The Highland Council

ACADEMY STREET

Economic Impact Assessment

APRIL 2024

CONFIDENTIAL

The Highland Council

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Economic Impact Assessment

TYPE OF DOCUMENT (VERSION) CONFIDENTIAL

PROJECT NO. 70117193

DATE: APRIL 2024

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QUALITY CONTROL

Issue/revision	First issue	Revision 1	Revision 2	Revision 3
Remarks	Draft	Final Issue		
Date	11/04/2024	26/04/2024		
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Project number	70117193	70117193		
Report number	002	002		

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EXECUTIVE SUMMARY

Like many city centres across the UK, Inverness's Academy Street has been impacted by the shifts in consumer habits and changing economic climate in recent years, leading to a near doubling in vacancy rates from 8.3% in 2018 to 16.0% in 2022, diminishing the appeal of the city centre street. Academy Street currently hosts high volumes of vehicular traffic in excess of 7,000 vehicles per day, which could be considered to detract from the visual appeal and sense of place. In response, The Highland Council (THC), are taking forward an ambitious regeneration scheme to revitalise the physical environment and characteristics on Academy Street. WSP UK Ltd. was commissioned to undertake technical assessments, including an Economic Impact Assessment, to provide detail on the scheme's impact in terms of its economic cost, and its quantified and non-quantified impacts.

WSP's Approach to the Economic Impact Assessment

The approach taken to the assessment has sought to align with the principles set out within Transport Scotland's Business Case Development Process, and the Scottish Transport Appraisal Guidance (STAG). The assessment has analysed impacts usually evaluated through the Stage 2 Planning: Outline Business Case (OBC) business case development process, which follows the Office of Government Commerce (OGC) and HM Treasury guidance. The assessment has not reviewed or critiqued the approach to option development nor public or stakeholder consultation.

The assessment considers the socioeconomic impacts of the scheme in line with STAG, considering the direct impacts on transport as a result of the scheme as well as assessing the likely wider economic impacts. This addresses the first of the five STAG criteria: Economy. The assessment has also considered the remaining four STAG criteria in turn (Environment, Climate Change, Health, Safety & Wellbeing, and Equality & Accessibility), evaluating the scheme's impact through a combination of qualitative and quantitative appraisal.

To weigh up the costs and impacts of the scheme, these quantified elements of the assessment are used to produce a Benefit-Cost Ratio, which can be used to help ascertain value for money of the investment.

What does the Economic Impact Assessment tell us?

The assessment has determined that the monetised impacts of the scheme are equivalent to +£2.8 million (2010 Prices and Values). Comparing this against the costs of the scheme, this indicates that there would be a positive return on the investment, however, the monetisable transport benefits and

disbenefits do not exceed the cost of investment. Overall, for every £1 spent, it is estimated that there will be a £0.51 return on the investment.

In addition to these quantifiable impacts, wider economic impacts (WEI's) and non-quantifiable impacts (evaluated within extra of the 5 STAG criteria) are also likely. Evidence discussed in this report suggests that the impacts of enhanced pedestrianisation and public realm can lead to higher footfall in town centres, and this has been shown to result in increased money spent in local businesses. Public realm improvements have also been found to increase property prices. Improving the public realm of Academy Street is also expected to improve the look and feel of Academy Street, benefitting the cultural heritage of the area. Footway widening will also give pedestrians more space, and the reduced traffic volumes will make it easier and safer for walkers, wheelers, and cyclists to access services and facilities. The air quality on Academy Street will also improve as a result of reduced congestion.

The rerouting of vehicles away from Academy Street, as detailed within the Traffic Impact Assessment (TIA) that accompanies this report, is expected to result in vehicles being displaced onto longer alternative routes. The TIA has determined that the scale of impact on the operation of the road network in Inverness, post-scheme implementation, is not forecast to be significant. However, the displacement of vehicles may negatively impact local noise levels and influence changes in greenhouse gas emissions and air quality on routes where traffic volumes could be expected to increase, and car journeys become longer. Furthermore, these road users are anticipated to receive a journey time disbenefit, as a result of having to travel further between their origins and destinations due to the restrictions on Academy Street.

The EIA concludes that the result of the monetised assessment is balanced, identifying benefits for sustainable travel users and disbenefits for road users, with further WEI's estimated to be between £1.5m and £4m. The assessment recognises that extensions in journey times for displaced traffic results in a low benefit to cost ratio, if people continue to choose to drive, however, concludes that each of the technical assessments a worst-case scenario is considered, not accounting for traffic evaporation.

In Scotland, the government does not recognise the BCR as a sole determining factor of value for money. If following DfT guidance it would traditionally fall within the 'poor' VfM category, however, the Schemes alignment with local and national policy and its ability to meet the objectives should also be considered in the overarching case for investment alongside the forecast quantified wider economic impacts.

It this instance the Scheme and its case for investment is further complemented through the delivery of a city-wide master plan to improve the sustainable travel network, making those journeys undertaken by bus and active travel easier and more accessible. Furthermore, disbenefits to road users and the subsequent impacts on GHG's, noise and air quality could be outweighed by the positive performance of the Scheme against the economy and equality and accessibility STAG criteria.

What are the limitations of the Assessment?

The assessment has been undertaken using the data available at the time of the assessment. A key data component has been the supporting TIA, which has evaluated the impact of the scheme on the local road network. The TIA has been undertaken using a series of local junction models and has considered the impact of the scheme during the AM and PM peak periods, using gravity modelling in

combination with census journey to work data to support the origin and destination analysis. No traffic modelling for the Interpeak period has been undertaken and therefore the Economic Impact Assessment has been required to estimate Interpeak values for the purposes of the assessment to ensure all impacts are scaled across an average weekday. This leaves the following weaknesses which this assessment has tried to mitigate:

- If the Interpeak flow patterns are different to either the AM or PM flow patterns, the vehicle delays could be different; and
- The wider rerouting data is based on the AM and PM data. If the actual Interpeak rerouting is significantly different from the AM and PM, then this would have a resultant impact.

In addition, there has been no consideration of weekends within this assessment or the supporting Traffic Impact Assessment. As a result, the economic assessment of the scheme considers only 253 days of each forecast year.

Finally, the baseline active travel demand on Academy Street used within the assessment has been derived from Vivacity count data provided by The Highland Council. Two sensor sites on Academy Street have been used to inform the baseline demand. The count data indicated that Site 1 has significantly lower average day pedestrian and cycle volumes than Site 2. As a result, two separate demand zones have been assumed for the purpose of the appraisal. This means that the pedestrians and cyclists observed at each site have been assumed to be using the full extent of each zone. The zones have been mapped out considering the different land uses on Academy Street and this is considered the most robust approach in the absence of alternative data sources.

WSP's Recommendations

Overall, it is concluded that the scheme offers a return on investment and offers both quantifiable and non-quantifiable impacts and benefits aligned to STAG criteria. The EIA has identified some potentially negative scheme outcomes related to the rerouting of traffic, particularly with regard to the air quality, carbon and noise impacts resulting from traffic displacement and an estimated increase in car kilometres. This could be further evaluated if changes in comparative flow are forecast to exceed modelling threshold requirements.

1 INTRODUCTION

1.1 BACKGROUND

1.1.1. In November 2023, The Highland Council (THC) commissioned WSP UK Ltd (WSP) to undertake two technical studies of the proposed Academy Street – Regeneration Scheme, herein referred to as 'the scheme':

- Traffic Impact Assessment (TIA); and
- Economic Impact Assessment (EIA).

1.1.2. The purpose of these assessments is to provide evidence and analysis-based findings to estimate the economic impact of the scheme, and the traffic impact of the scheme. The economic and traffic impact assessments use existing data sources supplied by THC and/ or those which are publicly available. The assessment is deemed to be proportionate in relation to the scheme cost and scale.

1.1.3. This report documents the EIA and monetises the outcome of the TIA and other impacts assessed within the Socio-Economic dimension of a 'typical' Outline Business Case. This report should be read in conjunction with the Academy Street – Regeneration Scheme Traffic Impact Assessment.

1.1.4. WSP is independent from the scheme designer (THC) and this report represents analysis of the scheme design as provided by THC to WSP. The analysis has been undertaken by appropriately skilled and experienced staff at WSP.

1.2 PURPOSE OF THE ECONOMIC IMPACT ASSESSMENT

1.2.1. The purpose of the EIA is to assess and quantify (where methodologies permit) the impact of the Scheme in terms of its economic cost, and its quantified and non-quantified economic impacts, including wider economic impacts. The assessment has been undertaken in the context of the Scottish Transport Appraisal Guidance (STAG) criteria – Economy, Environment, Climate Change, Health, Safety and Well-being and Equalities and Accessibility. Alongside a focus on the monetised aspects, there has also been consideration of more qualitative aspects of the STAG criteria to inform a fuller understanding of the Socio-Economic impact of the Scheme.

1.2.2. The reporting that follows should not be misinterpreted as a retrospective transport appraisal undertaken in accordance with STAG, and whilst performance of the Scheme is considered in the context of the STAG criteria, the assessment is focused on the quantifiable and non-quantifiable impacts of the Scheme. The assessment has also not reviewed or critiqued prior work informing the Scheme, including the approach to option development nor the public or stakeholder consultation.

1.2.3. Transport Scotland's (TS) STAG is part of a suite of appraisal and assessment guidelines within the transport sector. Undertaking an assessment of the Socio-Economic impact in the context of STAG does not remove the need for other statutory obligations, which should be dually completed by THC as scheme promoter.

1.2.4. This assessment adopts principles outlined in Transport Scotland's Business Case Development Process[1], and STAG. The assessment analyses impacts evaluated through Stage 2 Planning: Outline Business Case (OBC) activities the business case development process, which follows the Office of Government Commerce (OGC) and HM Treasury guidance. The report focuses on the Socio-Economic dimension of an OBC equivalent assessment.

1.2.5. For this assessment the preferred option has already been predefined. The Socio-Economic component will typically feature a high-level appraisal (also called 'cost-benefit analysis') which quantifies the Scheme costs and 'benefits' in order to provide an estimate of the value for money of the project.

1.2.6. Since the 2015 Business case guidance report was published, TS have updated their Socio-Economic case guidance and now the two 'soft' impact criteria have been replaced with the following criteria:

- 'Hard': Economy, Environment, Health Safety & Wellbeing; and
- 'Soft': Climate Change, Equality & Accessibility (see page 20 of Scottish Transport Appraisal Guidance Managers Guide for sub-criterion) – note, greenhouse gas impacts have been monetised within the climate change criterion.

1.2.7. Following guidance these 'soft' impacts have not been quantified or monetised in this assessment but have been explored qualitatively. The assessment of impacts is underpinned by evidence-based case studies to support assumptions and predictions in changes in the evaluation of the criteria.

1.3 STRUCTURE OF THIS REPORT

1.3.1. This report is structured to provide:

- Chapter 2 – The existing situation and proposed scheme;
- Chapter 3 – Socio-economic assessment methodology;
- Chapter 4 – Economy appraisal;
- Chapter 5 – Environment appraisal;
- Chapter 6 – Climate change appraisal;
- Chapter 7 – Health, safety, and wellbeing appraisal;
- Chapter 8 – Equality and accessibility appraisal; and
- Chapter 9 – Socio-Economic summary.

[1] https://www.transport.gov.scot/media/10165/idm-guidance-annex-d-business-case-guidance-for-publication-jan-2016.pdf

2 EXISTING SITUATION AND PROPOSED SCHEME

2.1 INTRODUCTION

2.1.1. The Scheme has been developed in-house by THC, who have secured funding through 'Places for Everyone'. This funding is made available to Local Authorities through Transport Scotland and administered by Sustrans. The aim of the Scheme is to ensure that the street becomes a safer, more accessible, and more attractive place to spend time in. The proposals include the widening of footways, the introduction of bus lanes, new trees, planting, and street furniture. The scheme is described in more detail within this chapter.

2.1.2. This chapter also sets out the context and identifies the drivers for change on Academy Street.

2.2 STRATEGIC SUMMARY

2.2.1. Academy Street is an arterial street of Inverness City Centre, known for its retail, businesses, and cultural attractions. Its central location makes it a key hub for both residents and visitors, contributing to the vibrancy of Inverness as a commercial and social centre for the Highlands.

2.2.2. Figure 2-1 provides an illustration of the Academy Street area.

Figure 2-1 – Academy Street

2.2.3. Academy Street currently operates as a two-way arterial route through the city centre, connecting with Chapel Street and the Shore Street roundabout to the north-west, and with Millburn Road to the south-east.

2.2.4. Academy Street connects both the rail and bus stations, with Inverness Bus Station and Inverness Rail Station both accessed via Academy Street. On-street parking is not provided on Academy Street itself, however, parking is available at the nearby Rose Street multi-storey car park, Inverness Rail Station and within the Eastgate Shopping Centre and Falcon Gallery Car Parks. Limited on-street parking, in addition to loading and disabled bays, is also available on adjacent streets including Church Street and Falcon Square.

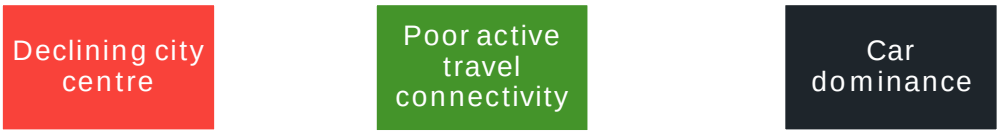
2.2.5. Academy Street is well-served with retail, hospitality, and other key services. In addition to high-street chains, Academy Street is also a key area for local independent businesses. As documented within the Inverness Town Centre Health Check (2022)[2], the majority of retail businesses on or near Academy Street are independent and local retailers, with national retailers making up a much smaller proportion of units.

2.2.6. Academy Street also has a strong night-time economy, with bars and restaurants located along the street and on adjacent side streets.

2.2.7. Academy Street also falls within the Riverside Conservation Area. The street is characterised through a mixture of late 18th to mid-19th century and Victorian redevelopment and expansion making it an area rich in heritage with many historic grade A, B, and C listed buildings lining the street and adjacent roads.

STRATEGIC DRIVERS FOR CHANGE

2.2.8. The need for change on Academy Street is driven by several factors, including:



2.2.9. Like many city centres across the UK, Academy Street has been impacted by the shifts in consumer habits and changing economic climate in recent years. Specifically, the Town Centre Health Check notes that vacancy rates in the Academy Street area have almost doubled, increasing from 8.3% in 2018 to 16% in 2022, noting that where there were clusters of vacant units, these were found to reflect areas in a state of decay or neglect. Meanwhile, the city centre also continues to compete with retail parks out with the city centre (Inverness Shopping Park and Inshes Retail Park), as observed nationwide[3].

2.2.10. The level of cohesive active travel provision within and connecting to Inverness city centre is considered a barrier to the area's connectivity, with a particular lack of active travel provision on and

[2] Inverness City Centre's Historical Old Town Sector (arcgis.com)
[3] https://www.local.gov.uk/publications/repurposing-shopping-centres-review-and-best-practice-guide

around Academy Street[4]. Specifically, no protected provision is in place on Academy Street, and high traffic flows (>7,000 vehicles a day) makes cycling through the city centre unattractive as cyclists need to share the road with traffic. Footways on Academy Street are generally 2 to 3 metres wide, and temporary bollards were previously installed under the Spaces for People fund in summer 2020 to allow more space for those walking and wheeling. Overall, however, the pedestrian environment on Academy Street is still constrained and hindered by the dominance of vehicles. Where pedestrian flows are high the footways can become crowded and feel narrow which can present barriers to pedestrian movement (including those users who rely on mobility aids such as wheelchairs or mobility scooters), despite the temporary bollards, and traffic volumes impact the ease of pedestrian movement on the street.

Figure 2-2 – Academy Street westbound at Inglis Street

[4] Inverness City Centre's Historical Old Town Sector (arcgis.com)

Figure 2-3 – Academy Street facing westbound across from Queensgate

Figure 2-4 – Academy Street eastbound at Rose Street

2.2.11. Despite being part of the city's Historical Old-Town sector, Academy Street lacks visual appeal. The Town Centre Health Check[5] notes a deficiency in street furniture and a dominance of hard surfaces with limited greenery or planting. This not only detracts from the street's attractiveness but also restricts potential activities, such as outdoor café seating, due to the limited footway width. Compounded by traffic congestion (and associated air pollution, discussed in Section 5.6), the current public space on Academy Street stands in stark contrast to its potential as a bustling, attractive destination within the city's historic core.

2.2.12. For THC, addressing these issues is crucial for revitalising Academy Street. The introduction of bus lanes and enhancements to the public realm are proposed to tackle these challenges. These changes aim to reduce vehicle dominance, improve active travel infrastructure, and enhance the overall attractiveness of the area, aligning with Inverness's broader strategic goals[6] for a vibrant, accessible city centre.

AIMS AND SCHEME DESCRIPTION

2.2.13. THC aspires to make Academy Street a safer, more accessible, and more attractive place to spend time in; where businesses and retail thrive, whilst being respectful of the local history and identity of Academy Street within Inverness City[7].

2.2.14. THC have identified a series of aims, which will seek to address transport problems on Academy Street. These aims are as follows:

[5] https://storymaps.arcgis.com/stories/5e1ec1f7b9ef44fe919ae0bbe351cf2e
[6] https://www.highland.gov.uk/info/178/development_plans/988/inverness_strategy/2
[7] https://academystreetproposals.commonplace.is/proposals/about-project/step1

2.2.15. As mentioned, THC have secured funding through 'Places for Everyone' for the design of Academy Street. Places for Everyone is a scheme funded by the Scottish Government through Transport Scotland and is administered by Sustrans.

2.2.16. THC has stated that the proposed design for Academy Street is part of the overall vision for the city centre, which is to create an attractive, greener, high-footfall place that people can comfortably live, work, and visit for a wide range of services and facilities and to spend their leisure time[8].

2.2.17. The Academy Street proposals include:

- Widening of pavements to make it more attractive for pedestrians as well as hospitality businesses who will be supported to explore options for pavement seating for customers;
- Introduction of a bus lanes which can also be used by taxis, the emergency services, and cyclists;
- A reduction in daily traffic flows using Academy Street;
- No change to the quantity of parking, disabled parking, loading bays and taxi ranks; and
- Introduction of trees and planting.

2.2.18. Scheme designs are enclosed within Appendix A.

POLICY ALIGNMENT

2.2.19. This section outlines national, regional, and local transport policies. These documents have been reviewed to ensure that the proposed scheme aligns with broader policy aims and objectives and long-term sustainability goals.

NATIONAL POLICY

National Transport Strategy 2 (2020)

2.2.20. Scotland's National Transport Strategy 2 (NTS2)[9] (2020) represents a refreshed national strategy, which sets out Transport Scotland's vision for Scotland's transport system over the next 20 years. The overall vision for transport in Scotland is that: "We will have a sustainable, inclusive, safe and accessible transport system, helping deliver a healthier, fairer and more prosperous Scotland for communities, businesses and visitors."

2.2.21. It is proposed that the vision will be achieved through the following interconnected priorities and outcomes:

- Reducing inequalities through fair access, ease of use and affordability;
- Taking climate action by promoting greener, cleaner choices;
- Helping to deliver economic growth by being reliable, efficient and of the highest quality; and
- Improving health and wellbeing by being safe, secure, and enabling healthy travel choices.

2.2.22. The strategic focus of the NTS2 is around how Scotland's transport system can help deliver sustainable and inclusive economic growth, benefitting the whole country, while safeguarding the

[8] https://academystreetproposals.commonplace.is/proposals/proposed-design/step1
[9] *Transport Scotland:* *https://www.transport.gov.scot/media/47052/national-transport-strategy.pdf*

environment. An efficient transport network allows for businesses to prosper, increased employment opportunities and more effective services.

2.2.23. The NTS2 introduces the Sustainable Transport Hierarchy, which ensures that walking, wheeling, cycling, public transport and shared transport (i.e., sustainable modes) are given priority over single occupancy private car use. The NTS2 also introduces the Sustainable Investment Hierarchy, which Transport Scotland and other public bodies have begun to employ to assess transport investment decisions. This hierarchy focuses investment proposals on reducing the need to travel unsustainably and reducing inequalities.

2.2.24. The NTS2 highlights that bus accounts for the majority of public transport trips in Scotland. It also states that: "[Bus travel] can be an important element in multi-modal journeys, for example, as part of the first or final mile of a longer train journey." Investing in infrastructure which can increase the competitiveness of bus travel over other means of transport could be considered to adhere to NTS2.

2.2.25. The NTS2 approach to active travel has significant implications for transport schemes in Scotland. It requires a shift in focus from car-centric planning towards a more balanced approach that prioritises sustainable and active modes of transport. This could involve measures such as improving pedestrian and cycling infrastructure, introducing traffic calming measures, and enhancing public transport services.

2.2.26. The least sustainable modes of transport, according to the Sustainable Transport Hierarchy, are internal combustion engine vehicles and air travel. These modes of transport should be discouraged where possible, through measures such as congestion charging, parking restrictions, and promotion of sustainable alternatives.

2.2.27. In summary, the NTS2 and supporting Sustainable Transport Hierarchy provides a clear framework for prioritising more sustainable modes of transport in Inverness and across Scotland.

Relevance:

The NTS2 priorities are clear in that they seek to reduce inequality, promote greener, and cleaner travel choices, and improve health and wellbeing through enabling healthy travel choices.

Providing people with the option to use a sustainable mode as part of a multi-modal journey through the delivery of bus and cycle infrastructure could aid realising the ambition presented within NTS2.

Strategic Transport Projects Review 2 (STPR2) (2022)

2.2.28. STPR2[10] follows on from the first STPR to support delivery of the National Transport Strategy's vision, priorities, and outcomes. STPR2 concluded in 2022 and identifies strategic transport interventions to inform transport investment in Scotland across the 2022-2042 period. The interventions are based on changes that will encourage:

- Shorter everyday trips being made by walking, wheeling, and cycling;
- Short to medium-length trips being made by public transport; and
- Longer trips being made by public transport and low emission vehicles.

2.2.29. These behaviour changes will be underpinned by the sustainable investment hierarchy, which focuses on:

- Reducing the need to travel unsustainably;
- Maintaining and safely operating existing assets;
- Making better use of existing capacity; and
- Targeted infrastructure improvements.

2.2.30. The objectives set out in the STPR2 cover the following topics:

- Takes climate action;
- Addressing inequalities & accessibility;
- Improving health & wellbeing;
- Supporting sustainable and inclusive economic growth; and
- Improving safety & reliability.

2.2.31. Addressing these topics ensures the recommendations identified in STPR2 align with the relevant Scottish Government policy, delivery and investment plans and help achieve the NTS priorities and delivery plan.

2.2.32. A total of 45 recommendations are set out in STPR2. These are grouped under six themes:

- Improving active travel infrastructure;
- Influencing travel choices and behaviours;
- Enhancing access to affordable public transport;
- Decarbonising transport;
- Increasing safety and resilience on the strategic transport network; and
- Strengthening strategic connections.

[10] *Transport Scotland: https://www.transport.gov.scot/our-approach/strategy/strategic-transport-projects-review-2/*

Relevance:

The aim of STPR2 is to prioritise measures that will encourage the use of public transport for short, medium, and longer trip lengths. Furthermore, the document draws focus on improving active travel infrastructure in Scotland, which will support its other key objectives such as decarbonising the network and improving safety for vulnerable users.

Changes in infrastructure provision that change the utility provision for sustainable transport modes in Inverness will contribute to improved accessibility and will encourage modal shift while addressing the STPR2 priorities of taking climate action, addressing inequalities and accessibility, supporting sustainable and inclusive economic growth, and improving safety and reliability.

Strategic Road Safety Plan (2016)

2.2.33. The Strategic Road Safety (SRS) Plan[11] identifies how road safety is delivered on the trunk road network and is a mid-point update of Scotland's Road Safety Framework to 2020.

2.2.34. The SRS vision is set out as: "A steady reduction in the numbers of those killed and those seriously injured, with the ultimate vision of a future where no one is killed on Scotland's roads, and the injury rate is much reduced."

2.2.35. The SRS also aims to: "Reduce the number of casualties on Scotland's trunk roads through of a proactive approach to road safety engineering in accordance with Scotland's National Transport Strategy vision"

2.2.36. The use of a Safe System approach, centred around the notion that death and injury is unacceptable and avoidable, is reinforced within the refreshed plan.

2.2.37. The framework identifies three priority areas:

- Speed and motorcyclists;
- Pre-driver, drivers aged 17 to 25 and older drivers; and
- Cyclists and pedestrians.

2.2.38. The plan also includes an action plan aligned with the Safe Systems approach's five pillars:

- Road safety management;
- Road infrastructure;
- Safe vehicles;

[11] *Transport Scotland:* *https://www.transport.gov.scot/media/10323/ts_strategic_road_safety_plan_2016_digital_sep_2016.pdf*

- Road user behaviour; and
- Post-crash response.

2.2.39. The action plan set outs 20 actions for the trunk road network which support wider engineering, education and enforcement programmes carried out by road safety partners. The action plan addresses the following areas:

- **Safe roads and roadsides** – that are consistent in their character and forgiving of mistakes. Their design should also encourage safe travel speeds and help avoid errors;
- **Safe speeds** – travel speeds that suit the function and level of safety of the road. Road users should be able to understand the relevance of the speed limit, and both comply with these and drive to the conditions they experience;
- **Safe road users** – Consider the needs of vulnerable road users through improvements in infrastructure, enforcement, and education; and
- **Safe Management** – Acting to manage and maintain the network to ensure that there is shared responsibility and acceptance of the roles that we play, both as roads users and in acting to promote road safety, in various policy.

Relevance:

Improvements to bus and active travel infrastructure could be perceived to align with the Strategic Road Safety Plan through consideration of the needs of vulnerable users, the promotion of safe speeds through design and the delivery of safe roadsides (where changes are proposed).

The scheme could impact traffic volumes on the A82, an arterial trunk road that cuts north-south through Inverness. Redistributing trips away from the city centre and out onto this (and other) arterial routes could improve road safety for pedestrians and cyclists in the city centre area but may increase traffic volumes on other routes which could have underlying safety issues.

Reducing Car use for a Healthier, Fairer and Greener Scotland Draft (2022)12

2.2.40. This draft sets out a route map to achieve a national reduction in car kilometres, allowing for healthier, fairer, and more sustainable lives.

2.2.41. The route map was published in response to the update to the Climate Change Plan. It states a commitment to reduce car kilometres by 20% by 2030 compared to a 2019 baseline to meet Scotland's statutory obligations for reducing greenhouse gas emissions by 2045.

2.2.42. The route map supports the framework of sustainable travel behaviours, set out in this draft. Four key behaviours were identified:

[12] *Transport Scotland: https://www.transport.gov.scot/news/reducing-car-use-for-a-healthier-fairer-and-greener-scotland/*

- **Travel less:** make use of sustainable online options to reduce your need to travel.
- **Stay local:** choose local destinations to reduce the distance you travel.
- **Switch mode:** to walking, wheeling, cycling or public transport where possible.
- **Combine a journey:** to reduce the number of individual car trips you make, if car remains the only feasible option.

Relevance:

Changes to bus and active travel infrastructure may encourage the uptake of sustainable modes, potentially resulting in new-to-walk, new-to-cycle, and new-to-bus users in the area. Some of these 'new' journeys may have transferred from car. This could reduce the number of vehicle kilometres travelled on the local network. Furthermore, if car trips become longer, this could further encourage people travelling shorter distances to change their travel patterns and behaviours. For those car trips that continue to access the city centre, travel distances may increase which could result in an increase in car kilometres travelled on the local network overall.

REGIONAL POLICY

HITRANS Regional Transport Strategy Update (2018)

2.2.43. The HITRANS Regional Transport Strategy (RTS)[13] sets out the policy framework that guides effective transport provision over the region. The vision of the RTS is: *"To deliver connectivity across the region which enables sustainable economic growth and helps communities to actively participate in economic and social activities."*

2.2.44. This vision is supported by two high level objectives:

- Support sustainable economic growth across the whole region.
- Reduce barriers to participation in employment, learning, social, leisure, health, and cultural activities through the region.

2.2.45. In addition to these high-level objectives, six sub-objectives have been developed:

1. Reduce journey times and improve reliability and resilience;
2. Improve safety of transport and travel;
3. Tackle capacity constraints;
4. Improve the quality, accessibility (availability, affordability, information, and integration) of travel;
5. Protect the environment and mitigate adverse impacts of transport and travel; and
6. Increase physical activity and participation to improve health and wellbeing.

2.2.46. The ultimate vision of the Strategy is that: "Looking to the future, each community across the region should be able to expect good transport connections."

[13] *HITRANS Regional Transport Strategy Refresh (2018):* https://hitrans.org.uk/userfiles/file/Regional_Transport_Strategy_Refresh_2018.pdf

Relevance:

The scheme will lead to a reduction in private vehicle car trips through Academy Street, directly contributing towards the objectives of the RTS. The improvement of bus and active travel infrastructure will encourage local trips to be undertaken by sustainable modes.

LOCAL POLICY

Inverness Sustainable Transport Strategy (2021)

2.2.47. The Inverness Sustainable Transport Strategy[14] is based on a review of the current transport context in Inverness, including an audit of existing and proposed sustainable travel infrastructure.

2.2.48. The Inverness Sustainable Transport Strategy seeks to develop a sustainable transport system that supports:

- Economic Prosperity;
- Climate Action;
- Inclusion and equity;
- Reduced Congestion; and
- Health and Wellbeing.

2.2.49. The result of the audit is the identification of missing links in the Inverness active travel network, as well as the identification of potential locations well-suited to being transformed into liveable neighbourhoods[15].

2.2.50. The liveable neighbourhood locations have been selected in the Strategy to: “Improve local connections to strategic destinations in the city, utilising the sustainable transport network”.

2.2.51. Within the strategy, Inverness Rail Station Masterplan is flagged as a key project. The station, accessed via Academy Street, is to be upgraded and improved alongside the enhancement of surrounding streets and public spaces.

[14] Inverness Sustainable Transport Strategy (2021): https://sway.office.com/wAd1aFriY1vT850k?ref=Link
[15] Liveable neighbourhoods are defined in the Inverness Sustainable Transport Strategy (2021) as *places where local streets within a neighbourhood are re-prioritised to make walking, wheeling, and cycling easier for residents by minimising through-traffic.*

2.2.52. The goals of the scheme could be considered to complement the ambitions of the Inverness Rail Station master plan which seeks to create a people-friendly station environment that provides integrated transport options.

Relevance:

The scheme could contribute towards improving the Inverness active travel network and improving sustainable travel connections in the city centre. The scheme delivers a focus on prioritising the upgrading of bus infrastructure while giving space back to pedestrians and cyclists. Complementing long term sustainable transport master plan proposals.

The Academy Street scheme also supports the vision to transform Inverness Rail Station into a people-friendly station that can be easily accessed by sustainable transport modes.

EVIDENCE BASE FOR BEHAVIOURAL CHANGE

2.2.53. A series of case studies of similar Scotland and UK-based bus infrastructure, active travel and sustainable travel schemes have been reviewed to provide evidence to help inform the assessment. This includes the evaluation outcomes of the ‘spaces for people’ programme, implemented across the country and in Inverness City Centre. A summary is provided in Table 2-1 overleaf.

Table 2-1 – Evidence Base for Behavioural Change

Schemes Name	Scheme Description	Recorded Scheme Impact
Scotland Spaces for People Programme (Sustrans, 2022)[16]	Between 2020 and 2022, in response to the Covid-19 pandemic, Scotland Spaces for People scheme saw Sustrans Scotland deliver: • 105km of temporary cycle lane and cycle lane upgrades • 41km of footpath widening • Speed limit reductions at 373 locations • Cycle parking at 228 locations • 83 streets closed to motorised vehicles, including 24 school streets.	The scheme saw a 17% rise in people walking at Spaces for People sites compared to a 9% drop at control locations. As well as a 15% rise in people cycling at Spaces for People sites compared to a 5% drop at control locations. Surveys undertaken to evaluate the schemes showed over half (56%) of survey respondents agreed that Spaces for People measures were essential for making essential journeys during the pandemic, with 48% of respondents with limited mobility also stating this. Spaces for People was launched, additionally, with the intention of rapidly installing other measures. After a year of the launching the programme, 91% of partners had installed at least one additional intervention (this mainly involved pavement widening and the closure of streets to motorised vehicles). It is important to note the limitations of this study, where proposals were implemented in response to social distancing requirements to adhere to government health advice. Where restrictions varied over time, these measures could significantly influence walking and cycling patterns, alongside other factors such as the availability of public transport and weather conditions. The evaluation of trends using a control location mitigates against some of these potential biases.
Spaces for People Glasgow (Sweco, 2021)[17]	Glasgow City Council introduced a number of Spaces for People temporary measures as a result of the Covid-19 pandemic, including widened footways, pop-up lanes, and pedestrianisation zones.	The evaluation of these temporary measures outlined that all 17 pop-up cycle lanes introduced were recommended to be retained. As they were not only strategically aligning to local active travel policy, but surveys demonstrated a strong support as well as usage. The three city centre interventions introduced (widening of footways, addition of city centre bus stops and urban greening) were also suggested to be retained due to strong public consultation views.

[16] Spaces for People Programme Evaluation, Sustrans, 2022
[17] Glasgow City Council – Spaces for People: Project Review and Assessment Report (Sweco, 2021)

Schemes Name	Scheme Description	Recorded Scheme Impact
South City Way, Glasgow (Glasgow City Council, 2023)[18]	A 2.5km, fully separated, two-way on-street cycle path, providing a high-quality direct and safe link between Glasgow's Southside and the city centre.	Over a 48-hour period between 20th and 21st September 2023, traffic surveys organised by Cycling Scotland recorded 3,739 bikes travelling along the route on Victoria Road in the South of Glasgow, out of a total of 29,318 travel methods recorded. This means that 12.75% of people cycled their journey. Comparing this result to a local street without safe cycle lanes, Cathedral Street in Glasgow showed just 1.69% of people cycling their journey.
Bedford Road Bus Gate (Aberdeen City Council, 2016)[19]	Provision of a bus gate (a length of road restricted to buses and cycles only) was introduced in North Aberdeen in 2016.	Since the scheme was implemented, several positive transport impacts have been highlighted: • Provision of priority for buses in the area. Since the scheme an additional four bus services have been provided along Bedford Road. • A reduction in traffic on Bedford Road has led to an improved environment for pedestrians and cyclists with local residents highlighting improved feel of the area and ease of road crossing, especially for local primary school pupils. • In 2016 and 2017, post-scheme, there were no recorded accidents when three years prior to the scheme eight were recorded on Bedford Road. However, five months post-scheme a petition with 3119 names requested that Bedford Road be re-opened to general traffic due to concerns regarding a downturn in business, whereby the introduction of the bus gate was heavily named as the causation. It is reported his could likely be attributed to the general downturn in the economic status of Aberdeen.

[18] Cycling Scotland: 13% of journeys on Victoria Road made by bike: Glasgow is going Dutch, December 2023

[19] Review of Bedford Road Bus Gate, Aberdeen City Council (2017)

Schemes Name	Scheme Description	Recorded Scheme Impact
Aberdeen Broad Street part-pedestrianisation (Aberdeen City Council, 2019)[20]	Development of Broad Street to bus, cycle, and pedestrian only through removal of general traffic and significantly widened shared footway and public realm improvements.	On-street surveys post-scheme outlined 71% of respondents felt although the impact of the project was positive or somewhat positive. Surveys undertaken with the 20 local retailers on Broad Street highlighted that 38% felt neutral towards the project, with eight respondents stating they believed the changes were either positive or somewhat positive. Of these respondents who deemed the scheme positive, seven felt the scheme led to improvement of the area's appearance.
Spaces for People: Union Street Pedestrianisation, Dundee (Dundee City Council, 2020)[21]	Union Street, in Dundee city centre, was temporarily pedestrianised during the Covid-19 pandemic. There was a really positive response to this, and it was clear there was desire to propose a more permanent design.	In a survey carried out on behalf of Dundee City Council, 84% of traders stated that the changes have been positive for the street, a major economic backbone in the city. With 62% of traders stating it has been positive for business. Furthermore, retailers reported that 68% of their customers felt they were more positive about the area after the measures were implemented.
Going Smarter in Kirkintilloch/Lenzie, Glasgow (Glasgow City Council, 2013)[22]	This scheme involved a £1 million investment into initiatives in Kirkintilloch/Lenzie, which encompassed a range of infrastructure and behavioural change measures to encourage more sustainable travel choices. This included	The monitoring and evaluation of this scheme observed the proportion of all trips made on foot increased significantly. It achieved a behavioural change and generated positive attitudes to active travel.

[20] Aberdeen Broad Street Post Construction Monitoring Report, sustrans, April 2019

[21] Transport Xtra: Dundee's Union Street to remain pedestrianised, Mark Moran, September 2020

[22] The Scottish Government: Monitoring and evaluation of the smarter choices, smarter places Going Smarter in Kirkintilloch/Lenzie, March 2013

Schemes Name	Scheme Description	Recorded Scheme Impact
	pedestrian priority, green networks, and path improvements.	
Altrincham public realm improvements, Phases 1,2 and 3 (Trafford Borough Council, 2015-2018)[23]	Public Realm improvements	Altrincham won the 2018 Best British High Street Award. The transformed streets of Altrincham helped deliver a 27% increase in footfall and a 22% decrease in vacancy rates.
Kelso public realm improvements (Scottish Borders Council, 2015)[24]	This scheme involved the reallocation of road space to provide improved public realm spaces in Kelso.	An increase of 28% in footfall was recorded as a result of the public realm improvements.

[23] Civil Engineers: Altrincham Public Realm, 2018
[24] Living Streets, The Pedestrian Pound, 2018

3 SOCIO-ECONOMIC ASSESSMENT METHODOLOGY

3.1 METHOD STATEMENT

3.1.1. This Socio-Economic assessment describes the performance of the Scheme against the five STAG criteria (Economy, Environment, Climate Change, Health, Safety and Wellbeing, and Equality and Accessibility).

3.1.2. A proportionate approach has been adopted to quantitively and qualitatively assess impacts through the interpretation of guidance, the use of available data and best practice tools.

3.1.3. In line with the economic appraisal process standardised in STAG, the economic impact assessment of the scheme has taken a two-tiered approach:

- **Economy and Environment impacts** (commonly referred to as 'hard' quantified or monetised Impacts) have been assessed using industry-standard methodologies to calculate the transport economic impacts of the scheme. Where possible, Economy impacts, and other impacts, namely, Accidents, Greenhouse Gases, Air Quality and Noise, have been quantified and monetised in line with STAG. The outputs are used to calculate a scheme Benefit Cost Ratio (BCR) and inform the scheme VfM. The assessment results are summarised in Chapter 9. This also includes consideration of wider economic impacts to understand the wider economic impacts in non-transport markets; and
- **Climate Change, Health, Safety & Wellbeing and Equality & Accessibility** (commonly referred to as 'soft' qualitative or non-monetisable impacts) have been assessed, supported by an evidence led decision making process informing the scoring of the criteria and sub-criteria. These criteria are also assessed and used to inform the Scheme VfM, summarised in Chapter 9.

3.1.4. Since the most recent revision of STAG guidance, quantifiable impacts associated with Accidents and Greenhouse Gases, now fall within the core 'soft' categories and as such have been reported within these sections.

STUDY IMPACT AREA

3.1.5. The area of influence selected for assessment has been informed by the Traffic Impact Assessment and the extent to which the scheme impacts exceed the immediate red line boundary and impact the surrounding transport network. As such, the study area for the EIA extends beyond Academy Street itself to encompass transport network impacts associated with the redistribution of vehicle 'through' trips currently using Academy Street that are displaced onto surrounding roads and junctions.

3.1.6. The determination of the area of influence is driven through the Threshold Assessment summarised in Chapter 7 of the TIA (Appendix B).

APPRAISAL AGAINST THE STAG CRITERIA

3.1.7. The following sections summarise the impact of the Scheme against the STAG criteria:

3.1.8. The STAG seven-point scale assessment, presented in Figure 3-1, has been used to appraise the scheme. Where impacts / benefits cannot be monetised, the approach considers the relative size and scale of these in qualitative terms.

Figure 3-1 – STAG Scoring Scale

+3	+2	+1	0	-1	-2	-3
Major benefit	Moderate benefit	Minor benefit	Neutral (no benefit or impact)	Small minor cost or negative impact	Moderate cost or negative impact	Major cost or negative impacts

3.1.9. The cost-benefit analysis that produces the BCR inherently includes quantitative estimates for aspects relating to four criteria (Economy, Environment, Climate Change and Health, Safety and Wellbeing), and these are discussed in the relevant chapters that follow. In addition, it is crucial that 'soft benefits' under the criteria are also considered within the impacts of the Scheme to capture fuller Socio-Economic considerations. This is in line with the guidance set out within STAG, therefore a qualitative appraisal of each criteria is also included in each of the following chapters.

4 ECONOMY APPRAISAL

4.1 INTRODUCTION

4.1.1. The economy appraisal has been undertaken for the Scheme along with several sensitivity tests surrounding the impact of the uplifts in demand and changes to assumptions surrounding background growth.

4.1.2. The economic assessment of the Scheme has involved the determination of costs and monetised or quantified scheme economic impacts using existing and forecast changes to travel demand. The assessment compares the costs with the 'benefits' of the Scheme over the assessment period, resulting in the calculation of a BCR, which is a contributing factor in the calculation of the Scheme VfM.

4.1.3. The approach utilised a range of modelling and appraisal techniques, to ensure that benefits or impacts and costs are captured appropriately. Where data or modelling information is not available to support the quantification of economy impacts, a qualitative assessment has been undertaken to ensure all impacts are not misrepresented and are holistically captured in the scoring of the Scheme VfM.

4.1.4. The quantitative economy appraisal has been split into the following two sub-criterion categories:

- Transport economic efficiency (TEE): This criterion assesses the direct impacts or benefits to users of the transportation system. The scope of the TEE appraisal is based on the size and scale of the Scheme's impacts. The following impacts have been identified and selected for assessment under the Economy:
  - Active Travel Impacts – monetisable impacts associated with changes in active travel infrastructure provision by the Scheme and forecast changes in active travel users as a result. Active travel impacts assess quantifiable changes in physical activity levels.
  - Journey Quality Impacts – monetisable impacts associated with changes in streetscape and public realm provision resulting from the Scheme. Ambience is measured in willingness-to-pay for the change in infrastructure utility for the pedestrians and cyclists using the space.
  - Road user efficiency impacts – monetisable impacts associated with forecast changes in travel time for through trips estimated to be displaced by the Scheme, including consequential impacts on the performance of junctions where traffic is displaced. A qualitative commentary of travel time impacts for trips with an origin or destination in Inverness city centre is also provided.
  - Bus user Impacts – monetisable impacts estimated through forecast changes in bus user travel time, potentially induced by the Scheme.
  - Decongestion and Environmental impacts - arising from modal shift to greener travel (bus and active modes from car/taxi), conveyed through accident, noise, local air quality, greenhouse gas, congestion, and infrastructure maintenance impacts from lower car use as a result of the Scheme.
- Wider Economic Impacts (WEIs): Beyond direct transport user benefits, this sub-criteria evaluates the broader economic impacts of the Scheme on the local, regional, and national economy. It includes the consideration of additional retail footfall expenditure, additional rental value, additional visitor expenditure, crime reduction impacts and public amenity impacts.

4.2 TRANSPORT ECONOMIC EFFICIENCY (TEE)

4.2.1. As discussed earlier this covers the monetisable impacts ordinarily captured by standard cost-benefit analysis.

4.2.2. This section quantifies the expected transport impacts of the Scheme.

ACTIVE TRAVEL IMPACT

4.2.3. The DfT Active Mode Appraisal Toolkit (AMAT) (November 2023) quantifies a range of impacts linked to an increase in active mode use and has been used to quantify the impact of the active mode enhancements introduced through the Scheme. The toolkit streamlines the process set out in the DfT's Transport Analysis Guidance (TAG) Unit A5-1 'Active Mode Appraisal' (November 2023) and STAG guidance, ensuring that the calculation of impacts is in accordance with DfT guidance and VfM can be consistently compared between different options.

Methodology

4.2.4. The appraisal of estimated scheme outcomes for pedestrian and cycle users includes journey quality impacts which accrue from improved infrastructure for current and future pedestrians and cyclists following guidance from TAG unit A5-1 (May 2020). New users generated from the scheme are expected to benefit from improved health arising from increased physical activity. This generates health, absenteeism and decongestion impacts to the user and wider society.

4.2.5. The AMAT quantifies a range of impacts linked to an increase in active mode use. These impacts are grouped into three key areas: health, journey quality, and mode shift. Table 4-1 presents each of these impact areas and the way in which they are appraised based upon their expected outcomes.

Table 4-1 – AMAT Monetisable Assessment Areas

Assessment Area	Impact	Impacts Assessed
Health	Reduced risk of premature death	Reduced risk of premature death Improved health and gaining life years due to increased physical activity.
	Absenteeism	Reduced levels of absenteeism from employment due to increased physical activity.
Journey Quality	Change in conditions (willingness-to-pay)	Improved experience due to the provision of cycle infrastructure and the environmental conditions on route[25].

[25] Note: Pedestrian Journey Quality is appraised within the ABC tool.

Assessment Area	Impact	Impacts Assessed
Mode Shift	Congestion	Reduced vehicle kilometres reduce the levels of congestion experienced by remaining road users.
	Infrastructure	Reduced vehicle kilometres lessen the impact on infrastructure.
	Accidents (reported under Health, Safety & Wellbeing)	This reflects the effect of reducing vehicles kilometres on road safety. It is not the direct benefit of increased cycle/pedestrian safety.
	Local Air Quality (reported under Environment)	Reflects a reduction in vehicle kilometres resulting in less pollutants emitted.
	Noise (reported under Environment)	Reflects a reduction in vehicle kilometres resulting in reduced environmental noise, impacting on annoyance, sleep disturbance and health.
	Greenhouse Gases (reported under Climate Change)	Reflects a reduction in vehicle kilometres resulting in reduced greenhouse gases emitted.
	Indirect Tax	Reflects a reduction in vehicle kilometres resulting in decrease of indirect tax revenue, such as fuel duty. This number will be negative.

Baseline Demand

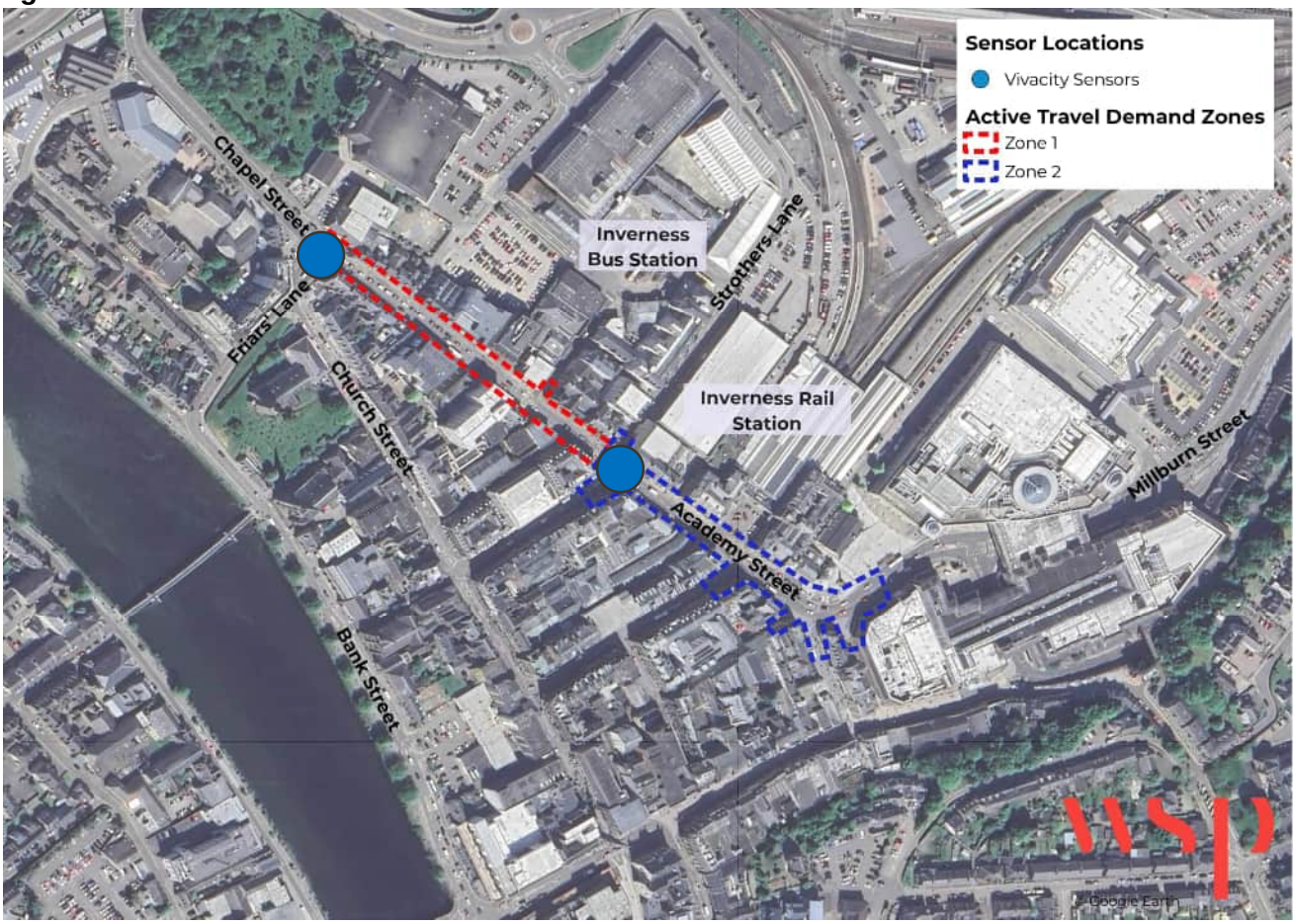
4.2.7. To establish the baseline walking and cycling demand for the scheme, count data from Vivacity sensors located on Academy Street has been used. These sensors are located at two junctions: Friar's Lane / Church Street / Academy Street, and Strother's Lane / Queensgate / Academy Street.

4.2.8. Following the installation of the cameras, Vivacity data available for November 2023 (defined as a neutral period) has been used to establish the pedestrian and cycle flows observed on an average day. The count data indicated that Site 1 has significantly lower average day pedestrian and cycle volumes than Site 2. As a result, two separate demand zones have been identified for the purpose of the appraisal:

- Zone 1 - covering Academy Street between Friar's Lane / Church Street / Academy Street and Maragaret Street / Academy Street - using the data from Site 1; and
- Zone 2 - covering Academy Street between Margaret Street / Academy Street and Milburn Road - using the data from Site 2.

4.2.9. The sensor locations and demand zones are presented in Figure 4-1.

Figure 4-1 – Sensors and Demand Zones



4.2.10. Using the average day results from each site in November 2023, the 2023 base demand is indicated in Table 4-2.

Table 4-2 – 2023 Daily Average (7 day) Pedestrian and Cycle Demand

Zone	Mode	Average Daily Trips
Zone 1	Pedestrians	617
	Cyclists	29
Zone 2	Pedestrians	7972
	Cyclists	157

4.2.11. Taking a conservative approach, no demand growth has been applied to the year 2023 average daily demand to bring the baseline pedestrian and cyclist demand up to a Scheme opening year of 2025.

Background Growth

4.2.12. In line with Guidance, using the assumptions contained within the AMAT, it was assumed that both walking and cycling trips will grow at 0.75% per year (for 20-years only as per AMAT default guidance) without the new active travel elements of the scheme.

Annualisation

4.2.13. To account for the fact that the baseline data includes weekday (Monday to Friday) data, an annualisation factor is applied to the trip estimation, determining an average number of days over which the weekday data sets are respectively applicable.

4.2.14. The number of working days has been estimated by excluding all 52 weekends throughout the year and the assumed public holidays, thus, becoming 253 working days of the year.

4.2.15. This can be represented by the following equation:

$$253 = 365 - 52 * 2 - 8$$

4.2.16. This conservative approach mirrors that adopted in the annualisation of all other impacts assessed in this chapter. As such no weekend impacts have been estimated in this assessment.

Appraisal Period

4.2.17. To assess the total long-term impact associated with the proposed scheme, an appraisal period of 40 years has been adopted. This is in line with the guidance contained within TAG Unit A1-1 for the AMAT.

Forecast Demand

4.2.18. When evaluating the long-term impact of the scheme, it is standard to account for an expected increase in demand resulting from the improved environment for pedestrians and cyclists. This reflects that:

- By improving walking and cycling provision, the scheme is likely to promote healthier lifestyles and reduce congestion. As people find it easier and safer to walk or cycle, demand for these modes is likely to rise.
- Improving infrastructure also encourages behavioural shifts. People accessing Academy Street and its services may choose to walk or cycle instead of driving, leading to reduced traffic congestion and environmental benefits.
- Increased levels of walking and cycling can positively impact public health, air quality and overall wellbeing.

4.2.19. The case studies discussed in section 2.2 indicate that the reallocation of road space and upgrade of active travel facilities can result in increased pedestrian and cyclist activity. This was notable in the Spaces for People programme and Glasgow's South City Way.

4.2.20. For the purposes of this appraisal, and in the absence of like for like case study evidence to support demand uplift assumptions, Active Travel England's Active Travel Fund 4 Uplifts Tool ('ATF4 Extension Uplifts Tool') has been used to calculate forecast 'with scheme' demand. This industry tool uses infrastructure type and cost to estimate changes in demand. A Low, Middle, and High uplift is given, with the 'medium' cycle demand uplift and 'medium' pedestrian demand uplift being used for the economic appraisal as recommended by the tool.

4.2.21. Using the approach outlined above the total number of additional active travel trips is then input into the AMAT to represent the 'with Scheme' demand. Table 4-3 shows the increase in trip demand in 2025 as a result of the uplift in active travel users due to the Scheme.

Table 4-3 – Pedestrian and Cycle Demand Uplift

Zone	Mode	Average Daily Trips – without Scheme	Average Daily Trips – with Scheme	Difference
Zone 1	Pedestrians	617	665	+48
	Cyclists	29	33	+4
Zone 2	Pedestrians	7972	8591	+619
	Cyclists	157	181	+24

Journey Quality Impact

4.2.22. The Scheme focuses on improving the user experience for those walking, wheeling, and cycling in the area. As such the proposals seek to introduce new wider footways, improved surfacing, new crossing facilities, seating, and planting. Furthermore, the forecast reduction in car trips on Academy Street could improve air quality and make the space much more permeable and attractive for those wishing to visit and spend time dwelling.

4.2.23. Changes to user journey quality are anticipated through the introduction of the Scheme, as such these impacts have been quantified and monetised in the following sections.

4.2.24. In order to capture all impacts relevant to the Scheme, two different toolkits were used to calculate the journey ambience and public realm impacts for active mode users. The AMAT was used for the walking and cycling elements, with the Transport for London's (TFL) Ambience Benefit Calculator (ABC) being used for the public realm improvements. Care has been undertaken to avoid double counting in the use of both toolkits.

4.2.25. Using the demand for walking and cycling derived from the Vivacity camera surveys, AMAT was used to estimate the potential improvements to physical activity of new users and journey ambience impacts.

4.2.26. Journey quality, in the context of the AMAT, relates primarily to the perception of safety. For pedestrians, the values related to increased journey quality include provision of street lighting, kerb level, crowding, pavement evenness, information panels, benches, and directional signage. For cyclists, new infrastructure and facilities result in large benefits, particularly if predominantly segregated provision is proposed.

4.2.27. The following changes in infrastructure have been assessed within the AMAT and captured under journey quality:

- No cycling infrastructure to cyclists now able to cycle in bus lanes; and
- No benches for pedestrians to pedestrians now able to dwell on new benches.

Ambience Benefit Calculator (ABC)

4.2.28. An additional appraisal has been undertaken using the ABC, to appraise the public realm elements of the scheme that are not covered in the AMAT. The tool monetises changes to individual journey

ambience and public realm attributes using willingness-to-pay-values in pence per trip per minute (or unit).

4.2.29. To assess the total long-term impact associated with the proposed scheme, an appraisal period of 20 years has been adopted. This is in line with the guidance provided by the DfT for appraisal using the ABC tool.

4.2.30. As the ABC is a TfL tool, the willingness-to-pay values have been calculated for London. In order to adapt this tool to the local context of the scheme, an assumption has been made to adjust the values for Inverness. This simple assumption consists of applying a reduction factor to the London willingness to pay figures, based on the relationship between median hourly pay in London and Inverness. Using official statistical data from the Annual Survey of Hours and Earnings (Office for National Statistics, 2019) this factor has been calculated as 0.60 for The Highlands.

4.2.31. The assumptions relating to the changes in walking attributes for the Scheme are as follows:

- Pavement Width – The scheme will include elements of significant pavement widening on the entire stretch of Academy Street to create a greater sense of place in the area and allow people to walk side by side without experiencing the issue of crowding;
- Pavement condition – The scheme includes resurfacing of the footways proposed on Academy Street for pedestrians;
- Plants and Public Art –The scheme will provide new planters and trees along the Academy Street to enhance the environment;
- Crossing elsewhere (given traffic flow prevents crossing) – A new at-grade carriageway crossing will be provided near the Inverness Bus Station, where currently there is no proper crossing provision;
- Vehicles on the pavement – The scheme will reduce the overall vehicle dominance on Academy Street. Furthermore, proposals for dedicated taxi rank/loading bays and pick-up/drop-off area will also alleviate issues resulting from vehicles parking on the pavement; and
- Physical intrusion of traffic (given: no dedicated crossing) – The new bus lanes on Academy Street and the signalised raised table crossing provided adjacent to Falcon Square will help reduce the physical intrusion of traffic by reducing traffic speeds and giving pedestrians more improved crossing opportunities.

Health and Absenteeism Impacts

4.2.32. The majority of impacts from the AMAT are typically attributed to health; this refers to how increased physical activity through walking and cycling can have a significant positive impact on health, on an individual and wider-society basis. As part of AMAT, results from several research studies have been brought together to calculate two key health impacts of increased cycling and walking activity. These impacts relate to the number of deaths avoided and the number of years of life lost (YLL) avoided which will increase as a result of reduced mortality and illness.

4.2.33. Individual health benefits are calculated along with the economic benefits of reduced absenteeism from work; the latter is based upon research which shows that people who regularly travel via active modes have fewer short-term illness related absences from work, as well as reduced risk of premature death, and thus increased output. As such, absenteeism benefits are only applied to the proportion of trips associated with commuter journeys.

Modal Shift impact

4.2.34. Mode shift refers to the economic impacts that can be realised as a result of reduced car kilometres travelled for those expected to walk and cycle in the future. These impacts comprise of estimates related to decongestion, collisions, greenhouse gas, air quality, noise, infrastructure, and indirect tax impacts. These impacts are reported in the environment and climate change sections of this report.

Monetised Impact

4.2.35. As mentioned above, the appraisal of impacts for cyclists and pedestrians has covered the following areas, in accordance with guidance from TAG Unit A5-1:

- Journey quality benefits which accrue from new and improved walking and cycling infrastructure; and
- Health benefits which accrue to new pedestrians and cyclists in the form of reduced mortality risk and reduced absenteeism.

4.2.36. Table 4-4 summarises the active travel and public realm impacts monetised using the AMAT and the ABC tool for the Scheme.

Table 4-4 – Monetised Active Travel Impacts

Economic Impact	Quantification (£)
Reduced risk of premature death and Absenteeism	3,703,251
Congestion	181,291
Journey Quality	5,015,271
Total	8,899,813

4.2.37. The journey quality benefits for active mode users equates to £5.02m (2010 prices and values). A further £181k of congestion benefits are reported. Physical activity and absenteeism benefits generated from new cyclists and pedestrians is £3.7m (2010 prices and values).

ROAD USER IMPACTS

Baseline Data

4.2.38. Road user demands for the scheme and impact area have been determined through the TIA. The TIA has used a combination of Automatic Number Plate Recognition (ANPR) data and Junction Turning Count (JTC) data to determine the traffic baseline and existing conditions.

4.2.39. ANPR survey data was made available by THC. The data was collected on the following dates:

- Tuesday 21st September 2021; and
- Wednesday 22nd September 2021.

4.2.40. Surveys covered a 12-hour period between 07:00 and 19:00. The survey locations are illustrated within Figure 4-2.

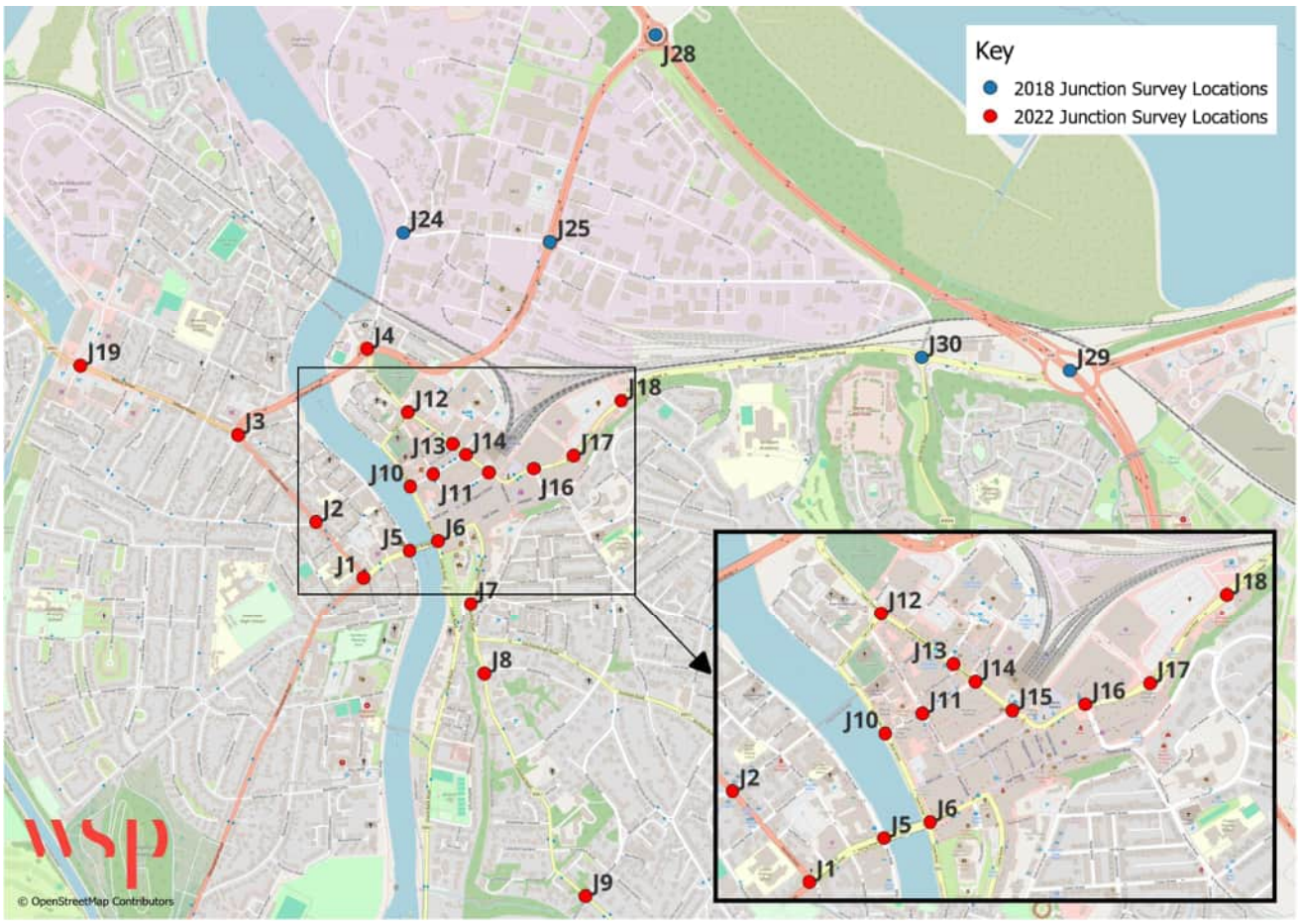
Figure 4-2 – ANPR Survey Plan

4.2.41. Classified junction turning count data was made available by THC. This data was collected on the following dates:

- Thursday 18th August 2022; and
- Thursday 15th February 2018.

4.2.42. Surveys covered a 12-hour period between 07:00 and 19:00. The survey locations are illustrated within Figure 4-3.

Figure 4-3 – Junction Survey Locations



4.2.43. WSP has interrogated the data provided by THC to ascertain its suitability for the purposes of this study. An audit was conducted of the ANPR data and Junction Turning Count (JTC) data to ensure their respective validity. Findings from the data audit included and were limited to:

- The northwestern section of Academy Street, specifically at the junction of Friar's Lane (B862) / Academy Street (B865) /Chapel Street (B865), the ANPR survey captured only the traffic travelling straight between Academy Street and Chapel Street. Consequently, trips originating from Friar's Lane were not disaggregated between through traffic and non-through traffic. While this presents a potential gap in the data, it has been assessed as manageable for the study's purposes. Given that trips from either Chapel Street or Friar's Lane have an equal likelihood of being through traffic, an estimated percentage from the available data was considered to provide a suitably reasonable basis for analysis;
- The JTC data provided by THC for the junctions depicted in Figure 4-3 was predominantly from surveys conducted on 18 August 2022, supplemented by data from 2018. Concerns regarding discrepancies due to the age of the 2018 data were addressed by reviewing historical trunk road traffic counters. This review indicated no significant changes in traffic volumes between 2018 and 2022 for the junctions in question, particularly those in the east of Inverness, such as Longman Roundabout and Raigmore Interchange. Therefore, the data was deemed reasonable for use in this study;

- The absence of queue data for network interrogation and model validation was acknowledged as a limitation and triggered the need for on-site review by WSPs model practitioners; and
- Weekend survey data was not available; however, it was considered that the wider network peaks during the weekday morning and evening peaks represented a more critical and consequentially robust basis to consider the wider impact of the scheme.

4.2.44. Following establishment of baseline traffic conditions on Academy Street, the assessment of the traffic impact focused on the impact the scheme places on the road network in Inverness. To do this, the distribution of trips was established as follows:

- Through traffic movements quantified utilising the ANPR and JTC data captured;
- Census 2011 Journey to Work data interrogated at an intermediate zone level to establish zone origins and destinations; and
- Disaggregation of trips to data zone level then established utilising a gravity model to determine the through traffic origins and their destinations.

4.2.45. This process establishes the origin and destination of Academy Street through traffic movements as well as confirming what the total through movements are for Academy Street on a typical day.

Trip Assignment

4.2.46. With the inability for traffic to pass through Academy Street following scheme implementation, alternative routes have been established to accommodate through traffic movements. This has been derived utilising peak time journey planning online tools (Google Maps), to identify the routing options and journey times between each origin and destination, in each direction. Noting that route options alter by direction in some instances. The routing options are presented within the TIA.

4.2.47. Whilst the scheme focuses predominately on streetscape enhancements, complemented through the reduction in general traffic, there is also an effect on non through traffic (i.e. traffic which will still route into Academy Street). A review of the re-assignment of vehicle trips where Academy Street will remain their destination has been undertaken. The permitted movement plan for the scheme is presented within Appendix C. The movement plan forms a core part of the design strategy developed by THC.

4.2.48. As previously noted, ANPR data was utilised to understand the split of traffic travelling on Academy Street. Consequently, **Error! Reference source not found.** provides a breakdown of the total AM and PM non-through traffic moving westbound and eastbound. These figures establish a baseline for understanding the volume of traffic that will be impacted by the scheme through localised re-routing.

As previously noted, ANPR data was utilised to understand the split of traffic travelling on Academy Street. Table 4-5 and Table 4-6 provide a detailed breakdown of the total AM and PM non-through traffic moving eastbound and westbound. These figures establish a baseline for understanding the volume of traffic that will be impacted by the scheme. In addition,

4.2.49. Table 4-7 shows the split of non-through traffic, attributed to city centre traffic (i.e. those who will still access Academy Street) and Eastgate / Morrisons traffic who will need to be redistributed following the change, which still includes the traffic originated from Crown who will be largely unaffected by the scheme in terms of route choice and those who may divert to the Rose Street car park. These figures establish a baseline for understanding the volume of traffic that will be impacted by the scheme through localised re-routing.

Table 4-5 – Percentage of Non-Through Traffic Trips based on ANPR Survey (including Eastgate and Morrisons traffic)

	Day 1		Day 2		Average	
	Eastbound	Westbound	Eastbound	Westbound	Eastbound	Westbound
0700 - 0800	45%	47%	48%	41%	47%	44%
0800 - 0900	50%	28%	57%	33%	54%	30%
0900 - 1000	69%	48%	65%	50%	67%	49%
1000 - 1100	61%	53%	67%	57%	64%	55%
1100 - 1200	67%	57%	72%	56%	70%	57%
1200 - 1300	63%	52%	61%	60%	62%	56%
1300 - 1400	62%	60%	58%	61%	60%	60%
1400 - 1500	56%	60%	63%	58%	60%	59%
1500 - 1600	58%	52%	54%	53%	56%	53%
1600 - 1700	63%	44%	55%	54%	59%	49%
1700 - 1800	47%	60%	40%	54%	44%	57%
1800 - 1900	54%	54%	54%	45%	54%	49%
Average	59%	52%	59%	52%	59%	52%

Table 4-6 – Volume of Non-Through Traffic Trips at Peak Hours (including Eastgate and Morrisons traffic)

Peak Hour	Average % non-through trips		Volume non-through Trips (PCUs)	
	Eastbound	**Westbound**	**Eastbound**	**Westbound**
AM Peak (08:15 – 09:15)	54%	30%	131	71
PM Peak (16:30 –17:30)	59%	49%	182	154

Table 4-7 – Volume of Trips Visting City Centre and Visiting Eastgate Shopping Centre / Morrisons Car Parks

Peak Hour	City centre trips to be redistributed (PCUs)		Eastgate/ Morrisons trips to be redistributed (PCUs)	
	Eastbound	Westbound	Eastbound	Westbound
AM Peak (08:15 – 09:15)	45	35	86	36
PM Peak (16:30 –17:30)	81	43	101	110

Junction Impact Assessment

4.2.50. As discussed in the TIA, it was determined that any junctions where an increase of 5% or more in traffic (PCU)[26] is expected on any approach to a junction then it would be subject to a detailed assessment. By doing so, this threshold assessment helps to ensure that all potentially impacted junctions are included within the study network, thus providing a comprehensive understanding of the implications of the Scheme.

4.2.51. The impact results are presented within Chapter 7 of the TIA. The assessment highlighted that the following junctions would see the 5% threshold impact breached post scheme implementation – this is 13 junctions from a total of 26 within the study area network:

- Junction 1 - Tomnahurich Street / Kenneth Street;
- Junction 2 - Fairfield Road / Greig Street;
- Junction 3 - Telford Street / Harrowden Road / Friar's Bridge;
- Junction 5 - Young Street / Huntly Street;
- Junction 6 - Castle Road / Bank Street / Ness Bridge;
- Junction 7 - Castle Street / View Place;
- Junction 8 - Castle Street / Mayfield Road;
- Junction 10 - Bank Street / Fraser Street;
- Junction 12 - Friar's Lane / Academy Street / Chapel Street;
- Junction 14 - Queensgate / Academy Street / Strothers Lane;
- Junction 24 - Cromwell Road / Harbour Road;

[26] A threshold impact of 5% has been adopted as a measure to determine the likelihood of a material or indeed perceivable impact on the local network. Where an increase of 5% or more was established on the approach to a junction, that location was then subject to a detailed assessment. It considers factors such as the scale of proposed change, existing traffic patterns, and the surrounding road network's capacity. This ensures that all potentially affected junctions, particularly around Academy Street, are comprehensively studied to understand the implications of the Scheme.

- Junction 25 - Longman Road / Harbour Road; and
- Junction 30 - Milburn Road / Harbour Road.

4.2.52. The redistributed traffic (both within Academy Street and the wider network) has resulted in a notable increase in traffic on one or more approaches of the above junctions compared to the Base scenario and, as a result, local junction modelling has been used to understand the effects in terms of capacity and delay. The methodology adopted for this assessment is detailed below.

Traffic Growth

4.2.53. National Road Traffic Forecast (NRTF) low growth has been utilised to factor the observed traffic survey data in September 2021 to the anticipated 2025 scheme opening year. A blend of 2018 and 2022 survey data has been used to derive a factor; therefore, the following growth factors have been applied;

- 2018-2025 – 1.046; and
- 2022-2025 – 1.016.

4.2.54. The 2025 Base AM and PM peak hour network flows diagrams are contained within Appendix E of the TIA.

Assessment Periods

4.2.55. The network peaks have been identified as:

- AM Peak: 08:15 – 09:15 hrs; and
- PM Peak: 16:30 – 17:30 hrs.

4.2.56. It should be noted that all values have been converted to Passenger Car Units (PCUs) for the purpose of this assessment.

Scenario Forecasts

4.2.57. The following AM and PM scenarios have been tested as part of this assessment:

- Scenario 1 - 2025 Opening Year (without Scheme); and
- Scenario 2 - 2025 Opening Year (with Scheme).

Interpeak Assessment

4.2.58. To ensure the interpeak is represented in the EIA, and the impacts are not understated, the AM and PM peak models have been used to forecast road user impacts across the Interpeak period.

4.2.59. The Interpeak models have been forecast by comparing the flow in each hour to the AM and PM modelled periods to identify which period is more representative for each Interpeak hour. The annualisation of the Interpeak hours is then calculated based on the proportion of flow when compared to its representative hour to ensure the impact analysis is robust.

4.2.60. For the wider re-routing assessment 17 counts across Inverness were used to calculate which modelled period was best placed to represent each hour.

Assessment Software

4.2.61. Priority junctions and roundabouts have been assessed using the industry standard Junctions 10™ program. Junctions 10™ provides an indication of the performance of a junction in terms of the Ratio of Flow to Capacity (RFC) and queue length on the approaches to the junction.

4.2.62. In order to assess the signalised junctions identified within the study network, the TRL TRANSYT16 software package has been used. TRANSYT16 is an industry standard software tool which allows traffic engineers to model signalised junctions and their effect on capacities and queuing. TRANSYT also allows for the optimisation of traffic signals to increase capacity and reduce delays at junctions.

4.2.63. The TRANSYT16 model presents results as percentage degrees of saturation (DoS) and corresponding likely traffic queues for each modelled link of the junction. It is generally accepted that DoS values of 90% or less on individual links represent satisfactory signal operation but should be viewed with cycle times and queue lengths.

4.2.64. Signal specification forms for the existing signalised junctions within the study network have been provided by THC and utilised to aid in model calibration. Out with the scheme, the general configuration, phasing and staging of each junction included within the study networks have been assumed to remain largely unchanged. Therefore, WSP has adopted existing signal specification data and utilised, where applicable, existing phasing, staging and intergreen data to inform the traffic models.

4.2.65. Assessment results are discussed within the TIA. The outputs of the modelling have been used to inform the assessment of Car User Impacts for the scheme, discussed in section 4.4 of this EIA.

Changes in distances and journey times

4.2.66. Applying the first principles approach outlined in the Trip Distribution Section the TIA, increases and/or decreases in journey distances have been quantified, alongside delay changes at impacted junctions.

4.2.67. It is noted that the modelling approach adopted, is based on a fixed assignment matrix. Therefore, no adjustment for modal shift to sustainable travel, retiming or changes in origin/destination has been captured through the assessment of road user impacts.

4.2.68. Changes in journey distances and subsequently journey time for both through trips and trips with origin/destinations in Inverness City Centre using Academy Street in the ‘without scheme’ scenario and redistributed in the ‘with scheme’ scenario have been quantified for the AM, Interpeak, and PM peak periods.

4.2.69. Each of the trips assigned to the zone to zone journeys have been reassigned onto an alternative route, in some cases, multiple alternative routes. The increase and/or decrease in distance and weighted journey time has been calculated for the baseline scenario ‘without scheme’ for all users travelling on or through Academy Street and between their origin and destination across all peak periods and for the forecast scenario ‘with scheme’ to quantify the change in absolute distance and as such journey time for impacted traffic. The increases in distance and time have only been calculated for the section where routes diverge.

4.2.70. As the impact on junction delay across the network has been calculated using local junction models this approach has only considered changes in distances and assumes vehicles can travel at free flow speeds. Free flow speeds have been assumed to be 85% of the speed limit.

Methodology

4.2.71. As discussed above, there is the potential for the scheme to impact general traffic as a result of the proposed bus lanes and the traffic restrictions on Academy Street. As demonstrated, the restrictions

will result in changes in journey times and/or distances and changes in delay at junctions across the network.

4.2.72. Where possible, the appraisal utilises local junction modelling outputs from the TIA and the latest version of TUBA (1.9.17 using the 1.9.22 economics file) to quantify the Scheme journey time impacts for road users. A 60-year appraisal period has been used for each scenario with an assumed Scheme opening year of 2025 (i.e. 2025-2084 (inclusive)).

4.2.73. TUBA is the industry-standard software used to derive the Transport Economic Efficiency (TEE) of a scheme. It considers both the Business and Consumer Traveller Impacts and the Private Sector Provider Revenues and Costs elements.

4.2.74. TUBA software takes trip, time, and distance matrices for each future year and each time period from the traffic forecast model and calculates travel time saving benefit or disbenefit. It does this by comparing the travel times in the 'without Scheme' scenario with those in the 'with Scheme' scenario. It then applies monetary values (known as Values of Time (VOT)) to derive the monetary impacts of those time savings or increases over the standard 60-year appraisal period.

4.2.75. TUBA also calculates Vehicle Operating Cost (VOC) changes which occur over the standard 60-year appraisal period due to changes in costs associated with such items as fuel, maintenance, and wear and tear. These occur due to changes in speed and distance when the scheme is implemented and can include both positive and negative values depending upon the scheme's impact upon traffic flows and routing.

4.2.76. The travel time and VOC impacts are then deflated and discounted to 2010, the TS and DfT's standard base year for appraisal, and converted to 2010 market prices.

4.2.77. Modelled time periods are expanded in TUBA to represent a full year of data, and this has been undertaken using available count data to be accurate, and to ensure peak hours are properly represented.

4.2.78. Car, LGV freight, LGV personal, OGV1 and OGV2 user classes were used across all modelling scenarios, and these were disaggregated to reflect the additional sub-categories in TUBA using values in the TAG Databook, where each user class has a different value of time (VoT), vehicle occupancy and fuel consumption. The split has been calculated individually at a junction level using survey data.

4.2.79. The peak hour flows extracted from the local junction models are then converted into full year values using annualisation factors calculated from the local counts. The AM and PM peak hours are compared against the respective peak period to find a factor which is then multiplied by 253, the number of working days in a year. Interpeak annualisation factors are calculated by comparing the interpeak flow best represented by each modelled period to the peak hour flow of that time period. As with the AM and PM a factor is created which is then multiplied by 253 to represent the number of working days in a year.

4.2.80. The annualisation factors are unique for each junction and the forecast rerouting of traffic, however, example factors for junction 1 are shown in the below table.

Table 4-8 – Example Annualisation Factors: Junction Impacts

Period	Example Annualisation Factors (Junction 1)

AM	664
IP (AM Source)	1079
IP (PM Source)	450
PM	717

Monetised impact

4.2.81. Changes in road user journey times have been calculated using TUBA. The results for the Scheme are presented in Table 4-9 below.

Table 4-9 – Road User Impacts (Quantified)

Economic Impact	Quantification (£)
Consumer Users (commuting)	-2,168,000
Consumer Users (other)	-2,906,000
Consumer Users (business users and providers)	-2,340,000
Vehicle Operating Costs (commuting)	1,000
Vehicle Operating Costs (other)	37,000
Vehicle Operating Costs (business users and providers)	-504,000
Total	-7,880,000

4.2.82. As shown in Table 4-9 it is estimated that there may be a -£7.9m disbenefit to road users (in 2010 values and prices). This is anticipated as a result of longer journey times, and increased delay at junctions across the study area, offset marginally by efficiency improvements at other city centre junctions.

4.2.83. Other monetised road user impacts associated with greenhouse gases (resulting from an estimate increase in extra daily vehicle kilometres travelled in the local area) and indirect taxation are reported in the Climate Change and Estimation of Costs chapters of this report.

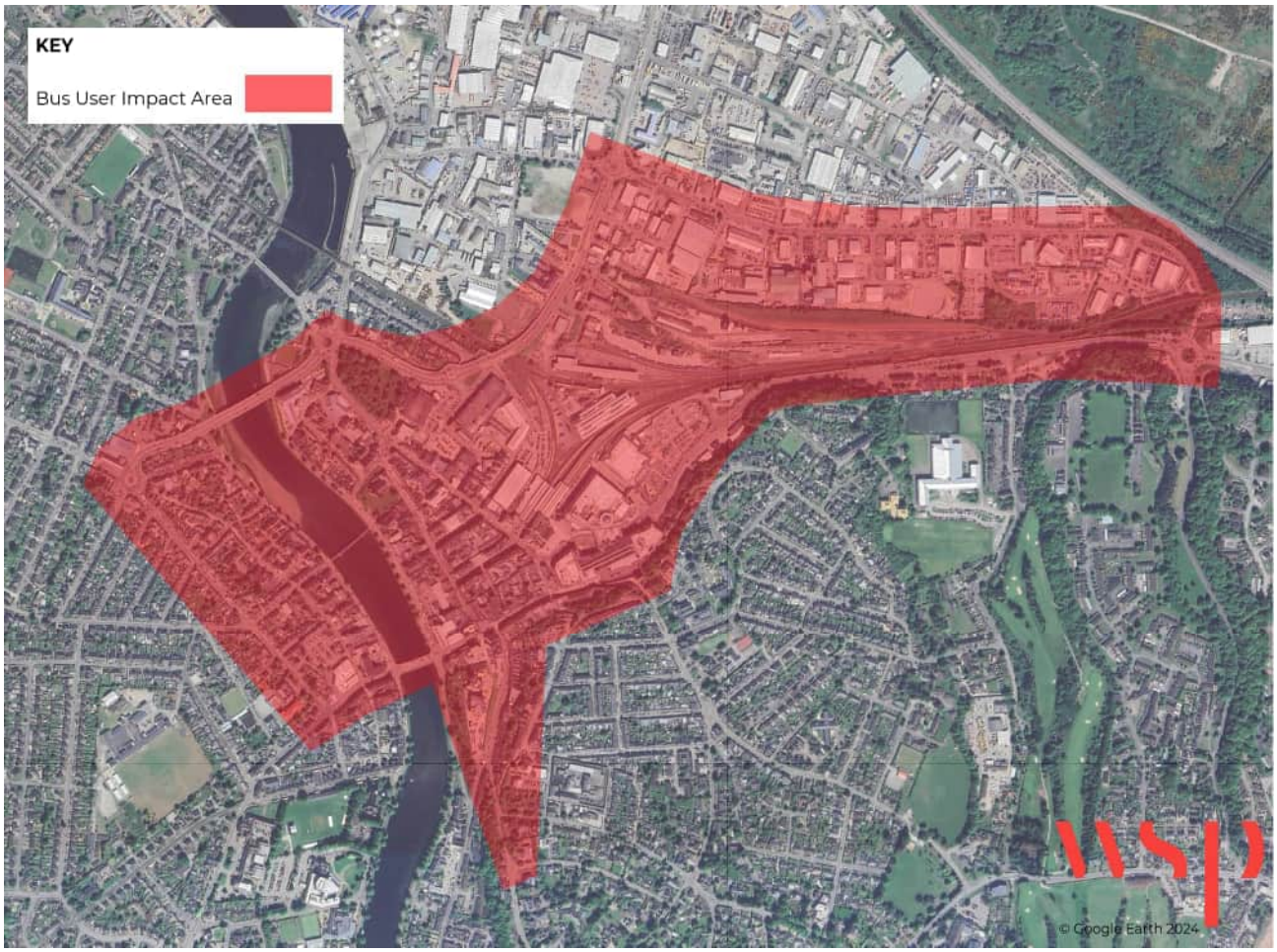
BUS USER JOURNEY TIME IMPACTS

Baseline Data

4.2.84. The approach taken to assess bus journey time impacts considers the changes in journey times for bus users from the “without Scheme” scenario to the “with scheme” scenario, then using TAG Databook values of time to convert the savings or increases in journey time to monetised benefits or disbenefits which were applied to the predicted number of bus users on each service. Consideration has been given to both changes in bus journey times, and subsequently bus users on Academy Street itself, in addition to the impacts of the traffic redistribution set out within the TIA. A map

showing the extent of the bus user journey time impact area is presented in Figure 4-4. This reflects the extent of the area encompassing junctions which exceed the 5% threshold.

Figure 4-4 – Bus user journey time impact area



4.2.85. The “without scheme” and “with scheme” journey times have been established through local junction modelling, using TRANSYT, Junctions9 and Automatic Vehicle Location (AVL) data from operators. The assessed junctions comprise existing signal-controlled junctions, priority junctions and roundabouts. For the purposes of the assessment, the junctions were assessed for the forecast year 2025 and historic AVL has been used from 2021. In the absence of new AVL data from bus operators, 2021 data has been used as a proxy and is expected to present a conservative estimate of potential bus user economic impacts as this was a low traffic growth year. With higher volumes of traffic, current delay to bus users is expected to be worse in 2025.

4.2.86. A first principles approach has been adopted to determine the impact of the bus lanes. The approach assumes that buses will achieve the lowest observed average journey time on their inbound and outbound route. This lowest observed saving is measured between inbound and outbound bus stops on Academy Street or the adjacent network. Savings have been calculated for each peak period based on current 2021 observed average journey times.

Methodology

4.2.87. WSP has developed a bespoke spreadsheet tool to monetise bus user impacts following changes to bus routing and increases or decreases in journey times. The inputs required in the spreadsheet are the number of buses per hour passing through the location, the number of passengers per bus in each hour (derived from patronage data and TAG bus occupancy assumptions), together with the predicted journey time saving at each hour of the day (AM, IP, and PM).

4.2.88. Table 4-10 illustrates the predicted journey time impacts expected for each inbound and outbound service using the new bus lanes on Academy Street across the AM, IP, and PM peak period. Table 4-11 illustrates journey time impacts in seconds for services travelling through each of the affected junctions modelled through the TIA for a 2025 opening year. The Interpeak is not presented Table 4-11 as each individual hour has been compared to the modelled hours to find the best representation to ensure a robust assessment.

Table 4-10 – Forecast Journey Time Savings in seconds (Academy Street Bus Lanes)

Inbound (s)			Outbound (s)		
AM	IP	PM	AM	IP	PM
0	72	22	0	59	35

Table 4-11 – Base 'without scheme' and 'with Scheme' bus journey times (seconds)

Bus Routes	AM Peak		PM Peak	
	without Scheme	with Scheme	without Scheme	with Scheme
Junction 1	48	48	41	41
Junction 2	22	22	22	22
Junction 3	27	27	27	27
Junction 5	19	19	18	18
Junction 6	53	53	59	60
Junction 7	85	86	82	86
Junction 8	49	50	47	47
Junction 10	21	21	21	21
Junction 11	24	24	24	24
Junction 12	79	79	91	89
Junction 13	61	59	65	60
Junction 14	49	50	52	52
Junction 25	27	27	26	27
Junction 30	34	35	29	30

4.2.1. Following the identification of the GJT saving values referenced above, the Do-Something (i.e. 'with Scheme') journey time is calculated as follows:

$$Do - Something\ GJT = Do - Nothing\ GJT - GJT\ Saving$$

4.2.2. Where journey times reduce, the spreadsheet estimates the new bus users that may shift mode to bus as a direct result of the scheme. This is calculated in the form of an elasticity demand model approach based on generalised cost elasticity. The elasticity factors are applied by journey purpose.

4.2.3. The Journey Purpose Share is calculated by multiplying standard diversion factors by the proportion of trips made in work and non-work time. This varies across the day, as the proportion of trips made in work and non-work time varies.

4.2.4. Journey purpose elasticities are included within Table 4-12 below.

Table 4-12 – Journey purpose elasticities

Elasticity	Value	Source
Commute	-1.15	RAND / SYSTRA
Leisure	-1.05	RAND / SYSTRA[4]
Work	-0.7	Used extensively in past appraisals for this purpose

4.2.5. The total new bus users are then calculated by journey purpose using the following formula:

$$New\ Users = \left(\left(\frac{Do - Somthing\ GJT}{Do - Nothing\ GJT}\right)^{Elasticity} - 1\right) \times Boarding\ Pass. \times Journey\ Purpose\ Share$$

4.2.6. This formula is applied for each bus journey purpose (business, commuting, and other). Value of Time (VOT) / Journey Purpose is then multiplied by their respective Journey Purpose Shares to get the total VOT per hour for each period.

4.2.7. Total one day bus user benefits are then calculated using this formula:

$$Day\ One\ Benefits = Journey\ Purpose\ New\ Users \times \left(\frac{GJT\ Saving}{60}\right) \times Journey\ Purpose\ VOT \times 0.5$$

4.2.8. This formula is repeated for all three journey purposes. Total bus user impacts are then calculated adding the three journey purpose impacts together and multiplying by the annualisation factor. Total new users are calculated by multiplying the new users per hour by the annualisation factor (253).

4.2.9. The spreadsheet tool uses standard values of time, journey purpose splits, annualisation figures and discount rates from current TAG guidance to monetise forecast changes in bus user journey time across a 60-year appraisal period.

Modal Shift Impact

4.2.10. There is an anticipated indirect impact to road users as a result of the forecast new-to-bus users potentially encouraged to switch mode following the implementation of the Academy Street scheme.

4.2.11. Decongestion and environmental economic impacts can be quantified where a reduction in car kilometres travelled is forecast for new users transferring mode to bus as a mode of travel. Whereby some of these new users are anticipated to switch from using private car and taxis.

4.2.12. These impacts comprise of estimates related to decongestion, collisions, greenhouse gas, air quality, noise, infrastructure, and indirect tax impacts.

4.2.13. To forecast these potential decongestion and environmental economic impacts associated with bus user journey time, an estimated reduction in car kilometres removed has been calculated for new-to-

bus users. The methodology uses Scottish Census 2011 – Distance Travelled to Work or Place of Study by Mode to identify the average distance travelled to work or place of study by car within Inverness. This was found to be on average 9.3km for car and 10.4km for bus users. The average distance travelled by car / bus and diversion factors have been applied to the applicable new-to-bus users to estimate total car kilometres removed.

4.2.14. These quantifiable impacts are reported in the Environment and Climate Change chapters of this report.

Monetised Impact

4.2.15. Table 4-13 summarises the bus user benefits calculated using the bespoke bus journey time spreadsheet for the scheme.

Table 4-13 – Bus User Benefits – Journey Time Savings

Economic Impact (including congestion)	Quantification (£)
Travel Time Impacts – Commute	371,889
Travel Time Impacts - Other	1,338,553
Travel Time Impacts – Business	64,589
Congestion	258,974
Total	**2,034,005**

4.2.16. The table above indicates that the Scheme is estimated to generate **£2.04m (2010 prices and values)** in bus user journey time saving benefits across a 60-year appraisal period.

4.2.17. The revenue generated by new users has not been included in the analysis in the absence of average revenue per trip data available for buses at this stage.

4.2.18. In the absence of detailed modelling or comparable local case study evidence to derive bus journey time savings it's important to note that this approach may not fully capture the potential benefits or impacts associated with the new bus lane infrastructure. The current method does not account for future traffic growth, therefore greater reductions in service delay could be expected as a result of the scheme.

'DECONGESTION' AND ENVIRONMENTAL IMPACTS

4.2.19. There is an anticipated indirect impact to road users as a result of the changes to bus and active travel infrastructure on Academy Street. With new-to-bus, new-to-walk and new-to-cycle users generated as a result of the Scheme. A portion of these new users will switch from using private car and taxis every year. This impact of the Scheme will contribute towards addressing the climate emergency declared by the Scottish Government in 2019 and 2045 net zero target, given that transport, in particular car travel, accounts for a significant proportion of emissions locally, nationally, and globally.

4.2.20. The AMAT and Bus Appraisal Tool both calculate the Marginal External Cost (MEC) saving separately to the above analysis reported in the Active Travel and Bus User Journey Time impact sub-sections above.

4.2.21. These calculations show that on average the scheme could result in a reduction of 387 daily car kilometres travelled on the localised transport network (AMAT and Bus Appraisal Tool calculations). The impact of this has been monetised using a MEC approach, using values provided in TAG.

4.2.22. The MEC values are based on the latest TAG Databook (released in November 2023). The total decongestion and environmental benefits can be split out into the following:

- Congestion – Reduced travel times for road users by journey purpose;
- Infrastructure – Reduced maintenance of roads as a result of fewer car trips causing deterioration (presented as a negative cost to the public accounts in the economic appraisal);
- Accidents – Fewer car kilometres reduces the risk of accidents on the road network and associated casualties;
- Noise Pollution – Reduced noise levels associated with road traffic acting as a benefit to the wider society;
- Local Air Quality – This will improve as a result of less car emissions of air pollutants;
- Greenhouse Gas (GHG) Emissions – Fewer car trips will lead to lower carbon emissions; and
- Indirect Taxation – The government will receive less tax revenue from fuel duties as a result of the modal shift away from private car, this will likely be a disbenefit.

4.2.23. As discussed, the monetisable impacts associated with mode shift are reported in the Environment, Health, Safety and Wellbeing and Climate Change sections of this report.

4.2.24. In addition to the above impacts, it is anticipated that there will be additional car kilometres travelled on the local network resulting from the redistribution of trips away from Academy Street and the extension of trips still travelling to the city centre. GHG emission impacts from increases in estimated daily car kilometres travelled (8,752), are monetised through the TUBA methodology and outputs. These are also reported in the Climate Change section of this report. TUBA does not monetise impacts on congestion, infrastructure, accidents, noise, and local air quality.

4.3 WIDER ECONOMIC IMPACTS (WEIS)

4.3.1. This section quantifies the expected wider economic impacts (WEIs) of the Scheme.

INTRODUCTION

4.3.2. Work undertaken by a range of organisations to investigate how improved active travel and public realm provision in city and town centres has impacted on local economies readily acknowledges the difficulties robustly quantifying these impacts. Unlike conventional transport economic appraisals where impacts such as monetised journey time savings and accident reduction benefits are well-established from a methodology perspective, the impacts associated with active travel and public realm improvements are less well understood.

4.3.3. As the 2018 update to 'The Pedestrian Pound' report[27] states: "The business and commercial case for investing in walkability remains a challenging area within which to make robust claims about

[27] The Pedestrian Pound, 2018 update (part sponsored by Transport Scotland), Living Streets / Just Economics

commercial returns. This is largely due to the absence of evaluations at the post-build or post-intervention stage. Five years on from the publication of The Pedestrian Pound hard, quantitative assessments remain very rare".

4.3.4. Nevertheless, the Pedestrian Pound report also states that there is a growing body of qualitative and case study evidence which, when evaluated alongside the available quantitative data, shows that public realm investments deliver significant, cost-effective benefits to consumers and businesses. The report goes on to acknowledge that: "*Most of the evidence in support of public realm investment exists in case study form and that this is a response to the challenges of conducting quantitative research in this area*".

4.3.5. The following analysis is based on both the research undertaken in this field as well as the case studies that underpin a significant proportion of the research.

4.3.6. As well as 'conventional' transport-related impacts, the Academy Street proposals will generate a range of other impacts. This is because evidence of other public realm improvement schemes has shown that the following impacts typically arise:

- Additional footfall due to the diversion of traffic away from the road as well as the public realm improvements that accompany active travel and 'pedestrianisation' schemes;
- The expenditure made by those additional people now visiting the repurposed street (whether on foot or by bicycle) – note these can be shoppers who come into the city from nearby or further away as well as tourists / visitors making trips into Inverness as part of their stay in the area;
- The gains made with respect to additional business rates income and other 'value gains' such as land value and/or property value gains; and
- Any other wider economic impacts that are in scope for a scheme of this type – e.g. public amenity and crime reductions.

4.3.7. As well as calculating a range of quantified and monetised wider economic impacts, it is also important to describe the evidence of what has happened with other pedestrian schemes, including those in Scotland. This discussion of evidence and 'case studies' forms the basis of the first part of this section. The later parts then go on to cover the extent to quantified wider economic impacts can be attributed to the scheme.

EVIDENCE OF OTHER SUSTAINABLE TRANSPORT / ACTIVE TRAVEL SCHEMES

4.3.8. There are several reports and research pieces covering the impact of sustainable transport / active travel schemes. Two key pieces of research are covered. Taking the first piece of work (by Climate Change), this was produced relatively recently (in May 2023) and includes case studies undertaken in the post-pandemic period.

Work by Climate Change, Scotland's Centre of Expertise Connecting Climate Research and Policy – economic benefits of sustainable travel

4.3.9. Dating from May 2023, this work by Climate Change[28] ('Scotland's Centre of Expertise Connecting Climate Research and Policy') was undertaken in light of the Scottish Government's aim to reduce car kilometres travelled by 20% by 2030 compared to a 2019 baseline. The report notes how the Government has stated that reducing car use will build stronger communities, including town centre revitalisation as well as developing 20-minute neighbourhoods.

4.3.10. Climate Change's report provides an evidence base on the environmental, economic, and social impacts of sustainable travel for local high streets and town centres for those promoting, campaigning on, designing and delivering sustainable travel interventions. The research comprised 1) a literature review, 2) stakeholder interviews 3) case studies.

4.3.11. All of the case studies referenced below have been taken directly from the Climate Change report and so there has not been a need to reference each case study independently.

4.3.12. The work showed, for example, that based on research by Sustrans in 2019, shop vacancy rates are five times higher on streets with high levels of traffic and that investments in sustainable travel can increase footfall, visitor spending, visit frequency and growth in the number of customers.

Increased Footfall, Sales, and Access

4.3.13. Various case studies also demonstrate that pedestrian-related improvements increase footfall. As well as the case studies below, the case studies covered by the Pedestrian Pound report (see 4.3.32 onwards) include examples in Scotland.

4.3.14. The work by Climate Change includes the following:

- In **Piccadilly**, **Stoke-on-Trent**, pavement widening in 2016 led to a 30% increase in footfall;
- In **Maid Marian Way**, **Nottingham**, carriageway remodelling, additional pedestrian crossings and new street furniture in 2005 resulted in a 29% increase in footfall; and
- Improved pedestrian and cyclist safety measures on **Newlands Avenue** in **Kingston-Upon-Hull** in 2005 increased pedestrian movements in the town centre by 18% and cycle movements by 17%.

4.3.15. Another case study (the 2015 conversion of **Acorn Road** in **Newcastle** from a two-way street to two-way access for cycling and one-way access for motor vehicles, plus the removal of 20 car parking spaces) is important to highlight here as it is a good example of where local business owners were concerned about loss of trade at the scheme's outset.

4.3.16. It was subsequently observed, however, that the change resulted in an improved atmosphere for businesses with better access for pedestrians and cyclists. Out of 500 people surveyed, 77% agreed that 'Acorn Road is a thriving retail area' after the introduction of the traffic calming features (this is based on research undertaken by Sustrans in 2019).

[28] The environmental, social, and economic benefits of sustainable travel to local high streets and town centres, Juliette Kariuki-Cobbett, Beth Morley and Fergus Worthy, Climate Change, May 2023

4.3.17. Similarly, in Oxford a traffic restraint and pedestrianisation scheme led to a 17% reduction in car trips to the city centre without impacting visitor numbers (based on research by Parkhurst in 2003).

4.3.18. In addition, research by Transport for London (TfL) found that retail vacancies were 17% lower after improvements to high streets and towns centres to encourage walking and cycling (based on research by Sustrans in 2022).

Increased Business Customer Numbers - and Satisfaction

4.3.19. Pedestrian and cycling schemes have also been shown to increase communities' engagement with their local high streets, increasing the likelihood of spending at the local businesses. As an example of this, 95% of representatives of London's Business Improvement Districts (BIDs) identified a good walking environment as important to business performance, 85% were in favour of cycling for business performance and 97.5% identified that schemes that enable people to spend more time certain areas helped to attract more customers (TfL research, 2018).

Increased Land Values and Lower Turnover

4.3.20. Based on research, investing in pedestrian, and cycling infrastructure increases land values by between 70% and 300% with retail commercial rates increasing by 10% to 30% (based on Active Living Research, 2013, Litman, 2023 and Living Streets, 2018).

4.3.21. Case studies include the following:

- A public regeneration project at **Peace Gardens** in **Sheffield** resulted in a 35% uplift in the number of visits for shopping - and a net increase in spending of £4.2 million. There was also an increase in rental values (from £1.60 to £2.40 per square foot);
- In **Altrincham**, **Manchester**, a £15 million scheme to improve the market area, food and drink premises and pavements generated a 25% increase in footfall and a 22% decrease in retail vacancy rates across the town centre (Momentum Transport Consultancy, 2022);
- An evaluation survey with local businesses in **Bromley North Village** in 2014 showed that a public realm improvement scheme increased turnover and land values. Restaurants within the scheme reported an average 30% increase in turnover and a £492 million increase in land value within the site catchment area (Momentum Transport Consultancy, 2022); and
- In Toronto, Canada, installation of cycle infrastructure reduced vacancy rates in the Danforth area from 5.2% to 3.4% (Smith Lea et al., 2017).

4.3.22. As well as the above, a case study in Pontevedra in Spain is relevant here as there are similarities to the proposals in Inverness given the former's population size being similar to that in Inverness as well as the types of proposals in both locations being similar.

4.3.23. To demonstrate this, Pontevedra (in the northwest of the country) has a population of 83,000 with a high population density. This is similar to Inverness where the population in the metropolitan area was over 82,000 in 2022[29]. Also similar to Inverness, Pontevedra has a historic centre. As Pontevedra suffered from congestion and infrastructure that was not designed for heavy car use, it

[29] https://www.nhshighland.scot.nhs.uk/media/vmol23wx/demography-inverness-2022.pdf (see Page 5)

implemented a plan to pedestrianise the city centre streets and allow only car access for residents and services.

4.3.24. This began in 1999 within the old town and was combined with other works, including restoration of public realm infrastructure. The metrics associated with the Pontevedra scheme are as follows:

- Following pedestrianisation, the city set a maximum speed limit of 30 km/h with 10km/h for vehicles in the centre;
- Traffic entering Pontevedra reduced by 92% in the centre, 77% in the inner city and 53% across the whole city;
- By using maps at strategic locations, these demonstrate the city's 'walkability' as well as showing links to public transit routes and the distances and average walking times between key locations;
- Impact-wise, there was a 7% increase in employment opportunities between 1997 and 2015;
- Most significantly, residents and visitors were positive about the city's prospects whilst the local economy has thrived in the transformed areas;
- Road safety has improved significantly (i.e. there have been no fatal traffic casualties in the pedestrianised area and only three across the city area since 2007); and
- Carbon emissions decreased by 66% between 1999 and 2014.

Acknowledgement of Negative Perceptions of Pedestrianisation and Active Travel Provision

4.3.25. As well as the case studies of other schemes, the work by Climate Change acknowledges that there are two groups who require consideration when designing sustainable travel interventions for local high streets.

4.3.26. The first are those for whom interventions may impact their ability to travel to and use the high street. Restricting car access could make it harder for people with limited mobility to access premises they want to visit.

4.3.27. The second group are businesses on high streets who perceive that they will suffer 'economic loss' due to the proposed changes. Although empirical evidence from case studies has shown that sustainable travel can have a positive impact on high streets through increased customer satisfaction, footfall, sales and land values, there is recognition that businesses can realise these benefits in different ways.

4.3.28. Firstly, evidence suggests that hospitality businesses benefit more from pedestrianised streets compared to the retail sector. In particular, niche retail businesses that rely on customers travelling long distances for their services may be more at risk (Portland State University et al., 2020). To mitigate against this, it is important to ensure that at the planning stage of the intervention, there is 1) good understanding of economic activity in the area and 2) to ensure that the impacts on local businesses are considered.

4.3.29. This approach ensures that the risk of factors being overlooked (such as the type of customers, current travel patterns and delivery requirements) which may result in negative impacts is minimised. It is therefore important that there is a good understanding of 1) the businesses in the area, 2) who their customers and workforce are and 3) what is important to the success of these businesses.

4.3.30. Having good data and information on the businesses affected by the pedestrianisation schemes will enable the following as part of the scheme planning process:

- Deliver interventions to the high street where they will have the most significant benefit first (i.e. predominantly hospitality businesses);
- Design interventions that support the businesses and that take into consideration their specific needs;
- Ensure that there is extra support for those businesses that may be at risk; and
- Plan for the disruption caused when civil works are taking place as part of the intervention.

4.3.31. Based on the research reviewed by the Climate Change team, there is evidence that businesses are able to realise more significant benefits when they 'take ownership' and are involved in sustainable travel interventions. Engagement processes that take the time to understand the community and businesses needs and foster buy-in are vital for successful schemes.

Work by Living Streets – the Pedestrian Pound

4.3.32. In 2013, Living Streets launched The Pedestrian Pound to demonstrate the hidden and underestimated economic contribution of people on foot to high street economic vitality.

4.3.33. The work was updated in 2018 and acknowledges that the business and commercial case for investing in pedestrian schemes remains a challenging area within which to make robust claims about financial impacts. The key question remains: "does investment in the public realm and 'walkability' create additional commercial benefits?".

4.3.34. Living Streets have found that there is a growing body of qualitative and case study evidence which, when evaluated alongside the available quantitative data, shows that public realm investments deliver significant benefits to consumers and businesses.

4.3.35. Based on Living Streets' literature review, three performance indicators for public realm investments were identified:

- The impact on existing business performance – covering footfall and retail;
- Urban regeneration – covering new businesses, increased rental income, increased employment, and reduced social exclusion; and
- Improved consumer and business perceptions.

4.3.36. Under each of these three themes, a series of case studies was compiled and some of the relevant examples are given below.

General Impacts

- **Scottish Government Town Centre Toolkit** – applied to the **Kirkintilloch town centre scheme** in **East Dunbartonshire**: this public realm improvement scheme covered 1) lowering vehicle speeds to 20mph, 2) removing traffic signals, 3) widening footpaths and improving cycling infrastructure, 4) developing a new public square and 5) repurposing the town hall as a centre for heritage, arts, culture, and community use. **Outcomes:** data collected indicated that a) overall trip frequencies by bike and bus increased, b) respondent perceptions of the retail area post-scheme improved with the majority (71%) indicating that Cowgate is a good retail area compared with 46% before development, c) the overall reaction to the scheme was mixed with some of the shared space elements of the scheme proving controversial, d) there is evidence that the Town Centre Toolkit approach of prioritising people on foot had a positive impact. For example, 61% of pedestrians experienced wait times to cross the junction before the improvements - this reduced to 27% once the scheme had been implemented.

Impacts on Existing Business Performance

- **Sheffield – Heart of the City**: this scheme comprised three key public realm improvement projects: 1) the re-construction of the Peace Gardens, 2) the re-alignment and narrowing of Pinstone Street and 3) the narrowing of the carriageway in Surrey Street to give pedestrians more space. **Outcomes:** an evaluation of the public realm improvements reported a) a 35% increase in footfall in the city centre (Genecon, 2010), b) a net increase of 350,000 to 770,000 in visitor numbers, c) a net increase in spending of £4.2 million, d) regeneration impacts of £1.60 to £2.40 per square foot and e) the creation of between 341 to 527 additional net jobs.
- **Kelso - Scottish Borders**: this project covered traffic management and public realm enhancements as well as a programme of town centre improvement works, including improved provision for pedestrians. **Outcomes:** since the improvements, Kelso is considered to have consistently performed well in footfall measures and in terms of town centre floorspace and retail unit occupancy. Footfall remains 28% above the levels recorded in 2011 (based on work undertaken in 2016).
- **Railton Road, Herne Hill - South London**: this included the part-pedestrianisation of Railton Road, closing it off to through traffic and creating a new public space. Expanded footways and new crossing points also formed part of the project. **Outcomes:** a follow-up survey undertaken with the public and local businesses. The evaluation highlighted the increased footfall and economic activity created by repurposing the area for pedestrians. Key metrics include: a) 66% of pedestrians surveyed agreed that they shopped more, b) 90% of local businesses surveyed agreed that the changes had resulted in an overall improvement, c) 38% of people agreed that people were spending more in the area and d) 78% of businesses agreed that the new market brought more people to the area.

Impacts on Regeneration

- **The Grassmarket, Edinburgh**: between 2013 and 2018, the Greater Grassmarket Business Improvement District (BID) delivered a series of targeted interventions in partnership with residents, community groups, the local authority, and retailers to bring additional daytime footfall to the area. This included a series of events to regenerate the public space. **Outcomes:** feedback from the outcomes of the project included this: *"The regenerated Grassmarket recovers many of its original qualities, previously lost due to increased traffic over the years. Changing the balance between vehicles and pedestrians was key to improving Grassmarket's appeal as a walkable neighbourhood and has seen local pubs and cafes embrace a continental-style cafe culture. Together with a vibrant retail scene… it makes for a thriving economic district."*

Impacts on Consumer and Business Satisfaction

- **Waltham Forest – Mini Holland Scheme**: the programme worked with residents and local businesses to improve conditions for pedestrians and cyclists by redirecting non-local vehicular journeys and re-allocating road space for walking and cycling. Non-local through traffic was redirected onto the main road network and dozens of blended 'Copenhagen' crossings were installed, giving priority to pedestrians crossing side streets on main roads. **Outcomes:** A 2015 survey found that local businesses believed that 63% of their customers arrived by car and 49% walk. A survey of visitors to the street, however, revealed that 20% had arrived by car and 64% had walked. The scheme also encouraged more businesses to open in the area leading to increased economic and employment opportunities.

- **Additional evidence covering consumer and business impacts/perceptions**: in addition to specific case studies, there is other empirical evidence and research covering consumer and business satisfaction with pedestrian and public realm schemes. **Outcomes of studies:** several studies show that shoppers are more likely to have negative opinions about traffic and transport than retailers (Hass-Klau 1993, Kumar, and Ross 2006, Tolley 2011). There is also evidence showing that traffic calming measures do not adversely affect small businesses (Drennen, 2003). Contrary to expectations at the time (1999), a combined traffic restraint and pedestrianisation scheme in Oxford did not lead to a reduction in visitor numbers despite a 17% reduction in car trips to the centre (Parkhurst, 2003). In addition, a survey of local authority attitudes towards road user charging reported that 83% of respondents were 'very concerned' or 'fairly concerned' with the economic impact on the urban area (Ison, 2000). However, research modelling the impact of road user charging on urban areas found that where revenue is ring-fenced for public realm investment it may enhance business performance in city centres in the long term (Whitehead, 2002).

CONCLUSIONS FROM THE EVIDENCE AND RESEARCH

4.3.37. There are several conclusions drawn from the research into the impacts of pedestrianisation and enhanced public realm:

- Significant evidence of higher footfall in businesses across large sample sizes in all geographies. Several UK studies found that footfall increases by approximately 30% after the introduction of sustainable travel measures (Momentum Transport Consultancy, 2022);
- Significant evidence of increased time and money spent in local businesses across large sample sizes in more than one geography;
- The Living Streets team who updated the "Pedestrian Pound" report in 2018 found that evidence from the UK and internationally demonstrated increased footfall and trading;
- The issues high streets are facing at the moment (i.e. degrees of decline) are due to long-standing trends with many causes. This is not, however, inevitable as businesses, high streets and urban centres are responding with a range of actions to encourage footfall and increase sales. The most successful of these recognise the 'economics of place' and the need to improve the pedestrian experience and accessibility;
- There is also evidence that business owners and organisations over-value the importance of parking and car access to their footfall and sales revenue. To mitigate these understandable perceptions, the Pedestrian Pound conclusions suggest that business organisations need to be aware of the evidence in this area to promote the economic benefits of walkability, public spaces, and provision for cycling and active transport users to members.

QUANTIFICATION OF WIDER IMPACTS

4.3.38. There are a range of wider economic impacts associated with pedestrianisation, urban sustainable travel and public realm schemes.

4.3.39. In addition to the guidance relevant to the conventional transport economics impacts reported in the earlier part of this EIA report, there are also several aspects of appraisal guidance relevant to the wider economic impacts covered here. With respect to how these wider impacts are incorporated in scheme appraisals, the following items of guidance are relevant:

- **STAG** - the "Economy Criterion" in STAG covers 1) Transport Economic Efficiency (TEE), i.e. benefits covering traffic volumes and journey times and 2) Wider Economic Impacts (WEIs), i.e.

any economic impacts which are additional to transport user benefits (such as how the option helps attract new jobs and helps existing businesses) – WEIs are relevant to this analysis of Academy Street's wider impacts;
- UK Government: **DfT Transport Analysis Guidance (TAG)** and **Value for Money Framework** – the latter sets out how wider economic impacts can be incorporated in the assessment of a scheme's VfM category; and
- UK Government: **Department for Levelling Up, Housing and Communities** (**DLUHC) Appraisal Guide** – this covers how various non-transport economic impacts can be captured, especially using 'additionality' principles covering displacement, leakage, substitution, and economic multipliers.

4.3.40. As noted in STAG, appraisals have traditionally focussed on the TEE assessment with less emphasis placed on WEIs. To ensure an effective economic assessment, STAG states that both should be addressed.

4.3.41. The impacts considered here include:

- Expenditure impacts due to changes in retail footfall;
- Expenditure impacts due to impacts on visitor numbers (i.e. those on vacation);
- Local 'value' impacts such as the impact on rental values and / or Land Value Uplift (LVU);
- Crime and Anti-Social Behaviour (ASB) reduction impacts; and
- Public Realm Amenity impacts.

4.3.42. These cover the types of impacts associated with 'wider economic impacts' and are those that would be expected to be captured using guidance such as STAG and DLUHC's appraisal guide[30]. These types of impacts are also those observed as part the case study research into the impacts of similar schemes.

4.3.43. DLUHC's appraisal guide provides over-arching guidance on impacts not associated with traditional transport economics-related benefits. The appraisal guide focuses on the concept of additionality whereby the impacts of an intervention need to be demonstrably over and above what would have been achieved in the 'without Scheme' scenario.

4.3.44. Additionality acknowledges the following:

- Impacts can be displaced from similar activity nearby (known as "displacement");
- Impacts can be transferred out or 'leak' outside the area (known as "leakage"); and
- Impacts can be amplified in the local supply chain or via the expenditure of new employees (captured via economic/employment "multipliers").

4.3.45. As well as additionality, several data sources are used to inform the wider impact analysis. These include:

- Footfall data available – used in the calculations of additional expenditure (based on 2022 Town Centre Health Check data for Academy Street in Inverness);

[30] DLUHC appraisal guide, March 2023 (https://www.gov.uk/government/publications/dluhc-appraisal-guide/dluhc-appraisal-guide)

- Scarborough Tourism Economic Activity Monitor data (also produced as the Scottish Tourism Economic Activity Monitor in Scotland) – otherwise known as 'STEAM' data. This data is produced at a regional/ county level. It is used as it gives metrics such as total visitor expenditure, expenditure per person, total visitor numbers as well as the number of Full Time Equivalent (FTEs) supported by additional visitor expenditure; and
- Various other local metrics used for impact calculations. These include local commercial property rental values as well as other local business parameters, including the number of businesses in the impacted area.

4.3.46. All quantified/ monetised impacts are calculated on the same basis. This is compliant with appraisal guidance and also means that the impacts can be incorporated alongside the transport benefits when the VfM of the scheme can be assessed.

4.3.47. The impact calculations are based on the following:

- The overall appraisal period covers up to 30 years. Note, however, that impacts based on using additionality are also calculated over shorter periods (e.g. 5 to 10 years). These shorter periods reflect the 'persistence' of the impacts whereby other factors will start to have an influence after a period of between 5 and 10 years;
- All impacts are subject to additionality factors. Additionality reflects the extent to which impacts will be greater than those in the 'business as usual' scenario (or 'without Scheme' scenario). The factors used are based on standard ready reckoner values taken from Homes and Communities Agency (HCA's) Additionality Guide; and
- All monetised values are subject to standard Green Book discount factors (e.g. 3.5% per annum for the first 30 years of the appraisal period) – this is the same discounting process applied to the transport benefits.

Wider impacts

4.3.48. The scale of potential wider impacts is reported below. Given the range of potential outcomes, Low, Central and High scenarios are covered. These different scenarios provide a quantitative indication of the magnitude of each type of wider economic impact.

Additional Footfall and Additional Expenditure

4.3.49. Based on footfall data observed in Academy Street in 2022[31], an annual total of footfall is derived. This is based on assumptions covering the proportion of those on foot spending in the street as well as factors to derive an annual footfall total.

4.3.50. For expenditure data, there are different sources:

- Inverness Shopping Park data: £74 per person[32];

[31] 2022 Town Centre Health Checks (arcgis.com) - the 'base' survey data covers the total number of people observed on Academy Street over a 30-minute period between 12pm and 2pm. This is then annualised.
[32] https://completelyretail.co.uk/scheme/inverness-shopping-park-inverness-2741

- Retail spend data from Eastgate Shopping Centre: £125 per person[33]; and
- 2021 STEAM data for Inverness and Loch Ness (covering expenditure per visitor)[34]: £199 per person.

4.3.51. The data used for the analysis assumes as a Central Case that spend per person is £74 (as per Inverness Shopping Park data). Data from the Shopping Park has been used as this is likely to be representative of average expenditure levels across all outlets on Academy Street. The Central Case also assumes that 10% of all those on foot spend in the street / local area. This is a conservative assumption and acknowledges that of all those on foot in Academy Street (or those making cycling trips) will not stop to spend money in the local shops and outlets.

4.3.52. The research (such as that by Living Streets in the Pedestrian Pound report) covering observed increases in footfall typically shows increases in the 15% to 30% range. Given the range of potential range of impacts, the following footfall increases over the 'baseline' (or Do Nothing, i.e. no Academy Street scheme) have been evaluated:

- +5% increase;
- +10% increase; and
- +15% increase.

4.3.53. In addition, three timeline scenarios are evaluated:

- Impact over 5 years;
- Impact over 10 years; and
- Impact over 15 years.

4.3.54. These different timelines reflect the typical periods over which impacts of this type are evaluated. The 5 and 10 year horizons reflect additionality guidance whereby the persistence of impacts tends to be over shorter periods of time[35]. This is different to the appraisal of the 'transport economics' impacts associated with transport schemes where time horizons of 30 to 60 years are used.

4.3.55. The results, in present day values, are presented in the table below.

Table 4-14 – Additional Retail Footfall Expenditure

Impact Timeframe	5% Footfall Increase	10% Footfall Increase	15% Footfall Increase
5 years	£1.37m	£1.44m	£1.50m
10 years	£2.5m	£2.6m	£2.8m
15 years	£3.5m	£3.7m	£3.8m

[33] Report: "Inverness Eastgate Shopping Centre: the retail destination in the UK's largest catchment area", September 2022
[34] STEAM Report for 2019-2021 – Final, Highland Council – Inverness and Loch Ness, Global Tourism Solutions (UK) Ltd
[35] See Section 2.6 ('Persistence of outputs and outcomes'), Page 13, HCA Additionality Guide (Fourth Edition 2014)

Additional Property Rental Income

4.3.56. As reported in the Pedestrian Pound report, there is substantial evidence that improvements to the public realm increase property prices. The Heart of the City scheme in Sheffield (which included narrowing of a carriageway in one of the central streets in the city - to give pedestrians more space) reported regeneration outcomes such as an increase in rental value of £1.60 to £2.40 per square foot.

4.3.57. Based on the current number of commercial properties in Academy Street, the increase in rental values is based on the following input data:

- Average size of properties in Academy Street: 682 square feet[36]; and
- Current rent per square foot in Academy Street: £13.28[37].

4.3.58. The research covering observed increases in rental values (such as that undertaken by Living Streets for the Pedestrian Pound) typically shows increases in the 10% to 30% range. Given this range of impacts, the following rental value increases (compared to a baseline of today's values) have been assessed:

- +5% increase;
- +10% increase; and
- +15% increase.

4.3.59. In addition, the following timeline scenarios are evaluated:

- Impact over 5 years;
- Impact over 10 years; and
- Impact over 15 years.

4.3.60. The results are presented in the table below.

Table 4-15 – Additional Rental Value

Impact Timeframe	5% Rental Increase	10% Rental Increase	15% Rental Increase
5 years	£55,781	£58,437	£61,093
10 years	£103,230	£108,146	£113,062
15 years	£143,182	£150,000	£156,818

Additional Visitor Expenditure

4.3.61. As well as the additional retail expenditure from increased footfall (i.e. local residents and those making trips into the city from the surrounding area for shopping and leisure purposes), the

[36] Based on publicly available data from sources such as Zoopla and Prime Location data
[37] Ibid

Academy Street proposals will also help to attract additional tourism visits into the city centre and therefore increased visitor expenditure.

4.3.62. The location of Academy Street adjacent to the entrance to Inverness railway station means that it is an important gateway corridor for tourists / visitors coming into Inverness. As major attractions such as the riverbank, castle and museum are all within a 10 minute walk of the station, the proposed changes to Academy Street will make the immediate station entry and exit point far more attractive and easier to negotiate.

4.3.63. In addition, for those making onward bus connections to locations not served by rail services from Inverness (e.g. Fort William and Ullapool), the bus station is a five minute walk from the station. Academy Street is on the walking (and cycling) route between the station and the bus hub and will become a far more attractive travel proposition between these locations once the work is complete.

4.3.64. Inverness station's importance has also been enhanced recently with the February 2023 opening of Inverness Airport station and the number of passengers that have used the station since. The station is on the Inverness to Aberdeen line and was intended to serve a wider market than just the airport.

4.3.65. The station is located just off the A96 and has given residents in Tornagrain and the east of Inverness a sustainable travel option for journeys into the city. In the year since opening, more than 50,000 passenger journeys have been made[38] with this number continuing to rise. Many of these passengers will be travelling into Inverness for various purposes and will add to the footfall in the vicinity of the city centre station and adjacent Academy Street.

4.3.66. To provide an indication of the potential for increased visitor expenditure, the following data is used:

- Current number of annual visitors: 300,000[39]; and
- Current spend per visitor: £199[40].

4.3.67. Given the potential to 'double count' additional retail expenditure (from increased footfall) and additional visitor expenditure, the uplift in visitor numbers has been kept low for the purposes of this analysis, i.e. a 1% uplift has been applied. The impact of adjusting this uplift assumption can be tested by running different sensitivities.

4.3.68. In addition, the following timeline scenarios are evaluated:

- Impact over 5 years;
- Impact over 10 years; and
- Impact over 15 years.

[38] https://www.railmagazine.com/news/network/2024/02/14/50-000-passenger-journeys-at-inverness-airport#:~:text=More%20than%2050%2C000%20passenger%20journeys,lift%20for%20passengers%20and%20cyclists.
[39] Based on the following from 8th Nov 2023: "Before the pandemic in 2019, 313,000 visitors came to Inverness" (source: https://www.pressandjournal.co.uk/fp/news/inverness/6251728/inverness-travel-lemming-scotland/)
[40] Based on 2021 STEAM data for Inverness & Loch Ness

4.3.69. The results are presented in the table below.

Table 4-16 – Additional Visitor Expenditure

Impact Timeframe	With 1% uplift in visitor numbers
5 years	£2.1m
10 years	£3.9m
15 years	£5.4m

Reduced Crime and Anti-Social Behaviour

4.3.70. Reductions in crime and anti-social behaviour (ASB) can potentially have positive impact associated with the type of change being proposed by the Scheme. ASB imposes costs on society as councils, the Police and residents all incur costs due to these activities. The costs from each type of crime comprise:

- Costs incurred in anticipation of crime;
- The consequences of the crime; and
- The response to the crime.

4.3.71. Improved public design of public areas and placemaking can lead to greater levels of footfall throughout the day and night, resulting in greater levels of natural surveillance. Increased footfall levels also result in higher occupancy rates in commercial buildings, which leads to greater income from business rates. Higher business rates are an additional form of income for the Council.

4.3.72. Although Inverness is not known for high levels of crime, statistics collated by Police Scotland[41] contain the number of offences committed in the 'Inverness Central' ward (in the Highland Council area) during Financial Year (FY) 2022/23. These include the following:

- Breach of the peace;
- Theft of pedal cycle;
- Supply of drugs;
- Possessing an offensive weapon;
- Robbery; and
- Theft by shoplifting.

4.3.73. In the Inverness Central ward during FY 2022/23, there were 798 offences across the above categories (approximating 140 per month). As not all crimes are reported or recorded by the Police, a multiplier is applied to the number of recorded crimes. The multipliers are based on data collated by the UK Home Office and reflect the likelihood of the reported crime.

4.3.74. The research by the Home Office also provides estimates of the unit cost of crime. This is used to calculate the potential crime reduction benefits associated with various policies and/or interventions.

[41] https://www.scotland.police.uk/about-us/how-we-do-it/crime-data/

Similar to all the other impact types quantified, a range of additionality factors are applied to reflect that other factors as well as the Academy Street proposals will impact on crime reduction. Another assumption is that if crime levels reduce by 20% as a result of the proposals, this will generate an additional economic benefit stream over time. The 20% assumption is used here as this has formed the basis of similar public realm improvement schemes where crime reduction impacts have been quantified. An example is the work WSP undertook for a similar scheme in Wandsworth High Street where a pedestrian and cycling infrastructure was significantly enhanced and the public realm enhanced as the road was closed to private 'through' traffic.

4.3.75. As well as a 20% 'central case' crime reduction impact, 5% and 10% reductions have also been evaluated (and the outcomes of these are given in the table below).

4.3.76. In addition, the following timeline scenarios have been evaluated:

- Impact over 5 years;
- Impact over 10 years; and
- Impact over 15 years.

4.3.77. The results are presented in the table below.

Table 4-17 – Crime Reduction Impacts

Impact Timeframe	-5% reduction	-10% reduction	-20% reduction
5 years	£68,819	£137,639	£275,277
10 years	£126,763	£253,527	£507,053
15 years	£175,551	£351,101	£702,202

Enhanced Public Amenity

4.3.78. Improved public space gives rise to external amenity benefits. In the context of the Scheme, these will comprise extensive public realm (and hence public amenity) enhancements. The UK DLUHC's Appraisal Guide contains estimates of the external amenity benefits of different land types.

4.3.79. The amenity value for the 'urban core' land type is estimated to be £109,138 per hectare (in 2016 prices). Converting this to 2022/23 values gives an amenity value per hectare of £128,135. To identify the area within Inverness city centre that will be impacted by the proposals, work undertaken for the Inverness City Centre Development Brief[42] identified that the central core of Inverness city centre comprises 6.28 hectares. This area contains a mix of uses such as retail, business, residential and open space.

4.3.80. Based on the amenity value per hectares (£128,135), the number of hectares forming the Inverness city centre 'core' and the application of additionality factors, the extent of public amenity benefits is calculated. As before, the following timeline scenarios have been evaluated:

- Impact over 5 years;

[42] Inverness City Centre Development Brief, Habitat Regulations Appraisal, Draft Record, January 2013

- Impact over 10 years; and
- Impact over 15 years.

4.3.81. The results are presented in the table below. It should be noted that the impact area covers the 'core' city centre within Inverness and therefore a larger area than just the immediate vicinity of Academy Street.

Table 4-18 – Public Amenity Impacts

Timeframe Impact	Impact
5 years	£113,538
10 years	£209,134
15 years	£289,623

INCORPORATION OF WIDER IMPACTS IN THE ECONOMIC APPRAISAL

4.3.82. Although the quantified / monetised wider economic impacts cannot be incorporated in the core BCR calculated for the transport economics elements of the scheme, they can be used to support the rationale underpinning the VfM assessment, this is reported in Chapter 9 of this report.

4.4 ESTIMATION OF COSTS (PVC)

4.4.1. Costs to Government can be defined as the total amount of money spent on constructing, operating and maintaining the scheme.

4.4.2. These costs include:

- Investment Costs - include all infrastructure and other capital costs incurred by public sector operators which are additional to those incurred in the do-minimum scenario;
- Operating and Maintenance Costs - include the annually recurring costs incurred by the public sector in operating and maintaining the scheme. These costs can include operating, continuous maintenance, and renewals costs;
- Grant and Subsidy Payments - should private sector operator revenues do not cover the investment and operating costs, some form of grant or subsidy may be required for delivery;
- Revenues - related to user charges, as user charges represent monetary transfers from users to the Government (although in many cases the revenues are subsequently re-reinvested in the transport system); and
- Indirect Tax Revenue - savings in fuel and modal shift may lead to a reduction in tax revenues for the Government. When calculating the BCR, indirect tax is considered as a benefit and is therefore reported separately.

4.4.3. To calculate a Present Value of Cost (PVC) for the Academy Street scheme, the methodology set out in DfT's TAG (Units A1-1: Cost-benefit Analysis and A1-2: Scheme Costs) has been followed. This approach is also compliant with the approach set out in STAG.

4.4.4. In line with guidance, the following steps have been undertaken:

- Scheme cost (2024 prices, including inflation);
- Sunken development costs of £249,859 up to the approval of RIBA stage 4 have been excluded from the Economic appraisal. Development costs for RIBA stage 4 have been included in the

PVC calculations. In economic appraisal, as set out in the Green Book, costs relevant to an economic appraisal are those about which decisions can be made, in other words, those costs which will be incurred subsequent to appraisal and the decision to go ahead. 'Sunk costs', which are the costs of goods and services that have been committed to prior to scheme appraisal and which are irrevocable, are therefore excluded from the appraisal. This reflects the principle that evidence should support decisions on spending over which the spending organisation has discretion43;

- Risk or Optimism Bias (OB) adjusted cost. This is recommended to be 23% for all costed elements;
- Optimism Bias adjusted cost is converted to 2010 prices;
- Discounted to 2010 prices; and
- Multiplied by the indirect taxation factor of 1.19 to ensure costs are in comparable market prices.

Base Cost

4.4.5. The estimated scheme outturn cost (Capital Cost) in real prices for the Scheme is £7.18m in Q4 2023/24 prices. This cost excludes risk, inflation and project development costs sunk to date.

Inflation

4.4.6. TAG Unit A1.1 (Cost Benefit Analysis) explains that when applying monetary values to cost impacts over a long appraisal period, it is important to consider the effects of inflation. Failure to do so would distort the results by placing too much weight on future impacts, where values would be higher simply because of inflation.

4.4.7. For Cost Benefit Analysis purposes, all values should be adjusted to include future cost inflation over and above general inflation. This is to prevent the effects of inflation, during variable scheme construction horizons, from distorting the common base values.

4.4.8. A 5% uplift has been applied to the base costs to account for construction inflation. This equates to 3.8% year-on-year inflation. This was then inflated year-on-year to only account for real increases in costs.

Adjustment for Optimism Bias

4.4.9. Optimism Bias (OB) refers to the tendency for scheme promoters to be overly optimistic about scheme costs. The function of OB adjustments is to confirm that the economic case remains robust if historically observed cost overruns were to be repeated and are generally higher where the cost estimate is immature, i.e. when there are significant elements of the project that are not defined or understood, and/or when there is evidence that the Quantified Risk Assessment is systematically underestimating costs.

[43] https://www.transport.gov.scot/media/10165/idm-guidance-annex-d-business-case-guidance-for-publication-jan-2016.pdf

4.4.10. The Treasury Green Book suggests that appraisers should make explicit, empirically-based adjustments to the estimates of costs, and TAG provides recommended adjustment factors based on the project category and stage of development.

4.4.11. TAG Unit A1-2 indicates that the recommended OB for road interventions and general transportation schemes is 23% for this stage of design. This would be applicable to all scheme elements.

4.4.12. In this instance, the level of risk exceeds the recommended OB uplift of 23%. To ensure the estimation of costs is robust and conservative, an adjustment over and above OB has been made to account for the greater level of cost uncertainty. A 39% uplift has therefore been used in the calculation of the Present Value Cost for risk / OB.

Rebasing

4.4.13. In line with TAG Guidance, cost impacts should be rebased to 2010 prices to ensure consistency between benefits and costs.

4.4.14. To convert from a Q3 2023/24 price base to the common price base year, 2010, an inflation index (GDP Deflator) should be applied, thereby allowing for the change in inflation between Q3 2023/24 and 2010.

4.4.15. The GDP price deflator index contained in the TAG Databook has been used to convert prices from the Q3 2023/24 price base year to 2010.

Discounting

4.4.16. TAG Unit A1.1 requires that, to calculate a present value, all monetised costs and benefits arising in the future should be 'discounted', that is to say adjusted for peoples' 'social time preference' to consume goods and services now rather than in the future.

4.4.17. A discount rate per annum is applied, to represent the reduced present value of deferred future monetary costs and benefits.

4.4.18. The scheme cost estimates have been discounted to the 2010 base year present value using rates from the TAG Databook (November 2023):

- 3.5% pa from base year 1 to year 30; and
- 3.0% pa from year 31 to year 60.

Market prices

4.4.19. The penultimate stage in preparing the cost for appraisal is to convert the aggregate scheme cost from 'factor cost' to the 'market price' unit of account using the TAG indirect tax correction factor of 1.19, which reflects the average rate of indirect taxation in the economy.

Operating, Maintenance and Revenue Costs (OMR)

4.4.20. It is assumed that the scheme will incur ongoing maintenance and operational costs. However, as the existing road is already established, it is assumed that the proposed changes on Academy Street will generate relatively low levels of additional maintenance costs. It is assumed that the scheme will incur increased sweeping/cleansing of the wider footways, pruning and maintenance of greenery, repainting of bus lane markings as well as replacement of signalling equipment and street furniture.

4.4.21. To ensure these reoccurring costs are accounted for, an OMR cost has been forecast across the 60-year appraisal period, recurring every 10 years. This has been estimated as 10% of the base scheme construction expenditure.

4.4.22. These reoccurring OMR costs have been discounted to 2010 prices and values, following the methodology outlined above.

4.4.23. The total net impact of operating and maintenance costs equates to £316k in 2010 prices and values across a 60-year appraisal period.

MEC Infrastructure Impacts and Indirect Tax

4.4.24. There are some infrastructure cost savings generated with the scheme implementation. The AMAT estimates **£0.8k** of infrastructure maintenance cost savings. The saving results from a reduction in vehicle kilometres travelled on the local network, and therefore a reduction in damages to road surface.

4.4.25. Non-transport indirect tax revenue costs from TUBA (£122k) and costs from the AMAT and bus user appraisal (£12k) are also captured in the PVC and are presented below as a value of £17.3k.

Present value of costs

4.4.26. The Present Value of Costs (PVC) of the Academy Street Scheme is £5.79m. This has been calculated and presented in **Table 4-19**, noting that the infrastructure cost saving calculated in the active mode and bus user appraisal has been included here.

Table 4-19 – Build-up of PVC

	Total Capital Costs (£)	Total OMR Costs (£)	Costs (£)
Outturn (Excluding risk, OB and inflation)	7,178,141	1,597,000	**8,775,141**
Real Prices (2023/24)	7,457,926	1,540,032	**8,997,958**
Risk/ OB adjusted cost	10,429,926	1,540,032	**11,969,958**
Rebased costs to 2010/11	7,479,364	1,104,366	**8,583,730**
Discounted costs to 2010/11	4,484,108	265,823	**4,749,932**
Capital Costs (2010 Market Prices and Values)	5,336,089	316,330	**5,652,419**
Infrastructure maintenance savings (MECs)	-885	-	**-885**
Indirect Tax	134,009	-	**134,099**
Present Value of Costs	**5,469,213**	**316,330**	**5,785,632**

4.5 ECONOMY SCORING EVALUATION

4.5.1. Following the assessment of estimated quantifiable impacts, this section concludes the outcome of the Economy evaluation for the impacts associated with the scheme. The conclusion utilises both qualitative information on likely impacts and where available, quantitative results of the economic impact assessment.

TRANSPORT ECONOMY EFFICIENCY

4.5.2. Section 4.2 presents the quantitative appraisal of the monetised impacts of the Scheme. This includes consideration of active travel impacts, journey quality impacts, road user impacts and bus user impacts.

4.5.3. A summary of the monetised impacts is provided in Table 4-20.

Table 4-20 – Summary of monetised Transport Economy Efficiency Impacts

Economic Impact	Quantification (£)
Congestion	440,265
Consumer Users (Commuting)	-1,796,111
Consumer Users (Other)	-1,567,447
Consumer Users (Business Users and Providers)	-2,275,411
Vehicle Operating Costs (Commuting)	£1,000
Vehicle Operating Costs (Other)	£37,000
Vehicle Operating Costs (Business Users and Providers)	-£504,000
Reduced Risk of Premature Death	3,109,396
Absenteeism	593,855
Journey Ambience	5,015,271
Total	2,972,579

WIDER ECONOMIC IMPACTS (WEIS)

4.5.4. As presented in Section 4.3, there are a number of additional potential wider economic impacts associated with the Scheme. These are based on the evidence gained from several case studies of other schemes across the United Kingdom, including Scotland. These impacts cover additional retail footfall expenditure, additional rental value, additional visitor expenditure, crime reduction impacts and public amenity impacts.

4.5.5. Although these impacts do not form part of a conventional transport economics-based scheme appraisal, they are nevertheless important to consider. In Transport Scotland's STAG, for example, these are termed Wider Economic Impacts (WEIs) and represent *"impacts in non-transport markets that are either of importance from a policy or distributional perspective or which affect the net value that society attributes to the outcomes of a transport intervention".*

4.5.6. As STAG also states, its advice on wider impacts is that the results of a WEIs analysis should be treated as a sensitivity to the conventional Transport Economic Efficiency (TEE) results. This is because under WEIs, it is difficult to monitor and evaluate the benefits captured by the WEIs analysis.

4.5.7. A summary of the quantifiable impacts is provided in Table 4-21. Given that these are indicative impacts, 'Low', 'Medium' and 'High' scenarios are covered with an explanation of these provided in Section 4.3. The period over which the impacts are quantified is five years (reflecting the typical 'persistence' of these types of impacts).

Table 4-21 – Summary of quantifiable WEIs

Economic Impact	Low Impact (£)	Medium Impact (£)	High Impact (£)
Additional Retail Footfall Expenditure	1.37m	1.44m	£1.50m
Additional Property Rental Values	55,781	58,437	61,093
Additional Visitor Expenditure	n/a	£2.1m	n/a
Crime Reduction Impacts	68,819	137,639	275,277
Public Amenity Impacts	n/a	113,538	n/a

STAG CRITERIA DETERMINATION

4.5.8. Further to the monetised impacts captured above, the appraisal of the scheme also considers all other impacts on the economy (both monetised and non-monetised). The outcomes of this assessment are summarised below:

- The scheme is expected to increase walking, wheeling, and cycling levels in the area. The improvements to infrastructure on Academy Street will encourage more users to access and spend time on the street. This increased footfall will support additional retail and hospitality expenditure.
- It is expected that there will be benefits for both existing and new walking, wheeling, and cycling users. Individuals will be able to enjoy the new public realm, with a lower traffic environment and dwelling activity may increase in the area. Furthermore, the new-to-walk and cycle users will benefit from increased levels of physical activity.
- Access to Academy Street and surrounding properties is still available for those still choosing to travel to and from the city centre by car. However, journey times for those choosing to drive will increase, particularly with origin and destinations between areas immediately east of Academy Street and southwest of the city.
- Increases in journey times could mean that some vehicular trips to and from Inverness become less attractive. This could encourage behavioural change for short distance trips as modal shift to active and sustainable travel is a more viable transport option. It could also discourage the trip altogether. Upon review of the surrounding land use, there are limited alternative destinations nearby, where trips could be encouraged to divert to. Therefore, it could be concluded that the demand is unlikely to decrease as the estimated increased journey times are not significant enough to warrant travelling to a nearby town or city to access key services provided in Inverness City Centre.
- In addition to the above, changes in journey times may also result in induced demand. Where journey times decrease through efficiencies in the performance of some junctions within the

network, this could encourage more people to drive into the city on these routes, who may have been previously discouraged to do so.

- Passengers currently accessing the city by bus, and either travelling through Academy Street or to the bus station, rail station or Queensgate, are expected to benefit from improvements in bus journey times. The new bus lanes and reductions in traffic flow on Academy Street are expected to improve network efficiencies for a multitude of services converging at the City Centre. Some delays for services are expected at certain junctions on the adjacent roads to Academy Street. However, these are considered within the overall journey time assessment for bus users and are counteracted by benefits on Academy Street.
- As mentioned above, improving the quality of sustainable transport infrastructure will encourage uptake in usage. This uptake could be enhanced where car trips become a less attractive alternative for travel due to increases in journey times, further encouraging modal shift. Upon review of the scale of the impact, it could be concluded that significant modal shift is unlikely to occur and uplifts in demand are likely to be new trips now attracted to the area through the improvements to the streetscape and infrastructure.
- The scheme could increase customer visits to local businesses, with studies showing an average footfall increase of around 30% (Momentum Transport Consultancy, 2022). Furthermore, evidence from multiple regions and locations has highlighted a marked rise in both the duration of stay and expenditure within local establishments, which could be expected through the delivery of improvements on Academy Street.
- Current challenges faced by high streets, including varying degrees of decline, stem from longstanding trends driven by several underlying factors. Nonetheless, proactive measures undertaken by businesses and urban centres demonstrate the potential for revitalisation, emphasising the significance of enhancing pedestrian accessibility and overall experience.
- Contrary to prevailing beliefs among business owners and organisations, research suggests an overemphasis on the role of parking and car accessibility in driving foot traffic and revenue. Addressing these perceptions, the findings of the Pedestrian Pound advocate for a better understanding of the economic advantages associated with walkability, public spaces, and accommodating active transport users.
- Utilising existing footfall data, the WEI assessment has concluded that retail spending could increase by between £1.4m (over a five year period) and £3.8m (the impacts are prolonged over 15 year period). The estimated impacts are based on local expenditure data to help determine the range of potential impacts.
- There is evidence to suggest that improvements to public realm may increase property prices. The impact assessment has examined the number of commercial properties in Academy Street, property size and rent per square foot to determine rental value changes. Research suggests these may increase by between 5% and 15% over potentially 5 to 15 year horizon periods. The assessment suggests that rents are likely to increase slightly resulting in a minor benefit (between £55k to £157k) over the assessment period.
- As well as the additional retail expenditure from increased footfall (i.e. local residents and those making trips into the city from the surrounding area for shopping and leisure purposes), the Academy Street proposals will also help to attract additional tourism visits into the city centre and therefore increased visitor expenditure. Academy Street connects both the rail station and bus station and is close to major tourist attractions, all a 10 minute walk away. The assessment indicates that there is potential for this visitor spend to increase between £2.1m and £5.4m following a modest 1% uplift in visitor numbers.

4.5.9. In line with the recommended STAG approach, the Economy criterion is subject to an overall STAG scoring, using the 7-point scale set out in section 3.2 and reiterated below.

Figure 4-5 – STAG Scoring Scale

+3	+2	+1	0	-1	-2	-3
Major benefit	Moderate benefit	Minor benefit	Neutral (no benefit or impact)	Small minor cost or negative impact	Moderate cost or negative impact	Major cost or negative impacts

4.5.10. Considering the monetised and qualitative impacts discussed above, the scheme is expected to have a **minor benefit (+1)** on the Economy criterion. The score is reflective of uncertainty surrounding the scale of road user impacts, whereby, in the absence of wider modelling this could be larger than currently quantified, albeit the results appear reasonable for the volume of traffic currently using Academy Street.

5 ENVIRONMENT APPRAISAL

5.1.1. The ‘Environment’ section in STAG covers qualitative and quantitative impacts. These also cover eight sub-criteria.

5.1.2. The Environment sub-criteria are:

- Biodiversity and Habitats;
- Geology and Soils;
- Land Use (including Agriculture and Forestry);
- Water, Drainage and Flooding;
- Air Quality (quantitatively appraised);
- Historic Environment;
- Landscape; and
- Noise and Vibration (quantitatively appraised).

5.1.3. The main environmental attributes and characteristics of the area covered by the Scheme have been summarised for each of the sub-criteria. This includes potential impacts for specially designated sites. Where it exists, environmental baseline data and evidence-based case studies are used to make informed views of the vulnerability of the Scheme area to likely changes. At this stage, the data is limited to readily available existing information.

5.2 BIODIVERSITY AND HABITATS

5.2.1. The biodiversity criteria evaluation should examine how the Scheme may affect biodiversity, including:

- Direct damage to important nature conservation sites or the habitats of protected species;
- Fragmentation or loss of habitats, thereby reducing species diversity and opening the way for the influx of other species;
- Creation of barriers to the movement and genetic interchange between populations; and
- Disturbance of habitats and species due to factors such as noise, light pollution and contaminated run-off which may depress populations and reproduction in some flora and fauna.

5.2.2. A qualitative review has been conducted to estimate the potential Scheme impact, beginning with the identification of designated sites, namely; Special Areas of Conservation (SAC), Special Protection Areas (SPA), National Nature Reserves (NNR) and Sites of Special Scientific Interest (SSSI).

5.2.3. No SAC’s, SPA’s, NNR’s and SSSI’s are located within the impact area.

5.2.4. Based on a review of these topics, it is not expected that there will be a negative impact on biodiversity and habitats as the Scheme is within existing road space, where there are no areas of vegetation or visible possible habitats. It is anticipated that the Scheme will adhere to the overall ‘No

Net Loss' objective in the Highland Biodiversity Action Plan[44]. Urban greening in the form of trees and planters is expected to slightly improve biodiversity in the Academy Street area.

5.2.5. Traffic is expected to be displaced as a result of the scheme. While this has no direct impact on biodiversity and habitats, negative impacts could be caused indirectly through changes in air quality and noise. This is discussed in the relevant sections below.

5.2.6. As the potential for biodiversity net gain in the area is minimal, the impact on Biodiversity is assumed to be negligible and has therefore been scored as **neutral (0)** against the STAG criteria.

5.3 GEOLOGY AND SOILS

5.3.1. This topic covers the underlying geology and bedrock influences and landscapes in Scotland. In some instances, transport interventions could have a direct impact on strata by imposing different loads, which could cause ground to collapse (by altering the hydrogeology or by burying or damaging important deposits or outcrops).

5.3.2. The scheme involves carriageway resurfacing and footway widening. Academy Street sits aboveground to superficial deposit of Raise Marine Beach Deposits of the Holocene Age combining sand and gravel. The bedrock geology of the area is Hillhead Sandstone[45]. Furthermore, as there are no sites of geological importance[46] nearby, it is not expected that the Scheme will have an impact on geology and soils. This criterion has been assessed as **neutral (0)**.

5.4 LAND USE

5.4.1. On Academy Street and across Inverness City Centre land use is diverse and varies between a mixture of mixed use, housing, business/ office, retail, and industrial areas.

5.4.2. There is no expected impact as land use remains mostly unchanged and there will not be any effect on agriculture or forestry activity due to the nature and location of the scheme. Therefore, this criterion has been assessed as **neutral (0)**.

5.5 WATER, DRAINAGE AND FLOODING

5.5.1. The development and operation of new transport infrastructure has the potential to have a significant effect on water quality. This could be, for example, through entrainment of sediments during construction or runoff containing pollutants once selected schemes are in operation.

5.5.2. Parts of Academy Street are susceptible to high (10%), medium (0.5%), and low (0.1%) likelihood levels of surface water flooding[47] each year. These areas tend to be localised and are aligned with changes in topography.

[44]https://www.highland.gov.uk/downloads/file/27148/highland_nature_biodiversity_action_plan_2021_%E2%80%93_2026
[45] British Geological Survey, Geology Viewer, 2024
[46] https://sitelink.nature.scot/map
[47] https://map.sepa.org.uk/floodmap/map.htm

5.5.3. The likely river flooding risk at Academy Street is below 0.5%, and is classified as 'low', with the river Ness located over 150m away. The extent of low likelihood river flooding extends from the river Ness to Chapel Street north of Academy Street[48]. There is no risk of coastal flooding in the area. There are several receptors that could be impacted by flooding events of a low likelihood. These include commercial properties, utilities and the road and rail network.

5.5.4. Furthermore, there is a low likelihood of groundwater flooding in Inverness City Centre and areas within the Crown.

5.5.5. Although it is not expected that groundwater tables will be interrupted during excavation activities undertaken in the Scheme construction phase, future scheme drainage design must remain cognisant of potential impacts to the groundwater table and must be designed to ensure impacts on levels and/ or flow direction are kept to a minimum.

5.5.6. At this stage, it is assumed the following activities that could impact ground water tables will not take place:

- Dewatering activities;
- Mining, quarrying, and backfilling;
- Drilling and borehole development;
- Construction of below and above ground structures; and
- Use and storage of fuels and other substances.

5.5.7. As the scheme will neither improve nor reduce the flooding risks stated, no impact is expected on water, drainage, or flooding. This criterion has been assessed as **neutral (0)**.

5.6 AIR QUALITY

5.6.1. The key pollutants considered within a STAG air quality assessment are NO^2 and PM^{1049}, used to measure local air quality. The assessment of air quality is predominantly qualitative at this stage in absence of locally available data. A qualitative summary of expected impacts is presented in the section below, followed by a quantified assessment of air quality impacts arising from modal shift and changes in car kilometres travelling, monetised through the application of the marginal external costs' methodology and TUBA (version 1.9.17).

5.6.2. Academy Street has daily traffic volumes exceeding 7,000 vehicles, which according to Friends of the Earth Scotland (FOTES), makes it one of the most polluted streets in Scotland.[50]

5.6.3. There is one key Air Quality Management Area (AQMA) on Academy Street, and this covers the Queensgate / Strothers Lane junctions with Academy Street. It was declared in 2014 for the pollutant Nitrogen Dioxide (NO^2)51. The latest monitoring report for the site was published in May

[48] https://map.sepa.org.uk/floodmap/map.htm
[49] https://www.transport.gov.scot/publication/stag-technical-database/section-7/#s746
[50] https://foe.scot/inverness-is-making-changes-for-a-cleaner-greener-city/#:~:text=In%20our%20analysis%20of%20air,of%20Scotland's%20cities%20got%20better.
[51] Air Quality in Scotland: Air Quality Management Areas, 2024

202352, and indicates that the site fell into the Air Quality Index 'Low' banding for every day recorded in 2022. This means that the Nitrogen dioxide hourly mean never rose above 200 µg/m3.

5.6.4. The scheme, as outlined previously, is forecast to redistribute some of the vehicular trips currently using Academy Street, elsewhere within the network. However, some users will continue to travel through the area to access businesses and car parks. By removing these vehicles and reducing congestion on the street, this is expected to reduce transport related emissions on Academy Street. As evidenced in section 4.2, an element of modal shift is also expected as a result of the improved pedestrian environment and cycle provision. This is expected to further contribute to improved air quality on Academy Street.

5.6.5. The TIA has concluded that the scheme and the associated displacement of through traffic is anticipated to have a minor impact on the surrounding road network's link capacity. While the impact is anticipated to be minor, this means that congestion on these surrounding links is likely to increase.

5.6.6. The likely links affected include:

- Millburn Road / Harbour Road;
- B861 between View Place and Bank Street;
- A82 between Ness Bridge and Harbour Road; and
- Friars Lane and Bank Street.

5.6.7. The increase in traffic volumes on these routes, and others identified in the TIA as alternative routes, is expected to worsen localised air quality on these routes. Increased delay at junctions is also likely to occur as a result of the scheme, with the TIA identifying 13 junctions where traffic flow is expected to increase by more than 5% on any arm. These increases in traffic will likely cause an increase in localised emissions at these junctions.

5.6.8. Additionally, the TIA has found that redistribution of internal traffic is likely to increase traffic volumes on Post Office Avenue, Queensgate, and Strothers Lane. This again may increase emissions and impact air quality on these routes.

5.6.9. Therefore overall, there will both be both positive and negative impacts to air quality: while on Academy Street itself air quality is likely to improve, this is at the expense of the wider area, unless significant modal shift is achieved. Where vehicles are re-routed away from Academy Street, this may be to streets with sensitive receptors, higher resident populations or where there are facilities such as schools. This has a resultant impact on air quality at these locations. As such a **minor negative (-1)** impact is expected overall.

[52] https://www.scottishairquality.scot/assets/reports/374/Highland_annual_2022.html#1_introduction

Quantitative Assessment

5.6.10. Impacts associated with changes in forecast car kilometres travelled in the area as a result of Scheme implementation are estimated within the AMAT and Bus User Journey Time tool through the application of the Marginal External Costs (MEC) methodology[53].

5.6.11. The Scheme is expected to increase the number of people using Academy Street by sustainable modes (walking, cycling, and bus), as referenced in section 2.2. Some of these users are expected to be new and therefore have previously not travelled within or to Academy Street prior to Scheme implementation, while others will be users that will have switched mode due to the improvement in the quality of sustainable travel facilities. For those previously travelling by private vehicle, a monetisable air quality impact can be calculated for the change in car kilometres travelled in the area.

5.6.12. The monetised air quality outcomes are presented in Table 5-1.

Table 5-1 – Local Air Quality MEC impacts (NPV)

Economic Impact	Quantification (£)
Local Air Quality	7,701
Total	**7,701**

5.6.13. Further local air quality impacts could occur at sensitive receptors elsewhere on the network. In the absence of link-by-link traffic flow change data for the wider network a detailed quantified air quality assessment has not been undertaken at this stage.

5.7 HISTORIC ENVIRONMENT

5.7.1. In 2006, The Highland Council, as a planning authority, designated Inverness Riverside as a Conservation area. Inverness Riverside was identified as an area of special architectural and historical interest and includes Academy Street[54]. This means the design and construction will need specific controls in place to protect the area's character and appearance.

5.7.2. The inclusion of trees and urban greening in the scheme is expected to improve the quality of the street environment. High-quality materials have been chosen for the resurfacing of the carriageway and footways and this is likely to also contribute to an improved sense of place on Academy Street.

5.7.3. There are many listed buildings on Academy Street and in areas within the immediate vicinity. The buildings vary in listed status, including Grade A, B, and C listed properties/ monuments.

5.7.4. The proposed scheme provides an opportunity to enhance the local townscape through enhanced public realm, the use of high quality materials and reductions in asphalt in locations.

[53] https://assets.publishing.service.gov.uk/media/64943365831311000c296183/tag-unit-A5.4-marginal-external-costs.pdf
[54] The Highland Council: Conservation Areas – 'Inverness Riverside Conservation Area', 2006

5.7.5. Improvements to human interaction are anticipated through upgraded pedestrian and cyclist environments, improvements to crossing points and creation of pedestrian friendly junctions. These measures are likely to result in improvements to connectivity and safety for cyclists / pedestrians within the city centre and accessing the train station and bus services; they will also likely help encourage a greater uptake of journeys made by sustainable modes of transport opposed to private vehicles. This in turn, alongside the introduction of new bus lanes, will reduce general traffic throughout Academy Street subsequently benefiting the appearance of the townscape and context of cultural heritage assets.

5.7.6. Some impacts may be slightly offset through the re distribution of vehicles to other areas of the network, which similar historical characteristics. As such, it is anticipated that impacts to the Historic Environment are considered to be **minor beneficial (+1)**.

5.8 LANDSCAPE

5.8.1. It is acknowledged that The Highlands have a diverse range of different landscape types. Many of which are highly valued and some being of national or international importance, whilst also contributing to local and Scottish national identity. These valuable and visually sensitive landscapes are protected by designations. As such transport interventions must complement the natural landscape of an area.

5.8.2. As stated earlier, Academy Street is located within an area of conservation due to historical importance. As with other areas of the city and within the Riverside Conservation Area, much of the transport network in Inverness City Centre has narrow, constrained, streetscape topographies, lined with listed buildings. In most instances, these were originally designed to accommodate pedestrians and horse and cart, prior to the introduction of motorised vehicles towards the latter end of the 19th century.

5.8.3. Restricting motorised vehicular access on Academy Street could be considered to enhance the appearance of the existing topography and streetscape, and the enhancement of unique architectural features will together contribute to an improvement in local cultural significance. However, this benefit could be offset where other nearby streets with similar characteristics may experience increases in traffic flow following the redistribution of vehicular trips away from Academy Street.

5.8.4. The proposed changes to infrastructure on Academy Street will not change the character or function of the surrounding landscape. A reduction in traffic flow on Academy Street itself could be deemed complementary to the existing streetscape reducing motor vehicle dominance in the immediate area, however, may be slightly offset through the re distribution of vehicles to other areas of the network, which similar landscape characteristics. Therefore overall, Landscape is scored as **minor beneficial (+1)** impact.

5.9 NOISE AND VIBRATION

5.9.1. There are no identified sensitive receptors immediately adjacent to Academy Street and there are no identified Noise Management Areas (NMAs) in Inverness.

5.9.2. The assessment of anticipated noise impacts remains predominantly qualitative at this stage in absence of locally available data.

5.9.3. The TIA indicates an anticipated reduction in traffic flow along Academy Street, which may yield a perceptible decrease in road noise for those continuing to make trips on Academy Street.

5.9.4. Furthermore, there could be minor modal shift to sustainable modes of transport, leading to a reduction in the level of general traffic accessing the town centre. However, the anticipated noise reduction from modal shift is unlikely to be substantial enough to noticeably affect road traffic noise levels, as a considerable alteration in traffic flow would be necessary to produce a perceptible change.

5.9.5. Where traffic is diverted away from Academy Street onto other routes, there is a likelihood of increased traffic-induced noise in those areas, particularly near sensitive receptors such as schools, hospitals, and heritage sites. The affected routes include:

- Millburn Road / Harbour Road;
- B861 between View Place and Bank Street;
- A82 between Ness Bridge and Harbour Road; and
- Friars Lane and Bank Street.

5.9.6. Additionally, the redistribution of internal traffic is predicted to elevate traffic volumes on Post Office Avenue, Queensgate, and Strothers Lane. This is likely to impact noise pollution, potentially affecting sensitive receptors such as The Inverness Library.

5.9.7. Other sensitive receptors that could be affected by traffic re-routing from Academy Street encompass:

- Central Primary School;
- Inverness High School;
- Crown Primary School;
- Millburn Academy;
- St Stephen's Church;
- Crown Church;
- St John's Church; and
- Kingsmills Care Home.

5.9.8. The heightened traffic volumes expected on these routes and others identified in the TIA, may exacerbate noise pollution. According to Section 7.4.1.3 of STAG, a discernible change in noise level typically requires a difference of around 3dB(A) for steady-state traffic conditions.

5.9.9. In the absence of link-by-link traffic flow data, the precise impact remains unknown at these sites. Assumptions suggest that while trips may increase near these key receptors, the change may not be substantial enough to be perceivable. Furthermore, the increase is road noise can be influenced by a multitude of factors such as road topography, speeds, vehicle type and the geometric relationship of source and receiver.

5.9.10. Overall, the scheme may yield both minor positive and minor negative impacts on noise and vibration. While noise and vibration on Academy Street may decrease, this reduction may cause increases in road traffic noise across the wider area, unless significant modal shift occurs. The scheme is assumed to have a **minor negative (-1)** impact on noise and vibration.

Quantitative Assessment

5.9.11. Quantifiable noise impacts are estimated through the application of the Marginal External Costs (MEC) methodology[55] monetised within the AMAT and Bus User Journey Time tool. As discussed in the Transport Economic Efficiency section of this report, these impacts are expected from new-to-walk, new-to-cycle, and new-to-bus users. For the new trips, a proportion of journeys will have previously been made by car or taxi. For those previously travelling by private car and taxi, a monetised noise impact can be calculated for the change in car kilometres travelled in the area. The monetised noise outcomes are presented in Table 5-2.

Table 5-2 – Noise MEC Impacts (NPV)

Economic Impact	Quantification (£)
Noise	5,375
Total	**5,375**

5.9.12. Further noise impacts could occur at sensitive receptors elsewhere on the network. The quantified noise assessment does not account for impacts arising from re-routed vehicle trips in the absence of link-by-link traffic flow change data.

5.10 ENVIRONMENT SCORING EVALUATION

5.10.1. Following the assessment of estimated quantifiable and non-quantifiable impacts, this section of the report concludes the outcome of the Environment evaluation for impacts associated with the Academy Street Scheme. The conclusion utilises both qualitative information on likely impacts and where available, quantitative results of the assessment.

Table 5-3 – Monetised Environmental Impacts

Economic Impact	Quantification (£)
Local Air Quality	7,701
Noise	5,375
Total	**13,076**

5.10.2. Further to the monetised impacts captured above, the appraisal of the scheme also considers impacts from a qualitative perspective. As discussed above:

- The scheme is not expected to have any adverse impacts on Biodiversity and Habitats and is anticipated to adhere to the 'No Net Loss' objective of The Highland Biodiversity Action Plan;
- No sites of geological importance are expected to be impacted by the scheme;

[55] https://assets.publishing.service.gov.uk/media/64943365831311000c296183/tag-unit-A5.4-marginal-external-costs.pdf

- The proposed scheme is not expected to have any significant impact on land use, agriculture, or forestry activity;
- The proposed scheme is not expected to improve or reduce the flooding risks stated, resulting in no impact on water, drainage, or flooding;
- Academy Street is considered one of the most polluted streets in Scotland[56]. The scheme aims to reduce the number of vehicular trips on Academy Street which is expected to contribute to a localised improvement in air quality on Academy Street. However, the scheme's associated displacement of through traffic will have a minor impact on the surrounding road network's link capacity and air quality of these routes;
- As a historic city centre, Academy Street has many listed buildings and is within an area of special architectural and historical interest. Urban planting and high-quality resurfacing materials are chosen for the scheme, contributing to an improved sense of place on Academy Street. However, the bus lane's colouring may not align with the historic surroundings;
- Restricting motorised vehicular access on Academy Street could enhance its appearance and sense of place, however this benefit may be offset when nearby streets experience increased traffic flow due to redistribution; and
- While noise generated by traffic will decrease on Academy Street, redistributed traffic may lead to increased noise in other areas. In addition, redistribution of internal traffic may significantly increase traffic volumes on Post Office Avenue, Queensgate, and Strothers Lane, impacting noise pollution. Therefore, any improvement in noise pollution on Academy Street potentially comes at the expense of the wider area unless significant modal shift occurs.

STAG CRITERIA DETERMINATION

5.10.3. In line with the recommended STAG approach, the Environment criterion is subject to an overall STAG scoring, using the 7-point scale set out in section 3.2 and reiterated below.

Figure 5-1 – STAG Scoring Scale

+3	+2	+1	0	-1	-2	-3
Major benefit	Moderate benefit	Minor benefit	Neutral (no benefit or impact)	Small minor cost or negative impact	Moderate cost or negative impact	Major cost or negative impacts

5.10.4. Considering the monetised and qualitative impacts discussed above, the scheme is expected to have a **neutral impact (0)** on the Environment.

[56] Inverness is making changes for a cleaner, greener city - Friends of the Earth Scotland (foe.scot)

6 CLIMATE CHANGE APPRAISAL

6.1.1. The Climate Change criterion comprises three sub-criteria:

- Greenhouse Gas Emissions;
- Vulnerability to the Effects of Climate Change; and
- Potential to Adapt to the Effects of Climate Change.

6.1.2. The STAG Technical Database has yet to be updated with detail around the Climate Change Criteria and as such WSP has defined the methodology of approach in respect of this criteria. The methodology is as follows:

Greenhouse Gas Emissions

- User emissions – assesses the potential change in distance travelled by mode;
- Embodied (or capital/infrastructure) emissions – assesses the potential overall change in carbon emissions, with consideration of the size of change in carbon emissions and the length of the 'payback' period associated with that infrastructure.

Vulnerability to the Effects of Climate Change

- This item considers the vulnerability of infrastructure and services to heat, in soil desiccation, surface, river and coastal flooding, coastal erosion and high winds. As they have the required scale and accuracy, Scottish Environment Protection Agency (SEPA) flood risks maps have been used to determine whether the scheme is vulnerable to extreme flood events.

Potential to Adapt to the Effects of Climate Change

- This criterion has been assessed by the ability of the scheme to make transport infrastructure more resilient than the Do-Nothing position. For example: if the scheme is sufficiently large in scale (e.g., a junction upgrade or long stretch of widening to warrant the replacement of the existing road drainage which could provide an opportunity to provide betterment from a resilience perspective).

6.2 GREENHOUSE GAS (GHG) EMISSIONS

6.2.1. As outlined above, the GHG emissions criterion considers both user emissions and embodied emissions.

User Emissions Summary

6.2.2. Provision of new pedestrian, cycling and bus infrastructure is expected to encourage a modal-shift to active and shared modes, thereby avoiding trips that would otherwise have occurred by private vehicle or taxi. A reduction in 387 daily car kilometres travelled on the local network is forecast, as such it is expected that this will reduce carbon emissions. However, by providing more space for sustainable travel infrastructure, and introducing bus lanes on sections of Academy Street; the proposed interventions are anticipated to redistribute traffic in the area, thereby forcing trips to take longer alternative routes.

6.2.3. The re-routing has the potential to lead to negative vehicular traffic impacts whereby concentrated traffic flows lead to increased stop-start traffic, delayed journey times, an increase in journey distances and subsequent increased GHG emissions. Impact of these changes in journey lengths

and flows (not accounting for modal-shift) will likely increase emissions across the appraisal period and subsequently an increase of 8,752 daily car kilometres travelled.

Embodied Carbon

6.2.4. Manufacture and transport of materials required for construction of the scheme (i.e. embodied carbon) will cause an increase in carbon emissions. Additional materials and processes such as concrete in drainage infrastructure and transport of workers to site will also cause an increase in emissions. Traffic management and diversions during construction may also cause some increases in emissions due to increase stop-start traffic and reduced fuel efficiency in traffic.

6.2.5. In summary, over the scheme lifetime it is predicted that increased emissions from embodied carbon and traffic flow changes will outweigh operational benefits from modal-shift and tree planting and as such a **minor negative (-1)** impact on GHG is anticipated. Additionally, modal-shift emission reductions have the potential to be greater than modelled if wider factors outside the proposed scheme encourage greater behaviour change for uptake of walking, cycling, bus and rail, which these infrastructure improvements can enable.

6.2.6. To mitigate this impact, a carbon management process should be put in place which aims to reduce the embodied carbon by building less, using different materials or construction techniques.

Quantitative Appraisal

6.2.7. In addition to providing Economy impacts, the monetised impacts from AMAT, TUBA (junction modelling only), and Bus User Impact Assessment were used to derive the impacts of the scheme in terms of GHG emissions. The monetised impacts to society reported in the table below, are predominately based on a minor reduction in car kilometres and junction impacts. The results do not quantified GHG impacts associated with the re-routing of vehicles.

6.2.8. The monetised impact in terms of GHGs is shown in Table 6-1. These benefits are calculated based on a 60-year appraisal period.

Table 6-1 – Greenhouse Gas Impacts

Economic Impact	Quantification (£)
Greenhouse Gases	-158,828
Total	**-158,828**

6.2.9. In the absence of link-by-link traffic flow change data for the wider network a detailed quantified GHG assessment has not been undertaken at this stage, for trips that are extended and re distributed to other parts of the network. It is anticipated that this could be a negative impact.

6.3 VULNERABILITY TO THE EFFECTS OF CLIMATE CHANGE

6.3.1. Even given strenuous efforts to limit the cause of global warming, further climatic changes are inevitable in the future and new schemes need to be prepared for the growing risks that climate change presents. Scotland's climate is changing with wetter winters, more intense rainfall, and rising sea levels. Despite actions to address climate change, it is expected that communities at lower risk

now may have a higher risk of flooding in the future. In addition, communities already at risk may see worse flooding or flood more often in the future[57].

6.3.2. The scheme includes resurfacing of the Academy Street carriageway, footways, and public spaces. This is likely to maintain the site's existing drainage and vulnerability to flooding. As noted in section 5.5, some areas of Academy Street have between 0.5% and 10% chances of standing water flooding by 2080. By keeping these areas surfaced the scheme does not change the vulnerability of Academy Street to this flood risk.

6.3.3. However, introducing trees and planting may slightly mitigate the impact of flooding in the area by increasing surface water absorption, but the benefit is expected to be minimal.

6.3.4. Considering the above, the scheme is expected to have a **neutral (0)** impact on the vulnerability of Academy Street to the effects of climate change.

6.4 POTENTIAL TO ADAPT TO THE EFFECTS OF CLIMATE CHANGE

6.4.1. As described above, new schemes need to be future ready and able to withstand the risks presented by climate change. In addition, with further climate change inevitable and the impact of this difficult to predict, schemes should be resilient and able to adapt to the future effects of climate change.

6.4.2. By reclaiming Academy Street for active travel, public transport and vehicles destined for the immediate Academy Street area, the scheme is prioritising sustainable travel. In doing so, the scheme contributes positively to the present need to adapt to climate change. Reclaiming footway space and introducing urban greening will also offer longer term opportunities to continue adapting how public space is used and therefore respond to climate change. This gives the scheme an element of resilience.

6.4.3. Trees and green spaces in the UK have also been found to have a cooling effect on their surroundings[58] due to their ability to provide shade and their release of water vapor. While the scheme only sees the introduction of a small number of trees and planted areas, this will nonetheless lead to an increase in the availability of shade. Introducing greenery into the space could also help provide new habitats.

6.4.4. Considering the above, the scheme is expected to have a **minor benefit (+1)** on Academy Street's potential to adapt to the effects of climate change.

6.5 CLIMATE CHANGE SCORING EVALUATION

6.5.1. Following the assessment of estimated quantifiable and non-quantifiable impacts, this section of the report concludes the outcome of the Environment evaluation for impacts associated with the Academy Street Scheme. The conclusion utilises both qualitative information on likely impacts and where available, quantitative results of the assessment.

[57] https://map.sepa.org.uk/floodmaps/FloodRisk/Risk
[58] https://friendsoftheearth.uk/nature/new-heat-maps-reveal-cooling-effect-trees-and-green-space

6.5.2. The quantified impact of the scheme is summarised in Table 6-2.

Table 6-2 – Greenhouse Gas Monetised Impact

Economic Impact	Quantification (£)
Greenhouse Gases	-158,828

6.5.3. Further to the monetised impacts captured above, the appraisal of the scheme also considers Climate Change impacts from a qualitative perspective. As discussed in this chapter:

- The scheme redirects traffic away from Academy Street, which is expected to reduce GHG emissions on Academy Street but is likely to displace these emissions to surrounding locations. An increase in localised emissions is also expected to occur at junctions where delay is likely to increase; and
- The inclusion of trees and planting within the scheme can improve Academy Street's ability to adapt to climate change.

STAG CRITERIA DETERMINATION

6.5.4. In line with the recommended STAG approach, the Climate Change criterion is subject to an overall STAG scoring, using the 7-point scale set out in section 3.2 and reiterated below.

Figure 6-1 – STAG Scoring Scale

+3	+2	+1	0	-1	-2	-3
Major benefit	Moderate benefit	Minor benefit	Neutral (no benefit or impact)	Small minor cost or negative impact	Moderate cost or negative impact	Major cost or negative impacts

6.5.5. Considering the monetised and qualitative impacts discussed above, the scheme is expected to have a **minor negative impact (-1)** on the Climate Change criterion.

7 HEALTH, SAFETY AND WELLBEING APPRAISAL

7.1.1. The Health, Safety and Wellbeing Criterion comprises four sub-criteria:

- Accidents;
- Security;
- Access to Health and Wellbeing Infrastructure; and
- Visual Amenity.

7.1.2. A qualitative assessment has been completed using the seven-point-scale assessment.

7.2 ACCIDENTS

7.2.1. The proposals will lead to a redistribution of general traffic away from Academy Street. This will lead to a reduction of vehicular accidents on the street and thus it is expected a reduction in overall accidents on Academy Street (see below case study). At current, however, between 2018-2022 there has only been one accident, involving a pedestrian[59]. Pedestrians will also be further protected through widening of footways and more public realm space.

7.2.2. Cyclists will have designated infrastructure to use in the form of the Academy Street bus lane, however it is likely there will be conflicts between buses, taxis and the cyclists using the shared bus lane. It will be safer than the current lack of provision, but it is expected conflict will take place that may lead to accidents. Increased traffic volumes on internal streets including Post Office Avenue, Queensgate and Strothers Lane also presents a safety risk to cyclists. Furthermore, displaced traffic on the wider network is expected to increase the likelihood of conflict between cyclists and general traffic in locations without segregated infrastructure.

7.2.3. The scheme is scored as having **neutral impact (0)** on Accidents.

Case Study: Bedford Road Bus Gate, Aberdeen (2017)

The road safety benefit of bus gates can be evidenced by the accident impacts of the Bedford Road bus gate in Aberdeen. Implemented in May 2016, the Bedford Road bus gate saw the restriction of this city centre street to buses and cycles only. Post implementation, road safety was observed to improve with no personal injury accidents recorded on Bedford Road in the 2 years post-implementation, compared with 5 reports in the 2 years pre-implementation.

[59] STATS19, DfT Road Casualty Statistics Collision Last 5 Years (2018-2022)

Quantitative Assessment

7.2.4. Quantifiable accident impacts are estimated through the application of the Marginal External Costs (MEC) methodology[60] monetised within the AMAT. This reflects the effect of changing vehicle kilometres on road safety. It is not the direct benefit of increased cycle safety.

7.2.5. As illustrated through the TIA, the Scheme is expected to reduce the traffic volume observed on Academy Street. By changing the vehicle kilometres driven, a monetised accident impact can be calculated for the change in car kilometres travelled in the area.

Table 7-1 – Accidents MECs

Economic Impact	Quantification (£)
Accidents	64,513
Total	**64,513**

7.2.6. In the absence of link-by-link traffic flow change data for the wider network a detailed accident impact assessment has not been undertaken at this stage, for vehicle trips that are extended and re distributed to other parts of the network. It is anticipated that this could have minor negative impact.

7.3 SECURITY

7.3.1. There is currently street lighting on Academy Street. The widening and improvement to pedestrian infrastructure may lead to an increased presence of people on Academy Street as forecast in the active mode appraisal (an estimated +667 new daily pedestrian trips and +29 cyclists). This will increase passive surveillance and may improve perception of security for non-motorised users. This is especially notable as the area Academy Street resides is ranked in the 10% most deprived, in terms of crime, in Scotland.[61]

7.3.2. Considering the above, the scheme is scored as having a **minor beneficial (+1)** impact on Security.

Case Study: Going Smarter Glasgow (2013)

Cycle infrastructure investment in Glasgow City Centre, as a part of Going Smarter Glasgow, saw public perceptions of personal security in areas of intervention improve post-scheme. This was a key factor of success for the scheme as the area was relatively deprived.

[60] https://assets.publishing.service.gov.uk/media/64943365831311000c296183/tag-unit-A5.4-marginal-external-costs.pdf
[61] Scottish Index of Multiple Deprivation, 2020, www.simd.scot

7.4 ACCESS TO HEALTH AND WELLBEING INFRASTRUCTURE

7.4.1. The bus lane proposal is expected to reduce bus journey times by reducing the number of vehicles on Academy Street, therefore improving access to a key destination for health and wellbeing infrastructure in Inverness. The bus lane will enhance access for cyclists and emergency vehicles choosing to travel via Academy Street to access health facilities in the city centre. However, displaced general traffic will not experience this benefit and could suffer increased journey times due to higher traffic volumes on these routes. This includes on Millburn Road which provides onward access to Raigmore Hospital.

7.4.2. In light of this assessment, the scheme is scored as having a **neutral (0)** impact on Access to Health and Wellbeing Infrastructure.

Case Study: Spaces for People Programme - Scotland

Five surveys, covering 16 local authorities, gathered information around how helpful the national scale Spaces for People measures were when making essential journeys (access to GPs, hospital facilities, supermarkets etc.). Overall, 53% of respondents (1,207) stated the active travel measures were helpful to make these journeys.

7.5 VISUAL AMENITY

7.5.1. Transport schemes can have a significant impact on the quality of panoramas, specific views, and the visual environment of sensitive receptors. More so where new infrastructure is introduced into an established scene, where the intensity of traffic movements increases or where new lighting is provided in formerly "dark" areas.

7.5.2. Visual impacts have been assessed for residential properties, and public buildings, including workplaces, recreational buildings, and outdoor locations to which the public has access in the area.

7.5.3. As recognised in the STAG technical database[62], an improvement in views may result if, for example, the option results in a reduction in levels of traffic. The Academy Street Scheme seeks to achieve this, through the redistribution of trips and modal shift to sustainable travel driven through improved pedestrian spaces, new bus lanes and traffic calmed cycling routes.

[62] https://www.transport.gov.scot/publication/stag-technical-database/section-7/#s746

7.5.4. The scheme is expected to have a **minor beneficial (+1)** impact on visual amenity.

Case Study: Broad Street Bus Gate, Aberdeen (2019)

In Aberdeen, the introduction of a bus gate on Broad Street outlined businesses' support around the positive impact of the provision on the look and feel of the area. The most positively received features, by local businesses, were the areas apparency and that there was now space to socialise. None of the features of the scheme were deemed to be negative overall.

7.6 HEALTH, SAFETY AND WELLBEING SCORING EVALUATION

7.6.1. Following the assessment of estimated quantifiable and non-quantifiable impacts, this section of the report concludes the outcome of the Health, Safety and Wellbeing evaluation for impacts associated with the Academy Street Scheme. The conclusion utilises both qualitative information on likely impacts and where available, quantitative results of the assessment.

7.6.2. The quantified impact of the scheme is summarised in Table 7-2.

Table 7-2 – Monetised Health, Safety and Wellbeing Impacts

Economic Impact	Quantification (£)
Accidents	64,513

7.6.3. Further to the monetised impacts captured above, the appraisal of the scheme also considers impacts from a qualitative perspective. As discussed in this chapter:

- Traffic displacement will reduce the risk of accidents on Academy Street, but could transfer risk to alternative routes where traffic volumes increase;
- Security is likely to improve due to increased passive surveillance;
- No impact on access to health and wellbeing infrastructure is anticipated; and
- Visual amenity will benefit from reduced traffic volumes on Academy Street, a historic area, however the bus lane will introduce a bright red section of road surface.

STAG CRITERIA DETERMINATION

7.6.4. In line with the recommended STAG approach, the Health, Safety and Wellbeing criterion is subject to an overall STAG scoring, using the 7-point scale set out in section 3.2 and reiterated below.

Figure 7-1 – STAG Scoring Scale

+3	+2	+1	0	-1	-2	-3
Major benefit	Moderate benefit	Minor benefit	Neutral (no benefit or impact)	Small minor cost or negative impact	Moderate cost or negative impact	Major cost or negative impacts

7.6.5. Considering the monetised and qualitative impacts discussed above, the scheme is expected to have a **neutral (0)** impact on Health, Safety and Wellbeing.

8 EQUALITY AND ACCESSIBILITY APPRAISAL

8.1.1. The Equality and Accessibility criterion includes five sub-criteria, these are:

- Public Transport Network Coverage;
- Active Travel Network Coverage;
- Comparative Access by People Group;
- Comparative Access by Geographic Location; and
- Affordability.

8.1.2. The Public Sector Equality Duties require public bodies to promote race, disability, and gender equality. Within STAG, the Equality and Accessibility criterion covers the appraisal of accessibility impacts defined by the ability of people and businesses to access goods, services, people, and opportunities. While most accessibility is revealed through travel demand and captured in the TEE, the appraisal qualitatively considers community and comparative accessibility beyond what is monetised within the TEE.

8.1.3. The existing Equality Impact Assessment (EqIA) produced by THC for the Academy Street scheme has not been examined as part of this EIA.

8.2 PUBLIC TRANSPORT NETWORK COVERAGE

8.2.1. The introduction of bus lanes on Academy Street will not change the coverage of the public transport network. It is assumed that the forecast bus user journey time savings are not large enough to reinvest the time saved into increasing route frequency or adding additional services to the network.

8.2.2. However, for shorter services, if a greater bus journey time saving is realised, beyond the results forecast, this may be achievable as evidenced by the case study referenced below. It is anticipated that bus stops at Queensgate as well as the bus station will become easier to access for pedestrians benefitting from the new wider footways. Access to the rail station for pedestrians and cyclists will also improve as a result of the scheme, with reduced severance from traffic on Academy Street.

Case Study: Bedford Road Bus Gate, Aberdeen (2017)

By giving priority to public transport, the bus gate - combined with other measures - has led to the introduction of four new bus services along Bedford Road. This led to the expansion of the public transport network in Aberdeen and the improvement of transport links to key destinations including the University of Aberdeen.

8.2.3. The assessment has also concluded that displaced traffic and increased congestion on alternative routes may create minor delays for bus services elsewhere on the network. However, these are offset from delay savings achieved on Academy Street itself.

8.2.4. Overall, the impact on Public Transport Network Coverage is scored as **neutral (+1)**.

8.3 ACTIVE TRAVEL NETWORK COVERAGE

8.3.1. The shared-use bus lanes will provide a level of protection for cyclists, which is a benefit as there are currently no cycle facilities on Academy Street. Additionally, forecast reductions in traffic volumes on Academy Street to less than 2000 vehicles per day will offer cyclists a high level of service as per Sustrans cycling by design (2019) guidance.

8.3.2. Footway widening will give pedestrians more space, and the reduced traffic volumes will make it easier and safer to access services and facilities. The severance caused by traffic on Academy Street will also be reduced, making crossing the street easier.

8.3.3. The Scheme is not expected to impact other existing active travel routes as the majority of the existing active travel network exists off carriageway, particularly where traffic volumes redistributed away from Academy Street increase flows elsewhere on the network.

8.3.4. Overall, the impact on Active Travel Network Coverage is scored as **minor benefit (+2)**.

8.4 COMPARATIVE ACCESS BY PEOPLE GROUP

8.4.1. The introduction of bus lanes and traffic restrictions on Academy Street is not expected to disproportionately affect any particular group of people. Pedestrians are expected to benefit from new wider footways, which will improve the quality of journeys for seldom heard user groups.

8.4.2. Reductions in traffic volumes on Academy Street will also benefit those choosing to cycle and travel by bus in the area. Bus journeys are expected to become faster, and cyclists will experience an improvement in journey quality, where lower traffic volumes make it easier to cycle in the carriageway. It is likely that younger, older and users from deprived backgrounds are likely to be benefitted in this instance, particularly those without access to a car and who rely on other modes of travel.

8.4.3. Longer journey times and increased congestion on alternative routes for those choosing to travel by car may negatively impact some people groups. However, access to the city centre is retained alongside disabled bays and pick up and drop off facilities.

8.4.4. Overall, the impact on Comparative Access by People Group is scored as **minor benefit (+1)**.

Case Study: Scotland Spaces for People Programme

The benefits of space reallocation in terms of accessibility and social inclusion are well documented through the evaluation of the Spaces for People measures introduced in Scotland. The programme-wide evaluation of the measures was published by Sustrans in 2022 and considers the extent to which the programme achieved its intended outcomes.[1]

Perception surveys carried out across 16 local authorities highlighted that:

- More than half of participants found the measures helpful when making essential journeys;
- All age groups found the measures to be more helpful than unhelpful; and
- People from lower income households found the measures more helpful than those from higher income households.

These findings evidence the way in which prioritising pedestrians and cyclists can help support inclusive transport, improving people's everyday journeys and supporting those on lower incomes who are more likely to rely on shared transport and active travel to make their everyday journeys.

8.5 COMPARATIVE ACCESS BY GEOGRAPHIC LOCATION

8.5.1. The assessment concludes that travel times will increase for those travelling by car or other motor vehicles either previously travelling through Academy Street to reach other destinations or travelling through to access services in the city.

8.5.2. Those from areas outside of inverness, including rural areas of The Highlands, are unlikely to recognise the change in journey time as the increase will be minor in comparison to their overall journey length.

8.5.3. According to SIMD the immediate area of Academy Street is ranked in the top 10% most deprived areas of Scotland[63]. The area of impact around the scheme has varying levels of deprivation, particularly to the West of the city centre.

8.5.4. Those located closer to the city with shorter existing car journey times are more likely to experience a relative change in journey time over and above those further afield. However, it is these users and those in deprived neighbourhoods who will also benefit from improved bus journey times and better quality active travel infrastructure, which will improve their access to these services in relation to their geographic location.

8.5.5. Overall, the impact on Comparative Access by Geographic Location is scored as **minor benefit (+1)**.

[63] Scottish Index of Multiple Deprivation, 2020, www.simd.scot

8.6 AFFORDABILITY

8.6.1. The proposals outlined for Academy Street will not affect the affordability of public transport.

8.6.2. The affordability of car use is expected to be slightly affected, as the Scheme is expected to increase journey times and impact on fuel consumption and vehicle maintenance. Overall, the impact on Affordability is scored as a **minor negative impact (-1)**.

8.7 EQUALITY AND ACCESSIBILITY SCORING EVALUATION

8.7.1. Following the assessment of estimated quantifiable and non-quantifiable impacts, this section of the report concludes the outcome of the Equality and Accessibility evaluation for impacts associated with the Academy Street Scheme. As discussed in this chapter:

- The scheme does not inherently change public transport network coverage; however, bus facilities will become easier to access for pedestrians, and access to the rail station for pedestrians and cyclists will also improve;
- Investment in active travel infrastructure, improves the coverage of Inverness' active travel network and provides opportunities for walking and cycling within the city centre; and
- The scheme is expected to benefit pedestrians, cyclists and bus users in the city centre, particularly those in seldom heard, younger, and elderly user groups.
- Road users are expected to experience increases in journey times, the perceived change of which is likely to remain relative to their geographic origin and destination.

STAG CRITERIA DETERMINATION

8.7.2. In line with the recommended STAG approach, the Equality and Accessibility criterion is subject to an overall STAG scoring, using the 7-point scale set out in section 3.2 and reiterated below.

Figure 8-1 – STAG Scoring Scale

+3	+2	+1	0	-1	-2	-3
Major benefit	Moderate benefit	Minor benefit	Neutral (no benefit or impact)	Small minor cost or negative impact	Moderate cost or negative impact	Major cost or negative impacts

8.7.3. Considering the monetised and qualitative impacts discussed above, the scheme is expected to have a **minor beneficial (+1)** impact on Equality and Accessibility.

9 APPRAISAL SUMMARY

9.1.1. This chapter summarises the quantitative and qualitative socio-economic appraisal results and establishes initial scheme value for money.

9.2 QUANTIFIABLE BENEFIT COST RATIO

9.2.1. The quantifiable outcomes of the Scheme are presented in Table 9-1 below.

9.2.2. A BCR is a key metric used in transport appraisal to assess the economic viability and efficiency of a scheme. It is a financial indicator that compares the total present value of benefits to the total present value of costs associated with a particular project over a specific time horizon.

9.2.3. The presentation of the overall monetised Socio-Economic impact is as follows:

- Present Value of Benefits (PVB);
- Present Value of Costs (PVC);
- Net Present Value (NPV); and
- Benefit Cost Ratio (BCR).

Table 9-1 – Summary of Quantitative Socio-Economic Appraisal Outcomes

Impact	Quantified outcome (£)
Congestion	440,265
Noise	5,375
Greenhouse Gases	-158,828
Air Quality	7,701
Accidents	64,513
Travel Time: Commuting	-1,796,111
Travel Time: *Other*	-1,567,447
Travel Time: *Business*	-2,275,411
Reduced Risk of Premature Death	3,109,396
Absenteeism	593,855
Journey Ambience	5,015,271
Vehicle Operating Costs: *Commuting*	1,000
Vehicle Operating Costs: *Other*	37,000
Vehicle Operating Costs: *Business*	-504,000
Total Present Value of Benefits (PVB)	**2,972,579**
Total Present Value of Costs (PVC)	**5,785,632**
Net Present Value (NPV)	-2,813,053
BCR	0.51

9.2.4. The estimated total PVB is £2.97 million (2010 Prices and Values). The estimated PVC is £5.78 million (2010 Prices and Values).

9.2.5. The quantifiable PVB is not expected to exceed the total PVC for the Scheme, resulting in a NPV of -£2.8m (2010 Prices and Values) and BCR of 0.51:1. The assessment concludes that there would be a positive economic return, however, the monetisable transport impact, does not exceed the cost of the investment. For every £1 spent, it is estimated that there will be a £0.51 return.

9.2.6. Furthermore, other monetisable non-transport related WEI's have been estimated and are forecast to be between £1.52m and £4.05m in present day values and prices. This strengthens the socio-economic case for investment.

9.3 SUMMARY OF STAG CRITERIA EVALUATION AND VFM

9.3.1. The scope of this EIA is to review and comment on the socio-economic performance of the Academy Street scheme, where data prevails, to help determine VfM through the examination of the following contributors:

- Net present value to society of all social, economic, and environmental benefits – in this case performance in the context of the STAG criteria; and
- Net present cost to government as measured by whole life costs, including capital and operating costs.

9.3.2. A summary of the quantitative socio-economic appraisal outcomes is provided in Table 9-1, in the previous section of this chapter. This concludes that there is a positive monetised present value of benefit, however, this is not expected to exceed the present value of costs to government. The economy criterion and scheme VfM statement is further supported by the potential for the scheme to realise other monetisable WEI's, discussed in the VfM statement below.

9.3.3. A summary of the scheme's scoring against the STAG criteria is shown in Table 9-2, taking into consideration both quantifiable and qualitative considerations. The EIA has concluded that impacts are spread across the minor beneficial to minor negative categories.

9.3.4. Where some sub-criteria, score well, other criteria less so, where impacts are expected to extend beyond the extent of Academy Street itself, caused by redistributed traffic. These impacts relate to potential changes in air quality, noise and GHG emissions.

Table 9-2 – Summary of STAG Criteria Performance

STAG Criteria	Score	Sub-Criteria	Score
Economy	**+1**	TEE	**+1**
		WEIs	**+1**
Environment	**0**	Biodiversity and Habitats	**0**
		Geology and Soils	**0**
		Land Use	**0**
		Water, drainage, and flooding	**0**
		Air Quality	**-1**
		Historic Environment	**+1**
		Landscape	**+1**
		Noise and Vibration	**-1**

Climate Change	**-1**	GHG Emissions	**-1**
		Vulnerability to the effects of climate change	**0**
		Potential to adapt to the effects of climate change	**+1**
Health, Safety and Wellbeing	**0**	Accidents	**0**
		Security	**+1**
		Access to Health and Wellbeing Infrastructure	**0**
		Visual Amenity	**+1**
Equality and Accessibility	**+1**	Public Transport Network Coverage	**+1**
		Active Travel Network Coverage	**+2**
		Comparative Access by People Group	**+1**
		Comparative Access by Geographic Location	**+1**
		Affordability	**-1**

Key:

+3	+2	+1	0	-1	-2	-3
Major benefit	Moderate benefit	Minor benefit	Neutral (no benefit or impact)	Small minor cost or negative impact	Moderate cost or negative impact	Major cost or negative impacts

9.3.5. Many of the sub-criteria have been scored as neutral, where the impact is expected to be negligible, particularly where the scheme does not substantially change the existing built environment or offer a betterment.

VALUE FOR MONEY STATEMENT

9.3.6. The purpose of the socio-economic assessment is to determine whether the proposed scheme will offer a solution to the identified problems at value for money (under the 5 STAG Criteria).

9.3.7. The present value of benefits (PVB) in 2010 prices and values is +£2.97m. The estimated present value of costs (PVC) in 2010 prices and values is £5.78m. The PVB remains positive for the scheme, however, benefits accrued by bus and active travel users are offset by disbenefits accrued by car users as a result of increased travel time. In this instance, the benefits do not exceed the public expenditure, and result in a traditional benefit cost ratio (BCR) of 0.51:1.

9.3.8. HM Treasury's Green Book recommends that scenarios are chosen to explore technical, economic, and political uncertainties which can affect the success of an intervention, and that, 'switching value analysis' is undertaken.

9.3.9. Under this approach further tests have been completed to evaluate the sensitivity of impacts. The benefit adjustment required to achieve a BCR of 1, where the scheme benefits are equal to the cost of intervention, is £2.81m in 2010 values and prices.

9.3.10. The assessment has concluded that monetised wider economic impacts would deliver inward investment benefits to the local economy, however, these are not captured within transport economic impacts that are used to inform the BCR calculation. Consideration should be given to the

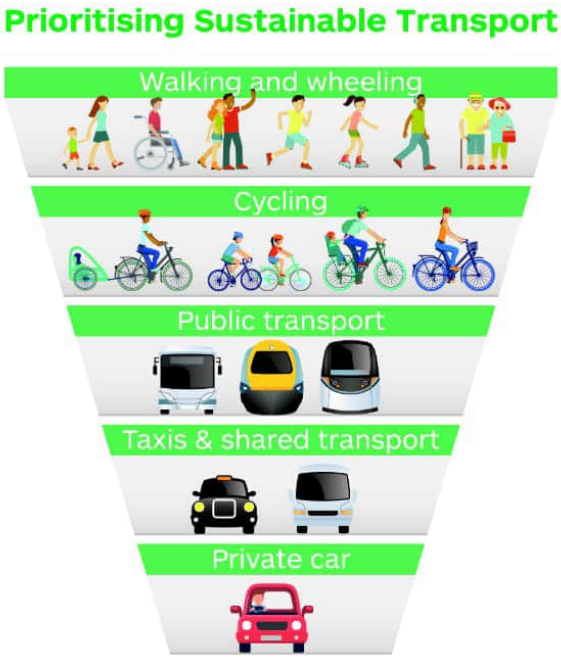
impact on the project's VfM if these impacts could be fully captured, monetised, and assured within the core BCR reporting metric.

9.3.11. The EIA has concluded that the monetised wider impacts generate benefits between £1.5 million and £4 million in present day values and prices. While STAG advises that the results of the WEIs analysis should be treated as a sensitivity to the TEE results. If incorporated within the BCR calculation the PVB could exceed the cost of intervention if the higher range of wider economic impacts are achieved.

9.3.12. The rationale of this approach is that it is difficult to monitor and evaluate the benefits captured by the WEIs analysis, hence the exclusion of impacts from the core BCR.

9.3.13. In addition to the above analysis, impacts have been further examined by mode of travel, to understand how these align against local and national policy (such as NTS2) which emphasise sustainable travel and prioritise vulnerable modes (pedestrians and cyclists) outlined in the transport user hierarchy, see Figure 9-1.

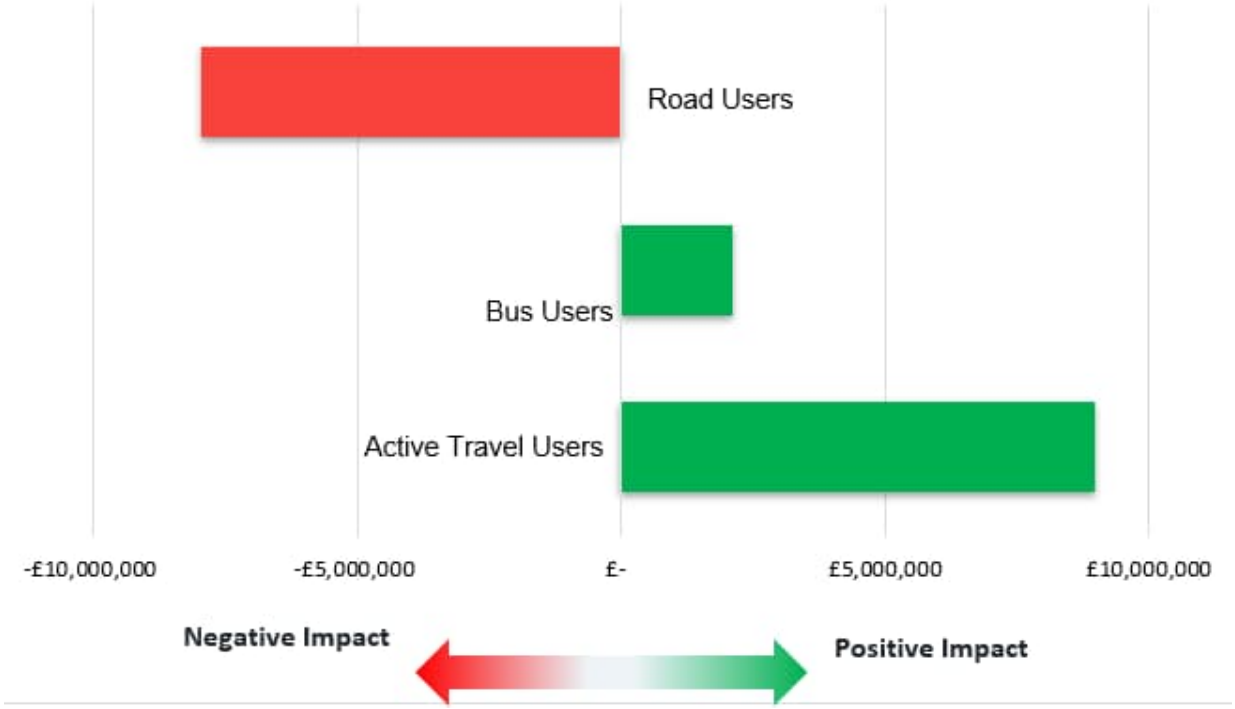
Figure 9-1 – NTS2 Sustainable Investment Hierarchy[64]



9.3.14. Figure 9-2 below shows that active travel is expected to generate the largest positive transport economic impact, followed by disbenefits for road users and minor positive economic benefits associated with bus travel.

[64] https://www.transport.gov.scot/active-travel/developing-an-active-nation/sustainable-travel-and-the-national-transport-strategy/

Figure 9-2 – Monetised transport impacts by mode of travel



9.3.15. The hierarchy of road users is a concept that places those road users most at risk in the event of a collision at the top of the hierarchy. Adopting a similar concept, greater emphasis could be placed on impacts to sustainable travel users at the top end of the hierarchy.

9.3.16. Whilst appraisal guidance states that road user impacts must be accounted for, a sensitivity test has been completed without road user disbenefits to determine the adverse impact these have on the appraisal of a sustainable transport scheme. This is common where there is disbenefit for road users due to the reallocation of road space for active travel, bus and placemaking initiatives, often resulting in a lower core BCR when applying available transport appraisal techniques.

9.3.17. Testing this policy driven concept, if less emphasis or weighting were to be placed to the significance of the road user impacts and these were discounted altogether, the scheme BCR for monetised transport economic impacts would improve beyond 1 to 1.9:1.

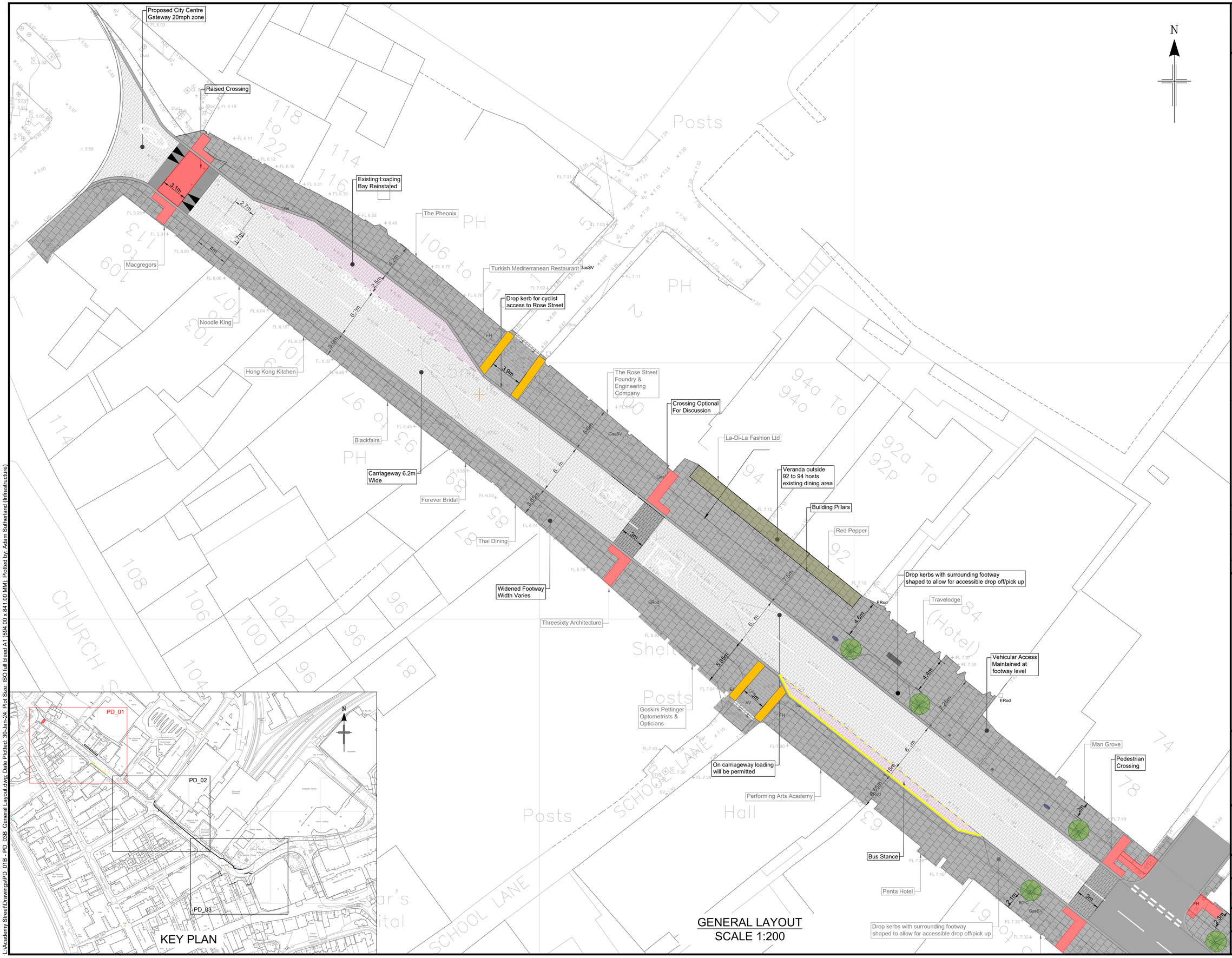
9.3.18. It is recognised that in the Highlands reliance on car travel is important, particularly for users with no viable transport alternative, however, the Scheme does not remove the ability to complete these trips, only making existing journeys longer. Furthermore, the increased in generalised journey cost of car users, particularly for those looking to access the areas surrounding academy street could act as catalyst for modal shift to sustainable modes of travel for those shorter trips who are able to transfer to alternative modes of transport.

9.3.19. In Scotland, the government does not recognise the BCR as a sole determining factor of value for money. If following DfT guidance it would traditionally fall within the ‘poor’ VfM category, however, the Schemes alignment with local and national policy and its ability to meet the objectives should also be considered in the overarching case for investment alongside the forecast quantified wider economic impacts.

9.3.20. It this instance the Scheme and its case for investment is further complemented through the delivery of a city-wide master plan to improve the sustainable travel network, making those journeys undertaken by bus and active travel easier and more accessible. Furthermore, disbenefits to road users and the subsequent impacts on GHG's, noise and air quality could be outweighed by the positive performance of the Scheme against the economy and equality and accessibility STAG criteria.

Appendix A

SCHEME DRAWINGS



Notes

Key

- Footway Surface - Caithness Flagstone
- Carriageway Surface - Silver Grey Granite setts
- Carriageway Surface at crossings - Dark Grey Granite setts
- Carriageway - Bituminous Surfacing at Bus turning areas
- Carriageway - Granite sets Shaded with pink and blue tones to delineate taxi rank/loading bays
- Tactile Paving at Controlled Crossings
- Existing Outside Dining Area
- Potential Outside Dining Area
- Proposed Trees
- Proposed Planters

Revision Details	Drawn By	Check By	Check Date	Suf'x
Dimensions added throughout. Changes incorporated in light of Road Safet Audit Stage 1	JC	AS	30/01/24	B
Bus Stance and Accessible Drop Off moved 2m	AK	AS	05/12/23	A

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Project
Academy Street

Title
General Layout
Sheet 1 of 3

Scale			
1:200	(@ A1)		
Drawn	AK	Date	1/12/22
Checked	AS	Date	09/08/23

Project No.
YEHAS6120

Drawing No.	Rev.
PD_01	B

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Notes

Key

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Revision Details	Drawn By	Check By	Check Date	Suffx
Dimensions added throughout. Changes incorporated in light of Road Safet Audit Stage 1	JC	AS	30/01/24	B
Addition of Red Tactile Paving At Junction of Strothers Lane	AK	AS	05/12/23	A

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Project: Academy Street

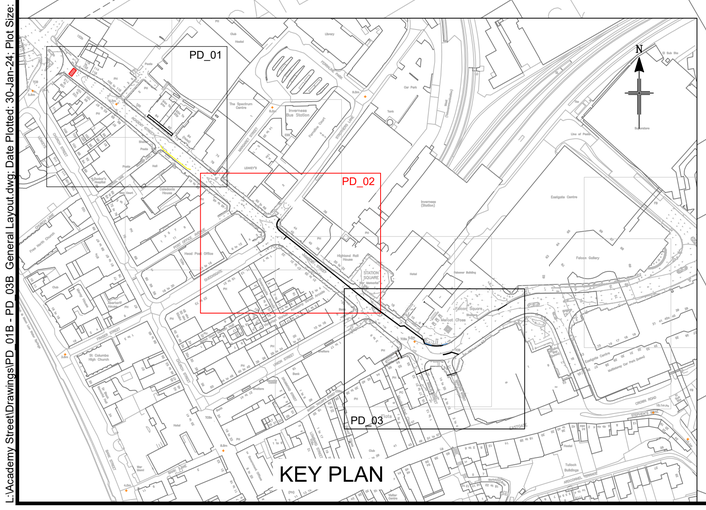
Title: General Layout Sheet 2 of 3

Scale: 1:200 (@ A1)

Drawn	Date
AK	1/12/22
Checked	Date
AS	22-Jan-24

Project No.: YEHAS6120

Drawing No.: PD_02 Rev.: B



KEY PLAN

GENERAL LAYOUT
SCALE 1:200

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Car Park and access to Station Square being reviewed by THC and Scotrail. The access could be moved to the other side of the statue.

Ash Restaurant/Bar

Filling Station

Raised Crossing

Surfaced area through junction where buses will be turning

Trees/shrubs in the pavement to enhance the Environment

Blacks

Widened Footway Width Varies

Bar one

Pedestrian Guardrail reinstated. To be set back minimum 0.5m from carriageway channel.

Proposed pedestrian zone barrier

Marks and Spencers

Falcon Square

Mercat Cross

Shelters

BUS TAXI ONLY

6.2m
4.3m
3.7m
3.2m
3m
6.2m
6.5m
3.2m
3.9m
5.2m
6.4m
2.5m
2.5m
7.9m
1.3m
4.8m
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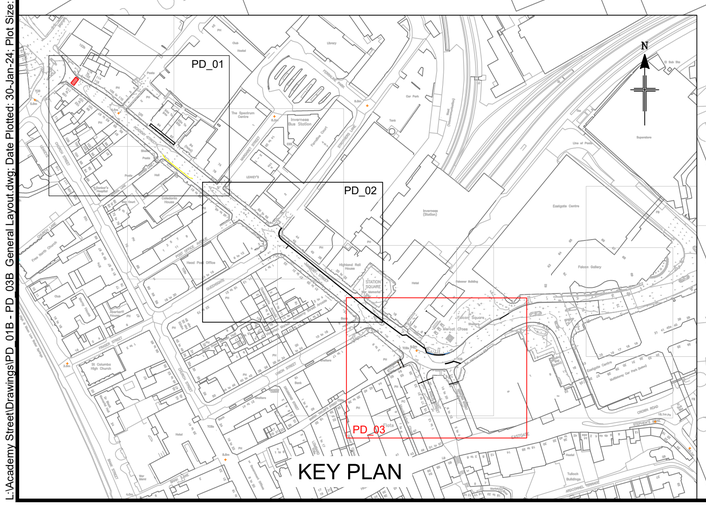
7.6m
2.5m
9.35m
6m
3m



KEY PLAN

GENERAL LAYOUT
SCALE 1:200

Notes

Key

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- Potential Outside Dining Area
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- Proposed Planters

Revision Details	Drawn By	Check By	Check Date	Suf'x
Dimensions added throughout. Changes incorporated in light of Road Safet Audit Stage 1	JC	AS	30/01/24	B
Scheme Terminates at Marks & Spencer Pedestrian Crossing	AK	AS	05/12/23	A

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Project: Academy Street

Title: General Layout Sheet 3 of 3

Scale: 1:200 (@ A1)

Drawn	Date
AK	1/12/22
Checked	Date
AS	22-Jan-24

Project No.: YEHAS6120

Drawing No.: PD_03 Rev.: B

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Appendix B

TRAFFIC IMPACT ASSESSMENT

Appendix C

SCHEME TRAFFIC MOVEMENT PLAN

Notes

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- Tactile Paving at Controlled Crossings

East Route

West Route

Revision Details	Drawn By	Check By	Check Date	Suf'x

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Project: Academy Street

Title: Car Routes

Scale		
Not to Scale	(@ A1)	
Drawn: J.Chambers	Date: 28/02/2023	
Checked: AS	Date: 9-Aug-23	
Project No.: YEHAS6120		
Drawing No.: PD_05	Rev.: -	

L:\Academy Street\Drawings\PD_05 - Car Vehicular Movements.dwg, Date Plotted: 09-Aug-23; Plot Size: ISO full bleed A1 (594.00 x 841.00 MM); Plotted by: Adam Sutherland (Infrastructure)

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