

Convent Road

Filtered Permeability Scheme Part 8 Traffic and Transport Assessment

Meath County Council

Project number: 60615775_S039

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Quality information

Prepared by

Tucken (m

Zachary Cave Senior Consultant Checked by

Shaun Grima Associate Director Verified by

Michael Dunne Associate Director Approved by

Stephen Kavanagh Principal Engineer

Revision History

Revision	Revision date	Details	Authorized	Name	Position
Α	31.08.2022	Part 8 Planning	SK	Stephen Kavanagh	Principal Engineer

Distribution List

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Prepared for:

Meath County Council

Prepared by:

AECOM Ireland Limited 4th Floor Adelphi Plaza Georges Street Upper Dun Laoghaire Co. Dublin A96 T927 Ireland

T: +353 1 238 3100 aecom.com

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1. Introduction

1.1 Background

The National Transport Authority Cycling Design Office (CDO) has been commissioned by Meath County Council to undertake a Transport Assessment for a Part 8 submission for the formalisation of a temporary filtered permeability scheme along Convent Road in Athlumney, Navan, Co. Meath. The route is approximately 0.6 km in length.

The temporary scheme consisted of the closure of Convent Road to through traffic for use for pedestrians and cyclists, along with limited local access, through a build out and bollards. The scheme also included buff coloured surfacing, planters, additional signage and road markings.

Construction of the temporary scheme was completed in October 2021 and was licensed to run for a period of 12 months in total. This Part 8 submission proposes to formalise the closure of Convent Road to through traffic and maintain its use as a pedestrian and cycle route.

Figure 1.1 shows the site location in relation to Navan Town, with Figure 1.2 displaying sections of the temporary scheme.



Figure 1.1 – Site Location in relation to Navan Town (Image Source: Google Earth)





Figure 1.2 - Measures included in temporary scheme to prevent general vehicle access to Convent Road

1.2 Objectives

The main objective of this assessment is to examine the potential traffic impact of the scheme on the adjacent local road network. The net change in traffic on the network due to re-distribution of traffic from Convent Road to the adjacent local road network has been investigated.

In order to complete this report, the CDO has referred to the following documents:

- Meath County Development Plan, 2021 2027 (Meath County Council, November 2021)
- PE-PDV-02045 Traffic and Transport Assessment Guidelines (Transport Infrastructure Ireland, May 2014);
- Design Manual for Urban Roads and Streets, DMURS (Dept of Transport, Tourism and Sport/ Dept of Environment, Community & Local Govt, May 2019);
- Traffic Management Guidelines (Department of Transport, 2003); and
- National Cycle Manual (National Transport Authority, 2011).

1.3 Study Methodology

The methodology adopted for this report can be summarised as follows:

- **Existing Transport Infrastructure** The design team collated information on public transport, walking and cycling in the vicinity of the site;
- Site Visit the design team carried out a number of site visits to Convent Road;
- **Development Proposals** Description of the proposed development;
- Traffic Flow Assessment An independent traffic surveyor, Nationwide Data Collection, conducted 18hr surveys (06:00 00:00) prior and post installation of the filtered permeability scheme on the 26th of May 2021 and the 25th of May 2022. These surveys have formed the baseline scenario for this analysis; and
- **Traffic Impact Analysis** A percentage impact analysis was undertaken to determine if further detailed traffic modelling would be required.

1.4 Report Structure

The remainder of this report is divided into the following sections:

- Section 2 describes the existing conditions at the subject site and the surrounding area;
- Section 3 provides a summary of the proposed development;
- Section 4 provides a summary of the existing traffic flows and vehicle trip redistribution;
- Section 5 provides a summary of our appraisal with the main conclusions of the assessment.

2. Existing Conditions

2.1 Introduction

This chapter includes a review of the existing baseline conditions of the site, including public transport provision, walking and cycling facilities and the current operation of the surrounding public network. The CDO undertook a number of site audits to identify the existing conditions in the vicinity of the site. The findings from The CDO's analysis are presented within this chapter.

2.2 Location

The subject site is situated along the Convent Road in Navan, Co. Meath.

The site is bounded by a school and medical centre to the east with residential units bounding the site to the west. Convent Road ties in with R153 at its northern extent and Elm Park Road at its south-eastern extent.

Figure 2.1 shows the development location in relation to Navan Town, with Figure 2.2 showing the surrounding environs of the proposed development.



Figure 2.1 - Site Location in relation to Navan Town (Image Source: Google Earth)



Figure 2.2 – Surrounding Environs (Image Source: Google Earth)

2.3 Existing Transportation Infrastructure

An important stage in the development of a Traffic and Transport Assessment is the identification and appreciation of the local network's existing transport conditions and vehicle movement characteristics.

An audit of the local road network has therefore been undertaken to establish the existing transport conditions and vehicle movement patterns across the existing network.

Prior to September 2021, Convent Road was used by pedestrians, cyclists and motor vehicles along the full extents of the scheme. In September 2021, the Section 38 Filtered Permeability Scheme Traffic Management Trial was implemented. Therefore, this section of the report has been split into two sections to consider the conditions on Convent Road before and after the temporary scheme's implementation.

2.3.1 Conditions Prior to September 2021

2.3.1.1 Pedestrian / Cyclist Environment

Prior to September 2021, Convent Road was used by pedestrians, cyclists and motor vehicles along the full extents of the scheme. Between the R153 Kentstown Road Junction and the Riverside housing estate, motor vehicles and cyclists travelled on a two-way carriageway and pedestrians had use of a footpath either side of the road as far as the St Michael's Loreto Convent, and from the Convent to the Riverside estate had use of a footpath on the north-eastern side of the road only. At some locations the pedestrian footpath reduced to below the DMURs guidelinges of 1.8m width.



Figure 2.3 - Convent Road at Bedford Medical Centre, Prior to September 2021 (Image Source: Site Photo June 2021)

Between the Riverside estate and the Convent Road/ Athlumney Castle Road junction, the vehicle traffic was restricted to one-way movement in the south-eastern direction only. Pedestrians used the footpath on the north-eastern side of the road - see Figure 2.4.

There were no cycle facilities on Convent Road prior to September 2021.



Figure 2.4 - Convent Road at Riverside Estate, Prior to September 2021 (Image Source: Site Photo June 2021)

2.3.1.2 Sustainable Transport - Bus

In the vicinity of the subject site there are 3 no bus stops of which are served by route no. N1 and 179. The N1 route has a service approximately every 30 mins with the 179 route having a service 4 times a day.

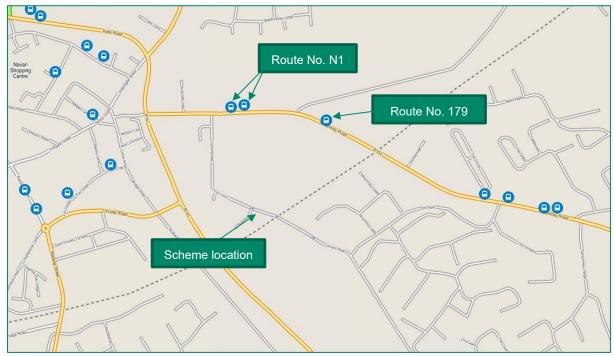


Figure 2.5 – Existing Bus Stops in Vicinity of the Scheme (Source: www.transportforireland.ie)

2.3.2 As Built Condition 2021 to 2022

2.3.2.1 Pedestrian / Cyclist Environment

The temporary scheme that has been installed prohibits through traffic movement along Convent Road. Pedestrians are catered for along Convent Road by means of a footpath and cyclists are now accommodated on the roadway which is indicated by buff coloured surfacing and additional road markings and signage. Figure 2.6, Figure 2.7 and Figure 2.8 show the temporary scheme provisions along Convent Road.



Figure 2.6 - Temporary Scheme Provisions



Figure 2.7 - Temporary Scheme Provisions, Southern End of Convent Road



Figure 2.8 - Figure 2.7 - Temporary Scheme Provisions, Northern End of Convent Road

Along the R153 there is a shared pedestrian / cyclist surface for pedestrians and cyclists travelling to / from Navan town. This shared area is provided along the southern side of the R153 carriageway and extends to the R147 Kells Road to the west.

2.3.2.2 Sustainable Transport - Bus

The bus facilities adjacent to the scheme were unchanged by the implementation of the Section 38 Filtered Permeability Scheme Traffic Management Trial.

2.3.3 Existing Conditions Summary

The temporary scheme currently operates as intended with pedestrians and cyclists availing of this filtered permeability scheme. Along the R153 there is a shared surface for pedestrians and cyclists which extends to the R147 Kells Road to the west. In the vicinity of the subject site there are 3 no. bus stops.

3. Proposed Scheme

3.1 Introduction

This chapter details the proposed scheme with regards to the transportation elements which include the proposed pedestrian / cycling infrastructure within the development area.

3.2 Scheme Proposals

The scheme proposes to formalise the closure of Convent Road to through traffic and implement the filtered permeability on a permanent basis. The temporary arrangement has been in place since 2021 and the proposed formalisation of the scheme will consist of the retention of the temporary elements. Appendix A illustrates the scheme proposals with Figure 3.1 showing a cross section along the filtered permeability section of the scheme.

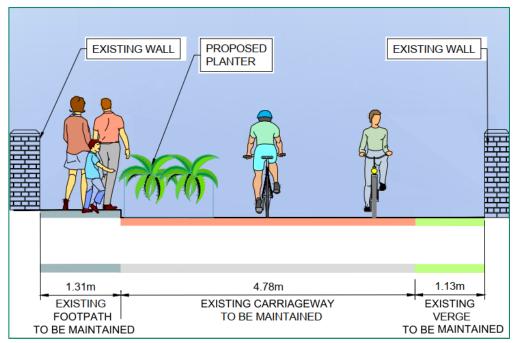


Figure 3.1 – Cross Section of Filtered Permeability Section of the Scheme (Source: NTA Drawing 60615775-NTA-SLW_ZZ-S039_XX_00-DR-KK-0002)

Planters shown in the cross section above are intended to restrict motor vehicle movements in accordance with the Filtered Permeability Scheme. Existing public lighting was upgraded along Convent Road as part of the scheme.

The scheme provides a high-quality traffic free environment along Convent Road between the Riverside Estate and its intersection with Convent Lane/Athlumney Castle Road. This allows students at the St Michael's Loreto Convent and other residents from the residential areas surrounding Convent Road to walk or cycle safely along the road. The Convent Road Filtered Permeability Scheme will provide an important permanent upgrade to a key area in the Navan town transport network. The improvements to the cycling and pedestrian facilities on Convent Road between the R153 Kentstown Road junction and the Convent Lane/Athlumney Castle Road junction are an important development to the area and will encourage the use of active travel.

4. Trip Generation and Distribution

4.1 Introduction

The purpose of this section is to determine the overall number of trips that have been redistributed onto the adjoining road network as a result of the temporary scheme. To understand the redistribution of traffic associated with the scheme, the CDO has undertaken a review of the traffic surveys that were undertaken both prior to the trialling of the scheme and after the scheme had been implemented.

4.2 Traffic Surveys

Pre- and Post-Scheme traffic surveys were undertaken along the section of the scheme between Riverside Estate and Convent Road/Athlumney Castle Road junction in order to establish the existing road network traffic characteristics, and subsequently enable the identification of the potential impact the redistribution of traffic has had on the surrounding junctions.

4.2.1 Pre-Scheme Traffic Surveys

The traffic surveys were undertaken on Wednesday the 26th of May 2021 over an 18hr period (06:00-00:00), which was prior to the trialling of the scheme. The results of the traffic survey are presented in

Table 4.1. The number of vehicles per established peak hour (AM Peak hour 08:00 - 09:00 and PM Peak hour 14:45 - 15:45) are shown in Table 4.2.

It should be noted that the traffic surveys were undertaken during the Covid 19 pandemic. Therefore, the flows shown may be less than pre-pandemic flows. The survey was undertaken at a location just south of the railway bridge on Convent Road, shown in Figure 4.1. This location consisted of one-way traffic prior to the scheme intervention, and only local access vehicle traffic after the intervention. No surveys were undertaken at a section of Convent Road with two-way traffic.



Figure 4.1 - 18-Hr Traffic Survey Location

Table 4.1 - 2021 18hr Link Count (Pre-Scheme)

Movement Direction	Mode of Transport				
Movement Direction	Pedestrians	Bicycles	Scooters	Vehicles	
Eastbound	399	31	N/A	566	
Westbound	378	19	N/A	0	

Table 4.2 – 2021 Peak Hour Vehicle Count (Pre-Scheme)

Movement Direction	Vehicles Per Hour		
wovement Direction	AM	PM	
Eastbound	31	59	
Westbound	0	0	

4.2.2 Post-Scheme Traffic Surveys

A bi-directional count was undertaken on Wednesday the 25^{th} of May 2022 over an 18hr period (06:00-00:00) to record the quantum walking, cycling, scooting and vehicular traffic along Convent Road, with the results presented in Table 4.3. The count took place at the same location as previously stated. The number of vehicles per peak hour (AM Peak 08:00-09:00 and PM Peak 15:00-16:00) are shown in Table 4.4.

Table 4.3 – 2022 18hr link Count (Post-Scheme)

Mayamant Direction	Mode of Transport				
Movement Direction	Pedestrians	Bicycles	Scooters	Vehicles	
Eastbound	238	26	9	2	
Westbound	248	28	15	1	

Table 4.4 – 2022 Peak Hour Vehicle Count (Post-Scheme)

Mayamant Divastian	Vehicles Per Hour		
Movement Direction	AM	РМ	
Eastbound	0	0	
Westbound	1	0	

As can be observed from

Table 4.1 and Table 4.3, the through vehicular traffic along Convent Road has reduced from 566 vehicles to 3 vehicles per day. It is noted that from a review of traffic survey footage, the recorded vehicles were maintenance vehicles.

It can also be seen that pedestrian volumes reduced from 777 to 486 between the 2021 and 2022 counts. This can be attributed to the location of the scheme adjacent to the Loreto Secondary School, and the latest survey being undertaken during a quieter period at the school term, i.e., during the end of year exams.

Traffic surveys were not undertaken at the Convent Road / R153, R153 / Boyne Road or R153 / The Orchard / Elm Park junctions (see Figure 4.2 for junction locations). As a result, the CDO have utilised the traffic surveys that were undertaken in 2015 as part of the Navan Cycle Network scheme. These traffic surveys were factored up to the present time in accordance with the TII future growth factors and have formed the baseline for the analysis.



Figure 4.2 – Junction Map (Image Source: Google Earth)

4.3 Trip Generation

4.3.1 Proposed Scheme

The proposed scheme has no vehicular trips associated with it as it removes through vehicular movements along Convent Road, apart from servicing vehicles. The traffic that previously utilised the Convent Road link has been redistributed onto the adjoining road network. It can be assumed that the traffic utilising the southern section of Convent Road link prior to the trial closure of the route was primarily made up of vehicles travelling to the surrounding estates (Elm Park, The Orchard, Athlumney Castle).

The recorded traffic flows along the section of Convent Road between the Riverside Estate and the Convent Road/ Athlumney Castle Road junction prior to installation of the temporary scheme were 31 vehicles during the morning peak and 59 vehicles during the evening peak, i.e., approximately one vehicle per 2 minutes during the morning peak hour and one vehicle per minute during the evening peak hour. Over an 18hr period, 566 vehicles were recorded utilising this link.

4.3.2 Trip Redistribution

As a result of the scheme proposals, the through traffic that previously utilised the Convent Road link has been reallocated onto the R153. The low number of trips per hour at peak times means that this redistribution has a minor impact on the surrounding road network. This is shown in Figure 4.3 during the morning and evening peak periods. The traffic flow that previously utilised Convent Road to access the housing estates such as the Orchard and the Elms is presumed to reroute to the same destination using the R153.

Further information regarding the flow distribution through the junctions has also been included in Appendix B of the report.



Figure 4.3 – Redistributed Traffic Moments (Image Source: Google Earth)

4.4 Traffic Growth

The TTA adopts an Opening Design Year of 2022. In accordance with TII Guidance, Future Design years (+5 and +15 years) of 2027 and 2037 will therefore be adopted.

The Transport Infrastructure Ireland (TII) 'Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections (October 2021)' sets out growth rates for forecasting future year traffic for use in scheme modelling and appraisal. It is noted that in respect of Navan, which is in Meath, the growth during the period 2016 – 2030 is set at 1.73% per annum for central growth, reducing to 0.70% per annum from 2030 – 2040 (LV rates used).

The development has assessed the opening year of the development (2022) and the two horizon year assessments (2027 and 2037), as per the TII Traffic Assessment Guidelines. The assessment years used for this assessment are as follows for the traffic surveys:

- 2015 to 2022 1.1211 (or 12.11% growth);
- 2015 to 2027 1.2076 (or 20.76% growth); and
- 2015 to 2037 1.3085 (or 30.85% growth).

4.5 Threshold Analysis

The TII Guidelines for Transport Assessments state that the thresholds for junction analysis in Transport Assessments are as follows:

- 'Traffic to and from the development exceeds 10% of the existing two-way traffic flow on the adjoining highway.'
- 'Traffic to and from the development exceeds 5% of the existing two-way flow on the adjoining highway, where traffic congestion exists or will exist within the assessment period or in other sensitive locations.'

As the junctions affected by the Convent Road development are relatively minor in nature and not considered to be sensitive, the first aforementioned threshold point of 10% will be considered as relevant in the following sections.

4.6 Impact of the Scheme

A comparison has been made between the pre-scheme and post-scheme scenarios to identify the percentage impact of the scheme at two different locations:

- 1. R153/Boyne Road junction
- 2. R153/The Orchard junction

These junctions are shown in Figure 4.3 above. It should be noted that, for the purposes of assessment, it has been assumed that the traffic that would utilise Convent Road would arrive via the Navan Town direction.

4.6.1 R153/Boyne Road junction

The impact of the scheme has been assessed against the R153 / Boyne Road junction, as this is the route by which motorists would now take to access the surrounding residential estates once the access through Convent Road has been cut off by the Filtered Permeability Scheme.

The percentage impact of the redistributed traffic on the road junction in the year of opening (2022) is set out in Table 4.5 and shown indicatively in Figure 4.4.

Table 4.5 - Percentage Impact at R153 / Boyne Road junction

Junction	Time Period	Existing Flows	Redistributed Flows	% Impact
D (D. D.)	АМ	720	+31	+4.3%
R153 / Boyne Road	PM	777	+59	7.6%

The percentage impact of the redistributed traffic will result in an impact of:

 4.3% and 7.6% upon the R153 / Boyne Road priority junction in the respective morning and evening peak hour periods;

Based on the TII Traffic and Transport Guidelines (May 2014), given that the impact upon this priority junction does not exceed 10% of the existing two-way traffic flow, modelling is not required for this junction. The traffic impacts upon this junction will be nominal.



Figure 4.4 – Percentage Impacts at relevant junctions (Image Source: Google Earth)

It should be noted that the opening year of the development (2022) has been assessed only. Any future year base flows would be greater than the existing flows presented in Table 4.5, hence a smaller percentage impact in comparison to the development flows would be recorded.

4.6.2 R153/The Orchard junction

The impact of the scheme has been assessed against the R153 / The Orchard junction, as this is the route by which motorists would now take to access the surrounding residential estates once the access through Convent Road has been cut off by the Filtered Permeability Scheme.

The percentage impact of the redistributed traffic on the surrounding road junction in the year of opening (2022) is set out in Table 4.6 and also shown indicatively in Figure 4.4.

Table 4.6 – Percentage Impact at R153 / The Orchard junction

Junction	Time Period	Existing Flows	Redistributed Flows	% Impact
D (T) O	АМ	1,037	+31	3.0%
R153 / The Orchard	PM	775	+59	7.6%

The percentage impact of the redistributed traffic will result in an impact of:

• 3.0% and 7.6% upon the R153 / The Orchard priority junction in the respective morning and evening peak hour periods

Based on the TII Traffic and Transport Guidelines (May 2014), given that the impact upon this priority junction does not exceed 10% of the existing two-way traffic flow, modelling is not required for this junction. The traffic impacts upon this junction will be nominal.

It should be noted that the opening year of the development (2022) has been assessed only. Any future year base flows would be greater than the existing flows presented in Table 4.6, hence a smaller percentage impact in comparison to the development flows would be recorded.

4.7 Summary

It is anticipated that the proposed scheme has resulted in a redistribution of 31 and 59 vehicle trips during the respective morning and evening peak hour periods.

Based on the percentage impact analysis it has been determined that the junctions will not be subject to detailed traffic modelling, as the junctions are under the threshold requirements for junction modelling in line with the TII Guidance.

On this basis, the traffic impacts of the scheme are considered to be minimal.

5. Conclusion

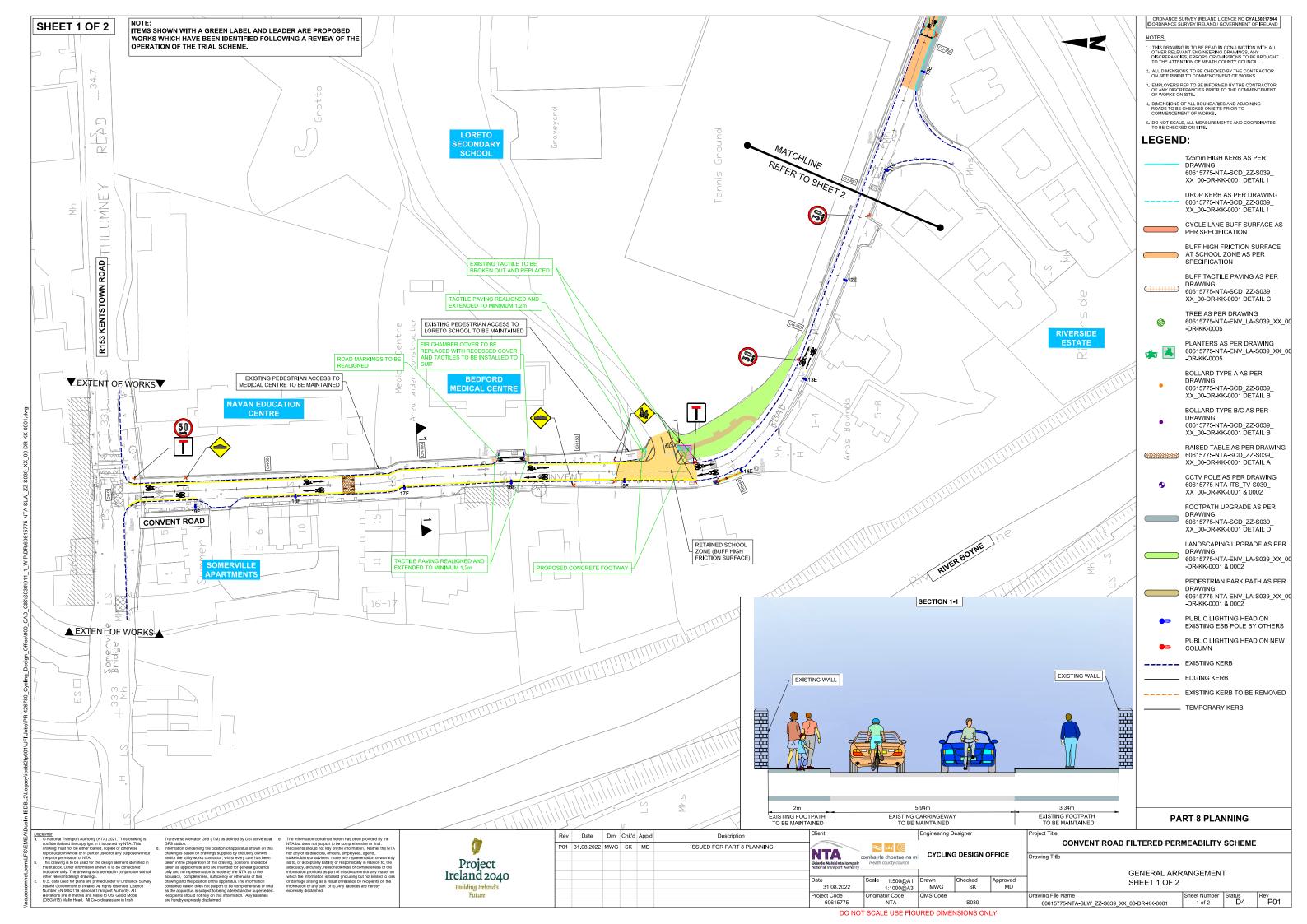
The Transport Assessment has considered the traffic implications of implementing the temporary scheme on a permanent basis. As detailed within this report, the redistribution of traffic onto the surrounding road network had had a nominal impact at the surrounding junctions.

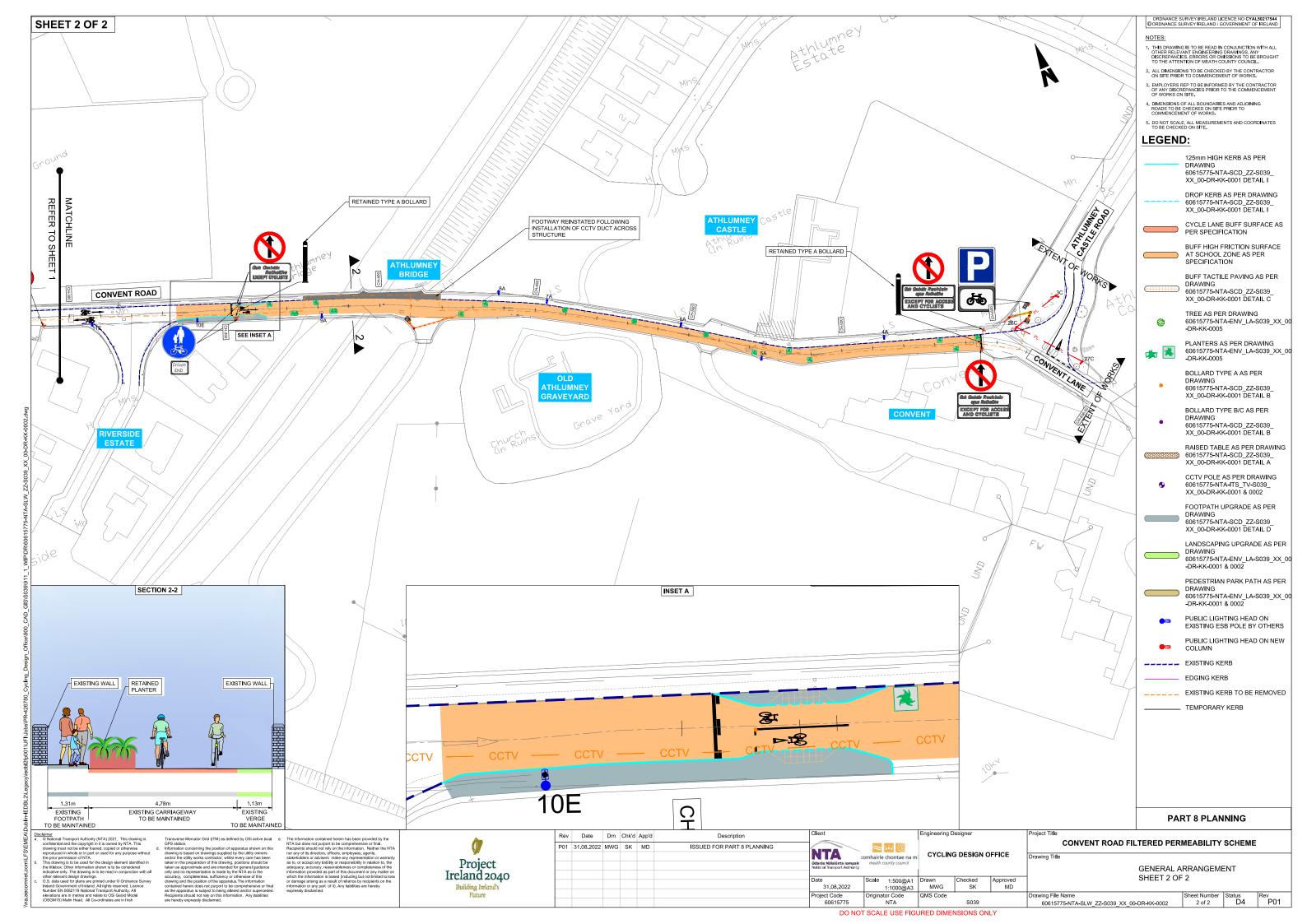
It is the CDO's considered opinion that there is no traffic or transportation reason why this development should not proceed.

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Appendix A – General Arrangement

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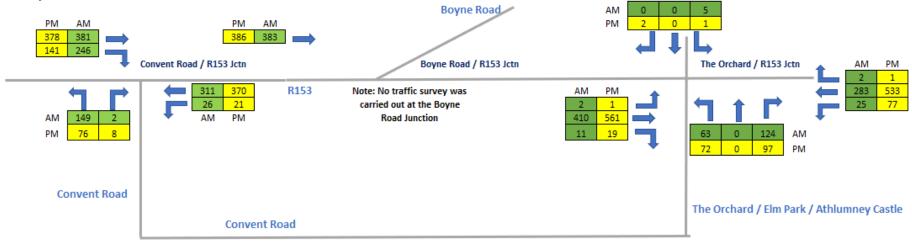
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Appendix B - Traffic Flow Diagram

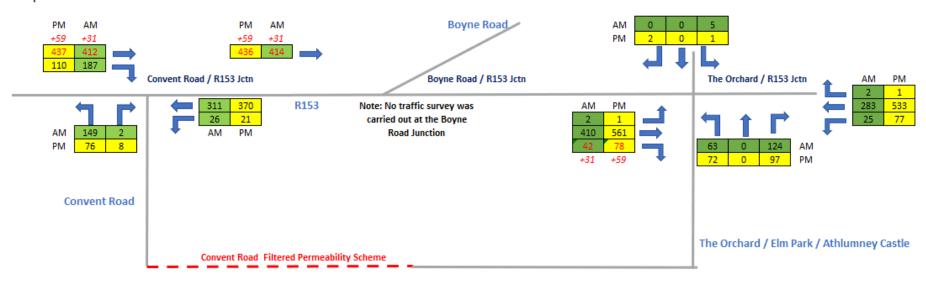
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Prior to Scheme Implementation



After Scheme Implementation



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