
Year of Opening	2022	Estimate based on current status of project
Background growth rate in all journeys	0.99% per annum	TEMPro – Aberdeen City
Baseline number of walking/wheeling journeys	2975	Estimate based on 12 hour survey of Garthdee Road.
Walking uplift factor following intervention	0	Negligible increase in walking potential modelled.
The average proportion of a walking/wheeling trip which uses the scheme infrastructure	48%	Length of Scheme 950m / average trip length 2km (Scottish Transport Statistics 2019)
Baseline number of cycling journeys	126	Estimate based on 12 hour survey of Garthdee Road.
Cycling uplift factor following intervention	118%	Forecast based on average uplift indicated in Sustrans projects monitoring report. ¹⁹
The average proportion of a cycling trip which uses the scheme infrastructure	20%	Length of Scheme 950m / average trip length 4.74km (Scottish Transport Statistics 2019)
Maintenance costs	£9k per km per annum	DfT Cost Benefit Analysis Manual 2019 (non-traffic related maintenance)

- 12.3.3. The AMAT tool reports monetised benefits and costs at 2010 values, in line with the DfT's current base year for economic appraisal.

¹⁸ Basic budget construction costings calculated using SPONS 2016. Budget construction costings include for gang hrs, labour plant and materials where applicable. We would note that as detailed design progresses budget construction costings may vary accordingly. We would also note that this construction cost estimate does not include costings for design fees, traffic management, temporary works, all results from site investigations that are not stated in cost breakdown including capping material, site investigations resulting in the detection of invasive species or further services, service protection/ realignment (provisional sums included below) and land purchase. There may be other items that are not known or fully appreciated that have not been considered in this cost estimate. In line with standard practise an optimism bias of 44% has been applied to this cost estimate. All construction costings must be checked & verified by a qualified cost consultant.

¹⁹ Community Links: 2017 Impact Progress Report, Sustrans, 2018

12.3.4. Table 12-6 presents the outputs of the AMAT, setting out the monetised benefits and costs of the scheme based upon the predicted uplift for walking and cycling trips.

Table 12-6 – Options B Scheme Benefits and Costs

Subject	Monetised Value (£s discounted to 2010)
Congestion benefit	218,578
Infrastructure	740
Accident	29,141
Local Air Quality	859
Noise	1,943
Greenhouse Gases	3,806
Reduced risk of premature death	2,585,929
Absenteeism	647,439
Journey Ambience	373,845
Indirect Taxation	- 13,084*

* The negative benefit value for indirect taxation is caused by reduced fuel duty revenue resulting from reduced overall motor vehicle use.

12.3.5. The overall present value benefits and costs as well as the BCR for Option B are presented in Table 12-7.

Table 12-7 – Option B Present Value of Costs and Benefits and Benefit Cost Ratio

Benefit / Cost Component	Monetised Value (£s discounted to 2010)
Present Value of Benefits	3,848,456
Present Value of Costs	1,236,987
BCR	3.11

12.3.6. It can be seen from the resulting BCRs that the proposals for Option B results in a 'high' value for money category, as defined by the DfT²⁰.

²⁰ Value for Money Assessment: Advice Note for Local Transport Decision Makers, DfT, 2013.

12.4 OPTION B RISK AND UNCERTAINTY

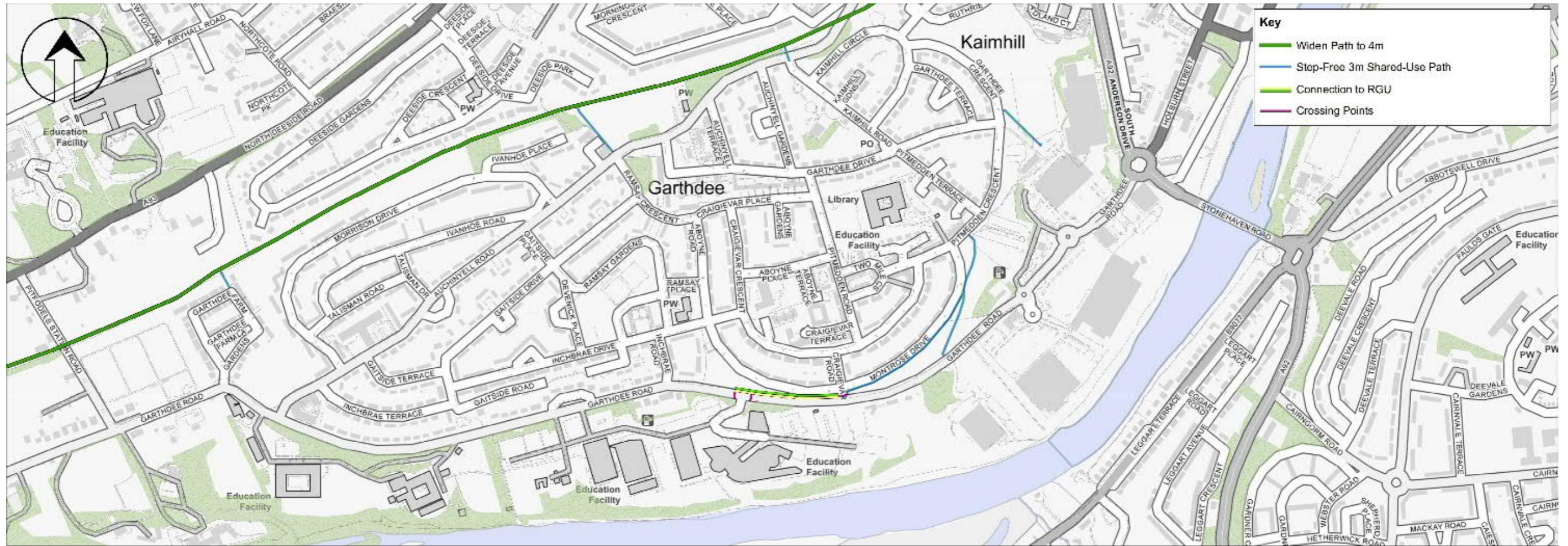
- 12.4.1. There are moderate risks and uncertainty associated with the delivery of this option. The primary risk is that Option B requires agreement to use small areas of land out-with ACC's control at localised zones.
- 12.4.2. Land agreements can result in significant delays to programme delivery and at this stage the certainty of securing the required land to deliver this route should be recorded as 'medium'. Minor modifications to the scheme may be necessary at the detailed design stage once full land ownership information is available (and willingness of the landowner to enter into an agreement) and a full scheme design based on accurate topographical data, known utility locations and ground condition information can be prepared.
- 12.4.3. Land agreements can require significant funds to secure an agreement with the existing landowner/s. On this basis, an additional uplift to the capital costs would be required to facilitate the delivery of Option B in its current form. This should be assessed in detail at the subsequent design stage.
- 12.4.4. The scheme proposals included under Option B are also expected to impact on existing services. These services may require additional protection and/or relocation. Preliminary costings to account for these potential works will be included in the finalised costings for Option B. However, detailed utility tracing will be required, along with approval from the appropriate Public Utility provider, during the detailed design stage to confirm alignments and depth and subsequent measures to accommodate utilities in the final design, as appropriate.
- 12.4.5. During the public consultation stage, consultation with Garthdee Community Council identified that there was existing local opposition to implementing measures on Garthdee Road which may impact on capacity for motor vehicles during both construction and operation. At present, Garthdee Community Council have reported their satisfaction with the consultation process undertaken during this study. As the project moves into the next design stage it is important that relevant parties continue to be engaged with to justify decisions that have been made and reduce the potential for significant local opposition to the scheme during and after construction.
- 12.4.6. It should also be noted that the predicted uplifts in usage which results from the implementation of Option B is a forecast estimate based on a study of comparable infrastructure. In practice, there are a wide range of factors beyond the scope of this study which may influence the way people travel in the future. Therefore, forecast BCRs should be treated as indicative and used for option comparison purposes only at this stage. A full Transport Business Case should be undertaken as part of the next stage of the design process to provide greater certainty to the economic forecasts.

13 APPRAISAL: DEESIDE WAY AND CONNECTIONS

13.1 OPTION C OVERVIEW

- 13.1.1. At the public consultation a design for improved connections between the Deeside Way and Garthdee Road as well as localised widening of the Deeside Way was presented. This option received largely positive feedback from the survey responses however there was a range of opinions regarding interventions on the Deeside Way Path itself.
- 13.1.2. On review of Option C by the Core Project Group it identified that an extension could be made to continue the walking, wheeling and cycling provision from Montrose Drive to the RGU campus access to create a more complete active travel connection to the campus.
- 13.1.3. The result of this can be seen in Figure 13-1 below which shows a high-level design of Option C. More detailed design drawings for this option are presented in Appendix G.

Figure 13-1 - Option C Overview



13.2 OPTION C APPRAISAL

13.2.1. An appraisal of Option C has been undertaken in line with STAG principles. The Appraisal Summary Tables setting out the outcomes of this appraisal are presented in Tables 13-1 to 13-4, covering background information, planning objectives, implementability and STAG criteria, respectively.

Table 13-1 - Option C Appraisal Summary Table 1: Proposal Details

Option C: Deeside Way			
Proposal Details			
Name and address of authority or organisation promoting the proposal.		ACC	
Proposal Name:	Option C: Garthdee Road to Deeside Way	Name of Planner:	WSP
Proposal Description:	Widening of the Deeside Way and connections from RGU and Garthdee to the Deeside Way to improve connectivity		
Background Information			
Geographic Context:	<p>Garthdee Road is a well-used transport corridor that functions as the main road for public transport and private vehicles within the local area. The Garthdee area includes residential properties, schools, a university campus and multiple large retail units.</p> <p>The active travel provision for those walking, wheeling and cycling is limited in places and the current conditions on the eastern section of Garthdee Road are considered unsuitable for many cyclists. The site is bound to the south by the River Dee and is otherwise limited by the fact the area is well developed with private residences and businesses.</p> <p>The site has significant topographical constraints for people travelling in both east-west and north-south directions, with steep longitudinal gradients.</p> <p>The study area benefits from the existing Deeside Way path which has been formed from a disused railway line. The Deeside Way provides connection from Duthie Park out into rural Aberdeenshire to the west of Aberdeen City.</p>		
Social Context:	<p>Garthdee constitutes a local community, a large student population that use the area daily and a large retail area that attracts people from surrounding areas, including a high volume of private motor vehicle trips.</p> <p>The levels of deprivation vary across Aberdeen, Garthdee is more deprived than the surrounding areas of Mannofield, Ruthrieston and Cults²¹.</p>		
Economic Context:	<p>Aberdeen has a strong economy however variable as it is largely dictated by the value of the oil and gas industry. The influence of oil and gas value over the Aberdeen economy results in the economic strength of Aberdeen being determined in part by factors out-with its direct control.</p> <p>The Garthdee area is on average within the lower 50% for economic activity and employment within Scotland. The Mannofield area is on average within the top 10% for economic activity and employment.²¹ The eastern section of the study area includes major retail land use which contribute towards the local economy and provide local employment opportunities.</p>		

²¹ Source: Scottish Index of Multiple Deprivation 2020

Table 13-2 - Option C Appraisal Summary Table 2: Planning Objectives

Option C: Deeside Way	
Planning Objectives	
Objective:	Performance against planning objective;
TPO 1: To increase the modal share of trips made by active travel (walking, wheeling and cycling) along the strategic corridor.	<p>Information recorded during the public consultation indicates that the alignment of the Deeside Way best serves the majority of short to medium length journeys between the study area and the City Centre.</p> <p>Option C provides additional connections from Garthdee Road to the Deeside Way and localised widening of the Deeside Way. The widening of the Deeside Way has the potential to reduce reported conflicts between users and increase capacity. Additional connections allow for more opportunities to join or leave the route, clearer connectivity between RGU and the Deeside Way would make this already well-established route more attractive to people connecting to and from the City Centre area.</p>
TPO 2: Enhance the social inclusion of the Garthdee area.	Option C provides improved and additional connectivity from the Garthdee area to the Deeside Way. Option C provides suitable connection from the Deeside Way to the RGU campus. In addition, the proposed step-free connection from Pitmedden Crescent to the Asda store and associated retail units improves access to local retail opportunities for people with impaired mobility.
TPO 3: Ensure connectivity to the retail parks, existing cycle infrastructure, places of work and leisure trip generators in the area.	Option C ensures connectivity for active travel to education facilities, leisure and work. The route includes an improved connection to the Asda store.
TPO 4: Ensure transportation proposals enhance conditions for biodiversity along each linear route corridor where interventions are proposed	<p>Option C includes path widening on the Deeside Way which is a designated Local Nature Conservation Site and therefore sensitive to changes in the existing conditions. If path improvements on the Deeside were taken forward it is recommended that path lighting be introduced on the Deeside Way. Any lighting solution would need to be selected to be as sensitive to resident species, especially bats. This is discussed further in the Preliminary Ecological Appraisal.</p> <p>The path sections proposed between the RGU campus and Deeside Way are routed on neutral grassland and therefore it is considered that they would have minimal negative impacts on biodiversity.</p>
Rationale for Selection of Proposal	Option C is intended to provide the best match for the major desire line for journeys between the study area and the City Centre. It provides a missing link for safer active travel options between the RGU campus and the off-road Deeside Way. The path widening of the Deeside Way aims to address the existing reports of user conflicts on the path and provide additional capacity for a potential increase in use. However, the potential ecological impacts of works on the Deeside Way and designation as a Local Nature Conservation Site may make this element of Option C more challenging to implement.

Table 13-3 - Option C Appraisal Summary Table 3: Implementability Appraisal

Option C: Deeside Way Implementability Appraisal	
Criterion	Performance against criterion
Technical:	<p>Option C presents technical challenges as the Deeside Way is a designated Local Nature Conservation Site . Some path connections may require land agreements to deliver in their current design alignment.</p> <p>The option does make use of some infrastructure that is already in place that will reduce the level of hard-engineering required.</p>
Operational:	<p>Option C would require minimal additional maintenance.</p>
Financial:	<p>The funding source/s of the capital costs for the proposal is to be confirmed at later design stages.</p> <p>The provider/s of operating / maintenance costs is to be confirmed at later design stages.</p>
Public Acceptance:	<p>Option C received a largely positive response with some concern regarding the proposed widening of the Deeside Way in light of its designation as a Local Nature Conservation Site.</p> <p>The lack of lighting on the Deeside Way was reported as being a safety concern for some users. Therefore, if path improvements on the Deeside Way were to be taken forward it is recommended that suitable ecologically sensitive lighting solutions are considered at the detailed design stage.</p>

Table 13-4 - Option C Appraisal Summary Table 4: STAG Criteria

Option C: Deeside Way		
STAG Criteria		
Criterion	Assessment Summary	Supporting Information
Environment:	-1	<p><u>Biodiversity and Habitats:</u> Option C includes path widening on the Deeside Way which is a designated Local Nature Conservation Site and therefore sensitive to changes in the existing conditions. If path improvements on the Deeside were taken forward it is recommended that path lighting be introduced on the Deeside Way. Any lighting solution would need to be selected to be as sensitive to resident species, especially bats. This is discussed further in the Preliminary Ecological Appraisal.</p> <p>The path sections proposed between the RGU campus and Deeside Way are routed on neutral grassland and therefore it is considered that they would have minimal negative impacts on biodiversity.</p> <p><u>Landscape and Visual Impact:</u> Option C is expected to have minimal landscape and visual impacts.</p> <p><u>Drainage and Flooding:</u> Option C is expected to have minimal flooding and drainage impacts.</p> <p><u>Noise and vibration:</u> Construction noise and vibration will impact local residents that live along Deeside Way or other points where connections are being improved. This would be a temporary effect</p> <p><u>Cultural heritage:</u> Option C support the continued reuse of the former Deeside railway line. There is the opportunity to enhance and upgrade existing path signage on the Deeside Way as part of any infrastructure works.</p>
Safety:	2	Option C provides a route that is mostly separated from road traffic or on quiet streets and therefore provides a suitable link between the RGU campus and the Deeside Way for the majority of pedestrian and cycle users.
Economy:	1	Option C does not provide a significant new connection to support the local economy, however there are direct economic benefits of increasing active travel journeys, which it is considered this option would achieve.
Integration:	1	Option C provides additional connectivity to public transport from Garthdee Road.
Accessibility and Social Inclusion:	2	Option C increases accessibility by providing more options with better provisions for mobility impaired users. Providing improved connectivity between Garthdee Road and the Deeside Way and also to the local Asda store will enhance social inclusion.

13.2.2. Based on the outcomes of the option appraisal for Option C, it is considered that the proposed interventions on the Deeside Way do not deliver sufficient benefits to outweigh the potential ecological impacts. In addition, undertaking widening and improvement works on the section of the path within the study area alone would not fully address the issues along the wider Deeside Way corridor. Therefore, it is recommended that as part of this study that the proposals for the Deeside Way are not progressed and Option C should focus on delivering the safer and more inclusive connections proposed between the RGU campus and the Deeside Way.

13.3 OPTION C COST-BENEFIT ANALYSIS

- 13.3.1. Preliminary stage construction costings have been developed for Option C using industry standard cost rates and the available scheme information. Please note the related assumptions in the footnote below.²² The full breakdown on costings includes the full package of interventions originally included under Option C (i.e. with Deeside Way widening and path lighting) as well as the reduced package of measures which excludes any works on the Deeside Way. These are presented in Appendix H.
- 13.3.2. The estimated costs for the revised Option C proposals (i.e. excluding Deeside Way improvements) including a 44% optimism bias is **£722,449**.
- 13.3.3. The same AMAT approach has been undertaken to assess the monetised costs and benefits of Option C as set out in Chapter 11. However, a number of Option C specific input parameters have been used, these are shown in Table 13-5.

Table 13-5 – Option C AMAT Input Parameters

Parameter	Input Value	Source
Year of Opening	2022	Estimate based on current status of project
Background growth rate in all journeys	0.99% per annum	DfT's Trip End Model Presentation Program (TEMPro) – Aberdeen City
Baseline number of walking/wheeling journeys	273	Estimate based on RGU Travel Survey 2018/19 and cross-referenced with 2018 and 2019 travel survey data for Garthdee Road.
Walking uplift factor following intervention	0	Negligible increase in walking potential based on Sustrans projects monitoring report ²²
The average proportion of a walking/wheeling trip which uses the scheme infrastructure	60%	Length of scheme 1.2km (Deeside Way not included in uplift)/ average trip length 2km ²³
Baseline number of cycling journeys	306	Estimate based on RGU Travel Survey 2018/19 and cross-referenced with 2018 and 2019 travel survey data for Garthdee Road.
Cycling uplift factor following intervention	118%	Forecast based on average uplift indicated in Sustrans projects monitoring report ²⁴ .
The average proportion of a cycling trip which uses the scheme infrastructure	26%	Length of scheme 1.2km (Deeside Way not included in uplift) / average trip length 4.74km ²¹
Maintenance costs	£9k per km per annum	DfT Cost Benefit Analysis Manual 2019 (non-traffic related maintenance)

²² Basic budget construction costings calculated using SPONS 2016. Budget construction costings include for gang hrs, labour plant and materials where applicable. We would note that as detailed design progresses budget construction costings may vary accordingly. We would also note that this construction cost estimate does not include costings for design fees, traffic management, temporary works, all results from site investigations that are not stated in cost breakdown including capping material, site investigations resulting in the detection of invasive species (allowance for site clearance of invasive species on Route Option A only) or further services, service protection/ realignment (provisional sums included below) and land purchase. There may be other items that are not known or fully appreciated that have not been considered in this cost estimate. In line with standard practise an optimism bias of 44% has been applied to this cost estimate. All construction costings must be checked & verified by a qualified cost consultant.

²³ Scottish Transport Statistics, Transport Scotland 2019

²⁴ Community Links: 2017 Impact Progress Report, Sustrans, 2018

- 13.3.4. The AMAT tool reports monetised benefits and costs at 2010 values, in line with the DfT's current base year for economic appraisal.
- 13.3.5. Table 13-6 presents the outputs of the AMAT, setting out the monetised benefits and costs of the scheme based upon the predicted uplift for walking and cycling trips.

Table 13-6 – Options C Scheme Benefits and Costs

Subject	Monetised Value (£s discounted to 2010)
Congestion benefit	185,849
Infrastructure	629
Accident	24,778
Local Air Quality	730
Noise	1,652
Greenhouse Gases	3,236
Reduced risk of premature death	2,261,726
Absenteeism	172,617
Journey Ambience	154,293
Indirect Taxation	- 11,125*

* The negative benefit value for indirect taxation is caused by reduced fuel duty revenue resulting from reduced overall motor vehicle use.

- 13.3.6. The overall present value benefits and costs as well as BCR for Option C are presented in Table 13-7.

Table 13-7 – Option C Present Value of Costs and Benefits and Benefit Cost Ratio

Benefit / Cost Component	Monetised Value (£s discounted to 2010)
Present Value of Benefits	2,793,756
Present Value of Costs	578,657
BCR	4.83

- 13.3.7. It can be seen from the resulting BCRs that the proposals for Option C results in a 'very high' value for money category, as defined by the DfT²⁵.

²⁵ Value for Money Assessment: Advice Note for Local Transport Decision Makers, DfT, 2013.

13.4 OPTION C RISK AND UNCERTAINTY

- 13.4.1. It is considered that there are minor risks and uncertainty associated with the delivery of this option. The primary risk is that Option C requires agreement to use areas of land potentially out-with ACC's control.
- 13.4.2. There is the potential to revise the design where necessary to accommodate land ownership constraints. Such modifications are not anticipated to have a major impact on the outcome of Option C. This should be assessed in detail at the subsequent design stage.
- 13.4.3. Whilst it is considered that interventions on the Deeside Way should be excluded from this option, it should be noted that if such interventions were to be taken forward, the impacts of path lighting on local ecology, especially bats should be considered in detail. This is set out in more detail within the Preliminary Ecological Appraisal (Appendix A). Information provided by Sustrans has identified that there are examples of path lighting on other active travel paths which has been selected specifically to minimise impacts on ecology. On this basis, it is considered that a suitable lighting solution could be implemented in consideration of ecological constraints. Path lighting options should be considered further at any future detailed design stage in consultation with ACC's Access Officer and Environmental Officer.
- 13.4.4. It should also be noted that the predicted uplifts in usage which results from the implementation of Option C is a forecast estimate based on a study of comparable infrastructure. In practice, there are a wide range of factors beyond the scope of this study which may influence the way people travel in the future. Therefore, forecast BCRs should be treated as indicative and used for option comparison purposes only at this stage. A full Transport Business Case should be undertaken as part of the next stage of the design process to provide greater certainty to the economic forecasts.

14 RECOMMENDED MEASURES

14.1 INTRODUCTION

14.1.1. As set out above, a multi-stage process has been undertaken to generate, sift and appraise the extent to which each of a wide range of active travel improvement options will meet the project's TPOs as well as the STAG appraisal criteria.



14.1.2. A STAG-based appraisal of Options A, B and C has been undertaken and is detailed in Chapters 11 to 13. The STAG criteria scores for each of the three options is summarised in Table 14-1. These scores related to the following criteria:

- Major Positive (+3)
- Moderate Positive (+2)
- Minor Positive (+1)
- No or Negligible Impact (0)
- Minor Negative (-1)
- Moderate Negative (-2)
- Major Negative (-3)

Table 14-1 – Summary of STAG Criteria Scores for Options A, B & C

Option	STAG Criteria Score				
	Environment	Safety	Economy	Integration	Accessibility & Social Inclusion
Option A Riverside Path	-2	1	1	1	1
Option B Garthdee Road improvements	0	2	0	2	2
Option C Connecting RGU to Deeside Way	-1	2	1	1	2

14.1.3. Following a review of the options appraisal it was considered appropriate to remove consideration of Deeside Way path improvements from Option C, prior to moving forward for the cost benefit analysis. The proposed interventions on the Deeside Way do not deliver

sufficient benefits to outweigh the potential ecological impacts. In addition, undertaking widening and improvement works on the section of the path within the study area alone would not fully address the issues along the wider Deeside Way corridor. Therefore, as part of this study it is considered appropriate that the proposals for the Deeside Way are not progressed and Option C should focus on delivering the safer and more inclusive connections proposed between the RGU campus and Deeside Way.

- 14.1.4. A cost benefit assessment has been undertaken using the DfT’s AMAT tool and incorporating the identified construction cost estimates for each option. A summary of the estimate BCRs for each option is presented in Table 14-2.

Table 14-2 – Summary of Option BCRs

Option	Forecast BCR
Option A – Riverside Path	2.43 (high value for money)
Option B – Garthdee Road improvements	3.11 (high value for money)
Option C – RGU to Deeside Way connections (excluding Deeside Way widening)	4.83 (very high value for money)

14.2 RECOMMENDATIONS

- 14.2.1. The outcomes of the options appraisal and cost benefit analysis have been considered together to identify a recommended way forward for the project’s next stages. These recommendations have been phased to allow for a period of monitoring and evaluation prior to developing the business case for more capital intensive interventions. In support of this phased approach an outline Monitoring & Evaluation Strategy has been prepared. This is presented in Chapter 15.

PHASE 1 RECOMMENDATIONS

- 14.2.2. As stated above, it is proposed that the package of measures included under design Option C, which involves the creation of new links between the RGU campus and the Deeside Way should be taken forward separately from any potential improvements to the Deeside Way.
- 14.2.3. Measures for increasing capacity on the Deeside Way are not forecast to deliver effective outcomes at this stage given the ecological sensitives of the path and would require further consideration as part of a full review of the Deeside Way rather than implementing improvements on a small section as was proposed originally under Option C..
- 14.2.4. However, The Deeside Way corridor is very well aligned with the main regular movement patterns between the study area and City Centre. Therefore, it is considered that investment in improving linkages between the study area and this route will provide significant active travel benefits. In addition, compared to delivering on-road infrastructure on Garthdee Road (Option B), or a new path along the north bank of the River Dee (Option A), Option C is considered relatively good value for money.

- 14.2.5. On this basis it is recommended that in Phase 1 that **Option C (excluding any interventions on the Deeside Way)** should be taken forward.

14.3 PHASE 2 RECOMMENDATIONS

- 14.3.1. The package of measures included under Phase 1 (Option C) should be implemented and post-construction monitoring and user surveys undertaken to determine the extent to which the Phase 1 measures achieve the TPOs.
- 14.3.2. In the event that minimal progress towards achieving the TPOs results from the Phase 1 measures it is recommended that further investment in active travel infrastructure is made within the study area. It is considered that **Option B**, which involves the delivery of improvements for walking, wheeling and cycling along Garthdee Road, between the Bridge of Dee and the Deeside Way, should be taken forward in Phase 2.
- 14.3.3. By bringing forward Option B as a second phase scheme, it will enable sufficient scheme justification to have been established to overcome the expected political challenges and increased capital costs (relative to Option C) of implementing the scheme.
- 14.3.4. It should be noted that there is a common section of proposed infrastructure which is included in both Options B and C. This is the section along Garthdee Road between Craigievar Road and Scott Cassie Circus, this is identified as section C2 in the detailed costings breakdown (Appendix H). The cost for section C2 (currently estimated at £262,624 inc. 44% optimism bias) should only be accounted for once if considering the costs of delivering Option C and Option B together.

14.4 PHASE 3 RECOMMENDATIONS

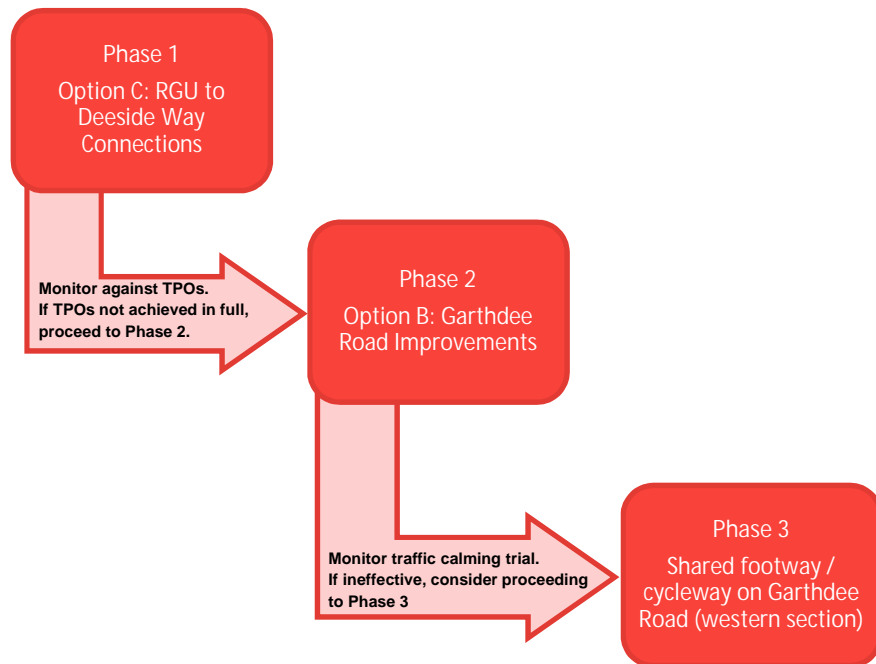
- 14.4.1. It should be noted for Option B, on the western section of Garthdee Road, on-street traffic calming measures are proposed to affect a reduction in motor vehicle speeds to an average speed which is considered suitable for on-carriageway cycling (20 – 25mph)²⁶. It is considered that these measures could be taken forward in Phase 2 as temporary (removable) measures which could be trialled over a period of 12 months and their effectiveness monitored.
- 14.4.2. If at the end of this trial period, it is considered that traffic calming measures would be sufficient to support on-carriageway cycling by the majority of potential users then more permanent traffic calming features could be installed.
- 14.4.3. However, if at the end of this trial period it is considered that traffic calming measures will not be an effective long-term solution to support on-carriageway cycling, an alternative approach could be taken forward as Phase 3. This could involve converting the existing 3m wide footway on the south side of Garthdee Road to a shared footway/cycleway.
- 14.4.4. In line with *Places for Everyone* guidance, this proposal has not been presented within the design for this Option B as shared-use footway / cycleways are not a preferred design solution. Shared-use footway / cycleways can have detrimental impacts on pedestrians, especially sensory-impaired pedestrians. On this basis, and in line with the Equality Act

²⁶ Cycling By Design, Transport Scotland (2011)

2010, these measures should only be implemented where it has been demonstrated that no alternative reasonable solution is available.

14.5 SUMMARY OF RECOMMENDATIONS

14.5.1. The diagram below provides a summary of the provisional recommendations based on the options appraisal study of the Bridge of Dee West Active Travel Corridor.



15 MONITORING & EVALUATION

15.1 INTRODUCTION

- 15.1.1. As presented in Chapter 14, a phased approach to delivering infrastructure interventions has been proposed to take forward active travel improvements within the study area. The phasing strategy is underpinned by a process of monitoring and evaluation to determine the extent to which new interventions result in a material change in conditions within the study area.
- 15.1.2. This chapter presents the proposed monitoring and evaluation strategy which will help to support future business cases for new interventions and inform decision making regarding proceeding from one phase of interventions to the next.
- 15.1.3. The data inputs proposed have been informed by the TPOs agreed through the study as well as the proposed SMART targets which sit below each of the TPOs. For reference these are summarised in Table 15-1.

Table 15-1 – Transport Planning Objectives and SMART Targets

Transport Planning Objective	SMART Target
TPO1: To increase the modal share of trips made by active travel (walking and cycling) along the strategic corridor	Increase the mode share percentage for active travel journeys to / from education and employment undertaken by residents of the Airyhall / Broomhill / Garthdee ward, from the level reported in the last Scottish Census (2011) of 26% to 34% by 2031 (assumed census year).
TPO2: Enhance the social inclusion of the Garthdee area.	Increase the overall SIMD scores for all data zones within the Garthdee area to the 5th decile or greater by 2031.
TPO3: Ensure connectivity to the retail parks, existing cycle infrastructure, places of work and leisure trip generators in the area.	A) Achieve at least an 'Adequate' aggregate score for walking, wheeling and cycling conditions on route sections where interventions are proposed.
	B) Maintain existing bus journey times, post-intervention, on the main bus corridors within the study area.
TPO4: Ensure transportation proposals enhance conditions for biodiversity along each linear route corridor where interventions are proposed.	Biodiversity net gain to be achieved by 2031 along each linear route corridor where interventions are proposed, compared to the 2019 biodiversity baseline.

15.2 BASELINE MONITORING

15.2.1. Baseline monitoring is required prior to the implementation of any interventions to provide a reference case against which to compare changes. Table 15-2 shows the proposed monitoring activities required to provide sufficient data to establish a baseline for evaluating progress against each TPO. The baseline monitoring has been proposed, where possible, to incorporate surveys which are already on-going or regularly undertaken. This approach is intended to minimise the additional public sector costs required to gather new data specifically for this project.

Table 15-2 – Baseline Monitoring Plan

Transport Planning Objective	Data Source / Collection Activity	When Survey Should be Undertaken	Survey Already Routinely Undertake by ACC or other organisation
TPO1: To increase the modal share of trips made by active travel (walking and cycling) along the strategic corridor	Scottish Census Multi-modal speed and volume survey on Garthdee Road east of RGU Multi-modal speed and volume survey on Garthdee Road west of RGU Multi-modal speed and volume survey on Montrose Drive RGU Staff and Student Travel Survey Active travel volume survey on Deeside Way	2011 Census / 2021 Census Prior to construction Prior to construction Prior to construction Prior to construction Prior to construction	Yes (National Records of Scotland) No, but 2019 WSP survey was undertaken for this study No No Yes (RGU) Yes (ACC)
TPO2: Enhance the social inclusion of the Garthdee area.	Scottish Index of Multiple Deprivation data	Most recent year prior to construction	Yes (Scottish Government)
TPO3: Ensure connectivity to the retail parks, existing cycle infrastructure, places of work and leisure trip generators in the area.	Walking Route Appraisal Tool survey (or equivalent) Cycling Level of Service survey (or equivalent)	Prior to construction Prior to construction	No No
	Bus journey time surveys along Garthdee Road and Auchinyell Road	Prior to construction	No
TPO4: Ensure transportation proposals enhance conditions for biodiversity along each linear route corridor where interventions are proposed.	Biodiversity net gain baseline habitats assessment.	Prior to construction	No, but 2019 WSP biodiversity net gain baseline was collected for this study.

15.3 PHASE 1 – IMPLEMENTING OPTION C (RGU TO DEESIDE WAY ACTIVE TRAVEL IMPROVEMENTS)

15.3.1. Phase 1 involves the introduction of new active travel connections between Garthdee Road and the Deeside Way (Option C excluding Deeside Way intervention). The proposed monitoring activities to be undertaken following the completion of the Phase 1 activities are shown in Table 15-3.

Table 15-3 – Phase 1 Monitoring Plan

Transport Planning Objective	Data Source / Collection Activity	When Survey Should be Undertaken	Survey Already Routinely Undertake by ACC or other organisation
TPO1: To increase the modal share of trips made by active travel (walking and cycling) along the strategic corridor	Scottish Census	2031 Census	Yes (National Records of Scotland)
	Multi-modal speed and volume survey on Garthdee Road east of RGU	6 months and 12 months post construction	No
	Multi-modal speed and volume survey on Garthdee Road west of RGU	6 months and 12 months post construction	No
	Multi-modal speed and volume survey on Montrose Drive	6 months and 12 months post construction	No
	RGU Staff and Student Travel Survey	Year subsequent to construction	Yes (RGU)
Active travel volume survey on Deeside Way	6 months and 12 months post construction	Yes (ACC)	
TPO2: Enhance the social inclusion of the Garthdee area.	Scottish Index of Multiple Deprivation data	Year subsequent to construction and then annually	Yes (Scottish Government)
TPO3: Ensure connectivity to the retail parks, existing cycle infrastructure, places of work and leisure trip generators in the area.	Walking Route Appraisal Tool survey (or equivalent)	Post-construction	No
	Cycling Level of Service survey (or equivalent)	Post-construction	No
	Bus journey time surveys along Garthdee Road and Auchinyell Road	Post-construction	No
TPO4: Ensure transportation proposals enhance conditions for biodiversity along each linear route corridor where interventions are proposed.	Biodiversity net gain baseline habitats assessment.	Year subsequent to construction	No

15.4 PHASE 2 – IMPLEMENTING OPTION B (GARTHDEE ROAD ACTIVE TRAVEL IMPROVEMENTS)

15.4.1. Phase 2 involves the introduction of new active travel improvements along Garthdee Road (Option B). The proposed monitoring activities to be undertaken following the completion of the Phase 2 activities are shown in Table 15-4.

Table 15-4 – Phase 2 Monitoring Plan

Transport Planning Objective	Data Source / Collection Activity	When Survey Should be Undertaken	Survey Already Routinely Undertake by ACC or other organisation
TPO1: To increase the modal share of trips made by active travel (walking and cycling) along the strategic corridor	Scottish Census	2031 Census	Yes (National Records of Scotland)
	Multi-modal speed and volume survey on Garthdee Road east of RGU	6 months and 12 months post construction	No
	Multi-modal speed and volume survey on Garthdee Road west of RGU	6 months and 12 months post construction	No
	Multi-modal speed and volume survey on Montrose Drive	6 months and 12 months post construction	No
	RGU Staff and Student Travel Survey	Year subsequent to construction	Yes (RGU)
	Active travel volume survey on Deeside Way	6 months and 12 months post construction	Yes (ACC)
TPO2: Enhance the social inclusion of the Garthdee area.	Scottish Index of Multiple Deprivation data	Year subsequent to construction and then annually	Yes (Scottish Government)
TPO3: Ensure connectivity to the retail parks, existing cycle infrastructure, places of work and leisure trip generators in the area.	Walking Route Appraisal Tool survey (or equivalent)	Post-construction	No
	Cycling Level of Service survey (or equivalent)	Post-construction	No
	Bus journey time surveys along Garthdee Road	Post-construction	No
TPO4: Ensure transportation proposals enhance conditions for biodiversity along each linear route corridor where interventions are proposed.	Biodiversity net gain baseline habitats assessment.	Year subsequent to construction	No

15.5 PHASE 3 – REVISING CONSIDERATIONS FOR WALKING AND CYCLING ON THE WESTERN SECTION OF GARTHDEE ROAD

15.5.1. Phase 3 was a conditional intervention phase and would only go ahead if the traffic calming measures proposed along the western section of Garthdee Road, within the study area, were not sufficient to meet the needs of people cycling on-carriageway. Phase 3 proposed the introduction of a shared footway / cycleway on the south side of Garthdee Road for this section. The proposed monitoring activities to be undertaken following the completion of the Phase 3 activities are shown in Table 15-5.

Table 15-5 – Phase 3 Monitoring Plan

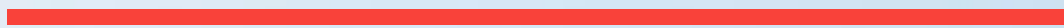
Transport Planning Objective	Data Source / Collection Activity	When Survey Should be Undertaken	Survey Already Routinely Undertake by ACC or other organisation
TPO1: To increase the modal share of trips made by active travel (walking and cycling) along the strategic corridor	Scottish Census	2031 Census	Yes (National Records of Scotland)
	Multi-modal speed and volume survey on Garthdee Road east of RGU	6 months and 12 months post construction	No
	Multi-modal speed and volume survey on Garthdee Road west of RGU	6 months and 12 months post construction	No
	Multi-modal speed and volume survey on Montrose Drive	6 months and 12 months post construction	No
	RGU Staff and Student Travel Survey	Year subsequent to construction	Yes (RGU)
	Active travel volume survey on Deeside Way	6 months and 12 months post construction	Yes (ACC)
TPO2: Enhance the social inclusion of the Garthdee area.	Scottish Index of Multiple Deprivation data	Year subsequent to construction and then annually	Yes (Scottish Government)
TPO3: Ensure connectivity to the retail parks, existing cycle infrastructure, places of work and leisure trip generators in the area.	Walking Route Appraisal Tool survey (or equivalent)	Post-construction	No
	Cycling Level of Service survey (or equivalent)	Post-construction	No
	Bus journey time surveys along Garthdee Road	Post-construction	No
TPO4: Ensure transportation proposals enhance conditions for biodiversity along each linear route corridor where interventions are proposed.	Biodiversity net gain baseline habitats assessment.	Year subsequent to construction	No

15.6 SUMMARY

- 15.6.1. Evaluation of the data produced by the above monitoring activities should be undertaken to determine how effective each intervention phase has been in relation to the project TPOs and associated SMART targets.
- 15.6.2. The outcomes of this process will then guide decision making on whether to proceed to the next phase of interventions or whether another approach is required at that stage.

Appendix A

ECOLOGY STUDIES



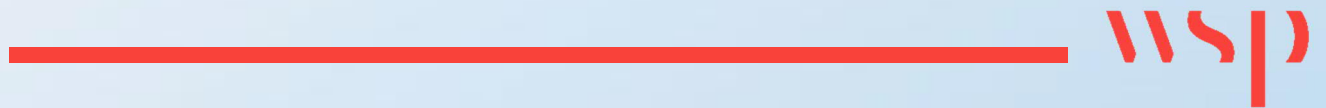
Appendix B

FLOOD RISK ASSESSMENT



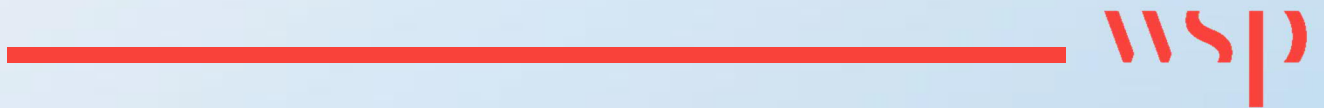
Appendix C

TRAFFIC MODELLING TECHNICAL
NOTE



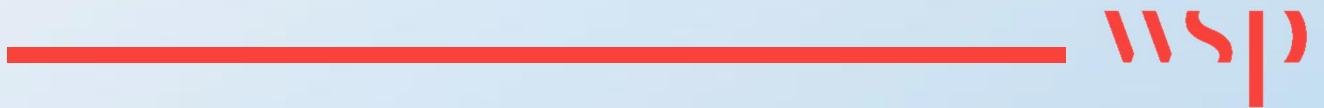
Appendix D

LONG LIST OF OPTIONS SCORING
TABLE



Appendix E

STAKEHOLDER WORKSHOP DESIGN
OPTIONS



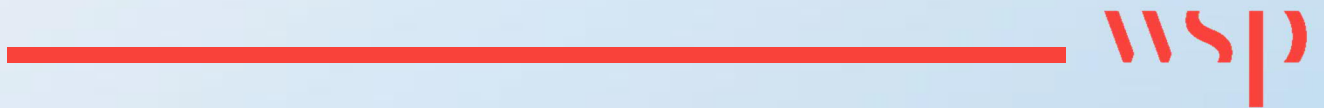
Appendix F

ENGAGEMENT SUMMARY REPORT



Appendix G

FINAL DESIGN OPTIONS (OPTIONS
A, B & C)



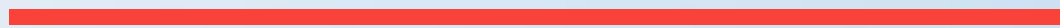
Appendix H

OPTION COST ESTIMATES



Appendix I

MONITORING & EVALUATION STRATEGY





7 Lochside View
Edinburgh Park
Edinburgh, Midlothian
EH12 9DH

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