NAAS/SALLINS TRANSPORT STRATEGY

Volume 1 - Strategy Report

November **2020**

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1 INTRODUCTION

1. Introduction

1.1 Overview

AECOM has been commissioned by Kildare County Council to complete a transport strategy for Naas and Sallins. The Transport Strategy is intended to address current issues and anticipate future problems in the transport network. The Transport Strategy presents a comprehensive analysis of the current transport situation in Naas/Sallins, outlines the impact of future proposed land development on transportation and presents potential solutions to improve conditions for active modes, private motorised vehicles and public transport.

The provision of high quality transport infrastructure is an essential component of urban regions and the delivery of sustainable development. Transport infrastructure provides the critical link between homes and activities such as work, school, college, leisure, shopping, healthcare and socialising. From an economic perspective, businesses are reliant on efficient, safe and reliable transport in order to attract employees or customers and to transport goods across the country. As a result, transport investment can help unlock new opportunities when it is well co-ordinated and has sufficient funding; or it can constrain opportunities if it is uncoordinated and poorly funded. The creation of a sustainable, affordable and efficient transport system will support economic development, reduce negative environmental impacts and enhance wellbeing.

In recent years, Naas, Sallins and Kildare County have experienced high levels of housing and employment growth which increased travel demand until the disruption caused by the Covid-19 pandemic. Effective planning practices can help to identify the conditions required to operate an efficient transport system and facilitate development growth proposals. This multi-modal strategy will provide a blueprint for transport investment within Naas/Sallins and its surrounds which will support the delivery of sustainable development and the regeneration of the town centre. In particular, the Naas / Sallins Transport Strategy will inform the future draft Local Area Plan (LAP) for Naas 2021-2027. The role of the Naas / Sallins Transport Strategy is to inform the future LAP by providing a comprehensive evidence based approach to the development of road-based and sustainable transport which supports the Council's land-use plans.

1.2 Background

In the 2016 Census, the population of Naas Central Statistics Office (CSO) Settlement was 21,393 people and the population of Sallins CSO settlement was 5,849 people. The boundaries of the CSO settlements are shown in Figure 1.1.

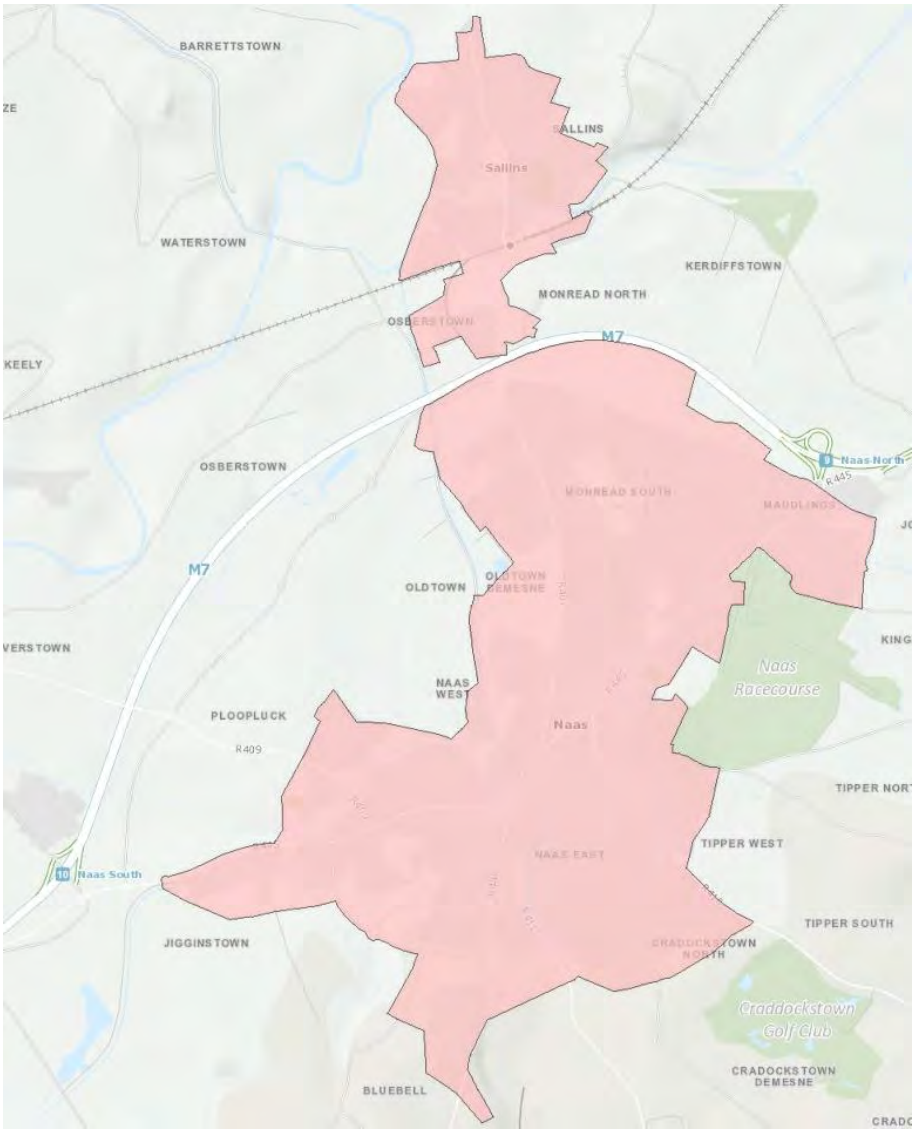


Figure 1.1 Naas and Sallins CSO Settlements

Over recent decades, Naas has rapidly expanded with the population doubling since the early 1990s; leading to the spread of housing estates across the urban area, particularly to the north-east and south-east of Naas Town Centre. This rapid expansion has increased pressure on the town's amenities, transport infrastructure and parking supply. Similar trends can be observed in Sallins village. Car dependency is relatively high, with 77.5% of people in Naas and 78.6% of people in Sallins driving to work, which presents a key challenge in the promotion of sustainable travel. While a greater proportion of people use rail in Sallins, there is also higher car use and this is due to the smaller amount of trips by active modes or bus travel for residents of Sallins compared to the larger urban centre of Naas.

The Naas/Sallins Transport Strategy aims to provide a multi-modal framework to inform future transport infrastructure planning, investment and delivery. The aim of the Strategy is to promote sustainable development in Naas/Sallins, to connect communities, support the economic and employment base as well as enhancing Naas as a cultural centre with a strong sense of place. The strategy will provide ease of movement across all modes and assist in creating the conditions necessary to facilitate the renewal of Naas town centre and Sallins village centre.

1.3 Report Structure

The Strategy Report draws on the information presented in the Baseline Report about Naas and Sallins to propose and assess potential options for inclusion in the Naas/Sallins Transport Strategy. The Strategy is contained in Volume 1 of the report, which is structured into the following sections:

Section 2: Transport and Development Context – A summary of the key policy, development and transport information presented in the Baseline Report.

Section 3: Consultation - A summary of the consultation process and survey responses.

Section 4: Strengths, Weaknesses, Opportunities and Threats (SWOT)

Section 5: Strategy Objectives - An outline of the Strategy objectives.

Section 6: Analysis Tools - A description of the analysis tools used to develop the Strategy.

Section 7: Option Assessment Methodology – A summary of the option assessment process.

Section 8: Public Transport Interventions – A description and assessment of options to improve public transport in Naas and Sallins.

Section 9: Road Transport Interventions – A description and assessment of options to manage roads and parking in Naas and Sallins.

Section 10: Non-Motorised Interventions – A description and assessment of options to enhance pedestrian permeability and cycling in Naas and Sallins.

Section 11: Public Realm – A description of the public realm measures proposed to support Naas town centre and Sallins Village centre

Section 12: Naas/Sallins Transport Strategy – A description of the Naas/Sallins Transport Strategy measures proposed across all modes of transport.

Section 13: Strategy Implementation – The phasing of implementation to achieve the objectives of the strategy and a review of important transport planning principles to incorporate in future design.

The appendices for the report are located in a separate document; Volume 2 of the Naas/Sallins Transport Strategy.

1.4 Approach

The Naas / Sallins Transport Strategy (NSTS) examines the transport network within the towns of Naas and Sallins in order to provide supportive analysis which will assist in providing an evidence- based development of future revisions of the Naas Local Area Plan (Naas LAP) and Sallins Local Area Plan (Sallins LAP). The strategy examines possible objectives which may be included as objectives in the Naas LAP and in some cases includes a high level Multi Criteria Analysis (MCA) which teases out options at a very high level.

The Naas LAP will bring forward objectives which may include those identified in the NSTS. However, it must be remembered that the objectives of the Naas LAP will then form the basis for individual projects. These projects will then be examined on their own merits and be subject to the rigorous analysis requirements of the Public Spending Code (PSC) and the Common Appraisal Framework for Transport Projects and Programmes (CAF). The PSC and CAF require the identification and examination of various options including the following:

- Do Nothing;
- Do Minimum;
- Pedestrian;
- Cycle;
- Public Transport in various forms; and
- Road or Street improvement.

While the Naas/Sallins Transport Strategy includes some high-level MCAs, these would not be sufficient for the purpose of assessing an individual project developed from an objective within the Naas LAP. They do not proport to be a definitive analysis of all the options for the possible objectives, but rather a broad reckoning which indicates they are suitable for inclusion as potential transport objectives for inclusion in the upcoming statutory LAP reviews.

It should also be noted that the individual projects will be subjected to public consultation, environmental and heritage studies, relevant statutory procedures and consultation with the relevant statutory stakeholders.

An overview of the approach taken in developing this transport strategy is provided below.

Stage 1
Evidence Analysis and Public Consultation

Stage 2
Strategy Option Development

Stage 3
Option Assessment and Draft Strategy

Stage 4
Public Consultation on Draft Strategy

Stage 5
Final Strategy

1.5 Study Area

The study area of the Naas/Sallins Transport Strategy is show in Figure 1.2. The Strategy covers the built-up area of Naas and Sallins along with the M7 junctions and future development areas.

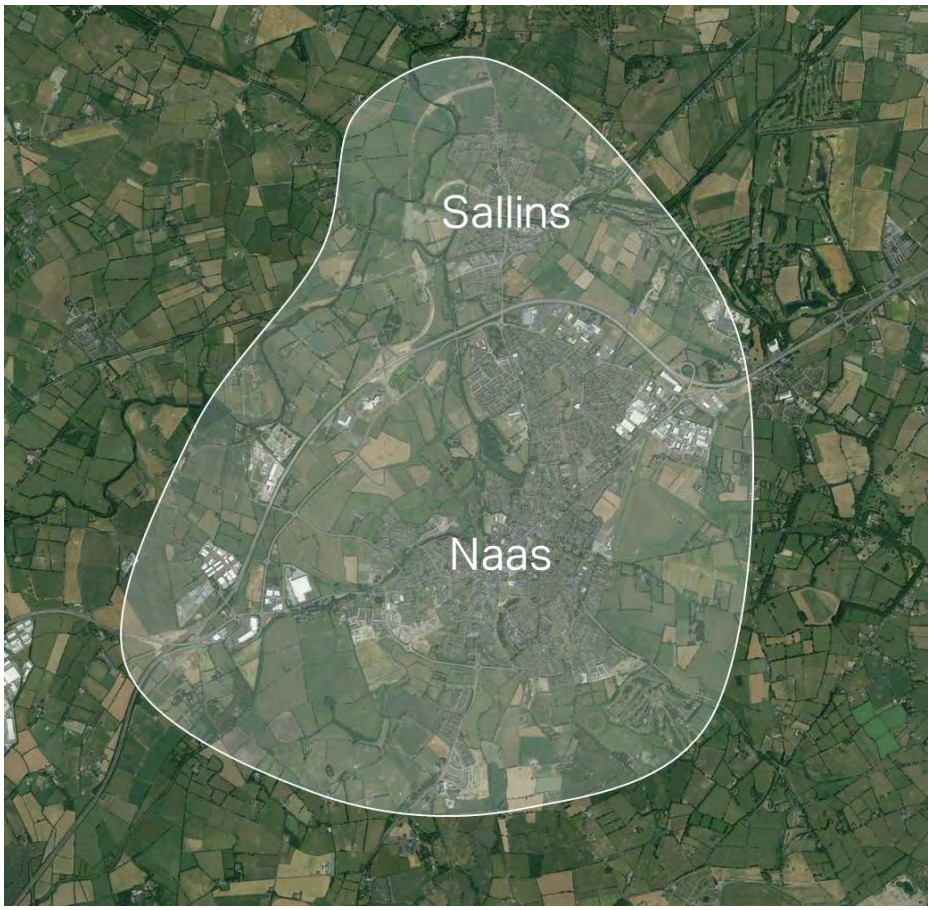


Figure 1.2 Naas/Sallins Transport Strategy Study Area

2 TRANSPORT AND DEVELOPMENT CONTEXT

2. Transport and Development Context

This section provides a summary of the policy, settlement and transport context in Naas and Sallins. This is a summarised version of the Baseline Report located in Appendix A.

2.1 Policy Review

2.1.1 National Policy

2.1.1.1 National Planning Framework

Project Ireland 2040 – National Planning Framework (NPF) provides a high-level strategic planning framework to guide development and investment. The NPF notes that Naas is located in the Eastern and Midland Region which has experienced population growth at more than twice the national rate. A population of 2.58 million is forecast by 2040 in the Eastern and Midland Region; 500,000 more people than live there at present.

Key future planning policy priorities for the Eastern Region which are relevant to Naas include:

- "*Enabling the complementary development of large and county towns... on the key strategic and public transport routes in a regionally co-ordinated manner, with an enhanced emphasis on measures to promote self-sustaining economic and employment based development opportunities to match and catch-up on rapid phases of housing delivery in recent years*."[1]
- "*...developing an integrated network of greenways, blueways and peatways, that will support the diversification of rural and regional economies and promote more sustainable forms of travel and activity based recreation utilising canal and former rail and other routes*."[1]

Another applicable objective is the NPF's National Policy Objective (NPO) 27 that states:

- "*Ensure the integration of safe and convenient alternatives to the car into the design of our communities, by prioritising walking and cycling accessibility to both existing and proposed developments, and integrating physical activity facilities for all ages*."[2]

2.1.1.2 National Development Plan 2018 - 2027

The National Development Plan (NDP) sets out the investment priorities that underpin the successful implementation of the National Planning Framework. It is designed to guide national, regional and local planning and investment decisions in Ireland over the next two decades.

One of the core investment priorities relevant to Naas outlined in the NDP under the public transport programmes is the Park-and-Ride Programme. This references the Naas Road as a specific example of where a Park-and-Ride facility could be provided. Naas / Sallins will benefit indirectly from the rail and bus improvements outlined in the NDP, such as electrification of the Kildare railway line as far as Celbridge or the BusConnects programme in Dublin, as passengers will be able to transfer to these services.

2.1.1.3 Climate Action Plan 2019

The Climate Action Plan 2019 sets a course of action to address the disruption that climate change is having on Ireland's environment, society, economy and natural resources. The Plan covers the sectors; electricity, transport, built environment, industry and agriculture to provide ambitious decarbonisation targets. In respect to transport, the Plan notes that transportation sources accounted for 19.8% of Ireland's greenhouse gases in 2017, as well as contributing to poor local air quality which can damage public health and quality of life.

In order to reduce the negative emissions causes by transport, the Plan focuses on two key areas; the transport intensity of growth and the carbon intensity of travel. In respect to transport intensity, this will be lessened through compact urban development envisioned by the NPF, expansion of infrastructure

[1] *Project Ireland 2040 – National Planning Framework, p.35*

[2] *Project Ireland 2040 – National Planning Framework, P82*

for sustainable modes to promote modal shift, market mechanisms to encourage modal shift and the roll-out of the National Broadband Plan to encourage remote working. In respect to reducing the carbon intensity of travel, policies are focused on; the roll-out of an effective electric vehicle charging network, decarbonisation of the public transport fleet, enhancing priority for public transport, the designation of low emission zones by local authorities and developing a strategy for the freight sector. The Plan recognises the need for Ireland to significantly step up its commitment to reduce climate disruption and notes the important role of public bodies in taking action to help achieve decarbonisation targets.

2.1.1.4 National Cycle Policy Framework 2009-2020

The National Cycle Policy Framework (NCPF; 2009-2020) is a policy document developed by the Department of Transport, Tourism and Sport (DTTAS) which sets out 19 specific objectives for cycling. A key component of this document is 109 individual, but integrated, actions which aim to ensure that a cycling culture is developed in Ireland. This document is close to expiry, but it contained the notable aspiration that 10% of all journeys would be completed by bike in 2020 which has not been achieved nationally. The NCPF does not mention Naas/Sallins or Kildare specifically, but this document would support the improvement of cycling infrastructure to contribute to higher cycling modal share.

2.1.2 Regional Policy

2.1.2.1 Regional Spatial and Economic Strategy for the Eastern and Midland Region 2019-2031

The Regional Spatial and Economic Strategy (RSES) for the Eastern and Midland Region 2019-2031 sets out a framework to direct future growth. The RSES identifies Naas as the county town of Kildare and a Key Town within the Hinterland of Ireland's Eastern and Midland Region. The RSES recognises that there are strong links between Naas and the nearby settlements of Sallins and Newbridge, with a strong interrelationship of services, employment and education facilities. A core theme of the RSES in relation to Naas is to enhance links to Sallins train station and improve sustainable travel options.

The RSES sets out the following key regional policy objectives specific to Naas:

- *"RPO 4.48: Promote the improvement of the transport network within and serving Naas town, including delivery of a robust and efficient walking, cycling and bus network with strong links to Sallins Railway Station, key destinations within the town and to the North West Quadrant and town centre area."*
- *"RPO 4.49: Support the development of the Grand Canal for amenity, recreation and sustainable transport purposes including the Naas to Sallins and Naas to Corbally harbour greenways and linking these to the national Grand Canal Greenway."*
- *"RPO 4.50: Regeneration and consolidation of the historic centre to improve the retail and commercial functions of the town core, with enhanced permeability and sustainable mobility within the town centre and improve links between the core and surrounding residential and employment areas through the further development of walking and cycling routes and improved public transport."*
- *"RPO 4.51: Strengthen the local employment base including through the development of MERITS, Millennium Park in the North West Quadrant and the regeneration of underutilised lands including industrial lands in the north east of the town."*
- *"RPO 4.52: Support the delivery of new and enhanced public transport infrastructure in Naas and Sallins, including Park and Ride and interchange facilities as identified by the NTA and Kildare County Council."*
- *"RPO 4.53: Support an enhanced role and function of Naas as the County town of Kildare, particularly as a hub for high quality employment, residential and amenities."*

The RSES states that a Local Transport Plan (LTP) should be developed to deliver investment in sustainable mobility in Naas, which should be created by the local authority in collaboration with state agencies. An LTP is the lowest tier of the NPF framework for integrated land-use and transport planning which takes account of the most recent demographic and travel information to develop objectives which align with those of National and Regional Policy. LTPs include transport priorities for a settlement

in respect to; cycle investment, pedestrian improvements, public transport infrastructure and road infrastructure. In respect to land-use-transport planning integration, the RSES state that "*the policies, objectives and measures which emerge from the LTPs shall be incorporated into the relevant statutory land use plans pertaining to each settlement*". The LTP process is similar to the Area Based Transport Assessment (ABTA) which are used in the preparation of Local Area Plans, Strategic Development Zones and masterplans to ensure that transport demand is a key consideration in the future development of areas and to integrate land-use and transport. The Naas/Sallins Transport Strategy fulfils the requirements of the LTP and ABTA process in preparing a detailed transport assessment and strategy which will inform the development of the future Draft LAP 2021-2027.

2.1.2.2 Transport Strategy for Greater Dublin Area 2016-2035

The Transport Strategy for the Greater Dublin Area 2016-2035 aims to contribute to the economic, social and cultural progress of the GDA by providing for the efficient, effective and sustainable movement of people and goods. The strategy outlines a suite of transportation objectives for the GDA including the provision of additional public transport facilities (heavy rail, light rail, bus and bus rapid transit facilities), cycling and walking infrastructure and road network measures up to 2035.

The priorities of the strategy which are relevant to Naas include the following:

- To address urban congestion and provide a safe cycling network
- To protect the capacity of the strategic road network
- To reduce the share of trips by car to increase walking, cycling and public transport
- To enhance the pedestrian environment to overcome severance and increase permeability
- To consider all-day travel demand from all societal groups

Naas is designated by the GDA Strategy as being within radial corridor D: Newbridge – Naas – Clondalkin – North Tallaght – to Dublin City Centre, the busiest radial route in and out of Dublin. The GDA Transport Strategy 2016 – 2035 indicates that this corridor is characterised by increasing issues with towns growing quickly outside the existing local catchment of rail and bus services.

2.1.2.3 Greater Dublin Area Cycle Network Plan

The Greater Dublin Area Cycle Network Plan is the National Transport Authority's plan for a regional cycle network. The Cycle Network Plan aims to ensure that cycling is supported and enhanced in order to achieve strategic objectives and reach national goals for cycle usage.

Figure 2.1 illustrates the proposed cycle network plan for Naas and Sallins.

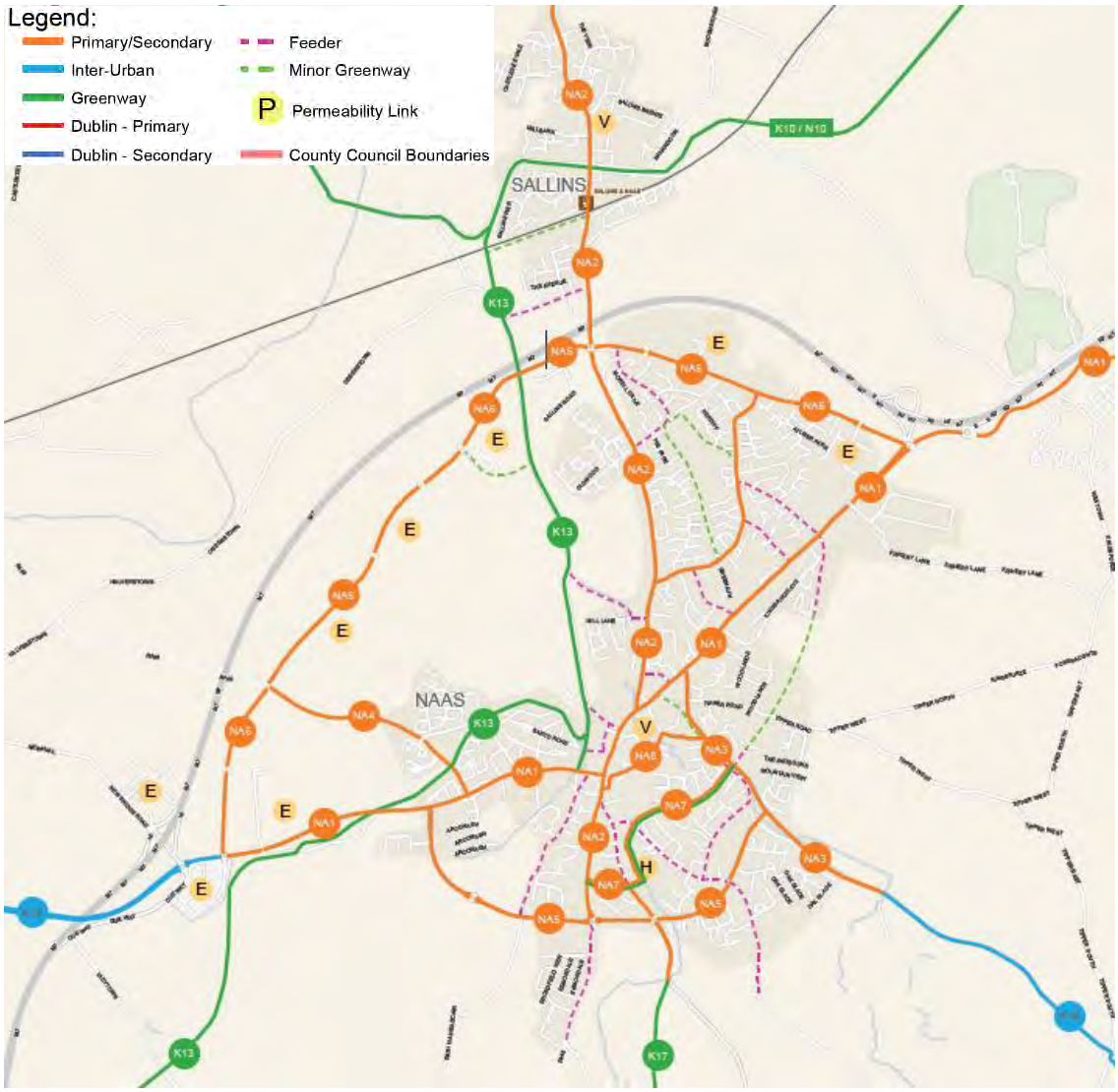


Figure 2.1 Greater Dublin Area Cycle Network Plan - Sheet N18: Naas, Sallins and Kill[3]

2.1.3 Local Policy

2.1.3.1 Kildare County Development Plan 2017 - 2023

The Kildare County Development Plan (CDP) 2017-2023 outlines the Municipal District system for local administration and Naas is designated within the Naas Municipal District area.

The CDP sets out an overall strategy for the proper planning and sustainable development of the functional area of County Kildare over the period 2017-2023. It sets out an overall vision, with strategies, policies and objectives for the County as a whole, all of which are material to local development plans, strategies and development decisions.

Section 6: 'Movement and Transport' sets out the objectives for the County with the overall aim:

> *"To promote ease of movement within and access to County Kildare, by integrating sustainable land use planning with a high quality integrated transport system; to support improvements to the road, rail and public transport network, together with cycleway and pedestrian facilities and to provide for the sustainable development of aviation travel within the county in a manner which is consistent with the proper planning and sustainable development of the county."*[4]

[3] Greater Dublin Area Cycle Network Plan, Sheet N18

[4] Kildare County Development Plan 2017 – 2023, P127

The CDP Movement and Transport section contains a number of objectives which are relevant to the development of Naas/Sallins Transport Strategy:

- MTO3: Review and implement Integrated Transport Studies for Maynooth, Leixlip, Celbridge, Naas, Newbridge, Kildare and Athy in conjunction with the DTTAS, TII and the NTA, as well as to prepare new Integrated Transport Studies for other towns, villages and settlements as required, to provide a framework to cater for the movement of pedestrians, cyclists, public transport and private vehicles.
- PTO4: Work with statutory agencies and stakeholders to promote and facilitate the development of a public transport hub near Naas which will connect road, rail transport and public bus transport.
- WCO4: Secure the development of the following specific cycle schemes (subject to funding from the NTA) as part of GDA Cycle Networks Projects:
    - Dublin Road Corridor Scheme Naas;
    - Naas to Sallins;
    - Kill to Naas.[5]

Kildare County Council made Variation No.1 of the County Development Plan in 2020, with public consultation on the variation held in January-February. The changes in the variation are designed to bring the CDP in line with the National Planning Framework and RSES documents, to replace guidance from the former National Spatial Strategy. The variation designates Naas as a 'Key Town' which is economically active, with a varied economy and high quality transport links. In respect to sectoral opportunities in Naas, the variation notes the following opportunities for the town:

- *"High quality high-density indigenous and Foreign Direct Investment within Millennium Park and the northwest quadrant of Naas town.*
- *Technology, IT and digital/tech sector including incubator units and shared space. Strengthen employment base through Tech Hub–MERITS Co-working space providing supports for technology entrepreneurs.*
- *High-tech manufacturing and research; Food processing and research including, the development of food incubation units.*
- *Re-intensification of industrial lands in the north east of the town. Exploit historic and amenity assets, regeneration of town centre to provide significant retail and commercial functions."*

Further information on the objectives contained in the County Development Plan can be found in the Baseline Report located in Appendix A.

2.1.3.2 Future Draft Naas Local Area Plan 2021 – 2027

Once adopted, the future draft Naas Local Area Plan 2021-2027 will replace the Naas Town Development Plan 2011-2017. Work has commenced on the future draft Naas Local Area Plan 2021-2027.

The future draft LAP 2021 to 2027 will seek to build upon Naas' existing assets and set out the long-term strategic vision for Naas as a successful town that promotes sustainable growth and a high quality of life for residents in the years leading up to 2027 and beyond. Key components of the core vision for Naas, with particular relevance to Transport Strategy, will include:

- To ensure that the growth planned for the town up to 2040 and beyond occurs in a sustainable and sequential manner, while prioritising a low carbon, compact, consolidated and connected pattern of development.
- To develop Naas as a vibrant and culturally rich town, supported by an inclusive, sustainable, all-of-life residential community.

[5] *Kildare County Development Plan 2017 – 2023, P132-133*

- To create a distinct sense of place and community in which people will continue to choose to live, work, do business and visit.
- Movement, connectivity and permeability to key destinations within the town and wider region will be prioritised and a greater emphasis on safe active transport routes and an enhanced public transport network.
- There will be a clear emphasis on linking the town centre to the Northwest Quadrant (NWQ) lands, developing key transport modes, community facilities and amenities and delivering a high quality and connected employment quarter with diverse residential and amenity areas.

The future Draft LAP 2021-2027 will include policies and objectives for movement and transport, walking and cycling, parking, public transport, road and street network as well as strategic road connections.

2.1.3.3 Naas Town Development Plan 2011 – 2017

The Naas Town Development Plan 2011-2017 is the existing local area plan for Naas. The Town Development Plan sets out the former Town Council's strategy for the sustainable development of Naas. Chapter 7 'Movement and Transport' contains the most relevant policies, key objectives include:

- General Movement and Transport (GT)1: To co-operate with other agencies to promote and facilitate the implementation of a sustainable transportation strategy for Naas.
- GT2: To support and promote the use of sustainable transportation modes in Naas and to seek to develop Naas as a "model town" for sustainable transport where pedestrian and cyclist activities are accommodated and encouraged.
- GT3: To support sustainable modes of transport and to ensure that land use planning and zoning are fully integrated with the provision and development of high quality transportation systems.
- GT4: To promote and encourage the development and growth of Naas in line with the principles of sustainable development and to continue to support the policies and recommendations as outlined in the Integrated Framework Plan for Land-Use for Naas and the Naas Traffic Management Plan.
- GT5: To provide a road network which is safe and efficient for all road users while being cognisant of the requirements of all traffic, including motorised vehicles, pedestrians and cyclists.
- GT6: To ensure that Naas is well-connected to both the national road network and local centres of population.
- GT8: To improve road safety within the town centre by implementing gateway entry treatments and other speed reduction measures (incl. 50kph signage) inside the Ring Road.
- GT10: To co-operate with the public transport authorities and any other relevant bodies towards the improvement of the public transport system and to establish the feasibility of a park and ride system in Naas.
- Traffic and Public Transport (TM) 3: To encourage the implementation and expansion of local bus services to link key trip generators and attractors in the town, particularly residential, employment, educational and retail centres.
- Parking (PK)1: To optimise the use of existing parking stock, and to provide, facilitate and regulate the provision of parking spaces conveniently located to serve the various land uses.
- Sustainable Travel (STO)6: To encourage Iarnród Éireann, Bus Éireann and private companies to improve the frequency and quality of public transport facilities to, from and within the town.

The following Roads Improvement, Realignment and Widening Objective is also relevant to the Naas/Sallins Transport Strategy:

- RWO3: To develop a network of bus priority routes including along the Sallins Road, Dublin Road and Newbridge Road and to widen these roads where necessary to improve traffic capacity and for the provision of footpaths, cycle tracks, public lighting and appropriate traffic calming.

2.1.3.4 2020 Vision for Naas

The 2020 Vision for Naas document summarises the conclusions reached in the Naas Integrated Framework Plan for Land Use and Transportation which provides a vision for the future development of the area. The preferred framework plan for development is shown in Figure 2.2, this favours the consolidation of the existing urban footprint through in-fill construction and the development of the greenfield sites to the west of the Grand Canal Naas Branch rather than urban sprawl in the periphery. Several of the proposed link roads, such as the Millennium Link Road and the South Ring road have been constructed, while the eastern link road has not yet been progressed by the Council.

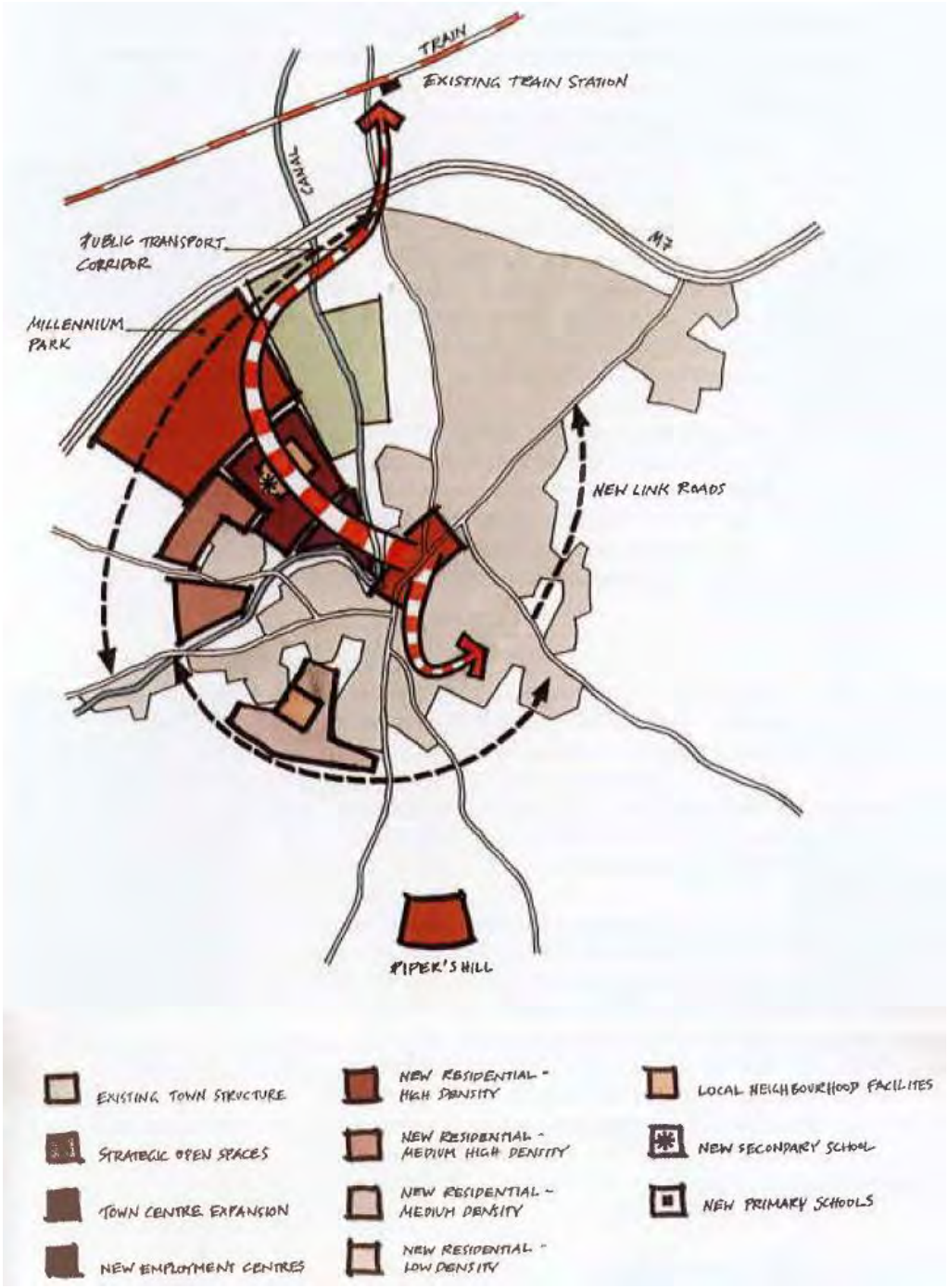


Figure 2.2 Preferred Framework Plan in the 2020 Vision for Naas

The preferred strategy of the 2020 Vision document promotes the co-location of different land-uses to reduce trip distances and promote sustainable travel. The objectives for future development are grouped into themes, the relevant objectives for the town centre and transport are summarised below:

Town Centre

- New shopping development should be located within the existing or expanded town centre
- New town centre development should include a mix of retail, commercial, community and residential uses in appropriate higher densities around pedestrian friendly streets
- New expanded town centre should have strong transport links with the existing town centre

Sustainable Travel

- Ensure that sustainable transport is integrated into development proposals
- Increase accessibility through higher development densities

Walking and Cycling Networks

- Provide comprehensive walking and cycling routes in the existing urban area
- Develop walking and cycling routes within future developments
- Develop a cycle link between Naas and Sallins Train Station
- Use accepted best practice in the design of cycle routes
- Encourage walking by providing appropriate detailed design of footways and footpaths

Public Transport

- Develop a bus corridor through Millennium Park
- Use accepted best practice in the design of passenger facilities
- Increase frequency on existing bus routes
- Introduce an upgraded bus interchange on the Main Street
- Encourage bus usage and reliability through priority measures on the Main Street
- Promote rail interchange and integration in Sallins
- Redevelop taxi facilities on the Main Street

Parking and Traffic Management

- Provide adequate parking for new developments
- Introduce traffic management measures on the Main Street
- Provide off-street parking to serve extended town centre

Environmental Impact of Transport Proposals

- Reduce environmental impacts through sustainable planning
- Encourage maximum use of walking, cycling and bus travel

Key Road Infrastructure

- Ensure that Kildare County Council committed road schemes are developed on time
- Provide vehicular access to the extended town centre
- Consider the requirements for long term road proposals

2.2 Settlement Context

2.2.1 Building Uses

Figure 2.3 provides an overview of the split between commercial and residential buildings in Naas and Sallins using the GeoDirectory (2018) dataset. This indicates that commercial activities are concentrated in the centre of Naas and in the industrial estates on the periphery. Sallins has a small number of commercial buildings but the settlement primarily consists of residential housing. While there is strong commercial presence throughout Naas, it is not all contained in the town centre and there are several suburban clusters of commercial activity. As a result, there is a clear spatial separation of land-use activities in suburban areas with little evidence of mixed-use development which would promote shorter trips and travel by active modes. Even in Naas town centre, mixed-use development is limited and there is scope for improving this through schemes to encourage living above ground floor retail and the construction of mixed-use buildings.

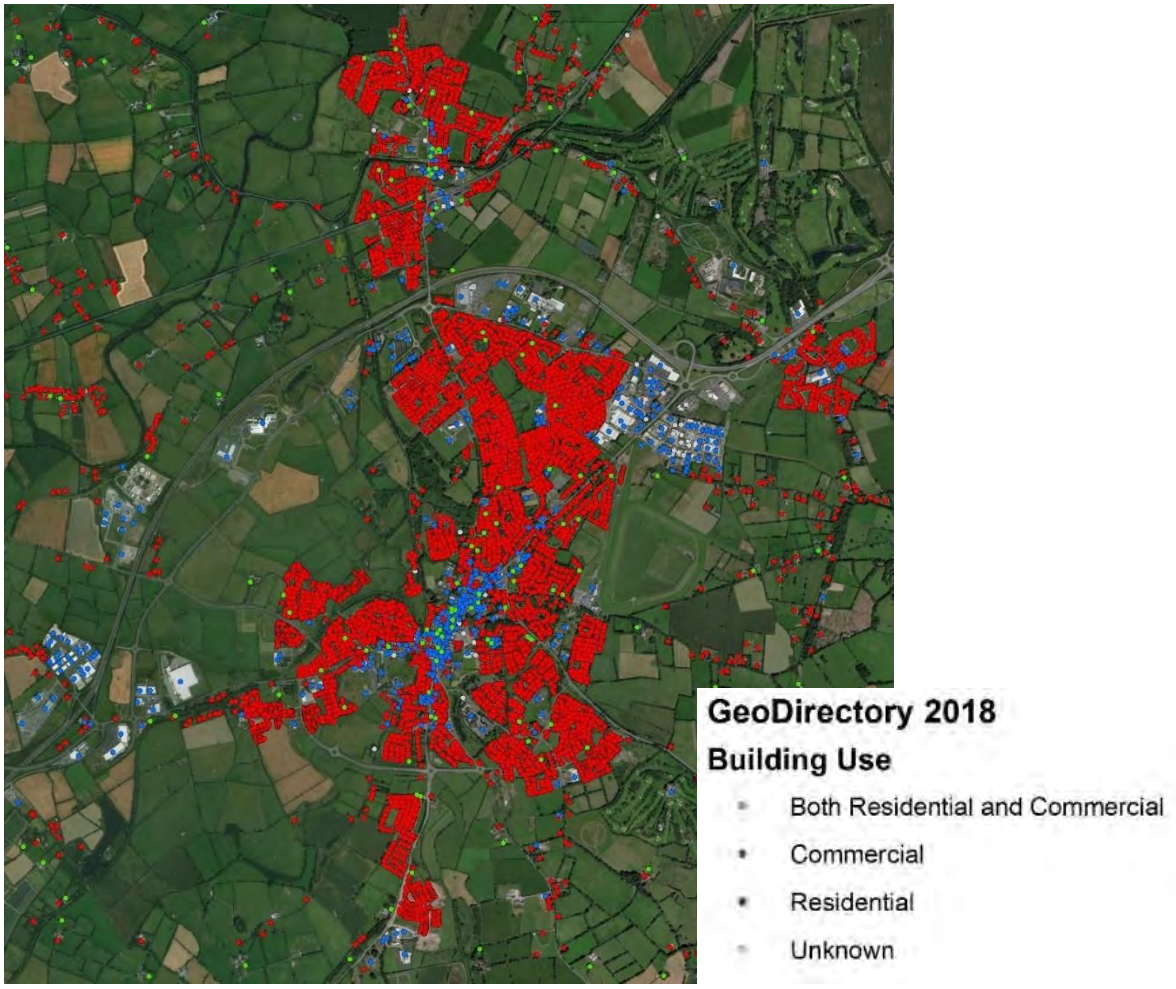


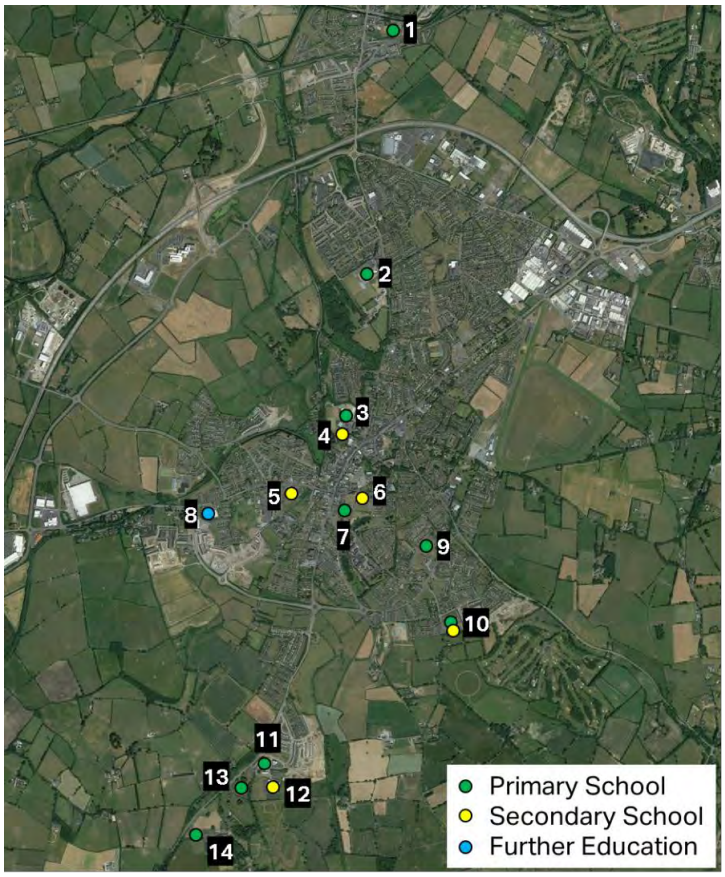
Figure 2.3 Residential and Commercial Buildings in Naas/Sallins (GeoDirectory, 2018)

2.2.2 Education Facilities

Figure 2.4 shows the location of the primary schools, secondary schools and the third level training centre. Naas has nine primary schools which are spatially distributed fairly evenly throughout the town. Naas has four secondary schools located in the central and southern areas of the town. The lack of secondary school in Sallins or northern Naas is likely to limit the ability of pupils to walk to school as they have to make longer trips which are more suited to car or bus. By late 2021, it is planned that Naas Community College secondary school will move from Craddockstown Road to Millennium Park in northern Naas and this will reduce trip distances for some pupils.

From a sustainable transport perspective, a critical issue is the development to the south of Naas of Gaelscoil Nás Na Ríogh, Piper's Hill College, St David's National School and Killashee School. The peripheral location of these schools means that most pupils will be travelling too far for walking to be an attractive transport option. As a result, in order to reduce car journeys to these schools it will be essential to ensure that suitable bus services as well as safe and attractive cycling facilities are provided.

There is only one third level education facility within the study area; the further education and training centre in western Naas. This will mean that all third level students who attend third level education will travel from Naas to Maynooth, Dublin and other locations for college.



No.	Level	Name
1	Primary	St. Laurence's National School
2	Primary	Scoil Bhríde
3	Primary	Mercy Convent Primary School
4	Secondary	St Mary's College
5	Secondary	Gael Choláiste Chill Dara
6	Secondary	Meánscoil Iognáid Rís
7	Primary	St. Corban's Boys National School
8	Third Level	Naas Further Education and Training
9	Primary	Holy Child National School
10	Primary	Naas Community College
-	Secondary	Naas Community National School
11	Primary	Gaelscoil Nás Na Ríogh
12	Secondary	Piper's Hill College
13	Primary	St. David's National School
14	Primary	Killashee School

Figure 2.4 Location of Education Facilities in Naas and Sallins

2.3 Transport Context

2.3.1 Work Trip Modal Split

Figure 2.5 shows the modal split for work trips by Naas residents from the Small Area Population Statistics (SAPS) of the Census 2016. This highlights that Naas residents are highly car dependent with 77.5% of commuters travelling by private car. Public transport use is relatively low with only 4.2% and 3.5% using bus and rail respectively. The percentage for active modes is higher in Naas than Sallins with 9.6% walking and 2.6% cycling to work, this reflects the fact that Naas is a large urban centre which will contain a reasonable amount of jobs within walking or cycling distance. However, the majority of residents travel longer distances to County Dublin, and they do this primarily by private motor vehicle.

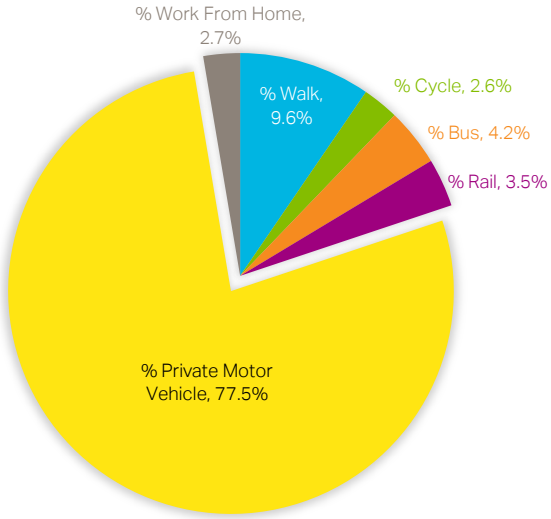


Figure 2.5 Naas Modal Split – Work Trips (Census, 2016)

Figure 2.6 shows the modal split for work trips by Sallins residents from the Census 2016. Car dependency is slightly higher (78.6%) than in Naas and there is a lower percentage for active modes; reflecting the smaller number of local jobs in Sallins. Due to the proximity of the rail station, the percentage of trips by rail is higher in Sallins (12.3%) than Naas and there are less bus users.

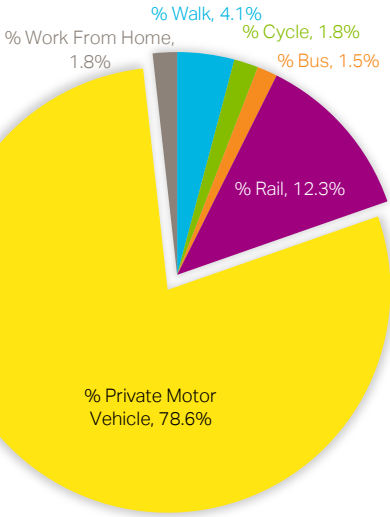


Figure 2.6 Sallins Modal Split – Work Trips (Census, 2016)

2.3.2 Road Network

The major roads in Naas and Sallins are shown in Figure 2.7. The main east-west access road through Naas is the R445, Dublin/Newbridge Road, along with the R409 in the west of the town. The main north-south access is provided by the R407, Sallins Road, and the R448, Kilcullen Road, which is the only link road between Naas and Sallins prior to the completion of the Sallins bypass in 2020. The primary orbital distributor roads in Naas are the R447 south ring, the Millennium Link Road in the north-west and the Monread Road in the north-east. Naas and Sallins have access to the M7 motorway from Junction 9 in the east and Junction 10 in the west. As part of the Sallins bypass, a new M7 junction, Junction 9A, will be created between Junction 9 and 10, which will improve access to the motorway from Sallins and Naas.

Figure 2.7 Major Roads in Naas (Open Street Map)

The Road Safety Authority (RSA) database of collisions in Naas and Sallins during 2008-2016 divides collision severity by; fatal, serious and minor collisions. The collision locations are shown in Figure 2.8. In respect to fatal collisions, there have been 3 fatal collisions in central Naas on the R445 and R448; two of which involved a pedestrian. In Sallins, there was one fatal collision in Sallins on the R407 between a car and a pedestrian.

There were 9 serious collisions on urban roads in Naas during the 2008-2016 period covered by the RSA data. Notably, seven of these serious collisions took place in 2016 and this suggests that road safety is declining. The three serious collisions in the town centre, which occurred on the R445/448, all involved a car or goods vehicle colliding with a pedestrian. There were four collisions on, or near, the R409 corridor, consisting of; a junction incident, a housing estate collision, a roundabout collision and a collision near K Leisure. All of these collisions, with the exception of the K Leisure collision, involved a collision between a motor vehicle and a cyclist. In the case of the collision in the Radharc An Chaislean housing estate; this involved the injury of a child. On the outskirts of Naas, there was a serious collision on the M7 mainline near Junction 10 in 2014 which involved a motorbike.

In Sallins, there was a serious collision between a car and pedestrian on Hunters Wood, a housing estate road off the R407. Throughout the study area there have been numerous minor collisions, which are clustered in the following locations: on the Naas bypass, the R407 through Sallins and the R445/R448 through central Naas.

In addition to the RSA data, in recent years there have been some high profile collisions which should be noted. In 2017, a 16 year old was killed when he was struck by a vehicle when crossing the road outside the Castlefen estate in northern Sallins. In 2018, there was a serious collision between a car and a pedestrian on Canal Bridge in Osberstown, just south of Sallins.

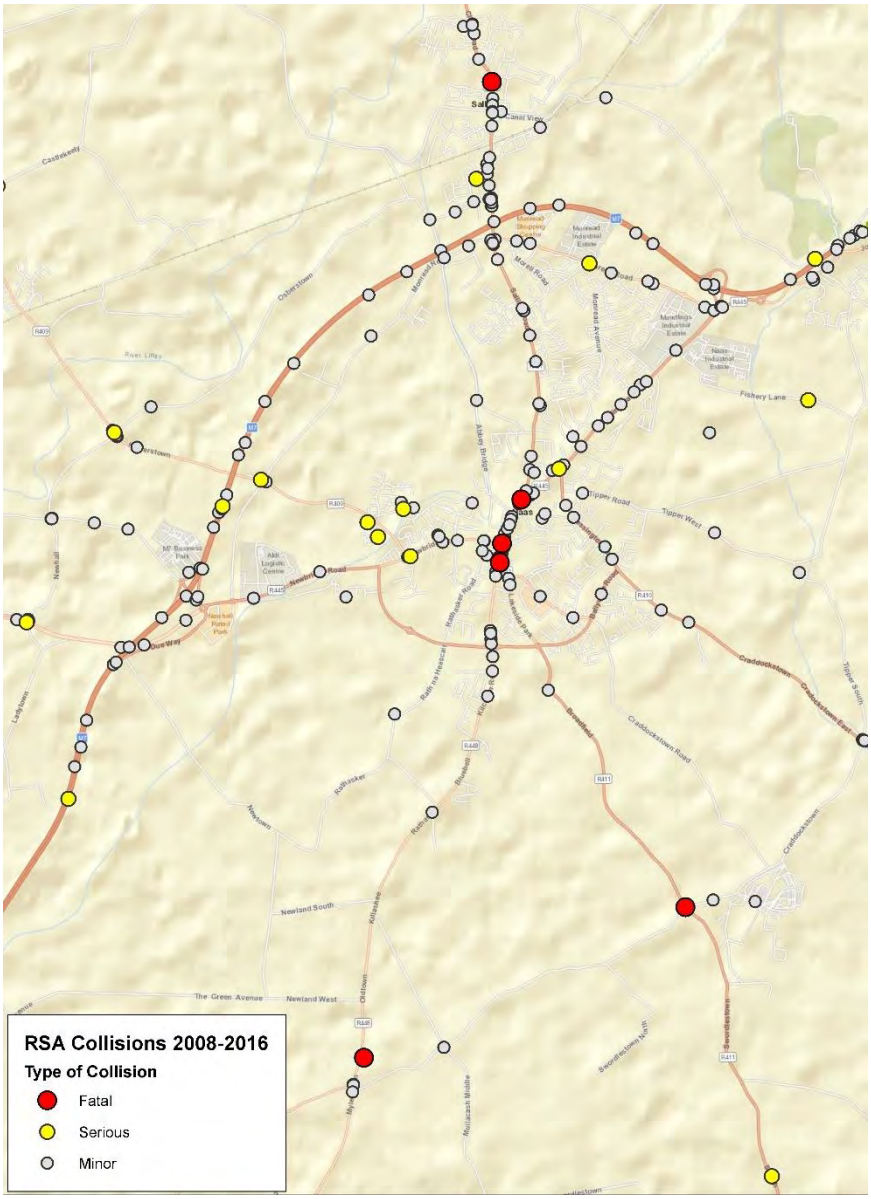


Figure 2.8 RSA Collisions 2008 – 2016 in Naas and Sallins

2.3.3 Parking Supply

A comprehensive parking survey of Naas was conducted. Figure 2.9 shows the percentage occupancy for on-street car parks during the peak hour for parking demand on a weekday in Naas. This highlights that the greatest occupancy levels occur in areas near major employment or services; such as near Naas General Hospital or in central areas adjacent to the Main Street.

Figure 2.10 shows the percentage occupancy for off-street car parks on a typical weekday during the peak hour in Naas. This highlights that the greatest occupancy levels can be observed near central areas adjacent to the Main Street and the Kildare County Council Offices. In addition, Sallins train station, which is not shown in the map, is operating near maximum capacity. However, none of the off-street car parks are operating at maximum capacity and several car parks are far less full. This highlights that there is spare parking capacity in Naas as a whole but that the distribution of parking supply is an issue; with oversupply in low demand areas and undersupply in high demand areas.

Figure 2.9 % Occupancy in On-Street Car Parks in Naas during Weekday Peak Hour

Figure 2.10 % Occupancy in Off-Street Car Parks in Naas during Weekday Peak Hour

2.3.4 Public Transport Network

There are a multitude of bus and rail services which provide access to Naas and Sallins. Table 2.1 provides a list of the radial public transport routes to Naas and the connections they provide to the west and east. It should be noted that local Bus Eireann services changed operator in 2019 and are now run by Go-Ahead Ireland as a result of a competitive tendering process by the NTA[6].

Table 2.1 Summary of destinations served by radial Naas public transport services

Operator	Route	Westbound Destinations	Eastbound Destinations
Irish Rail	Dublin – Cork	Newbridge, Kildare, Portlaoise, Mallow, Cork	Hazelhatch & Celbridge, Dublin Heuston
-	Dublin – Limerick	N/A: No Services	N/A: No Services
-	Dublin – Waterford	Newbridge, Kildare, Carlow, Kilkenny, Waterford	Hazelhatch & Celbridge, Dublin Heuston
-	Dublin – Galway	Newbridge, Kildare, Tullamore, Athlone, Athenry, Galway	Hazelhatch & Celbridge, Dublin Heuston
-	Dublin - Portlaoise	Newbridge, Kildare, Portlaoise	Hazelhatch & Celbridge, Dublin Heuston, Dublin Connolly, Dublin Pearse, Grand Canal Dock
-	Limerick – Galway – Dublin	N/A: No Services	Dublin Heuston
Go Ahead Ireland	125	Newbridge	Crumlin, Dublin, UCD
-	126	Newbridge, Kildare	Tallaght, Dublin, DCU
-	130	Kilcullen, Athy	Dublin
Dublin Coach	726 (N7 Service)	Newbridge, Kildare, Portlaoise	Red Cow Luas, Dublin Airport
-	Kildare – Naas Supplementary Service	Newbridge, Kildare	N/A
Kyanitedale Ltd	826	Newbridge, Kildare, Monasterevin	N/A
JJ Kavanagh	737	N/A	Heuston Station, Dublin City Centre, Dublin Airport
-	717	Athy, Kilkenny, Clonmel	Red Cow Luas, Dublin City Centre, Dublin Airport
Bernard Kavanagh	817	Kilcullen, Athy, Kilkenny	Red Cow Luas, Dublin City Centre

As well as radial bus services, there are also a small number of orbital bus services (Table 2.2). Orbital bus routes are particularly important in Naas as they provide a vital link to the train station in Sallins, which is beyond walking distance for most residents. There is a dedicated Irish Rail feeder bus service from Poplar Square which links Naas town centre with Sallins train station throughout the day.

[6] NTA press release on the transfer of Go-Ahead Ireland bus routes: https://www.nationaltransport.ie/news/nta-announces-preferred-bidder-for-bus-services-on-kildare-commuter-corridor/

Table 2.2 Summary of destinations served by Naas orbital public transport services

Operator	Route	Northbound Destinations	Southbound Destinations
JJ Kavanagh	139[7]	Sallins, Clane, Maynooth, Leixlip, Ongar, Blanchardstown	N/A
Kenneally's Bus	846	Sallins, Clane	N/A
Local Link	880	N/A	Kilcullen, Carlow
Irish Rail	Feeder Bus	Sallins Train Station	N/A

The location of radial bus and rail services in the town are shown in Figure 2.11. While there are many different radial bus routes, the service frequency provided by each route varies considerably. Northern areas of Naas have poor access to bus services compared to central and southern areas of the town. Figure 2.12 shows the orbital bus routes in Naas and this highlights the limited number of services in contrast with radial routes. In general, orbital bus routes are accessible to residents living along the central spine of the town, but the lack of routes means that residents living in the eastern or western periphery do not have access to an orbital bus service to link them with the train station.

[7] PSO Funded National Transport Authority (TFI) Route

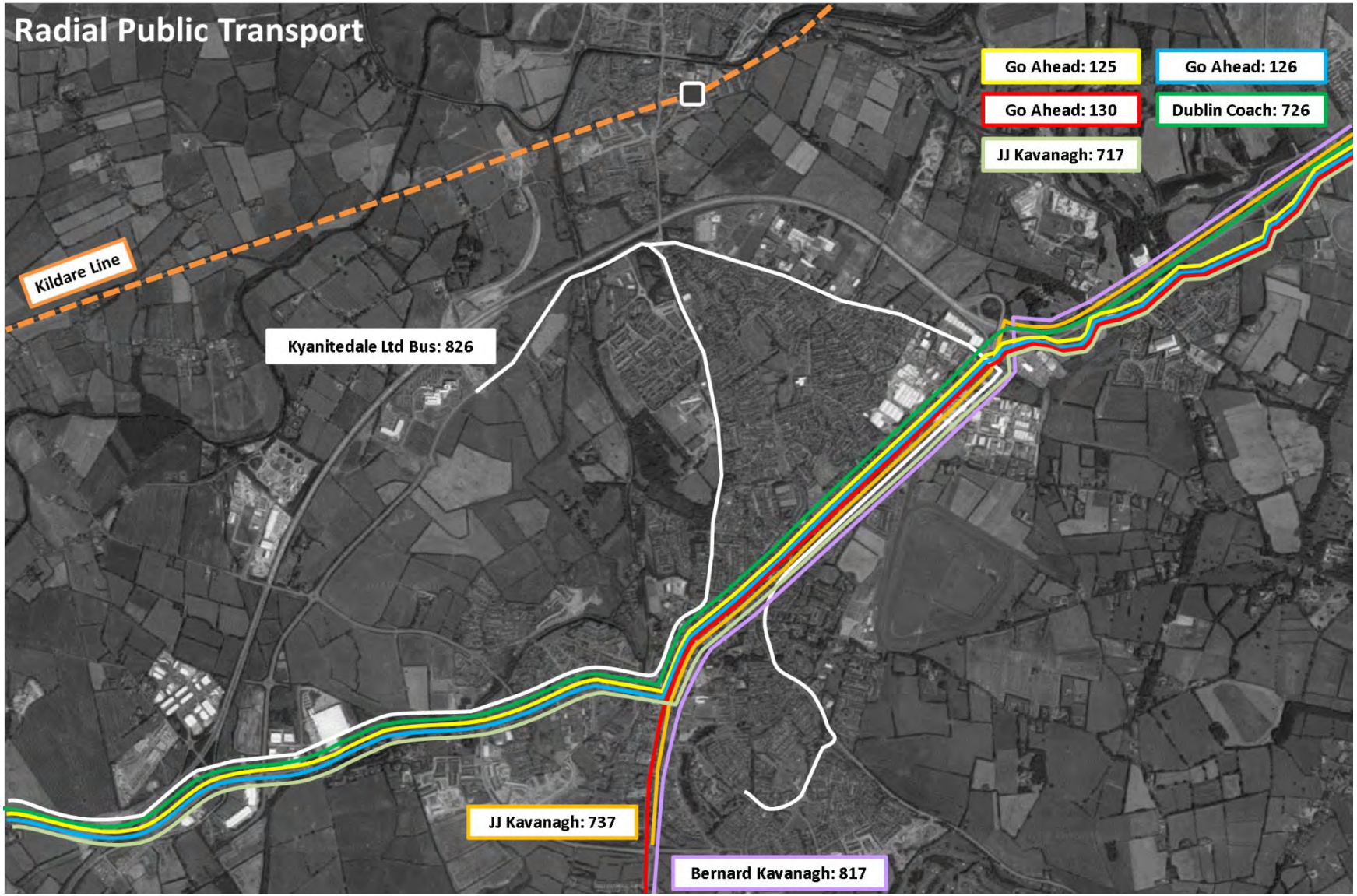


Figure 2.11: Location of Radial Bus Services in Naas and Sallins

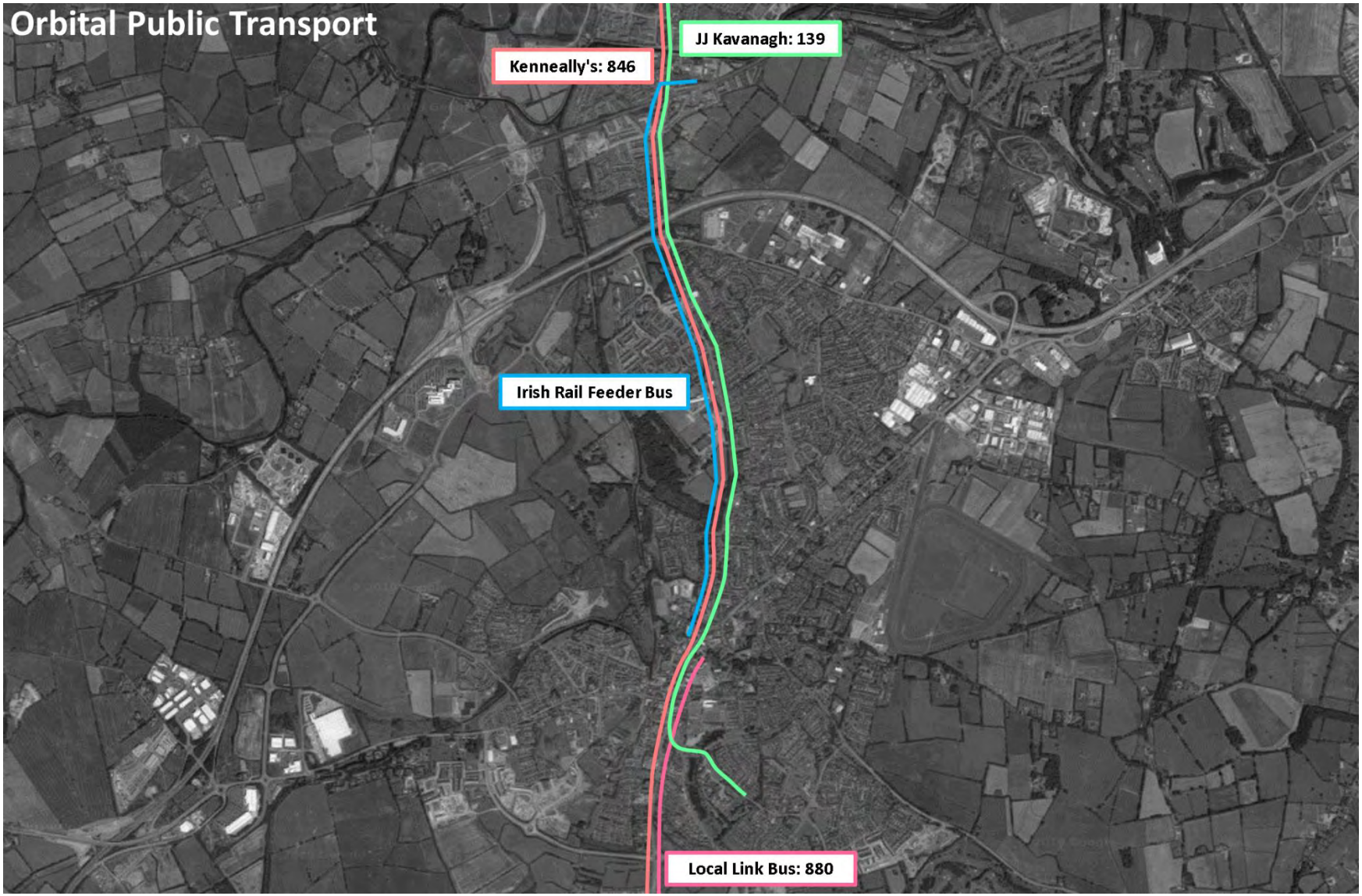


Figure 2.12: Location of Orbital Bus Services in Naas and Sallins

2.3.5 Path Network and Permeability

2.3.5.1 Key Permeability Barriers

Naas and Sallins are spatial separated by several large linear barriers; the Grand Canal, the railway line and the M7 Motorway (Figure 2.13). There are several crossing points, but these corridors constrain permeability and improving access will be important as the town expands. In the west, Naas town is bordered by the Naas and Corbally branches of the Grand Canal and east-west access across these waterways will need to be improved as development takes place. Within the town, there are also large impermeable blocks which can cause longer indirect trips for cyclists and pedestrians. Examples of this include; the racecourse, the GAA club, K Leisure and the hospital. Across the residential areas of Naas, the primary issue affecting residential permeability is the prevalence of cul-de-sac housing estates with high perimeter walls.

Figure 2.13 Identified Barriers to Permeability in the study area

2.3.5.2 Permeability Statistics

Table 2.3 provides an overview of the walking/cycling catchment for key locations throughout Naas and Sallins. This provides a count of the number of residential and commercial addresses in each catchment area using the GeoDirectory (2018) database. Furthermore, the table provides a breakdown of the percentage of total buildings in the study area which are within walking distance of each location. This highlights that the train station, hospital and sports amenity coverage is very low and covers less than 20% of residential buildings in the study area. In comparison, the secondary school catchment is better but only covers 35% of residential buildings and is constrained by the lack of secondary school in northern Naas or Sallins. The bus catchment is reasonably strong at nearly 60% of residential buildings but this also means that 4 in 10 houses in Naas and Sallins do not have convenient access to a bus service.

Table 2.3 GeoDirectory Statistics for Building Coverage of Key Services

	Existing Path Network Catchment		*% of Total Study Area Buildings*	
Catchment	Residential Addresses	Commercial Addresses	Residential Addresses	Commercial Addresses
Rail - 1km	1,485	107	13.7%	8.5%
Bus Stop - 500m	6,439	969	59.4%	77.1%
Primary School - 1km	6,222	797	57.4%	63.4%
Secondary School - 1km	3,799	688	35.0%	54.7%
Hospital - 1km	1,653	288	15.2%	22.9%
Sports Amenities - 1km	1,792	40	16.5%	3.2%

2.3.6 Cycling Infrastructure

Figure 2.14 shows the existing cycling infrastructure in Naas and Sallins, which includes designated cycle tracks/cycle lanes and greenway routes shared with pedestrians. Cycling infrastructure is largely restricted to the ring roads, and there is very limited cycle infrastructure throughout the town.

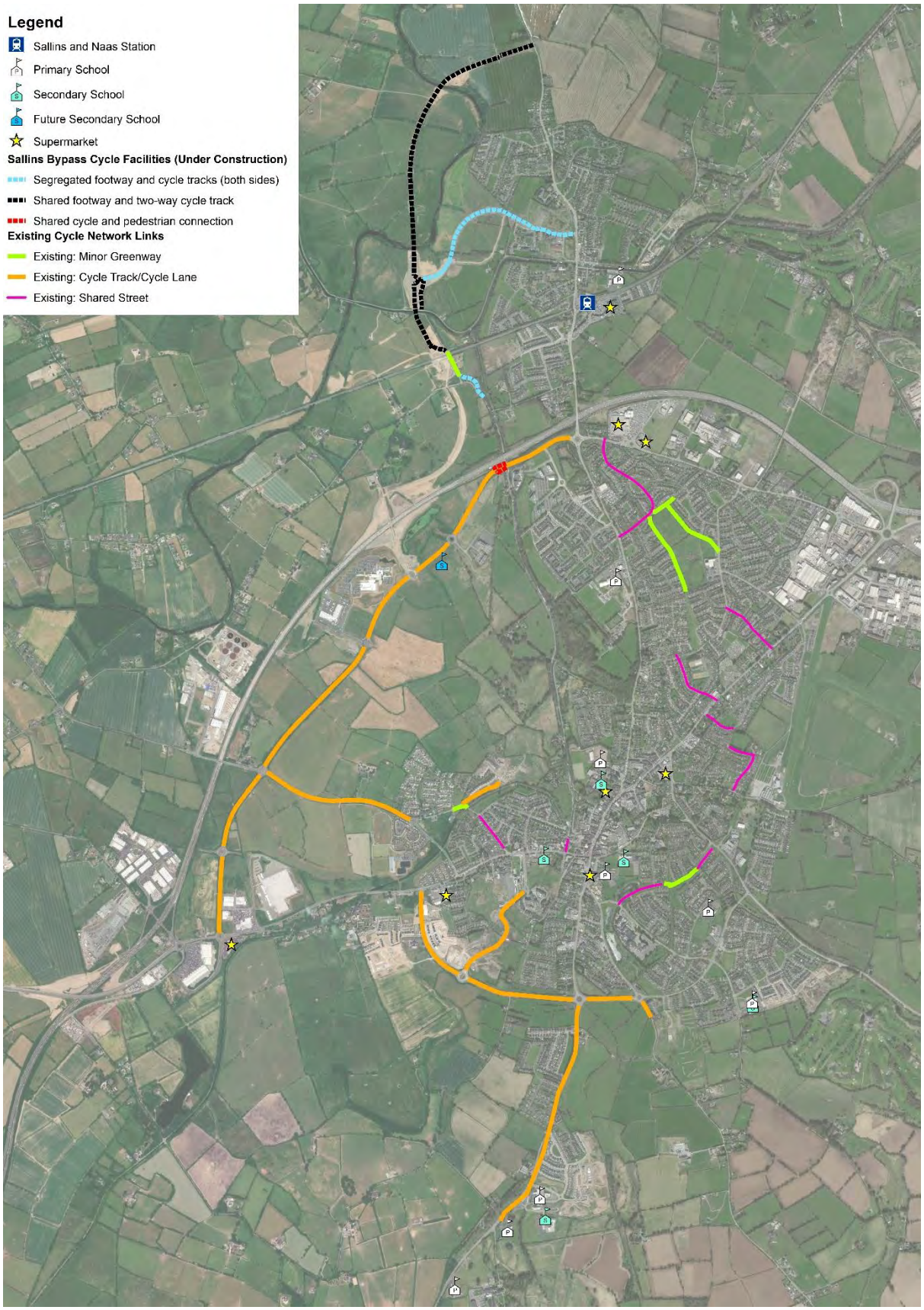


Figure 2.14 Existing or Under Construction Cycle Infrastructure in Naas and Sallins

3 CONSULTATION AND STAKEHOLDERS

3. Consultation and Stakeholders

It was essential to engage key stakeholders and the general public early in the strategy development process in order to gain an appreciation of existing transport issues and opportunities. The Stage 1 consultation included a series of workshops with invited stakeholders, an online survey which was open to all members of the public and consultation with school principals. Stage 2 consisted of an online survey for the public and stakeholders, as well as the option of sending in a written submission.

3.1 Stage 1: Consultation to Inform the Development of the Draft Strategy

The first round of consultation collected views from the public and stakeholders on the main transport issues in Naas and Sallins to inform the development of options in the draft strategy.

3.1.1 Stakeholder Engagement

Three stakeholder consultation workshops were held on Tuesday the 5th of March 2019 in the Kildare County Council offices in Naas. These involved:

- A dedicated workshop was held with local public representatives;
- A second workshop was held with Kildare County Council Departments; and
- 'Other' key stakeholders including representatives of the local business community.

The key issues raised at the workshops included:

- Potential opportunities to improve bus connectivity within and to/from the study area, with the biggest emphasis being on connectivity between Naas and Sallins train station;
- Car parking issues, including car parking capacity at Sallins train station, the potential for new or expanded Park & Ride facilities and parking issues within Naas town centre;
- Overcrowding on train services;
- Suggestions for traffic management solutions for different streets within the town centre, including a potential HGV ban or removal of non-essential traffic and a potential one-way system, amongst other ideas;
- The need for public realm improvements within the town centre and for these to have regard to the Conservation Area;
- Discussion around the best location for a public transport hub and the potential for a public transport bridge near the Canal Harbour;
- Road safety issues and the need to improve conditions and connectivity for walking and cycling, including the need to incorporate DMURS into all design proposals;
- Permeability issues between residential estates; and
- The growth opportunity within the North West Quadrant, as well as the future growth of the study area more generally, such as the need to ensure the future Draft LAP 2021-2027 and the Transport Strategy are well aligned.

A more detailed summary of issues raised at each of the three stakeholder workshops is provided in the baseline report in Appendix A.

3.1.2 Online Survey

An online public consultation survey was launched on the 5th of March 2019 and remained open for one month. The purpose of the online public consultation was to hear from people who live, work, shop, spend leisure time or attend education within the study area. The survey was anonymous and almost 1,000 respondents commenced the survey by clicking 'yes' to the introductory question confirming their consent to participate. However, some respondents did not complete the survey or all questions relevant to them. The actual number of respondents for each question is indicated alongside the results.

To summarise the existing situation, all respondents were asked to rate Naas's existing transport infrastructure for each mode of travel (Figure 3.1). The worst rated travel mode is cycling, with a combined 57% of respondents rating existing infrastructure for cycling as either poor/very poor. The proportions of people rating infrastructure for bus travel and for train travel as poor/very poor are similar at 49% and 50% respectively. The travel mode with the highest proportion of good and very good responses was walking, with 10% of respondents rating existing infrastructure for walking as very good and 43% rating it as good. A small majority of people viewed driving as acceptable or good with a significant minority (37%) rating it as bad or very bad.

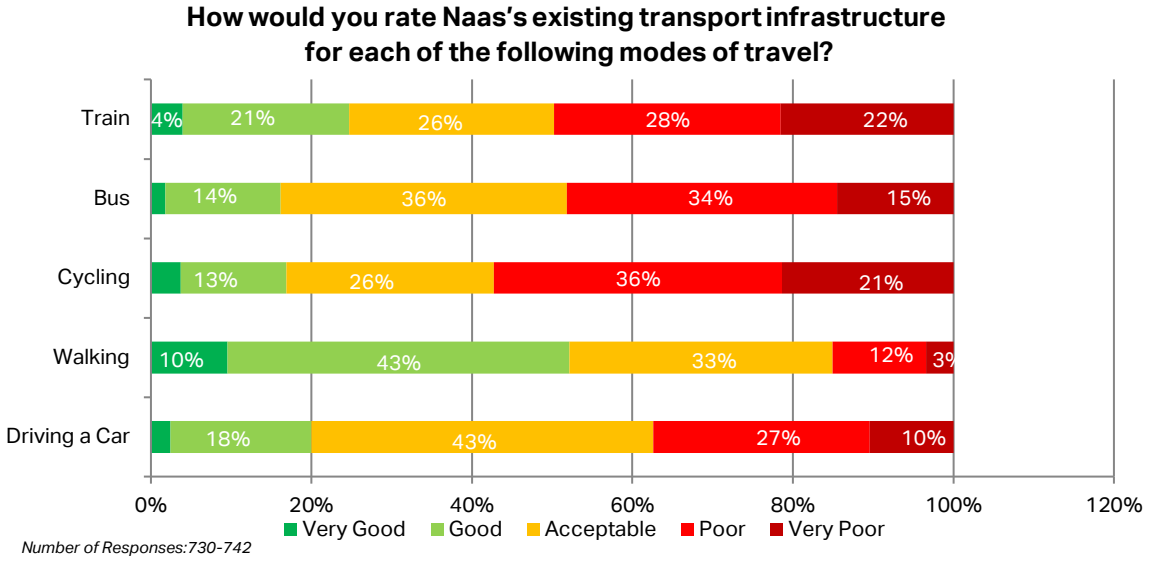
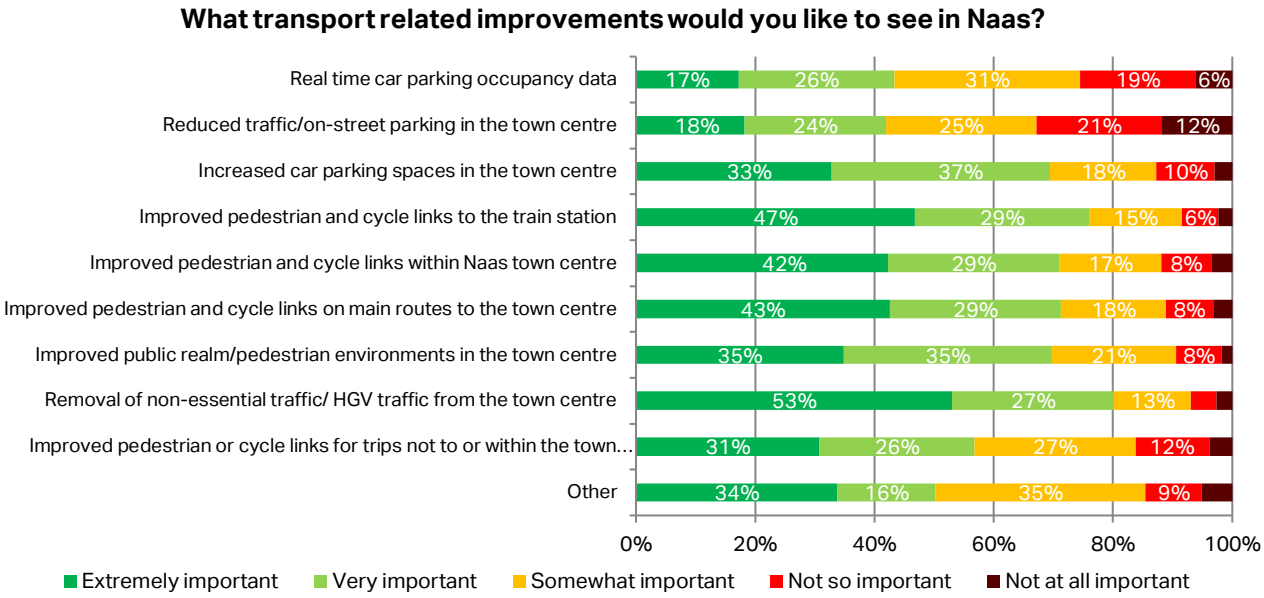


Figure 3.1 Rating of Naas's Existing Transport Infrastructure

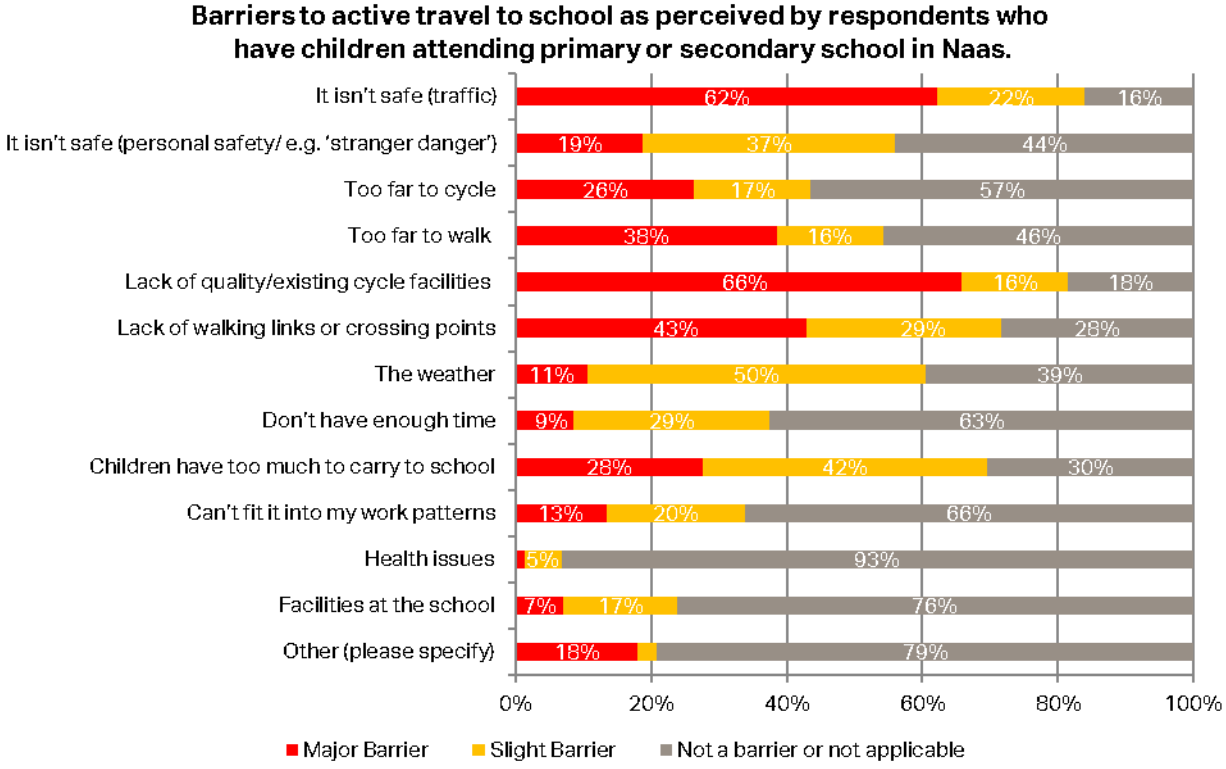
To summarise the intentions for possible future measures, a multiple choice rating question asked respondents to rate a wide selection of potential future changes to transport infrastructure, traffic management and parking management (Figure 3.2). All potential changes were perceived to be either extremely important or very important by a significant proportion of respondents (between 42% and 80%). The removal of non-essential HGV traffic from the town centre and the creation of improved pedestrian and cycle links to the train station were the options rated as extremely important or very important by the largest proportions of respondents. The potential changes which were rated as least important included the provision of real time car parking occupancy data and reduced traffic/on-street parking in the town centre. However, only one third of respondents rated each of these measures to be not important.



Number of Responses: 724 - 742

Figure 3.2. Importance of different potential transport improvements to respondents

In respect to encouraging the use of active modes to get to the school, the survey illustrated how respondents' who are parents or guardians of a child in school in Naas perceive different barriers to active travel for school trips (Figure 3.3). The transport barriers which stand out include; potential road safety/traffic risks, limited suitable cycle facilities, a lack of walking links and insufficient crossing points.



Number of Responses: 309 - 317

Figure 3.3 Barriers to Active Travel to School

A full breakdown of the survey results can be found in the Baseline Report located in Appendix A.

3.1.3 Schools Consultation

All primary and secondary school principals within Naas and Sallins were asked to complete a short survey to help identify and prioritise changes required to encourage and enable more pupils to travel to school using sustainable modes of transport. Respondents were asked what they believed were the main barriers to encouraging more pupils to walk or cycle to school and how they would like to see these barriers addressed.

Three schools provided responses, including two primary schools (St. Corban's Boys National School and Killashee Multi Denomination National School) and one secondary school (Gael Choláiste Chill Dara). Some of the key points of information gathered through this process included:

- Gael Cholaiste Chill Dara has a large catchment area which means that travel distance is a barrier to active travel to school for many pupils;
- Traffic volumes are perceived to be a barrier to encouraging active travel to both Gael Cholaiste Chill Dara and St. Corban's Boys National School;
- All three school principals believe that barriers to active travel to school should be addressed through changes to the street environment or traffic management. A footpath and cycle path to Killashee Multi Denomination National School is required, as neither is in place currently. According to the St. Corban's Boys National School principal, a safe corridor to cycle to school is required, while the principal of Gael Cholaiste Chill Dara suggested that warning signage and a reduced speed limit in the vicinity of the school would contribute to addressing the barrier which arises from the school's location on a busy road;
- Of the three schools, only Killashee Multi Denomination National School are actively involved in the Green-Schools Programme currently;
- Gael Cholaiste Chill Dara have good quality sheltered bicycle parking. The other two schools do not, but Killashee intend to provide facilities following completion of the planned footpath and cycle path to the school; and
- None of the three schools undertook any activities to promote sustainable travel during the most recent school year. However, Killashee Multi Denomination National School indicated their strong intention to encourage walking and cycling in the future once suitable infrastructure is in place.

Separate to the above process, the An Taisce Green-Schools officer who worked with St. Laurence's Primary School in Sallins reported that a 'walkability' audit was undertaken with pupils at this school. One of the key points arising was that driver behaviour on Church Avenue and the volume of turning traffic at the junction is perceived to create some danger for pupil's walking to school.

3.2 Stage 2: Consultation on Draft Strategy

A second round of consultation took place in May-June 2020 to gather views from the public and stakeholders on the draft Naas/Sallins Transport Strategy. In the stage 2 consultation, 797 submissions were received from the public and residents associations, while 33 submissions were received from stakeholders. This information has been used to revise and finalise the measures proposed in the final Naas/Sallins Transport Strategy. Please refer to the Stakeholder and Public Consultation No. 2 Submissions Report (separate document) for full details.

3.2.1 Draft Strategy Measures Removed or Modified

As part of the stage 2 consultation process, a number of measures were modified or removed from the draft strategy, these are documented in Table 3.1.

Table 3.1 List of Strategy Measures Removed or Modified as a Result of Stage 2 Consultation

Transport Mode	Measure	Changes Made
Permeability	PERM 4	Removed
Permeability	PERM 37	Connection moved to Rathasker Road
Permeability	PERM 47	Removed
Permeability	PERM 53	Removed
Permeability	PERM 62	Greenway extended to connect to Naas-Sallins greenway
Cycling	C 13	Changed from cycle track to shared street

In order to maintain consistency with the Stakeholder and Public Consultation No. 2 Submissions Report (separate document), the numbering used for measures in the strategy remains the same as the draft version of the strategy used for public consultation. This means that in some cases, such as PERM 47, certain numbers will be intentionally missing in the list of measures.

3.2.2 Additional Measures or Changes to the Strategy

In addition to the measures which were removed or modified, a number of additional measures or changes were introduced in the final strategy document in response to the Stage 2 consultation process. These additions to the strategy are summarised in Table 3.2.

Table 3.2 List of Additions to the Strategy as a Result of Stage 2 Consultation

Transport Mode	Section	Changes Made
Cycling	Cycle Objectives	Text added to the 6th cycling objective to mention making cycling easier to school.
Cycling	Cycle Parking Text	Text added to this section stating that the Council will lobby Irish Rail to provide bike lockers at the station.
Public Transport	Public Transport Measure	New public transport option created to lobby local bus providers to provide integrated ticketing, improved services, increased

Transport Mode	Section	Changes Made
		frequency and improved reliability. This measure is adopted as a short term public transport measure in the strategy.
Public Transport	Public Transport Measure	Additional eastbound bus stop added to the R445 in Jigginstown, opposite the existing westbound bus stop.
Permeability	Permeability Option Development Text	Text added to this section noting that a permeability link may be added to the De-Burgh estate to link it with the Naas-Sallins Greenway. This measure will be determined during the detailed design of the greenway.

4 STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS (SWOT)

4. Strengths, Weaknesses, Opportunities and Threats (SWOT)

Table 4.1 provides a summary of the strengths, weaknesses, opportunities and threats (SWOT) analysis for the Naas and Sallins study area to inform the development of the strategy objectives.

Table 4.1 SWOT Analysis of Naas and Sallins

Strengths	Weaknesses
• Growing population and employment • Frequent rail corridor • Motorway accessibility • Multiple bus routes and Main Street bus interchange • Orbital road network bypasses central areas • Clusters of retail, services and employment • Planned Greenways on canal corridors • Centrally located regional hospital • Historic town centre	• High level of car dependency • Peripheral train station location • Poor bus links to train station • Out of town schools, shopping centres and employment • Low housing densities and urban sprawl • Cul-de-sac design and perimeter walls around housing estates • Unsafe road conditions for cyclists • Land segregation by the motorway, railway and canals • Lack of lighting on pedestrian/cyclist routes
Opportunities	**Threats**
• Facilitating latent demand for public transport, walking and cycling • Relocating parking spaces to facilitate public realm improvements • Removing walls to improve permeability • Boosting tourism along Grand Canal greenway • Redevelopment of derelict Naas Shopping Centre site • Orbital roads allow for a potential HGV ban • Several greenfield and potential in-fill sites in urban area	• Objections from local businesses and residents • Increasing cyclist and pedestrian collisions • Lack of funding for infrastructure proposals • Further construction of low-density, single use developments • Insufficient co-ordination of land-use and transport plans • Future peripheral education, employment and retail development • Sallins bypass increases appeal of car travel

5 STRATEGY OBJECTIVES

5. Strategy Objectives

5.1 Introduction

The Naas/Sallins Transport Strategy objectives were developed through collaboration with Kildare County Council and on the basis of the information presented in the baseline report, the public consultation process and the SWOT analysis.

The Naas/Sallins Transport Strategy contains objectives for five transport modes/issues:

- Public transport
- Cycling
- Walking
- Road
- Parking

The merits of each potential strategy option will be assessed in a Multi-Criteria Analysis (MCA) assessment against the strategy objectives in the case of public transport, roads and parking.

5.2 Objectives

The Naas/Sallins Transport Strategy will aim to achieve the following objectives:

5.2.1 Public Transport Objectives

1. Link residential, employment, education, healthcare and retail facilities with a local bus service.
2. Improve the effectiveness, frequency and usefulness of existing bus services.
3. Provide bus priority infrastructure in the town centre and along key radial routes where the introduction of such priority would demonstrate significant benefits for public transport and lead to a reduction in vehicular trips.
4. Improve public transport shelters, information and visibility.
5. Significantly improve bus connectivity between Naas and Sallins Train Station.
6. Examine opportunities for a public transport hub in the vicinity of Naas Town Centre.

5.2.2 Cycling Objectives

1. Provide an integrated cycle network for Naas and Sallins in accordance with the National Transport Authority's Cycle Network Plan for the Greater Dublin Area.
2. Improve safety for cyclists in Naas and Sallins.
3. Prioritise investment in schemes that will deliver the greatest modal shift potential.
4. Provide recommendations on the quality of cycle facilities that should be delivered.
5. Expand cycle parking at schools, in the town centre and at public transport nodes.
6. Engage with schools with the aim of increasing cycling mode share and making cycling easier.

5.2.3 Walking Objectives

1. Provide an integrated walking network for Naas and Sallins.
2. Improve the standard of existing pavements or paths where required.
3. Improve permeability to enhance access to homes, job, schools and services.
4. Improve safety for pedestrians, particularly for vulnerable road users.
5. Engage with schools with the aim of increasing walking mode share.

5.2.4 Road Objectives

1. Reduce unnecessary vehicular trips through Naas town centre and Sallins village centre.
2. Mitigation measures to improve road safety and eliminate collision hotspots.
3. Reduce vehicular emissions in town centre by promoting mode transfer to sustainable travel modes.
4. Identify missing links, future capacity requirements and congestion bottlenecks in order to provide recommendations on future road schemes.
5. Review existing plans and designs for roads proposals in the Naas area to ensure that they are still relevant in the context of DMURS and the overall transport strategy goal of sustainability.

5.2.5 Parking Objectives

1. Develop a strategy to improve the efficient use of existing car parks in Naas Town Centre.
2. Identify locations for a future park and ride site(s).
3. Review HGV access management and make recommendations for improvement.


AECOM
6 ANALYSIS TOOLS

6. Analysis Tools

This section describes the analysis tools used to anticipate issues and develop solutions for the Naas/Sallins Transport Strategy. The following analysis tools were used:

- VISSIM Model – Micro-simulation traffic model used to assess the operation of individual junctions and traffic management proposals at a local level.
- VISUM Model – Strategic transport model used to inform the development of the road's strategy for the Naas area and to assess the performance of the road network in future years.
- ArcGIS Network Analyst – GIS method used to assess the impact of the permeability strategy on the walking catchments to key services and locations.

6.1 VISSIM Model

Kildare County Council commissioned AECOM to develop a microsimulation VISSIM model to inform the Council on the impact of network improvements and planning proposals. The VISSIM model network is shown in Figure 6.1. The study area covers the town centre of Naas and the major arterial routes through the town including the R445, R410, R407 and R448 as well as smaller routes such Friary Road and Corban's Lane.

A full document describing the development of the Naas VISSIM model can be found in the Micro-Simulation Transport Modelling Report (TMR) located in Appendix C.

Figure 6.1 VISSIM Model Microsimulation Area

6.2 VISUM Model

A VISUM local area model (LAM) was developed to study the transport network in Naas and its environs in the present day and in future years during the AM and PM peaks. The base model uses a POWSCAR (Place of Work, School or College, Census of Anonymised Records, 2016) trip matrix, modified according to extensive traffic survey data collected as part of this study. Future year models were developed according to the TII Project Appraisal Guidelines. Figure 6.2 shows the model zone structure

used in the Naas local area model which is compatible with local land-use zoning, the NTA's Eastern Regional Model and TII's National Transport Model.

A full document describing the development of the Naas LAM can be found in the Strategic Transport Modelling Report located in Appendix B.

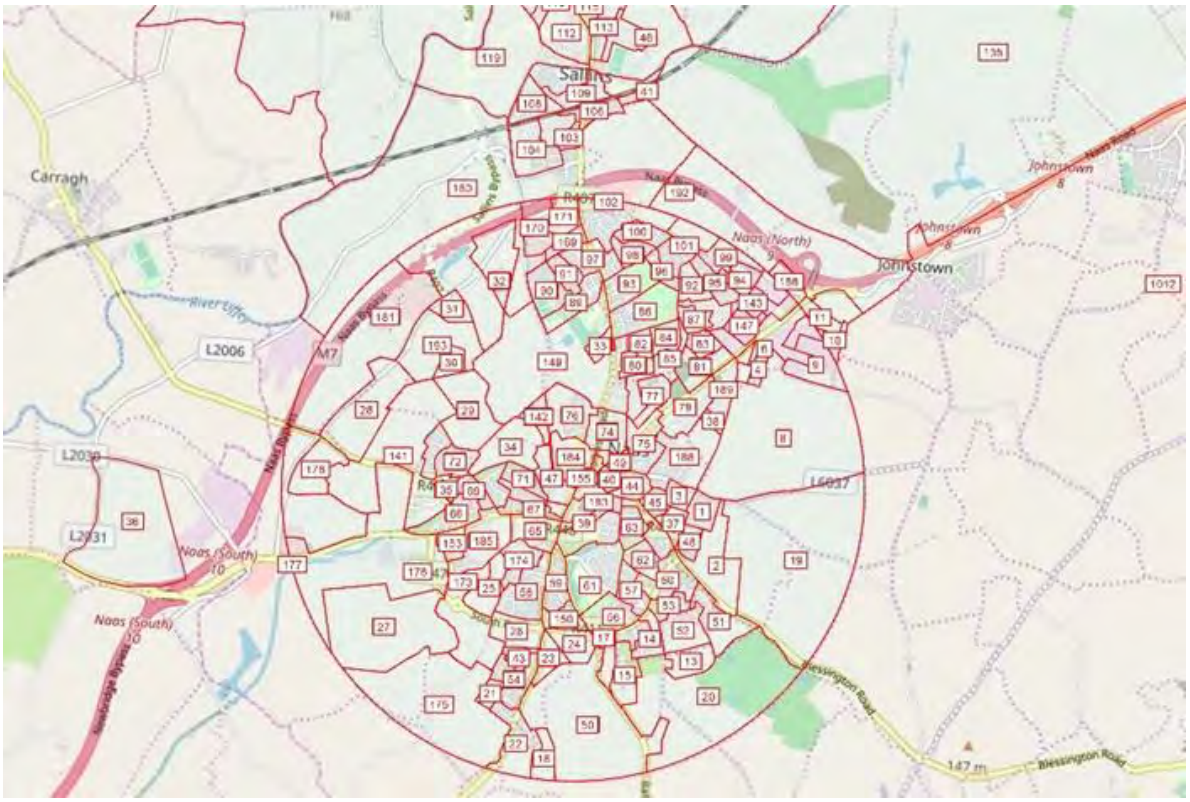


Figure 6.2 VISUM Local Area Model – Zone Structure

6.3 ArcGIS Network Analyst

In order to assess the walking catchments for key destinations in Naas and Sallins, an accurate path network was developed which included; roads with footpaths, pedestrian paths, reasonably surfaced tracks, clearly established informal paths and cut-throughs. The path network excluded; gated paths, muddy tracks and very informal paths. The objective of this path network is to accurately assess the walking distance to key destinations for most walkers or wheelchair users via established and maintained routes. It does not consider issues such as the quality of the surface, barriers, the level of lighting or other issues which affect walkers/cyclists.

An example of the road and path network is shown in Figure 6.3, which shows the pedestrian paths as dotted red lines in the surrounds of Naas General Hospital. The advantage of this path network is that it can accurately assess real pedestrian movement; rather than simply representing walking distances on the road network. The path network was assembled for the entire Naas and Sallins area. The path network ceases on approach roads where the footpath ends. The path network was originally extracted from Open Street Map and then extensively modified using aerial photography, Google Street View and site visits to identify paths, cut-throughs and public tracks. The resulting path network was used in the ArcGIS tool 'Network Analyst' to create walking distance service areas for key destinations in Naas and Sallins. To assess the strategy, a future Do-Something path network was developed which compares the existing situation to the proposed strategy path network. This allows for the benefits of the permeability strategy to be quantified by counting the number of GeoDirectory buildings in each scenario.

Figure 6.3 Example of Baseline Path and Road Network in Naas near the Hospital

7 OPTION ASSESSMENT METHODOLOGY

7. Option Assessment Methodology

This section presents the methodology used for the assessment of potentially viable strategy options identified within the study area.

7.1 Assessment Criteria

A multi-criteria analysis (MCA) is carried out separately to assess options for the road, parking and public transport interventions. Grouping options according to mode allows for fair assessments to be undertaken against similar types of infrastructure. The 'Common Appraisal Framework for Transport Projects and Programmes' (CAF) published by the Department of Transport, Tourism and Sport (DTTAS), March 2016, requires schemes to undergo an MCA using the following criteria:

- Economy
- Integration
- Accessibility and Social Inclusion
- Safety
- Environment
- Physical Activity

Table 7.1 presents a summary of the MCA criteria and the issues considered.

Table 7.1 Multi-Criteria Analysis – Assessment Criteria

MCA criteria	Summary of Issues Considered
Economy	Considers the cost of the project, potential returns, journey time savings and other transport indicators
Integration	Studies the accordance of the measure with local planning policies and integration in respect to land-use activities and other strategy proposals
Accessibility/ Social Inclusion	Considers the impact on accessibility to key trip destinations, social inclusion for marginalised groups and interchange between transport modes
Safety	Anticipates the impact of the measure on safety issues and collisions
Environment	Considers the impact of the measure on the natural and built environment
Physical Activity	Assesses the impact of the measure on walking and cycling

The assessment process draws on all available data from; public consultation, Kildare County Council feedback, surveys, GIS analysis and transport model outputs to appraise each option according to the strategy objectives. In addition to the qualitative MCA process, some supporting quantitative evidence will be presented to show the impact of the road's strategy and some bus priority measures in the transport model, as well as the benefits of the permeability strategy demonstrated in ArcGIS.

7.2 Assessment Scale

An option summary table in CAF format has been prepared which collates and summarises the impact of each option on the assessment criteria. A seven-point scale has been applied as used in Project Appraisal Balance Sheet (PABS) assessments. Given that most impacts are qualitative at this strategic stage, each criteria is scored on the extent to which it offers a positive or negative impact comparatively against all other options. For illustrative purposes, this seven-point scale is colour coded as presented in Table 7.2, with advantageous options graded to 'dark green' and disadvantageous options graded to 'dark red' in accordance with the CAF.

Table 7.2 MCA Colour Coded Ranking Scale

Colour	Description
	Major or highly positive
	Moderately positive
	Minor or slightly positive
	Not significant or neutral
	Minor or slightly negative
	Moderately negative
	Major or highly negative

At the end of the options assessment, an overall MCA conclusion is provided for each option, bringing together each of the individual criterion assessments. All criteria are considered in undertaking the overall assessment for each option and a lower ranking on one criteria will not necessarily mean that the option is not suitable. At the end of each assessment section, the preferred options to be included in the transport strategy are clearly identified along with an indication of the delivery timescale.

7.3 Implementation Timescale

Once the options have been assessed and the preferred strategy interventions have been identified, they will be categorised according to their estimated delivery timescale. In this regard, the following categories will be used to define the implementation timescale for each measure:

- Short term: Measure intended for implementation within 1-2 years
- Medium term: Measure intended for implementation within 3-5 years
- Long term: Measure intended for implementation within 6-10 years

The timescale category is not a reflection of the importance attached to each measure, but rather reflects the challenge involved for implementation and the expected duration of the planning/construction process.

8 PUBLIC TRANSPORT MEASURES

8. Public Transport Measures

8.1 Overview

Naas and Sallins have multiple bus and rail services, creating the potential for a substantial proportion of trips to be completed via sustainable travel modes. At present, there is significant car dependency for work, school and other trips in the study area. The strategy seeks to enhance existing infrastructure to resolve the issues identified in the Baseline Report, while also proposing new public transport infrastructure to guide investment in the future. In combination, the public transport strategy seeks to create the conditions necessary for substantial modal shift to take place from the private car to bus and rail services. The public transport strategy seeks to achieve the following objectives:

1. Link residential, employment, education, healthcare and retail facilities with a local bus service;
2. Improve the effectiveness, frequency and usefulness of existing bus services;
3. Provide bus priority infrastructure in the town centre and along key radial routes where the introduction of such priority would demonstrate significant benefits for public transport and lead to a reduction in vehicular trips;
4. Improve public transport shelters, information and visibility;
5. Significantly improve bus connectivity between Naas and Sallins Train Station; and
6. Examine opportunities for a public transport hub in the vicinity of Naas Town Centre.

The contents of this section are grouped into two modes; bus travel and rail travel. Within bus travel, there are three sub-sections which consider; the creation of a bus interchange, new local bus routes and bus priority infrastructure. In each case, the options are clearly described before a Multi Criteria Analysis process is used to identify the preferred options for inclusion in the public transport strategy.

8.2 Bus Option Selection Sequence

In order to meet the strategy objectives, the bus section needs to identify the most appropriate site for a bus interchange, define new local bus routes and select the necessary supporting bus priority infrastructure. The assessment of bus options is divided into three interdependent phases which take place in a sequence:

1. The first phase seeks to identify the best location for a bus interchange in Naas to serve existing bus routes and potential local routes;
2. The second phase seeks to identify the most appropriate local bus routes to link Naas and Sallins which will serve the bus interchange identified in phase 1; and
3. The third phase seeks to identify the most effective bus priority measures to support the operation of the local bus routes and the interchange identified in phase 1 and 2.

The following Sections 8.3, 8.4 and 8.5 outline the selection of preferred options for the bus interchange, local bus routes and priority infrastructure.

8.3 Bus Interchange Option Development and Outline Appraisal

This section identifies a range of potential locations for a bus interchange in the centre of Naas. The assessment outlines an initial high-level assessment of available options. In order to identify a final location for a bus interchange, it is likely that a detailed separate study will be undertaken taking account of all constraints relevant to the options outlined in this section.

A bus interchange is a location where multiple bus routes overlap, and passengers can transfer from one bus service to another route to reach their destination. Bus interchange designs vary from on-street bus stops with multiple overlapping routes, to larger off-road bus stations which provide a dedicated facility for bus passengers to transfer. Generally, a bus interchange should be sited in a central location where there is a large volume of passengers, good accessibility for active modes and sufficient parking. When considering options for potential bus interchange sites in Naas, the following criteria were considered:

- The location should be able to serve inter-city coaches and local bus routes
- The location should allow for supporting bus priority measures
- The location should have sufficient space for multiple bus bays
- The land should be free from development or suitable for a change of use
- The location should be central and near key trip attractors

In total, seven possible locations were identified which met the broad criteria above, these potential sites for a bus interchange are shown in Figure 8.1.

Figure 8.1 Sites Considered for a Potential Bus Interchange

It was decided that a suitable interchange design for Naas would consist of multiple bus stops parallel on each side of the road, similar to the existing arrangement on the Main Street, or a more substantial off-road interchange facility. An indicative example of an off-road bus interchange or bus station is the Blanchardstown Transfer Hub proposed as part of the BusConnects programme. This indicative design is shown in Figure 8.2 and this bus interchange is used throughout the options section as an example of an off-road bus station with multiple bus bays. It is not proposed that the Blanchardstown example design would be suitable for Naas. This section determines the best location for a bus interchange, rather than its design, which will require further detailed study at a later date.

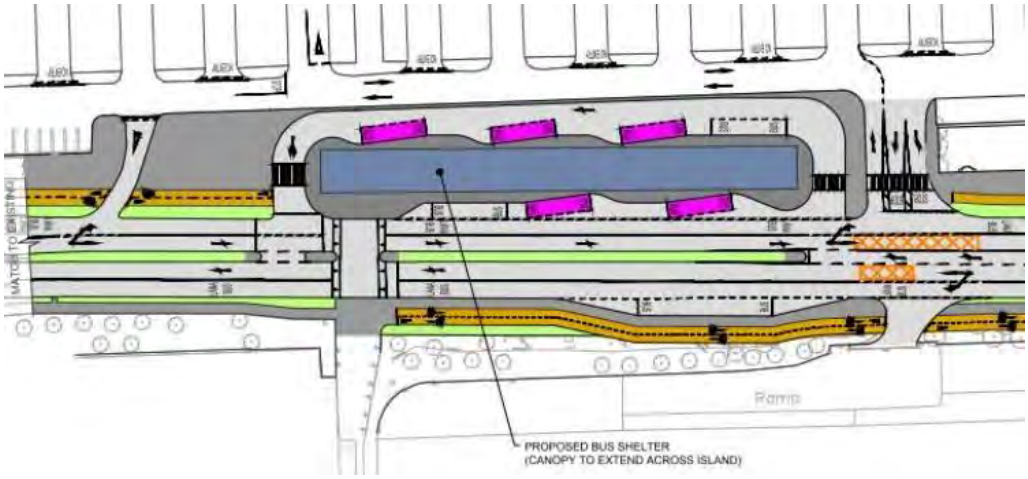


Figure 8.2 Example of a Bus Interchange: Draft Design of Proposed Blanchardstown Transfer Hub

8.3.1 Bus Interchange Option Description

The seven bus interchange options are described below:

Interchange Option 1: Market Square Interchange

In 2008, MVA Consultancy produced the Naas Town Traffic Management Plan and this included a design for a Main Street interchange, which is shown in Figure 8.3.

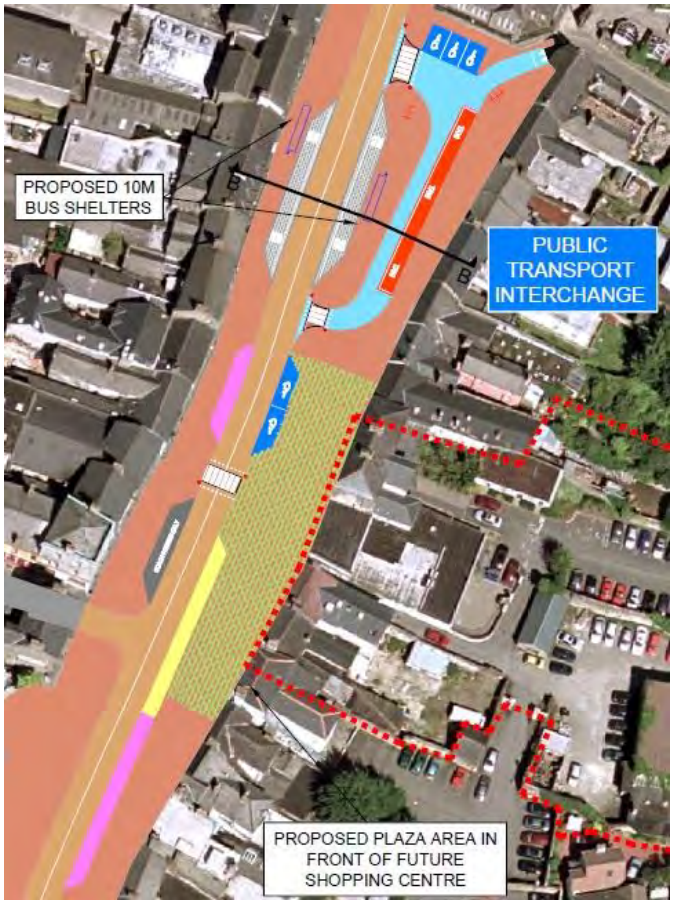


Figure 8.3 MVA Design of Market Square Bus Interchange

The MVA design has been partially implemented with the construction of bus bays and shelters in recent years, but the pedestrian plaza to the south has not been built. The revised Market Square design which was implemented is shown in Figure 8.4 for comparison.

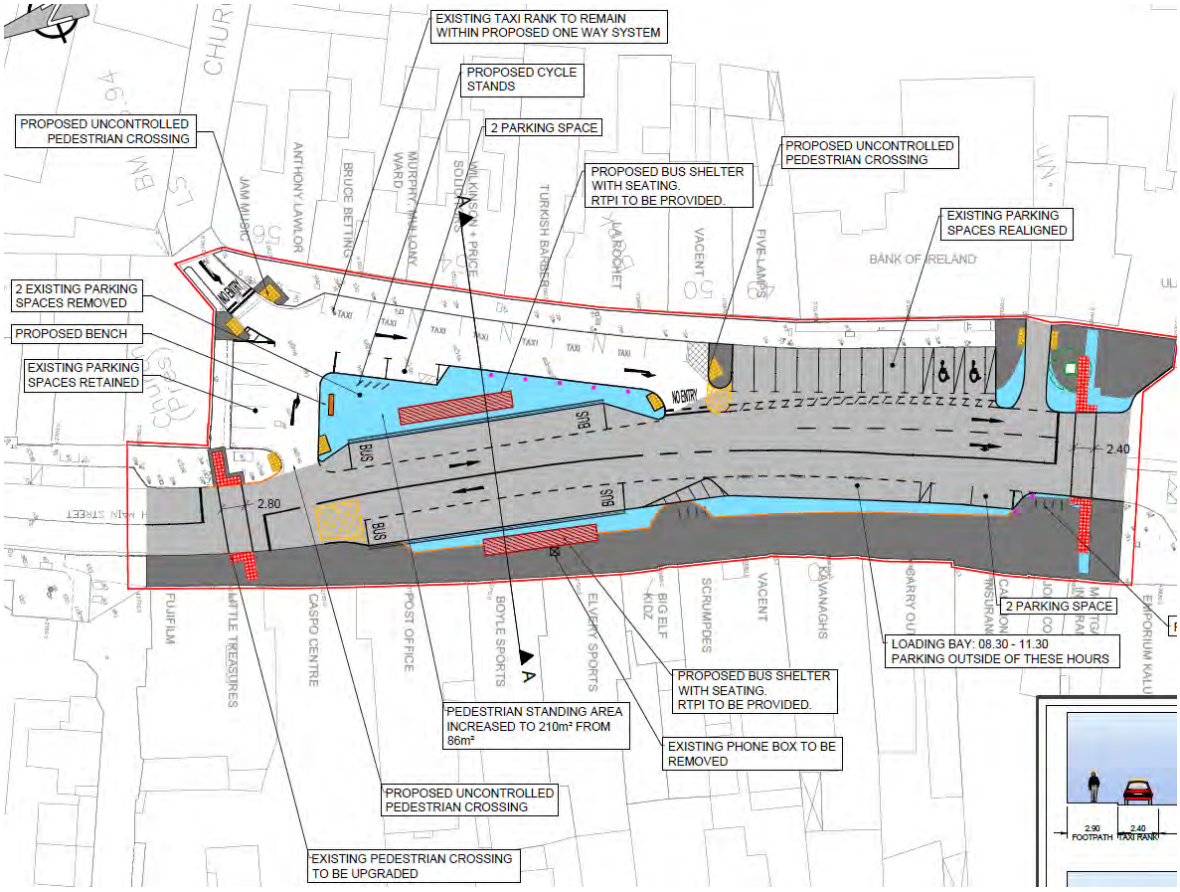


Figure 8.4 Implemented Version of Market Square Proposals (AECOM/ROD)

Option 1 retains Market Square on the Main Street as the primary bus interchange, with upgrades to; bus bay capacity, seating, shelters and cycle parking. This option would act as an on-street bus interchange for both local and inter-city buses, which is different to the off-road bus station example described earlier in Blanchardstown. In order to operate effectively, a bus interchange on Main Street would require supporting bus priority measures to lessen the impact of congestion. To complete the original MVA design, the parking strategy will assess an option to relocate the perpendicular parking on the Main Street to create a small pedestrian plaza south of the interchange.

It may be necessary to lengthen the bus bays to ensure that two coaches can pull-in simultaneously at the interchange in each direction. At present, the northbound bus bay is approximately 27 metres long and the southbound bus bay is approximately 31 metres long. The coaches operated by Go Ahead Ireland are approximately 14 metres long and the bus bays will need to be extended to allow sufficient length for two buses or coaches to pull-in simultaneously in both directions. A detailed study will be required to provide the precise measurements for two buses or coaches to alight passengers simultaneously in each direction. Furthermore, during detailed design it will be necessary to accommodate the existing disabled parking bays in Market Square.

A sketch of the Market Square bus interchange upgrade proposals which form Option 1 are summarised in the sketch shown in Figure 8.5.

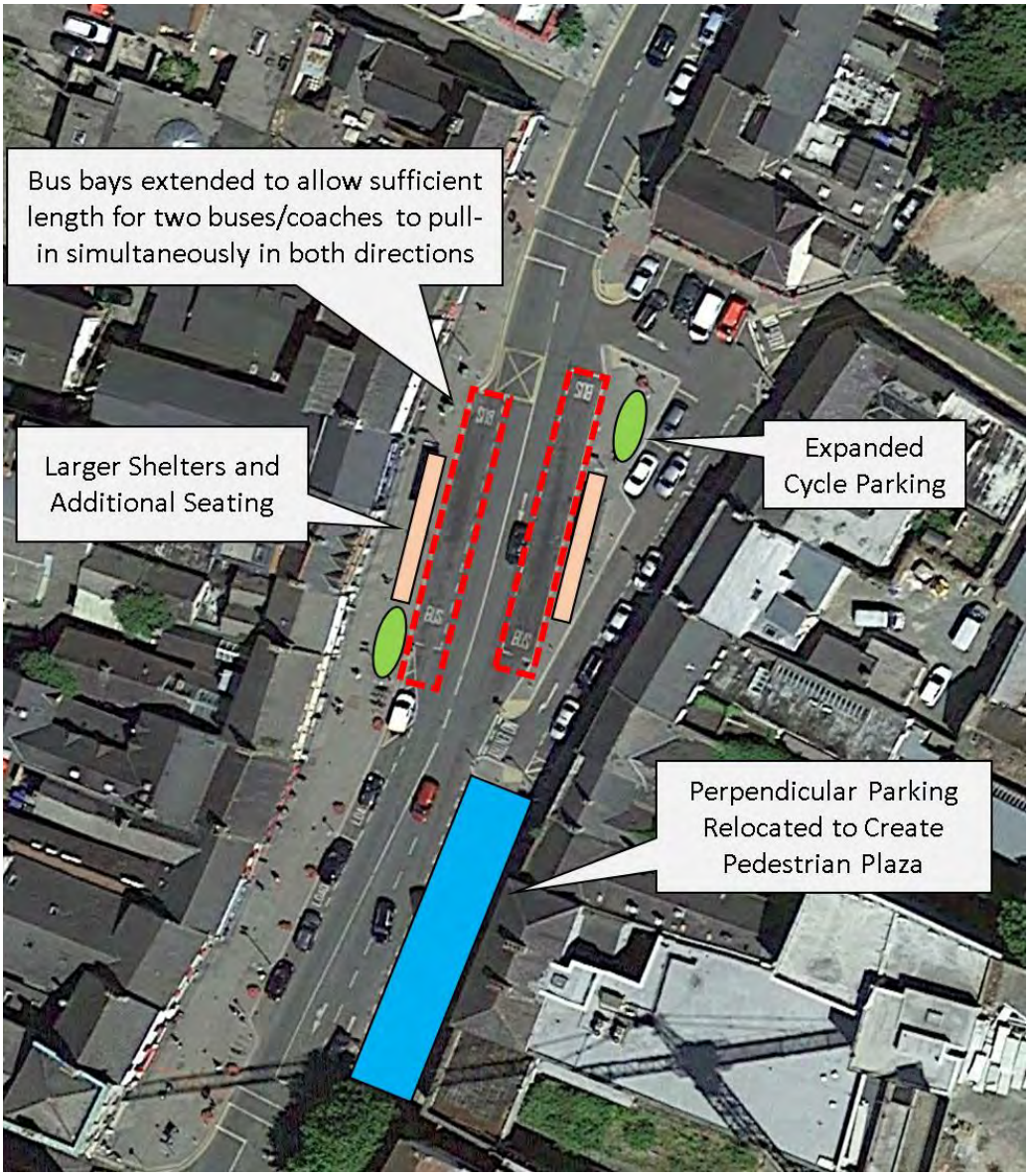


Figure 8.5 Option 1: Market Square Bus Interchange Proposal

Interchange Option 2: Poplar Square Interchange

This option proposes Poplar Square as the bus interchange with associated upgrades to bus capacity, seating, shelters and cycle parking. This proposal originated in the Part 8 drawings for the Dublin Road Cycle Scheme provided by Kildare County Council, shown in Figure 8.6, which also includes a small public plaza in the design. This option allows existing bus routes and potential local bus routes to interchange, but it requires additional bus priority measures to operate effectively. This option would only service buses which travel via the Dublin Road and not buses which travel to the train station via the Sallins Road.

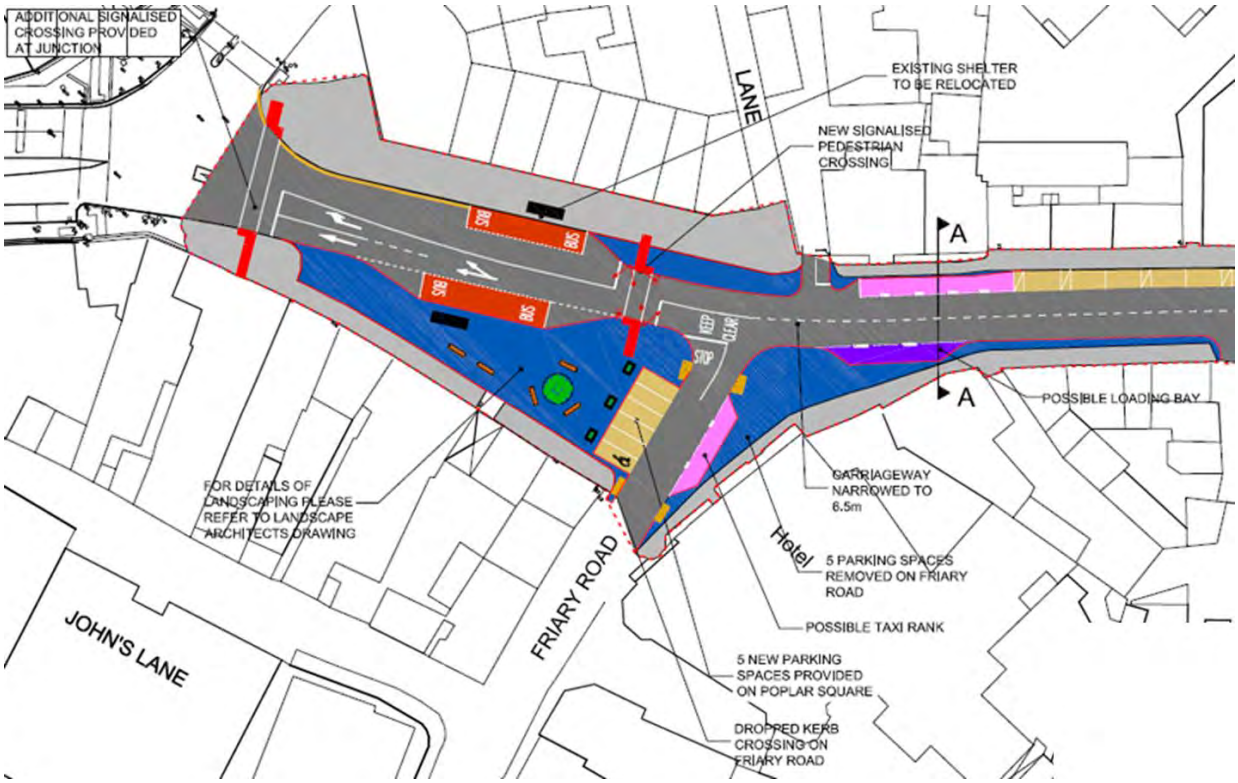


Figure 8.6 Part 8 Drawings for Poplar Square

Interchange Option 3: Ballymore Road Interchange

This option proposes an off-road interchange at Ballymore Road which could serve potential local bus routes, but it would cause rerouting and longer journeys for existing bus routes in order to access it. This location is also on the periphery of the town centre and it would be a moderate walk from the Main Street for passengers. An indicative sketch of how an off-road interchange would work at this location is shown in Figure 8.7.

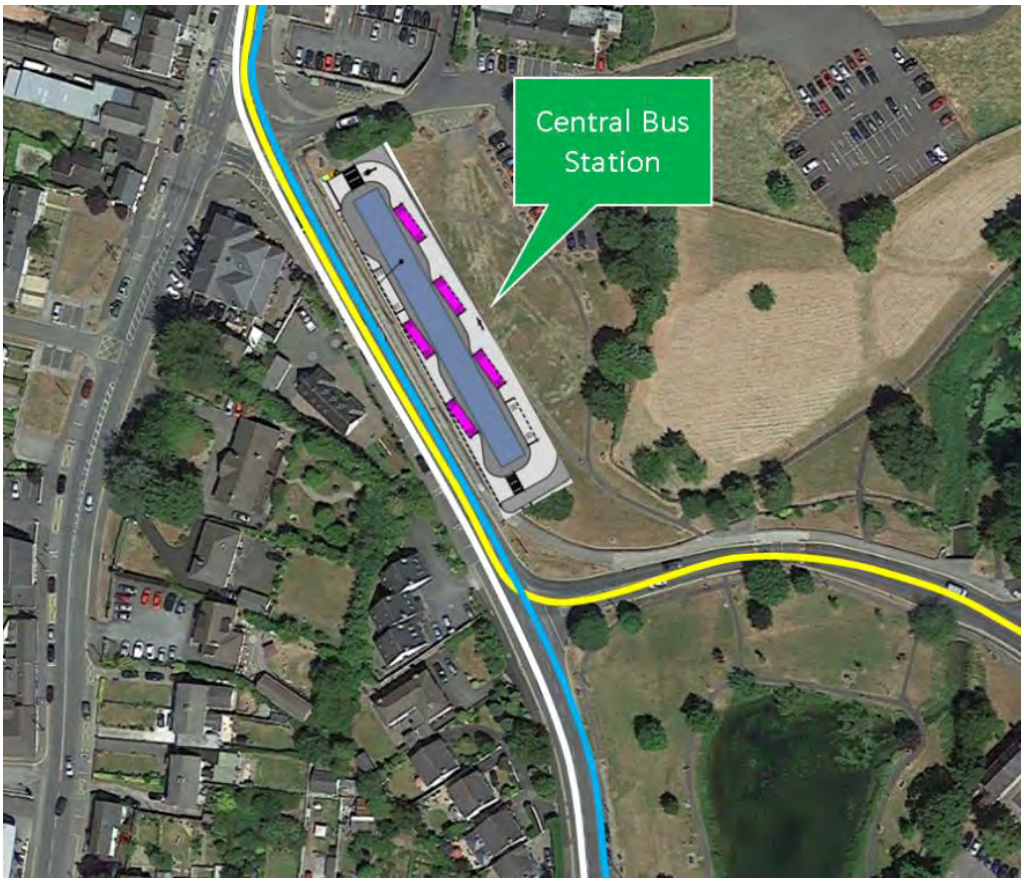


Figure 8.7 Ballymore Road Interchange

Interchange Option 4: Derelict Shopping Centre Site

This option proposes the conversion of the derelict Naas shopping centre site on Corban's Lane into a bus interchange for existing bus routes and potential local bus routes. This would involve the demolition of the shopping centre to create a mixed-use bus station combined with a potential residential and commercial development. The implementation of this option would require supporting bus priority measures to operate, which are shown in Figure 8.8.

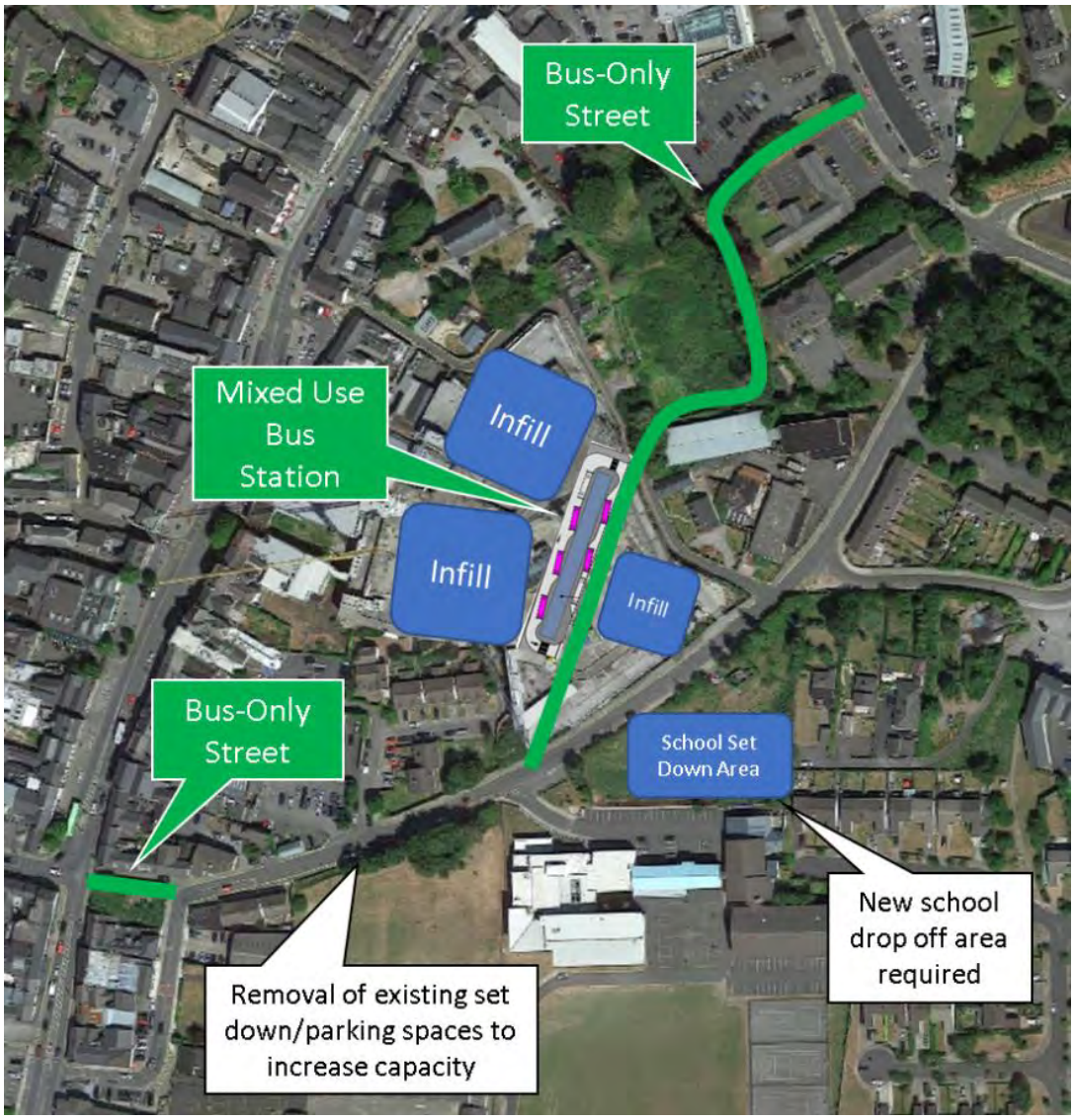


Figure 8.8 Shopping Centre Site Interchange

Interchange Option 5: Friary Road Bus Station

This option proposes an interchange at Friary Road for local and inter-city routes with the supporting bus priority infrastructure shown in Figure 8.9. The narrow road on Church Lane is a restriction with this site and access to the interchange would have to be controlled by one-way signals, unless the derelict shopping centre is demolished in the future and the road can be widened.

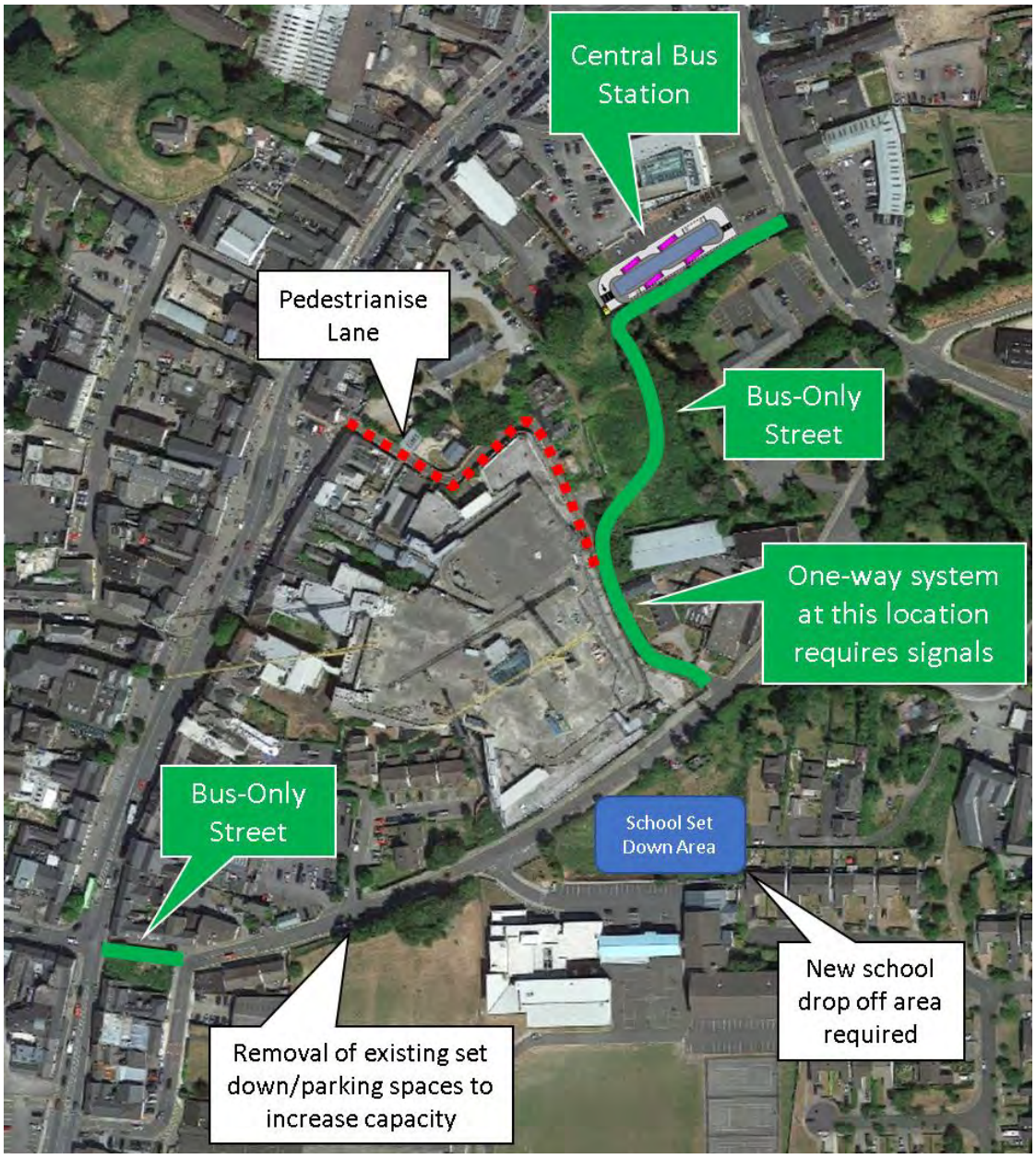


Figure 8.9 Friary Road Interchange

Interchange Option 6: Corban's Lane Interchange

This option proposes an interchange at Corban's Lane for local and inter-city bus routes with the supporting bus priority infrastructure shown in Figure 8.10. This location reduces the set-down capacity for school traffic to Naas CBS and congestion could affect the efficient operation of the bus interchange.

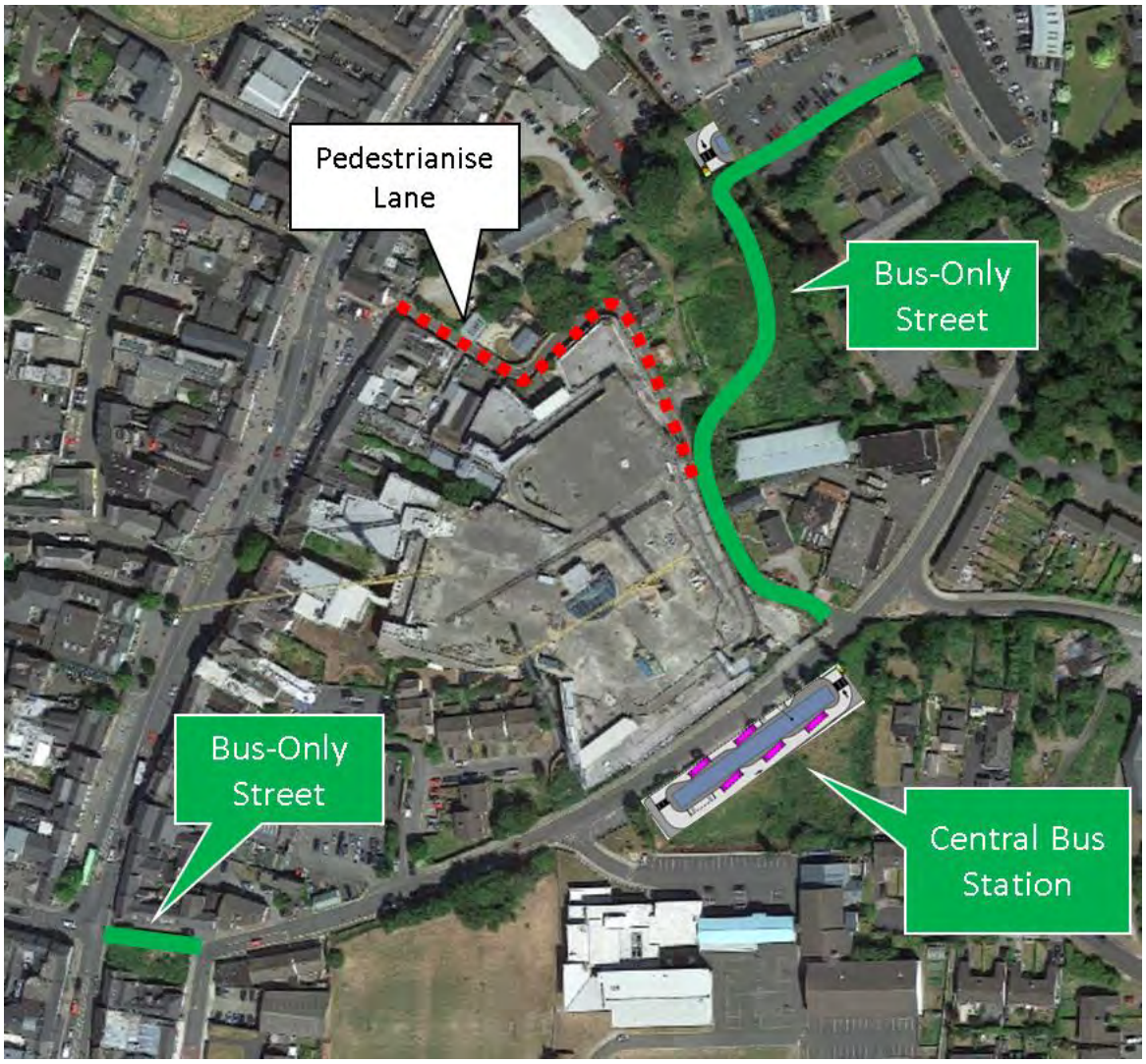


Figure 8.10 Corban's Lane Interchange

Interchange Option 7: Naas Harbour Bus Station

This option proposes a bus interchange at Naas Harbour, utilising the possible transport corridor identified in the Vision 2020 Integrated Framework Plan (2003). This transport corridor would link the harbour site with M7 Junction 9A which is being constructed as part of the Sallins Bypass project. As shown in Figure 8.11, it is envisioned that the link road to the M7 junction would be a bus-only street which would allow inter-city bus services to leave the motorway and travel to the interchange without being impacted by congestion in the town centre. One issue with this site is access from central Naas for existing and future bus services, as this would require a new road bridge over the canal for a low volume bus-only traffic. The precise location of the road bridge linking the harbour site with the town centre would need to be determined by a detailed study in the future.

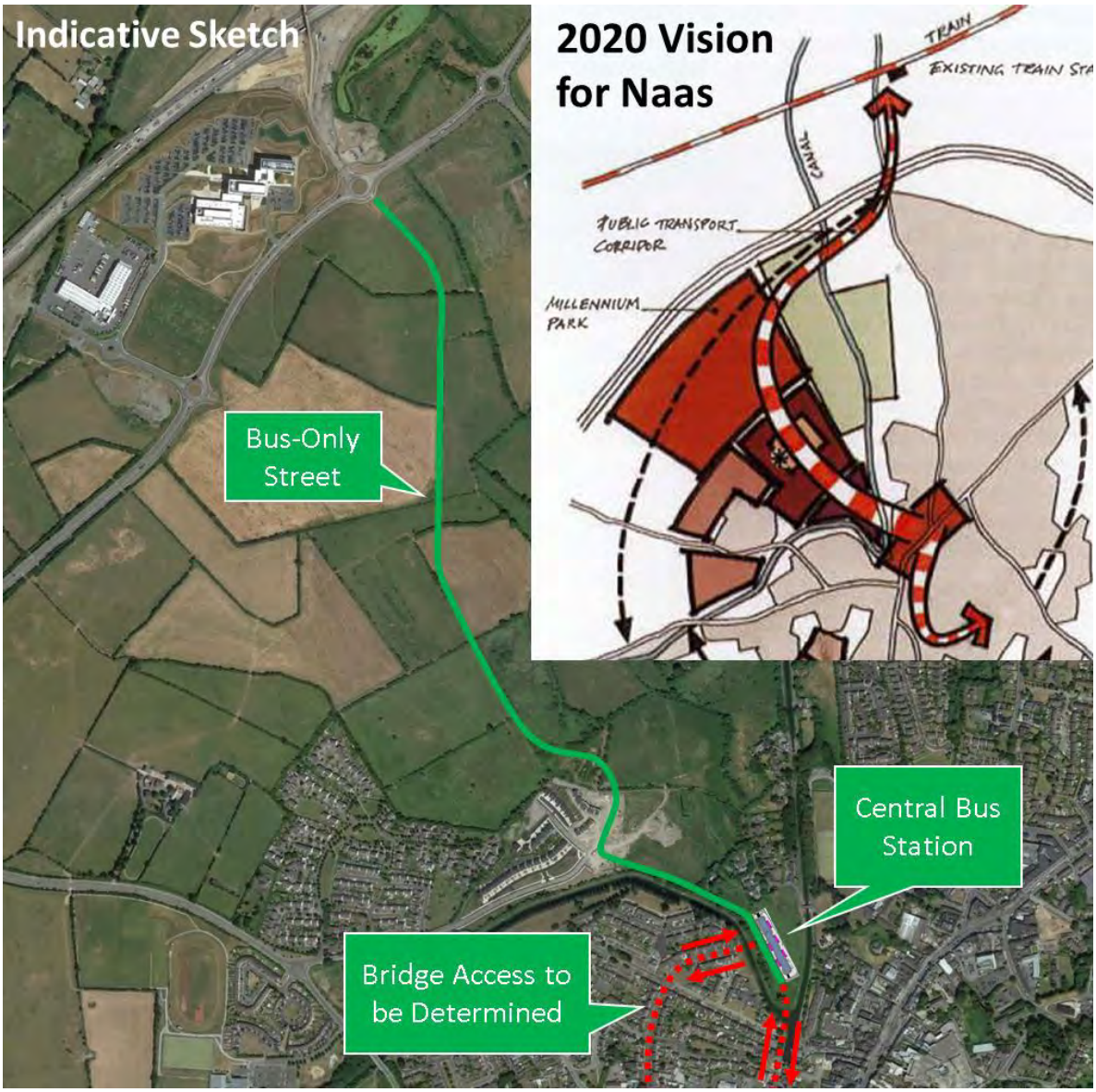


Figure 8.11 Naas Harbour Bus Interchange

8.3.2 Bus Interchange Assessment

The bus interchange options are assessed according to the six CAF criteria in the outline MCA shown in Table 8.2. This table summarises the impact of each option according to the assessment criteria. The assessment considers the relative merit of each option according to the seven-point scale presented in Table 8.1. The analysis presented is outline in nature and will require further detailed examination as part of separate study.

Table 8.1 MCA Colour Coded Ranking Scale

Colour	Description
	Major or highly positive
	Moderately positive
	Minor or slightly positive
	Not significant or neutral
	Minor or slightly negative
	Moderately negative
	Major or highly negative

Table 8.2 Multi-Criteria Analysis of Bus Interchange Options

Option	Economy	Safety	Environment	Access & Social Inclusion	Integration	Physical Activity	Combined Assessment Outcome	Summary Justification
Option 1: Market Sq.								The creation of an enhanced interchange on Main Street would likely incur moderate costs as it utilises existing infrastructure and the main expenditure would centre on the installation of waiting facility upgrades, longer bus bays and cycle parking. The interchange would encourage people to transfer from car to bus travel which would reduce collisions and emissions. As the interchange would remain in its current location, there would be no impact on accessibility. There could be temporary disruption to the square during construction. The interchange includes cycle parking and the relocation of car parking spaces to create a pedestrian plaza would improve integration of policy objectives and boost physical activity. The Market Sq. interchange would also be integrated with existing and proposed bus routes.
Option 2: Poplar Sq.								The upgrade of the existing bus stops at Poplar Square to create an interchange would incur moderate costs as it utilises some existing infrastructure, but it also involves the construction of shelters and a pedestrian plaza. As the interchange would not service the Sallins Road bus routes, there would be little benefit to accessibility or integration compared to the existing situation. Furthermore, as it would not provide a single interchange point for all bus routes, due to the exclusion of Sallins Road services, it is unlikely to significantly improve bus mode share or impact on the environment. The addition of cycle parking and a pedestrian plaza will encourage physical activity and creating a safer walking/waiting area would improve safety.
Option 3: Ballymore Road								The creation of an interchange at Ballymore Road would require construction of an off-road bus station which would be costly. The interchange would encourage people to transfer from cars to bus travel which would reduce collisions and emissions, however the loss of parkland and amenity space would result in environmental disbenefits overall. The interchange would integrate bus services to improve accessibility and social inclusion, but the location is on the periphery of the town centre and this reduces the positive impact on access overall. The addition of a bus station with cycle parking will encourage physical activity.
Option 4: Shopping Centre								The creation of an interchange on the derelict shopping centre site would involve significant costs to acquire the site, demolish the existing structure and construct a mixed-use development with a bus station. The interchange would encourage people to transfer from cars to bus travel which would reduce collisions and emissions. However, the loss of parkland to create a supporting

Option	Economy	Safety	Environment	Access & Social Inclusion	Integration	Physical Activity	Combined Assessment Outcome	Summary Justification
								bus-only street, and the potential negative heritage impact on St. David's Castle, would result in environmental disbenefits overall. The interchange would integrate bus services in a central location removed from general traffic which would significantly enhance and improve accessibility/social inclusion. The addition of a bus station and mixed-use development with cycle parking will encourage physical activity by foot or bike.
Option 5: Friary Road								The creation of an interchange at Friary Road would require construction of a bus station and supporting bus priority infrastructure which would be costly. The interchange would encourage people to transfer from cars to bus travel which would reduce collisions and emissions, however the loss of parkland would result in environmental disbenefits and the use of one-way Church Lane for two-way bus services could present a safety challenge. The interchange would integrate bus services in a central location to improve accessibility and social inclusion. The addition of a bus station in the town centre with cycle parking will encourage physical activity.
Option 6: Corban's Lane								The creation of an interchange at Corban's Lane would require construction of a bus station and supporting bus priority infrastructure which would be costly. The interchange would encourage people to transfer from cars to bus travel which would reduce collisions and emissions, however the loss of a greenfield site would result in environmental disbenefits and the location of a bus station in front of a school could present a safety hazard for children. The interchange would integrate bus services in a location near the town centre to improve accessibility and social inclusion. The addition of a bus station on the periphery of the town centre with cycle parking will encourage physical activity.
Option 7: Harbour								The creation of an interchange at the Naas Harbour site would involve the following costs; land acquisition, bridge construction and road (bus-only) construction to link with the M7. The interchange would encourage people to transfer from cars to bus travel which would reduce collisions and emissions, but the site's distance from the Main Street might limit this impact. Construction on a greenfield site near a heritage canal will incur environmental disbenefits and routing bus-only traffic via housing estates could reduce local air quality. The interchange would serve inter-city bus services effectively, but it would create longer journeys for local bus routes by adding a circular route via the canal to their route prior to travelling on the Main Street which would reduce accessibility. A bus station at this location would be integrated with a new road objective and support the development of the lands along the Millennium Link Road. The location of the bus station along the greenway will encourage cycling and walking to the interchange.

8.3.3 Preferred Interchange Locations

The Multi-Criteria Analysis clearly discounts Option 3 (Ballymore Road) and Option 6 (Corban's Lane). While providing benefits; Option 2 (Poplar Road), Option 4 (Shopping Centre) and Option 5 (Friary Road) do not provide sufficient net benefits to be selected as the preferred interchange location. Instead, Option 1, the upgrade of the existing Market Square interchange, is shown to provide the greatest net benefits to Naas and makes the best utilisation of recent investment in bus stop infrastructure on the Main Street. Therefore, the Market Square interchange is the preferred bus interchange for the Naas/Sallins Transport Strategy and the following proposals for local bus routes and bus priority measures will be designed to serve this location on the Main Street.

As a long term objective, the Council plans to develop the greenfield lands between the Millennium Link Road and the Grand Canal Naas Branch, which will significantly expand the continuous urban area of Naas. To support this development, it will be necessary to create a larger designated bus station which will have greater capacity for local and inter-city buses. In this regard, it is expected that Option 7 (the harbour interchange) would be an option in the long term to achieve this objective. The harbour interchange will provide a dedicated bus priority corridor for inter-city coaches which will encourage a greater number of services to stop in Naas and support the local economy. Furthermore, buses will have an efficient route to Sallins train station via the Sallins bypass which will improve public transport linkages between Naas and rail services. While access to the Harbour site may remain a challenge for local bus services, this could be solved with additional bridge infrastructure or by retaining the Main Street as the primary interchange for buses which serve the eastern side of the town to avoid diverting them.

8.4 Local Bus Route Options and Supporting Measures

This section assesses potential local bus routes which could serve Naas and Sallins to identify the preferred bus services to include in the Transport Strategy. In order to support the operation of the proposed local bus routes, an additional supporting measure is appraised to improve the bus stop infrastructure throughout the study area.

In order to identify local bus routes which would attract the sufficient travel demand to support a regular bus service, the following criteria were considered:

- *Housing density*: Linking neighbourhoods with more homes to produce more trips
- *Job density*: Linking areas with more jobs to attract more commuters
- *Key destinations*: Linking locations which attract visitors e.g. hospitals, schools, etc.
- *Interchange location*: Assessing whether the route could interchange on the Main Street

Housing density, job density, key destinations and the interchange location were overlaid on a map and the local bus route options were developed to service as many of these destinations as possible.

8.4.1 Local Bus Route Option Description

Bus Route Option 1: Central Spine

The central spine route is intended to be the primary link connecting the school complex to the south of Naas at Pipers Hill with the town centre and north to the train station and the periphery of Sallins (Figure 8.12). This route links key trip attractors such as; 8 different schools, the Main Street, the Naas GAA club, a Lidl supermarket and the train station. By connecting these key trip attractors, this route is expected to attract enough demand to support a regular bus service, particularly as it provides a vital link to rail commuter services for residents of Naas.

Figure 8.12 Option 1: Central Spine – Local Bus Route

Bus Route Option 2: Western Spine (Indicative Route)

The western spine is a future bus route intended to provide public transport access to the Millennium Park area in the north-west quadrant which has been identified for further development in the RSES. This route is intended to link this area with the train station and the town centre. As shown in Figure 8.13, the western route would take advantage of the Sallins Bypass and a future transport link proposed in the 2020 Vision for Naas document linking Naas harbour interchange site with the M7 Junction 9A. The final location of the bridge over the canal, which will connect the harbour interchange site with the town centre, is indicative at this stage and requires a detailed feasibility study.

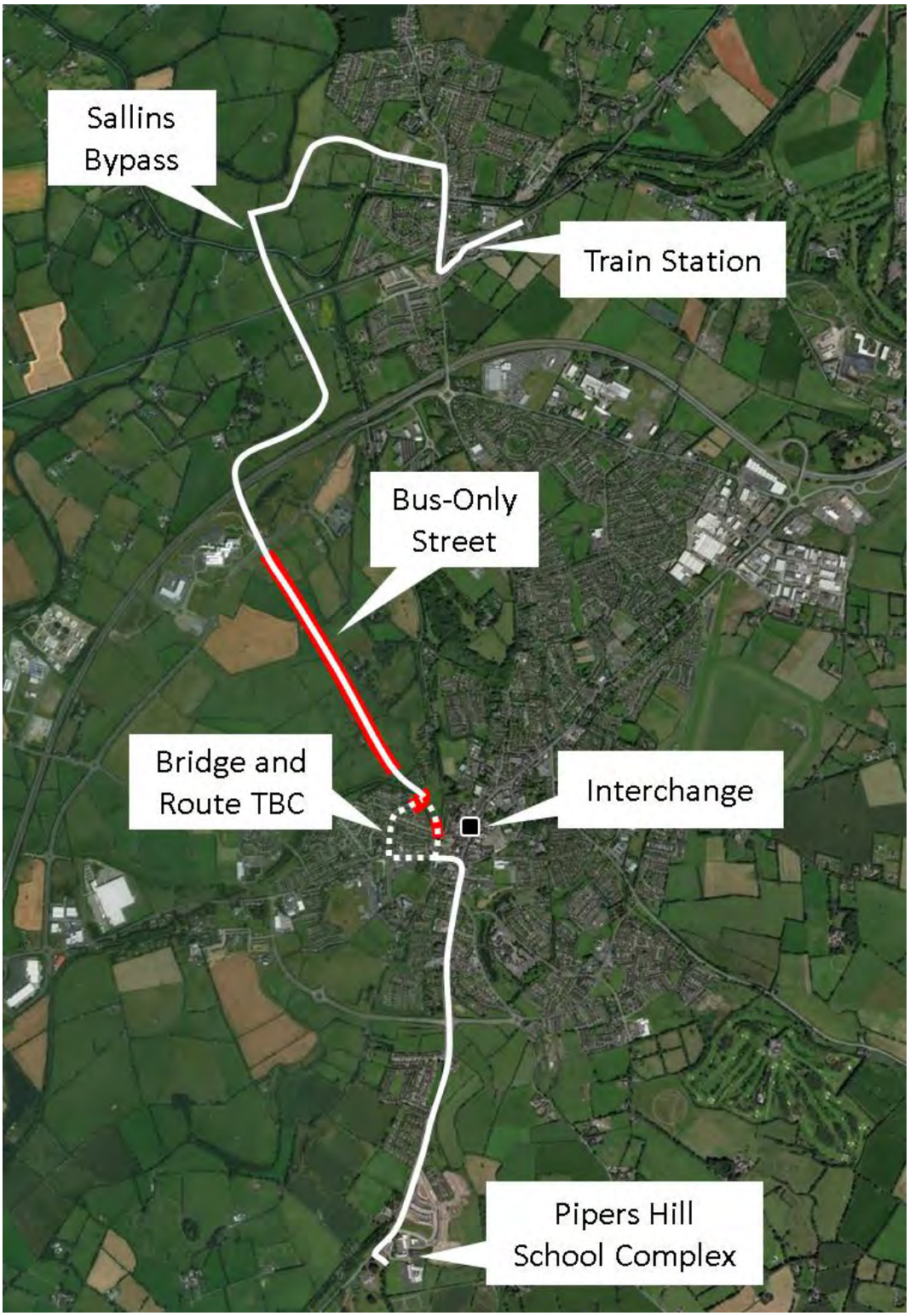


Figure 8.13 Option 2: Western Spine – Local Bus Route

Bus Route Option 3: Eastern Spine

The eastern bus route is intended to resolve the deficit in public transport access for residents in the housing estates to the north-east of Naas along the Monread Road. This route links southern, central and northern Naas with the hospital, several schools, the town centre and the train station (Figure 8.14). Bus priority infrastructure is required, such as a housing estate bus gate and a bus-only bridge over the M7, and these aspects of the route are assessed in Section 8.5 of the report.

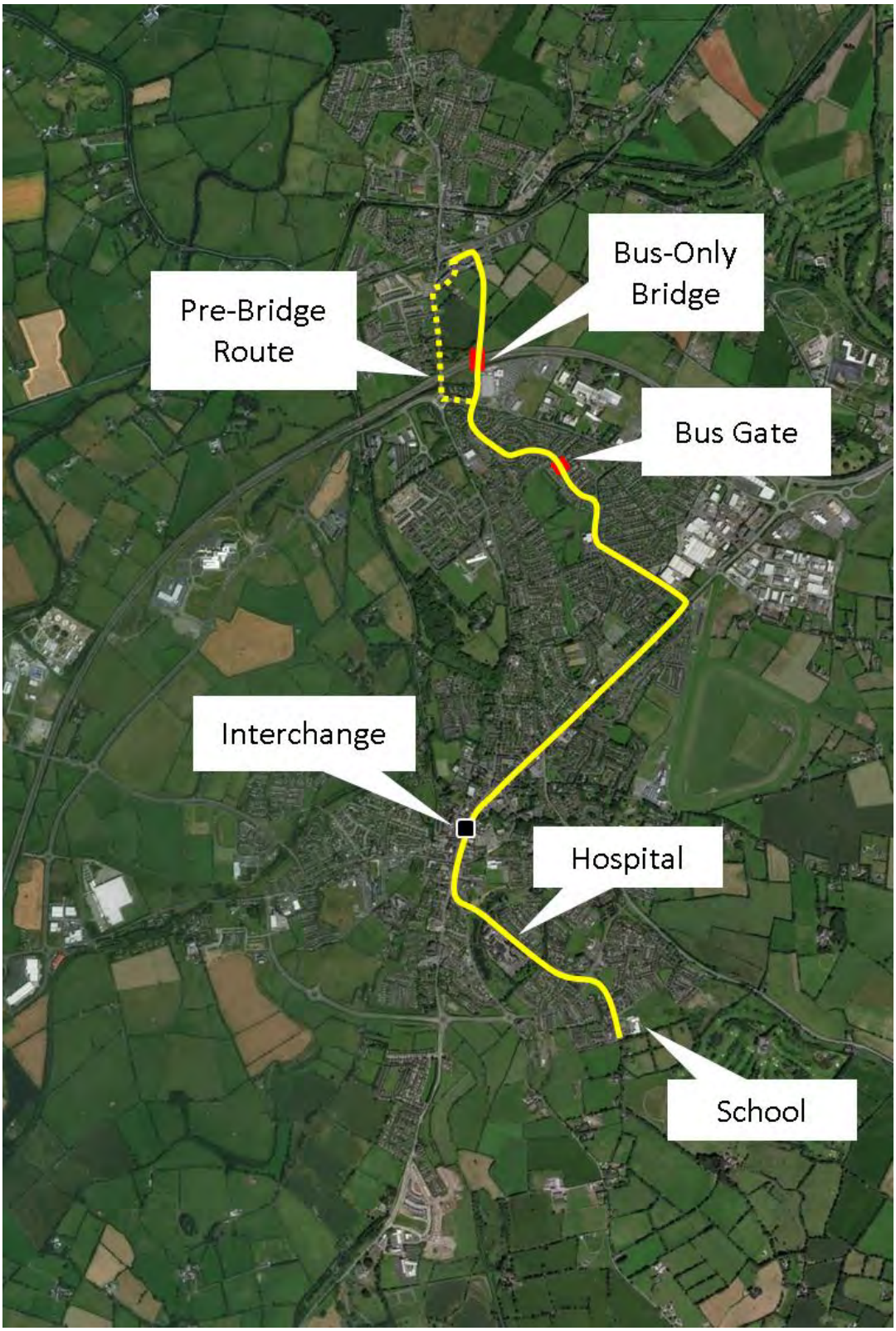


Figure 8.14 Option 3: Eastern Spine – Local Bus Route

Bus Route Option 4: East-West Link

The east-west link is intended to link key trip attractors along the Newbridge Road and Dublin Road with the town centre (Figure 8.15). Key destinations include; the Kildare County Council Offices, MERITS digital hub, K Leisure, Naas Further Education and Training Centre, Aldi and the town centre. This corridor is the main route for existing bus services through Naas and there would be a significant overlap in services.

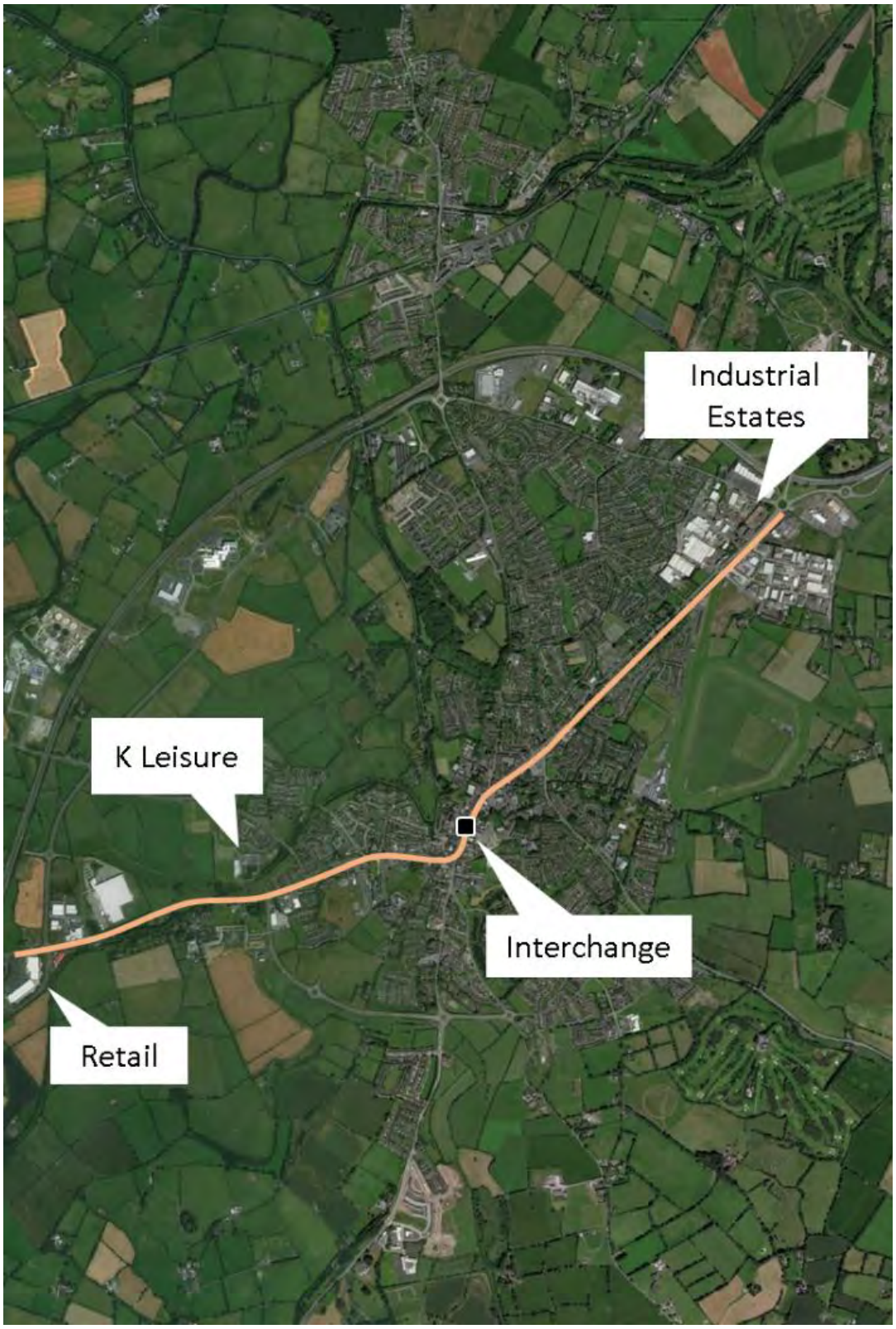


Figure 8.15 Option 4: East-West Link – Local Bus Route

Bus Route Option 5: Orbital Link

The orbital link is a future route which could connect the peripheral areas of Naas with the future development area along the Millennium Link Road identified in the RSES (Figure 8.16). It would link key destinations such as; Kerry Group, Tesco Extra, the Kildare County Council offices, retail parks, industrial estates and a stop within walking distance of the hospital. It would not serve the interchange on the Main Street or the train station.

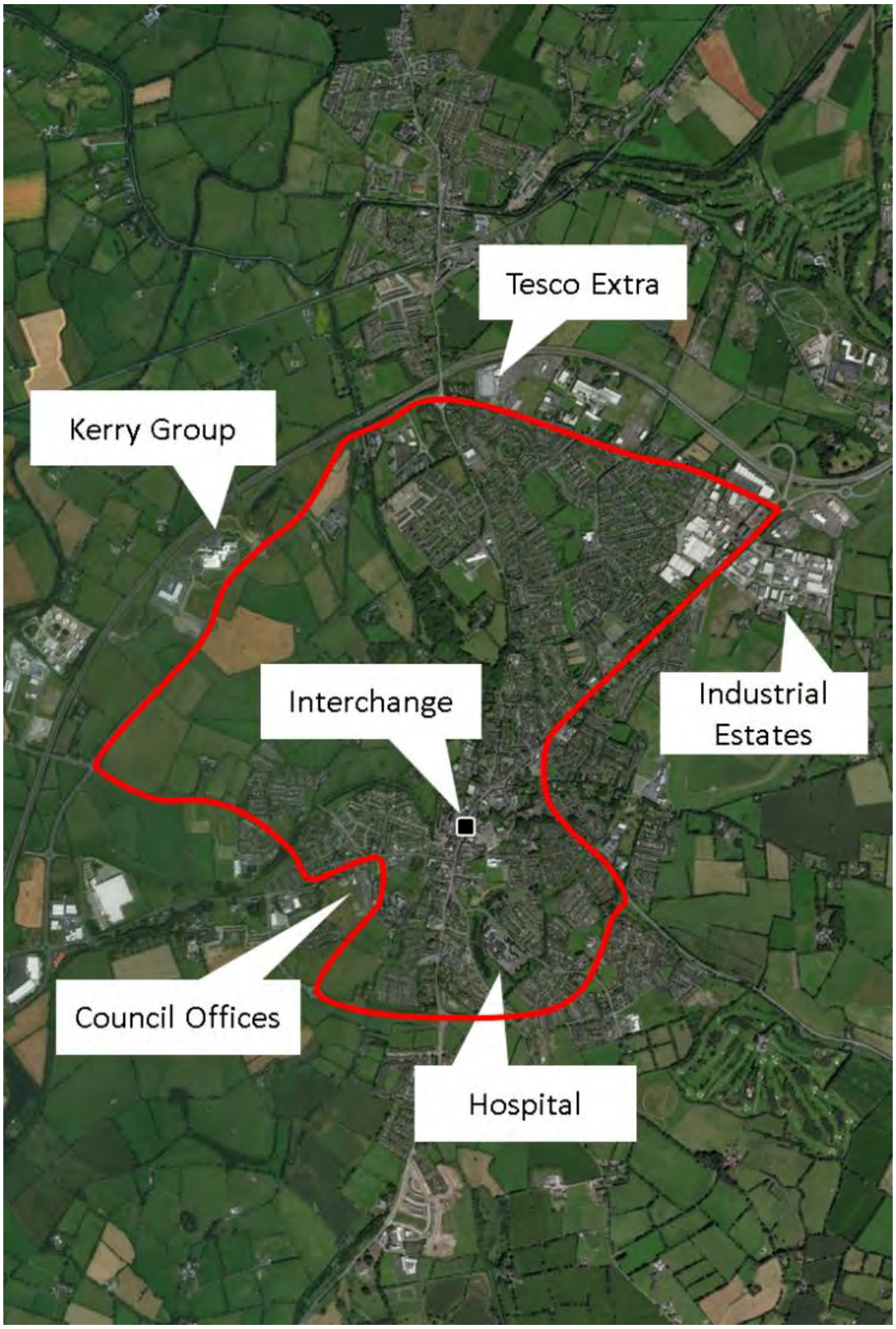


Figure 8.16 Option 5: Orbital Link – Local Bus Route

Option 6: Improve Bus Stops on Local Routes

This supporting option recommends that formal bus stops should be created at the locations served by the local bus routes identified in the Naas/Sallins Transport Strategy. As a minimum standard, each bus stop should consist of a safe waiting area, a clearly identifiable bus stop pole and timetable information. At key locations such as; the Main Street, the train station and the hospital, existing bus stops should be upgraded to ensure there is a shelter for passengers with lighting and Real Time Passenger Information (RTPI) signs.

Option 7: Lobby Bus Operators to Improve Local Services

This supporting option commits Kildare County Council to lobbying local bus operators to improve the standard of bus services in Naas and Sallins. This regards; the introduction of integrated LEAP card ticketing, improved services to Naas/Sallins, increased bus capacity, greater frequency of services and improved reliability in respect to timetabling.

8.4.2 Bus Route Option Assessment

The bus route options are assessed according to the six CAF criteria in the MCA shown in Table 8.4. This table summarises the impact of each option according to the assessment criteria. The assessment considers the relative merit of each option according to the seven-point scale presented in Table 8.3.

Table 8.3 MCA Colour Coded Ranking Scale

Colour	Description
	Major or highly positive
	Moderately positive
	Minor or slightly positive
	Not significant or neutral
	Minor or slightly negative
	Moderately negative
	Major or highly negative

Table 8.4 Multi Criteria Analysis of Bus Route Options

Option	Economy	Safety	Environment	Access & Social Inclusion	Integration	Physical Activity	Combined Assessment Outcome	Summary Justification
Option 1: Central Spine								The central spine route connects major trip attractors and has the potential to generate significant demand. This bus service would encourage people to transfer from cars to buses which would reduce the number of collisions and volume of emissions. Accessibility across the study area for all social groups would be enhanced. The bus route will be integrated with bus priority measures and serve the Main Street interchange to support the regeneration of the town centre. A new bus service will attract walking/cycling to bus stops and boost physical activity.
Option 2: Western Spine (Indicative Route)								The western spine route connects large trip attractors with areas which will be developed in the future. Assuming the bus is implemented in parallel with the completed development, the route has the potential to generate significant demand but to a lesser extent than Option 1 or 3 as the overall population catchment is lower. This bus service would encourage people to transfer from cars to bus travel which would reduce collisions and emissions. Accessibility across the study area, and access to the railway station, would be enhanced for all social groups but not to the same extent as Option 1 as this route serves fewer established social services. The bus route will be integrated with bus priority measures, but this route may not be able to serve the Main Street bus interchange due to the location of the bridge over the canal. A new bus service will attract walking/cycling to bus stops and boost physical activity.
Option 3: Eastern Spine								The eastern spine bus service connects key trip attractors in areas which have few bus services at present and this route has the potential to attract significant demand. The introduction of this bus service would encourage people to transfer from cars to bus travel which would reduce collisions and emissions. Accessibility across the study area for all social groups would be greatly enhanced. The bus route will be integrated with bus priority measures and serve the Main Street interchange as well as facilitating the development of lands south of Sallins station. The creation of a useful bus service will attract walkers/cyclists and boost physical activity.
Option 4: East-West Link								The east-west bus service would connect key trip attractors, but the duplication between this option and the existing bus routes along this corridor would significantly reduce the potential patronage. As a result, it is unlikely that this bus route would attract enough passengers to offset the cost of running the service. To a certain extent, this bus service would encourage people to transfer from cars to bus travel which would reduce collisions and emissions.

Option	Economy	Safety	Environment	Access & Social Inclusion	Integration	Physical Activity	Combined Assessment Outcome	Summary Justification
								Access and social inclusion would not be improved as the service would duplicate existing routes. Integration and physical activity would not be improved as existing bus services operate along this route.
Option 5: Orbital Link								The orbital bus service would connect key trip attractors which do not currently have a regular bus service, such as; Kerry Group and Tesco Extra. It would also service key locations such as the hospital, industrial estates, the Millennium Park development lands and the Council offices. As a result, the bus service would attract a certain amount of passengers, but it would not serve schools, the train station or the bus interchange and this would lower potential patronage. The bus service would encourage people to transfer from cars to bus travel for orbital travel which would reduce collisions and emissions. As this bus service would provide the first orbital bus service, linking jobs and homes which currently have no bus route; accessibility and social inclusion would be substantially improved. There would be a modest improvement to integration as this orbital route would allow for transfers to radial bus services, but it would not serve the proposed bus interchange. The addition of a new bus service may attract walkers/cyclists and boost physical activity.
Option 6: Bus Stop Upgrade								Upgrading bus stops would cost money, but the potential boost in patronage as a result of improved stop infrastructure and passenger information should offset some of this expenditure. At present, there are few formal bus stops and creating suitable stop infrastructure would improve safety for pedestrians and increase the visibility of public transport services to enhance accessibility. Improving bus stop infrastructure may increase the number of people using the service and this will have a modest benefit on the environment. Improving the quality of bus stops will encourage social inclusion and accessibility for marginalised groups. Bus stop improvements would be integrated with the new local buses and the planned interchange. Improved bus stops may attract walkers/cyclists and boost physical activity.
Option 7: Lobby Bus Operators to Improve Local Services								Improving local bus services would involve a financial cost, but this may be partially offset by the increase in passengers and revenue which may occur from enhancing passenger services. A modest safety and physical activity benefit could occur from attracting mode transfer from the private car and encouraging walking to bus stops. Larger environmental and accessibility benefits may result from improved bus services and a greater number of people travelling by bus. Introducing integrated ticketing across all bus services would greatly enhance integration.

8.4.3 Preferred Local Bus Routes

The MCA analysis establishes that the preferred routes are Option 1: Central Spine and Option 3: Eastern Spine. These two routes have been selected for inclusion in the Naas/Sallins Transport Strategy as immediate short term measures to increase public transport coverage and improve accessibility to Sallins training station. In some cases, the supporting bus priority infrastructure will be completed later than the routes e.g. the sustainable travel bridge for Option 3: Eastern Spine. In the short to medium term, the bus services will travel on temporary routes using existing roads and bridges until the preferred routes indicated in the strategy can be realised. To promote the use of the new local bus services, the supporting options to upgrade bus stop infrastructure and to lobby for improved local bus services are designated for implementation in the short term to encourage mode transfer.

In the future, the lands along the Millennium Link Road will be developed and Option 2: Western Spine (indicative route) has been selected as a long term measure to provide public transport to this area once there are sufficient homes and jobs to justify a local bus service. Figure 8.17 shows the three bus route options mentioned above; Central Spine (blue), Eastern Spine (yellow) and the Western Spine (white). The Central Spine and Eastern Spine are designated for implementation in the short term (1-2 years) while the Western Spine has been selected for implementation in the long term (6-10 years) in tandem with development along the Millennium Link Road. In respect to service frequency, it is proposed that the Central Spine and Eastern Spine bus routes would operate at a half hourly frequency, with the timetables of each route staggered to ensure that there is a local bus at the interchange every fifteen minutes. The increase in public transport access as a result of introducing these new routes is shown in Figure 10.7 and quantified in Table 10.2 later in the report.

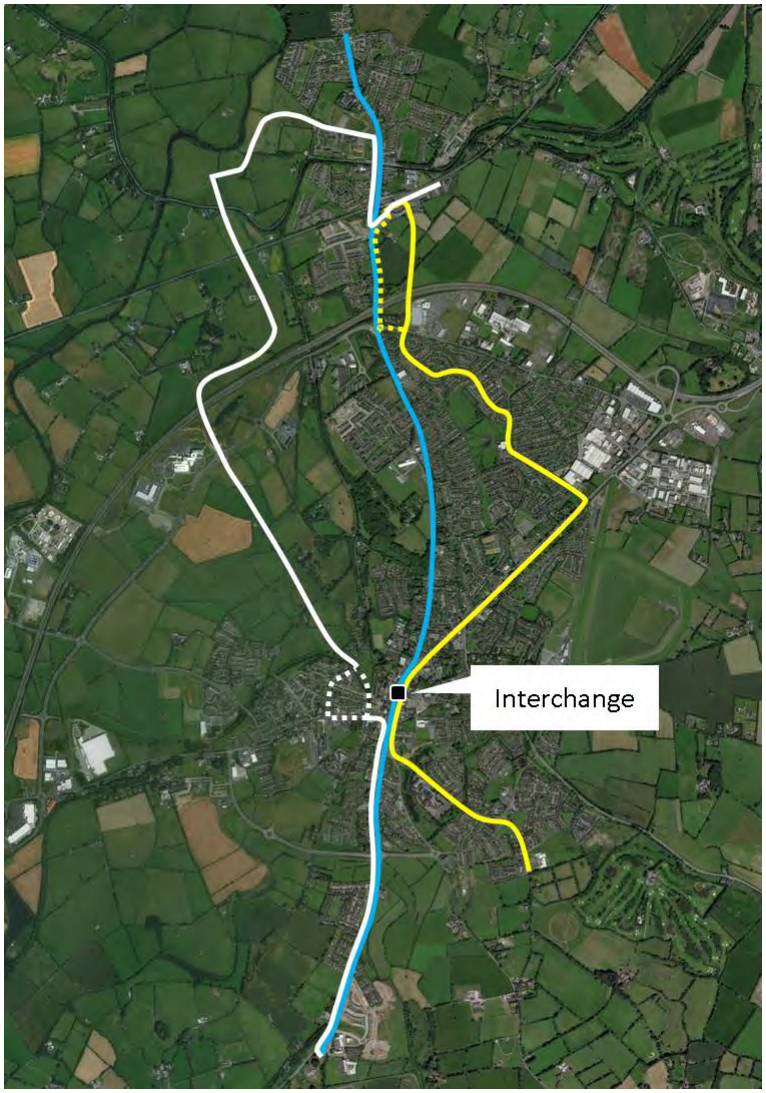


Figure 8.17 Local Bus Routes Strategy

The multi-criteria assessment determined that the orbital bus route (Option 5) would result in fewer benefits than the preferred interventions proposed in Options 1-3. While the orbital bus route would link a number of key trip attractors, it would not provide direct access to important destinations such as Naas town centre, the train station, Naas General Hospital or most schools. The lack of access to these destinations would reduce the benefit of the bus route to the community and result in a lower potential patronage which could cause higher operational costs. Furthermore, the orbital bus would not serve the proposed interchange location, which aims to integrate all local bus services with the longer distance commuter services to Dublin and other areas.

8.5 Bus Priority Options

This section seeks to identify suitable bus priority measures to support the operation of the interchange and the proposed local bus routes. This section outlines an initial high-level assessment of available measures. In order to identify a final suite of bus priority measures, it is likely that a detailed separate study will be undertaken taking account of all constraints relevant to the measures outlined in this section.

The bus priority measures are intended to improve the reliability and journey times of bus travel to give it a competitive advantage over the private car. The bus priority strategy centres on reducing general traffic flows along bus corridors, reassigning road space for dedicated bus use and creating new bus-only routes to enhance public transport accessibility.

8.5.1 Bus Priority Option Description

Bus Priority Option 1: Sustainable Travel Bridge

This option proposes the creation of a second bridge linking Sallins and Naas over the M7 which would be reserved for use by active modes and public transport (Figure 8.18). This bridge would allow for the development of higher density residential neighbourhoods to the south of the train station, which would increase patronage and support the viability of local bus routes.

Figure 8.18 Bus Priority Option 1: Sustainable Travel Bridge

Bus Priority Option 2: Morell Way Bus Gate

This option proposes the demolition of an existing wall at Morell Way, shown in Figure 8.19, to create a new bus-only street to allow for the eastern spine bus route to pass through the housing estates near Monread Road.

Figure 8.19 Wall to be Removed to Create Bus Gate – Viewed from Kerdiff Avenue

The location of the proposed bus gate is shown in Figure 8.20 along with the route of the Eastern Spine Local Bus Route. Automatic rising bollards will be required to ensure that the route is reserved for use by local buses and not general traffic.

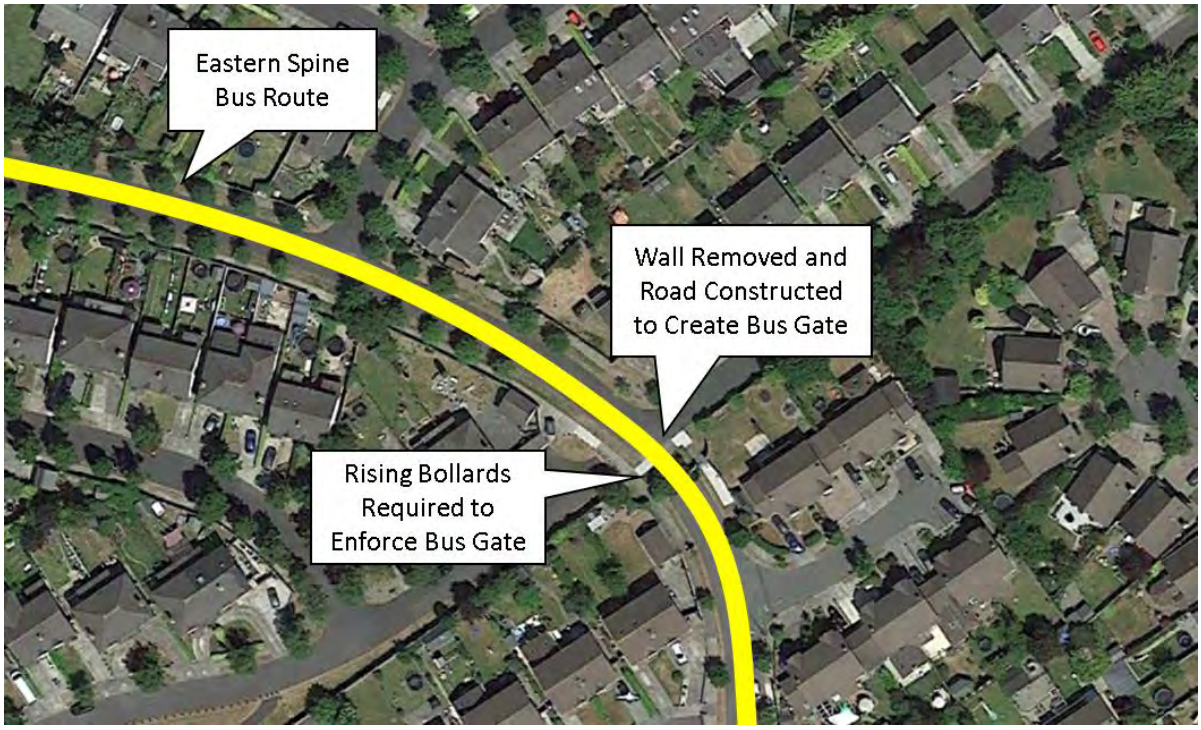


Figure 8.20 Bus Priority Option 2: Morell Way Bus Gate

Bus Priority Option 3: Left Turn Ban for Non-Bus Traffic from Newbridge Road to Main Street

This option envisions a left turn ban onto Main Street for cars/HGVs travelling from the Newbridge Road to reduce traffic volumes on Main Street in order to support the operation of the bus interchange (Figure 8.21). This option requires the implementation of Road Option 2 which creates a new link between Murtagh's Corner and Corban's Lane to allow for an effective diversion of Main Street traffic. Buses and coaches would still be able to use the left turn when travelling from Newbridge Road to the Main Street as this is the main corridor for existing bus services and continued access needs to be facilitated.

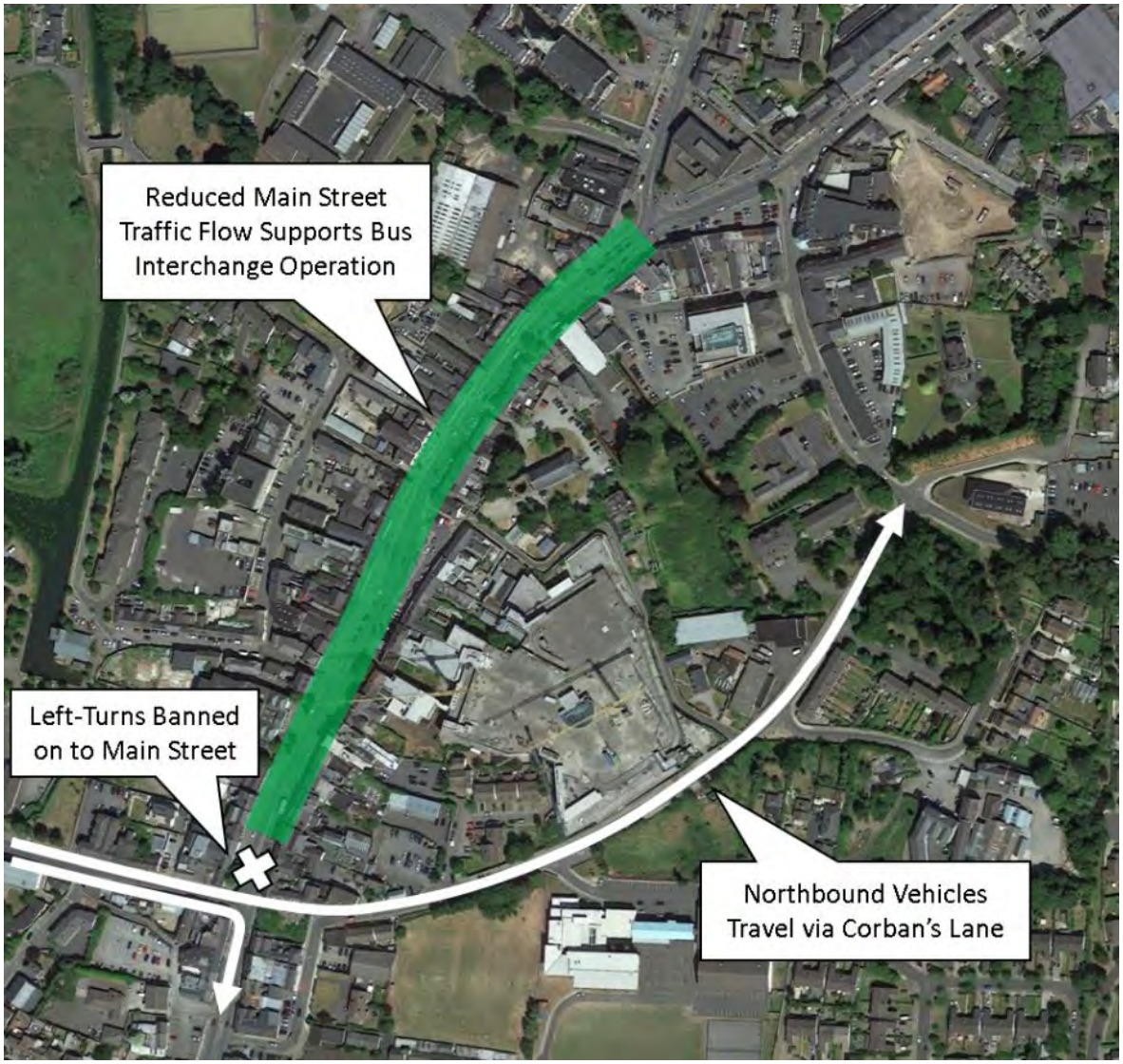


Figure 8.21 Bus Priority Option 3: Left Turn Ban onto Main Street

Bus Priority Option 4: Bus Priority Entrance to Pipers Hill Schools

The school complex at Piper's Hill experiences significant congestion during school drop-off and pick up times and this presents an operational problem if it is to act as a bus terminus for the central spine local bus route. This option proposes the creation of a second bus-only entrance to the school complex with associated drop-off area to provide for efficient access and the safe departure of school pupils (Figure 8.22). The bus-only entrance will be enforced with automatic rising-bollards similar to bus gate proposed for Morell Way.

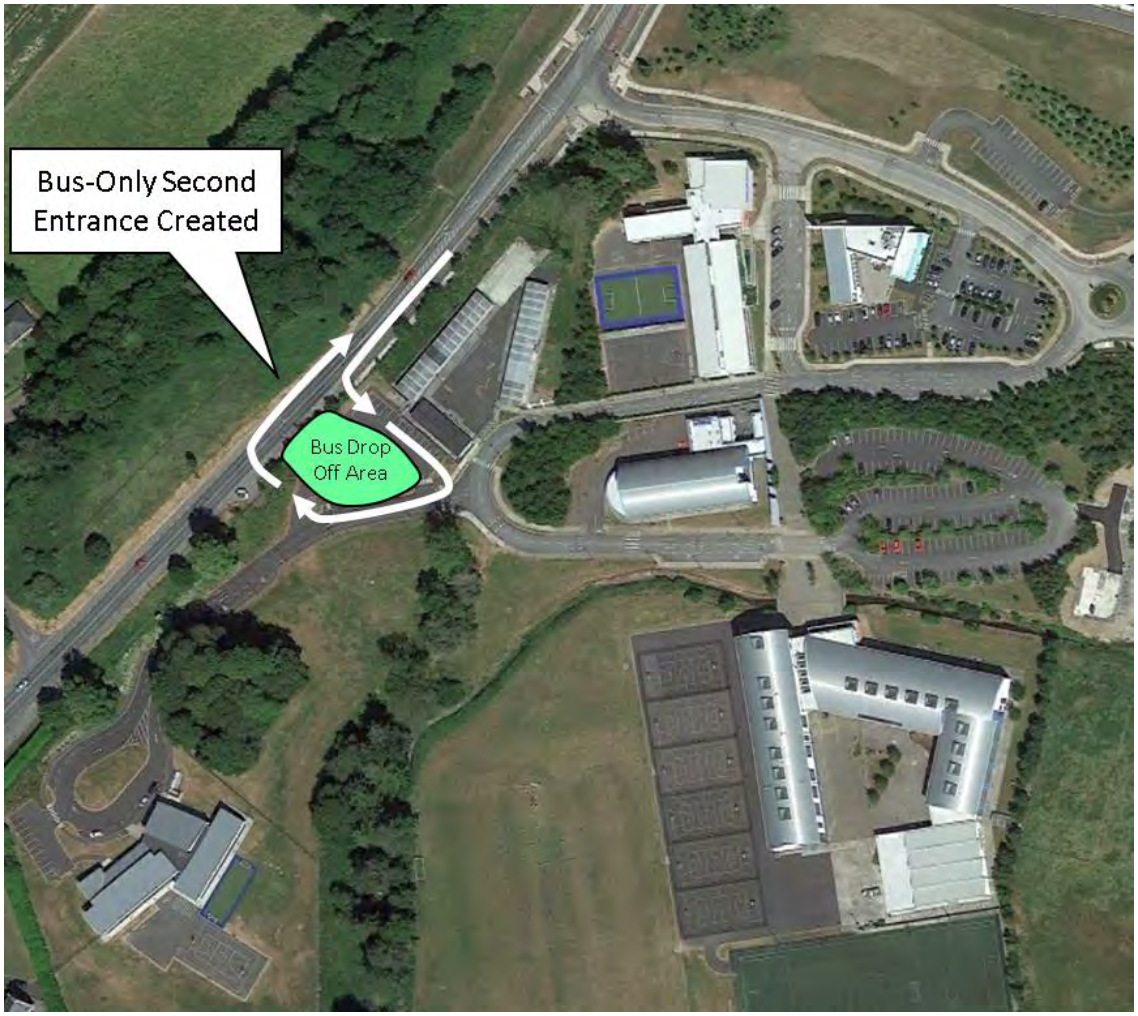


Figure 8.22 Bus Priority Option 4: Bus Priority Entrance to Pipers Hill Schools

Bus Priority Option 5: Bus-Only Link to Sallins Bypass (Indicative Route)

This option proposes a bus-only road between the M7 Junction 9A on the Millennium Link Road and Naas harbour to provide priority access for the proposed western spine local bus route (indicative route shown in Figure 8.23). The bridge required to link this bus-only street with central Naas will be determined by a future detailed study.

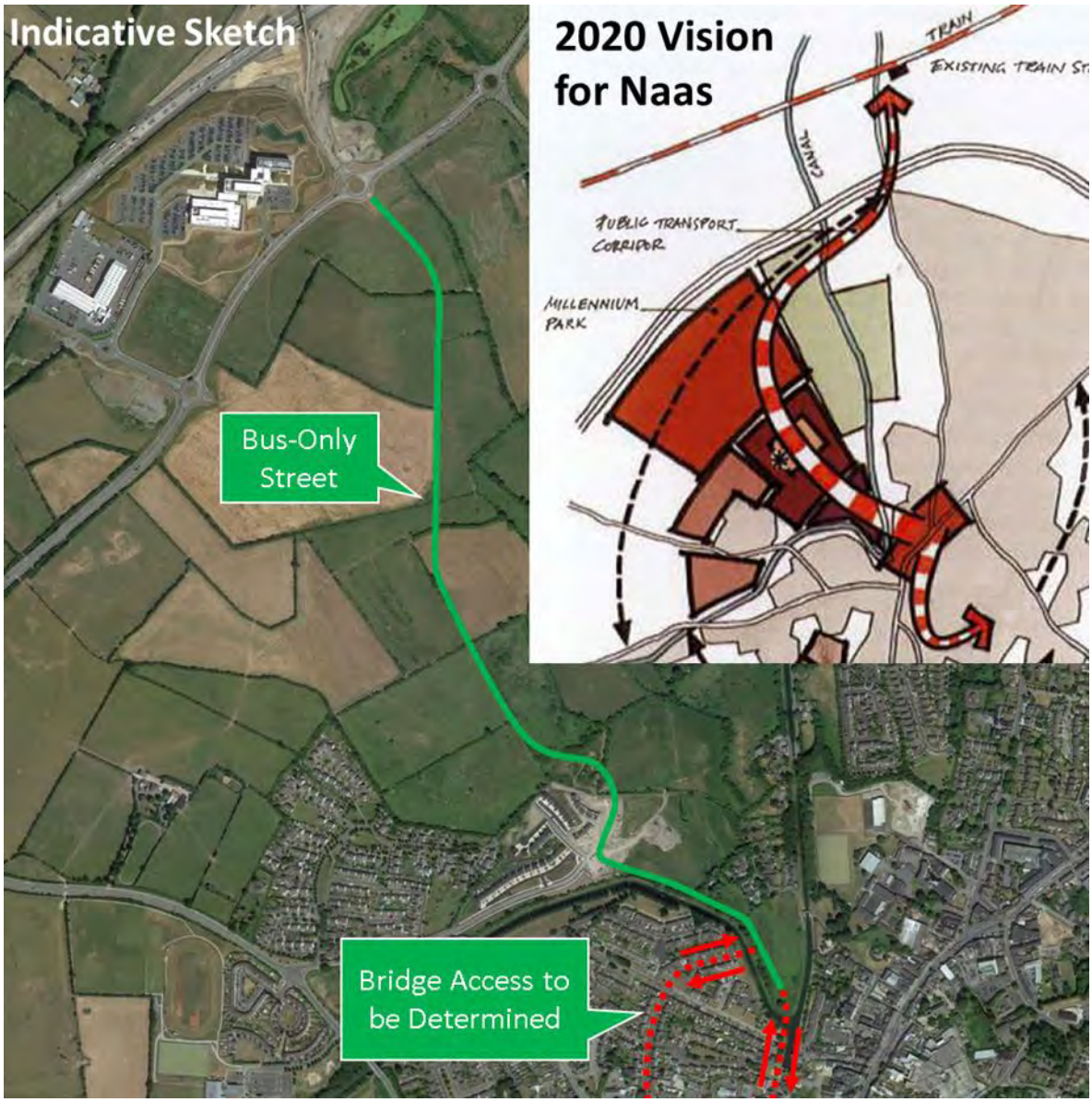


Figure 8.23 Bus Priority Option 5: Bus-Only Link to Sallins Bypass and M7 (Indicative Route)

Bus Priority Option 6: Main Street Bus Gate

This option envisions the creation of a bus gate on the Main Street which would greatly enhance the priority given to buses in central Naas to improve journey times and reliability. As shown in Figure 8.24, northbound general traffic would be able to access the Main Street as far as Market Square and then the existing loop arrangement would be used to return general traffic southbound. A number of cul-de-sacs would be created on connecting lanes which currently access the Main Street to ensure the bus gate remains car free. This option relies upon the construction of the Murtagh's Corner - Corban's Lane link road (Road Option 2) to provide a bypass of the Main Street for general traffic in both directions.

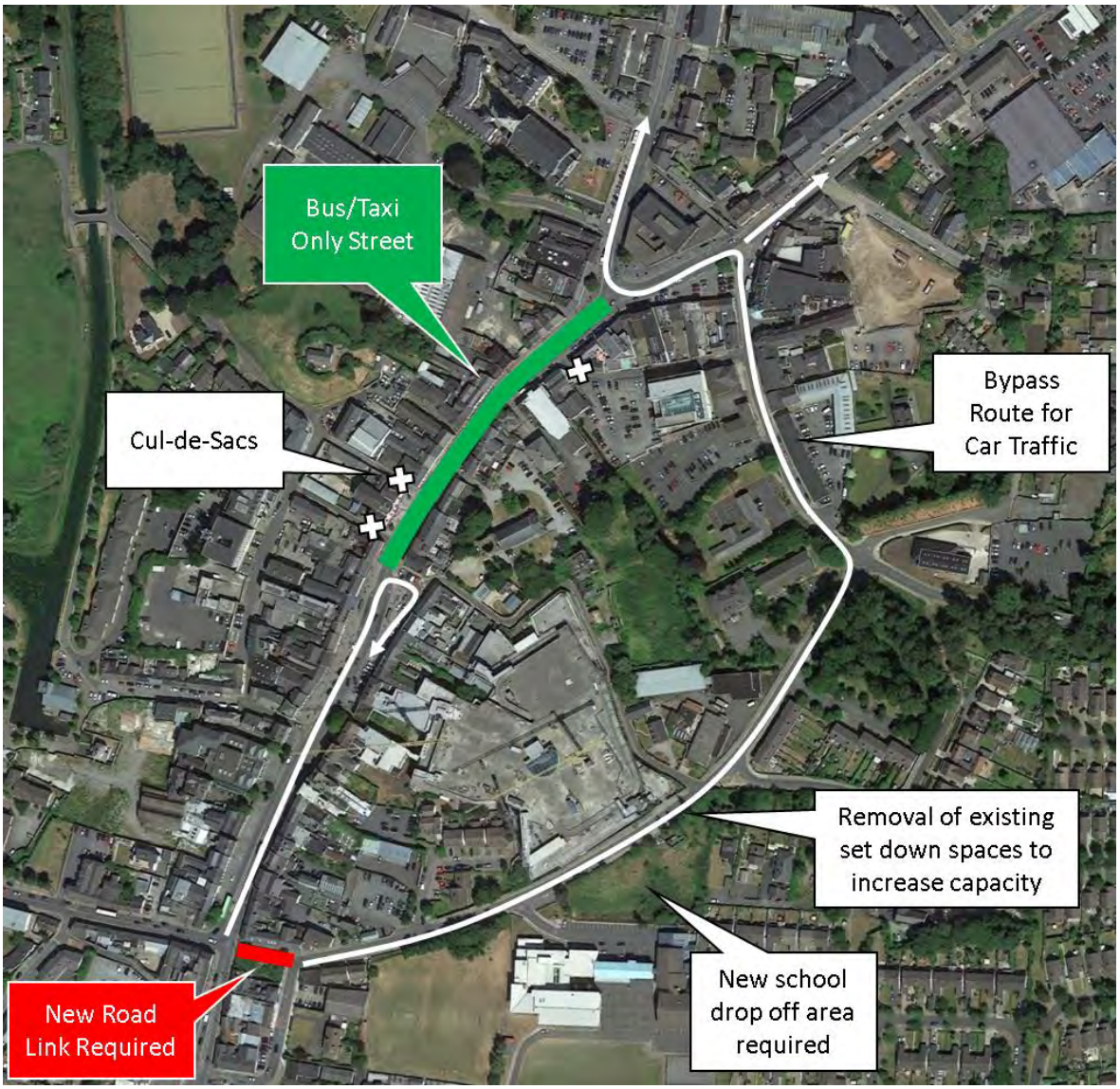


Figure 8.24 Bus Priority Option 6: Main Street Bus Gate

Bus Priority Option 7: Northbound Bus Lane on Main Street

This option proposes that the Main Street becomes a one way street for general traffic in the westbound/southbound direction, while a continuous inbound bus lane is implemented in the northbound direction to benefit buses travelling to the train station or Dublin (Figure 8.25). This would greatly improve the reliability of bus services and the operation of the interchange in the AM peak. Similar to the bus gate, this option relies upon the construction of the Murtagh's Corner - Corban's Lane link road (Road Option 2) to provide a bypass of the Main Street for diverted traffic.

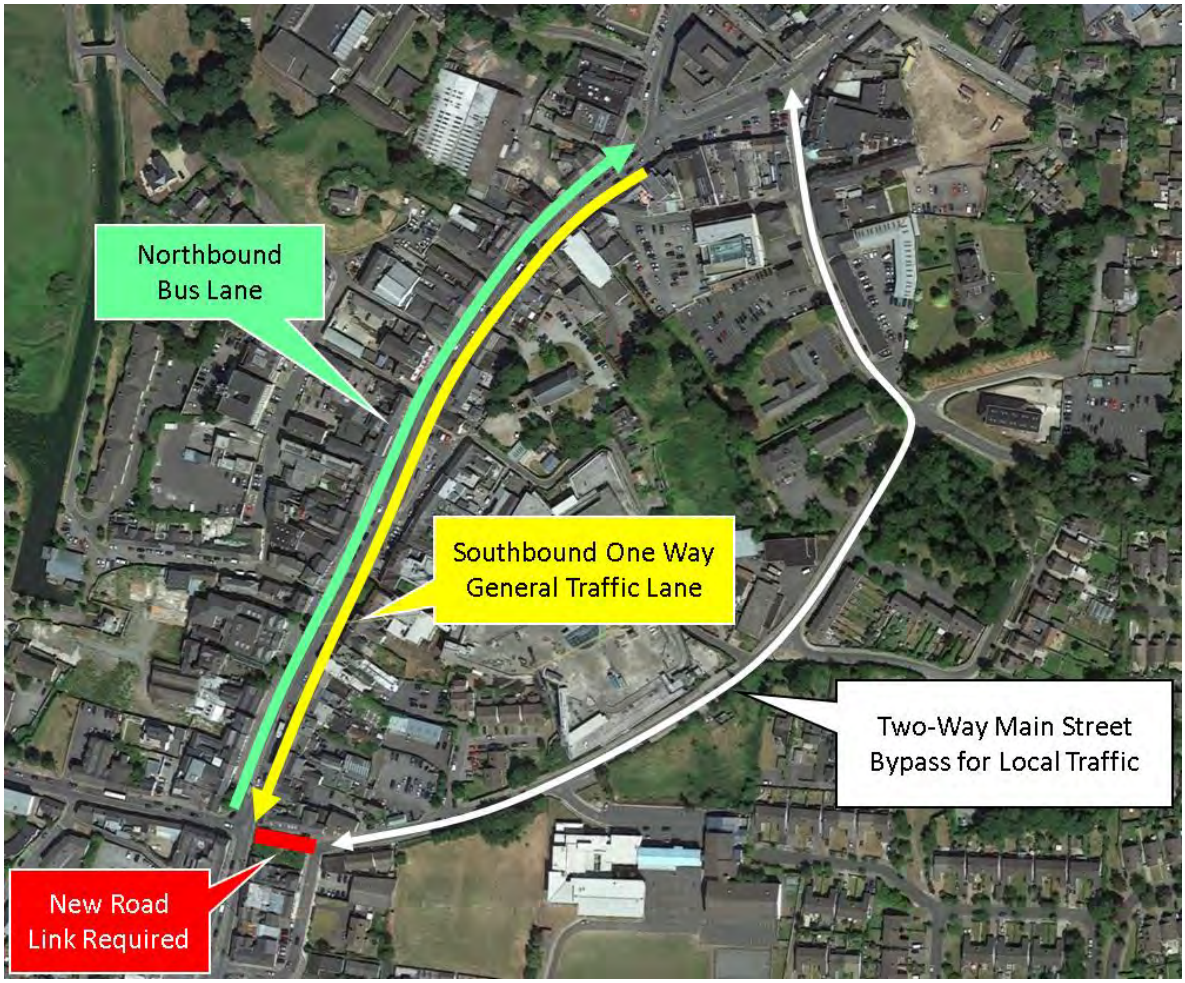


Figure 8.25 Bus Priority Option 7: Northbound Bus Lane on Main Street

8.5.2 Impact of Bus Priority Options on Road Network

The following scenario results were extracted from the VISUM Local Area Model and compare the results of the 2023 Do-Something (DS) scenario with the Do-Minimum (DM) scenario. Passenger Car Units (PCU) are used as the values in this analysis, PCU converts all vehicles into comparable units to reflect the amount of road capacity used by cars or HGVs. In this case, a car represents 1 PCU, and a HGV represents 2 PCUs.

Option 3: Left Turn Ban onto Main Street for Non-Bus Traffic

The left turn ban for cars/HGVs travelling to the Main Street from Murtagh's Corner results in the flow differences shown for the AM peak 2023 (Figure 8.26) and the PM peak 2023 (Figure 8.27). This measure reduces traffic flow on the Main Street to facilitate the operation of the bus interchange and public realm improvements. As most of the diverted traffic usually travels through the Main Street, rather than to destinations on the Main Street, the rerouted traffic at Murtagh's Corner travels along Corban's Lane and then returns to the same journey with little impact on the surrounding network. In the AM 2023 scenario, Corban's Lane is operating effectively at 30-40% of capacity and is not congested.

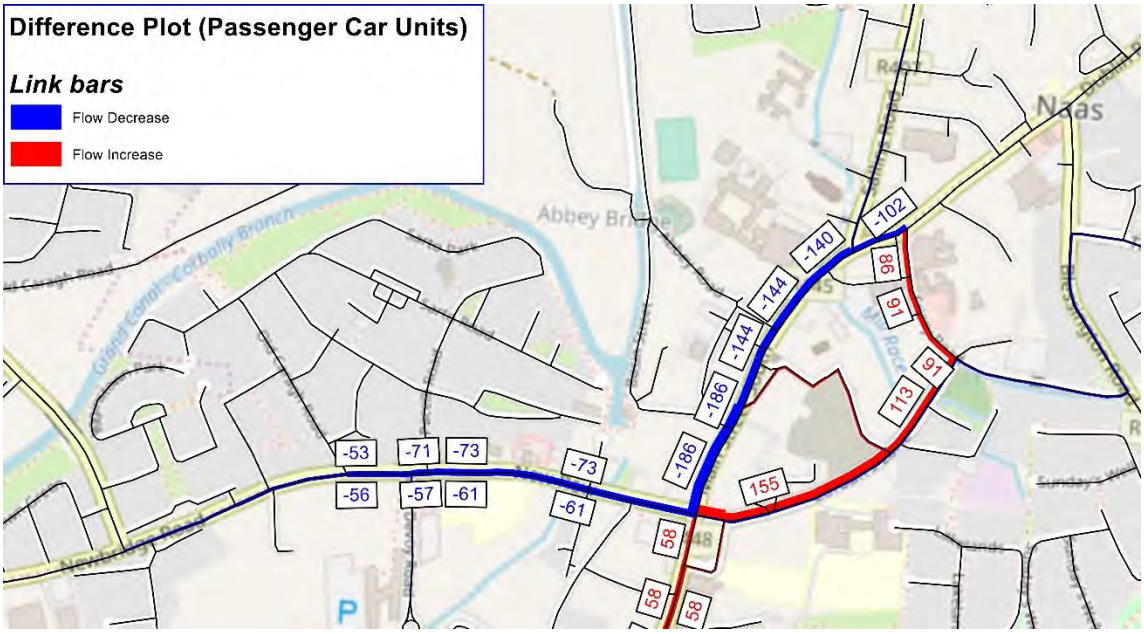


Figure 8.26 AM 2023 – Left Turn Ban onto Main Street for Private Vehicles – DS vs DM

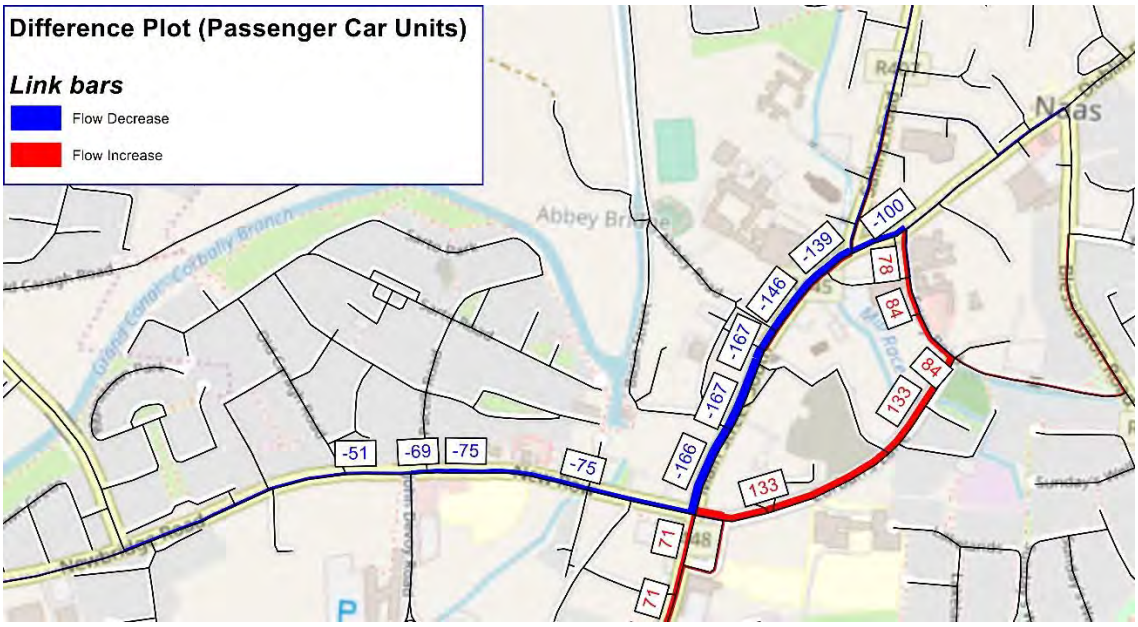


Figure 8.27 PM 2023 – Left Turn Ban onto Main Street for Private Vehicles – DS vs DM

In the transport model, journey times were compared for trips from Newbridge Road to the Dublin Road between the two points shown in Figure 8.28. In the 2023 AM do-minimum scenario, this trip took 2 minutes and 58 seconds compared to 3 minutes and 33 seconds in the left turn ban scenario. This suggests that the left turn ban will increase journey times by a sixth for private cars along this route.

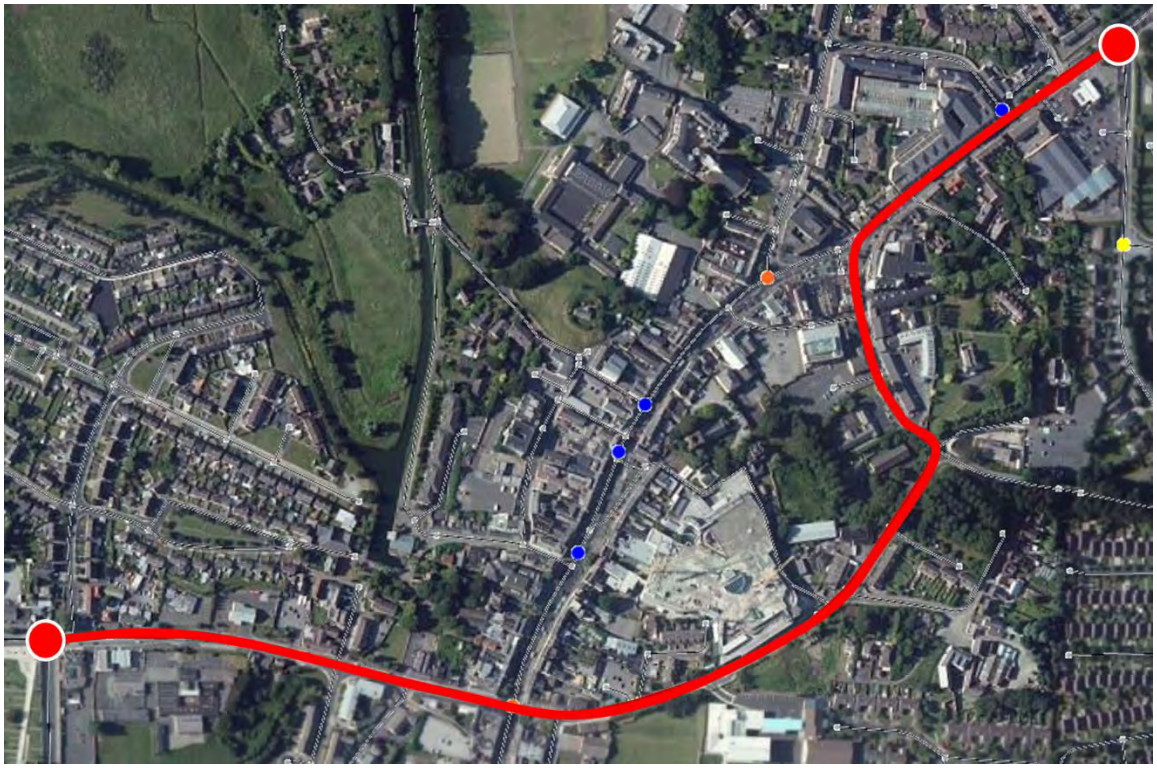


Figure 8.28 Shortest Path Comparison between Nodes in the Transport Model

Option 5: Bus-Only Link to Sallins Bypass

The National Transport Authority (NTA) Eastern Regional Model was used to assess the potential impact of Option 5 (Bus-Only Link to Sallins Bypass). The NTA Eastern Regional Model (ERM) is a strategic multi modal transport model representing travel by all primary surface modes – including walking, and cycling (active modes) and travel by car, bus, rail, light goods and heavy goods vehicles. It covers the area to the east of Ireland including the counties of Dublin, Wicklow, Kildare, Meath, Louth, Wexford, Carlow, Laois, Offaly, Westmeath, Longford, Cavan and Monaghan.

The ERM sits within the overall NTA Regional Modelling System (RMS) which comprises of the following three main components:

- The National Demand Forecasting Model (NDFM);
- Five Regional Models, including the ERM; and
- A suite of Appraisal Modules

Potential demand responses arising from the Bus-Only Link to Sallins Bypass (i.e. the change in mode share and number of bus passenger) was assessed using the 2043 NTA ERM Greater Dublin Area (GDA) Transport Strategy model.

As part of the assessment the 'Western Spine' bus route corridor (i.e. Bus Route Option 2) was coded in the NTA ERM, this indicative bus route and the bus stop locations assumed for the NTA ERM run are illustrated in Figure 8.29. For the purposes of the NTA ERM run a service frequency of 15min in each direction was assumed.

The results of the NTA ERM run indicated that over 330 passengers would use the 'Western Spine' bus route in the AM Peak in the northbound direction and over 130 in the southbound direction. In the northbound direction the busiest bus stops are the Harbour (boarding) and Sallins Train Station (alighting). In the southbound direction there is more balanced use of the various bus stops,

Over this equates to a 1% change in public transport mode share in study area, with changes in all other modes including Road, Walking and Cycling. It should be noted that the NTA ERM run did not include the other bus routes identified as part of the strategy (i.e. Central Spine or Western Spine) or the potential for inter-urban bus service to use the bus-only link via the M7 Osberstown Interchange.

Figure 8.29 Western Spine Bus Route assessed in NTA ERM

The high level assessment of Option 5 in the NTA ERM shows the potential of this option in providing access between the Kilcullen Road and Sallins Train Station via the Bus-Only Link. With bus stops locations refined to capture the maximum level of potential demand, appropriate land-use planning in

the North West Quadrant and a high quality local bus service that integrates with the rail service at Sallins this option has the potential to have a direct impact on reducing car dependency in Naas.

Option 6: Main Street Bus Gate

The Main Street bus gate results in the flow differences shown for the AM peak 2023 (Figure 8.30) and the PM peak 2023 (Figure 8.31). As expected, the bus gate eliminates traffic from the Main Street, but it has a relatively small impact upstream and downstream on the approach roads, meaning that the positive impact on bus operations would be largely restricted to the Main Street. This option results in a significant increase in traffic on Corban's Lane and Friary Road. In the AM 2023 scenario, Corban's Lane is operating at full capacity, with flows of 900+ vehicles on a 1,000 vehicle capacity road which contains a school. This highlights the lack of capacity in the surrounding road network to absorb the diversion of all town centre traffic if the Main Street is closed.

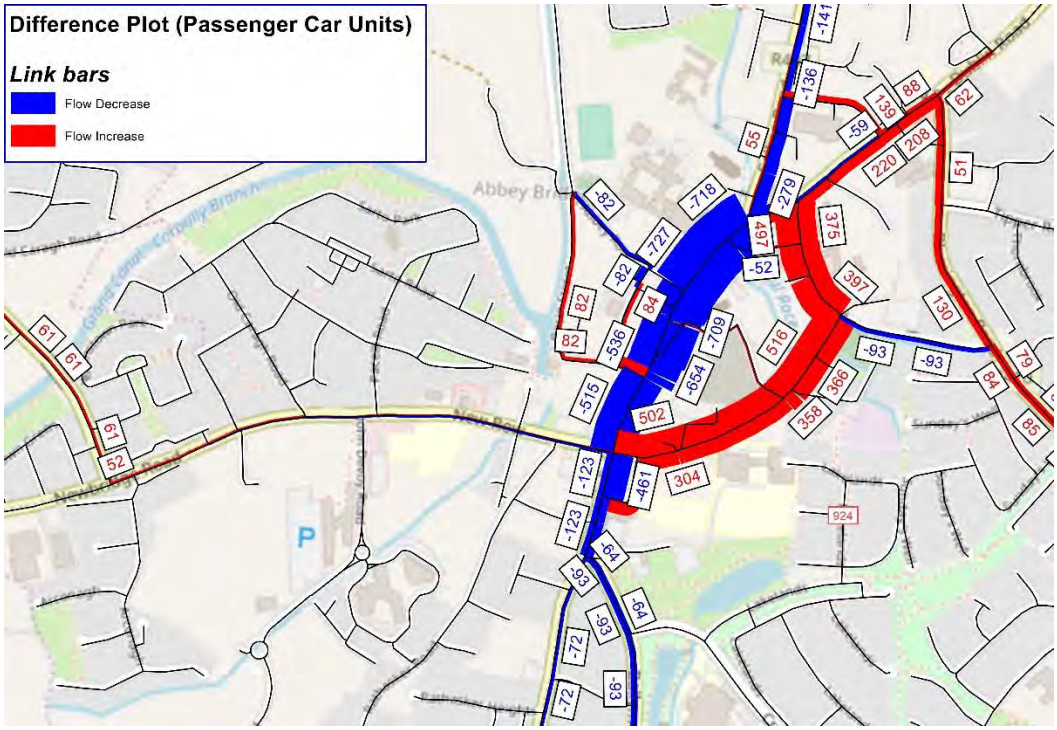


Figure 8.30 AM 2023 – Main Street Bus Gate – DS vs DM

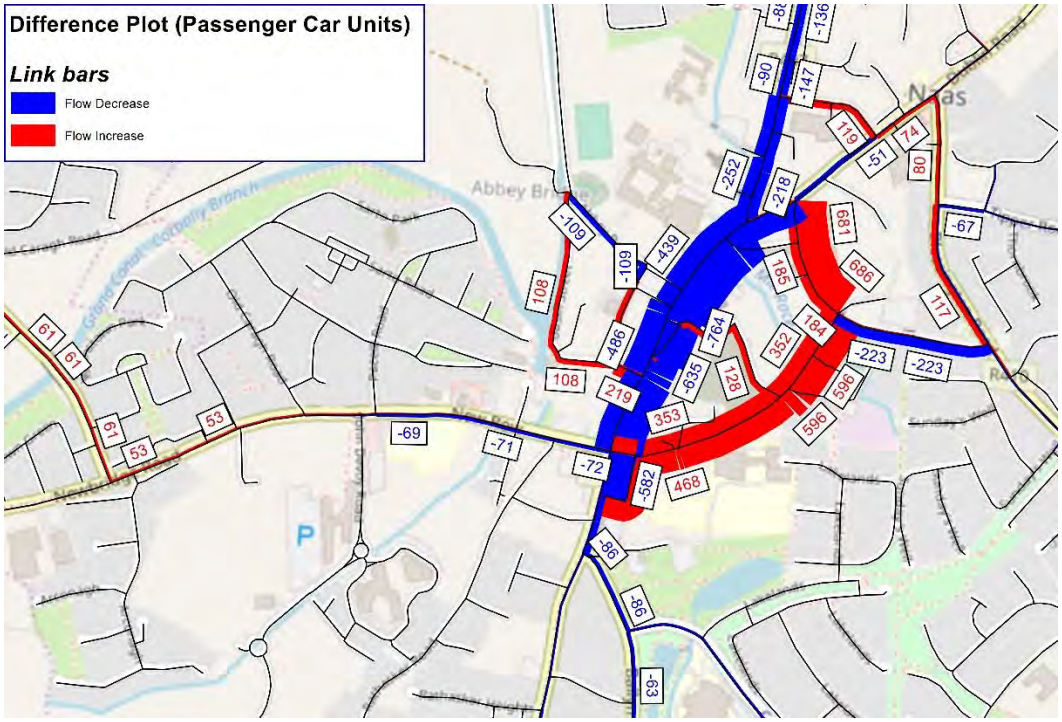


Figure 8.31 PM 2023 – Main Street Bus Gate – DS vs DM

In the transport model, journey times were compared for trips from Newbridge Road to the Dublin Road along the route shown in Figure 8.28. In the 2023 AM do-minimum scenario, this trip took 2 minutes and 58 seconds compared to 3 minutes and 53 seconds in the bus gate scenario. This suggests that the bus gate will increase journey times by a third for private cars along this route.

Option 7: Northbound Bus Lane on Main Street

A one way northbound bus lane on the Main Street results in the flow differences shown for the AM peak 2023 (Figure 8.32) and the PM peak 2023 (Figure 8.33). This option significantly reduces congestion on the Main Street in the direction of Sallins and Dublin which would aid the operation of the interchange and local bus routes. However, it also results in a significant increase traffic on Corban's Lane and Friary Road to accommodate the rerouted vehicles. Yet in contrast to the bus gate scenario, the surrounding road network is more capable of absorbing the redistributed traffic as Corban's Lane is operating at 50-60% capacity in the AM 2023 scenario for northbound traffic.

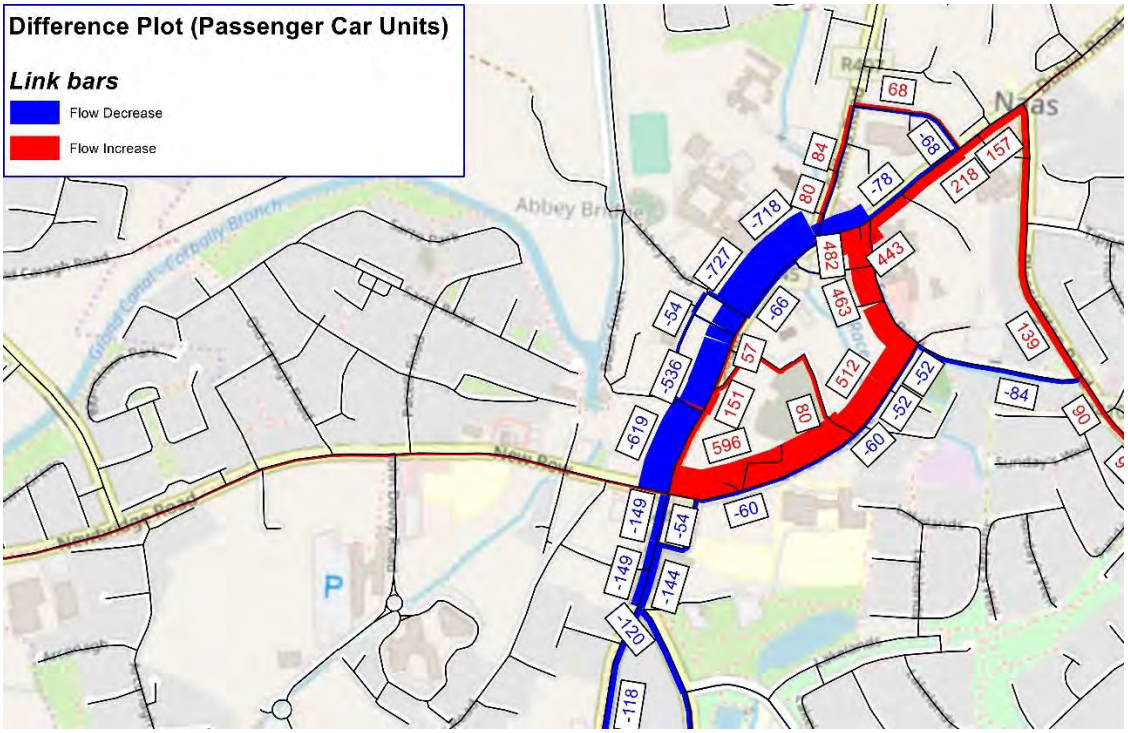


Figure 8.32 AM 2023 – One Way Northern Bus Lane on Main Street – DS vs DM

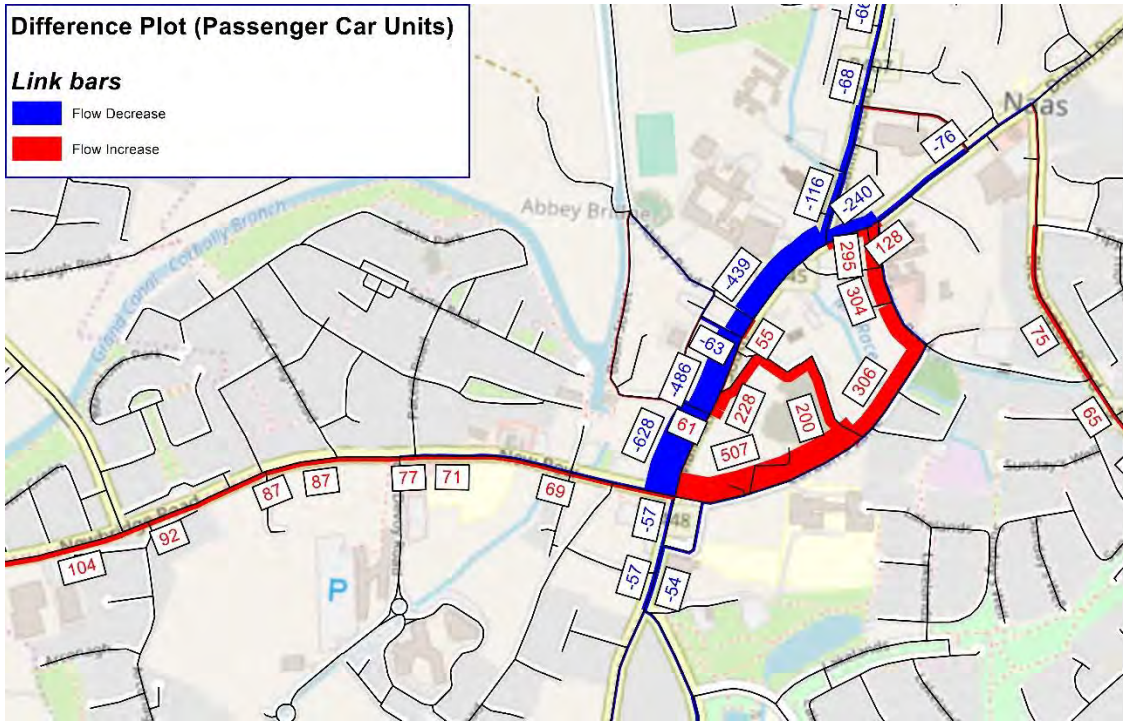


Figure 8.33 PM 2023 – One Way Northern Bus Lane on Main Street – DS vs DM

In the transport model, journey times were compared for trips from Newbridge Road to the Dublin Road along the route shown in Figure 8.28. In the 2023 AM do-minimum scenario, this trip took 2 minutes and 58 seconds compared to 3 minutes and 47 seconds in the northbound bus lane scenario. This suggests that the northbound bus lane will have a moderate impact on journey times for private cars along this route.

8.5.3 Bus Priority Options Assessment

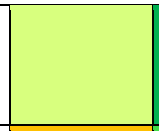
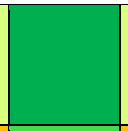
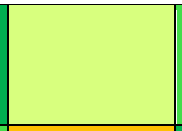
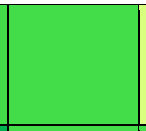
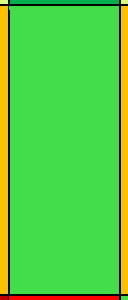
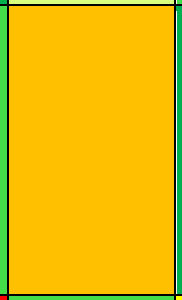
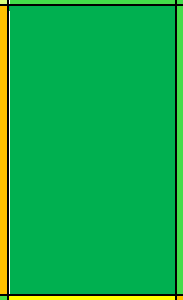
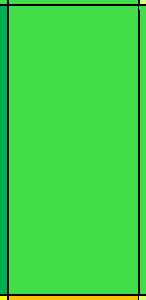
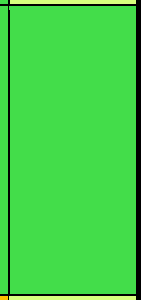
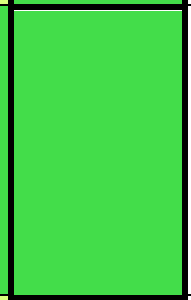
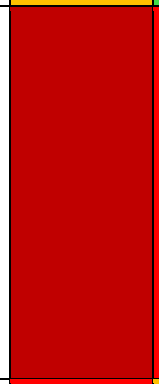
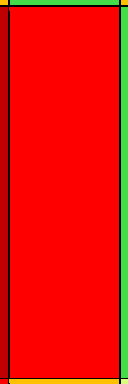
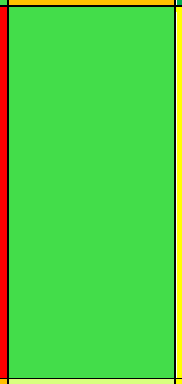
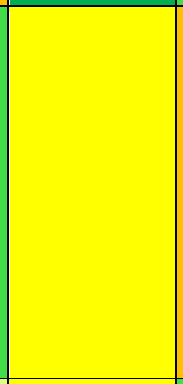
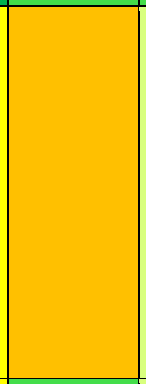
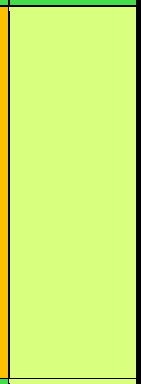
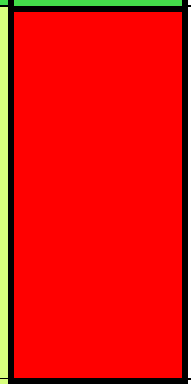
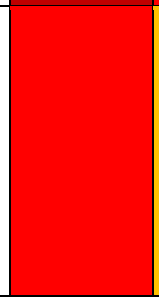
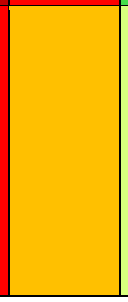
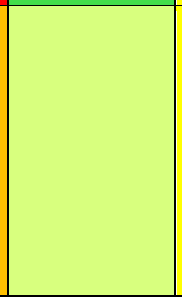
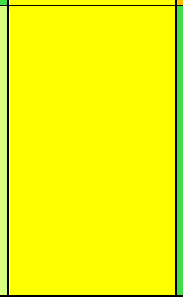
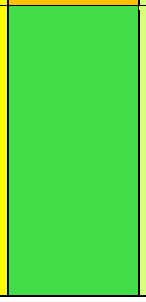
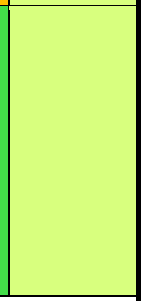
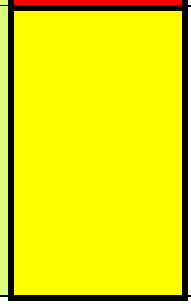
The bus priority options are assessed according to the six CAF criteria in the MCA shown in Table 8.6. This table summarises the impact of each option according to the assessment criteria. The assessment considers the relative merit of each option according to the seven-point scale presented in Table 8.5.

Table 8.5 MCA Colour Coded Ranking Scale

Colour	Description
	Major or highly positive
	Moderately positive
	Minor or slightly positive
	Not significant or neutral
	Minor or slightly negative
	Moderately negative
	Major or highly negative

Table 8.6 Multi Criteria Analysis of Bus Priority Options

Option	Economy	Safety	Environment	Access & Social Inclusion	Integration	Physical Activity	Combined Assessment Outcome	Summary Justification
Option 1: Sustainable Travel Bridge								The sustainable travel bridge would require significant capital investment but the potential benefits of the scheme, such as a bus-only bridge and facilitating high density rail-centric development, would compensate for many of these costs. In respect to safety, the bridge would create a segregated route for walkers and cyclists and help them avoid the general traffic on Sallins Road. This infrastructure would help to increase the modal share for non-car modes which will provide environmental benefits, but the loss of greenfield land and habitats will reduce the overall score in this regard. Accessibility between Naas and Sallins will be greatly enhanced and this measure will aid the integration of land-use and transport. The bridge will be integrated into the walking and cycling strategy. Physical activity will be promoted by a new segregated walking/cycling route between Naas and Sallins.
Option 2: Morell Way Bus Gate								The Morell Way bus gate will involve minor capital investment, largely in the form of enforcement bollards, which will be offset by the benefits of allowing efficient bus travel which reduces passenger delays. A minor environmental benefit will occur from potential mode transfer from the private car. Accessibility and integration will be enhanced as bus priority will support the implementation of the eastern spine local bus route. There will be no real impact on physical activity as pedestrian/cyclist access exists at this location.
Option 3: Left Turn Ban onto Main Street								The left turn ban would have little financial cost, as the main supporting infrastructure is the Murtagh's Corner – Corban's Lane link road, which is a separate road option, but it would deliver significant economic benefits to bus users travelling on the Main Street. The reduction of vehicles on the Main Street will produce modest local safety and environmental benefits. Accessibility and social inclusion for public transport and cyclist users will be enhanced by a reduction in traffic volumes. The restriction of access to the Main Street for car users will reduce accessibility benefits slightly. This option is integrated with the Murtagh's Corner – Corban's Lane link road and supports the operation of the Main Street bus interchange as well as local bus routes.
Option 4: Bus Priority Entrance to Pipers Hill Schools								A second entrance to Pipers Hill with supporting enforcement infrastructure would incur some financial cost but this would be offset by the benefit of separating bus operations from the school drop-off congestion at the existing entrance. Removing buses from the crowded Piper's Hill drop-off area would remove them from conflict situations with young children on the road and increase safety. There would be limited impact on the environment, but a

								minor benefit would occur from modal shift as a result of efficient bus school travel. This option is integrated with the creation of two local bus routes and it would aid accessibility for school trips. Creating a second entrance would remove a perimeter wall and provide a new path to boost physical activity.
Option 5: Bus-Only Link to Sallins Bypass								This option would incur significant costs, but once the lands along the Millennium Link Road are developed, this infrastructure will provide an efficient route for the western spine local bus route and inter-city buses. As this is a bus-only road, it would provide a lower traffic route for cyclists and walkers which would be safer than normal roads. As greenfield lands will be built on to create this link, there will be a negative environmental impact, which will be offset to a certain extent by mode transfer from the private car. This option will greatly expand bus accessibility to a new development zone, and it will be integrated with the intensification of land-use activities in this area. As a bus-only street will facilitate walkers/cyclists, physical activity should increase.
Option 6: Main Street Bus Gate								The Main Street bus gate would require a small amount of infrastructure investment, but the surrounding road network cannot absorb the diversion of this volume of traffic; causing a severe economic impact on the town centre. Furthermore, the transport model indicates that Corban's Lane would operate at 90-100% capacity outside a school entrance, which presents a safety issue. The bus gate will deliver an efficient bus interchange, which is likely to attract mode transfer from the private car to provide environmental benefits. The impact on public transport accessibility would be very positive, while the impact on the private car/HGVs will be very negative; resulting in a neutral score. This option would be integrated with the bus interchange and local bus routes, but overwhelming the road network with excessive traffic flows would harm the local economy and hinder town centre regeneration. Reducing traffic on the Main Street could promote a small increase in physical activity.
Option 7: Northbound Bus Lane on Main Street								The northbound bus lane on the Main Street would involve limited investment and it would deliver significant benefits for bus passengers, but car users would be affected. The increase in traffic on Corban's Lane could impact on school safety but not to the same extent as the bus gate scenario as traffic flows are slightly lower. As the bus lane will improve the effectiveness of bus travel, there will be a modest environmental benefit. Accessibility for bus users will be enhanced but a reduction in car user access will negate this benefit to a certain extent. As this option is designed to support the operation of the Main Street interchange, integration benefits will occur. Furthermore, the reduction in general traffic on the Main Street may encourage physical activity.

8.5.4 Preferred Bus Priority Measures

As a result of the modelling results and the MCA, the following bus priority measures have been selected for inclusion in the strategy:

- Option 1: Sustainable Travel Bridge
- Option 2: Morell Way Bus Gate
- Option 3: Left Turn Ban on to Main Street
- Option 4: Bus Priority Entrance to Pipers Hill Schools
- Option 5: Bus-Only Link to Sallins Bypass (Indicative Route)

Of these options, Option 2 (Morell Way bus gate) and Option 4 (priority entrance to Piper's Hill) have been designated as short term measures to enable the effective operation of the planned local bus routes. In the medium term, Option 3 (Left turn ban onto Main Street) is designated for delivery along with the Murtagh's Corner – Corban's Lane link road (Road Option 2). Option 1 (sustainable travel bridge) and Option 5 (bus-only link to the M7) have been designated as long term measures as they will require significant investment and alignment with future development plans for the surrounding areas.

The transport modelling showed that Option 6 (Main Street bus gate) would redistribute far more vehicle traffic than the surrounding road network could accommodate in respect to capacity. As this option would have a detrimental impact on the economy of the town centre and raise safety concerns in respect to the school on Corban's Lane; the Main Street bus gate has been excluded from the strategy. While the modelling results for Option 7 (Northbound Main Street bus lane) indicated that it had a lesser impact on Corban's Lane in respect to congestion compared to the bus gate, the MCA assessment concluded that other bus priority options would provide greater net benefits and this option was excluded.

8.6 Rail Transport Options

This section seeks to identify the most suitable rail improvement measures for Sallins and Naas to compliment the overall public transport strategy. The options consider issues such as; the optimum location for the train station, potential upgrades to the station and improving rail service frequencies. The rail measures are an essential part of the overall public transport strategy, but they cannot be delivered by Kildare County Council and implementation will have to be lobbied for through negotiation with state agencies and Irish Rail.

8.6.1 Rail Options

Rail Option 1: Lobby for the Relocation of Sallins Train Station to the West

This option proposes moving Sallins train station to a greenfield site 1.1km to the west of the existing location (Figure 8.34). This would allow for a larger purpose built park and ride facility which could be accessed from the M7 at Junction 9A via the Sallins bypass. There would also be the opportunity to build higher density development around the new station than currently exists in Sallins.

Figure 8.34 Rail Option 1: Relocating Station to the West

Rail Option 2: Lobby for a Second Train Station to Facilitate Large Scale Park and Ride Facility

This option proposes creating a second train station approximately 2km to the west which would allow for a dedicated park and ride facility, accessed from the national road network via the Sallins Bypass (Figure 8.35). This station is intended as a dedicated park and ride facility, similar to M3 Parkway, rather than an opportunity for new development as it would contribute to urban sprawl.

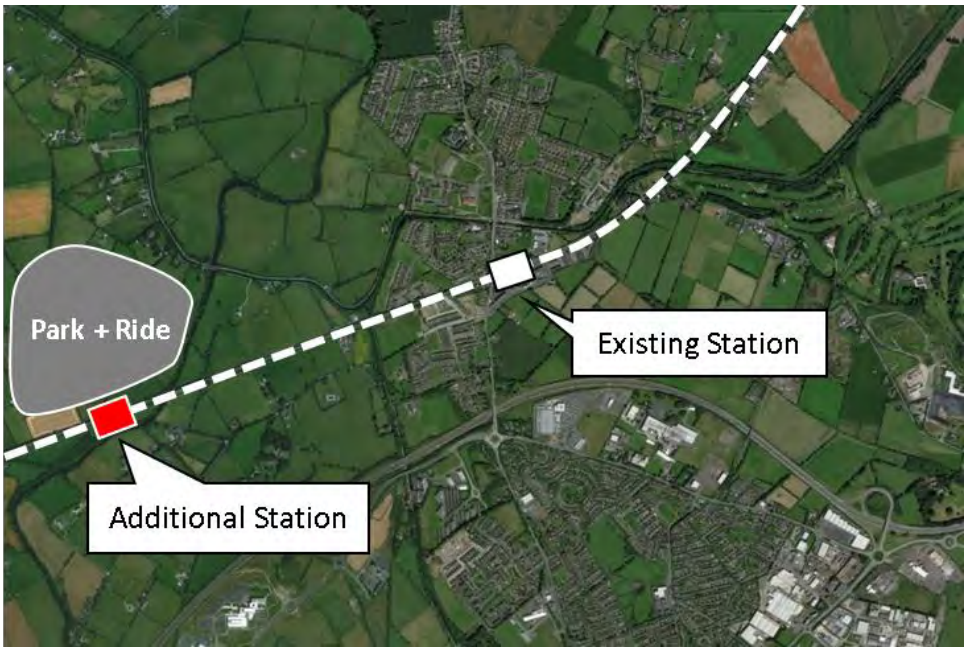


Figure 8.35 Rail Option 2: Second Station with Park and Ride Facility

Rail Option 3: Lobby for the Extension of DART to Sallins by 2027 with Quad Track Infrastructure

The National Development Plan intends to extend the DART network as far as Celbridge on the Kildare line. This option proposes that the Council should lobby for the DART to be extended further to Sallins (Figure 8.36) with electrified quad-track to allow inter-city and DART trains to travel on the same line without capacity issues. Integrating Sallins train station into the DART network would result in a significant improvement in passenger capacity and service frequency.

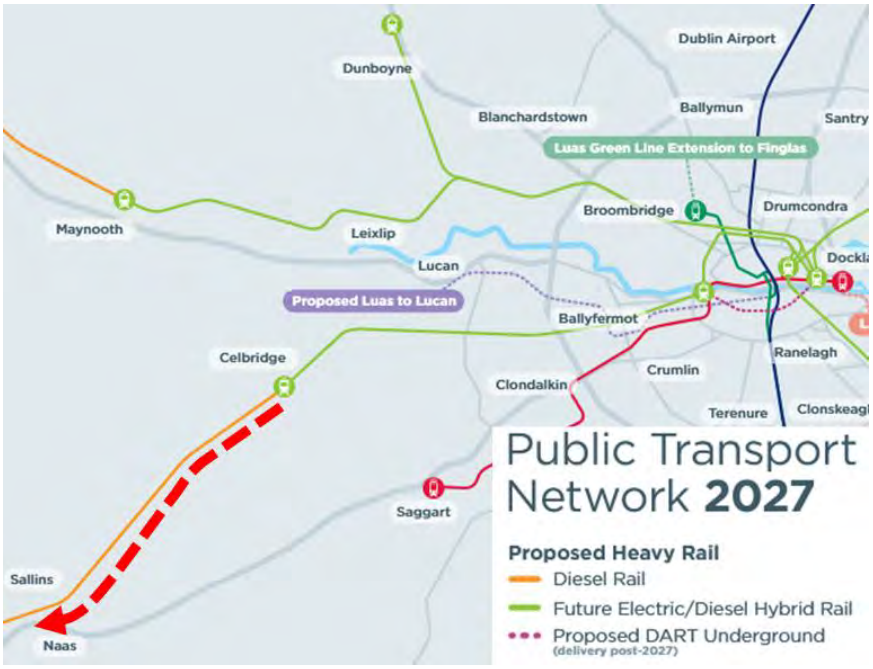


Figure 8.36 Rail Option 3: Lobby for the Extension of the DART to Sallins

Rail Option 4: Lobby for Sallins Train Station Upgrade with Lifts, Passenger Shelters and Cycle Parking

At present, Sallins train station does not have lifts to allow access by wheelchairs, people with limited mobility or prams. Instead, a long wheelchair ramp is provided to allow users to transfer platforms and this arrangement is far from ideal. The wheelchair ramp at the station is shown in Figure 8.37. In addition to access issues, there is also insufficient cycle parking or passenger shelters at the station.

Figure 8.37 Existing Wheelchair Ramp Infrastructure at Sallins Station

This option proposes that the Council will lobby for the train station to be upgraded to best practice standards with the construction of lifts to access all platforms, additional shelters for passengers and extensive sheltered cycle parking to encourage trips by bike.

Rail Option 5: Lobby for Ten Minute Peak Frequencies on Rail Commuter Services

This option proposes that the Council should lobby for the frequency of heavy rail commuter services to be increased to ensure a 10 minute frequency inbound to Dublin during the 6.30am – 9am morning peak, and outbound from Dublin during the 4.30pm – 7pm evening peak. Peak rail services at Sallins are relatively frequent, but the frequency can vary from under ten minutes to over half an hour, this can be observed in Figure 8.38. In the main, increased frequencies could be achieved by extending the commuter services which currently terminate at Celbridge, to serve Sallins, or by introducing a Sallins stop on inter-city train services.

		2 Not on Fri	2 Fri Only	2 Mon to Sat	2 Mon to Fri	2 Mon to Sat	2 Mon to Fri	2 Mon to Sat	2 Mon to Sat	2 Mon to Fri	1 2 Mon to Sat	2 Mon to Fri	2 Mon to Fri	2 Mon to Sat	2 Mon to Sat
DUBLIN Heuston ⓑⓛⓐ	Dep	17.10	17.10	17.25	From GCD	17.30	From GCD	17.32	17.35	From GCD	18.00	18.05	From GCD	18.25	18.30
Park West & Cherry Orchard	Dep	..	..	..	17.15	..	17.31	17.39	..	18.03	..	18.12	18.32	18.36	..
Clondalkin Fonthill	Dep	....	....	....	17.19	....	17.35	17.43	....	18.07	....	18.16	18.36	18.40	....
Adamstown	Dep	..	..	..	17.24	..	17.40	17.48	..	18.12	..	18.21	18.41	18.46	..
Hazelhatch & Celbridge	Arr	....	....	....	17.28	....	17.47	17.53	....	18.17	....	18.26	18.47	18.51	....
Sallins & Naas	Dep	..	..	..	17.37	17.47	..	18.01	17.52	18.25	..	18.37	..	18.59	..

Figure 8.38 Example of PM Peak Timetable for Trips to Naas from Dublin

Rail Option 6: Lobby for a Third Platform to Increase Station Capacity

To the north of the tracks at Sallins train station there is the remains of an old railway siding which has been partially deconstructed. This option proposes reinstating the track at this location and extending it to create a third platform to increase station capacity (Figure 8.39). This would allow for commuter trains to use this platform as a terminus without blocking inter-city train services on the mainline. The third platform is intended as a supporting option for the extension of the DART to Sallins to allow for inter-city and DART commuter services to operate in parallel.

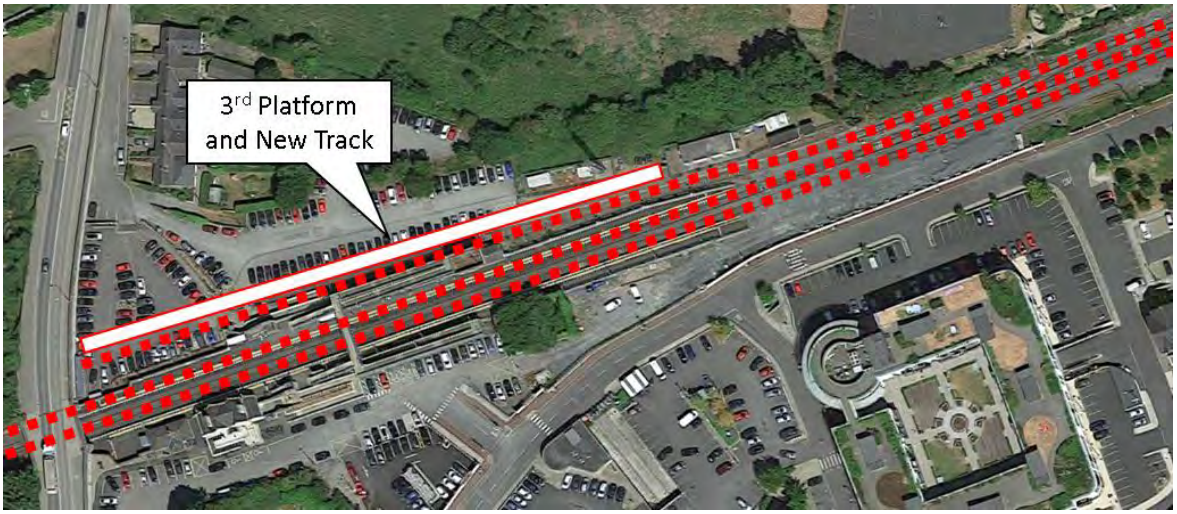


Figure 8.39 Rail Option 6: Create Third Station Platform

8.6.2 Rail Options Assessment

The rail options are assessed according to the six CAF criteria in the MCA shown in Table 8.8. This table summarises the impact of each option according to the assessment criteria. The assessment considers the relative merit of each option according to the seven-point scale presented in Table 8.7.

Table 8.7 MCA Colour Coded Ranking Scale

Colour	Description
	Major or highly positive
	Moderately positive
	Minor or slightly positive
	Not significant or neutral
	Minor or slightly negative
	Moderately negative
	Major or highly negative

Table 8.8 Multi Criteria Analysis of Rail Options

Option	Economy	Safety	Environment	Access & Social Inclusion	Integration	Physical Activity	Combined Assessment Outcome	Summary Justification
Option 1: Relocate Station to the West								Relocating the station to the west would remove most of the residential areas of Sallins from the 1km walking catchment. This would have a detrimental impact on accessibility/social inclusion, integration of land-use-transport policy and the environment as car use would rise. The loss of greenfield habitat to build the station and the park and ride facility would be a further negative environmental impact. This option would incur significant investment costs, which would be compounded by reduced fare revenue as patronage falls. The station would be outside the walking distance of many Sallins residents and this would reduce physical activity.
Option 2: Second Station with P&R to the West								A second station to the west would be expensive to develop, but the additional passengers produced by a dedicated park and ride facility would offset some of these costs. Mode transfer from cars on the M7 would produce a slight safety benefit and reduce emissions. A large park and ride facility and station built on a greenfield site would negatively affect the environment and cause habitat loss. A second station would improve rail accessibility which would benefit M7 commuters and nearby the village of Caragh. Making use of the Sallins bypass would aid integration and allow for the existing train station car park in Sallins to be used for development. The new station would encourage cycling trips from nearby Caragh village to access rail services if infrastructure to support active modes is constructed, such as footpaths or a greenway.
Option 3: Extend DART to Sallins with Electric Quad Track								Extending the DART to Sallins from Celbridge would require significant capital investment in track infrastructure to deliver quad track lines and electrification. Mode transfer from the private car to DART would provide a modest safety benefit. While there would be loss of hedgerows and habitats to widen the rail corridor, the positive environmental benefits of mode transfer would offset many of these costs. Accessibility/social inclusion and land-use integration would be benefited by DART expansion. Improved rail services would attract more passengers, providing a modest physical activity boost.

Option 4: Upgrade Station (lifts, shelters, cycle parking)								Station upgrades would incur financial cost, but these changes are necessary to allow universal access. Eliminating the long ramps used for wheelchair/pram access would improve safety. Greater cycle parking would encourage more cycling to the station and potentially reduce driving. Accessibility and social inclusion would be improved with the implementation of lifts. This policy is integrated with other measures intended to boost rail patronage.
Option 5: Minimum 10 minute commuter rail frequency								Improving the regularity of peak rail services will involve additional operating costs which would be partly offset by the fact that there is excess demand for rail travel at present which would use the new services and generate revenue. Modest mode transfer from the private car would provide a small environmental, physical activity and safety benefit. Improved rail frequency would enhance accessibility to/from Sallins and aid transfer from local bus services through greater integration.
Option 6: Create 3rd Rail Platform to Increase Capacity								Construction of a third rail platform would be expensive and only necessary if there is a significant increase in the number of train services e.g. DART expansion. As construction would be on an existing car park, there would be no negative environmental impact. Accessibility and integration with other infrastructure would be enhanced if the scheme is linked with DART expansion to Sallins.

8.6.3 Preferred Rail Measures

The MCA clearly discounts Option 1, the relocation of Sallins station to the west, as a detrimental measure which would increase car use in the local area and primarily benefit residents from outside the study area. Instead, the following rail interventions have been selected for inclusion in the strategy as short term measures, to be lobbied for by the Council, to enhance rail services:

- Option 4: Lobby for Upgraded Station (lifts, shelters, cycle parking)
- Option 5: Lobby for Minimum 10 minute peak commuter rail frequency

In advance of the DART expansion and additional trains services, if they are successfully lobbied for; Option 6: Construction of a third platform at Sallins, is recommended for the medium term. Subject to further study, the following options have been selected as long term rail measures:

- Option 2: Lobby for Second Station with park & ride to the West
- Option 3: Lobby for Extension of DART to Sallins with Electric Quad Track

The DART extension will require the construction of the 3rd platform at Sallins to provide sufficient rail capacity to avoid interrupting inter-city trains. Option 2, the creation of a second station to the west, is regarded as an ambitious target which would free up the car park spaces near Sallins Station for rail-centric development and the densification of Sallins village.

9 ROAD TRANSPORT MEASURES

9. Road Transport Measures

9.1 Overview

A key objective of the Naas/Sallins Transport Strategy is to reduce car dependency in Naas through improvements in public transport services and walking/cycling facilities throughout the town. To create the required capacity for new or improved public transport and waking/cycling facilities, most notably in the town centre, several road measures are required.

9.2 Road Objectives

The following five road objectives were defined at the outset of the transport strategy and have been used to guide the identification of roads options and their assessment:

1. Reduce unnecessary vehicular trips through Naas town centre and Sallins village centre.
2. Mitigation measures to improve road safety and eliminate collision hotspots.
3. Reduce vehicular emissions in town centre by promoting mode transfer to sustainable travel modes.
4. Identify missing links, future capacity requirements and congestion bottlenecks in order to provide recommendations on future road schemes.
5. Review existing plans and designs for roads proposals in the Naas area to ensure that they are still relevant in the context of DMURS and the overall transport strategy goal of sustainability.

9.3 Traffic Modelling

As discussed in Section 6.2, a strategic traffic model of Naas and its surrounding road network, which is referred to as the Naas Local Area Model (LAM) was developed to assess road options and to inform the transport strategy. The extents of the Naas LAM are illustrated in Figure 9.1.

Figure 9.1 Naas Local Area Model Extents

AM (08:00 – 09:00) and PM (17:00 – 18:00) peak hour models were developed for 2018 utilising the TII National Transport Model as a donor model and extensive local traffic survey data. The base year

models were developed, calibrated and validated in accordance with the Transport Infrastructure Ireland (TII) Project Appraisal Guidelines (PAG) Unit 5.2 – Construction of Transport Models.

Future year models (2023 and 2030) were developed in conjunction with Kildare County Council's Planning Section based on projected land uses and population/employment projections for each traffic model zone. The future year assessments are based on the full build out of an conceptual land-use zoning map, provided by the KCC Planning Department for the purposes of the transport strategy.

Figure 9.2 shows the zone structure for the Naas LAM. Full details of the development, calibration, validation and future year forecasting for the Naas LAM are provide in the Naas LAM Traffic Modelling Report which is provided as Appendix B.

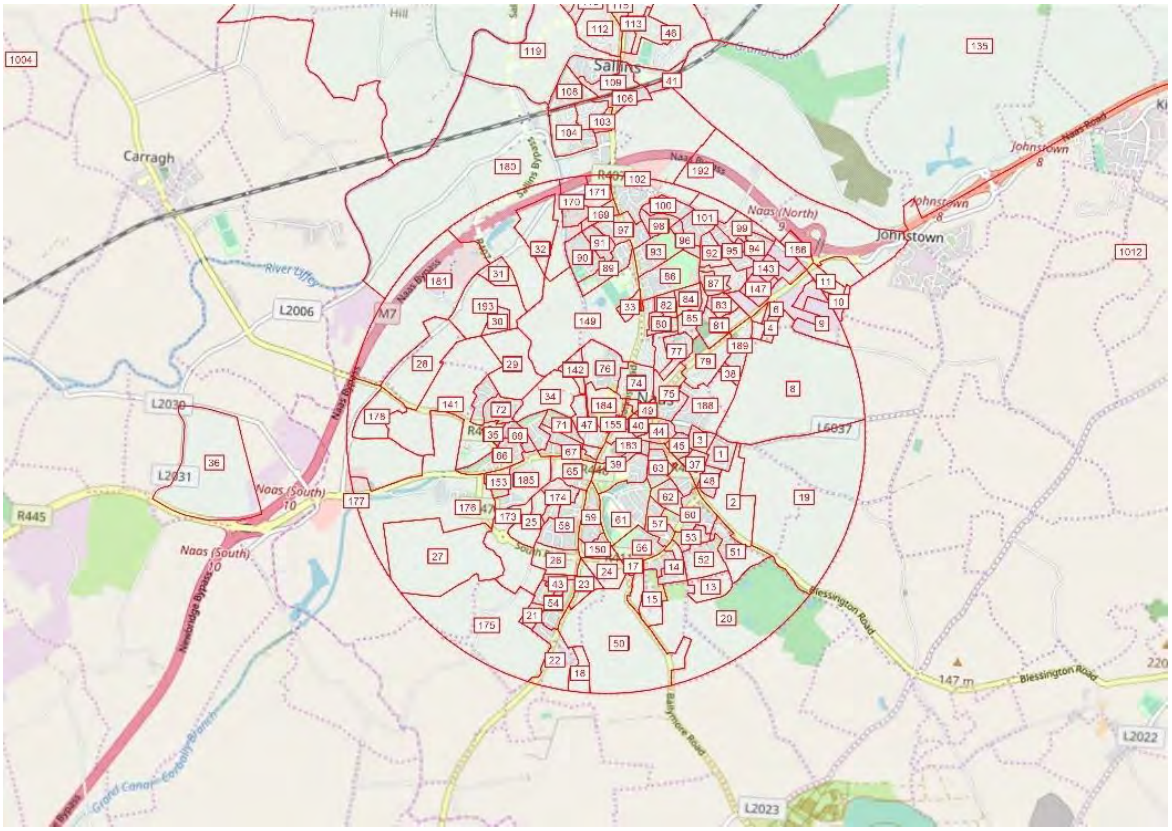


Figure 9.2 Naas Local Area Model Zone Structure

9.4 Road Options

The options considered, which seek to reduce traffic levels and improve the overall management of traffic in the town centre are described in the following sections before a Multi Criteria Analysis is undertaken to identify the preferred measures for inclusion in the transport strategy.

A total of 8 road interventions were identified and assessed for their suitability to meet the objectives of the strategy. The location of options 1-7 is illustrated in Figure 9.3. The options are as follows:

- Option 1 – The Gallops Avenue
- Option 1 (Alt) – The Gallops Avenue (Alternative Route)
- Option 2 – Upgrade of Murtagh's Corner Junction
- Option 3 – Millbridge Street (Indicative Route)
- Option 4 – Roadway Linking Aldi Distribution Centre to Millennium Park Road
- Option 5 – Northwest Quadrant Link Street

- Option 6 – Outer Orbital Route
- Option 7 – Town Centre HGV Restrictions

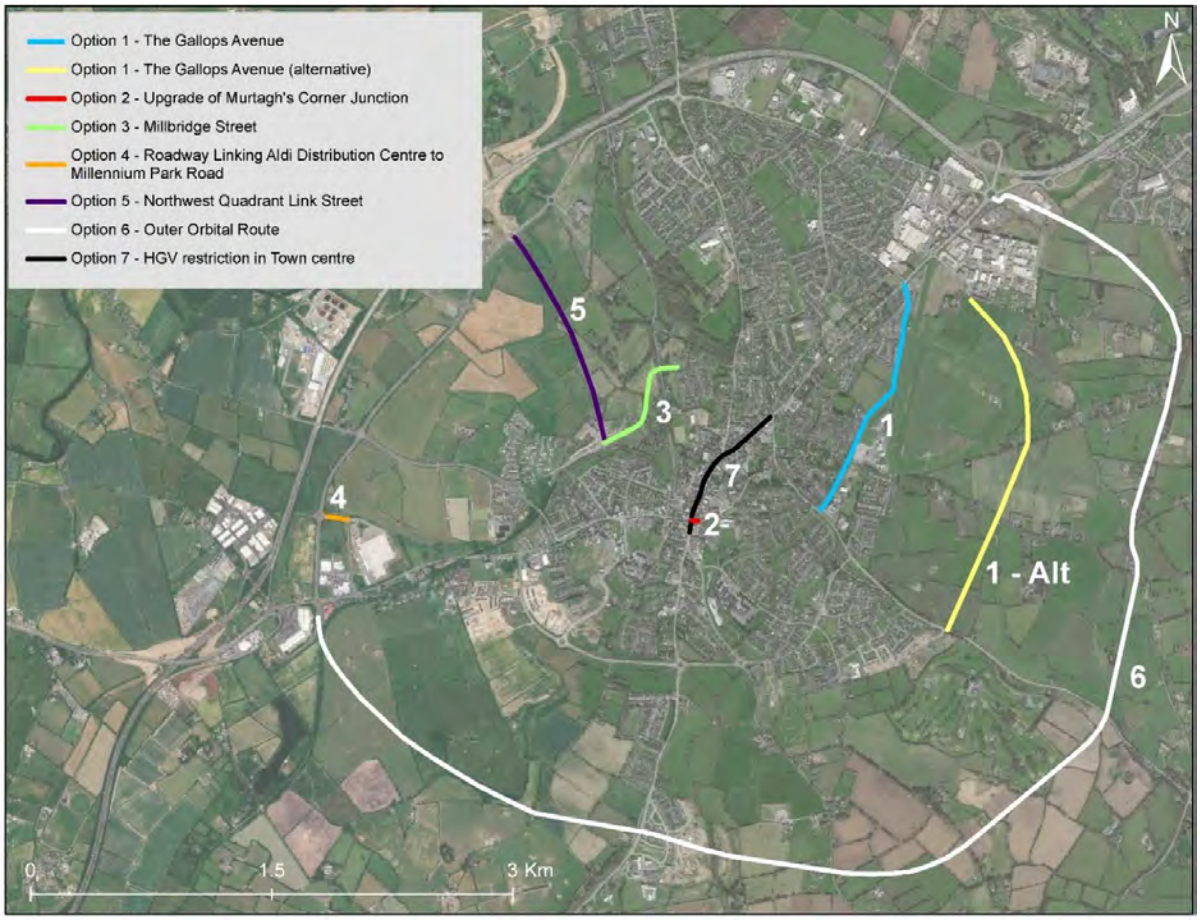


Figure 9.3 Road Options

In addition to the options shown in Figure 9.3, there is an additional Option 8: 'Upgrade Signalised Junctions to MOVA or SCOOT as Appropriate', which is not shown on the map as the junctions to be upgraded have not yet been determined.

9.4.1 Road Option Description

Road Option 1: The Gallops Avenue

The Gallops Avenue is a proposed route connecting the R410 Blessington Road to the R445 Dublin Road with the objective of alleviating congestion on the R445 Dublin Road, R410 Blessington Road and R445 Main Street. Reducing traffic on the R445 Dublin Road and Main Street would facilitate the implementation of the bus route, walking/cycling measures and public realm proposals identified previously. This route is based on the Part 8 planning application for the Naas Inner Relief Road which was not approved by councillors in the Naas Municipal District (17th June 2019). It is proposed that this corridor would be reimagined and redesigned to act as an eastern street connection which facilities increased permeability for pedestrians and cyclists as well as drivers.

Figure 9.4 shows the traffic reassignment impacts (i.e. the re-routing of traffic) as a result of this proposal in the 2023 AM Peak Naas LAM. The figure shows a reduction in traffic (reduction in traffic is shown in blue) on the R445 Dublin Road, R410 Blessington Road and R445 Main Street as traffic re-routes to the proposed scheme (increase in traffic shown in red).

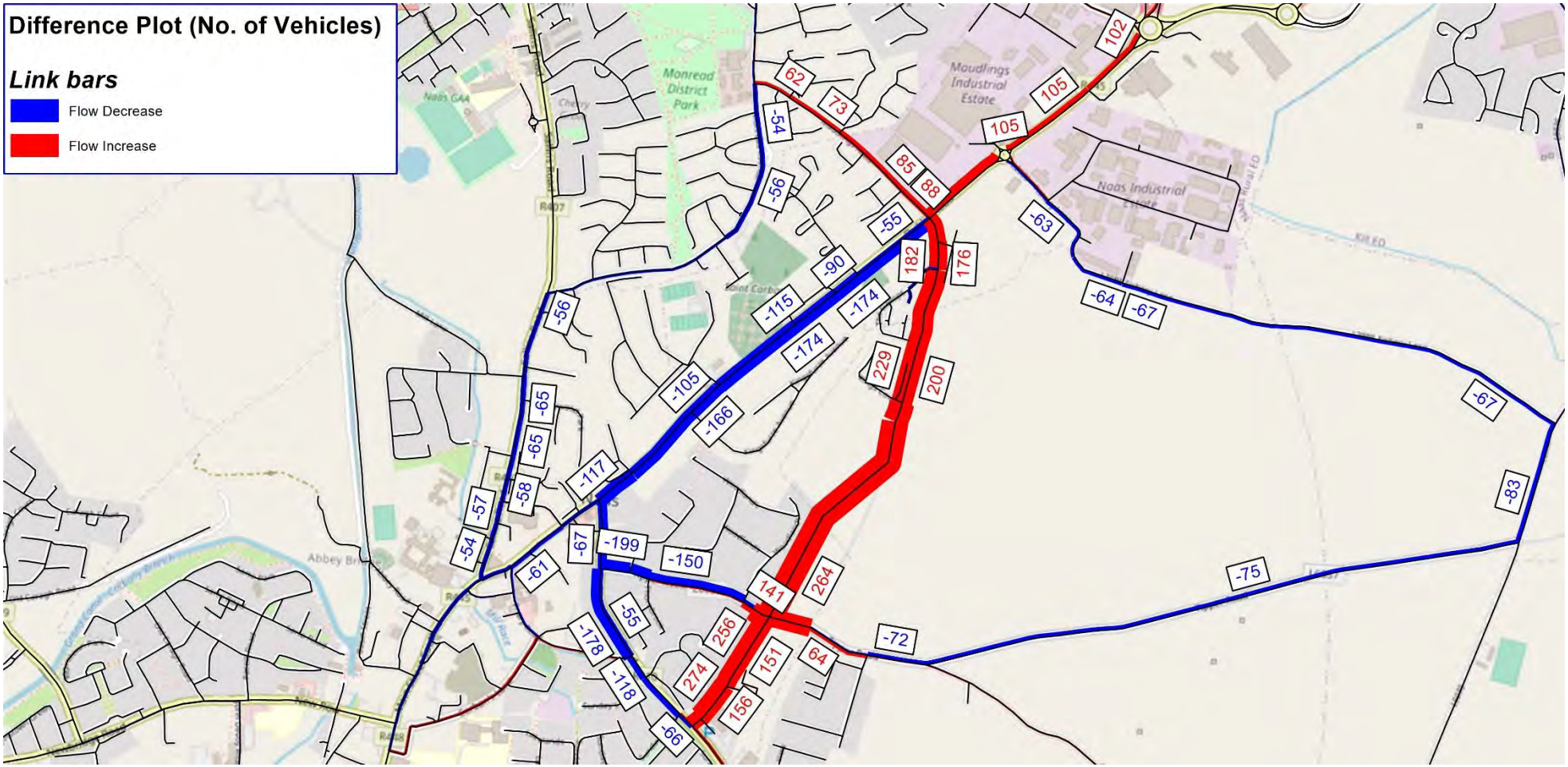


Figure 9.4 Option 1 - 2023 AM Traffic Reassignment Impacts

Option 1(Alt): The Gallops Avenue (Alternative Route)

In addition to the preferred option which was selected for The Gallops Avenue (i.e. Option 1 above), an alternative option on a corridor located to the east of Naas Racecourse was also assessed.

The traffic reassignment impacts of this proposal in the 2023 AM Peak Naas LAM are illustrated in Figure 9.5. The figure shows a reduction in traffic on the R445 Dublin Road, R410 Blessington Road and R445 Main Street, however the scale of benefits when compared to Option 1 are considerably lower. In the 2023 AM peak scenario the reduction in traffic on the Dublin Road is 14.9% in Option 1 compared to 5.0% in Option (Alt), while in 2023 PM the reduction is 28.1% compared to 19.3%.

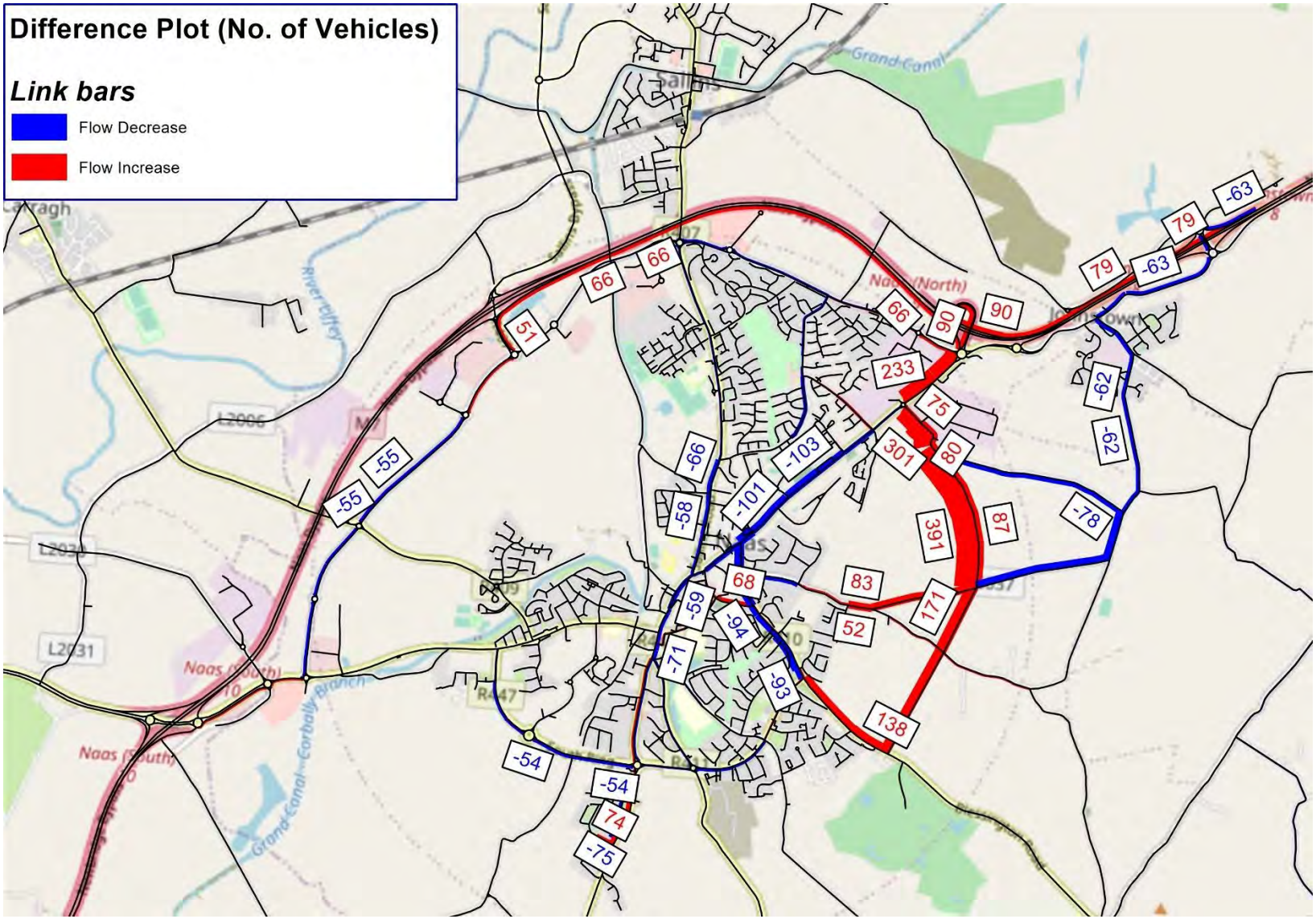


Figure 9.5 Option 1 (Alt) - 2023 AM Traffic Reassignment Impacts

Option 2: Upgrade of Murtagh's Corner Junction

Murtagh's Corner currently operates as a 3-arm junction and under this option it would be upgraded to create a 4-arm junction linking Corban's Lane to Main Street as illustrated in Figure 9.6. The proposal would aim to lead to a reduction in traffic on the Main Street. As part of this proposal Corban's Lane would also need to be upgraded to cater for an increase in traffic.

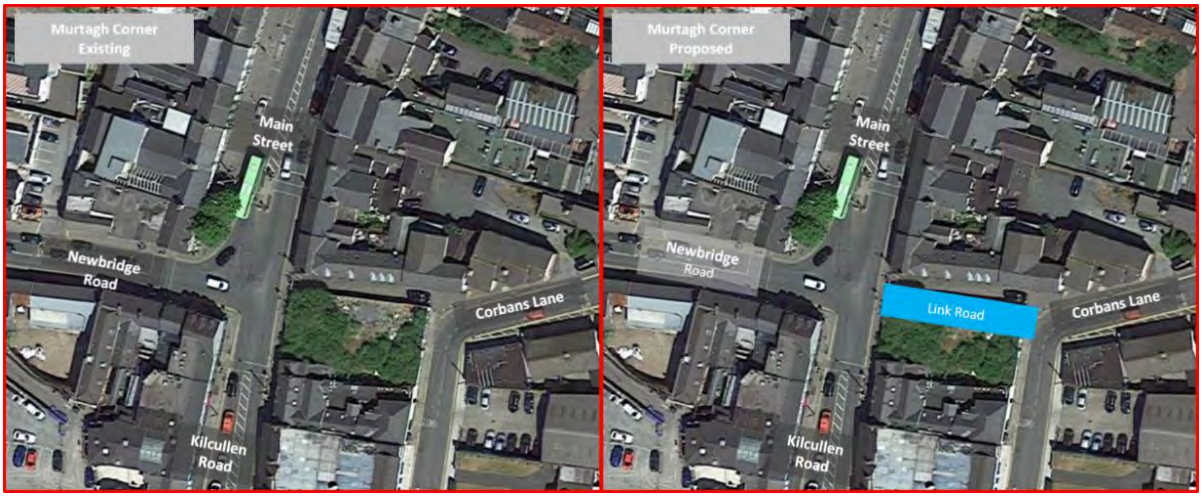


Figure 9.6 Murtagh's Corner Upgrade

The impact of this proposal is illustrated graphically in the 2023 AM Peak Naas LAM in Figure 9.7. The figure shows a reduction in traffic on the R445 Main Street between Murtagh's Corner and the R445 Dublin Road and Friary Road Junction and a subsequent increase in traffic on Corban's Lane and Friary Road.

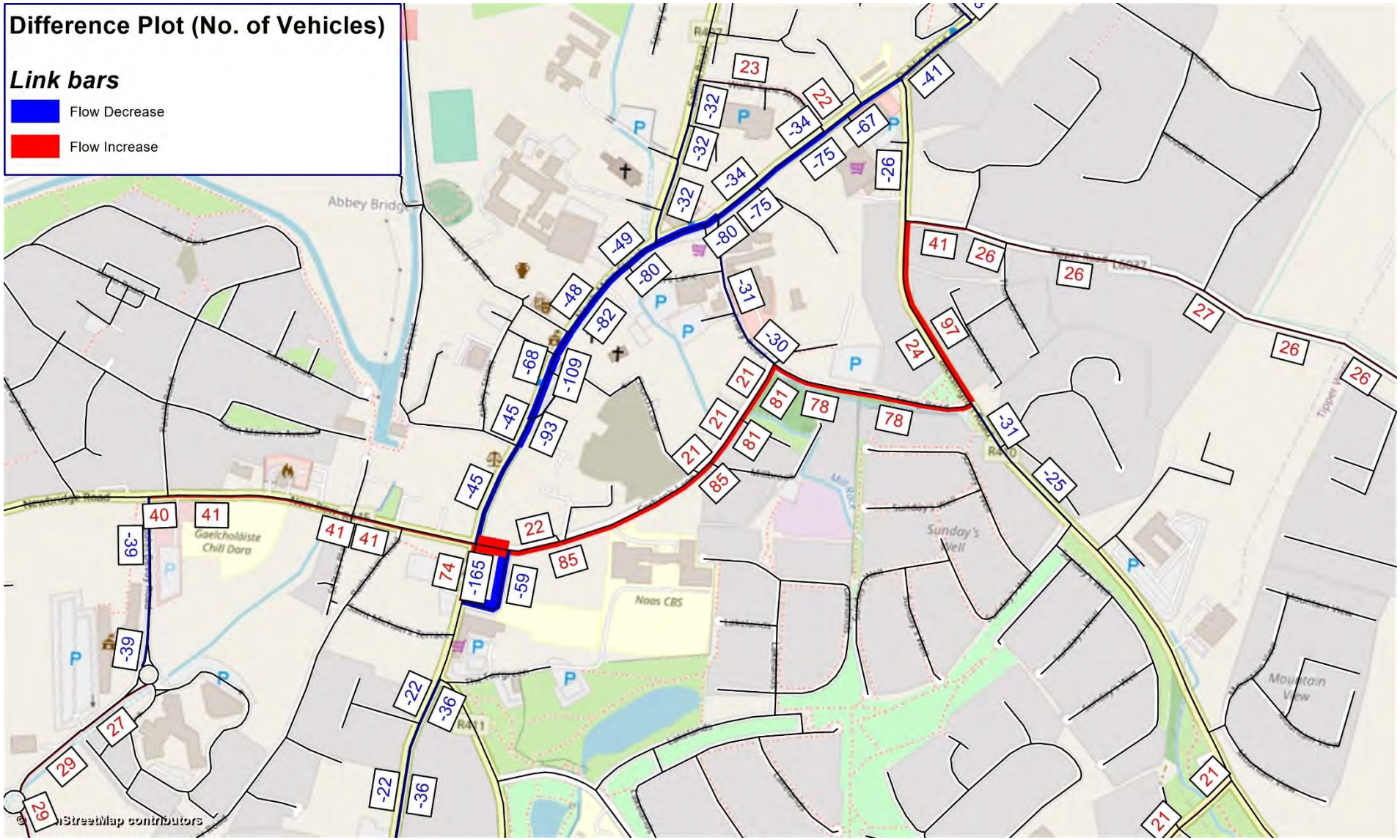


Figure 9.7 Option 2 Murtagh's Corner - 2023 AM Traffic Reassignment Impacts

Option 3: Millbridge Street – Indicative Route

Millbridge Street is a proposed option to connect the Old Caragh Road to Millbridge Way. This option will provide greater access between the R409 Caragh Road and the R407 Sallins Road and will require a crossing of the canal. The primary purpose of this option is to provide local access to the lands to the west of the canal. This road is intended for public transport, walking and cycling usage, while its suitability to carry private vehicle traffic will be examined during detailed design. An indicative alignment of the proposal is illustrated in Figure 9.8.

Figure 9.8 Millbridge Street (Indicative Alignment)

The traffic reassignment impacts of this proposal are illustrated in the 2023 AM Peak Naas LAM in Figure 9.9. The figure shows a reduction along the Millennium Park Road, R407 Sallins Road and the R445 Main Street, as traffic between Caragh and Naas now has a direct connection to the Sallins Road.

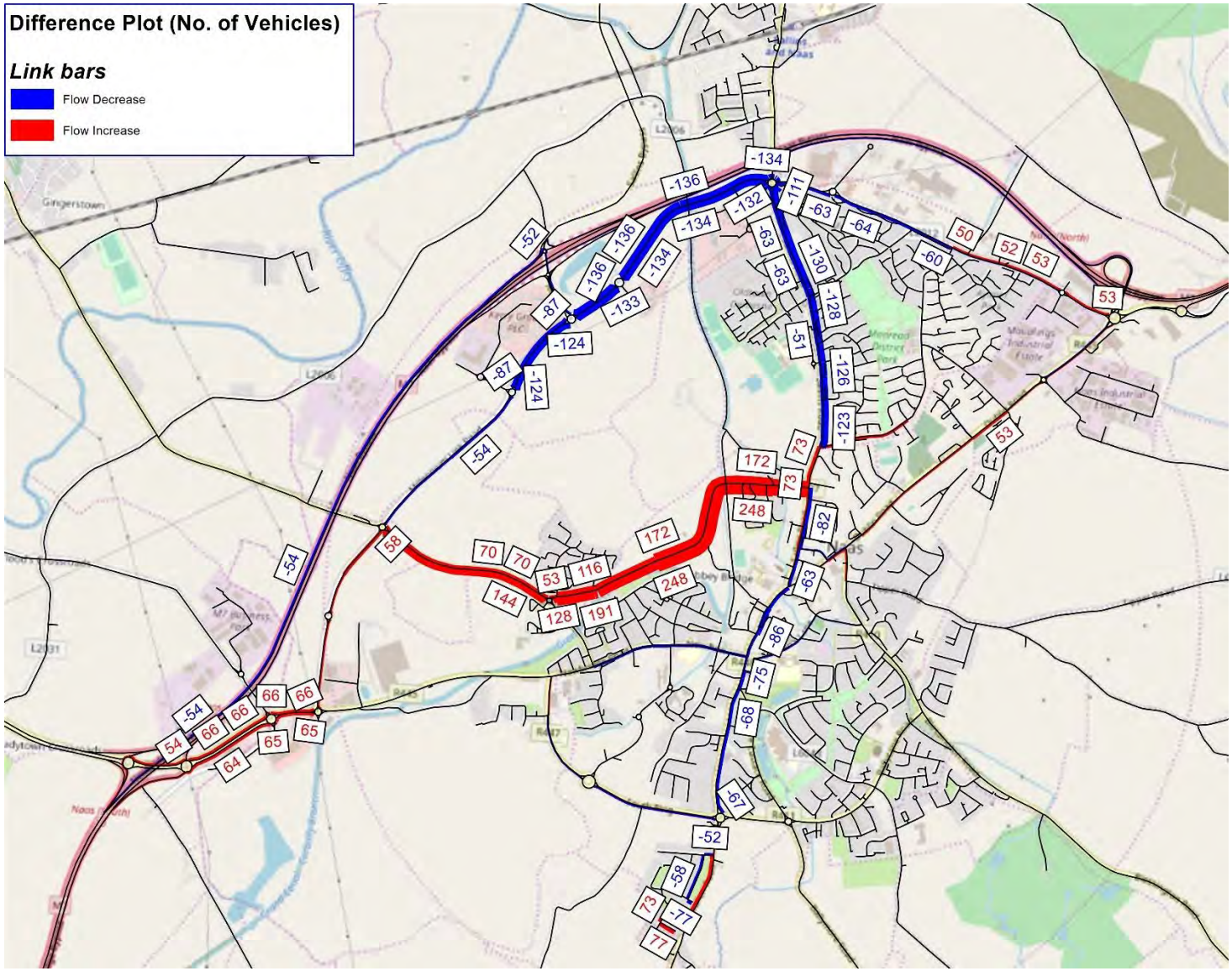


Figure 9.9 Option 3 Millbridge Street - 2023 AM Traffic Reassignment Impacts

Option 4: Roadway Linking Aldi Distribution Centre to Millennium Park Road

This option proposes a new short link from the Aldi Distribution Centre to the existing roundabout on the Millennium Park Road as illustrated in Figure 9.10. The objective of this option is to provide safer access for HGVs onto the road network as currently HGVs have difficulty turning on to the R445 Newbridge Road most notably during peak times.

Figure 9.10 Roadway Linking Aldi Distribution Centre to Millennium Park Road

Option 5: Northwest Quadrant Link Street

This is a strategic route linking Naas to the M7 and Sallins (via the Sallins Bypass) serving existing urban areas and the potential employment/residential development identified in the RSES for the Northwest Quadrant. As previously discussed under the public transport section, it is envisaged that this link would be a bus-only link (with pedestrian/cycle facilities), however it has also been assessed as a roads option to understand its impact in Figure 9.11.

In terms of traffic reassignment this option would only take traffic off the Caragh Road and Millennium Park Road but would have very little to impact on all other key roads in the network, meaning that this option should only be retained as a public transport option.

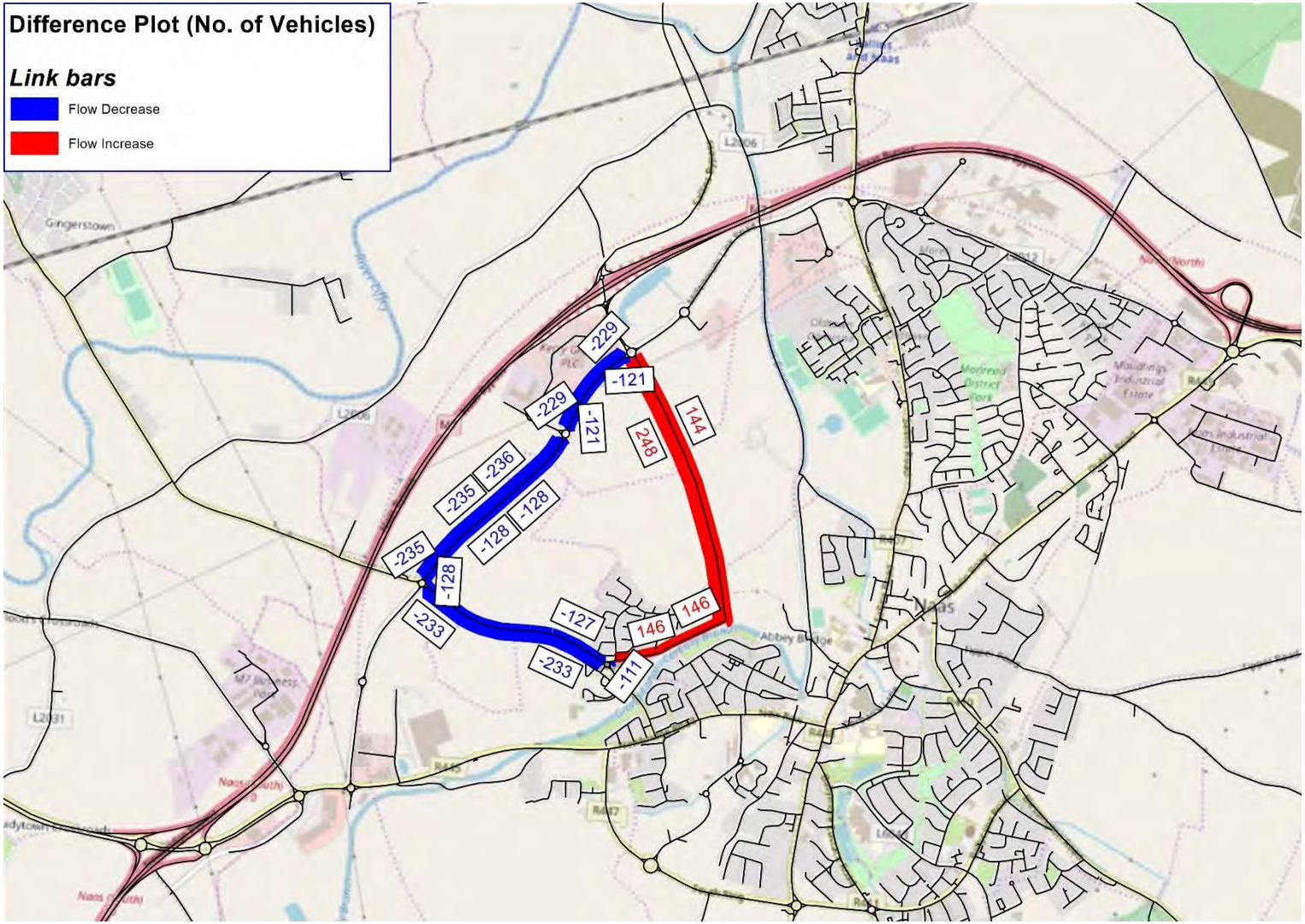


Figure 9.11 Option 5 North West Quadrant Link – 2023 AM Traffic Reassignment Impacts

Option 6: Outer Orbital Route

An indicative Outer Orbital Route as illustrated in Figure 9.12 has been assessed which would start at the Newbridge Road Roundabout on the R445 Newbridge Road and finish at the R445 Dublin Road at the Maudlins Roundabout. This route would be an outer ring and would link with the R448 Kilcullen Road, R411 Ballymore Road and the R410 Blessington Road along with other local roads.

Figure 9.12 shows the traffic reassignment impacts of the proposal and illustrates that the corridor would have limited impact on the town centre but would reduce traffic on the Naas Southern Ring Road and also draw traffic in from a number of local roads.

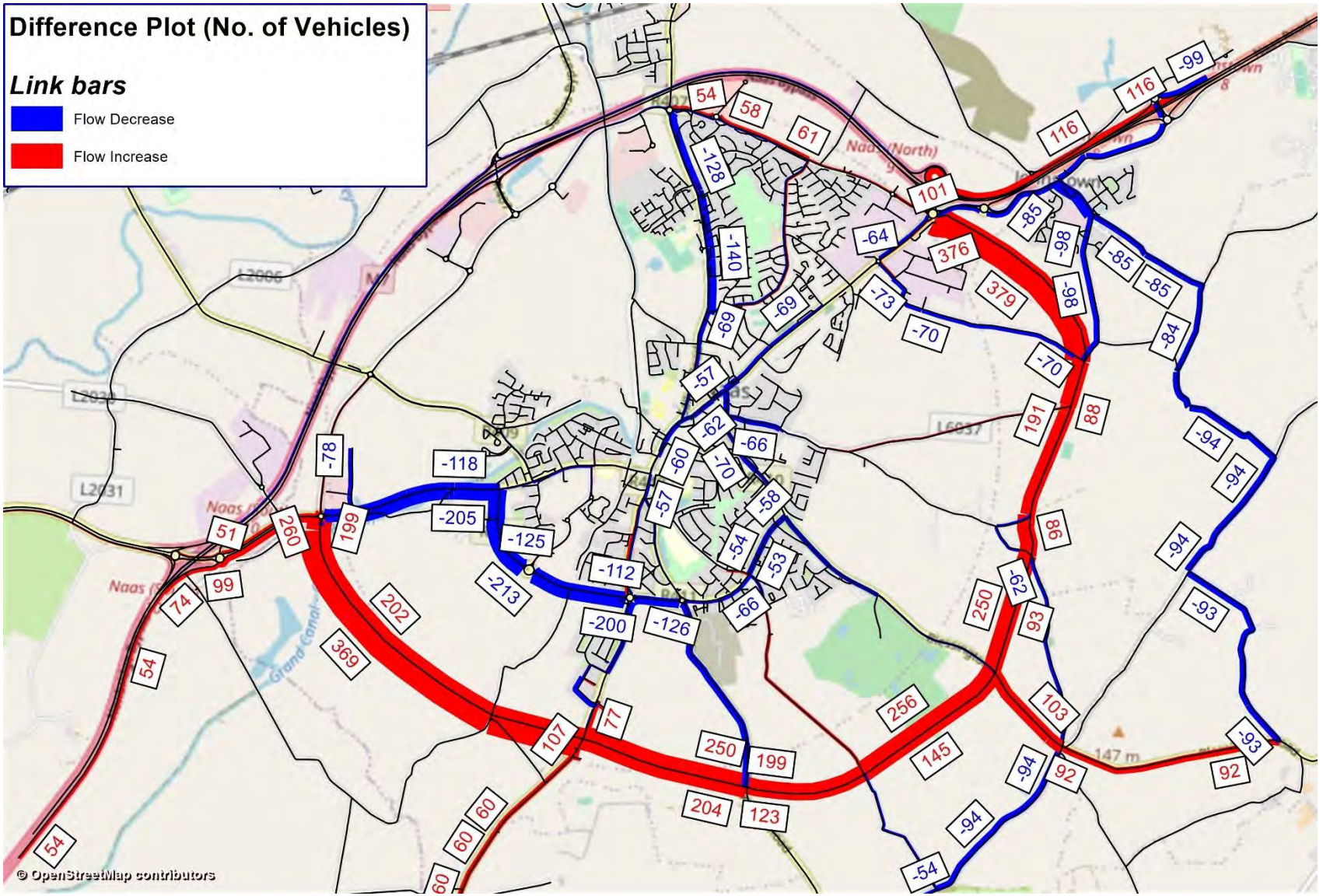


Figure 9.12 Option 6 Outer Orbital Route - 2023 AM Traffic Reassignment Impacts

Option 7: Town Centre HGV Restrictions

While not an infrastructure option, a town centre restriction on HGV through trips was assessed on the R445 Main Street. The restrictions would extend from Murtagh's Corner to the R410 Blessington Road junction, meaning that HGVs would have to use the R410 Blessington Road and Naas Southern Ring Road or the Millennium Park Road as alternative routes. Access for HGVs with deliveries in the town centre (via a permit) would be maintained but would be restricted to specific times of the day.

Figure 9.13 illustrates the impact of the Town Centre HGV Restrictions in the 2023 AM Peak scenario. The figure shows a reduction in HGV traffic through the town centre and an increase in traffic on the Naas Southern Ring Road and Millennium Park Road.

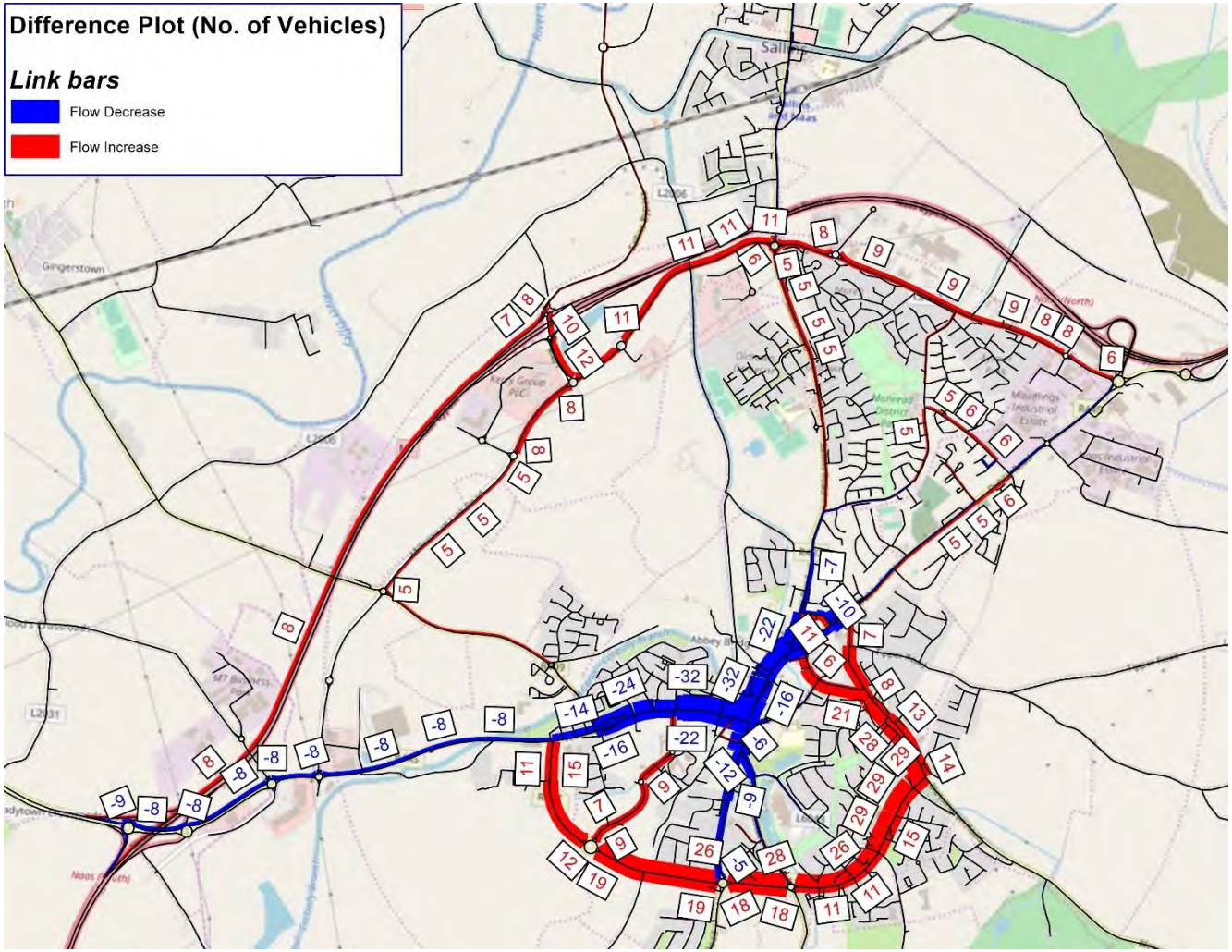


Figure 9.13 Option 7 Town Centre HGV Restrictions - 2023 AM Traffic Reassignment Impacts

Option 8: Upgrade Signalised Junctions to MOVA or SCOOT as Appropriate

This option would upgrade signalised junctions to MOVA or SCOOT as appropriate to improve traffic flow and improve the safety of pedestrians, cyclists and vulnerable road users through the implementation of Intelligent Transport Solutions technology. This option has not been assessed in the transport model.

9.5 Roads Option Assessment

The roads options are assessed according to the six CAF criteria in the MCA shown in Table 9.2 against the road's objectives. This table summarises the impact of each option according to the assessment criteria. The assessment considers the relative merit of each option according to the seven-point scale presented in Table 9.1.

Table 9.1 MCA Colour Coded Ranking Scale

Colour	Description
	Major or highly positive
	Moderately positive
	Minor or slightly positive
	Not significant or neutral
	Minor or slightly negative
	Moderately negative
	Major or highly negative

Table 9.2 Multi-Criteria Analysis of Road Options

Option	Economy	Safety	Environment	Access & Social Inclusion	Integration	Physical Activity	Combined Assessment Outcome	Summary
Option 1: The Gallops Avenue								The Gallops Avenue scores positively in terms of economy, integration and physical activity by providing relief of congestion on Main Street and the R455 Dublin Road. Vehicles travelling between the R445 Dublin Road the R448 Kilcullen Road can now bypass the town centre by taking the Southern Ring Road and the new road link.
Option 1 (Alt): The Gallops Avenue (Alternative)								The Alternative Option for The Gallops Avenue will provide some benefits, but not to the same extent as Option 1 (Gallops Avenue). Significantly, its impact in relieving congestion on the Dublin Road (R445) corridor is only half that of Option 1 (Gallops Avenue).
Option 2: Murtagh's Corner Junction								Upgrading the junction at Murtagh's Corner will provide positive benefits to the town centre by providing greater access to East-West traffic. The proposal would reduce town centre traffic which would facilitate the proposed public transport and walking/cycling measures.
Option 3: Millbridge Street								Millbridge Street performs quite well in relation to the road's objectives of the strategy. The route can provide greater east-west accessibility for the town and can promote walking and cycling between the residential areas that it connects.
Option 4: Aldi Distribution Centre Link								The Aldi Distribution Centre Link to Millennium Park Road will deliver safety benefits primarily. HGVs will no longer find difficulty in accessing the local road network and have a safer option to get to and from the distribution centre.

Option	Economy	Safety	Environment	Access & Social Inclusion	Integration	Physical Activity	Combined Assessment Outcome	Summary
Option 5: North West Quadrant Link								Providing the Northwest Quadrant Link Street as a road would not meet the objectives of the strategy. Although its design could incorporate walking and cycling facilities, it has the potential to increase car based trips which would lead to further congestion. It would also have limited impact on Naas town centre. As such, the option does not provide many traffic benefits, its key benefit would be as a public transport-only street, providing an improved linkage to Sallins Train Station and the N7.
Option 6: Outer Orbital Route								An Outer Orbital Route would lead to a reduction in traffic on a number of peripheral routes in Naas but would have limited impact on town centre traffic. The additional capacity created by the route may lead to an increase in car based trips which in turn may lead to an increase in emissions. The cost of constructing this option would be substantial and would not be warranted at this time.
Option 7: Town Centre HGV Restrictions								HGV restrictions in the town centre would provide numerous benefits in terms of safety, accessibility & social inclusion and physical activity. HGVs will have to re-route around the Naas Southern Ring Road and Millennium Park Road which may lead to a net increase in emissions but the benefits for the town centre from a health perspective would outweigh this impact. On Main Street there will be a reduction of approximately 50 HGVs (i.e. nearly 1 HGV per minute) during the AM peak.
Option 8: Upgrade Signalised Junctions to MOVA or SCOOT as Appropriate								Upgrading to MOVA/SCOOT would involve some financial cost but it would improve safety and the appeal of physical activity for vulnerable road users. The primary benefits would be in respect to integration as technology improvements would allow for effective utilisation of existing road infrastructure and improve traffic flow/safety.

9.5.1 Option 1 Vs. Option 1 Alternative

Although both Option 1 and Option 1 Alternative provide benefits in terms of reduced traffic, Option 1 has the most beneficial impact on the R445 Dublin Road, R410 Blessington Road and R445 Main Street in terms of reducing traffic. In particular on the Dublin Road, Option 1 reduces 13-14% more traffic than Option 1 Alternative which is the overall goal of this option, therefore Option 1 Alternative has been excluded from further assessment.

9.5.2 Combined Road Options

Each of the road options were assessed in isolation in both the 2023 and 2030 future year models. In addition, a number of road options were combined to assess their cumulative impacts, the following combinations were assessed:

- Options 1 – 7
- Options 1 & 2 (The Gallops Avenue and Murtagh's Corner Upgrade)
- Options 1, 2 & 3 (The Gallops Avenue, Murtagh's Corner Upgrade and Millbridge Street)

9.5.3 Impact of Road Options on Town Centre Traffic Levels

Two core objectives in relation to the road's strategy are to remove unnecessary traffic from the town centre and to reduce emissions in the town centre. In order to compare the benefits of each option / combination of options, each was ranked in terms of the amount of traffic reduced on several key roads in the town during the AM & PM peak hours. The six roads used for this comparison are the Main Street, the R445 Dublin Road, the R407 Sallins Road, the R448 Kilcullen Road, the R445 Newbridge Road and Corban's Lane.

Table 9.3 lists all the of options and combinations and their respective ranking in relation to the reduction in traffic on the Main Street and its approach roads. Option 4 (Aldi Distribution Centre Link) has no impact on traffic flows in the town centre as it is a targeted scheme to assess a local safety issue, as such it was excluded from the assessment. In addition, Option 7 (Town Centre HGV Restriction) when considered in isolation will have a limited impact in relative terms to the other options as HGV proportions when compared to general traffic are low at present in the town centre, therefore this option was also excluded from the assessment.

Table 9.3 Ranking of Road Options & Impact on Town Centre Traffic Levels

Option	AM % Reduction	PM % Reduction	Ranking
Do-Minimum	N/A	N/A	N/A
Option 1: Gallops Avenue	-5.6%	-3.3%	5th
Option 2: MC Jn.	-1.7%	-0.8%	7th
Option 3: Millbridge Street (Indicative Route)	-5.2%	-5.5%	6th
Option 5: NWQ Link	-0.8%	-1.6%	8th
Option 6: OOR	-5.4%	-8.0%	4th
All Options	-15.1%	-17.8%	1st
Option 1 & Option 2	-7.7%	-5.6%	3rd
Option 1, Option 2 & Option 3	-11.3%	-8.9%	2nd

As expected Table 9.3 demonstrates that the combination of all options would have the most beneficial impact in reducing town centre traffic, followed by the combination of Options 1, 2, and 3.

Option 5 ranks 8th overall in the assessment and is therefore not brought forward as it does not perform well in terms of overall objectives of the strategy. However, as discussed previously, Option 5 still has much value as a public transport / cycle / pedestrian link. Option 6 performs well in terms of reducing traffic on the R445 Newbridge Road and R407 Sallins Road as illustrated in Figure 9.12, but would only have a minor impact in reducing traffic through the town centre.

9.5.4 Preferred Roads Measures

As a result of the MCA and town centre traffic reduction assessment, six of the options have been brought forward and will form part of the preferred suite of measures in the transport strategy. These are as follows:

- Option 1 – The Gallops Avenue
- Option 2 – Upgrade of Murtagh's Corner Junction
- Option 3 – Millbridge Street (Indicative Route)
- Option 4 – Roadway Linking Aldi Distribution Centre to Millennium Park Road
- Option 7 – Town Centre HGV Restrictions
- Option 8 - Upgrade Signalised Junctions to MOVA or SCOOT as Appropriate

Figure 9.14 shows the traffic reassignment impacts of the preferred suite of measures in the town centre (with the exception of Option 8 which is not modelled) and illustrates the reduction in traffic along the R445 Dublin Road, R445 Main Street, R407 Sallins Road and R410 Blessington Road. The introduction of these roads measures will help to facilitate the implementation of the various public transport, walking and cycling proposals discussed previously in the report.

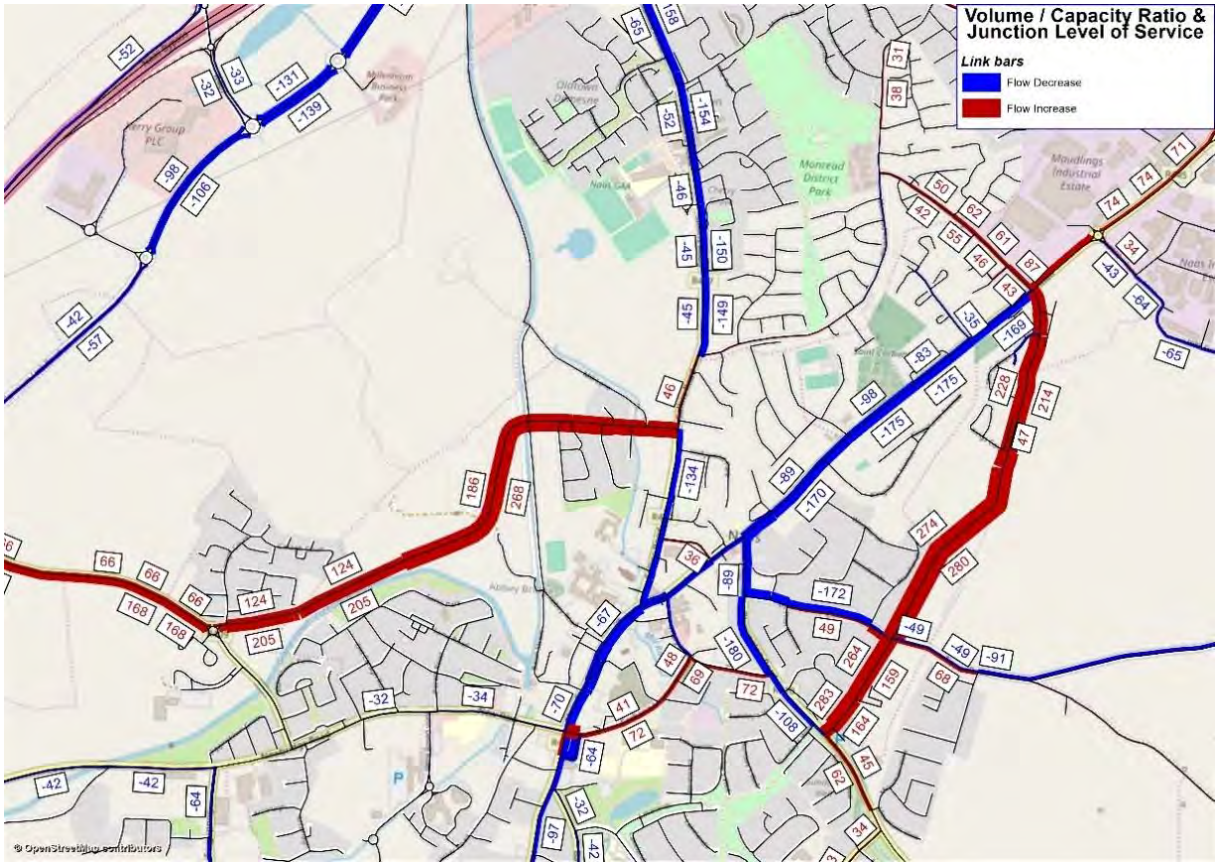


Figure 9.14 Options 1, 2 & 3 (The Gallops Avenue, Murtagh's Corner Upgrade and Millbridge Street) - 2023 AM Traffic Reassignment Impacts

9.6 Implementation

A delivery timeframe of these six options is presented in Table 9.4 and illustrated graphically in Figure 9.15 and Figure 9.16. Note: RD 6, upgrade of signalised junctions to MOVA/SCOOT is not shown on the maps.

Table 9.4 Delivery Timeframe of Road Options

				Delivery Timeframe		
Option	Measure	Type	Short Description	Short Term (1-2 Years)	Medium Term (3-5 Years)	Long Term (6-10 Years)
1	RD 1	Road	The Gallops Avenue			x
2	RD 2	Road	Upgrade of Murtagh's Corner Junction and Link Road to Corban's Lane		x	
3	RD 3	Road	Millbridge Street (Indicative Route)			x
4	RD 4	Road	Road Linking Aldi Distribution Centre and Millennium Link Road	x		
7	RD 5	Road	HGV Restriction in Town Centre	x		
8	RD 6	Road	Upgrade Signalised Junctions to MOVA or SCOOT as Appropriate	x	x	

Figure 9.15 Preferred Road Measures

Figure 9.16 Preferred Road Measures (Alternative HGV Route)

9.7 Micro-Simulation Modelling

Road measures 1, 2, and 3 were modelled using the Naas Micro-Simulation model to assess their performance and impact both on the wider road network and on the local area they serve. Each measure was compared against the 2023 AM Peak Do-Minimum scenario and assessed against the following:

1. Network Statistics – Performance/impact of the measure across the entire modelled road network.
2. Changes in Vehicle Flow – Change in the number of vehicles passing a specific data collection point in the network (i.e. increase/decrease in flow as a results of the toad measure).
3. Change in Queue Length – Change in the queue lengths (in meters) through various junctions located throughout the modelled road network.

Full details of the Naas Micro-Simulation model and its development are presented in Appendix C of this report.

9.7.1 Network Statistics

The performance of each of the 3 measures relative to the 2023 Do-Minimum scenario is provided in Table 9.5. The results relate to the performance of the measure in respect to the entire modelled road network in VISSIM. All proposed measures show a reduction in average delays per vehicle, with Measure 1 (Gallops Avenue) providing the largest benefit across the entire modelled road network.

In relation to average speeds, all measures show an increase over the 2023 Do-Minimum scenario with Measure 1 once again generating the largest increase. Measures 1, 2 and 3 all lead to an overall increase in distance travelled as vehicles reroute to access the new road links.

Table 9.5 2023 AM Peak Network Statistics (Do-Minimum and Road Measures 1, 2 and 3)

Network Statistics	2023 Do-Minimum	2023 Measure 1 (Gallops Avenue)		2023 Measure 2 (Murtagh's Corner)		2023 Measure 3 (Millbridge Street)	
Average Delay Per Vehicle (sec)	198.7	152.0	-24%	189.9	-4%	174.1	-12%
Average Stops per Vehicle	5.0	3.7	-26%	5.0	-1%	4.8	-5%
Average Speed of Vehicle (km/hr)	15,9	19.1	20%	16.5	3%	17.6	10%
Total Distance Travelled (km)	9924	10397	5%	9455	1%	10320	4%

9.7.2 Change in Vehicle Flow

The change in vehicle flow between the 2023 AM Do-Minimum and Measures 1, 2 and 3 was assessed at 38 different locations throughout the modelled road network. The purpose of the assessment was to understand the potential re-routing impacts of the measures across the modelled study area. The 38 locations which are illustrated in Figure 9.17 are as follows:

1. Sallins Road (Southbound)
2. Wolfe Tone Street (Eastbound Left Turn Lane)
3. Blessington Road (Southbound)
4. Friary Road (Southbound)
5. North Main Street (Southbound)
6. Wolfe Tone Street (Eastbound Right Turn Lane)
7. Sallins Road (Southbound Left Turn Lane)
8. Sallins Road – North of Mill Lane (Southbound)

9. Sallins Road – North of Mill Lane (Northbound)
10. Dublin Road (Southbound)
11. Dublin Road (Northbound)
12. Tipper Road Right (Northbound)
13. Tipper Road Left (Southbound)
14. South Main Street (Northbound)
15. South Main Street – Right Turn (Southbound)
16. South Main Street – Straight Ahead (Southbound)
17. Corban's Lane (Northbound)
18. Corban's Lane (Southbound)
19. Friary Road (Northbound)
20. Blessington Road (Northbound)
21. Blessington Road (Southbound)
22. Blessington Road - North of Tipper Road Junction (Northbound)
23. Friary Road – East of Corban's Lane Junction (Eastbound)
24. Friary Road – East of Corban's Lane Junction (Westbound)
25. Dublin Road – Between Friary Road and Wolfe Tone Street (Eastbound)
26. Dublin Road – Between Friary Road and Wolfe Tone Street (Westbound)
27. Wolfe Tone Street (Westbound)
28. Wolfe Tone Street – from Carpark (Westbound)
29. Dublin Road – Between Blessington Road and Wolfe Tone Street (Southbound)
30. Dublin Road – Between Blessington Road and Wolfe Tone Street (Northbound)
31. Dublin Road - Right onto Blessington (Between Wolfe Tone Street and Blessington Road)
32. Main Street - Between Sallins Road & Friary Road (Northbound)
33. Main Street - Right onto Sallins Road (between Sallins Road & Friary Road)
34. Main Street - Between Sallins Road & Friary Road (Southbound)
35. Corban's Lane (Eastbound)
36. Corban's Lane (Westbound)
37. Mill Lane (Westbound)
38. Mill Lane (Eastbound)

Table 9.6 shows the number of vehicles in the 2023 Do-Minimum model and each of the 3 measures assessed at each of the 38 data collection points. The table also provides the percentage change in flow at each location between the 2023 Do-Minimum and the relevant measure. Changes in vehicle flows in excess of 5% between the 2023 Do-Minimum and each Measure are high in red (>5%) and green (<5%).

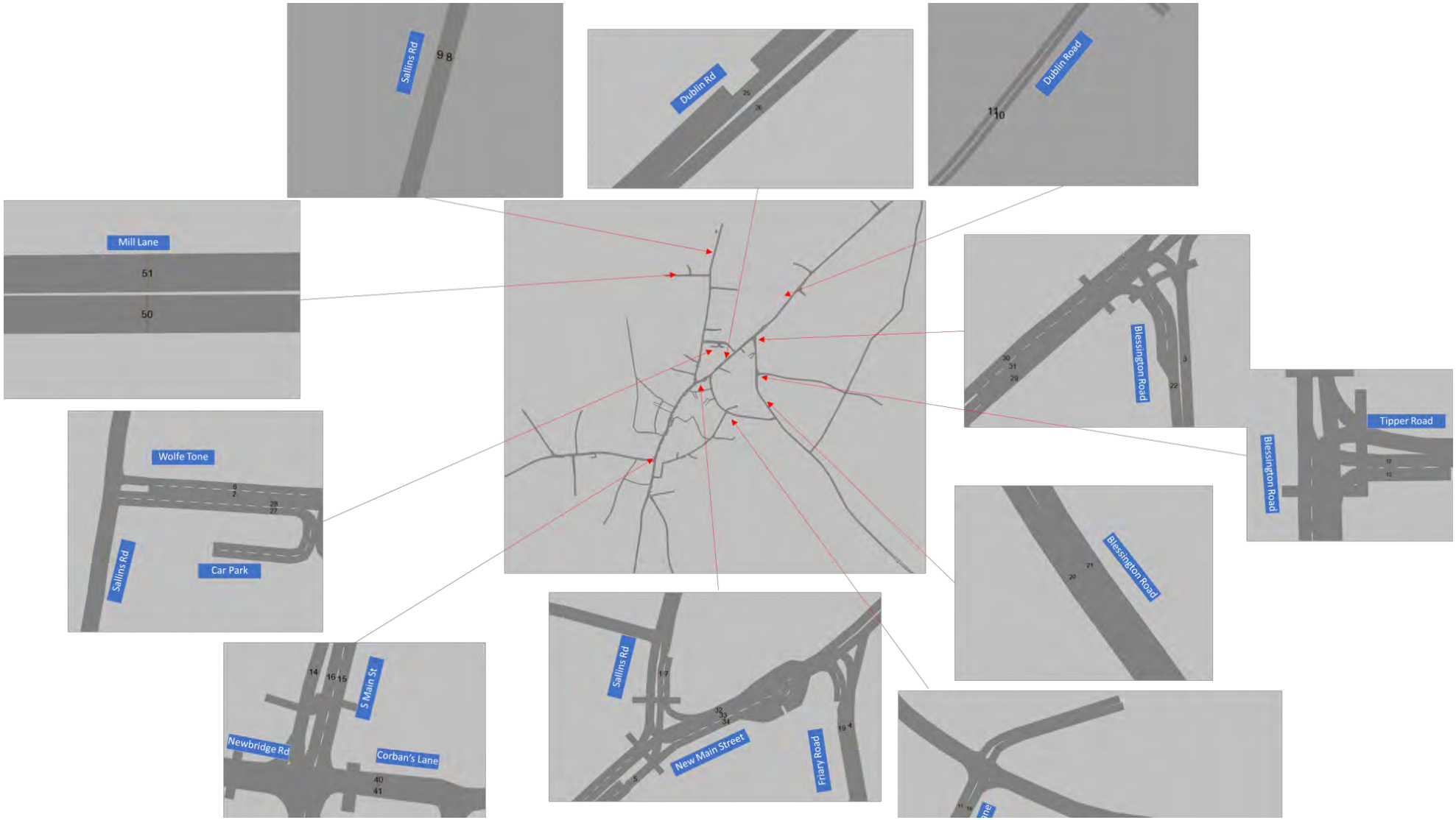


Figure 9.17 Queue Length Counter Locations

Table 9.6 2023 AM Peak Change in Vehicle Flow (Do-Minimum and Road Measures 1, 2 and 3)

Counter	2023 Do-Minimum	2023 Measure 1 (Gallops Avenue)		2023 Measure 2 (Murtagh's Corner)		2023 Measure 3 (Millbridge Street)	
1	204	218	7%	211	3%	197	-3%
2	66	67	2%	64	-3%	65	-2%
3	465	323	-31%	421	-9%	393	-15%
4	181	184	2%	279	54%	204	13%
5	602	583	-3%	480	-20%	569	-5%
6	263	253	-4%	206	-22%	218	-17%
7	130	119	-8%	126	-3%	138	6%
8	581	570	-2%	528	-9%	583	0%
9	461	483	5%	472	2%	463	0%
10	691	404	-42%	709	3%	706	2%
11	627	336	-46%	644	3%	651	4%
12	65	195	200%	72	11%	73	12%
13	201	34	-83%	189	-6%	180	-10%
14	674	594	-12%	610	-9%	562	-17%
15	486	472	-3%	523	8%	516	6%
16	278	290	4%	128	-54%	220	-21%
17	219	357	63%	304	39%	242	11%
18	351	435	24%	512	46%	354	1%
19	332	203	-39%	294	-11%	247	-26%
20	523	360	-31%	596	14%	581	11%
21	571	190	-67%	552	-3%	497	-13%
22	447	481	8%	486	9%	489	9%
23	195	355	82%	243	25%	244	25%
24	474	429	-9%	438	-8%	371	-22%
25	537	379	-29%	488	-9%	472	-12%
26	472	468	-1%	462	-2%	459	-3%
27	29	29	0%	28	-3%	28	-3%
28	236	266	13%	251	6%	267	13%
29	718	774	8%	737	3%	775	8%
30	428	275	-36%	446	4%	449	5%
31	246	266	8%	156	-37%	172	-30%
32	477	393	-18%	398	-17%	457	-4%
33	185	167	-10%	147	-21%	142	-23%
34	398	365	-8%	270	-32%	372	-7%
35	-	-	-	115	-	-	-
36	-	-	-	186	-	-	-
37	-	-	-	-	-	125	-
38	-	-	-	-	-	183	-

Road Measure1: Gallops Avenue

The results for Measure 1 show a significant reduction (-42% & 46%) in traffic on the Dublin Road (Counters 10 and 11) which is due to the transfer of traffic from the Dublin Road to the Gallops Avenue. In addition, traffic levels reduce on Blessington Road and also in the town centre (Main Street, Wolfe Tone Street and Sallins Road (Left Turn).

The assessment shows an increase in traffic on Tipper Road, Friary Road and Corban's Lane as traffic re-routes to access Gallops Avenue.

Road Measure 2: Murtagh's Corner

The proposal to upgrade Murtagh's Corner shows a reduction in traffic in both directions on North Main Street due to the rerouting traffic as a result of the new direct road link through to Corban's Lane. This re-routing of traffic away from Main Street in turn leads to an increase in traffic on Corban's Lane, Friary Road and Blessington Road.

Due to the dynamic assignment of traffic in the VISSIM model there is some re-routing of traffic between the Poplar Square, Friary Road, Wolfe Tone Street and Blessington Road junctions. As part of the implementation of Measure 2 and the resulting increase in traffic via Corban's Lane, Friary Road and Blessington Road the existing traffic signals timings at the junctions along the Main Street/Dublin Road would need to be reviewed to optimise the flow of traffic at peak times.

Road Measure 3: Millbridge Street

The assessment of Millbridge Street leads to a reduction in traffic on Main Street and an increase on Sallins Road (6%) as traffic reroutes to Millbridge Street. There is also some local re-routing of traffic between the Poplar Square, Friary Road, Wolfe Tone Street and Blessington Road junctions due to the dynamic assignment of traffic in the VISSIM model. As per Measure 2 the traffic signals timings at the junctions along the Main Street/Dublin Road would need to be reviewed to optimise the flow of traffic at peak times.

9.7.3 Change in Queue Lengths

The performance of each of the 3 road measures in relation to queuing relative to the 2023 Do-Minimum is provided in Table 9.7. The locations included in the assessment are illustrated in Figure 9.18, a total of 23 locations were included in the assessment. Queuing is presented in meters with each vehicle occupying approximately 6m.

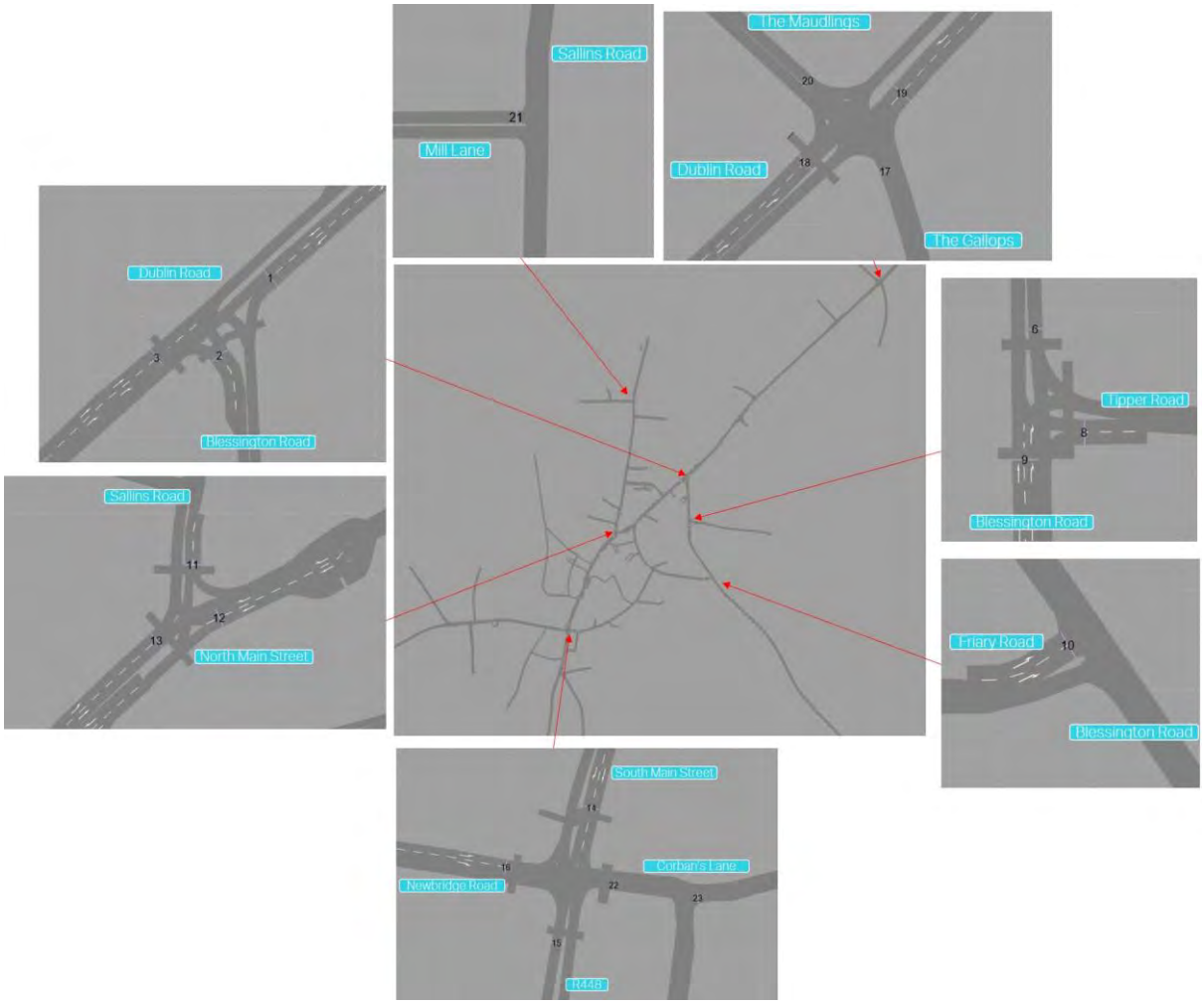


Figure 9.18 Queue Length Counter Locations

Table 9.7 2023 AM Peak Change in Queue Length (Do-Minimum and Road Measures 1, 2 and 3)

Counter	2023 Do-Minimum	2023 Do-Minimum	2023 Measure 1 (Gallops Avenue)		2023 Measure 2 (Murtagh's Corner)		2023 Measure 3 (Millbridge Street)	
1	Dublin Road (Southbound)	207m	28m	-86%	145m	-30%	177m	-15%
2	Blessington Road (Northbound)	105m	17m	-84%	113m	8%	114m	9%
3	Dublin Road (Northbound)	183m	30m	-84%	50m	-73%	48m	-74%
6	Blessington Road (Southbound)	45m	44m	-3%	31m	-32%	30m	-34%
8	Tipper Road	98m	107m	8%	147m	49%	164m	67%
9	Blessington Road (Northbound)	148m	34m	-77%	221m	49%	251m	69%
10	Friary Road (Eastbound)	15m	2m	-83%	15m	5%	8m	-48%
11	Sallins Road (Southbound)	324m	388m	20%	417m	29%	351m	8%
12	North Main Street (Southbound)	224m	70m	-69%	42m	-81%	55m	-75%
13	North Main Street (Northbound)	228m	169m	-26%	181m	-21%	72m	-68%
14	South Main Street (Northbound)	71m	46m	-35%	41m	-42%	29m	-58%
15	Kilcullen Road (Northbound)	133m	53m	-60%	324m	144%	72m	-46%
16	Newbridge Road Eastbound)	261m	129m	-50%	50m	-81%	21m	-92%
17	East Dublin Road Gallops Avenue	-	109m	-	-	-	-	-
18	South Dublin Road Gallops Avenue	-	182m	-	-	-	-	-
19	North Dublin Road Gallops Avenue	-	43m	-	-	-	-	-
20	West Dublin Road Gallops Avenue	-	72m	-	-	-	-	-
21	Mill Lane / Sallins Road	-	-	-	-	-	23m	-
22	Corban's Lane Signal	-	-	-	52m	-	-	-
23	Corban's Lane Junction	-	-	-	22m	-	-	-

Road Measure 1: Gallops Avenue

The results for Measure 1 show a reduction in queuing through the Dublin Road/Blessington Road junction (as illustrated in Figure 9.19), Poplar Square junction and also the Murtagh's Corner junction. There is a minor increase in queuing on the Tipper Road due to the increase in traffic volumes associated with the opening of the Gallops Avenue link. In addition there is also an increase in queueing on the Sallins Road southbound at Poplar Square, however this relates to the re-routing of traffic due to the dynamic assignment in VISSIM (i.e. traffic rerouting from Wolfe Tone Street to Sallins Road).

Figure 9.19 Dublin Road/Blessington Road Junction (2023 AM Do-Minimum versus Measure 1)

Road Measure 2: Murtagh's Corner

The proposal to upgrade Murtagh's Corner shows a reduction in queuing on the Newbridge Road and Main Street arms of Murtagh's Corner (as illustrated in Figure 9.20) and a reduction through the Poplar Square junction. The assessment show an increase in queueing on the Kilcullen Road, however the as part of the implementation of the proposal and signal stages/phases and signal times would be tested and optimised to maximise the efficiency of the junction.

An increase in queuing is noted through the Blessington Road/Tipper Road junction, which is due to the re-routing of traffic from Main Street/Dublin Road to Corban's Lane, Friary Road and Blessington Road. As previously noted, the existing traffic signals timings at the junctions along Main Street/Dublin Road would need to be reviewed to optimise the flow of traffic at peak times.

Figure 9.20 Murtagh Corner Junction (2023 AM Do-Minimum versus Measure 2)

Road Measure 3: Millbridge Street

The assessment of Millbridge Street leads to an reduction in queuing through the Murtagh's Corner junction and also through the Poplar Square junction as illustrated in Figure 9.21 and Figure 9.22 respectively. As per Measure 2 an increases in queuing is also noted through the Blessington Road/Tipper Road junction. The existing traffic signals timings at the junctions along the Main Street/Dublin Road would need to be reviewed to optimise the flow of traffic at peak times.

Figure 9.21 Murtagh's Corner Junction (2023 AM Do-Minimum versus Measure 3)

Figure 9.22 Poplar Square Junction (2023 AM Do-Minimum versus Measure 3)

9.7.4 Micro-Simulation Modelling Summary

The assessment has shown the benefits of all 3 road measures assessed in the 2023 VISSIM micro-simulation model in terms of the overall performance of the road network, reduced flows through Naas town centre and reduced queuing at key town centre junctions.

The assessment has also demonstrated that the proposals, most notably Option 2 and 3 are likely to have an impact on the performance of a number of other junctions in the town due to the re-routing of traffic (e.g. Dublin Road/Blessington Road and Blessington Road/Tipper Road). Therefore the implementation of the options would need to be further assessed as part of the option appraisal/design process to understand upstream/downstream impacts of the proposal.

9.8 Parking Options

This section identifies and assesses options to improve the distribution and operation of car parks in Naas and Sallins. The parking strategy is integrated with the public transport, walking, cycling and road strategies to ensure that mutually supportive measures are implemented. To support the town centre, particularly in respect to retail, the total parking stock in central areas is not reduced. Instead, where parking spaces are removed to improve the operation of the transport network or the public realm, the spaces are relocated to an alternative site nearby. The parking strategy seeks to achieve the following objectives:

1. Develop a strategy to improve the efficient use of existing car parks in Naas Town Centre.
2. Identify locations for a future park and ride site(s).
3. Review HGV access management and make recommendations for improvement.

The Roads Section of the report has proposed a HGV ban in the town centre and this fulfils objective 3, meaning that the focus of the parking assessment is on the first two objectives.

9.8.1 Parking Options Description

Parking Option 1: Expanded Park and Ride Facility at the Station

This option proposes that the park and ride facilities at Sallins train station should be expanded to facilitate rising passenger demand, particularly since the reopening of the Phoenix Park Tunnel. Figure 9.23 indicates a site to the north-east of the train station which could be used for a dedicated park and ride facility. This sketch is an indicative representation of the car park which could be provided, it may be the case that the park and ride facility would be delivered underground or at a different location after further study and confirmation of land ownership.

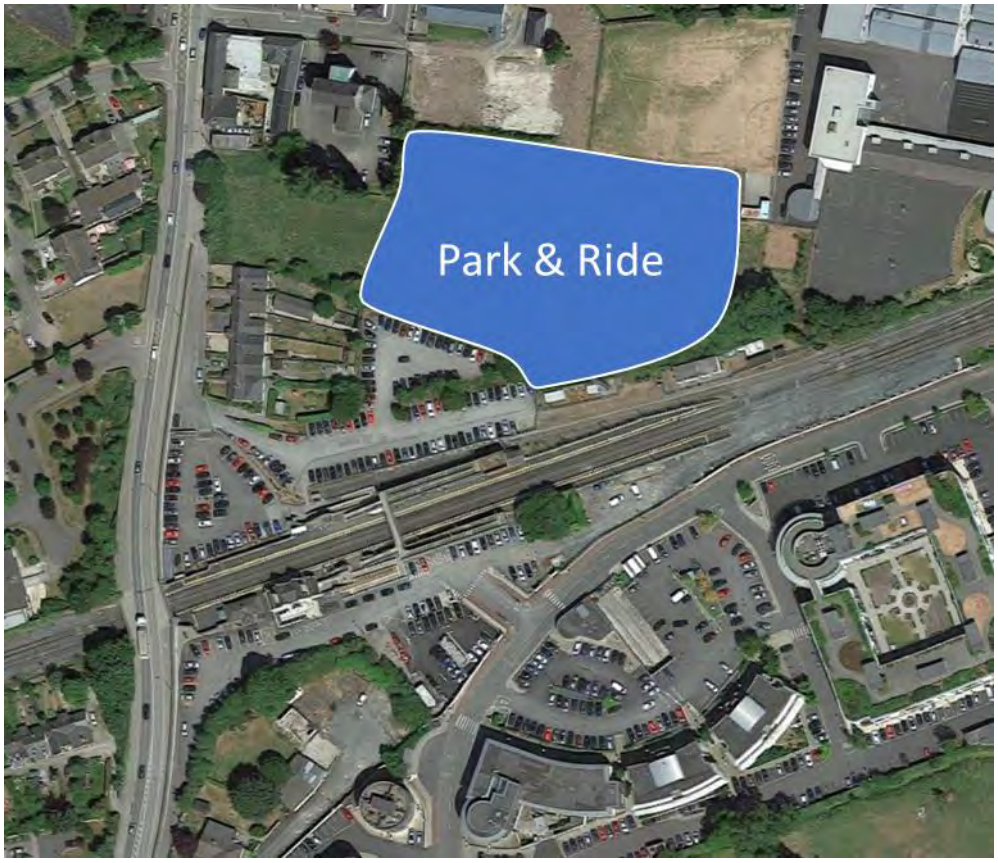


Figure 9.23 Parking Option 1: Expanded Park and Ride Facility

Parking Option 2: Perpendicular Parking on Main Street and Sallins Road Relocated

This option seeks to relocate the perpendicular parking on the Main Street and Sallins Road to facilitate urban realm improvements such as wider footpaths which are described in Section 11 (Figure 9.24). Furthermore, the removal of perpendicular parking could improve the traffic flow to aid the operation of the proposed local bus routes and the bus interchange on the Main Street. It is important to note that these parking spaces would not be eliminated, instead they would be relocated to Option 3: a new off-street town centre car park. It is also important to note that the provision of disabled parking bays would be maintained and accommodated in the detailed design process.

Figure 9.24 Parking Option 2: Relocate Perpendicular Parking

Parking Option 3: New Off-Street Car Park in the Town Centre

This option proposes the creation of a new off-street car park on the vacant site between Harbour View and the Main Street (Figure 9.25) to accommodate the parking spaces relocated from the Main Street (Option 2), Poplar Square (Option 4), Sallins Road (Option 2) and Corban's Lane (Option 6). Vehicular access could potentially be provided from the Newbridge Road – Harbour View side of the site and this would be supported by Road Option 2: Murtagh's Corner Junction Upgrade. Car park signage would direct users to travel via Corban's Lane and the new road link at Murtagh's Corner when accessing the site from the north to reduce trips via the Main Street. This new car park will support the retailers of Naas by allowing for convenient parking for shoppers in a central location near Main Street.

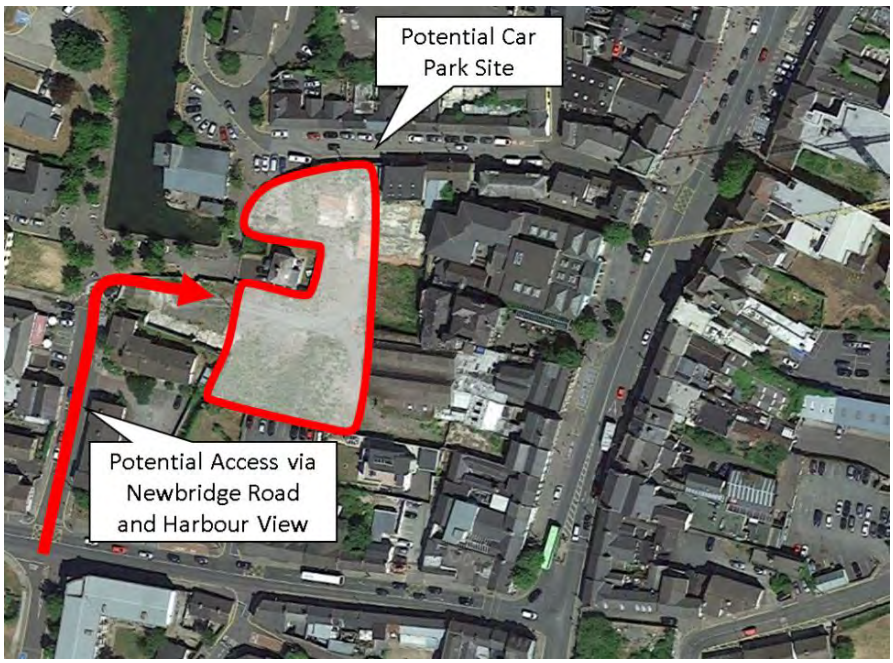


Figure 9.25 Parking Option 3: New Town Centre Car Park

Parking Option 4: Pedestrian Plaza with Formal Bus Stop at Poplar Square

At present, Poplar Square is a car park with an informal bus bay which is far from ideal for bus passengers and represents a safety hazard as there could be conflict between waiting passengers and motor vehicles (Figure 9.26).

Figure 9.26 Existing Arrangement at Poplar Square

This option proposes that the parking spaces at Poplar Square should be relocated to the new town centre off-street car park described in Parking Option 3. This will enable the implementation of a new design for a pedestrian plaza with a formal bus stop at Poplar Square, as shown in Figure 9.27. Furthermore, it should be noted that a new car park is being developed to the rear of Lawlor's Hotel nearby on Friary Road and this will provide an alternative parking location in the locality.

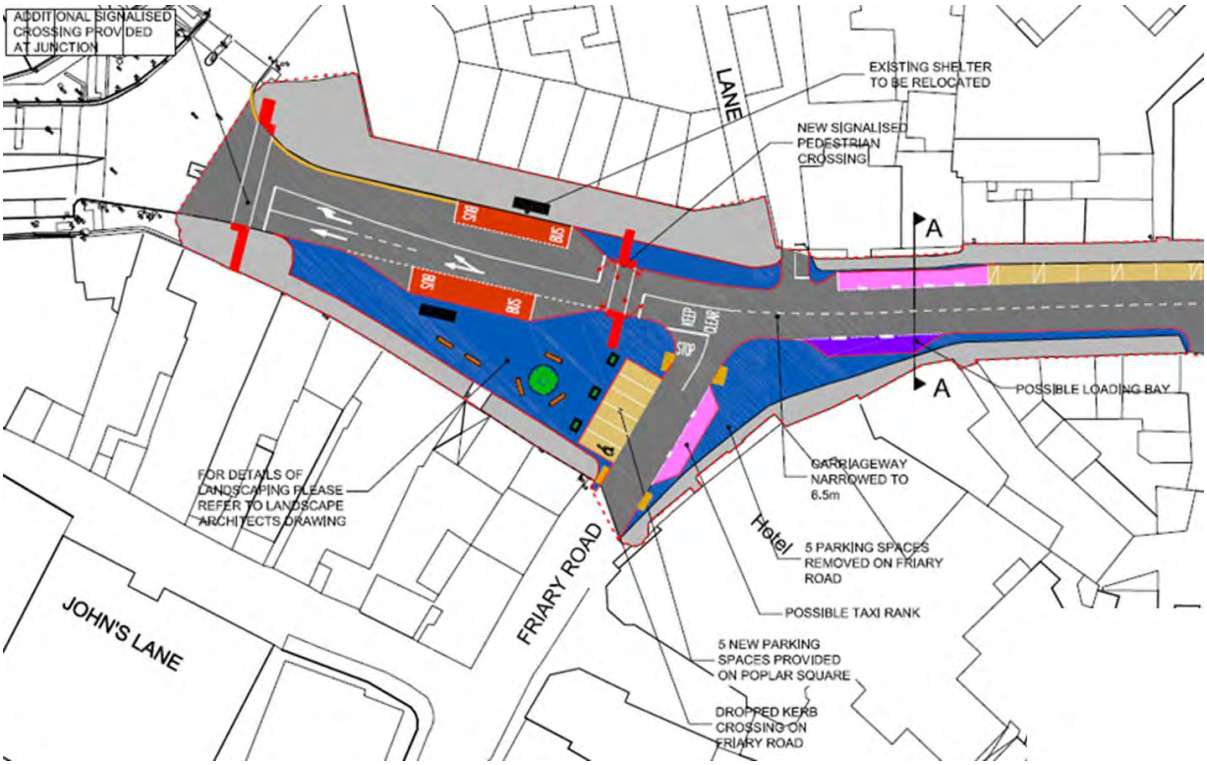


Figure 9.27 Parking Option 4: Replace Parking with Pedestrian Plaza

Parking Option 5: Mobility Management Plans at Workplaces for Major Employers

This option proposes that mobility management plans (MMPs) will be developed for major workplace locations throughout Naas such as the Council offices, Naas General Hospital and other significant businesses or organisations. In accordance with the Smarter Travel (2009) national policy document, MMPs will be recommended for all organisations or businesses which contain over 100 staff. The NTA guide to Workplace Travel Plans for implementors states that; '*workplace travel plans have been shown to reduce single-occupant car use by 10-24%, with the reduction depending on the extent of the travel plan and site-specific issues'*.

Parking Option 6: Relocate Parking from Corban's Lane and Create Formal School Drop-Off Facility

At present, there is parallel parking along Corban's Lane which also acts as a school drop off area for Naas CBS at particular times of day (Figure 9.28). This parallel parking restricts the road width and reduces the ability of Corban's Lane to provide sufficient capacity to support the diversion of traffic from the Main Street envisioned in the left turn ban at Murtagh's Corner (Bus Priority Option 3).

Figure 9.28 Parallel Parking on Corban's Lane

This option proposes that the parallel parking on Corban's Lane should be relocated, with a formal school drop-off facility constructed to maintain access to Naas CBS. There are two possible sites for the location of the school drop-off facility:

- Option 6A: Ballymore Road Access
- Option 6B: Corban's Lane Access

Option 6A originated in the Naas Town Traffic Management Plan developed by MVA Consultancy (2008), which contained a proposal for a new formal drop-off facility for St. Corban's Primary School and Naas CBS Secondary School. This proposed design is located to the south of the schools and is shown in Figure 9.29.

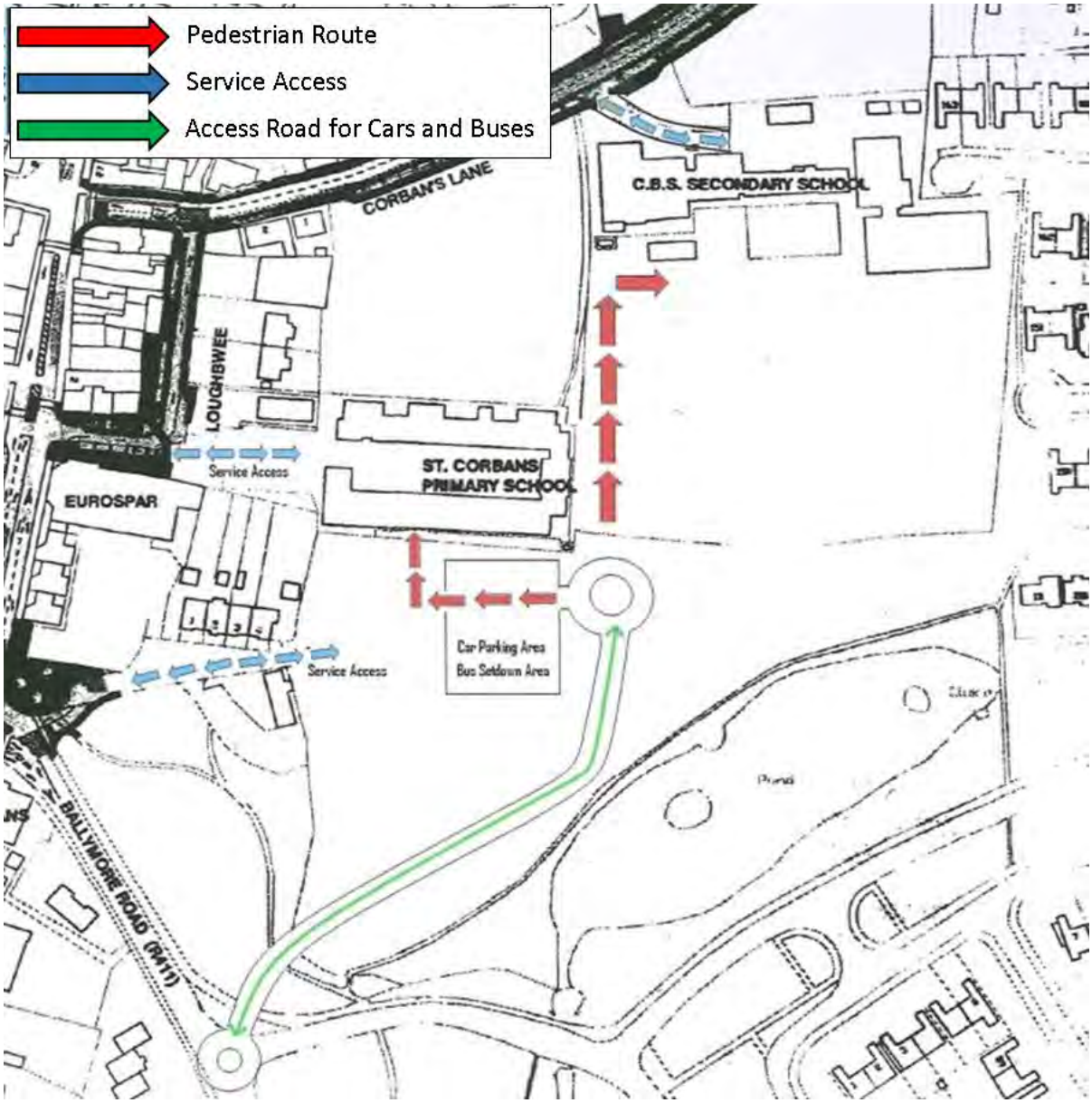


Figure 9.29 Proposed School Drop-Off Facility from 2008 MVA Report

Option 6A proposes that the parallel parking from Corban's Lane should be relocated to the new car park created in Parking Option 3; to increase road capacity and facilitate traffic bypassing the Main Street along Corban's Lane. For St. Corban's Primary School and Naas CBS pupils and parents, a new formal school drop-off facility will be created to the south of the schools in the location shown in Figure 9.30. The location of the parking drop-off facility is indicative and will require detailed design.

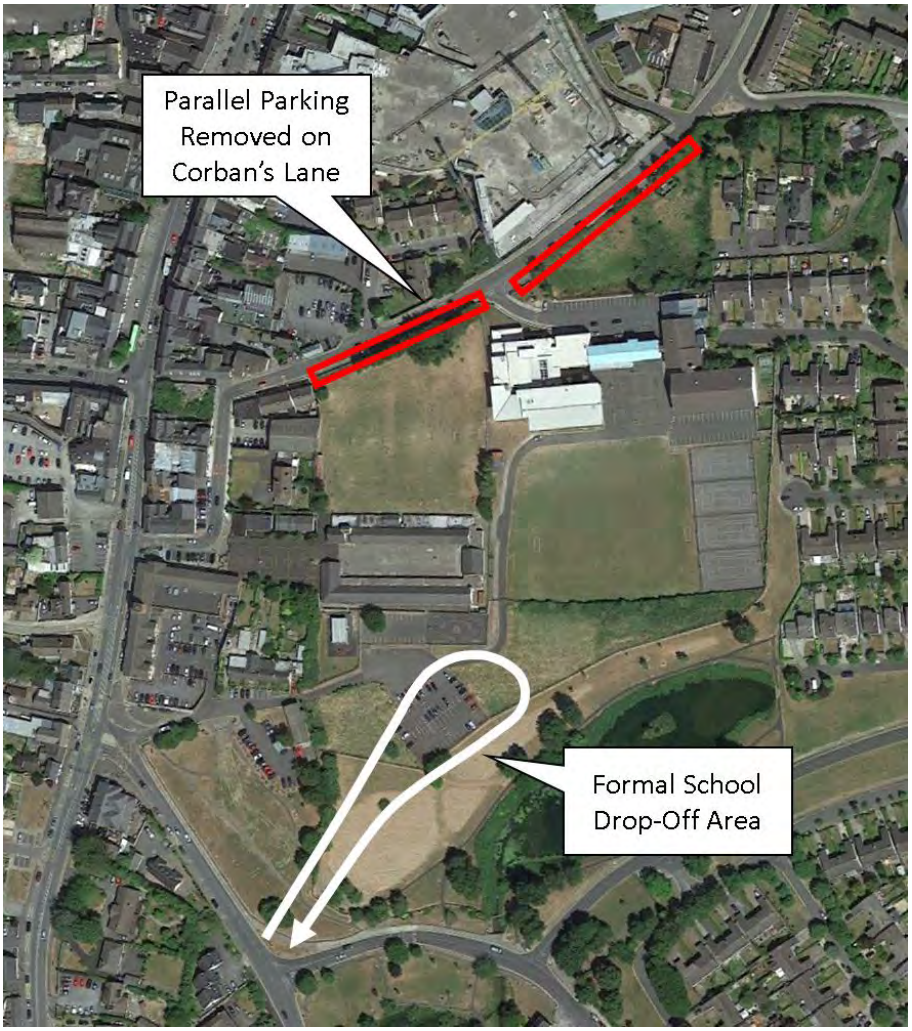


Figure 9.30 Parking Option 6A: New School Drop-Off Area to Replace Parallel Parking

Option 6B is an alternative approach which constructs the proposed school drop-off facility on the undeveloped greenfield site to the north of Naas CBS with access via Corban's Lane. The location of the drop-off facility is shown in Figure 9.31.

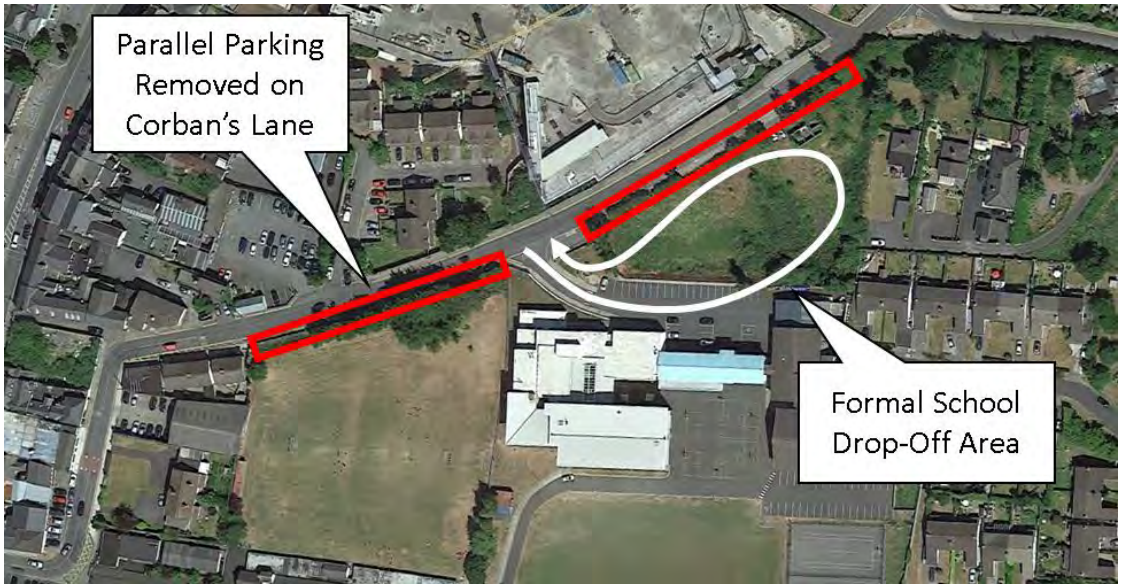


Figure 9.31 Parking Option 6B: New School Drop-Off Area on Corban's Lane

Parking Option 7: Electric Vehicle Charging Points in Local Authority Car Parks with Reserved Spaces

The number of electric vehicles (EV) in the state is increasing and Government policy is encouraging drivers to switch from petrol/diesel cars to electric vehicles. In light of this, Parking Option 7 proposes that EV charging points with reserved spaces should be created in all local authority car parks.

Parking Option 8: Increase Parking Enforcement to Eliminate Illegal Parking in Spaces Designated for Buses and Cyclists

Site visits highlighted issues with parking enforcement and illegal parking in bus stops/bays and cycle lanes throughout Naas and Sallins. This option proposes stricter parking enforcement to ensure that road space designated for sustainable modes will be clear of private vehicles, an issue which will become increasingly important as the cycling and public transport strategy is implemented. This option will ensure efficient and safe access for walkers and cyclists to encourage modals shift.

Parking Option 9: New Car Park Facility in Redeveloped Naas Shopping Centre Site

The derelict Naas Shopping Centre site (Figure 9.32) has recently been sold to a new owner and it has the potential to add a significant volume of car parking spaces to the town centre once it has been redeveloped. This option proposes that planning conditions should be used to ensure that future development on this site provides a significant amount of retail space and general purpose car parking to support the town centre.

Figure 9.32 Derelict Naas Shopping Centre Site

9.8.2 Parking Option Assessment

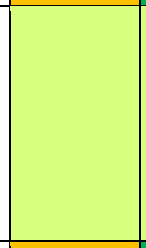
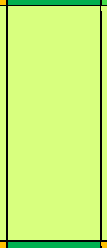
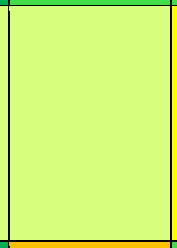
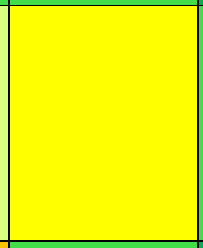
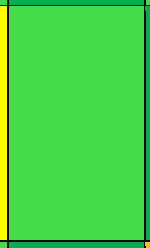
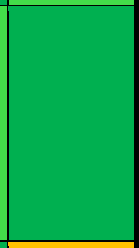
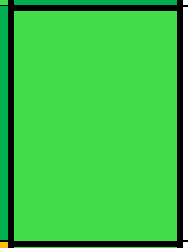
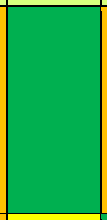
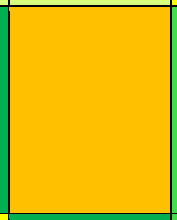
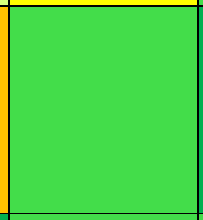
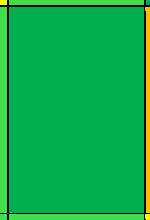
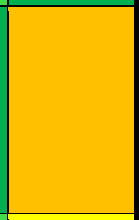
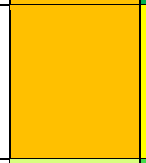
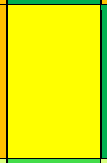
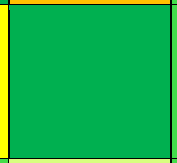
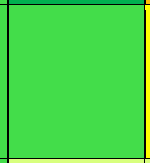
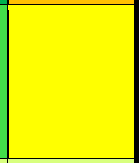
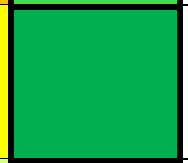
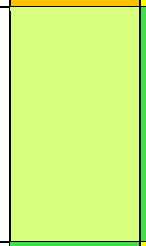
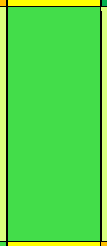
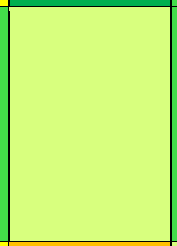
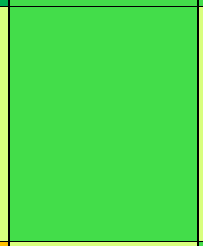
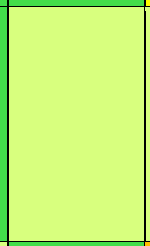
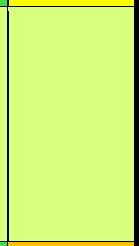
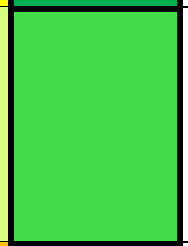
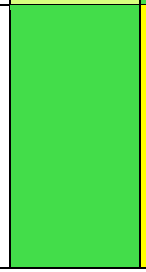
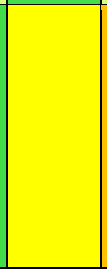
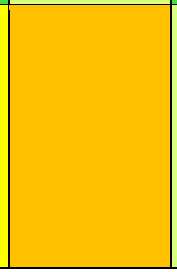
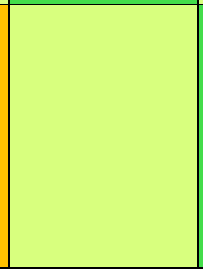
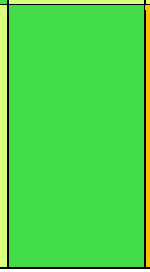
The parking options are assessed according to the six CAF criteria in the MCA shown in Table 9.9. This table summarises the impact of each option according to the assessment criteria. The assessment considers the relative merit of each option according to the seven-point scale presented in Table 9.8.

Table 9.8 MCA Colour Coded Ranking Scale

Colour	Description
	Major or highly positive
	Moderately positive
	Minor or slightly positive
	Not significant or neutral
	Minor or slightly negative
	Moderately negative
	Major or highly negative

Table 9.9 Multi Criteria Analysis of Parking Options

Option	Economy	Safety	Environment	Access & Social Inclusion	Integration	Physical Activity	Combined Assessment Outcome	Summary Justification
Option 1: Expanded Station Park and Ride								The park & ride would incur financial and environmental costs as it would require construction on a greenfield site but these disbenefits would be offset by parking revenue and modal shift to rail. Additional spaces could reduce illegal parking nearby which could produce a small safety benefit. Greater parking supply would increase accessibility to rail and support the public transport strategy aim of upgrading the station facilities. This option would be integrated with the long term plan to create a second rail station to the west. In the short term, more capacity would resolve parking issues at Sallins, and in the long term the car park could be built-on once the dedicated park & ride facility becomes available to the west. Encouraging driving to the station may reduce physical activity.
Option 2: Relocate Perpendicular Parking								Relocating perpendicular parking would improve traffic flow to support the operation of the local bus routes while also making roads safer for cyclists as it removes reversing vehicles. Accessibility and physical activity would receive a minor boost as cyclist accessibility would improve. This option is integrated with the bus route proposals, the operation of the bus interchange and planned cycle routes throughout Naas.
Option 3: Additional Town Centre Car Park								The new car park would incur some financial cost to construct but it would allow more parking near the Main Street which could boost retail activity in the town centre. Additional town centre parking would improve vehicular accessibility and its implementation would be integrated with the relocation of parking spaces from other locations. Increased parking supply would discourage walking to the town centre and increasing the number of vehicles in this area would have a minor negative impact on the environment.
Option 4: Create Poplar Square Plaza								The plaza would cost money to construct but parking revenue would not be lost as the spaces will be relocated to the new town centre car park created in Option 3. However, safety would be significantly enhanced by the creation of a formal bus stop which is segregated from conflict with cars. The local environment would improve with less air and noise pollution, while accessibility and physical activity for active modes would be greater due to the shared space plaza.

								This objective is integrated with the proposal to upgrade local bus stops (Section 8.4) and improve the public realm (Section 11).
Option 5: Mobility Management Plans								MMPs would be low cost to implement with potential cost savings by reducing the need for future investment in car parking. Mode transfer from the private car to sustainable travel modes could result in a modest boost to safety and the environment. Reducing car use would aid the achievement of land-use-transport policy objectives and improve integration. MMPs improve conditions for cyclists in the workplace by providing infrastructure (e.g. showers, lockers, etc) which will boost accessibility and physical activity.
Option 6: Relocate Corban's Lane Parking								A formal school drop-off area would cost money to develop. Safety would be improved by removing pupils from a busy road during school drop-offs and it would enhance school accessibility. This proposal is integrated with the plan to divert some traffic from Murtagh's Corner via Corban's Lane rather than the Main Street. Improving the efficiency of school drop-offs could discourage walking and cycling to school.
Option 7: Electric Vehicle Charging Points								This would involve implementation and operation costs but encouraging the uptake of electric cars would provide clear environmental benefits and support integration with policies to reduce car-based pollution in Naas. Accessibility for electric vehicle users would be enhanced throughout Naas.
Option 8: Increased Parking Enforcement								Improving parking enforcement could lead to additional revenue which could offset the costs of greater parking enforcement. Greater enforcement would reduce instances of illegal parking which present hazards to cyclists and walkers to improve safety. If illegal parking is eliminated then fewer cycling routes will be blocked, and this will produce accessibility, physical activity and environmental benefits. Eliminating illegal parking is an integrated solution to aid the successful delivery of the cycling network.
Option 9: New Car Park Facility in Redeveloped Naas Shopping Centre								Requiring the developer of the shopping centre site to include a significant amount of car parking would incur no cost to the Council but it should provide an economic boost to the town centre. It is unlikely there would be an impact on safety as this is an existing structure. There is the potential for a negative environmental impact if the shopping centre is partially, or completely demolished, during redevelopment. Access to the town centre would be improved for car drivers and integration would be enhanced by repurposing this derelict site for new land-use activities.

9.8.3 Preferred Parking Measures

As a result of the MCA, the following parking options have been selected for inclusion in the strategy as short term measures;

- Option 2: Relocation of Perpendicular Parking
- Option 3: Additional Town Centre Car Park
- Option 5: Mobility Management Plans
- Option 8: Increased Parking Enforcement

In the medium term, which regards the 3-5 year period, the following measures are proposed:

- Option 1: Expanded Park and Ride
- Option 4: Poplar Square Plaza
- Option 6: Corban's Lane Drop-Off Facility and Space Reallocation
- Option 7: Electric Vehicle Charging Points

In the medium to long term, the following measure is proposed[8]:

- Option 9: New Car Park Facility in Redeveloped Naas Shopping Centre

A number of complimentary measures are outlined in the following section to support the parking strategy. Following this, potential options to improve parking technology are described.

9.8.4 Complimentary Parking Measures

To support the parking strategy, a number of complimentary measures are proposed to ensure the effective operation of car parks and goods vehicles in Naas:

- **Improve Car Park Signage:** The signs used to guide drivers to car parks in Naas should be improved and they should direct cars along routes which support the objectives of the Naas/Sallins Transport Strategy e.g. rerouting traffic to reduce vehicle traffic on Main Street.
- **Review Parking Duration:** Parking duration should be reviewed at car parks throughout Naas to reach a suitable balance between long and short-term parking. Parking duration limits should be specified in car parks and enforced to be effective.
- **Introduce Live Information Signs:** Live information signs should be implemented on key approach roads to the town centre; Dublin Road, Newbridge Road, Blessington Road, Sallins Road and Kilcullen Road. The live information signs will show the parking spaces available in major car parks such as the multi-story facility at Naas Town Centre shopping centre.
- **Review HGV Loading Bays:** In addition to the parking strategy, it will be necessary in the future to review the HGV loading bays used throughout Naas to optimise the operation of heavy vehicle traffic in the town and support the proposals of the Naas/Sallins Transport Strategy.

9.8.5 Parking Technology

This Section provides an overview of parking technology and explores potential solutions for Naas.

9.8.5.1 Variable Message Signs

Variable Message Signs (VMS) can be deployed at three strategic areas:

- **Strategic Level** - Information can be provided on key routes heading into the town centre, the signs can have multiple functions displaying parking information, traffic information or special event information

[8] Timeline of Option 9 is dependent on the Naas Shopping Centre site redevelopment

- Tactical Signs - Information provided on the individual car parks within the inner road network
- Car Park - Information provided at car park entries on current status (Full / Spaces) and where appropriate on individual floors for large multi storey car parks

VMS systems help reduce time wasted searching for a parking space or queueing at car park entrances and have the benefit of improving the public image of parking management and a reduction in driver frustration. In areas where the utilisation of car parks is non uniform or skewed, it can help to improve the utilisation of off-street long stay parking which in turn benefits the accessibility to short stay on-street parking. Further detail on each type of VMS technology is provided below:

VMS: Strategic Level Signage

The main advantage of strategic VMS signs is their ability to display a full range of messages and their flexibility to deal with changes within the parking provision. They can be used to show messages in dual text and pictures, offering greater display flexibility and can provide additional strategic information e.g. traffic and road information/warnings, which allows the motorist to make informed route choices. An example of strategic level VMS infrastructure sign is shown in Figure 9.33.

Figure 9.33 Example of Strategic VMS Sign in Oxford Street, Belfast

A further advantage of this type of sign is its ability to convey messages with limited text, eliminating any confusion due to language barriers. In addition to mains power this type of sign can be powered by solar panel or wind (or a combination of sources), providing a sustainable solution with limited environmental impacts. These signs are generally used at key strategic points on corridors into town centres.

VMS: Tactical Level Signage

Tactical VMS signs can be the same format as the strategic signs or can be limited function signage, used to provide drivers with information on the location and availability of spaces in car parks; they combine static signage with LED inserts. The signs can display information such 'FULL', 'CLOSED', 'SPACES' or the actual number of available spaces. This type of sign is normally post mounted on either one or two posts. An example of a tactical VMS sign from Naas is shown in Figure 9.34. A tactical VMS sign facilitates drivers who have not been captured by the strategic signs or those who have chosen a car park based on the strategic signs.

Figure 9.34 Example of Tactical VMS Sign from Sallins Road

The main advantages of these signs are their low cost and generally low maintenance requirements. A significant disadvantage of these signs is the limited information that can be displayed on the signs and their potential inflexibility if the parking provision / usage changes, which could result in the need for new sign facing boards.

Within the confines of the Parking Strategy, the use of this level of sign is expected to be limited and may only be useful to those car parks which have been identified as having high utilisation and high occupancy in order to defer users to other car parks.

VMS: Car Park Signage

These signs are generally used to reinforce information provided by the main external signage and have similar characteristics to the limited function signage. The main difference is that the signs are normally ceiling or wall mounted at the entries to car park building. Signs combine parking signage with LED inserts displaying information such 'FULL', 'CLOSED', 'SPACES' or the actual number of available spaces. The main advantages of these signs are their low cost, no need for ground foundations and generally low maintenance costs. As with the tactical level signs, the implementation of these signs could be ad-hoc based on the utilisation and occupancy of the car parks.

9.8.5.2 Parking Solutions and Technology

Parking Smartphone Applications

A wide range of mobile parking applications are available online. Mobile apps provide drivers with a flexible online payment option to pay for parking durations of stay such as 'Pay Now' or 'Pay Later' payment options. These applications can also inform drivers about the price of parking in advance of their arrival to make an informed choice. An example of a parking payment app is shown in Figure 9.35.

Figure 9.35 Example of Parking Payment Application

Mobile payment apps may also have a range of additional features such as providing the user with real time parking availability and tariff information. This enables users to locate the nearest and cheapest available parking space. The parking rules, regulations and tariffs at each given parking space are also displayed, if applicable. An example of a holistic parking solution which directs drivers to the nearest free parking space is shown in Figure 9.36.

Figure 9.36 Example of Holistic Parking Solution Application

Parking Sensors

Parking bay vehicle detector sensors can be installed into individual parking spaces. Bay sensors use infrared and / or electromagnetic technology to record the presence of a vehicle. The vehicle's length of stay is also recorded. Occupancy data is then wirelessly transmitted to a central software system. An example of a parking bay sensor is shown in Figure 9.37.

Figure 9.37 Example of a Parking Bay Sensor

The wireless transmission of data can alert nearby traffic attendants to parking infringements. Real time parking occupancy data can also be available online. This notifies drivers to the most convenient and cheapest parking space in their local area. The data is utilised by management systems such as space and permit management, Variable Message Signage and parking enforcement. Bay sensors have a greater than 99.7% vehicle detection rate.

Inductive Loops

Inductive loops are still one of the most common methods of detecting vehicle movement. Loops are installed within the road surface and vehicles are detected by changes in the inductive field strength. The vehicle movements by inductive loops can be transmitted and used to provide real-time parking space availability information on VMS.

The typical accuracy of effectively installed inductive loops is in the region of 95%. The main advantages of this form of monitoring are that they are a low cost option and are easy to install and provide a reliable level of accuracy.

The main disadvantages are they cannot be installed in some road surfaces, e.g. steel reinforced concrete and need to be replaced if the road surface is re-laid, incurring high maintenance costs.

9.8.5.3 Potential Locations for Parking Technology

In the short term, induction loops or sensors may need to be installed at larger car parks to collect the parking data for VMS signs or mobile phone applications. In the short-medium term, it may be necessary to develop a network of VMS signs across Naas and Sallins. In respect to strategic VMS signs, these should be located at strategic locations on the regional roads approaching Naas town centre. This will assist drivers in choosing the appropriate route and / or car park location, and potentially ease congestion. The following potential locations for strategic VMS infrastructure have been identified:

1. R407 approach from the north, prior to junction with Monread Road;
2. R445 approach from the north, prior to junction with Monread Road;
3. R410 approach from the south-east, prior to junction with Ballycane Road;
4. R411 approach from the south, prior to junction with Ballycane Road;
5. R448 approach from the south, prior to junction with Ballycane Road;
6. R445 approach from the west, prior to junction with the Ring Road; and
7. R409 approach from the west, prior to junction with the Ring Road.
8. R445 approach from the north-east, prior to the junction with Blessington Road
9. R407 approach from the north, prior to the junction with Wolfe Tone Street

10. R445 approach from the west, prior to Murtagh's Corner
11. R448 approach from the south, prior to Murtagh's Corner
12. M7 Junction 9A approach from motorway to Millennium Link Road

These potential locations for strategic VMS infrastructure are shown visually in Figure 9.38.

Figure 9.38 Potential Locations for Strategic VMS Signs

In respect to smaller tactical VMS infrastructure, there are two tactical VMS signs at present located on the Sallins Road and the Dublin Road to direct vehicles to the Naas Town Centre car park. This is the largest car park in the town centre by a significant margin, but in the future, it may be necessary to install induction loop technology and tactical VMS infrastructure at the following locations:

- Sallins train station car park and overflow car parks
- Naas General Hospital
- Proposed new town centre car park in the Naas (Parking Option 3)

In the longer term, induction loop infrastructure could be used to explore the potential to develop a Naas parking application for smartphone users to receive live parking information in their vehicles.

10 NON-MOTORISED MEASURES

10. Non-Motorised Measures

10.1 Permeability Measures

This section outlines the development of the permeability options, sets out the final permeability strategy and quantifies the improvement in access to key locations. In addition, the expected delivery timetable and the travel role of each strategy measure is defined. The permeability strategy seeks to achieve the following walking objectives:

1. Provide an integrated walking network for Naas and Sallins
2. Improve the standard of existing pavements or paths where required
3. Improve permeability to enhance access to homes, job, schools and services
4. Improve safety for pedestrians, particularly for vulnerable road users
5. Engage with schools with the aim of increasing walking mode share

10.1.1 Permeability Option Development

The permeability strategy seeks to create convenient, efficient routes to key trip attractors and reduce walking trip distances to give non-motorised modes a competitive advantage over private cars. Similar to other urban areas across the Greater Dublin Area, there are numerous issues affecting permeability in Naas such as boundary walls, canals, railways or motorways which have been documented in the Baseline Report (Appendix A). To develop options for the strategy, the baseline catchments were assessed to identify barriers which lengthen walking distances to key trip attractors such as schools, bus stops and the train station. Particular focus was placed on facilitating direct routes along desire lines between homes and key destinations for work (industrial estates, town centre), retail (supermarkets, local shops), education (schools) and recreational (GAA club, greenway) trips.

As major greenway infrastructure is planned for the Grand Canal and Naas Branch of the canal, a key consideration was connecting neighbourhoods and trip destinations to the greenway to ensure it is useful for all types of trips. In the future, a potential permeability link will be considered to link the Naas-Sallins Greenway with the De-Burgh Gardens during the detailed design of the greenway. The permeability options were developed to support the cycling strategy and ensure that new links would have a dual role to facilitate pedestrians and cyclists. Furthermore, to support the operation of proposed local bus routes, a number of permeability links were developed to improve access to the location of future bus stops.

Four types of permeability links were developed for the strategy:

- New pedestrian/cyclist paths
- New pedestrian/cyclist bridges
- New footpaths on an existing road
- Indicative future path connections – These are used for active development sites where a specific path route could not be designated but where access should be provided.

In addition, the permeability strategy incorporates new links from the following:

- Greenways: Grand Canal Greenway and the Naas Branch of the Grand Canal Greenway which are planned schemes. As well as the Corbally Branch Greenway of the Grand Canal and the Dunlavin Greenway from the GDA Cycle Network Plan.
- Roads Schemes: Roads which will have footpath/cyclist provision are included. The road links included in the permeability strategy were provided by Kildare County Council.

In combination, the proposed permeability links, and their interdependencies with the greenway and road schemes form the overall permeability strategy which is described in the following section.

10.1.2 Permeability Options Description

There are 65 measures which make up the permeability strategy, these are listed and described in Table 10.1. In cases where the permeability measure is derived from a planned road or greenway scheme, this is clearly indicated in bold.

The permeability measures numbered in Table 10.1 are shown in Figure 10.1 for Sallins and Figure 10.2 for Naas. In combination, these maps represent the permeability strategy for Naas and Sallins.

Larger scale A3 versions of these maps are provided in Appendix D.

Table 10.1 List of Permeability Strategy Measures

Options	Description
01	Extend pavement on Clane Road to link with Sallins Bypass
02	**Road Scheme**: Pedestrian/Cyclist facilities on the Sallins Bypass under construction
03	**Greenway Scheme**: Grand Canal Greenway - South Bank (East of Sallins) and North Bank (West of Sallins)
05	Extend pavement along L6013 to provide access to recent housing estate development
06	Create pedestrian/cyclist link between Castlesize Drive and Sallins Bypass
07	Finish incomplete footpath on the green of Sallins Bridge housing estate
08	Create permeability link between housing estates Sallins Bridge - Straffan Way
09	Create permeability links between Millbank Estate housing estate - Lidl - Millbank on the greenway
10	**Greenway Scheme**: Pedestrian/cyclist footbridge over Grand Canal outside St. Laurence's National School
11	Pedestrian/cyclist footbridge over Grand Canal linking Osberstown Park - Millbank
12	Pedestrian/cyclist footbridge over railway line and associated paths linking Church Avenue - The Waterways
13	Pedestrian/cyclist footbridge to connect the Grand Canal Greenway with the Naas Branch Greenway
14	Create permeability link between two housing estates; Sallins Pier - Osberstown Drive
15	Cyclist/pedestrian footbridge over railway line linking housing estates; Sallins Pier - Oldbridge Station
16	**Greenway Scheme**: Grand Canal Greenway Naas Branch
17	Create permeability link between housing estate and lane: Oldbridge Drive - Osberstown Cottages
18	**Public Transport Measure**: Sustainable travel modes bridge over M7 to link Sallins with Naas with associated footpaths. Linking The Waterways (Sallins) - Monread Road (Naas)
19	Create path to link Canal Greenway with Millennium Business Park
20	Ramp and/or steps from Millennium Link Road to Naas Branch Canal Greenway
21	Pedestrian/Cyclist footbridge over Canal and associated path to link to Oldtown Demesne housing estate
22	Permeability link between Naas Branch Greenway - Oldtown Demesne housing estate - Millennium Business Park - Sallins Road
23	Permeability link between two housing estates; Oldwood - Oldtown Demesne
24	Permeability link between housing estate Millbridge Way and Greenway canal bank

Options	Description
25	Path network linking GAA club, school, greenway and local housing estates
26	Permeability link between Millennium Business Park - Sallins Road
27	Permeability link between Morell Lawns - Sallins Road
28	Permeability link between Oldtown Walk - Sallins Road
29	Permeability link between Alder Grove - Sallins Road
30	Permeability link between Oldtown Rise - Oldtown Lawns - Sallins Road
31	Permeability link between Morell Close - Monread Road
32	Permeability link between Morell Crescent - Monread Road
33	Permeability link between Monread Avenue - Dun Na Riogh Avenue
34	Permeability link between Monread Road - Alymer Park
35	**Public Transport Measure**: Road with footpaths from Millennium Link Road - Abbey Bridge
36	Permeability link between housing estates; Rathasker Heights - Rathasker Road - Devoy Quarter
37	Permeability link between housing estate Carraig Oscair – Rathasker Road
38	Two footbridges and associated connecting paths to link; The Harbour - Abbey Bridge - Pacelli Road
39	Permeability link between housing estate Ashfield Park - South Ring road
40	Western entrance to St Mary's College to link with Greenway
41	Complete pedestrian footpath on Corban's Lane
42	Create southern entrance to two schools to link with existing path network near the lake
43	Path network to improve town centre accessibility between R445 - Friary Road - Corban's Lane
44	Create southern entrance to Naas General Hospital
45	Permeability link to hospital from Craddockstown Park housing estate
46	Create permeability link between; Thornbrook - R410
48	**Road Measure**: The Gallops Avenue with associated footpaths
49	Extend pavement along R448 to Killashee School
50	Finish connection for existing cycling infrastructure to link R448 with Piper's Hill school complex
51	Create path between Broadfield View - R448
52	Create path between Esmondale housing estate and R448
54	Create path between Pipers Hill College - Dunlavin Greenway
55	Residential link from The Drive housing estate - Dunlavin Greenway
56	**Greenway Scheme**: Dunlavin Greenway. Southbound from the R411 on the route of the old railway line
57	Path network to link Cluain Aoibhinn - Craddockstown Crescent housing estates with R411
58	Create path network to Ballycane Road from housing estates Craddockstown Rise and Cluain Aoibhinn
59	Permeability link to school between Cluain Aoibhinn - Bán Na Gréinne housing estates
60	Bus stops moved from dual carriageway to the section of the R445 to the north of Naas Retail Park and signalised pedestrian crossing point provided for access
61	**Road Measure**: Short link road between Millennium Link Road - Aldi Logistic Centre
62	**Greenway Scheme**: Greenway on Corbally branch of Grand Canal, linked to Naas-Sallins Greenway
63	Permeability link between housing estate Jigginstown Green - R445

Options	Description
64	Create link from R409 - Grand Canal Greenway Naas Branch
65	Create footpath on existing roads to link Osberstown Cottages - Osberstown Road - Naas Branch Greenway - Sallins Bypass
66	Permeability link between housing estates Kingsfurze Avenue - Woodlands
67	Permeability link between Oakfield Park - Craddockstown Road
68	Permeability link between Devoy Barracks Site and Newbridge Road

Figure 10.1 Permeability Strategy in Sallins

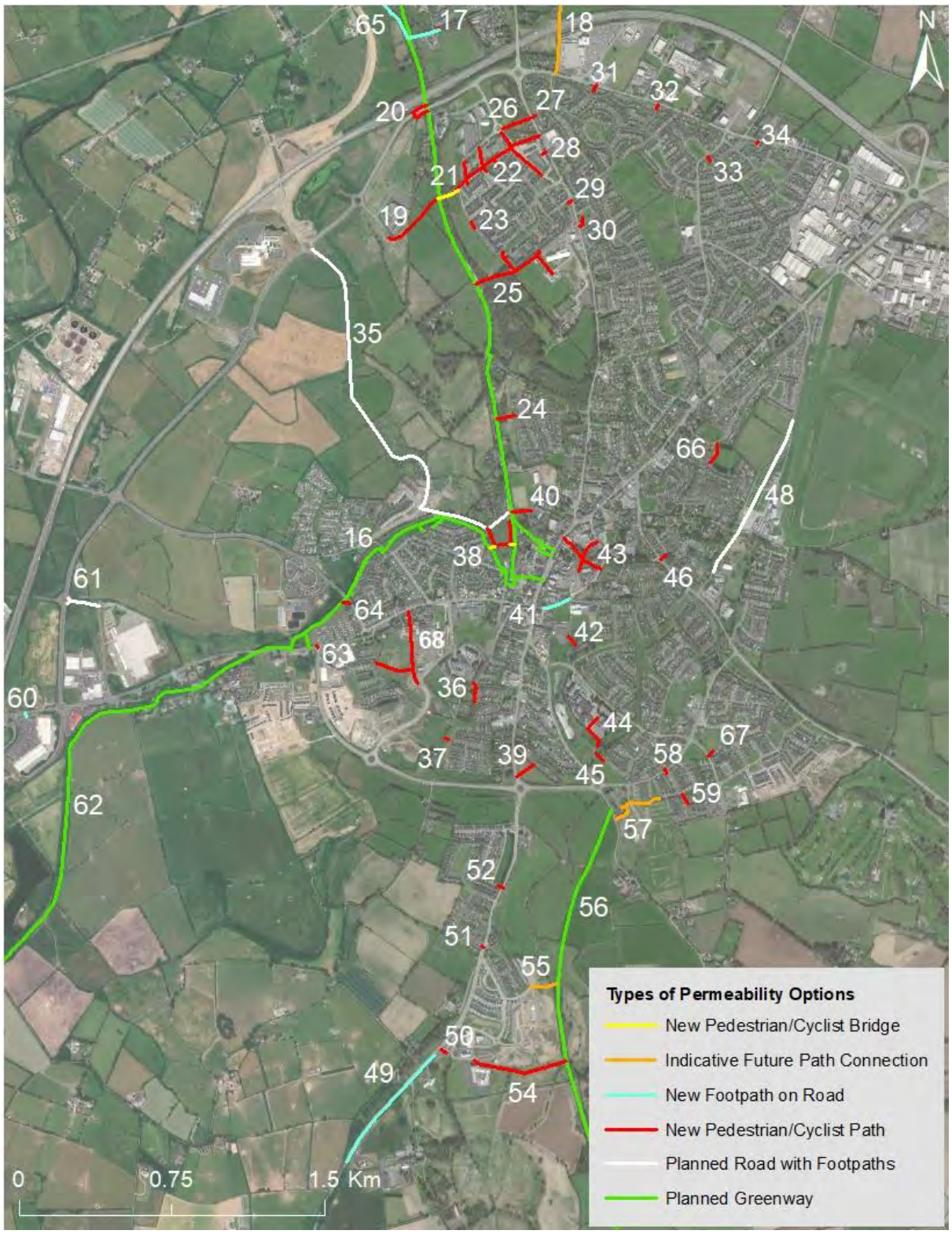


Figure 10.2 Permeability Strategy in Naas

10.1.3 Permeability Strategy Assessment

The impermeable neighbourhoods of Naas and Sallins require a holistic solution which encompasses a large number of interconnected permeability links to improve conditions for walking and cycling. Individually, the purpose of each link may not be immediately apparent, but in combination each link forms part of a wider walking or cycling route to a key destination (e.g. employment, education, retail) or a critical piece of transport infrastructure (e.g. bus stop, greenway, train station). As a result, it is not

appropriate to assess each permeability option individually, as would occur in a roads scheme where different options are ranked. Instead the benefits of the permeability network as a whole are assessed to quantify the number of homes which will be added to the walking catchment for key destinations.

This section assesses the expansion of walking distance catchments in Naas with the implementation of the permeability strategy measures. To conduct this analysis, a Do-Something path network was created which contained the baseline path network with the addition of all proposed paths, roads and footbridges. Sections 10.1.3.1 to 10.1.3.7 present the results of the network analyst GIS assessment which shows the spatial expansion in catchment as a result of the strategy. Section 10.1.3.8 summarises the quantitative benefits of the strategy through the expansion of the number of buildings in the catchment for key destinations.

10.1.3.1 Impact on Primary School Catchment

Figure 10.3 shows the expansion of the 1km primary school catchment with the implementation of the permeability options, which are shown as white lines. The increase in catchment area when the proposed permeability measures are implemented is shown as a yellow shaded area. There is a modest increase in the number of homes added to the 1km catchment area, with an additional 146 homes (2.3% increase) brought into the walking catchment. Greater benefits are observed in relation to reducing walking distance to school where implementation of the permeability measures results in a substantial reduction of over 100m in school trip distances for 556 buildings. This represents a reduction in walking distance for 10% of buildings within the baseline 1km catchment area for primary schools.

A larger scale A3 version of this map is provided in Appendix D.

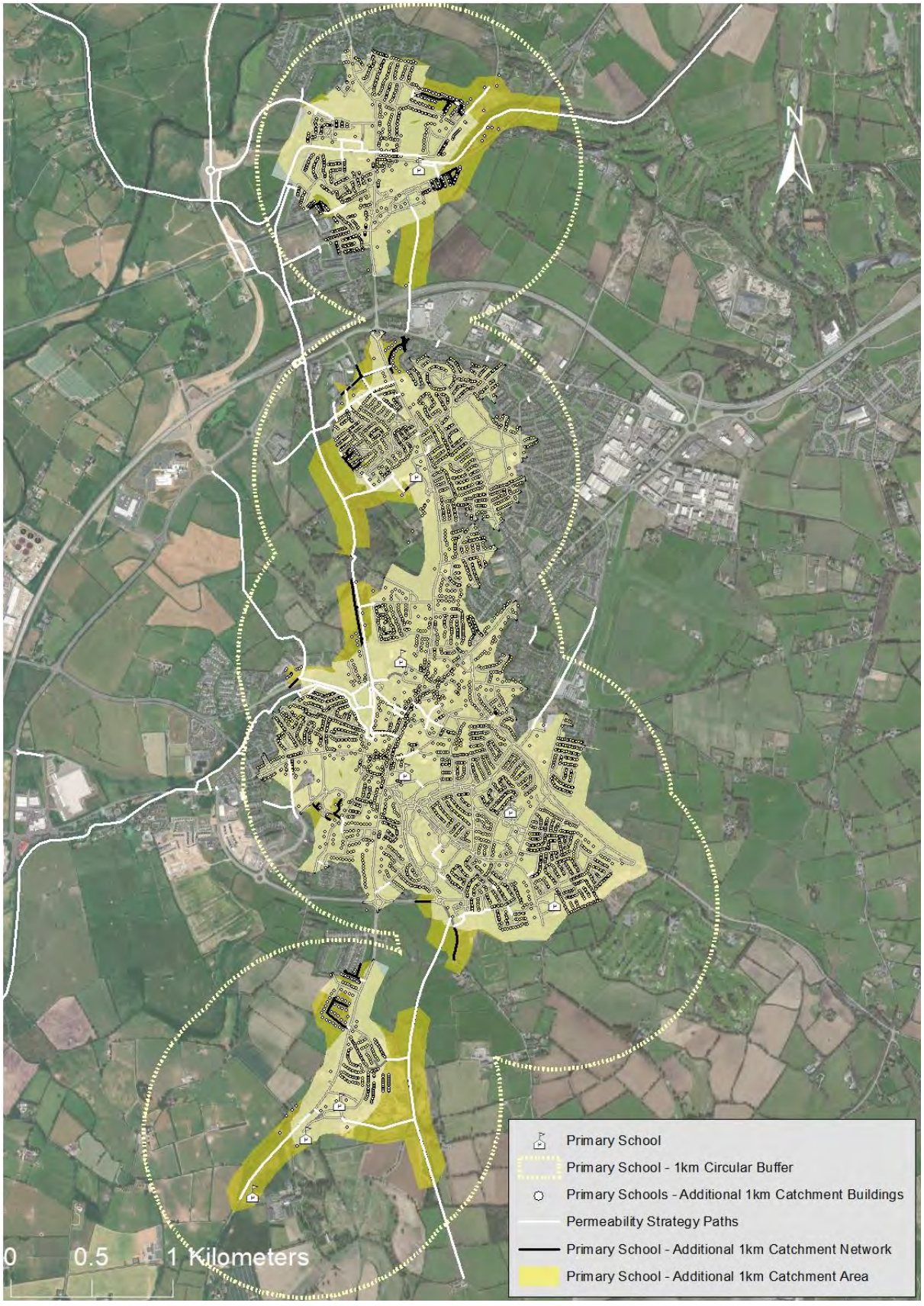


Figure 10.3 Expansion of the 1km Catchment for Primary Schools

10.1.3.2 Impact on Secondary School Catchment

Figure 10.4 shows the expansion of the 1km secondary school catchment with the implementation of the permeability options, which are shown as white lines. This assessment incorporates the planned

development of a new secondary school in the north-west on the Millennium Link Road. The increase in catchment area when the proposed permeability measures are implemented is shown as an orange shaded area. There is a modest increase in the number of homes added to the 1km catchment area, with an additional 131 homes (3.4% increase) brought into the walking catchment. Greater benefits are observed in relation to reducing walking distance to schools. Implementation of the permeability measures results in a substantial reduction of over 100m in school trip distances for 560 buildings. This represents a reduction in walking distance for 16% of buildings within the baseline 1km catchment area for secondary schools.

A larger scale A3 version of this map is provided in Appendix D.

Figure 10.4 Expansion of the 1km Catchment for Secondary Schools

10.1.3.3 Impact on Retail Catchment – Tesco Extra

Figure 10.5 shows the expansion of the 1km catchment for Tesco Extra, a major retail trip attractor on the Monread Road, with the implementation of the permeability measures, which are shown as white

lines. The increase in catchment area when the proposed permeability measures are implemented is shown as a dark shaded area. There is a significant increase in the number of homes added to the 1km catchment area, with an additional 263 homes (46.5% increase) brought into the walking catchment. Furthermore, nearly half houses within the existing 1km walking catchment have shorter trips to retail.

A larger scale A3 version of this map is provided in Appendix D.

Figure 10.5 Expansion of the 1km Catchment for Tesco Extra

10.1.3.4 Impact on Bus Stop Catchment

Figure 10.6 shows the expansion of the 500m bus catchment with the implementation of the permeability options, which are shown as white lines. The increase in catchment area when the

proposed permeability measures are implemented is shown as a red shaded area. There is a modest increase in the number of units added to the 1km catchment area, with an additional 225 homes (3.5% increase) and 34 commercial buildings (3.5% increase) brought into the walking catchment. Additional benefits are observed in relation to reducing walking distance to bus stops. Implementation of the permeability measures results in a substantial reduction of over 100m in bus stop trip distances for 112 buildings. Overall, the benefits are relatively modest as the baseline bus stop catchment covered a large area and this assessment only considers existing bus stops. The major benefits of the permeability strategy are observed when the new local bus routes are incorporated into the assessment.

A larger scale A3 version of this map is provided in Appendix D.

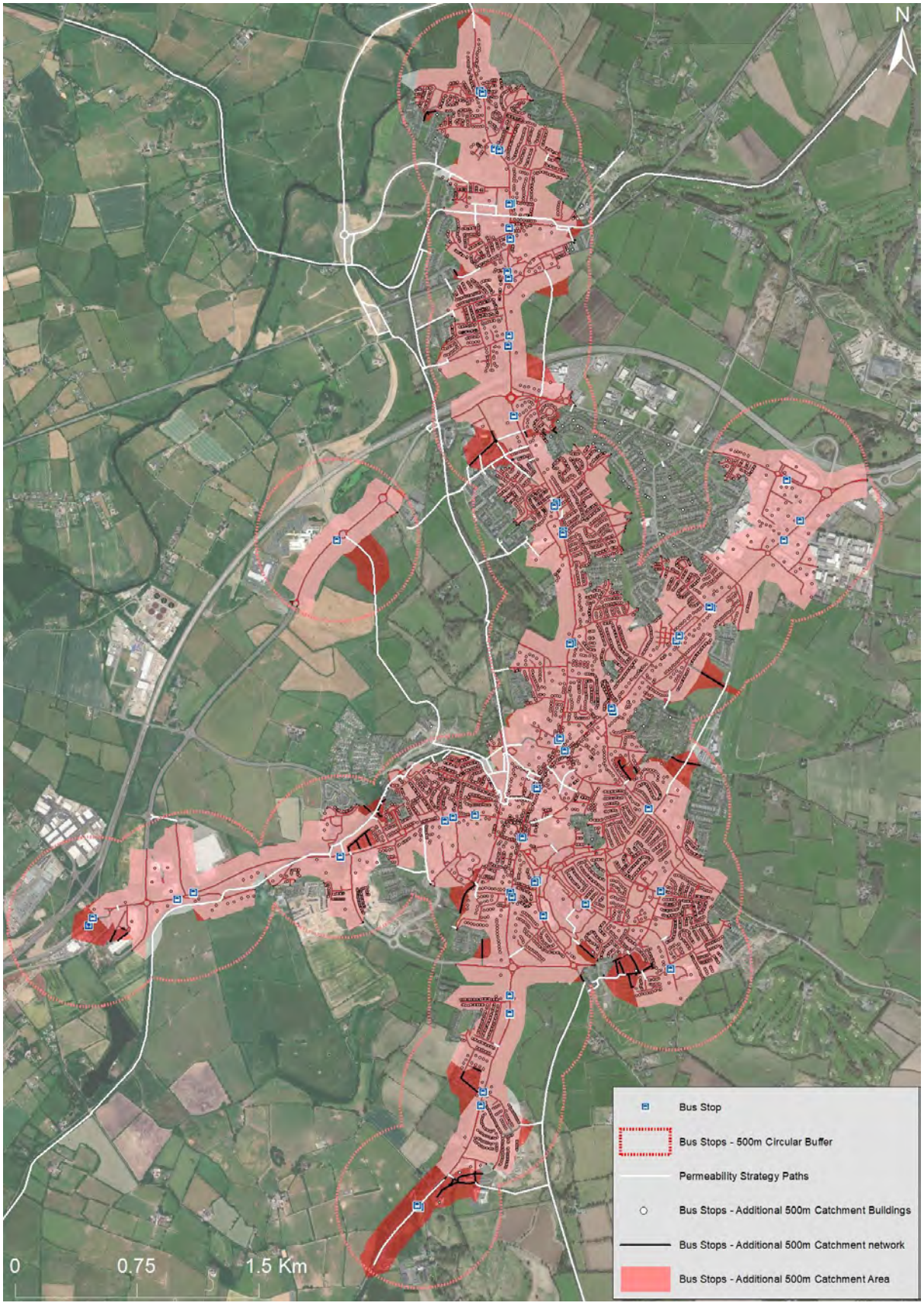


Figure 10.6 Expansion to the 500m Catchment for Existing Bus Stops

Figure 10.7 shows the expansion of bus stop coverage with the implementation of the new local bus routes in combination with the permeability strategy. This results in a substantial expansion in the bus catchment, with the greatest improvement along the Bus Route Option 3 (eastern spine - yellow line) as

this provides a bus service to built-up areas which currently have no public transport. Overall, the new bus routes, in combination with the permeability strategy, increase the bus catchment by 1,638 homes (+25.4% increase) and 73 commercial addresses (+7.5% increase). These statistics do not consider the future development, which Bus Route Option 2 (western spine – white line) will service.

A larger scale A3 version of this map is provided in Appendix D.

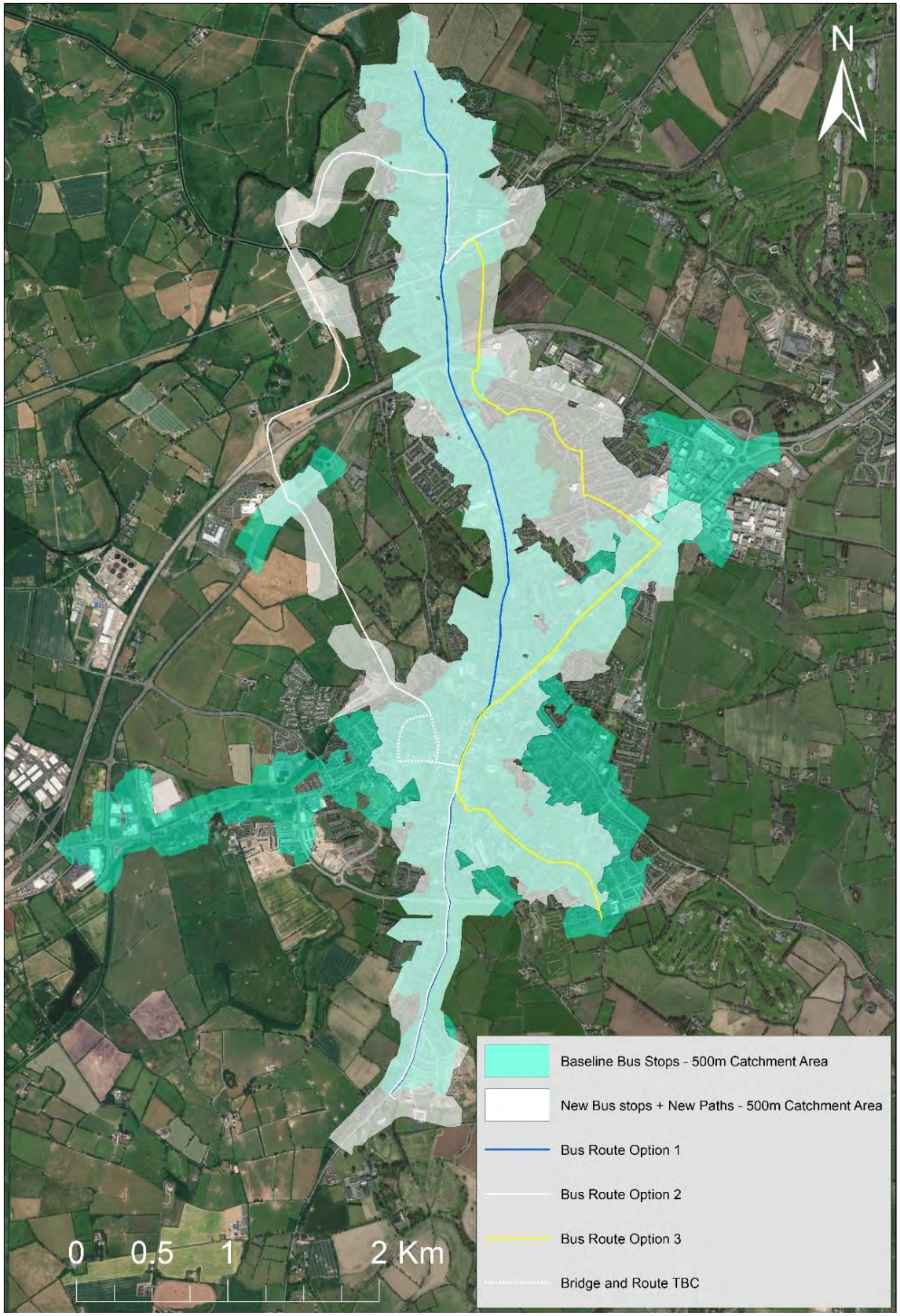


Figure 10.7 Expansion to the 500m Bus Catchment with New Bus Routes and Permeability Measures

In respect to the total bus coverage for the study area, Table 10.2 shows that access to bus services for residential units has increased from 59.4% to 74.5% with the implementation of the public transport and permeability strategies. The existing bus catchment for commercial units was substantial and a more modest 5.8% increase is observed across the entire study area. This highlights that the strategy

has resulted in a situation where three quarters of all homes in Naas and Sallins have access to bus services, which is a substantial improvement on the baseline situation.

Table 10.2 Bus Coverage for Total Study Area with Strategy

	Existing Building Catchment		*% of Total Study Area Buildings*	
Catchment	*Residential Addresses*	*Commercial Addresses*	*Residential Addresses*	*Commercial Addresses*
Existing Bus Routes: 500m Catchment	6,439	969	59.4%	77.1%
New Local Bus Route Stops + Permeability Strategy: Additional 500m Catchment	1,638	73	15.1%	5.8%
Total Do-Something 500m Bus Catchment	8,077	1,042	74.5%	82.9%

10.1.3.5 Impact on Rail Catchment

Figure 10.8 shows the expansion of the 1km rail station catchment with the implementation of the permeability options, which are shown as white lines. The increase in catchment area when the proposed permeability measures are implemented is shown as a green shaded area. There is a modest increase in the number of homes added to the 1km catchment area, with an additional 106 homes (7.1% increase) brought into the walking catchment. Additional benefits are observed in relation to reducing walking distance to the train station. Implementation of the permeability measures results in a substantial reduction of over 100m in trip distances to rail for 67 buildings. This represents a reduction in walking distance for 6% of buildings within the baseline 1km catchment area for the train station.

A larger scale A3 version of this map is provided in Appendix D.

Figure 10.8 Expansion to the 1km Catchment for the Train Station

10.1.3.6 Impact on Sport Amenities Catchment

Figure 10.9 shows the expansion of the 1km sports amenity catchment with the implementation of the permeability options, which are shown as white lines. The increase in catchment area when the proposed permeability measures are implemented is shown as a blue shaded area. There is a significant increase in the number of homes added to the 1km catchment area, with an additional 295 homes (16.5% increase) brought into the walking catchment. For commercial buildings, there is a substantial increase in 21 commercial buildings (+52.5%) within walking distance of sports amenities which will benefit employees. Additional benefits are observed in relation to reducing walking distance to the sports facilities. Implementation of the permeability measures results in a substantial reduction of over

100m in trip distances for 237 buildings. This represents a reduction in walking distance for 13.5% of buildings within the baseline 1km catchment area for sports amenities.

A larger scale A3 version of this map is provided in Appendix D.

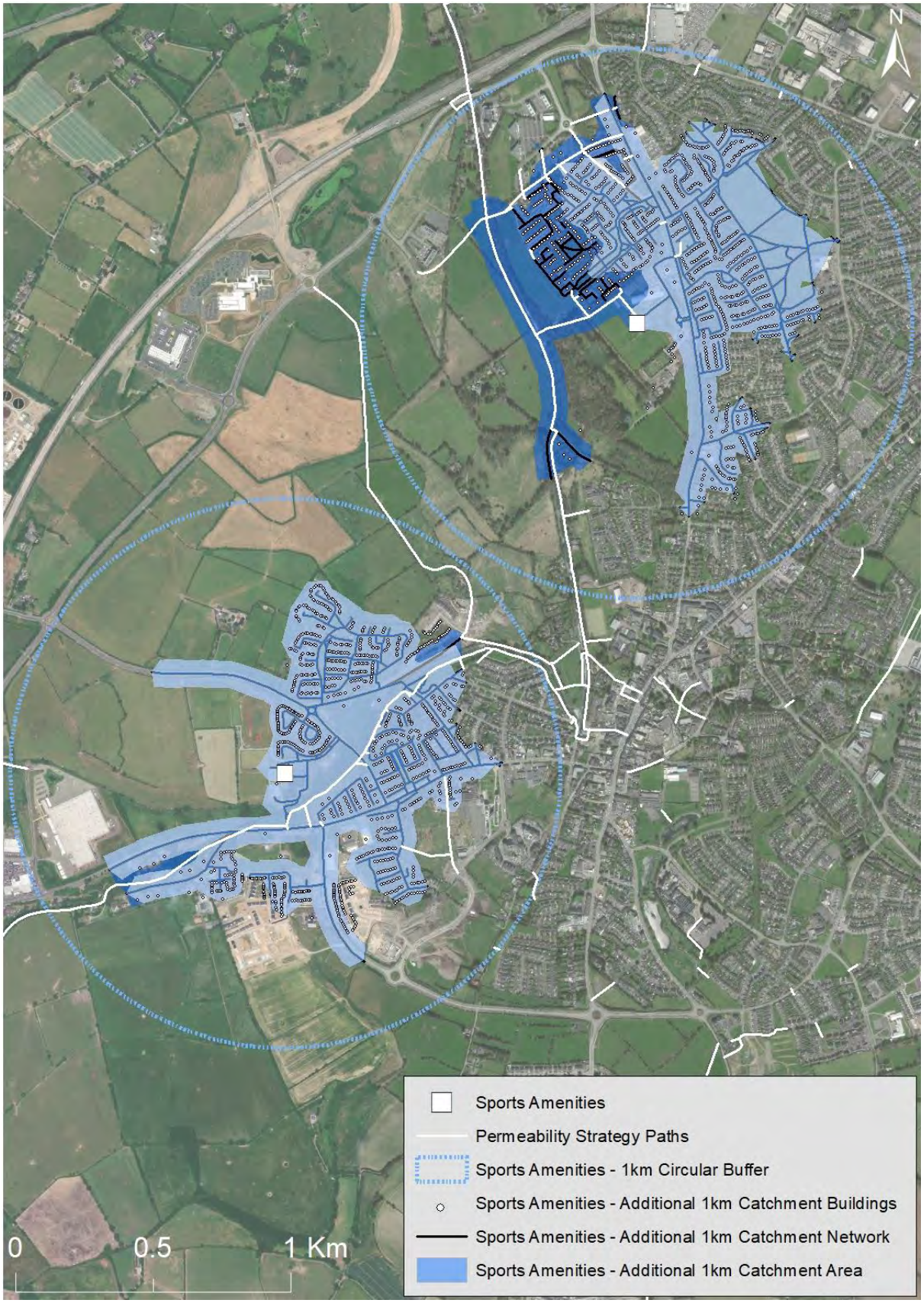


Figure 10.9:Expansion to the 1km Catchment for Sports Amenities

10.1.3.7 Impact on Hospital Catchment

Figure 10.10 shows the expansion of the 1km hospital catchment with the implementation of the permeability options, which are shown as white lines. The increase in catchment area when the proposed permeability measures are implemented is shown as a purple shaded area. There is a small increase in the number of homes added to the 1km catchment area, with an additional 75 homes (+4.5% increase) brought into the walking catchment. Additional benefits are observed in relation to reducing walking distance to the hospital. Implementation of the permeability measures results in a substantial reduction of over 100m in trip distances for 129 buildings. This represents a reduction in walking distance for 8.8% of buildings within the baseline 1km catchment area for the hospital.

A larger scale A3 version of this map is provided in Appendix D.

Figure 10.10 Expansion to the 1km Catchment for the Hospital

10.1.3.8 Quantified Benefits of the Permeability Strategy

In order to quantify the change in permeability as a result of the permeability strategy, the following statistics were produced using GIS tools and data from the GeoDirectory database of buildings (2018):

Number of Residential or Commercial Units Added to Walking Catchment

The implementation of the permeability strategy results in an increase in the number of buildings inside the walking distance catchment area for key destinations. The results are summarised in Table 10.3. While there is a modest improvement in respect to all catchments, the greatest proportional benefits are observed for Tesco Extra supermarket and bus stops, particularly as a result of the new stops for the proposed local bus routes, followed by sports amenities and the train station.

Table 10.3 Expansion of Walking Catchment to Key Destinations

	Existing Path Network		*Future Path Network*		*Difference*		*% Increase*	
Catchment	Residential Addresses	Commercial Addresses	Residential Addresses	Commercial Addresses	Residential Addresses	Commercial Addresses	Residential Addresses	Commercial Addresses
Rail Station - 1km	1,485	107	1,591	109	106	2	+7.1%	+1.9%
Existing Bus Stop - 500m	6,439	969	6,664	1,003	225	34	+3.5%	+3.5%
Existing + Proposed Bus Stops – 500m	6,439	969	8,077	1,042	1,638	73	+25.4%	+7.5%
Primary School - 1km	6,222	797	6,368	825	146	28	+2.3%	+3.5%
Secondary School - 1km	3,799	688	3,930	689	131	1	+3.4%	+0.1%
Tesco Extra -1km	566	33	829	62	263	29	+46.5%	+87.9%
Hospital - 1km	1,653	288	1,728	288	75	0	+4.5%	0.0%
Sports Amenities - 1km	1,792	40	2,087	61	295	21	+16.5%	+52.5%

Number of Buildings with Shorter Walking Distances to Key Destinations

The permeability strategy also reduces travel distance to key destinations from buildings in the existing catchment area. The findings presented in Table 10.4 highlight that walking trip distances have reduced by at least 100 metres to many key destinations throughout Naas and Sallins. The most significant improvements have been observed in enhancing access to primary and secondary schools as well as sports amenities.

Table 10.4 Reduction in Walking Distance to Key Destinations

Destination	No. Buildings with Trips at Least 100 Metres Shorter	Total Number of Buildings in Baseline Catchment	% Buildings in Catchment with Shorter Trips
Bus stops	112	5933	1.9%
Train Station	67	1193	5.6%
Primary School	556	5606	9.9%
Secondary School	560	3513	15.9%
Hospital	129	1471	8.8%
Sport Amenities	237	1754	13.5%

10.1.4 Phasing and Travel Role of Strategy Measures

The permeability strategy measures vary from simple interventions, such as creating links between housing estates, to complex pieces of infrastructure linked to the public transport strategy. The expected delivery timeframe of each permeability measure is defined in Table 10.5. Furthermore, Table 10.5 gives an indication of where each strategy measure improves accessibility to key destinations such as bus stops, rail station, schools, supermarkets, the hospital, sports amenities, Naas town centre, Sallins village centre, greenways or future development lands. This list of destinations is not exhaustive, and this qualitative assessment seeks to highlight the role of each measure in the improvement of walking/cycling for different trip types, rather than indicating the relative importance of each measure.

In respect to implementation, stakeholder and community engagement will be important in the delivery of the permeability strategy. It will be vital that the benefits of the permeability measures are communicated to local people prior to development and that residents are actively involved in the decision-making and design process. The National Transport Authority's (2015) 'Permeability: Best Practice Guide[9]' provides detailed guidance on the implementation of permeability links and the most appropriate approach to community engagement.

[9] https://www.nationaltransport.ie/wp-content/uploads/2015/07/NTA_Permeability_Report_-_Web.08.2015.pdf

Table 10.5 Delivery Timeframe and Role of Permeability Measures

Measure No.	Measure	Delivery Timeframe	Access to Destination Improved by Measure								
			Bus Stop	Rail Station	School	Supermarket	Hospital	Sports Amenity	Town/Village Centre	Greenway	Future Development Lands
01	Extend pavement on Clane Road to link with Sallins Bypass	Medium Term	x								x
02	Sallins Bypass - Pedestrian/Cyclist facilities	Delivered as part of Sallins by-pass scheme	x						x	x	x
03	Grand Canal Greenway - South Bank (East of Sallins) and North Bank (West of Sallins)	Delivered as part of Greenway Scheme.	x			x			x	x	
05	Extend pavement along L6013 to link with new housing estate	Short Term			x						
06	Create pedestrian/cyclist link between Castlesize Drive and Sallins Bypass	Medium Term	x	x	x	x			x		
07	Finish incomplete footpath on green of Sallins Bridge housing estate	Medium Term	x		x			x	x		
08	Create permeability link between housing estate	Medium Term	x		x			x	x	x	x
09	Create permeability links between housing estate, Lidl and Grand Canal Greenway.	Long Term	x			x			x	x	
10	Pedestrian/cyclist footbridge over Grand Canal outside St. Laurence's National School	Delivered as part of Greenway Scheme.	x	x	x	x		x	x	x	
11	Pedestrian/cyclist footbridge over Grand Canal	Long Term	x	x		x			x	x	
12	Pedestrian/cyclist footbridge over railway line and associated paths	Medium Term		x	x	x		x		x	x
13	Pedestrian/cyclist footbridge to connect the Grand Canal Greenway with the Naas Branch Greenway	Medium-Long Term linked to development of two greenways		x					x	x	
14	Create permeability link between two housing estates	Long Term	x	x		x					
15	Cyclist/pedestrian footbridge over railway line	Long Term		x					x	x	x

Measure No.	Measure	Delivery Timeframe	Access to Destination Improved by Measure								
			Bus Stop	Rail Station	School	Supermarket	Hospital	Sports Amenity	Town/Village Centre	Greenway	Future Development Lands
16	Grand Canal Greenway: Naas Branch	Delivered as part of Greenway Scheme.		x	x	x		x	x	x	x
17	Create permeability link between housing estate and lane	Medium Term								x	
18	Option for sustainable travel modes bridge and road over M7 to link Sallins with Naas	Long Term	x	x	x	x			x	x	x
19	Create path to link Canal Greenway with business park	Long Term								x	x
20	Ramp and/or steps from Millennium Link Road to Naas Branch Greenway	Medium Term	x							x	x
21	Pedestrian/Cyclist footbridge over Canal and associated path to link to housing estate	Medium Term	x							x	x
22	Permeability link between greenway, main road, housing estates and business park	Medium Term	x							x	x
23	Permeability link between two housing estates	Short Term						x		x	
24	Permeability link between housing estate and Greenway	Medium Term								x	
25	Path network linking GAA club, school, greenway and local housing estates	Medium Term - linked to the development of greenway and requires extensive stakeholder negotiation	x		x			x		x	
26	Permeability link between business park and bus stops	Medium Term	x								x
27	Permeability link between cul-de-sac and bus stops	Short Term	x								
28	Permeability link between cul-de-sac and bus stops	Short Term	x								
29	Permeability link between cul-de-sac and bus stops	Short Term	x		x						

Measure No.	Measure	Delivery Timeframe	Access to Destination Improved by Measure								
			Bus Stop	Rail Station	School	Supermarket	Hospital	Sports Amenity	Town/Village Centre	Greenway	Future Development Lands
30	Permeability link between cul-de-sac and bus stops	Short Term	x		x						
31	Permeability link between housing estates and supermarkets	Short Term	x			x					
32	Permeability link between housing estates and supermarkets	Short Term	x			x					
33	Permeability link between housing estates	Short Term	x			x					
34	Permeability link between housing estate and potential bus route	Short Term	x			x					
35	Road from Millennium Link Road to Abbey Bridge with pedestrian/cyclist facilities	Delivered as part of road scheme	x		x				x	x	x
36	Permeability link between housing estates	Medium Term	x		x		x				
37	Permeability link between housing estate and existing infrastructure	Short Term	x		x						
38	Two footbridges and associated connecting paths	Long Term	x		x	x			x	x	x
39	Permeability link between housing estate and existing infrastructure	Short Term	x		x		x				x
40	Western entrance to school to link with Greenway	Medium Term			x				x	x	
41	Complete pedestrian pavement to school	Medium Term	x		x				x		x
42	Create southern entrance to two schools to link with existing path network	Short Term	x		x				x		
43	Path network to improve town centre accessibility	Long Term	x			x			x		
44	Create southern entrance to hospital	Short Term					x				
45	Permeability link to hospital from housing estate	Short Term	x				x				
46	Create permeability link from housing estate to main road	Medium Term	x		x				x		
48	New road objective	Delivered as part of road scheme									x
49	Extend pavement to nearby school and houses	Medium Term	x		x						x

Measure No.	Measure	Delivery Timeframe	Access to Destination Improved by Measure								
			Bus Stop	Rail Station	School	Supermarket	Hospital	Sports Amenity	Town/Village Centre	Greenway	Future Development Lands
50	Finish connection for existing cycling infrastructure	Short Term	x		x						
51	Create path between housing estate and main road	Short Term	x		x						
52	Create path between housing estate and main road	Short Term	x		x						
54	Create path between schools and greenway	Long Term	x		x					x	x
55	Residential link to greenway	Long Term	x		x					x	x
56	Dunlavin Greenway from GDA Cycle Network	Delivered as part of Greenway Scheme.	x		x					x	x
57	Path network to link multiple housing estates	Medium	x		x					x	x
58	Create path network to main road from housing estates	Short Term	x		x						
59	Create school path	Short Term	x		x						
60	Bus stops moved from dual carriageway to the section of the R445 to the north of Naas Retail Park and signalised pedestrian crossing point provided for access	Short Term	x			x					
61	New road objective	Delivered as part of road scheme									x
62	Greenway on canal branch	Delivered as part of Greenway Scheme.								x	x
63	Permeability link between housing estate and main road	Short Term	x		x			x		x	
64	Create link from main road to greenway	Medium Term	x					x			
65	Create footpath on existing roads to link housing estates, greenway and Sallins Bypass	Long Term								x	x
66	Permeability link between housing estates for cycle route	Medium Term	x								x

Measure No.	Measure	Delivery Timeframe	Access to Destination Improved by Measure								
			Bus Stop	Rail Station	School	Supermarket	Hospital	Sports Amenity	Town/Village Centre	Greenway	Future Development Lands
67	Permeability link between housing estate and school	Short Term	x		x						
68	Permeability link between Devoy Barracks Site and Newbridge Road	Medium	x			x		x	x	x	x

10.2 Cycling Measures

The cycling measures seek to achieve the following strategy objectives:

1. Provide an integrated cycle network for Naas and Sallins in accordance with the National Transport Authority's Cycle Network Plan for the Greater Dublin Area.
2. Improve safety for cyclists in Naas and Sallins.
3. Prioritise investment in schemes that will deliver the greatest modal shift potential.
4. Provide recommendations on the quality of cycle facilities that should be delivered.
5. Expand cycle parking at schools, in the town centre and at public transport nodes.
6. Engage with schools with the aim of increasing cycling mode share and making cycling easier.

10.2.1 Development of Cycle Network Options

The cycling strategy seeks to create a network of safe, comfortable, coherent and convenient cycling routes throughout the study area. This network should ensure that cycling becomes an attractive option for as many local trips as possible, including journeys to work and school and journeys made for other purposes such as shopping, visiting friends and family and attending leisure activities.

The proposed set of cycle network infrastructure measures outlined in the following section was developed through an iterative process which considered:

- The NTA's Cycle Network Plan for the Greater Dublin Area (also referred to as GDA Cycle Network Plan) first published in 2013
- Existing cycling infrastructure within the study area and other relevant features of current cycling conditions on each significant link
- Cycling infrastructure schemes for which planning is already in place or planning work has commenced
- Obvious constraints which impact the feasibility of prioritising cycling on some major roads
- The location of schools, employment, supermarkets and significant leisure facilities and desire lines to these destinations from residential areas
- Relevant input collected through the stakeholder meetings and public consultation survey discussed in Section 3

Routes following roads within the proposed urban cycle network for Naas and Sallins which were included in the Cycle Network Plan for the GDA were categorised in the plan as either 'Primary/Secondary' routes or 'Feeder' routes. Although a distinction was made between 'Primary' and 'Secondary' routes within Dublin, this was not done in the case of other towns. Green routes away from roads were categorised separately as either 'Greenway' or 'Minor Greenway'. The relevant categorisation of each link according to the Cycle Network Plan has been included for reference purposes in the Cycle Network Options table.

In the case of cycling links on or along roads, the Cycle Network Plan for the GDA did not propose the type of infrastructural improvement, if any, which should be provided at specific locations within Naas and Sallins. In this strategy, options on or adjacent to existing roads have been categorised as being likely to require either dedicated cycling infrastructure (Cycle Track/Cycle Lane), or other improvements ('Shared Street Improvement'). The category of 'Shared Street' is intended to correspond to the link type within the National Cycle Manual of 'Mixed/Shared Street'. The type of road environments which are typically suitable to be designated as 'Mixed/Shared Streets' for cycling are: residential areas, access roads and streets, environmental traffic cells (low traffic neighbourhoods where through traffic has been eliminated through the use of 'modal filters'[10]) and shopping streets. Mixed/shared streets should also meet a number of other criteria, including:

[10] Modal filters create 'filtered permeability', where access is retained for active modes while restricting vehicular traffic. There are different ways of achieving this including the use of physical barriers such as planters or bollards, arranging one way streets to

- Little or no through traffic, except perhaps public transport
- Traffic function is subordinate to vulnerable road user requirements
- Low traffic speeds and volumes
- Not appropriate for multi-lane roads

The category of 'Shared Street Improvement' has been allocated to cycle network options where it is considered that some improvement, other than the provision of dedicated cycle facilities, is likely to be required in order to ensure a street meets these criteria.

No distinction has been made between cycle lanes and segregated cycle tracks at this stage, as schemes can be comprised of both types of facility and smooth transitions from cycle track to cycle lane are central to success. However, while the exact degree of segregation to be provided at different points on these links is best determined at detailed design stage, the overall objective should be to ensure that to the greatest extent possible, the degree of protection provided from vehicular traffic ensures a high level of perceived, as well as actual, safety, as this is an essential component of achieving modal shift.

The categories allocated to each option within the strategy should be considered as indicative or provisional at this point, as future, more detailed analysis of existing traffic levels, current speeds and other local specific considerations may determine that an alternative category is more suitable for some links. In addition, a small number of link options have been allocated a category of 'link type to be determined by detailed study'. These are locations where a strong cycling desire line exists, but the complexity of the current street configuration means that the relative benefits and feasibility of providing dedicated space for cycling requires more detailed analysis before even an indicative determination can be made.

An objective of the Naas/Sallins Transport Strategy is to provide an integrated cycle network in accordance with the Cycle Network Plan for the Greater Dublin Area (GDA). The Cycle Network Plan for the GDA therefore acted as a starting point for the development of cycle network options and in general, the proposals within this strategy are largely consistent with that document. However, some routes or sections of routes which are included within the Cycle Network Plan have not been prioritised within this strategy. In some cases, this is because a link relates to an inter-urban route which has been deemed outside the scope of this study. However, in other cases it is because it is considered unfeasible to deliver a suitable standard of cycling priority within the lifetime of this strategy in the context of the existing traffic regime and physical space constraints. In these latter cases, it is intended to ensure a parallel/alternative route is provided which at least partially replaces a missing segment. It should also be noted that the expectations of both the public and policy makers regarding the quality of cycling infrastructure provision in Ireland have increased in the seven years since publication of the Cycle Network Plan. Therefore, although a road segment may have been included within the Cycle Network Plan, it may now be more difficult to deliver infrastructure which meets current standards at a location than had been previously envisaged.

There is some overlap between measures included in the cycling strategy and the permeability strategy outlined previously. In general, it has been assumed that unless otherwise stated, all new links included within the permeability strategy will also be accessible for cycling. However, only measures which provide some 'strategic' function in the context of the overall cycle network have been included/duplicated as cycle network options. In addition, in the process of developing the cycle network strategy some locations were identified where pedestrian permeability already exists but permeability for cycling could be improved through relatively minor works and these have been included in the cycling strategy as a separate category of options.

10.2.2 Cycle Network Measures

Proposed cycle network measures are described in Table 10.6. Each link has been allocated a rating with regard to its potential to achieve modal shift to cycling for trips to work, school or 3rd level

prevent through traffic while providing exemptions for cycles, or implementing other types of signed traffic restrictions with exemptions for cycles.

education. A summary of the connectivity provided by each proposed link for improvement within the network is also provided.

Figure 10.11 presents the existing cycle network within the study area, including those links which have been designated as 'shared streets' not requiring improvement as part of the strategy. Figure 10.12 presents the proposed cycle network options incorporating both existing links and strategy measures.

Larger scale A3 versions of these maps are provided in Appendix D.

Table 10.6 Delivery Timeframe and Role of Cycle Network Measures

ID	Description	Proposed Link Type	Proposed Timeframe	Existing Scheme	GDA Cycle Network Plan	Importance for School Trips	Importance for Employment and 3rd Level	Summary of Main Connectivity Provided
1	Naas to Sallins Greenway	Greenway	Medium term	Naas to Sallins Greenway (Part 8 process significantly advanced)	Greenway	High	High	Essential north/south spine within overall network
2	Grand Canal Greenway	Greenway	Medium term	Part 8 complete	Greenway	Medium	Medium	Mainly a leisure route but within Sallins will improve east/west connectivity and access to Naas to Sallins Greenway
3	Naas to Dunlavin / Baltinglass Greenway	Greenway	Long term	No	Greenway	Medium	Low	Mainly a leisure route but if provided could be connected to Piper's Hill campus and residential estates
4	Monread Road	Cycle Track/ Cycle Lane	Medium term	No	Primary/ Secondary	Medium	High	Retail and employment Residential estates south of Monread Road Links Johnstown/Kill and northern section of Dublin Road to Sallins and to Millennium Park
5	Dublin Road (Monread Road to Naas Town Centre)	Cycle Track/ Cycle Lane	Medium term	Part 8 complete	Primary/ Secondary	Medium	High	Maudlings Industrial Estate (incl. Cinema) Naas Industrial Estate Link to separate planned Naas to Kill cycle scheme
6	Blessington Road (Dublin Road to Ballycane Road)	Cycle Track/ Cycle Lane	Long term	No	Primary/ Secondary	Medium	Medium	AIB Direct Link from north / Dublin Road to schools at Lacken View and Craddockstown Road Residential estates
7	Ballycane Road	Cycle Track/ Cycle Lane	Medium term	No	Primary/ Secondary	High	Medium	No major attractors directly on link but most direct route from some residential areas to schools and hospital
8	Craddockstown Road (Outside Ring)	Cycle Track/ Cycle Lane	Short term	Currently in Design Phase	Feeder	Cycle Track	Short term	Craddockstown NS Significant residential catchment

ID	Description	Proposed Link Type	Proposed Timeframe	Existing Scheme	GDA Cycle Network Plan	Importance for School Trips	Importance for Employment and 3rd Level	Summary of Main Connectivity Provided
9	Craddockstown Road (Inside Ring)	Cycle Track/ Cycle Lane	Medium term	No	Feeder	Medium	High	Naas Hospital (main entrance) Substantial residential catchment Route towards Craddockstown NS from north and most direct route to Town Centre from residential areas south of Ballycane Road
10	Ballymore Road (Craddockstown Road to Kilcullen Road Section)	Cycle Track/ Cycle Lane	Medium term	No	Feeder	Medium	High	Link to Craddockstown Road (Hospital), Lakelands and to Ballymore Road
11	Kilcullen Road (Ring Road to Town Centre)	Cycle Track/ Cycle Lane	Medium term	Part 8 complete	Primary/ Secondary	High	Medium	Schools at Piper's Hill and Killashee Town Centre Residential
12	Kilcullen Road Piper's Hill to Killashee	Cycle Track/ Cycle Lane	Medium term	No	n/a	High	Low	Killashee School Killashee Hotel (incl. leisure centre)
13	Main Street	Shared Street	Medium term	No	Primary/ Secondary	High	High	Town Centre retail and other attractions Town Centre Schools Connects numerous other links within network e.g. Dublin Road to Kilcullen Road
14	John Devoy Road (section from Newbridge Road to Devoy Quarter)	Cycle Track/ Cycle Lane	Medium term	No	n/a	Low	High	KCC Offices Osprey Hotel Connects Greenway to South Ring Road and Kilcullen Road
15	Newbridge Road (Millennium Link Road to Canal Bridge/Jigginstown Green Road)	Cycle Track/ Cycle Lane	Long term	No	Primary/ Secondary	Low	High	Newhall Retail Park, Lidl, Aldi Distribution Centre and surrounding retail/employment

ID	Description	Proposed Link Type	Proposed Timeframe	Existing Scheme	GDA Cycle Network Plan	Importance for School Trips	Importance for Employment and 3rd Level	Summary of Main Connectivity Provided
16	Northwest Quadrant Link Road	Cycle Track/ Cycle Lane	Delivered as part of road scheme	No	n/a	High	High	Future Naas Community College Kerry Group New residential quarter
17	Sallins Road (Morell Road to Maple Avenue)	Cycle Track/ Cycle Lane	Medium term	No	Primary/ Secondary	High	Medium	Link residential areas off Morrell Road to Greenway and Millennium Park
18	Sallins Road (in Sallins)	Cycle Track/ Cycle Lane	Medium term	No	Primary/ Secondary	High	High	Train Station, St. Laurence's NS, Retail, Significant residential catchment, access to two Greenways, connection to cycle facilities on Sallins Bypass
19	Sustainable travel modes bridge	Cycle Track/Cycle Lane (on proposed new bridge)	Long term	No	n/a	Low	High	Access to Train Station from eastern part of Naas Access to Monread and Dublin Road from Sallins
20	Ballymore Road	Link type to be determined by detailed study	Medium term	No	Feeder	Medium	Medium	Health Centre/Pharmacy Possible rear entrance to hospital Residential on road itself and shortest route between some larger residential areas off Ballycane Road to Town Centre
21	Newbridge Road (Old Caragh Road/St. Bridget's Terrace to town centre)	Link type to be determined by detailed study	Medium term	No	Primary/ Secondary	High	High	Gael Choláiste Chill Dara Access to other schools (e.g. at Corban's Lane or Kilcullen Road) from Greenway Library, Harbour Hotel Residential
22	Newbridge Road (Canal crossing/Jigginstown Green Road to South Ring Road)	Link type to be determined by detailed study	Long term	No	Primary/ Secondary	Medium	Medium	Link to Greenway, retail/employment at western end of Newbridge Road
23	Sallins Road (Section between	Link type to be determined by detailed study	Medium term	No	Primary/ Secondary	High	High	Connects residential areas on both sides of Sallins Road to destinations on opposite sides

ID	Description	Proposed Link Type	Proposed Timeframe	Existing Scheme	GDA Cycle Network Plan	Importance for School Trips	Importance for Employment and 3rd Level	Summary of Main Connectivity Provided
	Maple Avenue and Oldtown Walk)							
24	Southern section of route through park from Monread Avenue to Morell Road	Minor Greenway	Short term	No	Minor Greenway	High	High	Important north/south connection, alternative to Sallins Road for trips with origins and destinations in eastern part of Naas as well as local trips within Monread. Significant residential catchment
25	Woodlands to Kingsfurze Avenue Proposed Link	Minor Greenway	Medium term	No	n/a	Medium	Medium	Alternative to existing narrow laneway connecting two estates. Facilitates cycling access to trip attractors in direction of Dublin Road and Monread. Direct access to Racecourse from Dublin Road (avoiding narrow Tipper Road Proposed as replacement for Minor Greenway in GDA Cycle Network Plan which is on the Gallops Avenue (Road Option 1) alignment
26	Canal Bank to Millennium Link Road	Minor Greenway	Long term	No	Minor Greenway (Part of proposed link only)	High	High	Kerry Group Millennium Park School All areas accessible from Greenway
27	Path network linking GAA club, school, Greenway and local housing estates	Minor Greenway	Medium term	No	n/a	High	High	All destinations accessible via Greenway Scoil Bhríde GAA Residential estates
28	Sallins Road to Millennium Park and Canal Greenway	Minor Greenway	Medium term	No	n/a	High	High	All destinations accessible via Greenway Millennium Park Monread residential areas (via Sallins Road)
29	Millbridge Way/Mill Lane to Greenway	Minor Greenway	Medium term	No	n/a	Medium	Medium	All destinations accessible via Greenway Most direct connection to Greenway from areas off Monread Avenue

ID	Description	Proposed Link Type	Proposed Timeframe	Existing Scheme	GDA Cycle Network Plan	Importance for School Trips	Importance for Employment and 3rd Level	Summary of Main Connectivity Provided
30	Maudlin's Avenue	Shared street improvement	Short term	No	Feeder	Low	High	East/West Link to: Maudlings and Naas Industrial Estates Monread Community Centre/Sports Facilities Medical Centre/GymPlus
31	Monread Avenue	Shared street improvement	Short term	No	Primary/ Secondary	High	High	Orbital link in wider network Large residential catchment Local destinations - Tennis Club, Gym, Medical Centre, Local Shops
32	Sallins Road (Mill Lane to the Sycamores) and route through the Sycamores estate	Shared street improvement	Medium term	No	Primary/ Secondary	High	High	Link between Monread Avenue and Greenway and between Dublin Road and Greenway Desire line towards schools and town centre Residential estates
33	Sallins Road (Mill Lane to Monread Avenue)	Shared street improvement	Medium term	No	Primary/ Secondary	High	High	Link between Monread Avenue and Greenway and between Dublin Road and Greenway Desire line towards schools and town centre Residential estates
34	Tipper Road	Shared street improvement	Medium term	No	n/a	Medium	Medium	Racecourse Residential estates
35	Abbey Street/Moat Lane/Town Hall Lane	Shared street improvement	Medium term	Naas to Sallins Greenway	Feeder	High	High	Access to Greenway Town Centre attractions
36	Abbey Road	Shared street improvement	Medium term	No	Feeder	Low	Low	Numerous restaurants, pubs, retail, offices Access to Greenway
37	Basin Street	Shared street improvement	Medium term	Naas to Sallins Greenway	Feeder	High	High	Access to Greenway Town Centre attractions
38	Kilcullen Road (Town Centre section)	Shared street improvement	Medium term	Part 8 complete	Primary/ Secondary	High	High	Essential north/south spine in wider network Access to schools on Corban's Lane Supervalu, some other retail and some residential on this section of road.

ID	Description	Proposed Link Type	Proposed Timeframe	Existing Scheme	GDA Cycle Network Plan	Importance for School Trips	Importance for Employment and 3rd Level	Summary of Main Connectivity Provided
39	Old Caragh Road	Shared street improvement	Short term	No	n/a	High	High	Residential - access to Greenway
40	Oberstown Cottages Link (Greenway to Sallins Road)	Shared street improvement	Medium term	No	Feeder	Medium	Medium	Link between Greenway, residential development and Sallins Road
41	The Gallops Avenue	Cycle Track/Cycle Lane (as part of road scheme)	Delivered as part of road scheme	Naas Inner Relief Road (Rejected June 2019)	Minor Greenway and Feeder	Low	Low	Residential on corridor itself and off Blessington Road Naas Racecourse Maudling's Industrial Estate and Naas Industrial Estate on Dublin Road
42	Friary Road	Link type to be determined by detailed study	Medium term	No	Primary/ Secondary (part of link only)	High	Medium	Link to Corban's Lane and schools Orbital link in overall network
43	Corban's Lane	Link type to be determined by detailed study	Medium term	No	Primary/ Secondary	High	Medium	St. Corban's B.N.S Naas C.B.S Orbital link in overall network.

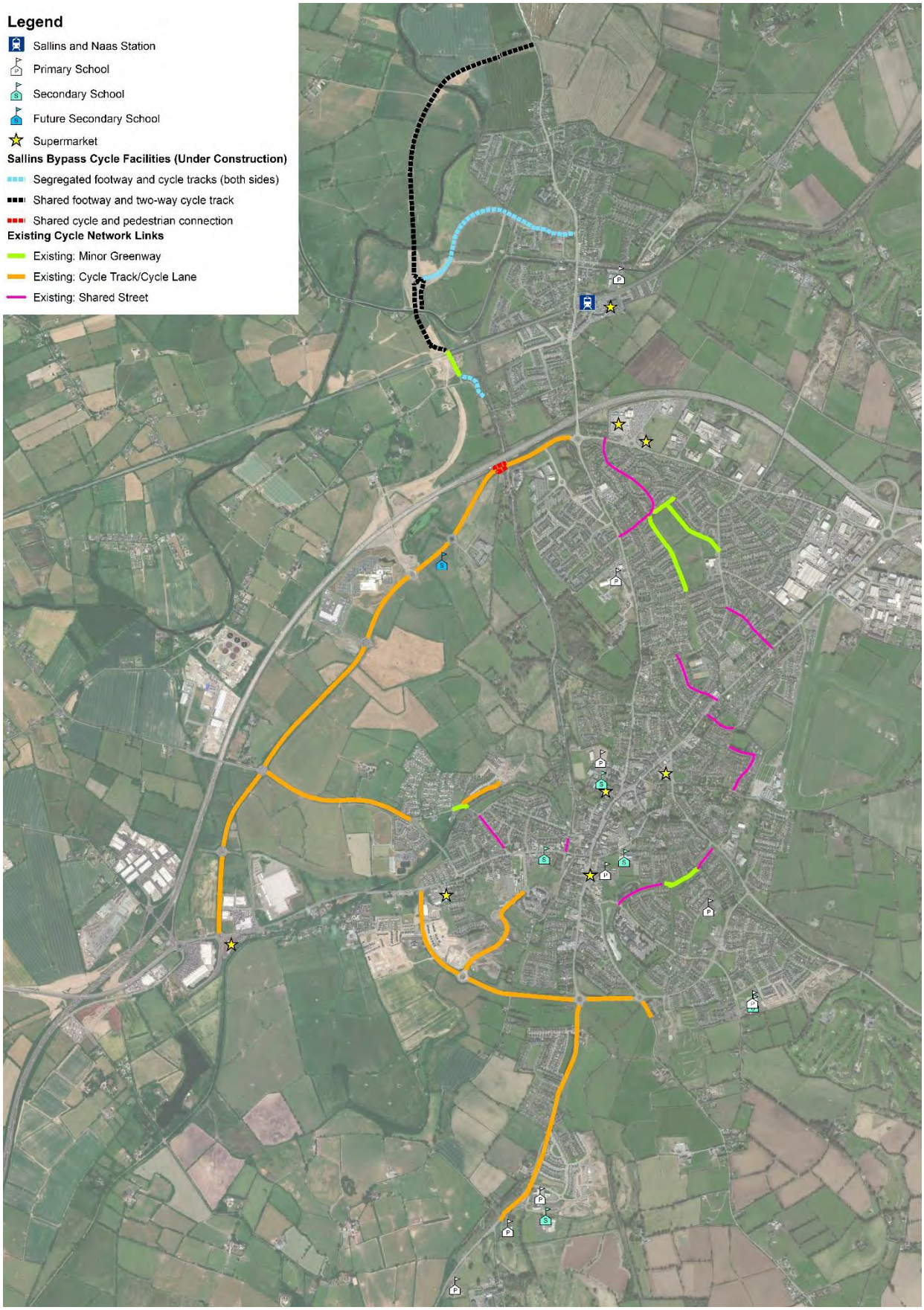


Figure 10.11 Existing and 'Under Construction' Cycle Facilities in Naas and Sallins

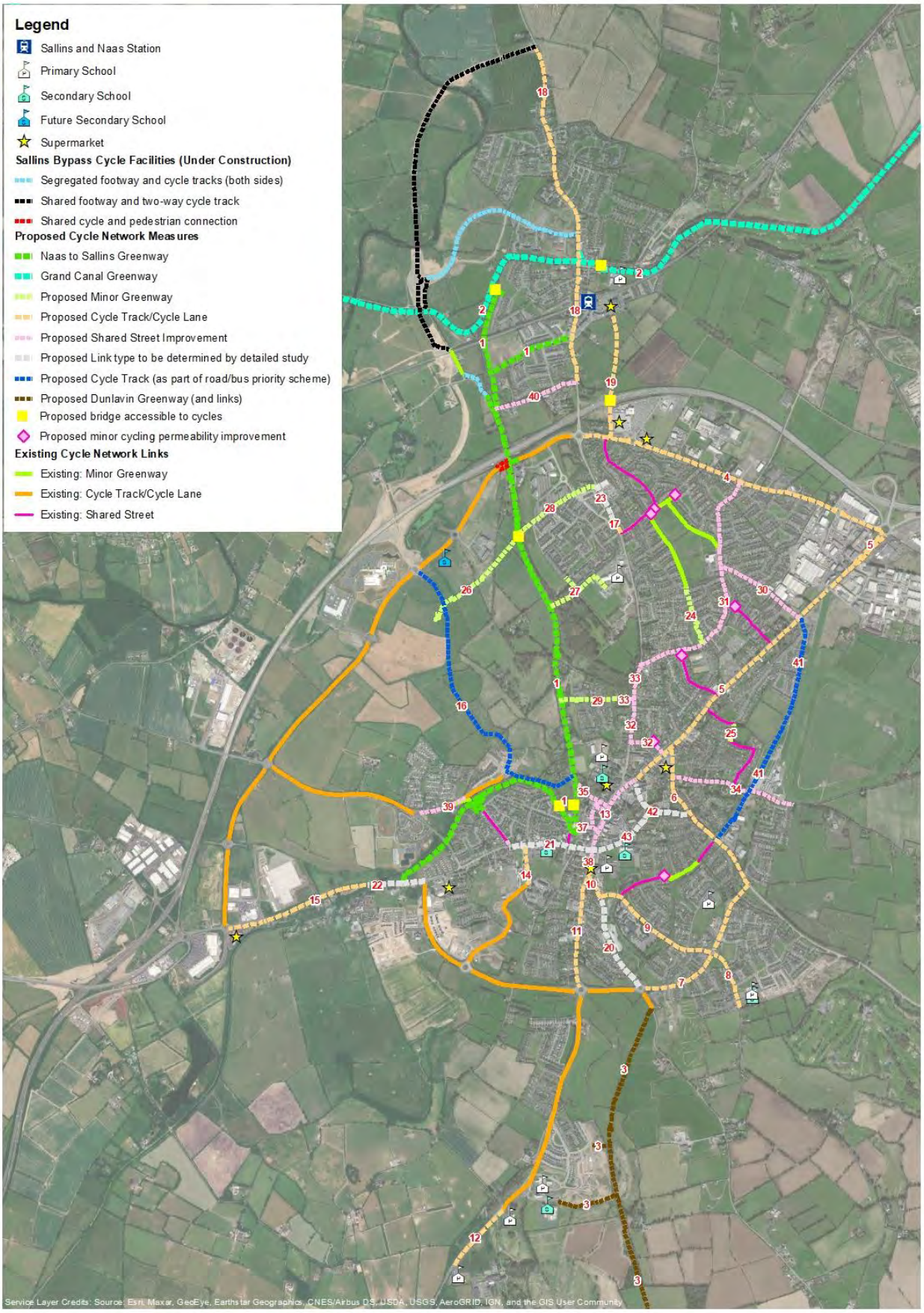


Figure 10.12 Proposed Cycle Network Measures

10.2.3 Cycle Parking

An absence of convenient and adequately secure cycle parking at all types of destinations presents a barrier to modal shift to cycling and can undermine investment in the overall cycle network infrastructure. Different types of cycle parking solutions are typically required at different locations and in some cases, a variety of different cycle parking solutions are required at the same location to accommodate different cycle parking duration or types of users.

The basic requirements of all cycle parking facilities are that they should be capable of supporting the frame of the bicycle and preventing it from falling over; protecting the cycle against theft and allowing the cyclists sufficient room to position and lock the cycle. In addition, consideration should be given to lighting, protection against the weather, ease of access and additional requirements at public transport. Cycle parking should also be conveniently located, with a good guideline being that it should always be as near or closer to the principal destination than the nearest non-disabled car parking space. Within larger sites, cycle parking should be well distributed throughout the site rather than concentrated in one area.

The National Cycle Manual provides comprehensive guidance regarding cycle parking which should be referred to by all stakeholders, with the aim of bringing all destinations in Naas up to best practice standards in terms of both the quality and quantity of cycle parking provided.

A high-level assessment of existing cycle parking provision within the study area demonstrates that there is currently significant scope to improve the provision of cycle parking at most types of destinations, including in particular: Naas and Sallins Station, bus stops, schools, retail destinations and other commercial premises.

The need to improve the security, quality and availability of cycle parking at Sallins Train Station was raised in the public consultation survey by a number of different respondents. During site visits, it was observed that the largest cycle parking area at the station was very overcrowded. There is also limited passive surveillance outside of peak commuting times and bicycles are likely to be left for long periods of time, including sometimes overnight, which increases the risk of theft. Therefore, it is recommended that cycle parking facilities at the station should be significantly expanded and enhanced and that a variety of options should be made available to accommodate the needs of different user groups, including regular sheltered cycle parking stands available to all and more secure options. For example, consideration should be given to the provision of a secure compound accessible only to registered users using an electronic fob, as is commonly found at similar commuter railway stations in other countries. Users could pay a monthly or annual fee for access to such a facility, which should also include lockers to facilitate the storage of helmets and other gear.

The integration of cycling and public transport could also be enhanced through improved provision of sheltered cycle parking at bus stops served by the busier commuter routes where space allows, as a survey of all bus stops in the study area showed that very few have adjacent cycle parking.

Within Naas Town Centre, there are currently small clusters of public cycle parking stands distributed at various locations along Main Street which appear to be adequate to accommodate current demand by shoppers and visitors to other business premises on Main Street, given the relatively low current uptake of cycling generally. However, it is recommended that usage of these facilities should be monitored, and provision should be made in the design of any future works to increase the level of provision over time. Additional cycle parking should also be provided at key public buildings within the Town Centre, such as the Courthouse and Moat Theatre. Furthermore, additional cycle parking should be provided at key trip destinations like Naas Hospital or Tesco Extra. There are also a small number of secure cycle parking lockers located in the car park at the rear of Abbey Street which are not currently well used. The Council will lobby Irish Rail for the installation of new bike lockers at the train station, or to facilitate the relocation of the bike lockers from Abbey Street to the train station.

There is a need to significantly enhance public cycle parking provision at other retail and commercial destinations away from Main Street, including supermarkets, neighbourhood centres and local shops and to ensure the facilities are prominently located. Many retail/commercial destinations currently have no obvious cycle parking at all or have poor quality 'wheel grip' stands in place. At other locations, cycle parking is not optimally located or maintained. For example, at Monread Shopping Centre, it was

observed that cycle parking stands were positioned far away from building entrances and shelter roofs were damaged.

Consultation with schools and the public consultation survey identified that some schools within the study area, such as Gael-Choláiste Chill Dara, already have high quality sheltered cycle parking while others have none. It is recommended that a comprehensive assessment of current provision of both cycle and scooter parking at schools should be undertaken to identify the number of schools where improvements are required. KCC could then consider providing facilities directly to interested schools in order to avail of economies of scale.

It was not possible to assess the current provision of cycle parking at private workplaces, or other supporting facilities currently in place at workplaces such as showers and lockers as part of this study. However, experience in other locations in Ireland has demonstrated that workplace facilities are very often below best practice standards and are regularly cited in employee travel surveys as a barrier to people choosing to cycle to work. It is recommended that KCC engage with workplaces in the study area to understand current provision and provide advice on best practice. A scheme of grants to incentivise the provision of adequate facilities could also be considered, which could potentially be restricted to smaller or non-commercial organisations who may have difficulty financing improvements from their own resources.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11 PUBLIC REALM IMPROVEMENTS
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11. Public Realm Improvements

The public realm report is located in Appendix E in Volume 2 of the report. It contains high-level concept sketches for public realm improvements in Sallins Village, Naas Main Street, the bus-only link from the harbour to the M7 and the backstreets to the west of Naas Main Street. The public realm improvements includes proposals for benches, planters, footpath improvements, road surface improvements, higher quality materials and other associated measures. The public realm proposals incorporate and compliment the changes proposed in the Naas/Sallins Transport Strategy in respect to public transport, permeability, roads, cycling and parking measures.

12 NAAS/SALLINS TRANSPORT STRATEGY

12. Naas/Sallins Transport Strategy

This section presents the measures included in the Naas/Sallins Transport Strategy for all modes of transport.

12.1 Public Transport Strategy

The measures included in the public transport strategy are listed in Table 12.1 and shown in Figure 12.1 with the same numbering. An exception is PT 6, the bus stop upgrade, where the location of existing bus stops and the new proposed bus stops for the local bus routes are shown, with this measure applying to every location. Furthermore, PT 17, lobbying for improved local bus services is not shown in the map.

Table 12.1 Public Transport Strategy Measures

Measure	Type	Short Description
PT 1	Interchange	Market Sq.
PT 2	Interchange	Harbour
PT 3	Local Bus Route	Central Spine Bus Route
PT 4	Local Bus Route	Western Spine Bus Route – Indicative Route
PT 5	Local Bus Route	Eastern Spine Bus Route
PT 6	Local Bus Route	Bus Stop Upgrade
PT 17	Local Bus Route	Lobby Bus Operators to Improve Local Services
PT 7	Bus Priority	Sustainable Travel Bridge
PT 8	Bus Priority	Morell Way Bus Gate
PT 9	Bus Priority	Left Turn Ban onto Main Street for Non-Bus Traffic
PT 10	Bus Priority	Priority Entrance to Pipers Hill for Buses
PT 11	Bus Priority	Bus-Only Link to Sallins Bypass – Indicative Route
PT 12	Rail	Lobby for Second Station with Park & Ride to the West
PT 13	Rail	Lobby for Extension of DART Services with Quad Track
PT 14	Rail	Lobby for Upgraded Sallins Train Station
PT 15	Rail	Lobby for 10 minute peak commuter rail frequency
PT 16	Rail	Lobby for 3rd Rail Platform at Sallins Train Station

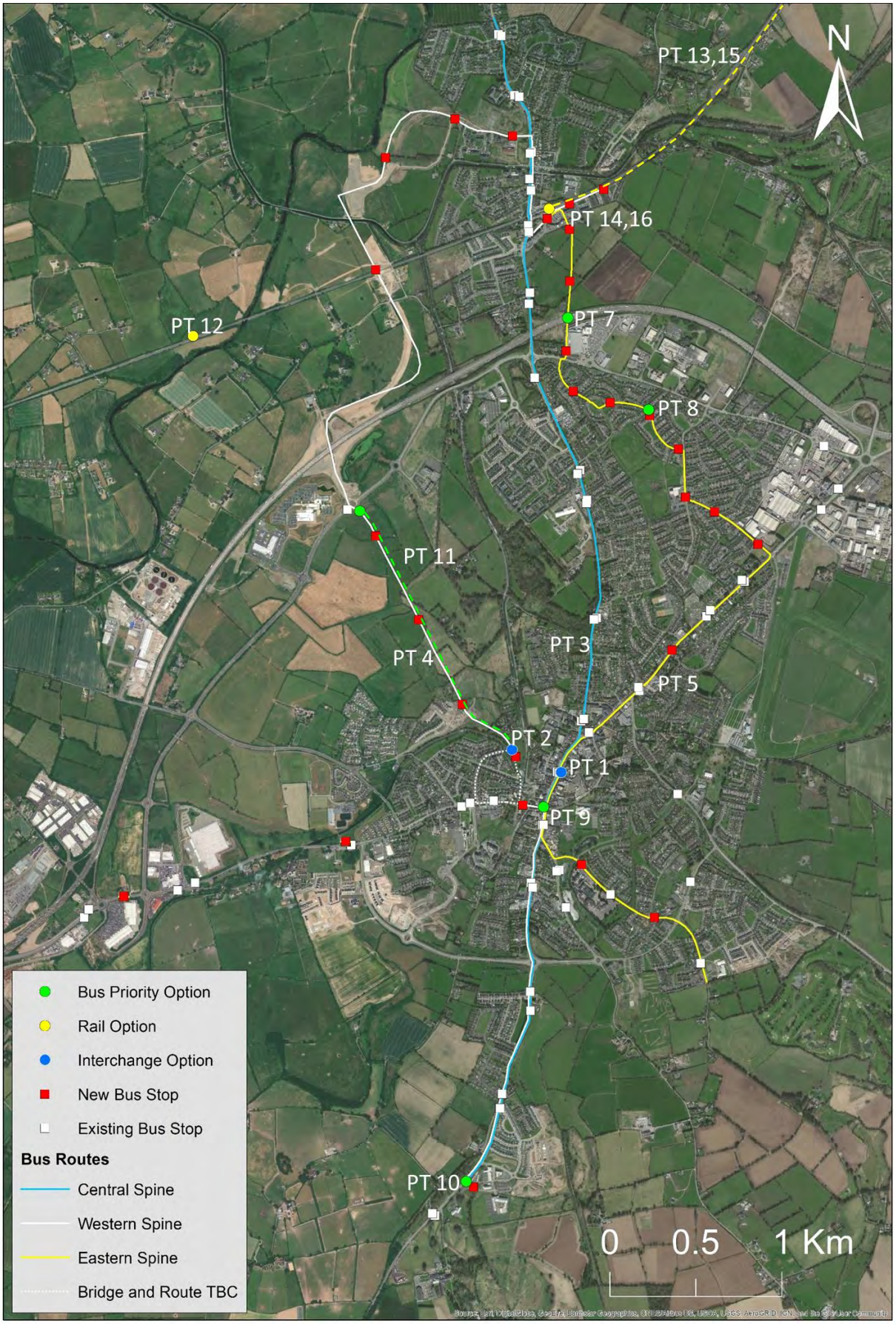

Figure 12.1 Naas/Sallins Public Transport Strategy

12.2 Permeability Strategy

The permeability measures numbered in Table 12.2 are shown in Figure 12.2 for Sallins and Figure 12.3 for Naas. In combination, these maps represent the permeability strategy for Naas and Sallins.

Larger scale A3 versions of these maps are provided in Appendix D.

Table 12.2 List of Permeability Strategy Measures

Measure	Description
PERM 1	Extend pavement on Clane Road to link with Sallins Bypass
PERM 2	**Road Scheme**: Pedestrian/Cyclist facilities on the Sallins Bypass under construction
PERM 3	**Greenway Scheme**: Grand Canal Greenway - South Bank (East of Sallins) and North Bank (West of Sallins)
PERM 5	Extend pavement along L6013 to provide access to recent housing estate development
PERM 6	Create pedestrian/cyclist link between Castlesize Drive and Sallins Bypass
PERM 7	Finish incomplete footpath on the green of Sallins Bridge housing estate
PERM 8	Create permeability link between housing estates Sallins Bridge - Straffan Way
PERM 9	Create permeability links between Millbank Estate housing estate - Lidl - Millbank on the greenway
PERM 10	**Greenway Scheme**: Pedestrian/cyclist footbridge over Grand Canal outside St. Laurence's National School
PERM 11	Pedestrian/cyclist footbridge over Grand Canal linking Osberstown Park - Millbank
PERM 12	Pedestrian/cyclist footbridge over railway line and associated paths linking Church Avenue - The Waterways
PERM 13	Pedestrian/cyclist footbridge to connect the Grand Canal Greenway with the Naas Branch Greenway
PERM 14	Create permeability link between two housing estates; Sallins Pier - Osberstown Drive
PERM 15	Cyclist/pedestrian footbridge over railway line linking housing estates; Sallins Pier - Oldbridge Station
PERM 16	**Greenway Scheme**: Grand Canal Greenway Naas Branch
PERM 17	Create permeability link between housing estate and lane: Oldbridge Drive - Osberstown Cottages
PERM 18	**Public Transport Measure**: Sustainable travel modes bridge over M7 to link Sallins with Naas with associated footpaths. Linking The Waterways (Sallins) - Monread Road (Naas)
PERM 19	Create path to link Canal Greenway with Millennium Business Park
PERM 20	Ramp and/or steps from Millennium Link Road to Naas Branch Canal Greenway
PERM 21	Pedestrian/Cyclist footbridge over Canal and associated path to link to Oldtown Demesne housing estate
PERM 22	Permeability link between Naas Branch Greenway - Oldtown Demesne housing estate - Millennium Business Park - Sallins Road
PERM 23	Permeability link between two housing estates; Oldwood - Oldtown Demesne
PERM 24	Permeability link between housing estate Millbridge Way and Greenway canal bank
PERM 25	Path network linking GAA club, school, greenway and local housing estates
PERM 26	Permeability link between Millennium Business Park - Sallins Road

Measure	Description
PERM 27	Permeability link between Morell Lawns - Sallins Road
PERM 28	Permeability link between Oldtown Walk - Sallins Road
PERM 29	Permeability link between Alder Grove - Sallins Road
PERM 30	Permeability link between Oldtown Rise - Oldtown Lawns - Sallins Road
PERM 31	Permeability link between Morell Close - Monread Road
PERM 32	Permeability link between Morell Crescent - Monread Road
PERM 33	Permeability link between Monread Avenue - Dun Na Riogh Avenue
PERM 34	Permeability link between Monread Road - Alymer Park
PERM 35	Public Transport Measure: Road with footpaths from Millennium Link Road - Abbey Bridge (Indicative Route)
PERM 36	Permeability link between housing estates; Rathasker Heights - Rathasker Road - Devoy Quarter
PERM 37	Permeability link between housing estate Carraig Oscair – Rathasker Road
PERM 38	Two footbridges and associated connecting paths to link; The Harbour - Abbey Bridge - Pacelli Road
PERM 39	Permeability link between housing estate Ashfield Park - South Ring road
PERM 40	Western entrance to St Mary's College to link with Greenway
PERM 41	Complete pedestrian footpath on Corban's Lane
PERM 42	Create southern entrance to two schools to link with existing path network near the lake
PERM 43	Path network to improve town centre accessibility between R445 - Friary Road - Corban's Lane
PERM 44	Create southern entrance to Naas General Hospital
PERM 45	Permeability link to hospital from Craddockstown Park housing estate
PERM 46	Create permeability link between; Thornbrook - R410
PERM 48	Road Measure: The Gallops Avenue
PERM 49	Extend pavement along R448 to Killashee School
PERM 50	Finish connection for existing cycling infrastructure to link R448 with Piper's Hill school complex
PERM 51	Create path between Broadfield View - R448
PERM 52	Create path between Esmondale housing estate and R448
PERM 54	Create path between Pipers Hill College - Dunlavin Greenway
PERM 55	Residential link from The Drive housing estate - Dunlavin Greenway
PERM 56	Greenway Scheme: Dunlavin Greenway. Southbound from the R411 on the route of the old railway line
PERM 57	Path network to link Cluain Aoibhinn - Craddockstown Crescent housing estates with R411
PERM 58	Create path network to Ballycane Road from housing estates Craddockstown Rise and Cluain Aoibhinn
PERM 59	Permeability link to school between Cluain Aoibhinn - Bán Na Gréinne housing estates
PERM 60	Bus stops moved from dual carriageway to the section of the R445 to the north of Naas Retail Park and signalised pedestrian crossing point provided for access

Measure	Description
PERM 61	**Road Measure**: Short link road between Millennium Link Road - Aldi Logistic Centre
PERM 62	**Greenway Scheme**: Greenway on Corbally branch of Grand Canal, linked to Naas-Sallins Greenway
PERM 63	Permeability link between housing estate Jigginstown Green - R445
PERM 64	Create link from R409 - Grand Canal Greenway Naas Branch
PERM 65	Create footpath on existing roads to link Osberstown Cottages - Osberstown Road - Naas Branch Greenway - Sallins Bypass
PERM 66	Permeability link between housing estates Kingsfurze Avenue - Woodlands
PERM 67	Permeability link between Oakfield Park - Craddockstown Road
PERM 68	Permeability link between Devoy Barracks Site and Newbridge Road

Figure 12.2 Permeability Strategy in Sallins

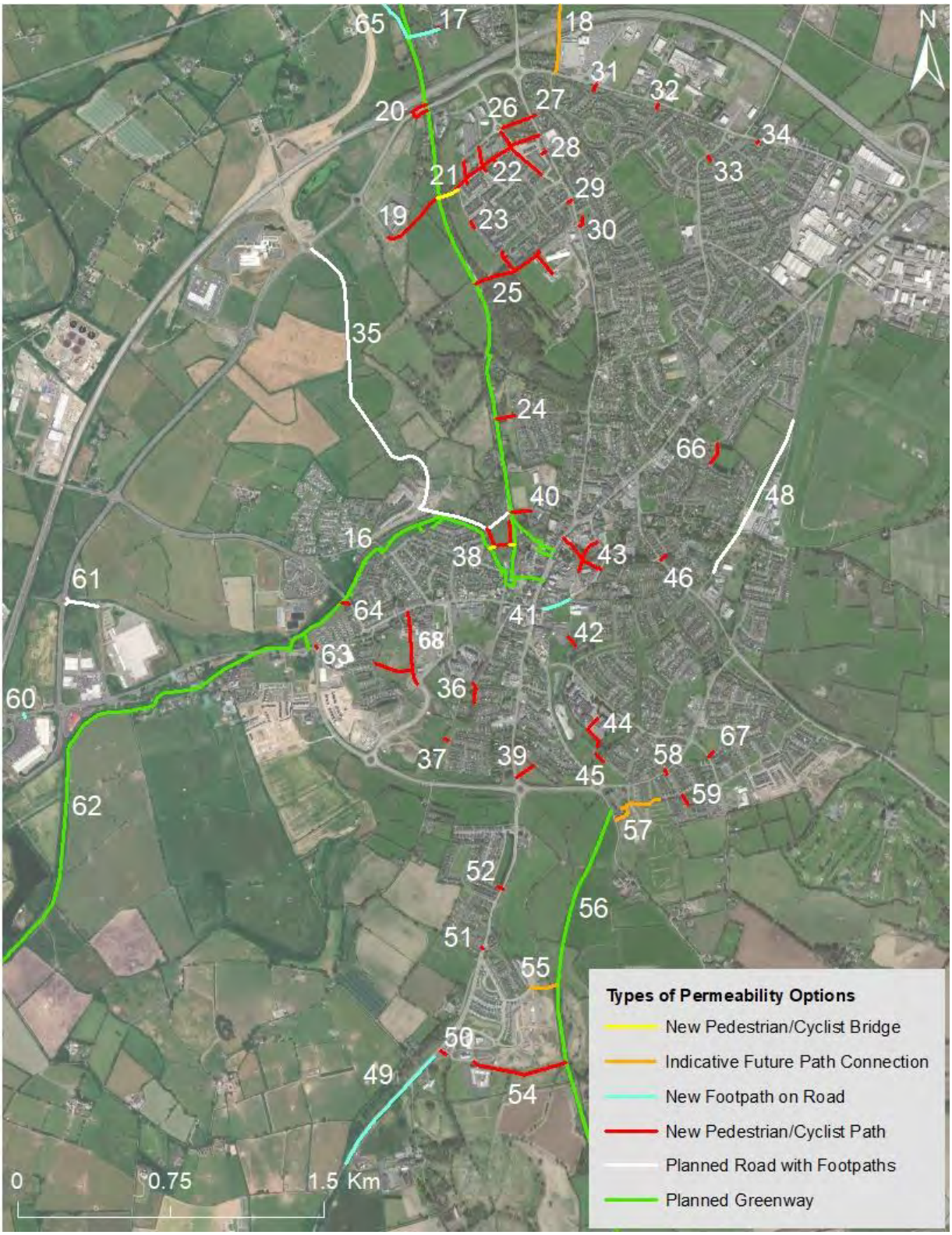

Figure 12.3 Permeability Strategy in Naas

12.3 Cycling Strategy

The cycling measures numbered in Table 12.3 are displayed spatially in Figure 12.4. This map shows the proposed cycling measures within the context of the existing cycling infrastructure to demonstrate the independencies between them. Larger scale A3 versions of these maps are provided in Appendix D.

Table 12.3 Cycle Network Strategy Measures

Measure	Description	Proposed Link Type
C 1	Naas to Sallins Greenway	Greenway
C 2	Grand Canal Greenway	Greenway
C 3	Naas to Dunlavin / Baltinglass Greenway	Greenway
C 4	Monread Road	Cycle Track/Cycle Lane
C 5	Dublin Road (Monread Road to Naas Town Centre)	Cycle Track/Cycle Lane
C 6	Blessington Road (Dublin Road to Ballycane Road)	Cycle Track/Cycle Lane
C 7	Ballycane Road	Cycle Track/Cycle Lane
C 8	Craddockstown Road (Outside Ring)	Cycle Track/Cycle Lane
C 9	Craddockstown Road (Inside Ring)	Cycle Track/Cycle Lane
C 10	Ballymore Road (Craddockstown Road to Kilcullen Road Section)	Cycle Track/Cycle Lane
C 11	Kilcullen Road (Ring Road to Town Centre)	Cycle Track/Cycle Lane
C 12	Kilcullen Road Piper's Hill to Killashee	Cycle Track/Cycle Lane
C 13	Main Street	Shared Street improvement
C 14	John Devoy Road (section from Newbridge Road to Devoy Quarter)	Cycle Track/Cycle Lane
C 15	Newbridge Road (Millennium Link Road to Canal Bridge/Jigginstown Green Road)	Cycle Track/Cycle Lane
C 16	Northwest Quadrant Link Road (Indicative Route)	Cycle Track/Cycle Lane
C 17	Sallins Road (Morell Road to Maple Avenue)	Cycle Track/Cycle Lane
C 18	Sallins Road (in Sallins)	Cycle Track/Cycle Lane
C 19	Sustainable travel modes bridge	Cycle Track/Cycle Lane (on proposed new bridge)
C 20	Ballymore Road	Link type to be determined by detailed study
C 21	Newbridge Road (Old Caragh Road/St. Bridget's Terrace to town centre)	Link type to be determined by detailed study
C 22	Newbridge Road (Canal crossing/Jigginstown Green Road to South Ring Road)	Link type to be determined by detailed study
C 23	Sallins Road (Section between Maple Avenue and Oldtown Walk)	Link type to be determined by detailed study

Measure	Description	Proposed Link Type
C 24	Southern section of route through park from Monread Avenue to Morell Road	Minor Greenway
C 25	Woodlands to Kingsfurze Avenue Proposed Link	Minor Greenway
C 26	Canal Bank to Millennium Link Road	Minor Greenway
C 27	Path network linking GAA club, school, Greenway and local housing estates	Minor Greenway
C 28	Sallins Road to Millennium Park and Canal Greenway	Minor Greenway
C 29	Millbridge Way/Mill Lane to Greenway	Minor Greenway
C 30	Maudlins Avenue	Shared street improvement
C 31	Monread Avenue	Shared street improvement
C 32	Sallins Road (Mill Lane to the Sycamores) and route through the Sycamores estate	Shared street improvement
C 33	Sallins Road (Mill Lane to Monread Avenue)	Shared street improvement
C 34	Tipper Road	Shared street improvement
C 35	Abbey Street/Moat Lane/Town Hall Lane	Shared street improvement
C 36	Abbey Road	Shared street improvement
C 37	Basin Street	Shared street improvement
C 38	Kilcullen Road (Town Centre section)	Shared street improvement
C 39	Old Caragh Road	Shared street improvement
C 40	Osberstown Cottages Link (Greenway to Sallins Road)	Shared street improvement
C 41	The Gallops Avenue	Cycle Track/Cycle Lane (as part of road scheme)
C 42	Friary Road	Link type to be determined by detailed study
C 43	Corban's Lane	Link type to be determined by detailed study

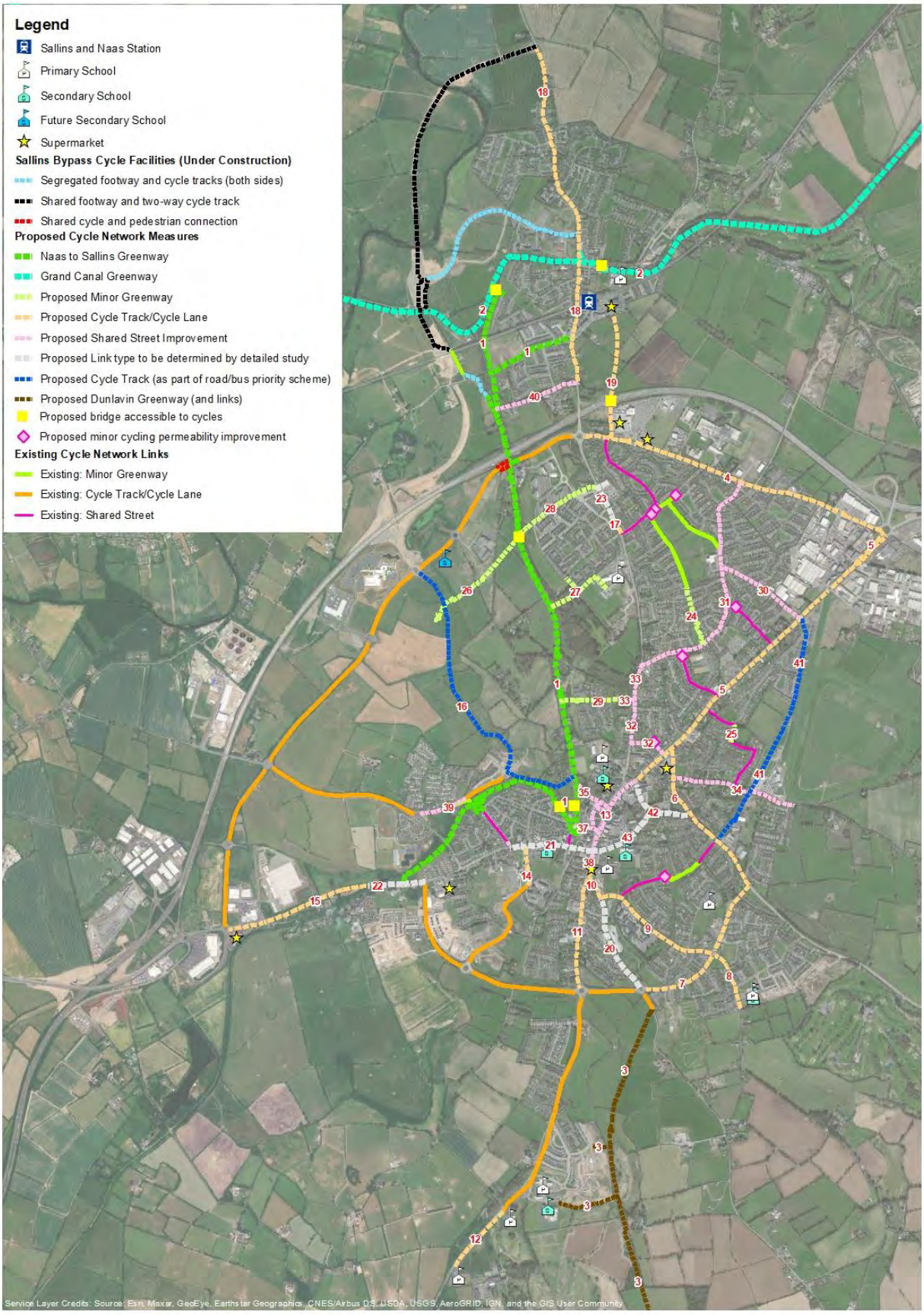

Figure 12.4 Future Cycle Network (Existing and Proposed Links)

12.4 Roads Strategy

The list of measures contained in the road's strategy are listed in Table 12.4. The location of road strategy measures 1 to 4 are shown in Figure 12.5 and road strategy measure RD 5, the HGV restriction in the town centre, is represented in Figure 12.6. Road strategy measure RD 6 is not shown on the maps.

Table 12.4 List of Roads Strategy Measures

Measure	Short Description
RD 1	The Gallops Avenue
RD 2	Upgrade of Murtagh's Corner Junction and Link Road to Corban's Lane
RD 3	Millbridge Street – Indicative route
RD 4	Road Linking Aldi Distribution Centre and Millennium Link Road
RD 5	HGV Restriction in Town Centre
RD 6	Upgrade Signalised Junctions to MOVA or SCOOT as Appropriate (Note: Not shown on map)

Figure 12.5 Roads Strategy – Measures 1-4

Figure 12.6 Road Strategy – Measure 5

12.5 Parking Strategy

The measures included in the parking strategy are listed in Table 12.5 and shown in Figure 12.7 with the same numbering. Parking measure PK 6 is divided into two elements to demonstrate the different locations involved; PK 6 Part A – relocate parallel parking from Corban's Lane, and PK 6 Part B – the creation of a formal school drop-off area for Naas CBS. PK 6B is shown in multiple locations to reflect the two possible sites for a school drop-off facility, with the final site chosen through a detailed design process. It should be noted that the locations for mobility management plans (PK 5), electric vehicle charging points (PK 7) and increased parking enforcement (PK 8) are not shown in Figure 12.7.

Table 12.5 List of Parking Strategy Measures

Measure	Short Description
PK 1	Expanded Park and Ride at Sallins Train Station
PK 2	Relocate Perpendicular Parking on Main Street and Sallins Road
PK 3	New Town Centre Car Park Near Main Street
PK 4	Poplar Square Plaza Development
PK 5	Mobility Management Plans for Major Workplace Locations (100+ staff) – Note: Not Shown on Map
PK 6A	Relocate Parallel Parking on Corban's Lane
PK 6B	Construct Formal School Drop-Off Facility for Naas CBS on one of the two sites indicated. Final location determined by detailed design.
PK 7	Electric Vehicle Charging Points – Note: Not Shown on Map
PK 8	Increased Parking Enforcement – Note: Not Shown on Map
PK 9	New Car Park Facility in Redeveloped Naas Shopping Centre

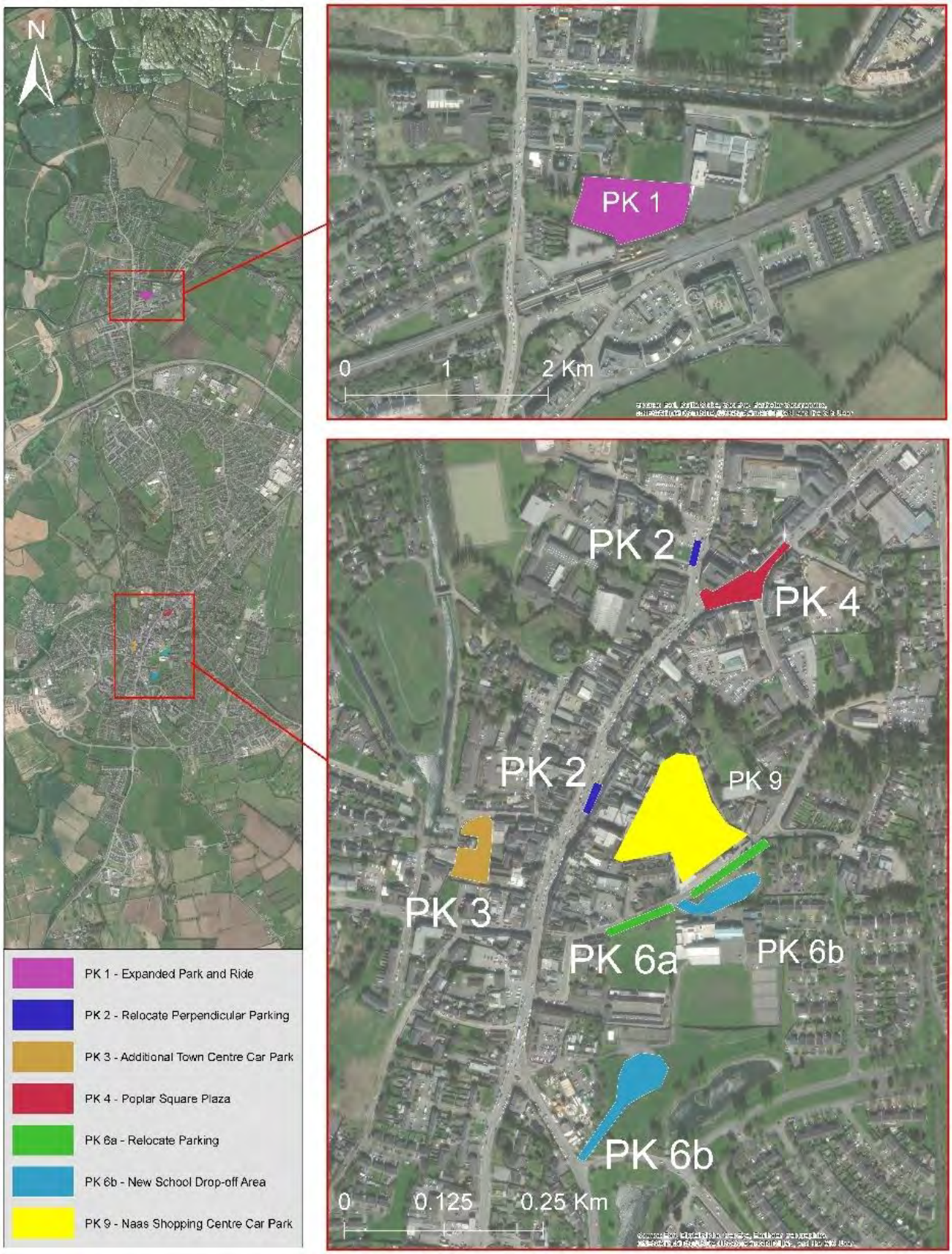

Figure 12.7 Parking Strategy in Naas and Sallins

13 STRATEGY IMPLEMENTATION

13. Strategy Implementation

This section defines the delivery timeframe for each measure contained in the Naas/Sallins Transport Strategy and establishes a series of planning principles to support the delivery of the Strategy.

13.1 Strategy Phasing

The implementation of the Naas/Sallins Transport Strategy has to be carefully phased to ensure that all measures are mutually supportive in achieving the objectives of the strategy.

13.1.1 Short Term Measures

Table 13.1 lists the short term measures in the Naas/Sallins Transport Strategy across all modes. Measures which are being delivered as part of separate road, greenway or other projects are designated as N/A as their timetable of delivery cannot be defined by the Naas/Sallins Transport Strategy.

Table 13.1 Naas/Sallins Transport Strategy Phasing – Short Term Measures

			Delivery Timeframe			
Measure	Type	Short Description	Short Term (1-2 Years)	Medium Term (3-5 Years)	Long Term (6-10 Years)	Notes
PT 1	Interchange	Market Sq.	x			
PT 3	Local Bus Route	Central Spine	x			
PT 5	Local Bus Route	Eastern Spine	x			
PT 6	Local Bus Route	Bus Stop Upgrade	x			
PT 8	Bus Priority	Morell Way Bus Gate	x			
PT 10	Bus Priority	Priority Entrance to Pipers Hill	x			
PT 14	Rail	Lobby for Upgraded Sallins Station	x			
PT 15	Rail	Lobby for 10 minute commuter rail frequency	x			
PT 17	Local Bus Route	Lobby Bus Operators to Improve Local Services	x			
RD 4	Road	Road Linking Aldi Distribution Centre and Millennium Link Road	x			
RD 5	Road	HGV Restriction in Town Centre	x			
RD 6	Road	Upgrade Signalised Junctions to MOVA or SCOOT as Appropriate	x	x		
PK 2	Parking	Relocate Perpendicular Parking	x			
PK 5	Parking	Mobility Management Plans	x			
PK 8	Parking	Increased parking enforcement	x			

			Delivery Timeframe			
Measure	Type	Short Description	Short Term (1-2 Years)	Medium Term (3-5 Years)	Long Term (6-10 Years)	Notes
PERM 2	Permeability	Sallins Bypass - Pedestrian/Cyclist facilities		N/A		Delivered as part of by-pass scheme.
PERM 3	Permeability	Grand Canal Greenway		N/A		Delivered as part of Greenway Scheme.
PERM 5	Permeability	Extend pavement along L6013	x			
PERM 10	Permeability	Pedestrian/cyclist footbridge over Grand Canal		N/A		Delivered as part of Greenway Scheme.
PERM 16	Permeability	Grand Canal Greenway: Naas Branch		N/A		Delivered as part of Greenway Scheme.
PERM 23	Permeability	Permeability link between two housing estates	x			
PERM 27	Permeability	Permeability link between cul-de-sac and bus stops	x			
PERM 28	Permeability	Permeability link between cul-de-sac and bus stops	x			
PERM 29	Permeability	Permeability link between cul-de-sac and bus stops	x			
PERM 30	Permeability	Permeability link between cul-de-sac and bus stops	x			
PERM 31	Permeability	Permeability link between housing estates and supermarkets	x			
PERM 32	Permeability	Permeability link between housing estates and supermarkets	x			
PERM 33	Permeability	Permeability link between housing estates	x			
PERM 34	Permeability	Permeability link between housing estate and bus route	x			
PERM 35	Permeability	Road from Millennium Link Road to Abbey Bridge		N/A		Delivered as part of bus priority scheme. See PT 11 for phasing details.
PERM 37	Permeability	Permeability link between housing estate and road	x			

			Delivery Timeframe			
Measure	Type	Short Description	Short Term (1-2 Years)	Medium Term (3-5 Years)	Long Term (6-10 Years)	Notes
PERM 39	Permeability	Permeability link between housing estate and road	x			
PERM 42	Permeability	Create southern entrance to two schools	x			
PERM 44	Permeability	Create southern entrance to hospital	x			
PERM 45	Permeability	Permeability link to hospital from housing estate	x			
PERM 48	Permeability	The Gallops Avenue		N/A		Delivered as part of road scheme
PERM 50	Permeability	Finish connection for existing cycling infrastructure	x			
PERM 51	Permeability	Create path between housing estate and main road	x			
PERM 52	Permeability	Create path between housing estate and main road	x			
PERM 56	Permeability	Dunlavin Greenway		N/A		Delivered as part of Greenway Scheme.
PERM 58	Permeability	Path network to school from housing estates	x			
PERM 59	Permeability	Permeability link to school	x			
PERM 60	Permeability	Relocate Bus Stops from dual carriageway on R445 and provide crossing point	x			
PERM 61	Permeability	New road objective		N/A		Delivered as part of road scheme
PERM 62	Permeability	Greenway on canal branch		N/A		Delivered as part of Greenway Scheme.
PERM 63	Permeability	Permeability link between housing estate and main road to access greenway	x			
PERM 67	Permeability	Permeability link between housing estate and school	x			

			Delivery Timeframe			
Measure	Type	Short Description	Short Term (1-2 Years)	Medium Term (3-5 Years)	Long Term (6-10 Years)	Notes
C 8	Cycling	Craddockstown Road (Outside Ring)	x			
C 16	Cycling	Northwest Quadrant Link Road		N/A		Delivered as part of bus priority scheme. See PT 11 for details.
C 24	Cycling	Southern section of route through park from Monread Avenue to Morell Road	x			
C 30	Cycling	Maudlin's Avenue	x			
C 31	Cycling	Monread Avenue	x			
C 39	Cycling	Old Caragh Road	x			
C 41	Cycling	The Gallops Avenue Road Scheme		N/A		Delivered as part of road scheme

The short term permeability measures are shown in Figure 13.1 along with the N/A timescale measures which are part of separate road or greenway schemes.

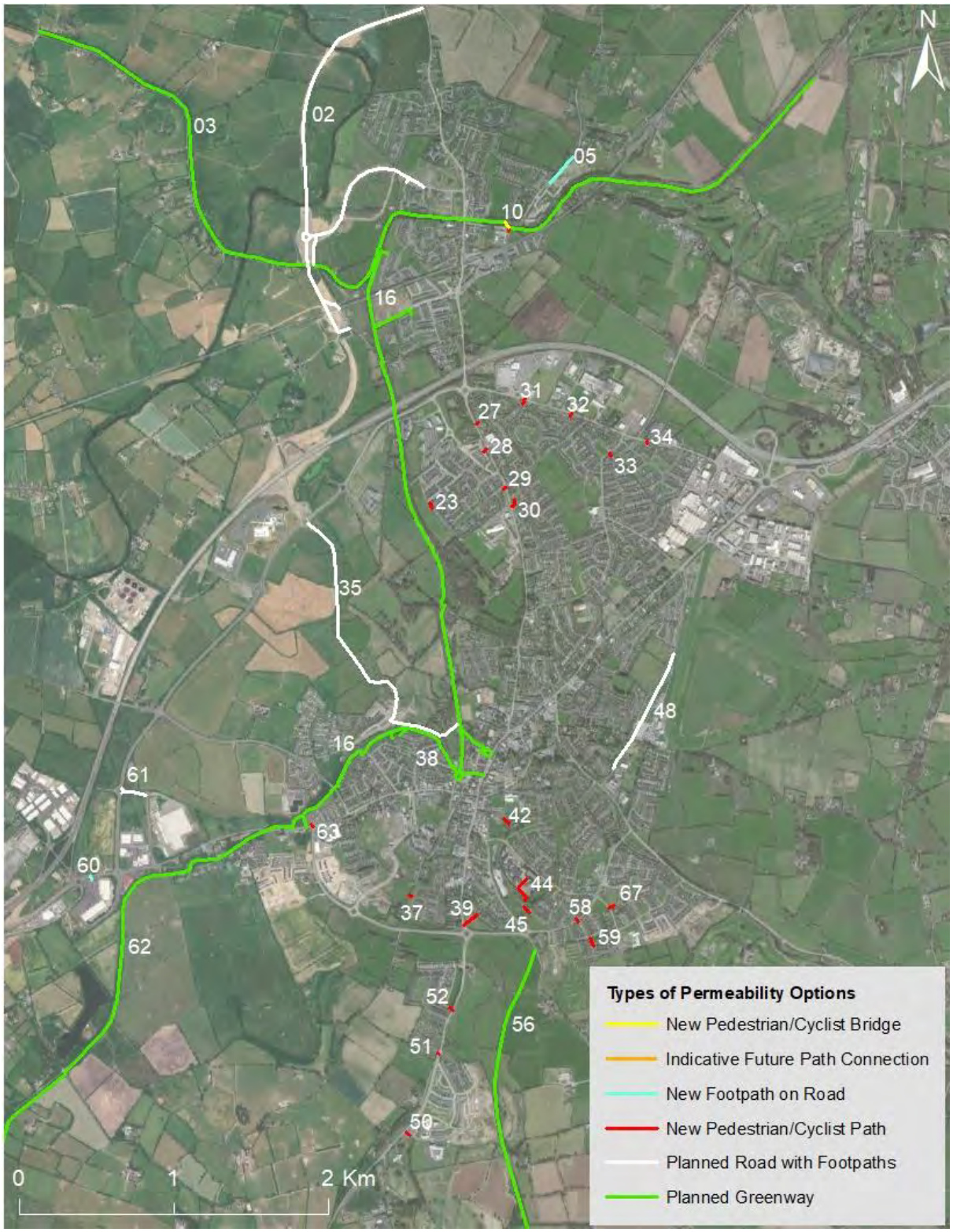

Figure 13.1 Short Term Permeability Measures and Greenway or Road Schemes

Figure 13.2 shows the existing and short term cycling measures in the transport strategy.

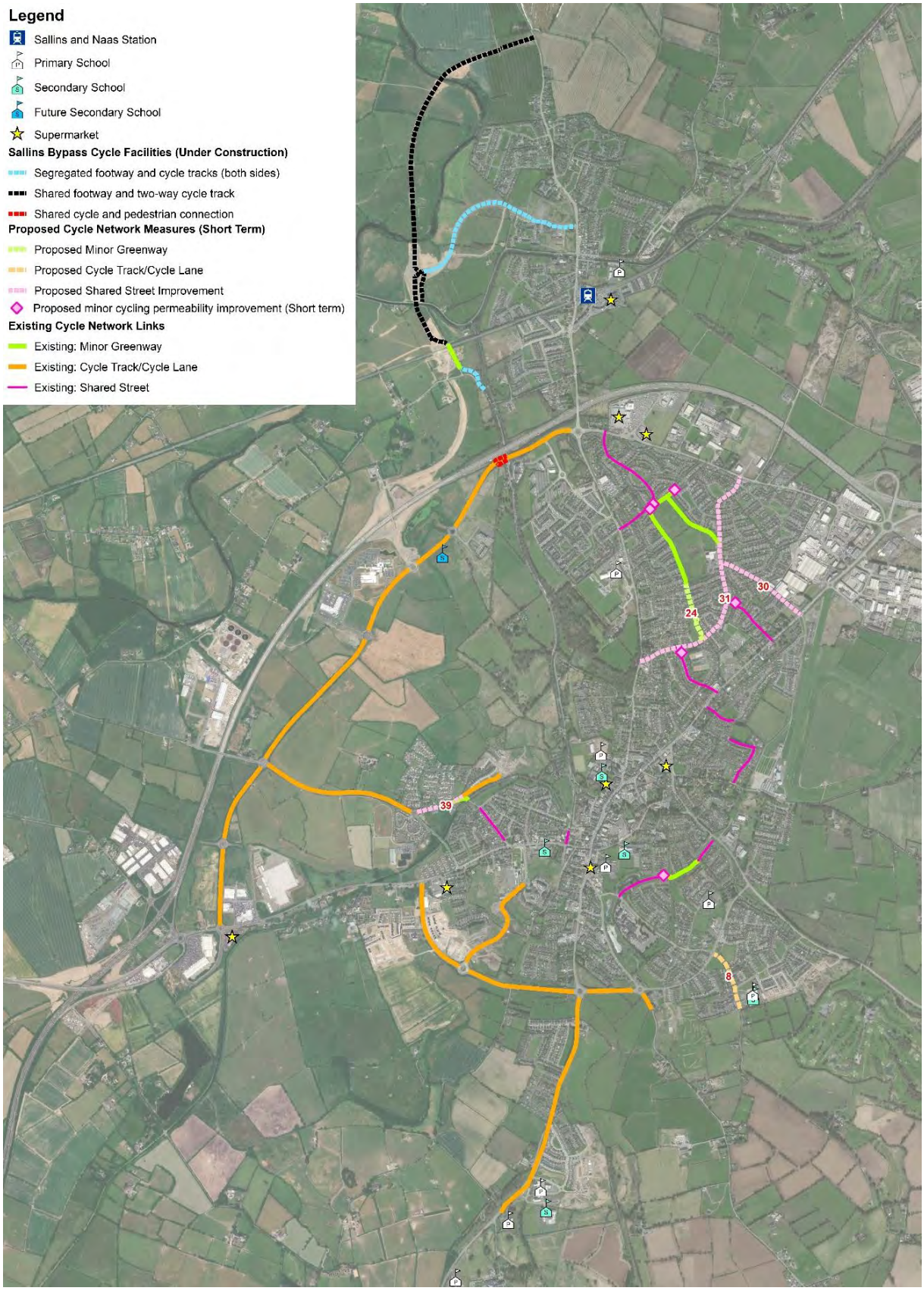

Figure 13.2 Short Term Cycling Measures and Existing Infrastructure

A larger A3 version of the cycling and permeability phasing maps can be found in Appendix D.

13.1.2 Medium Term Measures

Table 13.2 lists the medium term measures in the Naas/Sallins Transport Strategy across all modes.

Table 13.2 Naas/Sallins Transport Strategy Phasing – Medium Term Measures

			Delivery Timeframe			
Measure	Type	Short Description	Short Term (1-2 Years)	Medium Term (3-5 Years)	Long Term (6-10 Years)	Notes
PT 9	Bus Priority	Left Turn Ban to Main St.		x		
PT 16	Rail	Lobby for 3rd Rail Platform at Sallins Train Station		x		
RD 2	Road	Upgrade of Murtagh's Corner Junction and Link Road to Corban's Lane		x		
RD 6	Road	Upgrade Signalised Junctions to MOVA or SCOOT as Appropriate	x	x		
PK 1	Parking	Expanded Park and Ride		x		
PK 3	Parking	New town centre car park		x		
PK 4	Parking	Poplar Sq. plaza		x		
PK 6	Parking	Corban's Lane - parking relocation + Naas CBS school drop off		x		
PK 7	Parking	Electric vehicle charging points		x		
PK 9	Parking	New Car Park in Redeveloped Naas Shopping Centre		x	x	Timeline dependent on the shopping centre redevelopment
PERM 1	Permeability	Extend pavement on Clane Road		x		
PERM 6	Permeability	Pedestrian/cyclist link to Sallins Bypass		x		
PERM 7	Permeability	Finish incomplete footpath in Sallins Bridge		x		

			Delivery Timeframe			
Measure	Type	Short Description	Short Term (1-2 Years)	Medium Term (3-5 Years)	Long Term (6-10 Years)	Notes
PERM 8	Permeability	Permeability link between housing estates		x		
PERM 12	Permeability	Pedestrian/cyclist footbridge over railway line and paths		x		
PERM 13	Permeability	Pedestrian/cyclist footbridge to connect Grand Canal Greenways		x	x	Linked to development of the two greenways
PERM 17	Permeability	Permeability link between housing estate and lane		x		
PERM 20	Permeability	Ramp from Millennium Link Road to Greenway		x		
PERM 21	Permeability	Pedestrian/Cyclist footbridge over Canal and paths		x		
PERM 22	Permeability	Link between greenway, road, housing estates and business park		x		
PERM 24	Permeability	Permeability link between housing estate and Greenway		x		
PERM 25	Permeability	Paths linking GAA club, school, greenway and housing estates		x		Implementation linked to the development of greenway and extensive stakeholder negotiation
PERM 26	Permeability	Permeability link between business park and bus stops		x		
PERM 36	Permeability	Permeability link between housing estates		x		
PERM 40	Permeability	Western entrance to school to link with Greenway		x		
PERM 41	Permeability	Complete pedestrian footpath to school		x		
PERM 46	Permeability	Create permeability link from housing estate to main road		x		
PERM 49	Permeability	Extend footpath to nearby Killashee school		x		

			Delivery Timeframe			
Measure	Type	Short Description	Short Term (1-2 Years)	Medium Term (3-5 Years)	Long Term (6-10 Years)	Notes
PERM 57	Permeability	Path network to link multiple housing estates		x		
PERM 64	Permeability	Create link from main road to greenway		x		
PERM 66	Permeability	Permeability link between housing estates for cycle route		x		
PERM 68	Permeability	Permeability link between Devoy Barracks Site and Newbridge Road		x		
C 1	Cycling	Naas to Sallins Greenway		x		
C 2	Cycling	Grand Canal Greenway		x		
C 4	Cycling	Monread Road		x		
C 5	Cycling	Dublin Road (Monread Road to Naas Town Centre)		x		
C 7	Cycling	Ballycane Road		x		
C 9	Cycling	Craddockstown Road (Inside Ring)		x		
C 10	Cycling	Ballymore Road (Craddockstown Road to Kilcullen Road Section)		x		
C 11	Cycling	Kilcullen Road (Ring Road to Town Centre)		x		
C 12	Cycling	Kilcullen Road Piper's Hill to Killashee		x		
C 13	Cycling	Main Street		x		
C 14	Cycling	John Devoy Road (section from Newbridge Road to Devoy Quarter)		x		
C 17	Cycling	Sallins Road (Morell Road to Maple Avenue)		x		

			Delivery Timeframe			
Measure	Type	Short Description	Short Term (1-2 Years)	Medium Term (3-5 Years)	Long Term (6-10 Years)	Notes
C 18	Cycling	Sallins Road (in Sallins)		x		
C 20	Cycling	Ballymore Road		x		
C 21	Cycling	Newbridge Road (Old Caragh Road/St. Bridget's Terrace to town centre)		x		
C 23	Cycling	Sallins Road (Section between Maple Avenue and Oldtown Walk)		x		
C 25	Cycling	Woodlands to Kingsfurze Avenue Proposed Link		x		
C 27	Cycling	Path network linking GAA club, school, Greenway and local housing estates		x		
C 28	Cycling	Sallins Road to Millennium Park and Canal Greenway		x		
C 29	Cycling	Millbridge Way/Mill Lane to Greenway		x		
C 32	Cycling	Sallins Road (Mill Lane to the Sycamores) and route through the Sycamores estate		x		
C 33	Cycling	Sallins Road (Mill Lane to Monread Avenue)		x		
C 34	Cycling	Tipper Road		x		
C 35	Cycling	Abbey Street/Moat Lane/Town Hall Lane		x		
C 36	Cycling	Abbey Road		x		
C 37	Cycling	Basin Street		x		
C 38	Cycling	Kilcullen Road (Town Centre section)		x		
C 40	Cycling	Oberstown Cottages Link (Greenway to Sallins Road)		x		

			Delivery Timeframe			
Measure	Type	Short Description	Short Term (1-2 Years)	Medium Term (3-5 Years)	Long Term (6-10 Years)	Notes
C 42	Cycling	Friary Road		x		
C 43	Cycling	Corban's Lane		x		

Figure 13.3 shows the short and medium term permeability measures as well as the complimentary road or greenway schemes.

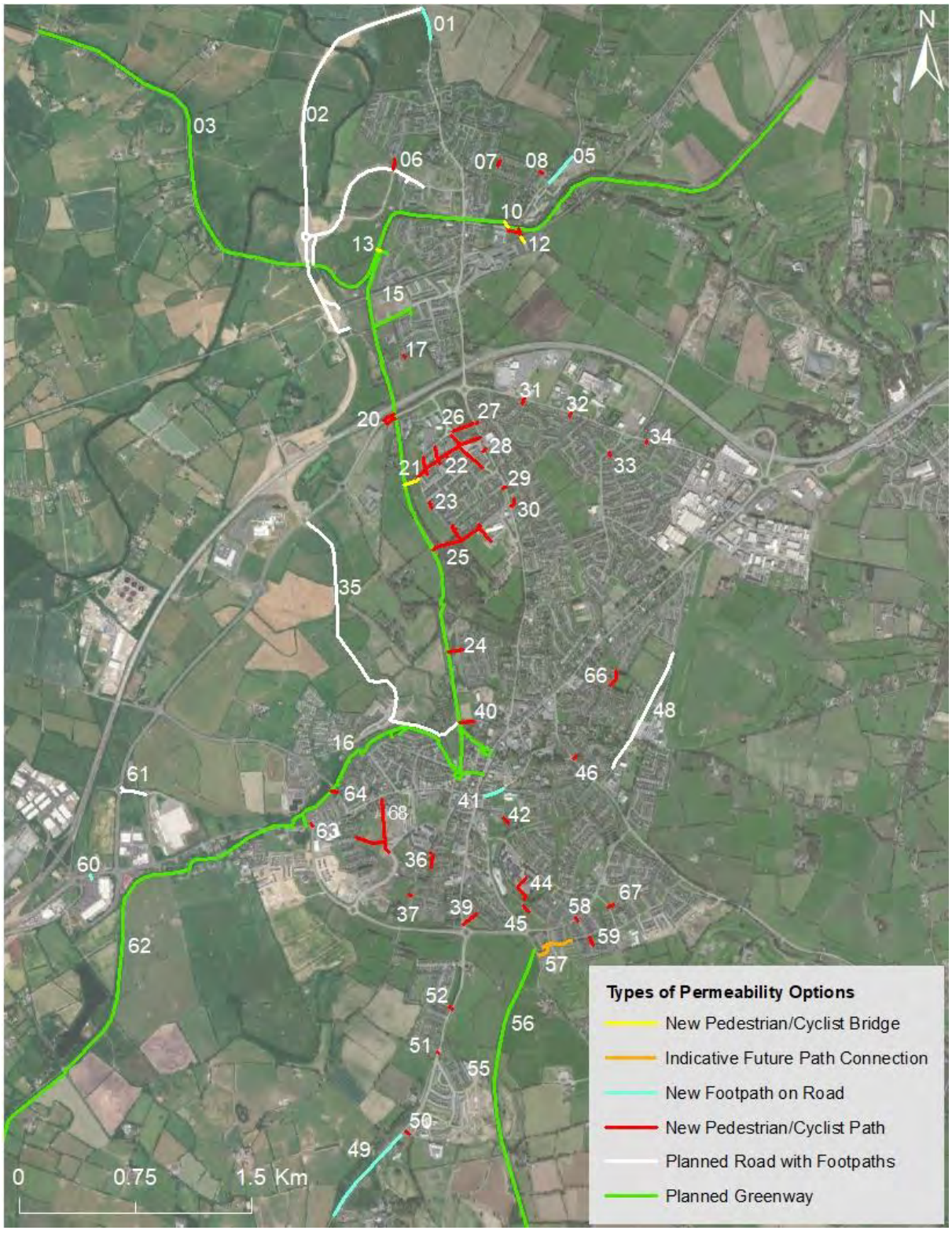

Figure 13.3 Short and Medium Term Permeability Measures as well as Greenway or Road Schemes

Figure 13.4 shows the short and medium term cycling measures in the transport strategy.

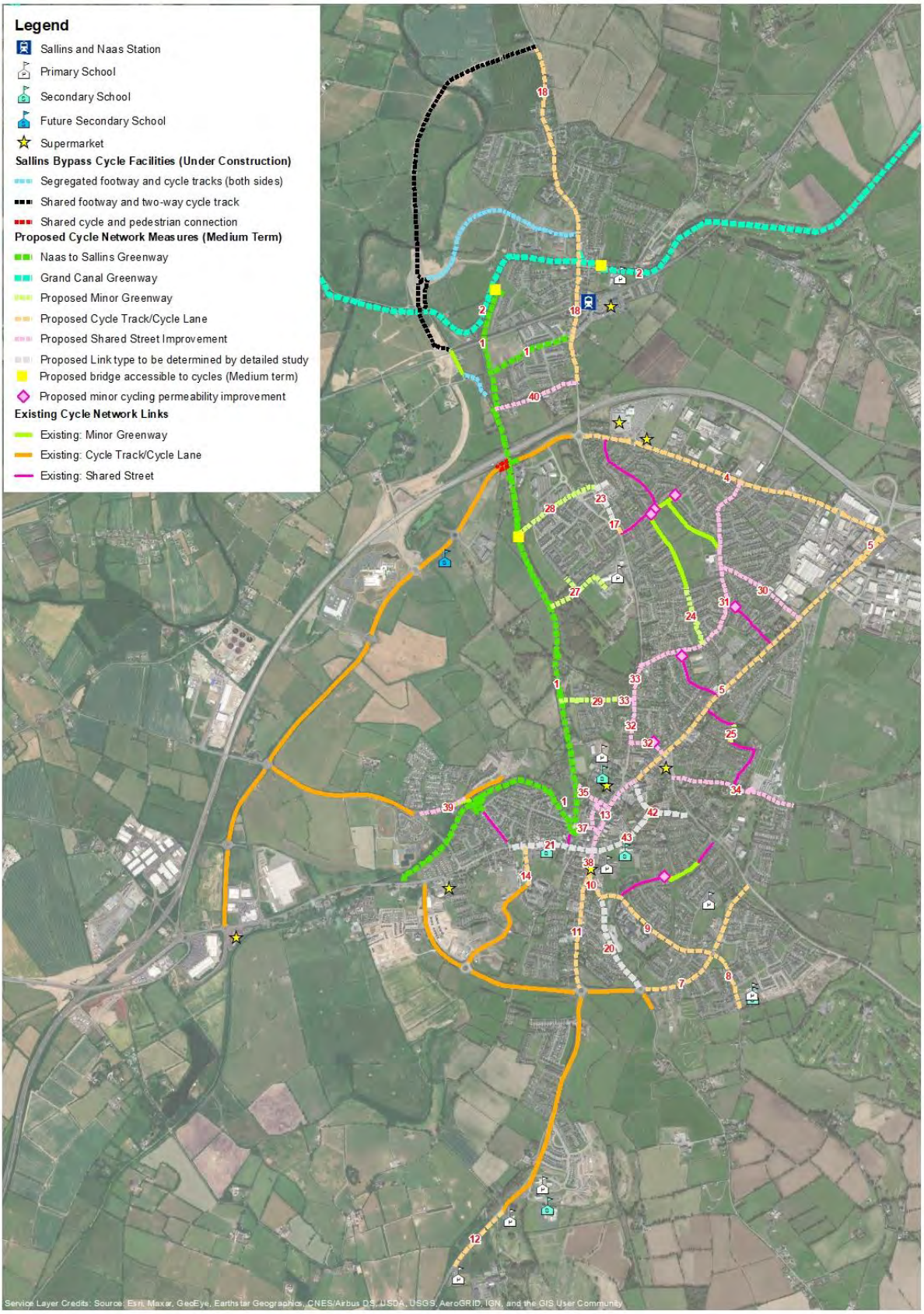

Figure 13.4 Short and Medium Term Cycling Measures

A larger A3 version of the cycling and permeability phasing maps can be found in Appendix D.

13.1.3 Long Term Measures

Table 13.3 lists the long term measures in the Naas/Sallins Transport Strategy across all modes.

Table 13.3 Naas/Sallins Transport Strategy Phasing – Long Term Measures

			Delivery Timeframe			
Measure	Type	Short Description	Short Term (1-2 Years)	Medium Term (3-5 Years)	Long Term (6-10 Years)	Notes
PT 2	Interchange	Harbour bus interchange			x	
PT 4	Local Bus Route	Western Spine bus route			x	
PT 7	Bus Priority	Sustainable Travel Bridge			x	
PT 11	Bus Priority	Bus-Only Link to Sallins Bypass			x	
PT 12	Rail	Lobby for Second Station with P&R to the West			x	
PT 13	Rail	Lobby for Extension of DART with Quad Track			x	
RD 1	Road	The Gallops Avenue			x	
RD 3	Road	Millbridge Street (Indicative Route) Road Measure			x	
PK 9	Parking	New Car Park in Redeveloped Naas Shopping Centre		x	x	Timeline dependent on the shopping centre redevelopment
PERM 9	Permeability	Permeability links between housing estate, Lidl and Greenway			x	
PERM 11	Permeability	Pedestrian/cyclist footbridge over Grand Canal			x	
PERM 13	Permeability	Pedestrian/cyclist footbridge to connect Grand Canal Greenways		x	x	Linked to development of the two greenways

			Delivery Timeframe			
Measure	Type	Short Description	Short Term (1-2 Years)	Medium Term (3-5 Years)	Long Term (6-10 Years)	Notes
PERM 14	Permeability	Permeability link between two housing estates			x	
PERM 15	Permeability	Cyclist/pedestrian footbridge over railway line			x	
PERM 18	Permeability	Sustainable travel modes bridge and footpaths			x	
PERM 19	Permeability	Link Canal Greenway with business park			x	
PERM 38	Permeability	Two harbour footbridges and connecting paths			x	
PERM 43	Permeability	Path network to improve town centre accessibility			x	
PERM 54	Permeability	Create path between schools and greenway			x	
PERM 55	Permeability	Residential link to greenway			x	
PERM 65	Permeability	Create footpath on existing roads			x	
C 3	Cycling	Naas to Dunlavin / Baltinglass Greenway			x	
C 6	Cycling	Blessington Road (Dublin Road to Ballycane Road)			x	
C 15	Cycling	Newbridge Road (Millennium Link Road to Canal Bridge/Jigginstown Green Road)			x	
C 19	Cycling	Sustainable travel modes bridge			x	
C 22	Cycling	Newbridge Road (Canal crossing/Jigginstown Green Road to South Ring Road)			x	
C 26	Cycling	Canal Bank to Millennium Link Road			x	

Figure 13.5 shows the short, medium and long term permeability measures as well as the greenway or road schemes.

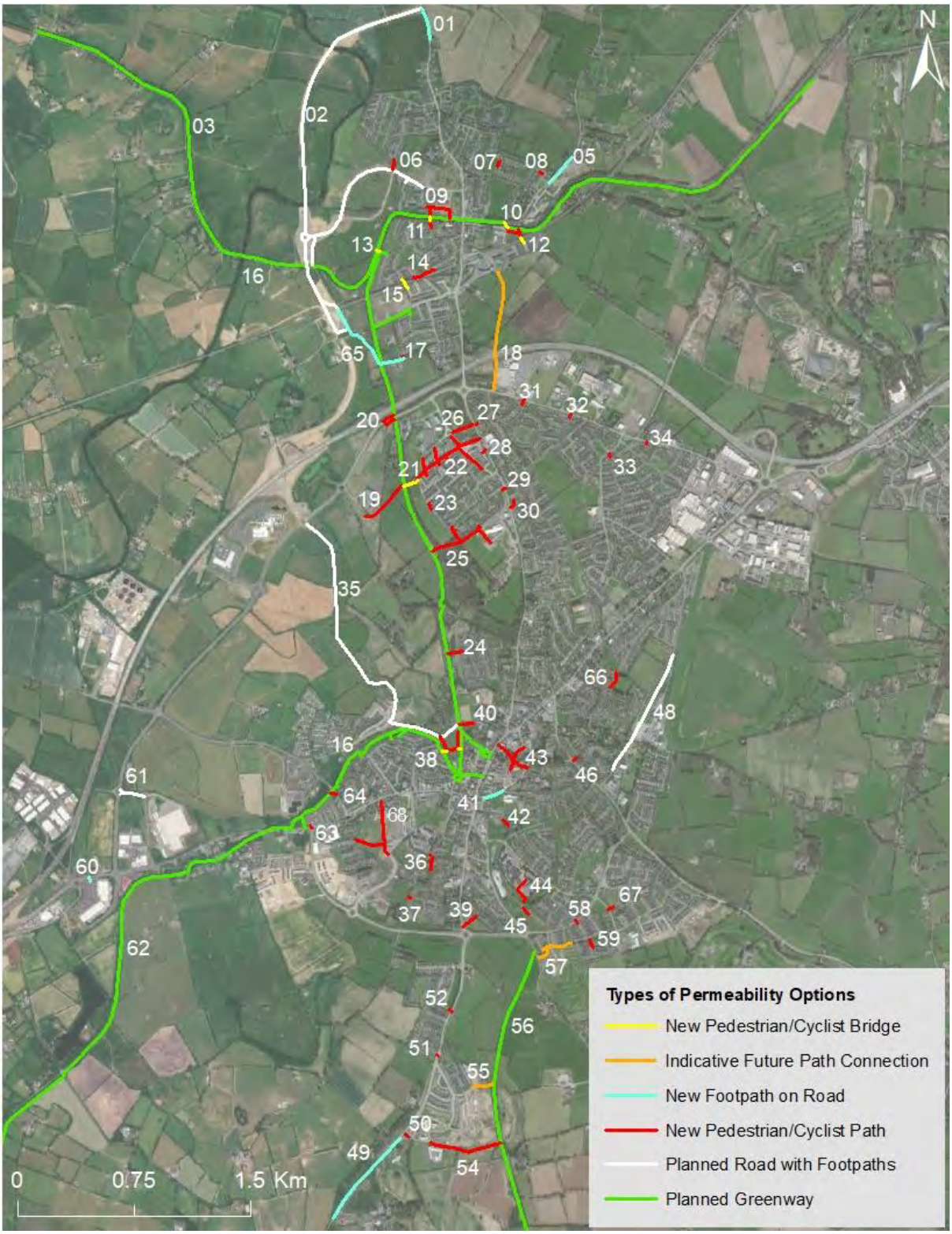

Figure 13.5 Short, Medium and Long Term Permeability Measures with Greenway or Road Schemes

Figure 13.6 shows the short, medium and long term cycling measures which form the complete cycling strategy for Naas and Sallins.

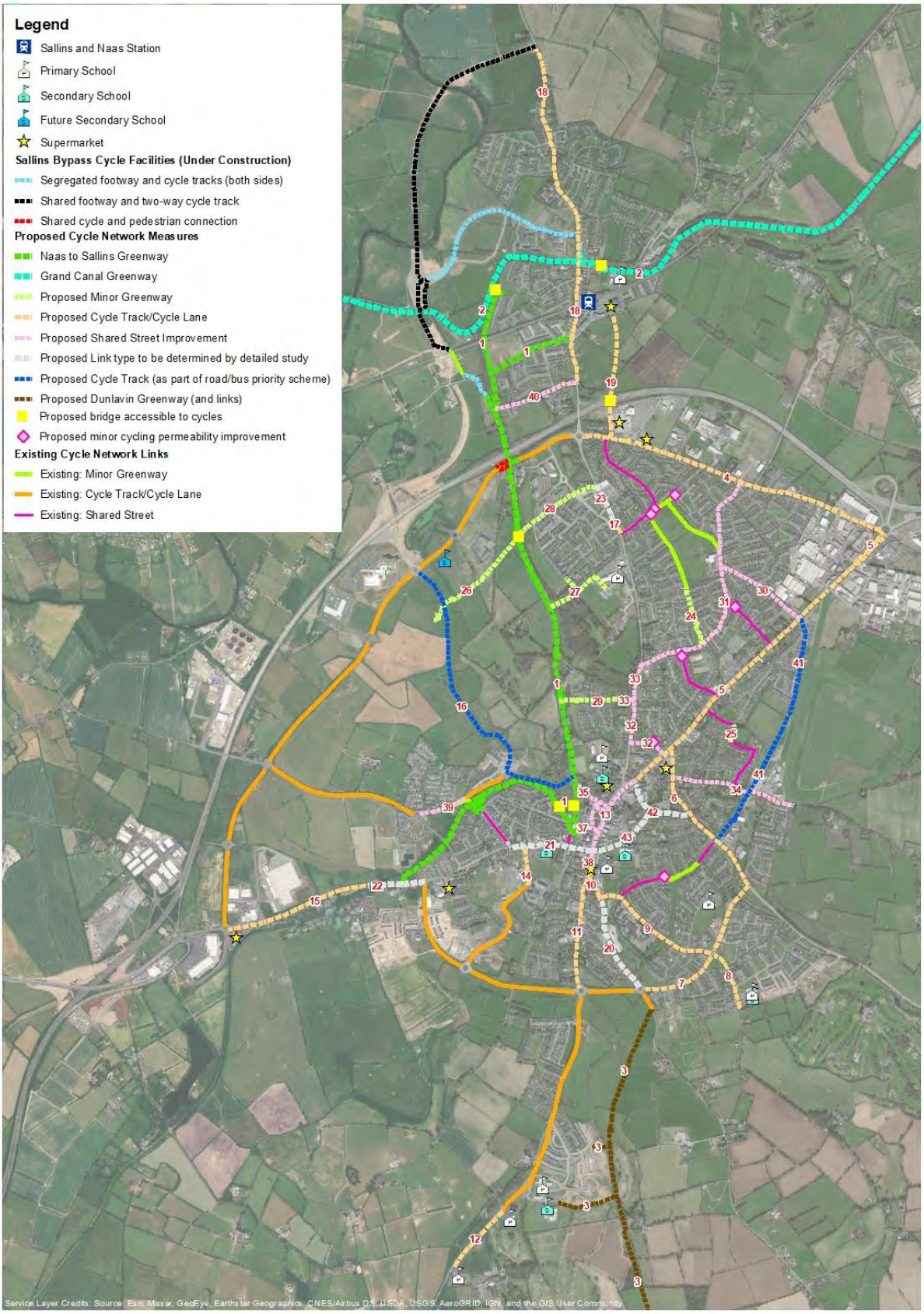

Figure 13.6 Short, Medium and Long Term (Full Strategy) Cycling Measures

A larger A3 version of the cycling and permeability phasing maps can be found in Appendix D.

13.2 Future Planning Principles to Support Strategy

If the Naas/Sallins Transport Strategy is to be successful then an integrated approach with significant liaison between the transportation and planning departments of the Council will be required to ensure that the car-centric development approaches, which have been prevalent throughout Naas in the past, are not repeated. In general, it is cheaper, easier and less controversial to implement sustainable travel concepts in the first instance during the design and planning phase rather than attempting to retrofit established areas afterwards. This section describes key planning principles for each mode which should be considered during the redesign of existing areas and the design of future development areas to ensure the prioritisation of sustainable modes.

13.2.1 Permeability and Cycling Planning Principles

The active mode interventions proposed in this strategy seek to remedy permeability and access issues that have emerged through the poor design of residential and commercial areas. In many cases, housing and commercial estates have been constructed with a single entrance and surrounding walls to stop walking and cycling to surrounding areas. While the proposed interventions will solve many of the existing problems, it is vital that the planning system encourages the use of active travel modes in future development to ensure these issues are not repeated.

In future, it advisable that the following planning concepts are adopted to improve permeability and conditions for active modes:

- Residential or commercial estates should have multiple entrances to facilitate permeability for walking and cycling to public transport, jobs and services.
- New housing estates should leave sufficient space for future permeability connections with adjacent zoned development. At present, cul-de-sac designs and the lack of free corridors mean that some existing neighbourhoods can never be retrofitted to be more permeable.
- The use of high perimeter walls around residential and employment areas should be eliminated as they cause indirect travel paths which favour car use.
- Mixed-use development should be encouraged to reduce the length of journeys and to encourage the use of active modes.
- Local jobs, retail and services should be located centrally in the town whenever feasible, to encourage the use of walking and cycling. Retail and services should generally be located in, or adjoining, the town centre and should be prohibited from suburban locations, unless part of planned neighbourhood centres and at an appropriate scale. It should be noted that all retail development should be in line with the principles of the Retail Planning Guidelines (2012). Generally, high intensity employment uses should be located in central locations in, or adjoining, the town centre while low intensity employment uses (such as logistics and warehousing) should be located in edge of centre or peripheral locations of the town.
- Schools should be located near residential areas and within the existing urban footprint. Locating schools in out of town locations will promote car use and reduce pupil safety if walking or cycling to school.
- Land segregation caused by long tracts of river, railway line or motorway should be mitigated with regular crossing points for walking or cycling.
- Formal crossing points, such as signalised junctions or zebra crossings, should be provided to enable safe pedestrian travel for all ages and means.

Further detail on these issues and preferred design can be found in 'Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas (Cities, Towns and Villages)' (2009) and the National Transport Authority's 'Permeability: Best Practice Guide' (2015).

In addition to the permeability principles, it advisable that the following planning concepts are integrated into design to improve the safety and convenience of cycling trips:

- Provision of effective, segregated cycling facilities will require reallocation of road space from cars to cyclists to create continuous corridors which eliminate conflict between modes.
- New roundabouts should be designed in accordance with the National Cycle Manual (NCM) and existing roundabouts should be retrofitted or converted to signalised junctions.
- New roads with segregated cycling facilities should be designed in accordance with the National Cycle Manual.
- Greenways and off-road cycleways should be sufficiently lit to provide for commuting travel.
- Obstacles (e.g. bollards, gates) should be removed from cycling routes to allow uninterrupted journeys and to facilitate non-standard cycles (e.g. disability adapted bikes) or cargo bikes.
- New residential and employment areas require sufficient, sheltered and secure cycle parking.
- Major public transport stops should have sufficient, sheltered and secure cycle parking.

Further elaboration of these concepts and design standards can be found in the National Cycle Manual (2011) and the Design Manual for Urban Roads and Streets (2019).

13.2.2 Public Transport Planning Principles

The Strategy proposes a number of public transport improvements and future development practices will determine if the growth of Naas will support these measures or hinder their success. In this regard, the following principles will be important to follow in development control and urban design:

- New development should be encouraged to locate on public transport corridors. The Guidelines[11] define a public transport corridor as a location less than 1km from a rail service or 500 metres from a bus stop when walking on the path network.
- Higher residential densities are required along public transport corridors to support patronage and higher frequencies. Housing densities in Naas are comprehensively low, with many residential areas falling below 10 units per hectare (UPH). The Guidelines[12] recommend that housing densities should be at least 35-50 UPH in outer suburban/greenfield locations, with densities below 30 UPH discouraged. It is a common misconception that higher densities require high-rise structures when, in fact, high density accommodation can be provided in low-rise residences. For example, the diagram in Figure 13.7 shows how residential densities as high as 75 UPH can be achieved through low or medium-rise designs.
- Urban sprawl through the extension of the existing urban boundary with single-use, low density residential development should not occur as this encourages car dependency.
- In central and established areas, higher residential densities are essential to support existing and future bus services. Furthermore, higher densities result in a greater number of people in central areas which can help rejuvenate the local retail and service economy. Higher densities can be achieved in these areas through in-fill and brownfield development.
- Jobs located in central areas and along radial links are the easiest to service with bus routes and future high intensity employment uses (e.g. offices, public/commercial services, hotels, etc.) should be focused in these areas. Peripheral employment centres on orbital links will guarantee a high mode share for cars as they are serviced by few bus routes and are too far away for active modes – such locations should be reserved for employment types that are land extensive with relatively low employment generation such as warehousing.
- Cul-de-sac housing estate designs are a barrier to local bus routes and banish services to main roads which are often far away from homes. Every estate should have contingency design which allows for the removal of a wall to provide a bus route through estates if required. Concerns over excessive through-traffic can be resolved with rising bollard bus gates.

[11] 'Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas (Cities, Towns and Villages)' (2009)

- Speed ramps result in uncomfortable bus journeys and affect the safe transportation of ambulance patients. Alternative traffic calming designs, such as speed cushions with built-out kerbs, should be designed to be bus-friendly and allow convenient emergency vehicle access.
- Sufficient, secure and sheltered cycle parking should be provided at public transport stops.

Further detail on sustainable development in residential areas can be found in 'Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas (Cities, Towns and Villages)' (2009).

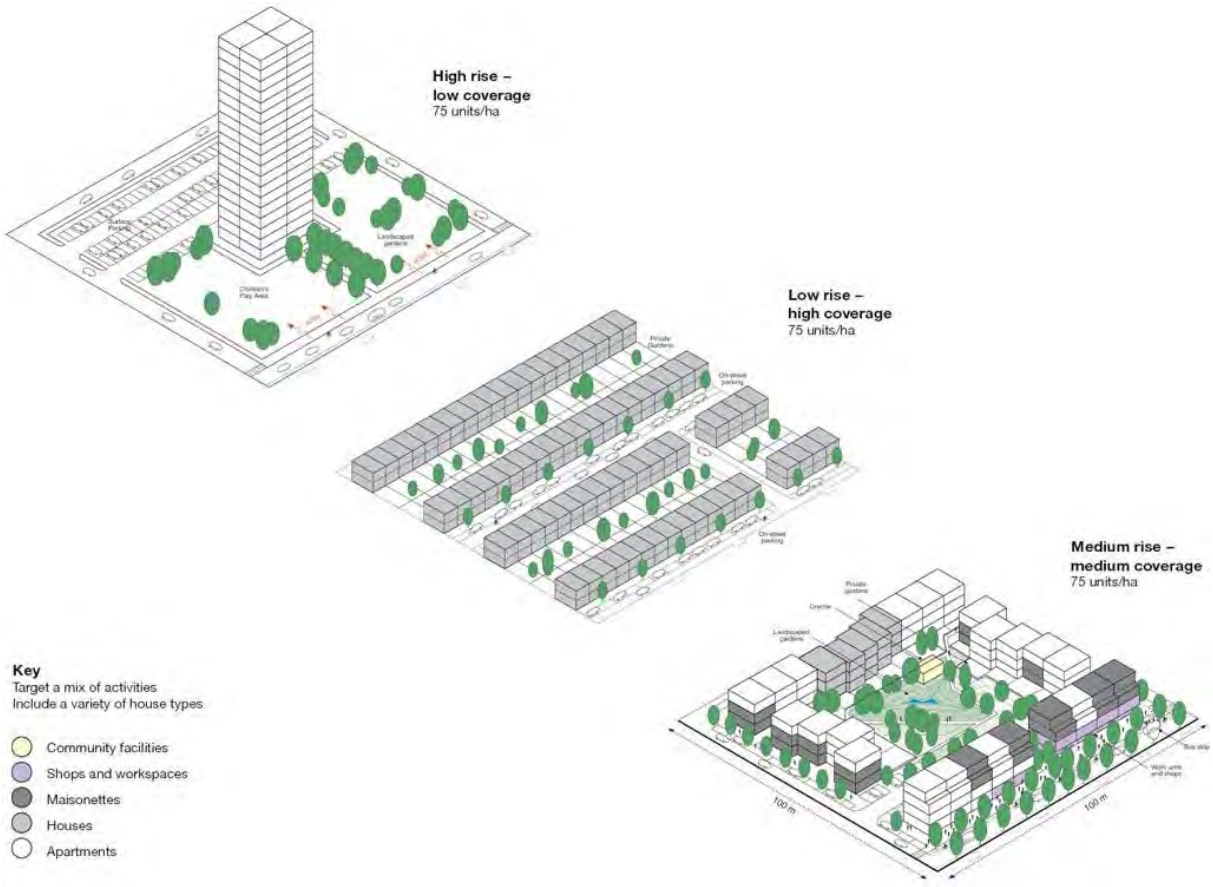

Figure 13.7 Different Designs to Achieve High Residential Densities (Towards an Urban Renaissance, 1999, p. 35)

13.2.3 Road Planning Principles

In order to maintain the efficient operation of the road network in Naas, the following principles should be applied in the planning process:

- The strategic function of the National Road Network should be protected in accordance with the Spatial Planning and National Roads Guidelines for Planning Authorities (2012) through plan-led development and appropriate zoning objectives.
- The strategic role of the Sallins Bypass and Osberstown Interchange should be protected by restricting direct access to the road from residential or employment uses for private motor vehicles. In parallel to this, walking/cycling access to the infrastructure on the bypass should be encouraged from newly developed residential and employment areas.
- Peripheral development should be discouraged as this will increase the modal split for car traffic and negatively affect the efficient operation of the local and strategic road network.
- Future road construction should design pedestrian, bus and cyclist infrastructure in accordance with DMURS and the NCM.
- Non-NCM standard roundabouts are dangerous for cyclists and new roundabouts, if absolutely essential, must be designed in accordance with the NCM or ideally replaced with signalised junctions if possible.

Further elaboration of these concepts can be found in the National Cycle Manual (2011) and the Design Manual for Urban Roads and Streets (2019).

The transport model created for Naas and Sallins will be used to assess the impact of future planning applications on the road network and the consistency of the proposals with the Naas/Sallins Transport Strategy.