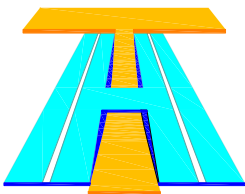


# N24 CARRICK ROAD IMPROVEMENT SCHEME



## SCHEME FEASIBILITY & ROUTE OPTIONS REPORT

OCTOBER 2019



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## EXECUTIVE SUMMARY

Tramore House Regional Design Office have undertaken the Route Selection Process for the N24 Carrick Road Improvement Scheme on behalf of Kilkenny County Council. This Route Selection Report is prepared in accordance with the Project Appraisal Guidelines (PAG) Unit 12.0, (Minor projects €5m to €20m) and as amended by the Project Appraisal Plan (PAP), published in August 2018. As part of the Route Selection Process, three corridors that included nine preliminary route options were developed. These corridors included Corridor 1, Corridor 2 and Corridor 3. At Stage 1 Preliminary Assessment, which included environmental, engineering and economic assessment, Corridor 2 was eliminated. Corridor 1 and Corridor 3 were brought forward to Stage 2, Multi Criterial Analysis and further to completion of the Project Appraisal Matrix, Corridor 1 was deemed the preferred option. As required by PAG Unit 12.0 and the PAP, a Project Appraisal Balance Sheet (PABS) was completed for Corridor 1. In accordance with the PABS, the "*Overall Description of Scheme*" for Corridor 1, is "*Slightly Positive*"



# 1 INTRODUCTION & DESCRIPTION

## 1.1 Scheme Description & Development

The N24 is a National Primary Route located in County Waterford, County Kilkenny, County Tipperary and County Limerick, with an overall total length of approximately 116km. The cities and towns located on or adjacent to the N24 are Waterford (City), Carrick-on-Suir, Clonmel, Cahir, Tipperary and Limerick (City). There are also numerous villages located along the N24 route and it provides a vital link in the region to both the M9 and M8 Motorways in the counties of Waterford and Tipperary.

The section of N24 that is being considered within this report is rural in nature and located immediately North West of the village of Mooncoin in County Kilkenny. See Figure 1.1 below.



**Figure 1.1: Project Extents**

As part of the Phase 0 Pre-Appraisal process a Project Appraisal Plan (PAP) has been prepared for the N24 Carrick Road Improvement Scheme in accordance with the TII Project Appraisal Guidelines (PAG) and the Department of Transport, Tourism and Sport publication, which is referred to as the Common Appraisal Framework for Transport Projects and Programmes 2016 (DTTaS CAF).

It is anticipated that any proposed minor scheme at this location will be between 1.9km and 2.3km in length and will involve online and / or offline improvements.

## 1.2 Background, Project History & Context

In 2002, Kilkenny County Council completed a 9.3 kilometre improvement of the N24 between The Three Bridges (South Tipperary / Kilkenny County Boundary) and Clonmore Cross, immediately west of the N24 Carrick Road Improvement project extents. This wide single carriageway improvement bypassed the villages of Piltown and Fiddown. In 2006, a two plus one carriageway retrofit (Type 3 Dual Carriageway) was carried out along the full extent of the by-pass, as a pilot project trialling this type of cross-section. The N24 Carrick Road Improvement Scheme will interface with the by-pass and two plus one carriageway.

The N24 Carrick Road Improvement Scheme is situated adjacent to the N24 Mooncoin Bypass Major Scheme. The identified route options for the Major Scheme as taken from the Final September 2003 Route Selection Report and the Published Preferred Route are provided in Appendix 1.

Within the past 10 years, Kilkenny County Council has implemented 80kph speed limit zones and low cost safety measures on the N24 within the N24 Carrick Road Improvement Scheme extents (circa 2008 & 2012 respectively). See Sections A2.3 and A2.4 in Appendix 2. The author has been advised by Kilkenny County Council that these controls and measures came about primarily due to the recorded collision history at the location.

The National Development Plan published in February 2018 has identified the “N24 Waterford to Cahir” project as a section of the national road network that *“will be progressed through pre-appraisal and early planning during 2018 to prioritize projects which are proceeding to construction in the National Development Plan.”* Refer to Chapter 2 of this PAP for further details regarding policy context.

## 1.3 Purpose of the Scheme Feasibility & Route Options Report

The purpose of this report is primarily to confirm project scope, feasibility and to identify and recommend a Preferred Route Corridor for the N24 Carrick Road Improvement Scheme. This report effectively covers the TII Project Management Guidelines (2017) requirements in relation to Phase 1 Scope & Feasibility and Phase 2 Route Selection. This approach is considered appropriate and commensurate with the relative size and geographic extent of the minor project being considered i.e. 1.9km to 2.3km.

The completion of the route selection report also facilitates the following objectives:

- To bring the road scheme proposals to the notice of the public and interested parties.
- To bring the road scheme proposals to members of Kilkenny County Council for adoption.
- To obtain approval of the TII to progress to subsequent phases i.e. Phase 3 Design & Phase 4 Statutory Processes.

## 1.4 Project Operational Goals & Design Strategies

The scheme need and objectives are set out clearly in Chapter 2 under scheme specific deficiencies and policy context. At the end of Chapter 2, a table is provided which sets out in summary format the specific objectives under the following TII Project Appraisal headings:

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

The design strategies for the project are listed as follows:

- Development of designs, which will meet the scheme specific needs and objectives as set out in Chapter 2.
- Development of the best possible designs for the route alternatives and options taking into account TII DMRB compliance requirements, the constraints within the study area, interface locations and the needs of the local community and vulnerable road users.
- Development of mainline designs with minimum design speeds of 100kph, to the extent possible and appropriate.
- Development of designs, which limit access to the national road network in line with the TII policy.
- Development of designs, which have the best balance in terms of the above-mentioned TII Project Appraisal headings.

## 2 SCHEME NEED & OBJECTIVES

### 2.1 Overview

This section of the Project Appraisal Report outlines the deficiencies associated with the existing network within the project extents for the N24 Carrick Road Improvement Scheme. These deficiencies combined with National, Regional and local policies as discussed in section 3.2 of this PAP constitute the ‘Need for the Scheme’.

The following are assessed in terms of network deficiencies:

- Journey Times & Speeds
- Existing Road Character
- Traffic Volumes
- Road Safety

#### 2.1.1 Journey Time & Speed

Within the project extents journey time data was collected on the N24 for both the eastbound and westbound directions using the Google maps distance matrix API. Figure 3.1 provides a summary of the average journey times in seconds, whilst Figure 3.2 provides a summary of the resultant average speeds on the N24. The am and pm peaks referred to in this section relate to traffic flow from 8 to 9am and 5 to 6pm.

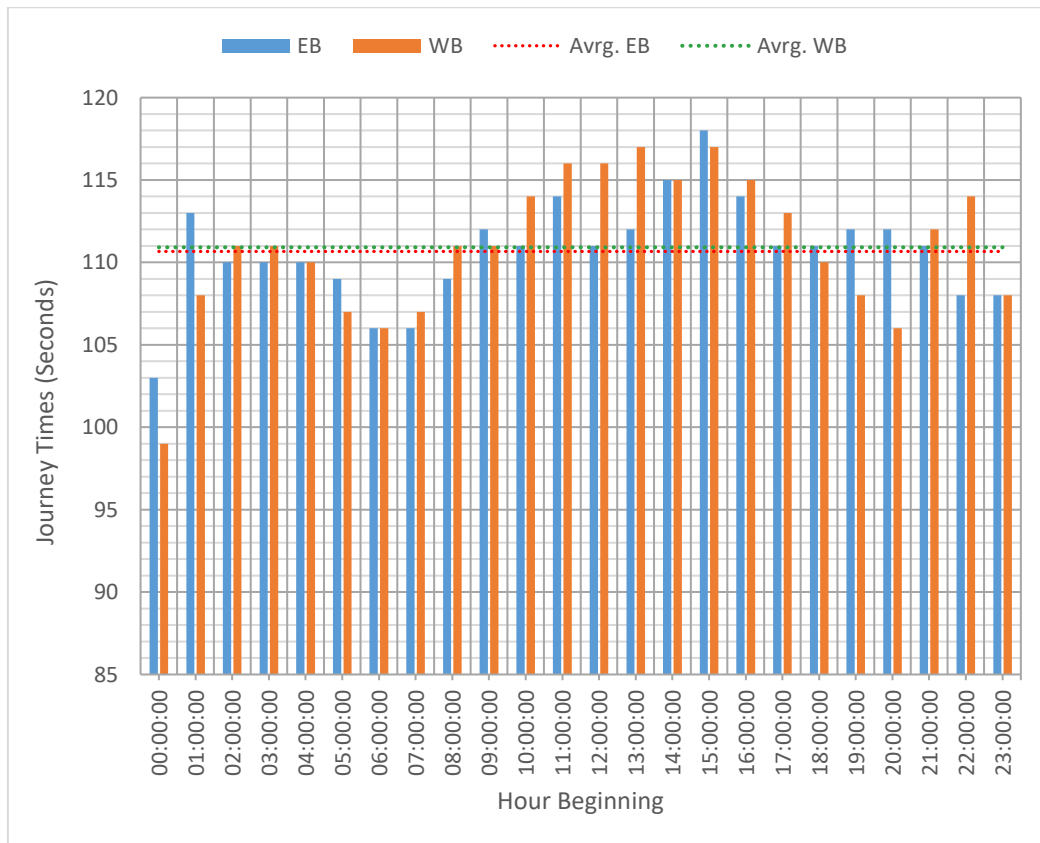
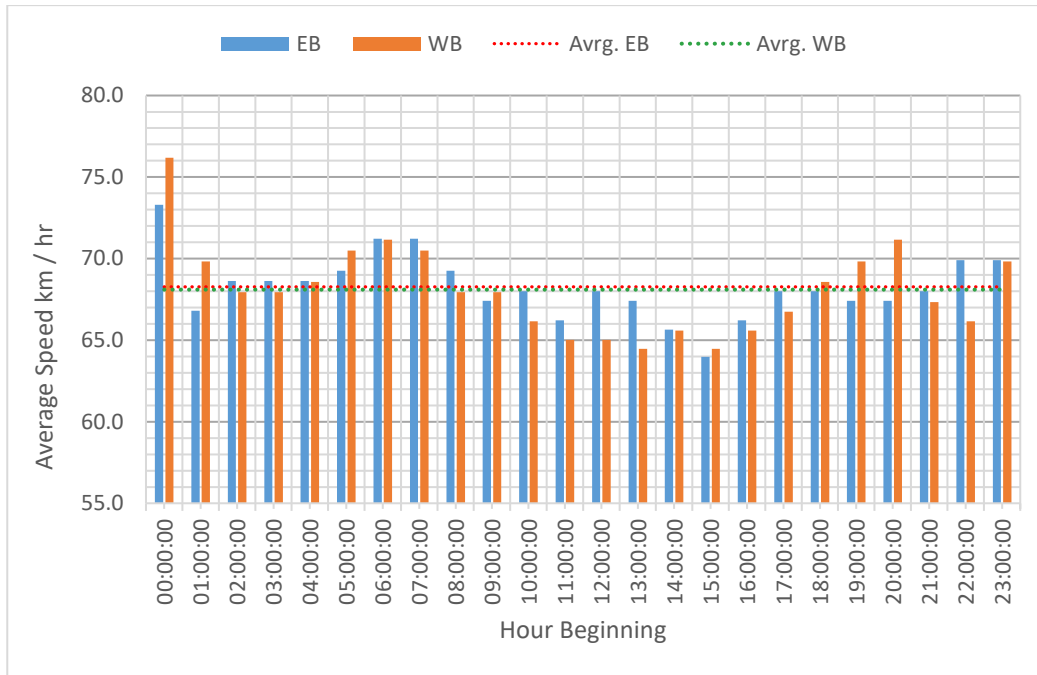


Figure 3.1: Journey Time N24 Carrick Road Project Extents – Eastbound & Westbound

For the eastbound direction, the average journey time is 109 seconds (1 minute 49 seconds) during the AM peak and 111 seconds (1 minute 51 seconds) during the PM Peak, which equates to an average speed in the order of 69kph and 68kph respectively. In the westbound direction, the average journey time is 111 seconds (1 minute 51 seconds) during the AM peak and 113 seconds (1 minutes 53 seconds) during the PM Peak, which equates to an average speed in the order of 68kph and 67kph respectively.



**Figure 3.2: Speeds N24 Carrick Road Project Extents – Eastbound & Westbound**

Overall, the recorded daily speed range in the eastbound direction is in the order of 64kph to 73.3kph and 64.5kph to 76.2kph in the westbound direction.

Driven Journey Time video surveys were undertaken on-site on the existing N24 in June 2017. See Section A2.1 in Appendix 2 for further details. The recorded Journey Times in the AM, PM and Inter Peak periods ranged from 1m 39sec to 1m 59sec, with average speeds between 63.2kph and 76kph. During the on-site surveys it was noted that traffic on the mainline was effectively stopped up for a dairy cattle crossing for a period of between 4 to 5 minutes within the AM and PM Peak hours of 8-9am and 5-6pm. Significant queuing of national road traffic occurred in this period. The location of the cattle crossing is between Ch1400 and Ch1500 as can be seen on Section A2.1

**2.1.2 Existing Road Character**

The existing section of the N24 which is under consideration within this report is a narrow rural 80kph single carriageway road with average driving lane widths in the order of 3.2m and hard-strips typically ≤ 0.5m. The existing verge widths vary but are again predominantly narrow and sub-standard and they allow little or no scope for widening within the existing roadbed and for the provision of forgiving roadsides. The narrow nature of the cross-section effectively means that Vulnerable Road Users are

typically in close proximity to vehicular traffic, with cyclists using the vehicular driving lanes. However, from Ch0 to Ch750 there is an existing footpath in the verge from Mooncoin village adjacent to the westbound carriageway.

There is considerable existing road frontage development including roadside boundary walls with approximately 43 no. private access points and 3 no. local road junctions. See Figure A2.2 in Appendix 2 for a drawing of the existing private access locations and junctions.

An indicative drawing or representation of the existing N24 road alignment has been provided in Figure A2.3 of Appendix 2. As can be seen the horizontal alignment from Ch300 to Ch1500 contains sub-standard radii. There are also hidden dips in the vertical alignment from Ch1500 to Ch2200. These deficiencies coupled with the narrow cross-section and extent of development means that the forward visibility on the mainline is extremely poor with no safe overtaking opportunities. Visibility is also sub-standard for a considerable number of the existing private access points, in particular those located within the section from Ch300 to Ch1500.

### 2.1.3 Traffic Volumes & Route Capacity

Traffic data on the N24 was collected from the existing TII Traffic Monitoring Unit adjacent to Pilltown village i.e. TMU N24 100.0 E, Site ID 000000001243. A summary of the Average Annual Daily Traffic (AADT) and percentage Heavy Goods Vehicles (HGV) is provided on Table 2.1. This table indicates that traffic volumes have increased by 6% between 2014 and 2017.

	2018	2017	2016	2015	2014
AADT	7256	7130	7042	6726	6771
% HGV	7.9%	7.8%	7.5%	7.6%	7.3%
Annual Coverage	99.7%	99.7%	99.7%	99.7%	99.7%

**Table 2.1: AADT (veh / day) on the N24 at the TII TMU 1243 (See Appendix 3 for location)**

Further N24 traffic data from short period counts, including base year and projected AADT is provided in Appendix 3. Traffic growth projections as shown have been obtained using link-based demand projections for the Southeast region contained within Unit 5.3 of the TII Project Appraisal Guidelines (PAG).

The TII Road Link Design standard DN-GEO-03031\* indicates a capacity at Level of Service D of 5,000 AADT for Type 3 Single Carriageway road and 8,600 AADT for a Type 2 Single Carriageway road. Based on a review of the existing N24 cross-section it is reasonable to assume that the actual Level of Service D for the existing N24 is between this AADT range i.e. in the order of 6,800 AADT. Based on Table 2.1 and Appendix 3 it is noted that the existing road has already exceeded 6,800 AADT. Further growth is also anticipated into the future, including growth beyond the Level of Service D of 8,600 AADT for a Type 2 Single Carriageway road.

(\*NOTE: The TII Road Link Design standard DN-GEO-03031 states that "Capacity figures are indicative for general guidance. The appropriate cross section shall be selected with reference to the TII Project Appraisal Guidelines.")

The National Planning Framework (NPF) – Project Ireland 2040 published in February 2018 states the following strategy in relation to Ireland’s cities “Supporting ambitious growth targets to enable the four cities of Cork, Limerick, Galway and Waterford to each grow by at least 50% to 2040 and to enhance their significant potential to become cities of scale.” Given the proximity of the N24 Carrick Road Improvement Scheme to Waterford City, the above-mentioned targeted growth if realised could result in a significant increase in traffic volumes on the N24, over the above-mentioned PAG projections.

#### 2.1.4 Road Safety

Available collision history on the N24 from 2004 to 2017 was reviewed during the preparation of this report. The relevant sources used are listed as follows:

- Kilkenny County Council Pre-2005 records;
- Collisions 2005 to 2014 inclusive from the Road Safety Authority <https://www.rsa.ie/RSA/Road-Safety/RSA-Statistics/Collision-Statistics/Ireland-Road-Collisions/>; and
- Available records from the Regional Road Safety Engineer, Tramore House.

Figure 2.1 provides a summary of collision information from 2004 to 2017 within the minor project extents identified in Chapter 1 of this report.

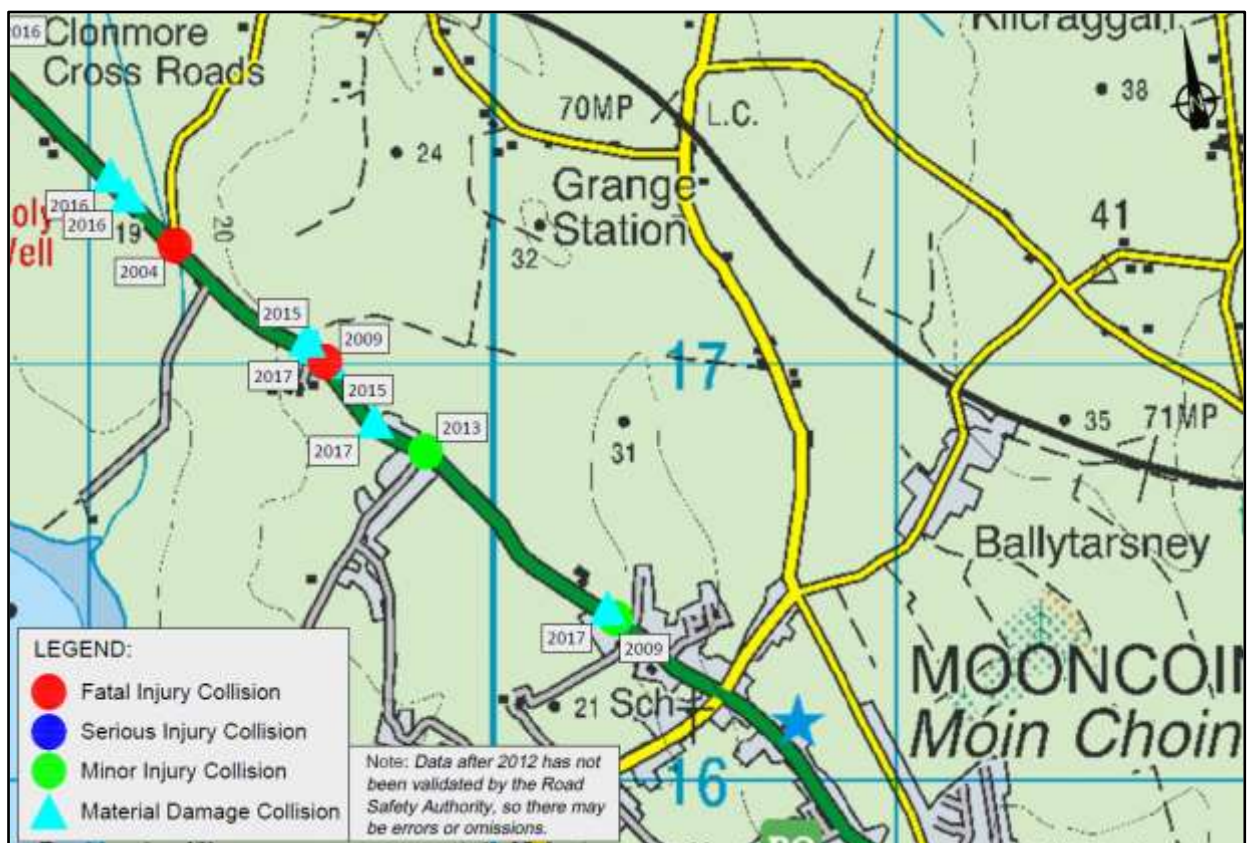


Figure 2.1: Available Collision History 2004 to 2017

In addition, Transport Infrastructure Ireland (TII) produce collision maps of the national road network that indicate the safety ranking of the network relative to the national average collisions for particular

road types. Figure 2.2 illustrates the current available results for a 3 year period from 2014-2016 along the N24 and includes Material Damage Collisions.



**Figure 2.2: TII Network Safety Ranking 2014 to 2016 (Current Available Ranking)**

Within the extents of N24 Carrick Road Improvement Scheme, it is noted that Kilkenny County Council has an 80kph speed limit zone in force since around 2008. In addition, Kilkenny County Council also implemented low cost safety measures in 2012. See Figure A2.3 and Figure A2.4 in Appendix 2.

Based on the review of collision history there were no specific road safety problems identified in terms of injury collisions. The author also considers it reasonable to say that the speed limit and low cost measures implemented by Kilkenny County Council as outlined above has assisted in reducing the number of recorded collisions and severity along the N24, albeit with reduced average journey times and speeds as indicated within section 2.1.1 of this report. However an accumulation of collisions including material damage collisions in recent years is noticeable on Figure 2.1 at locations where horizontal Radii is sub-standard and where there are a number of private accesses. Some of these collisions are reported as rear end incidents. See also Figure A2.2 to Figure A2.4 in Appendix 2.

The safety objective will be to maintain the existing collision rankings at below or twice below the national average rates, with an improvement in average mainline speeds within the project extents.



## 2.2 Policy Context

The Need for the N24 Carrick Road Improvement Scheme is consistent with or in-line with the following National, Regional and Local policy documents.

### National Policy Context:

- National Planning Framework – Project Ireland 2040;
- National Development Plan 2018-2027 – Project Ireland 2040;
- Strategic Framework for Investment in Land Transport;
- Smarter Travel: A Sustainable Transport Future 2009 - 2020; and
- Road Safety Authority Road Safety Strategy 2013 – 2020.

### Regional Policy Context:

- Regional Planning Guidelines for the South-East Region 2010 – 2022.

### Local Policy Context:

- Kilkenny County Development Plan 2014 – 2020.

### 2.2.1 National Development Framework – Project Ireland 2040

The National Planning Framework (NPF) – Project Ireland 2040 was published by the Government in February 2018. It sets out a new strategic planning and development context for Ireland and all of its regions up to 2040, setting a high-level framework for the co-ordination of a range of national, regional and local authority policies and activities, planning and investment, both public and private. The NPF is structured around a set of National Strategic Outcomes (NSOs) or goals. One of these NSOs, which is directly related to the proposed road development, is:

- Enhanced Regional Accessibility i.e. National Strategic Outcome 2

Under Enhanced Regional Accessibility, the NPF states the following national strategic outcomes of the plan for *“Inter – Urban Roads:*

- *Maintaining the strategic capacity and safety of the national road network including planning for future capacity enhancements; and*
- *Improving average journey time targeting an average inter-urban speed of 90kph.”*

In relation to Ireland’s cities, the following is the strategy as stated in the NPF:

- *“Supporting ambitious growth targets to enable the four cities of Cork, Limerick, Galway and Waterford to each grow by at least 50% to 2040 and to enhance their significant potential to become cities of scale.*
- *Enabling the four cities to be regional drivers and to lead in partnership with each other and as partners in regional/inter-regional networks as viable alternatives to Dublin.*
- *Focusing investment to improve the collective ‘offer’ within each of the four cities, i.e. infrastructure, quality of life and choice in terms of housing, employment and amenities.”*

Given the close proximity of the N24 Carrick Road Improvement project to Waterford City, the above-mentioned targeted growth if realised is likely to result in a significant increase in traffic volumes on the N24 by 2040.

The N24 Carrick Road Improvement project would support the goals and targets contained within the NPF in relation to enhanced accessibility and growth targets for Waterford City.

### 2.2.2 National Development Plan – Project Ireland 2040

The National Development Plan 2018 – 2027 was published with the National Planning Framework in February 2018. The National Development Plan (NDP) will drive Ireland's long-term economic, environmental and social progress across all parts of the country over the next decade and will underpin the successful implementation of the new National Planning Framework (NPF).

The NDP provides €7.3 billion for investment in the national road network under National Strategic Outcome 2 – Enhanced Regional Accessibility as outlined in the previous section. In addition, the NDP provides €14.5 billion for compact growth targets.

The NDP states, *“A core priority under the NPF is the essential requirement to enhance and upgrade accessibility between urban centres of population and their regions, in parallel with the initiation of compact growth of urban centres. This has a crucial role to play in maximising the growth potential of the regional urban centres and the economy as a whole.”*

The NDP has also specifically identified the “N24 Waterford to Cahir” project as a section of the national road network that *“will be progressed through pre-appraisal and early planning during 2018 to prioritise projects which are proceeding to construction in the National Development Plan.”*

### 2.2.3 Strategic Investment Framework for Land Transport (SIFLT)

The Strategic Investment Framework for Land Transport (SIFLT) 2015, which was published by the Department of Transport, Tourism and Sport (DTT&S), outlines the key principles against which national and regional, comprehensive and single mode based plans and programmes will be drawn up and assessed. The framework does not set out a list of projects to be prioritised. However, the following three priorities are noted in terms of investment:

- Priority 1 – Achieve steady state maintenance;
- Priority 2 – Address urban congestion; and
- Priority 3 – Maximise the value of the road network.

In terms of Priority 3, the report states that *“the value of the road network will be maximised through targeted investments that:*

- *Enhance the efficiency of our existing network, particularly through the increased use of ITS applications;*
- *Improve connections to key seaports and airports;*
- *Provide access for large-scale employment proposals; and*
- *Support identified national and regional spatial planning priorities”*

The proposed project will support the objectives of the SIFLT by improving the efficiency of part of the national road network.

#### **2.2.4 Smarter Travel – A Sustainable Transport Future 2009 – 2020**

Smarter Travel, A Sustainable Transport Future 2009 - 2020, presents a transport policy framework for Ireland covering the period up to 2020. The policy, launched by the Department of Transport in 2009, sets out a vision, goals and targets to be achieved, and outlines 49 actions that form the basis for achieving a more sustainable transport future. One of the key goals of the initiative is:

*“Improve economic competitiveness through maximising the efficiency of the transport system and alleviating congestion and infrastructural bottlenecks.”*

This key goal as defined within the policy document, in relation to maximising the efficiency of the transport system is consistent with the ambitions of the subject improvement scheme.

The policy recognises the need to focus population and employment in a way that will minimise the potential for excessive transport demand. This will be achieved through consolidation of future growth in residential, commercial and retail development within existing settlements. The N24 Carrick Road Improvement Scheme is located in a rural area some distance from Waterford City, with N24 access restricted to a strategic junction located away from the city. As such any proposed future N24 upgrades will support the future consolidated growth of Waterford City, but without unduly influencing the demand for travel, local development patterns or car use within urban centres.

Policies for improvements to public transport within Smarter Travel distinguish between Significant Urban Areas and Rural Areas. For public transport, the focus in urban areas is a transfer from car use to fast and frequent public transport services in order to reduce congestion and emissions in densely populated areas. For rural areas, public transport attracts less demand because of the dispersed population, and hence there is limited congestion or environmental benefit to be realised. Instead, rural services are focused more on filling a social need, providing for those who do not have access to private means of transport. The proposed scheme will maintain the existing rural public transport facilities, with the benefits of improvements to journey times and consistency of speeds for inter-urban bus users and operators.

### 2.2.5 RSA Road Safety Strategy 2013 – 2020

The Road Safety Authority (RSA) Road Safety Strategy 2013 – 2020, sets out targets to be achieved in terms of road safety in Ireland as well as policy to achieve these targets. The primary target of this strategy is:

*“A reduction of road collision fatalities on Irish roads to 25 per million population or less by 2020 is required to close the gap between Ireland and the safest countries. This means reducing deaths from 162 in 2012 to 124 or fewer by 2020.*

*A provisional target for the reduction of serious injuries by 30% from 472 (2011) to 330 or fewer by 2020 or 61 per million population has also been set.”*

The plan sets out strategies for engineering and infrastructure in terms of the benefits that they can have in terms of reducing collisions. The provision of an upgraded section of national roads proposed as part of this project would support and complement this RSA strategy.

### 2.2.6 South East Regional Planning Guidelines 2010-2022

The South East Regional Authority is one of the regional authorities established in Ireland and is responsible for implementing the National Spatial Strategy at regional level. The South-East Region covers Carlow, Kilkenny, South Tipperary, Waterford City, Waterford County and Wexford. The Authority operates with the assistance and cooperation of the local authorities and with input from a wide range of public and private sector organisations and individuals. In July 2010, it made the Regional Planning Guidelines for the South-East Region for the period 2010 to 2022, to replace those made in 2004.

These guidelines take account of the key issues affecting the development of the region, such as population and settlement; economic and employment trends; industrial and commercial development; transportation; water supply and wastewater facilities; energy and communications; education, healthcare, retail and community facilities; environmental protection etc.

Under the heading “N24 PRIORITISATION STUDY” the South East Regional Planning Guidelines state *“The current N24 is of variable standard and is certainly not consistent with its status as a National Primary route. This results in a number of problems, principally arising from congestion and safety issues. The Study, published in 2008, sets out the case for upgrading the route on the grounds of safety, efficiency and strategic importance of the route for the economic performance of the region. It is an objective of the Regional Authority to prioritise upgrading of the N24.”*

Consequently, the proposed N24 Carrick Road Improvement project is consistent with the objectives and visions for the N24 as set out in the South Eastern Regional Planning Guidelines.

### 2.2.7 Kilkenny County Development Plan 2014 – 2020

The Kilkenny County Development Plan 2014 – 2020 is the current development Plan for County Kilkenny. It is stated in section 11.7.6 of the Kilkenny County Council Development Plan 2014 – 2020 that the Council with the support of the NRA (now TII) is progressing / developing a number of schemes within County Kilkenny and specifically mentions the “N24 Mooncoin Bypass”. In terms of sustainable development for future needs, it is anticipated subject to appraisal requirements in the context of scheme specific needs that the proposed N24 Carrick Road Improvement project will complement any future bypass scheme.

In terms of alternate modes of transport the plan also states that *“The Council will promote walking, cycling, public transport and other more sustainable forms of transport as an alternative to the private car, together with the development of the necessary infrastructure and promotion of the initiatives contained within Smarter Travel, A Sustainable Transport Future 2009 – 2020.”*

## 2.3 Scheme Objectives

The framing of scheme specific objectives was undertaken in accordance with the guidance provided in the TII PAG and DTTaS CAF. These guidance documents include a recommendation that project objectives are established based on each of the following criteria:

- Economy;
- Safety;
- Environment;
- Accessibility & Social Inclusion;
- Integration; and
- Physical Activity (if applicable).

Based on characteristics of the existing road corridor, and responding to the aspirations of national and strategic policy documentation, a series of defined objectives were developed. The objectives, which are presented in Table 2.2, are intended to allow a focused definition of options, which can be examined both quantitatively and qualitatively against a series of required outcomes.

Criteria	Scheme Specific Objective
Economy	<ul style="list-style-type: none"> <li>To improve journey times and average mainline speeds; and</li> <li>To improve capacity, drivability and efficiency of the N24 by providing a suitable and sustainable road type, plus road alignment to meet current and future needs.</li> </ul>
Safety	<ul style="list-style-type: none"> <li>To maintain the existing collision rankings at below or twice below the national average rate, with improved average mainline speeds;</li> <li>To improve mainline visibility and overtaking opportunities, thereby reducing the potential for driver frustration and unsafe manoeuvres;</li> <li>To reduce the level of private access on the national road network and to provide a more forgiving roadside; and</li> <li>To complement the Government's Road Safety Strategy.</li> </ul>
Environment	<ul style="list-style-type: none"> <li>To maintain or reduce existing CO2 and particulate emissions through a reduction in fuel consumption in addition to other Government initiatives;</li> <li>To develop designs and measures so as to manage or minimise any potential Environmental Impacts; and</li> <li>To avoid any adverse affects on the integrity and qualifying interests of the Lower River Sure SAC (Site Code 002137).</li> </ul>
Accessibility and Social Inclusion	<ul style="list-style-type: none"> <li>To improve road based public transport journey time and journey time reliability; and</li> <li>To complement wider government policy related to improved accessibility from socially disadvantaged areas.</li> </ul>
Integration	<ul style="list-style-type: none"> <li>To be compatible with adopted land use objectives;</li> <li>To complement and be consistent with the objectives of National, Regional and Local Planning Policy; and</li> <li>To complement any existing and / or proposed future major schemes for the N24 as indicated within the above-mentioned planning policy.</li> </ul>
Physical Activity	To improve facilities for vulnerable road users, including separation distances from vehicular traffic on the national road network.

**Table 2.2: Scheme Specific Objectives**

### 3 TRAFFIC ASSESSMENT & OPTION CROSS-SECTION

#### 3.1 Overview

Given the project extents, a simple static traffic model is proposed. In this regard, no change in the distribution of traffic is expected because of this project and there are no alternate parallel routes in close proximity to the Study Area.

It is expected that all traffic will transfer to any proposed option or scheme within the Study Area. In this regard the do-nothing and do-something traffic will effectively be the same. Consequently, the base model network for the static traffic model shall be limited to the existing roads contained within the Study Area as defined in Chapter 4.

The main objective of the traffic assessment is to inform the economic appraisal (Sketch Appraisal) of the project. This is achieved by ascertaining the current N24 traffic levels in terms of AADT and forecasting future traffic projections by the application of approved traffic growth rates.

Short period Automatic Traffic Counts (ATC's) and a nearby TII Permanent Traffic Count site (TII TMU) were used to determine AADT using the single TMU methodology in Unit 16.0 of the TII PAG. The TMU used is identified as follows:

- [TMU N24 100.0 E](#) N24 between Carrick-On-Suir and Waterford, Piltown, Co. Kilkenny

#### 3.2 Traffic Volumes – Mainline

Traffic data on the N24 was collected from the existing TII Traffic Monitoring Unit adjacent to Piltown village i.e. [TMU N24 100.0 E](#), Site ID 000000001243. A summary of the Average Annual Daily Traffic (AADT) is provided on Table 3.1. This table indicates that traffic volumes have increased by 7.9% between 2014 and 2018.

	2018	2017	2016	2015	2014
AADT	7305	7177	7042	6726	6771
% HGV	7.8%	7.8%	7.5%	7.6%	7.3%
Annual Coverage	99.7%	99.7%	99.7%	99.70%	99.7%

**Table 3.1: AADT (veh / day) on the N24 at the TII TMU (See Figure 3.1 for the location)**

Further available N24 traffic data was collected from the following sources. See also location drawing in Appendix 3:

- January 2017 - Tracis PLC surveys on behalf of Kilkenny County Council at ATC Site 7 and 8.
- March 2017 – Tramore House survey at ATC 1
- 2013 - Kilkenny County Council traffic Count Granny

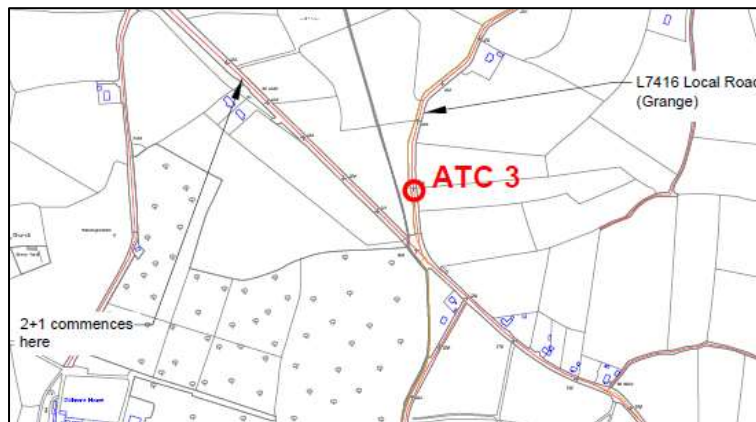
The Tramore House Survey at ATC 1 is located within the project extents and the Study Area defined in Chapter 4 of this report. Consequently, it is proposed to use the data from this location for the Project Appraisal. As stated in section 3.1 the single the single TMU methodology in Unit 16.0 of the TII PAG was used to convert the ATC 1 short period traffic count to AADT. See Table 3.2.

	THRDO ATC 1 N24 (March 2017)
AMx	1596
IPx	4033
PMx	2245
AADTx	<b>7875</b>
HGV	5.2%

**Table 3.2: 2017 AADT (veh / day) THRDO ATC 1 (See Appendix 3 for location)**

### 3.3 Traffic Volumes – L7416 Grange Road

A traffic count was also under taken by THRDO on an existing local road from the 13/03/2017 to the 26/03/2017 inclusive i.e. THRDO ATC 3 on the L7416 Grange Road. This road is located towards the western end of the scheme Study Area as shown in Figure 3.1. The Average Daily Traffic (ADT) recorded during the count period was 116 vehicles per day.



**Figure 3.1: Location of THRDO ATC 3 on the Local Road L7416 to Grange**

### 3.4 Future Traffic Projections N24

In order to forecast future traffic volumes for application in the project appraisal and given the location and limited size, scope and effective area of the project, it is proposed to use the Link-Based Growth Rates published on Table 5.3.2 in Unit 5.3 of the TII PAG. County Kilkenny is located in the 'South-East' region i.e. No. 7 on Table 5.3.2 shall be used in the Project Appraisal.

The relevant annual growth projections for light and heavy vehicles on the national route are provided in Table 3.3. Zero traffic growth is assumed beyond 2050.



	2013 – 2030		2030 – 2050	
	LV	HV	LV	HV
<b>Annual Low Sensitivity Growth Rates (South-East, Kilkenny)</b>	1.0076	1.0221	0.9996	1.0135
<b>Annual Central Growth Rates (South-East, Kilkenny)</b>	1.0106	1.0237	1.0022	1.0176
<b>Annual High Sensitivity Growth Rates (South-East, Kilkenny)</b>	1.0118	1.0242	1.0038	1.0195

**Table 3.3: Link-Based Growth Rates from Table 5.3.2 of Unit 5.3 of the TII PAG**

*(NOTE: The Low and High Sensitivity Growth rates may be used for the purposes of Sensitivity Testing for Economic and Environmental Impacts.)*

The following forecast years have been assumed for Future Traffic Projections:

- Opening Year 2020
- Design Year 2035
- Forecast Year 2050

The Base Year and Future Traffic Projections are summarized below for the N24 at THRDO ATC 1. Information on projected growth at other traffic count locations is also provided in Appendix 3.

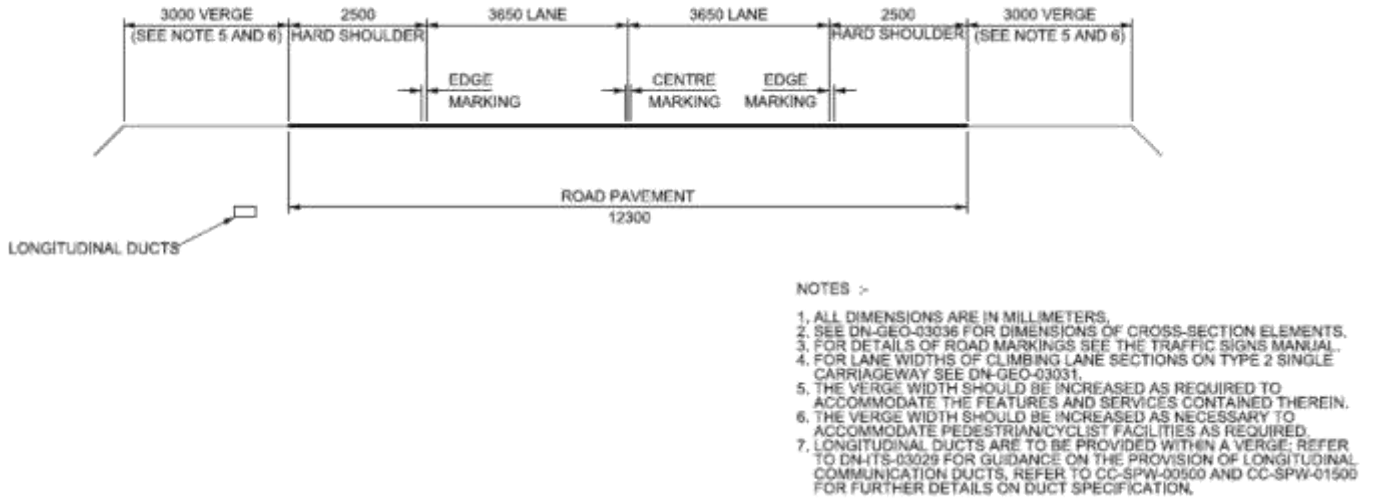
<b>Base Year &amp; Projected AADT (THRDO ATC1)</b>				
<b>Year</b>	<b>2017</b>	<b>2020</b>	<b>2035</b>	<b>2050</b>
<b>Base</b>	7875	-	-	-
<b>Low</b>	-	8074	8734	8814
<b>Central</b>	-	8144	9263	9736
<b>High</b>	-	8173	9478	10205

**Table 3.4: N24 Base Year & Projected AADT THRDO ATC 1 (See also Appendix 3 for location)**

### 3.5 Option Cross-Section Considerations

Based on the previous section the maximum predicted AADT in 2050 on the N24 is in the order of 10,205 veh. / day using the High Growth Scenario, with the Central Growth Scenario having a predicted AADT of 9,478 veh. / day. Consequently and having due regard to Table 6.1 TII Rural Road Link Design standard DN-GEO-03031\* a Type 1 Single Carriageway as shown on Figure 3.2 is considered to be more than adequate to cater for future traffic needs on the N24 within the project extents. The capacity in terms of AADT at Level of Service D for this road type is 11,600 veh / day.

When the predicted AADT in Appendix 3 at adjacent locations both sides of Mooncoin Village are considered, the provision of a Type 1 Single Carriageway is also considered to be a suitable road type.



**Figure 3.2: Type 1 Single Carriageway Road Type**

The TII Road Link Design standard DN-GEO-03031 states for table 6.1 that “Capacity figures are indicative for general guidance. The appropriate cross section shall be selected with reference to the TII Project Appraisal Guidelines.” In terms of other considerations it is also noted that one of the objectives of this minor project in terms of integration as stated in Chapter 2 is to complement any existing and / or proposed future major schemes for the N24. The N24 Waterford to Cahir project is currently at Phase 0 and therefore the cross-section or road type of this major scheme is unknown. The options developed for N24 Carrick Road minor scheme and subsequent appraisal will take into consideration this objective. The National Planning Framework (NPF) – Project Ireland 2040 published in February 2018 states the following strategy in relation to Ireland’s cities “Supporting ambitious growth targets to enable the four cities of Cork, Limerick, Galway and Waterford to each grow by at least 50% to 2040 and to enhance their significant potential to become cities of scale.” Given the proximity of the N24 Carrick Road Improvement Scheme to Waterford City, the above-mentioned targeted growth if realised could result in a significant increase in traffic volumes on the N24, over the above-mentioned PAG projections.

## 4 STUDY AREA & CONSTRAINTS

### 4.1 Overview

During the preparation of the Phase 0 Project Appraisal Plan (PAP) as discussed in section 1.1 of this report, a Study Area for the project was defined and is shown on Figure 4.1 on the next page. The Study Area commences on the N24 from a location just west of Mooncoin village and terminates towards the end of the N24 Pilltown Fidown Bypass, (Type 3 Dual).

In terms of the extent of the study area, the author has reviewed the existing Constraints and Route Selection Report for the N24 Mooncoin Bypass Major Scheme. In this regard, the identified constraints and routing potential for this scheme have been considered in terms of defining an appropriate and realistic Study Area for the development of sustainable options. See also Appendix 1.

The following sections briefly describe the constraints, which have been identified to date for the N24 Carrick Road Improvement Scheme. Constraints are described and considered under the headings below.

- Natural Constraints;
- Artificial Constraints;
- External Parameters.

### 4.2 Natural Constraints

The following Natural Constraints have been considered:

- Ecology & Bio-Diversity
- Geology, Hydrology and Hydrogeology
- Landscape and Visual

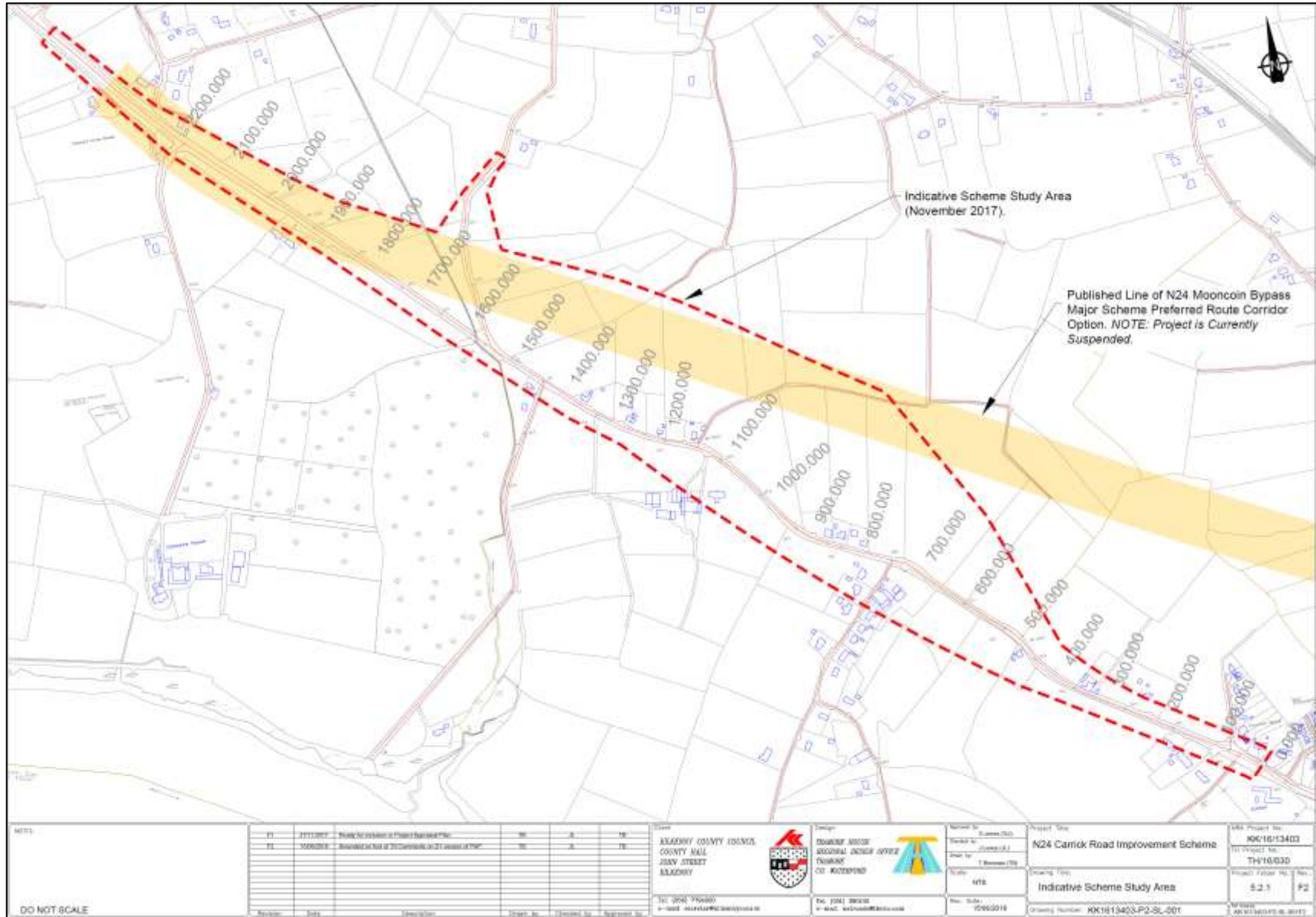


Figure 4.1: Proposed N24 Carrick Road Improvement Scheme Study Area

#### 4.2.1 Ecology & Bio-Diversity

The proposed Study Area does not lie within any SAC or SPA. The closest Special Area of Conservation is the Lower River Suir SAC (Site Code: 002137), located ca. 423m south-west of the development. The proximity of this Natura 2000 site essentially means that a Screening for Appropriate Assessment will be required for the project. SACs and SPAs within 15km of the proposed development are illustrated on Figures A3.1 and A3.3 in Appendix 3.

Natural Heritage Areas (NHAs) are sites of national ecological importance in the Republic of Ireland. NHAs and pNHAs within 5km of the proposed development are illustrated in Figure A3.2 in Appendix 4. No NHAs are located within 5km of the proposed development. The closest pNHA to the proposed Study Area is the Lower River Suir (Coolfinn, Portlaw) pNHA (Site Code: 000399), ca. 1km south-west, followed by the Fiddown Island pNHA (Site Code: 000402), located ca. 1.7km north-west.

On the southwestern side of the Study Area from Ch1400 to Ch2100, there is an area of land currently cultivated as Orchard. The Study Area also crosses an open watercourse (Skelpstown 16 Stream) which discharges directly into the River Suir. See Figure A3.3 in Appendix 3.

Existing field boundaries within the Study area consist mainly of hedgerows interspersed with trees. Dwelling roadside boundaries adjacent to the existing N24 consist of either walls or fences and are located close to the existing paved road edge.

#### 4.2.2 Geology, Hydrology and Hydrogeology

Geological Survey of Ireland (GSI) 1:100,000 bedrock mapping indicates that the geology of the area is characterized by three main geological formations. Waulsortian Limestone (WA) underlay the majority of the area and are described as pale grey massive unbedded Lime Mudstone. The second formation of interest is Silverspring Formation (SS), characterized by pale grey bedded cherts and dark boimicrite Limestones. The Ballysteen Formation (BA) comprised of dark muddy Limestone and Shale is mapped to the North and South of the Study Area. A series of structural faults are shown to offset the formations. See Figure A3.4 in Appendix 3.

GSI subsoil mapping indicated that the Study Area is covered predominantly by glacial till derived from Devonian Sandstones. Alluvial deposits were identified along waterbodies i.e. adjacent to Skelpstown Steam. Subsoil permeability mapping also suggests that the soils in the Study Area have low permeability. GSI Aquifer mapping indicate that Study Area is located in a Regionally Important Karstified (diffuse) Aquifer (Rkd). Groundwater Vulnerability maps also classify the Study Area as being of "Low" Vulnerability. See Figures A3.5 to A3.8 in Appendix 3.

GSI mapping also suggest that rock may be present at or near the ground surface towards the western end of the Study Area. GSI Historical borehole ref: 2311SEW110, located immediately north of Mooncoin along the N24 route identified bedrock at a depth of 12.2m. A Karst feature in the form of a

spring is mapped to the north east of the Study Area within the above-mentioned Ballysteen Limestone formation. Springs are also mapped to the south of Mooncoin. Karst is considered to be a geotechnical design risk. See Figures A3.7 and A3.9 in Appendix 3.

The Hydrology environment in which the Study Area is located is dominated by the River Suir, and the Skelpstown Stream, which is a tributary of the River Suir. The River Suir is located ca. 700m from the Study Area. See Figure A3.3 in Appendix 3.

#### **4.2.3 Landscape & Visual**

Based on a review of Kilkenny County Council's 2014-2020 County Development Plan there are no protected views in the vicinity of the Study Area. The Study Area is located within a Landscape Character Type defined as "Lowland" within the County Development Plan. The River Suir south of the Study Area is defined as Highly Scenic / Visually Pleasing. See Figure A3.10 in Appendix 3.

The general topography of the Study Area slopes in a southwesterly direction towards the River Suir. The approximate height difference or elevation range is 30m OD to 14m OD from east to west. See also Figure A2.3 in Appendix 2.

### **4.3 Artificial Constraints**

The following Artificial Constraints have been considered:

- Land Use and Planning
- Engineering
- Archaeology, Architectural and Cultural Heritage
- Material Assets – Agriculture
- Material Assets – Non-Agricultural
- Noise & Vibration
- Human Beings

#### **4.3.1 Land Use and Planning**

The general area is predominantly rural in character and heavily dependent on agriculture to support the local economy. The only significant development is Mooncoin village immediately east of the Study Area. There are a number of properties and buildings within and adjacent to the Study Area as shown on Figure A3.3 in Appendix 3. The type of existing development along the existing N24 is also identified in Figure A2.2 in Appendix 2.

A planning search to identify all development was undertaken within and immediately adjacent to the Study Area using the following online resource:

<http://kilkennycoco.maps.arcgis.com/apps/webappviewer/index.html?id=6bec3bf1a88d4596b84ff0a2d17cafb0>

Following the planning search, a site walkover was also carried out. The map provided under Figure A3.3 in Appendix 3 is considered to reflect all known development within and immediately adjacent to the Study Area.

A review of the Kilkenny County Development Plan (2014-2020) indicates that currently only a small part at the eastern end of the Study Area will cross the Settlement Boundary for Mooncoin village. There are currently no land zoning objectives within either the Study Area or Settlement Boundary in the County Development Plan. See Figure A3.11 in Appendix 3.

In relation to the Department of Environment, Community and Local Government's 2012 Spatial Planning and National Roads Guidelines *"The Policy of the Planning Authority will be to avoid the creation of any additional access point from new development or the generation of increased traffic from existing accesses to national roads to which speed limits greater than 60kmh apply. This provision applies to all categories of development, including individual houses in rural areas, regardless of the housing circumstances of the applicant."* This policy is also stated within the Kilkenny County Development Plan (2014-2020) under the heading Access to National Roads

#### 4.3.2 Engineering

The topography of the Study Area is as described previously in section 3.2.3. Existing water bodies in the locality consists of the Skelpstown stream, which crosses through the western part of the Study Area and discharges into the River Suir. See Figure A3.3 in Appendix 3.

The existing roads within the Study Area include the N24 National Primary and seven local roads and / or access lanes / tracks, with junctions onto the N24 as outlined below. Please read together with the chainages provided on Figure 3.1 Study Area.

- Ch50 LHS – Not Classified
- Ch80 RHS – LS7422
- Ch750 LHS – LS7421
- Ch1150 RHS – Not Classified (Partially Disused)
- Ch1450 LHS – LT74163
- Ch1550 RHS – LS7416
- Ch2200 LHS – LS7414

An existing rail line is located approximately 0.5km north of the Study Area. It serves Waterford, Carrick-On-Suir, Clonmel, Cahir, Limerick Junction and Limerick City. See Discovery Map in Appendix 1.

The proposed scheme must consider waste issues during design and construction in accordance with the Waste Management Acts 1996-2011. Refer to TII Guidelines on The Management of Waste from National Road Construction Projects (GE-ENV-01101) and EPA Guidance on Soil and Stone By-products (Ver. 3, June 2019).

#### 4.3.3 Archaeology, Architectural and Cultural Heritage

A preliminary desktop assessment was completed by the assigned TII Project Archaeologist in the vicinity of the Study Area. See Section A4.1 of Appendix 4 for further details regarding these constraints.

#### 4.3.4 Material Assets - Agriculture

The agricultural lands within the study area are predominantly pastureland. There are 28 individual Agricultural plots within the Study Area that may be impacted by the N24 Carrick Road Improvement Scheme, including one notable dairy enterprise, which currently herds cattle across the N24 in the morning and evening. See crossing point on Figure A2.1 in Appendix 2.

#### 4.3.5 Material Assets – Non Agriculture

The current built environment constraints are shown on Figure A4.3 in Appendix 3. The type of development for properties along the existing N24 are identified on Figure A2.2 in Appendix 2.2.

There are existing ESB and Eir overhead and underground services within the Study Area, predominantly along the existing N24 and adjacent local roads. Irish Water mains services are present within the Study Area also along the existing N24 and adjacent local roads. Existing Storm Water services have been identified on the N24 from Ch0 to Ch750, within the Study Area on Figure 3.1. Existing Storm Water Services are also present on the western side of the Study Area on the existing N24. Based on the above it is noted that offline routing to the north of the existing N24 within the Study Area is unlikely to encounter services, whereas online improvement and tie-in locations will impact existing services to varying degrees depending on the route options developed. There are no known gas services present within the Study Area.

#### 4.3.6 Air Quality & Climate

Due to the geographical extent and size of the minor scheme being considered, the Operational stage impacts for this project are considered negligible, as the anticipated impact of higher speeds will be potentially balanced by reduced braking. All existing potential receptors (existing properties) have been identified within and adjacent to the Study Area on Figure 4.3 in Appendix 4.

Reference shall also be made as required to the 2011 TII Guidelines on the Treatment of Air Quality during the Planning and Construction of National Road Schemes

#### 4.3.7 Noise & Vibration

All existing potential noise receptors (existing residential dwellings) have been identified within and adjacent to the Study Area on Figure 4.3 in Appendix 4. Noise impacts associated with the operational stage of a road project can be separated into two main components as follows:

- Vehicle engines and wind rush, which is a function of the type, number and speed of vehicles;  
and



- The interaction of vehicle types with the road surface, which depends on road structure, which depends on the pavement material used.

Due to the limited geographical extent and size of the minor scheme being considered, the subsequent appraisal method will record the number of dwellings within 300m of the project and identify the number of properties that are closer to or further away from the driving or running lanes on the national route. It is also assumed that existing national road traffic will in effect transfer to any route options that may be identified within the Study Area. Mitigation measures shall be considered on a case-by-case basis having regard to the outcome of the above appraisal.

It should be noted that requirements for the control of noise and vibration including the monitoring of same, will be implemented during the construction phase.

Reference shall also be made to the 2014 TII Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes.

#### **4.3.8 Human Beings**

Settlement patterns in the region are characterized by a dispersed pattern of residential settlement patterns throughout with clusters of rural development along the existing N24. Waterford City and Carrick on Suir are the principle economic drivers in the vicinity of the Study Area, with the villages of Piltown, Fidown and Mooncoin also supporting a number of local businesses and shops. Within the Study Area, there is one heavy haulage and Container Company and one notable large dairy business. As the Study Area is rural in nature, agriculture is considered the main employer.

The highest concentration of development in and close to the Study Area is Mooncoin village. There is one primary and one secondary school located in the village. Existing amenities in or adjacent to Mooncoin include the GAA and soccer clubs and associated grounds. There is also a Community Centre located within Mooncoin. The main centres in the region for shopping, retail and leisure are located in Waterford City and Carrick on Suir. The Regional Sports Centre is located in Waterford City, as is the Regional Hospital at Ardkeen.

Due to the limited geographical extent and size of the minor scheme, the main impacts to Human Beings are likely to be slight and temporary in nature. Given the level of the existing development along the N24 within the Study Area, online options or alternatives may impact directly upon these development. Temporary disruption to existing national and local travel patterns may occur during any subsequent road construction, with the extent of disruption being a measure of the percentage of online works. Agricultural landowners may also be impacted in terms of acquisition, severance and temporary disturbance.

#### 4.4 External Parameters

It is anticipated that Exchequer funding will be required in its entirety, due to the rural and confined nature of the project extents in the context of a minor scheme. In this regard, the project is unlikely to attract non-exchequer funding locally, nationally or internationally.

Given the duration of previous minor scheme construction projects within Kilkenny it is anticipated that all required construction would proceed during one construction phase under a Public Works Contract for Civil Engineering Works designed by the Employer. Advance works contracts are not envisaged at this stage.

The TII publications website, including standards and guidelines contained therein shall be used in the Planning & Design of this project. Progression through subsequent phases shall be subject to the approval of the Sanctioning Authority (TII).

In line the TII Standard related to Geometric Design of Major / Minor Priority Junctions and Vehicular Access to National Roads access to any subsequent new minor scheme will be limited and may be subject to TII Departure Application in certain situations. See also section 3.3.1.

## **5 CONSIDERATION OF ALTERNATIVES & OPTIONS**

### **5.1 Overview**

This section provides a description of the alternatives and options considered for the project. In accordance with the Unit 4.0 of the Project Appraisal Guidelines, Alternatives refer to a specific transport mode (road, rail, bus, air etc.) or demand management proposals (fiscal, control, ITS measures etc.), whilst options are typically road based.

### **5.2 Public Transport - Rail**

There is a parallel rail link / network alternative to the existing N24 road based route which serves Waterford, Carrick-on-Suir, Clonmel, Cahir, Limerick Junction and Limerick City. The nearest adjacent train stations are located in Waterford and Carrick-On-Suir.

Given the isolated rural nature and geographic extent of the minor scheme or improvement being considered (<3km), the development of rail alternatives will not address the project objectives, as identified in Chapter 2. In this regard, it should be noted that the objectives are predominantly relative to the existing road character and not specifically demand driven. However, it is anticipated that any proposed improvements to address the objectives will also improve accessibility to the existing rail connection locations in Waterford and Carrick-On-Suir.

### **5.3 Public Transport - Bus**

There are no existing defined formal Bus Stops located within the identified Scheme Study Area, with the location being rural in nature and limited in terms of its extent. There are a number of existing through bus services on the N24 between Waterford, Carrick-On-Suir and beyond. There are existing Bus Stops located at the Church on the N24 in Mooncoin village.

Given the limited geographic area of the project along the N24 (<3km), the development of bus alternatives will not satisfy or address the objectives of the scheme as identified in Chapter 2. In this regard, it should be noted that the objectives are predominantly relative to the existing road character and are not specifically demand driven. However, it is anticipated that any proposed improvements to address the objectives will be of benefit to existing and future bus services using the route and travelling to connection points in Carrick-On-Suir, Mooncoin village, Waterford City and beyond.

### **5.4 Vulnerable Road Users (VRU) – Cyclists**

An Automatic Traffic Counter (ATC) was installed on the N24 by Tramore House Regional Design Office at location THRDO ATC 1 in March 2017. Cycle trips recorded from the 13/03/2017 to 26/03/2017 inclusive are provided on the next page in Table 3.1. See also Appendix 3 for a map showing the location of the THRDO ATC 1.

Date	Day	THRDO ATC 1 N24 (13/03/17-26/03/17)		
		A>B East	B>A West	Total
13/03/2017	Mon	7	9	16
14/03/2017	Tue	7	8	15
15/03/2017	Wed	6	6	12
16/03/2017	Thu	3	12	15
17/03/2017	Fri	5	5	10
18/03/2017	Sat	8	8	16
19/03/2017	Sun	4	8	12
20/03/2017	Mon	5	4	9
21/03/2017	Tue	5	6	11
22/03/2017	Wed	1	5	6
23/03/2017	Thu	3	4	7
24/03/2017	Fri	5	9	14
25/03/2017	Sat	8	9	17
26/03/2017	Sun	13	7	20
<b>Average &gt;&gt;</b>		<b>6</b>	<b>7</b>	<b>13</b>

**Table 4.1: Recorded Cycle Trips March 2017 at THRDO ATC 1**

The results indicate that the level of cycle trips recorded during the count period is very low, with the average number of daily two-way trips at THRDO ATC1 being 13. This is consistent with traffic data gathered at adjacent locations on the N24 as shown in Appendix 3, including the TII TMU on the N24 at Piltown (Site ID: 1243). The following is also noted:

- There are no specific local or regional planning policies or objectives currently in place for the provision of an online cycle route on the N24 at this location.
- The N24 between Mooncoin and Carrick-On-Suir has not been identified as being part of the proposed National Cycle Network, within the [National Cycle Network Scoping Study](#), dated August 2010.

There are existing hardshoulders / hardstrips available for cyclists on the N24 west of the Study Area for the N24 Carrick Road Improvement Scheme. However, there is little or no hardshoulder available within the scheme extents.

Taking into account the objectives identified in Chapter 2 of this report, the improvement of facilities for cyclists by way of the provision of an increased hardshoulder width would improve road safety and accessibility for Vulnerable Road Users, in addition to providing increased separation from vehicular traffic on the national road.

## 5.5 Vulnerable Road Users (VRU) – Pedestrians

Taking into account the initial objectives identified in Chapter 2 of this report, the improvement of facilities for pedestrian by way of the provision of an increased hardshoulder width within the scheme extents, as identified within the previous section, would improve road safety and accessibility for Vulnerable Road Users. All existing pedestrian facilities adjacent to Mooncoin village will be maintained and / or improved.

## 5.6 Demand Management Proposals or Controls

Given that, the defined objectives at this stage are primarily related to the existing road character and geometry, the provision of demand management proposals are not considered appropriate.

Within the last 10 years, Kilkenny County Council has implemented 80kph speed limit zones (circa 2008) and low cost safety measures (circa 2012) on the N24 within the scheme Study Area. See Figure(s) A2.3, A2.4 in Appendix 2. These controls and measures in addition to the existing road character and geometry have resulted in reduced journey times and average speeds as outlined in section 2.1.1 of this report. An objective of this project will be to maintain the existing collision rankings at below or twice below the national average rate, with improved average mainline speeds.

## 5.7 Road Based Options

Having regard to Unit 4.0 of the PAG the initial consideration of road-based options are broadly identified and discussed in the following sections. It is anticipated that road based options will address key objectives identified in Chapter 2 i.e. objectives related to exiting road character, geometry, journey time and average speeds.

### 5.7.1 Do-Nothing & Do-Minimum Option

The Do-Nothing Option assumes that there will be no other investment in the transport network other than regular maintenance within the appraisal period. Therefore, the Do-Nothing Option is the existing transport network plus regular maintenance. The Do-Nothing Option will not address the key objectives identified in Chapter 2.

The Do-Minimum Option provides the baseline for establishing the economic, integration, safety, environmental and accessibility impacts of all options.

### 5.7.2 Do-Something Options

A number of Do-Something Options have been identified on an incremental basis as an intervention to address the objectives in Chapter 2. See Chapter 6 for further details.

## 6 PRELIMINARY OPTION ASSESSMENT

### 6.1 Overview & Proposed Route Corridor Options

In developing road based Corridor Options consideration was given to the future sustainability of any subsequent route in terms of the potential for the imposition of a major scheme in the area i.e. the future N24 Waterford to Cahir project, which is currently at Phase 0 Scope & Pre-Appraisal. This is consistent with the integration objectives of the project.

Having regard to the identified Study Area and constraints 3 no. Route Corridor Options have been defined for the N24 Carrick Road Improvement Scheme. These are listed as follows and shown on Figure 6.1 on the next page:

- Corridor 1 Blue (A-B) 1.9km
- Corridor 2 Green (A-B) 1.8km
- Corridor 3 Magenta (A-C) 2.3km

All Corridor Options traverse through the townland's of Clonmore, Grange and Pollrone to the west of Mooncoin village. Consequently, the geographical extent and associated impacts or effects are limited to a relatively small local area. One combination Corridor Option 1-3 (A-B-C) at 2.25km was developed following Public Consultation in November / December 2018.

Within the above-mentioned Corridor Options, nine Alignment or Preliminary Design Options were developed and are summarised in Table 6.1. Some of the Preliminary Design Options were developed in consideration of the sustainability of the route in the context of the N24 Waterford to Cahir project as mentioned above. Preliminary Design Option 1A-1C covers three no. potential variations in alignment and access to the redundant existing N24.

This chapter will provide a summary of the Engineering Assessment, the Environmental Assessment and the Economy Assessment including Option Comparison Estimates. It will identify the proposed Corridor and Preliminary Design Options to be carried forward to Stage 2 Project Appraisal.

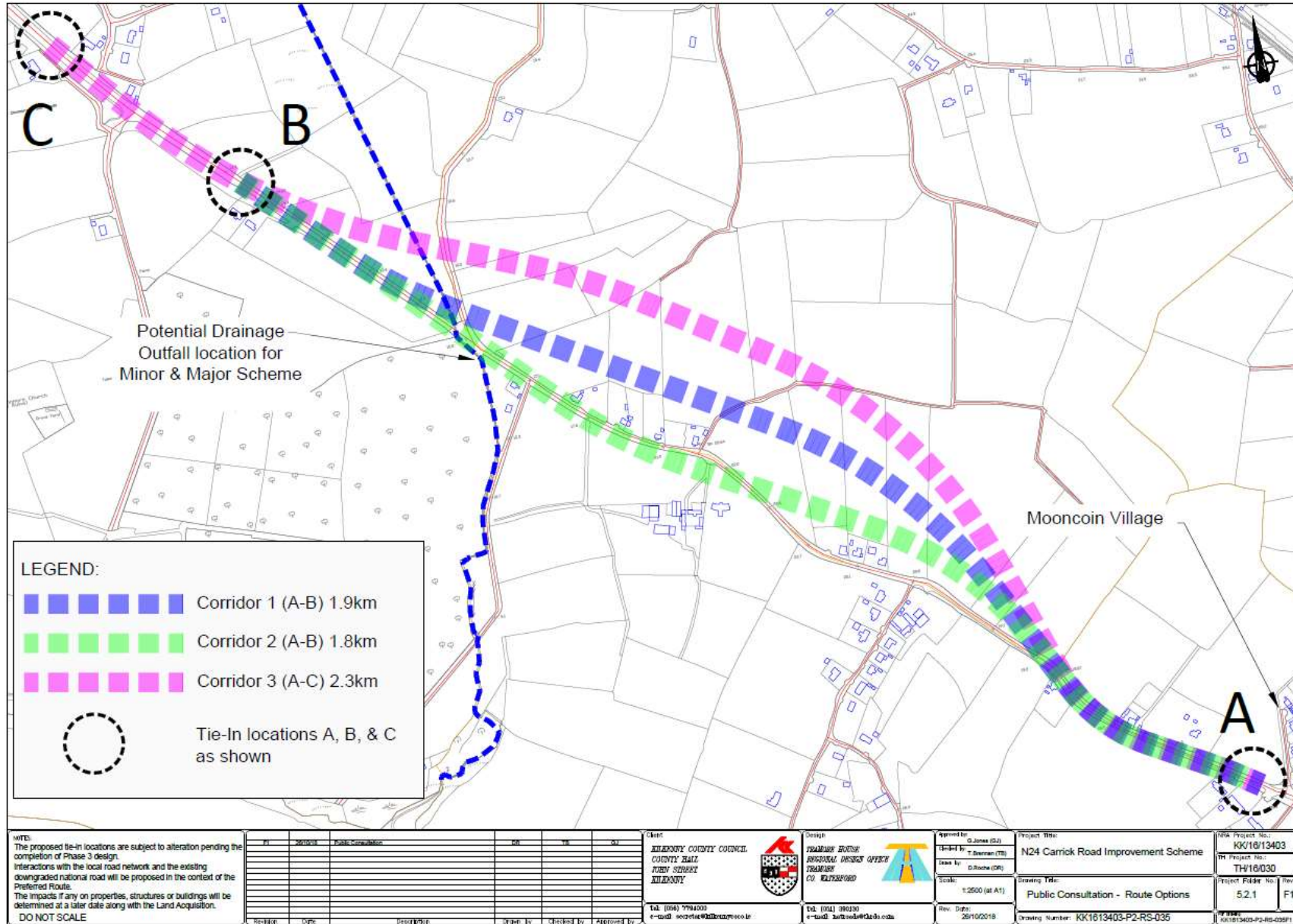


Figure 6.1: Route Corridor Options

Published Display Corridor	Published Indicative Tie-In	Preliminary Design Option	Length (Km)	Drawing No.	Type 2 Single	Type 1 Single	* Type 2 Dual Platform (28.5m)	OCE	Comments / Description
1	A - B	1A	1.88	KK1613403-P2-RS-001-004	Ch0 - Ch415	Ch415 - End	-	6.68	No specific future proofing built into the Design Option(s) for the potential N24 Waterford to Cahir Project, which is currently at Phase 0. However the overall route corridor is considered to be compatible with a potential future major road project, based on the previously identified Preferred Route for the N24 Mooncoin Bypass in 2003. In this regard see also Design Options 1D & 1E below.  As the difference between Design Options 1A, 1B & 1C only relates to minor variations in alignment and side road options, one overall Option Comparison Estimate has been prepared for Preliminary Design Options 1A - 1C. This is consistent with the TII PAG.
	A - B	1B	1.88	KK1613403-P2-RS-001-008	Ch0 - Ch415	Ch415 - End	-		
	A - B	1C	1.87	KK1613403-P2-RS-009-0012	Ch0 - Ch415	Ch415 - End	-		
1-3	A - B - C	1D	2.25	KK1613403-P2-RS-036-039	Ch0 - Ch415	Ch415 - End	-	8.38	Alignment & option length amended to facilitate future widening for the potential N24 Waterford to Cahir Project, which is currently at Phase 0, based on the assumption of a Type 2 Dual Carriageway.
1-3	A - B - C	1E	2.25	KK1613403-P2-RS-025-028	Ch0 - Ch415	Ch415 - Ch950	Ch950-End	8.82	* Type 2 Dual platform incorporated as indicated with alignment & option length amended to facilitate the potential future N24 Waterford to Cahir Project, which is currently at Phase 0.
2	A - B	2A	1.87	KK1613403-P2-RS-013-016	Ch0 - End	-	-	5.90	This Design Option whilst suitable in the context of a minor upgrade scheme, would not facilitate any future proofing due to local access plus alignment issues & proposed carriageway type.
	A - B	2B	1.87	KK1613403-P2-RS-017-020	Ch0 - Ch415	Ch415 - End	-	6.55	This Design Option whilst suitable in the context of a minor upgrade scheme, would not facilitate any future proofing due to local access plus alignment issues.
3	A - C	3A	2.29	KK1613403-P2-RS-040-043	Ch0 - Ch415	Ch415 - End	-	7.55	Alignment & option length will facilitate future widening for the potential N24 Waterford to Cahir Project, which is currently at Phase 0 (Based on the assumption of a Type 2 Dual Carriageway). Route follows part of the previously identified Mooncoin Bypass Preferred Route.
	A - C	3B	2.29	KK1613403-P2-RS-021-024	Ch0 - Ch415	Ch415 - Ch1050	Ch1050 - End	7.78	* Type 2 Dual Platform incorporated as indicated with alignment & option length to facilitate the potential future N24 Waterford to Cahir Project, which is currently at Phase 0. Route follows part of the previously identified Mooncoin Bypass Preferred Route.

\* A Type 2 Dual Platform provides an overall width of 28.5m including potential future verges plus cycle tracks, with a Type 1 Single Carriageway road pavement width of 12.3m from Ch950 or Ch1050-End. If selected this design option and associated cross-section would be subject to TII approval via an early departure application. The inclusion of this element has the potential to limit the future local impacts on the double in terms of any larger scheme i.e. possible future N24 Waterford to Cahir Major Scheme.

**Table 6.1: Preliminary Design Options (See also drawings in Appendix 7)**



## 6.2 Public Consultation

Public consultation was undertaken at two stages during the route selection process. Initially during November and December 2018, a public consultation was undertaken of the Route Corridor Options. A further public consultation was undertaken on the Preferred Route Corridor in July and August 2019.

### 6.2.1 Public Consultation – Route Corridor Options

A public consultation of the Route Corridor Options was held in November and December 2018, including a public information event at the community centre in Mooncoin village on the 27<sup>th</sup> of November. Staff from both Kilkenny County Council and Tramore House attended on the 27<sup>th</sup> of November. The following is a summary of the various submissions received on foot of the public consultation relating to the N24 Carrick Road Improvement Scheme in November 2018.

Seventeen submission were received in total, thirteen submissions were received by post with three submissions received by email to the dedicated consultation email address. One additional submission was received after the submission date by post. No submissions came in via the Kilkenny Co. Council consultation web portal.

The number of submission indicating that they were directly affected by Route Corridor options is provided on Table 6.2 below.

Route corridor Option	No. of submission
Blue	3
Green	3
Magenta	6
None	4
Not indicated	1

**Table 6.2: No. of Submissions indicating that they are directly impacted**

Submission were received from a number of interested parties including Owners, Occupiers and Renters concerning residential, non-residential and farming / farmland interests. One notable large dairy operation / business made a submission in relation to the impact of the project and provided a map showing the respective lands impacted, including lands rented.

Twelve submissions considered the scheme necessary with three considering it not necessary and one additional submission stated that they considered the scheme not necessary as currently proposed.

Eleven submissions considered the scheme would have benefit for the local community or local economy, with five submissions stating that it would not. Seven of the eleven indicated that the main benefit would be regarding the safety for the local community and road users, with some further inferring safety around accessing entrances. Four of the five who were of the opinion that it would not benefit cited that fact that it was not a bypass / N24 Mooncoin Bypass.

Further comments made included:

- the scheme would greatly enhance the quality of lives for the residences along the route;
- the scheme would bring the road closer to homes and divide farmland;
- traffic will still pass through Mooncoin and accidents have abated since reduced speed warning signs had been erected; and
- the scheme will result in large amount of disruption and environmental destruction for a relatively small temporary gain.

Table 6.3 below provides a summary of the Route Corridor preference.

Route corridor Option	No. of submission
Blue	3
Green	3
Magenta	6
None	4
Not indicated	1

**Table 6.3: Route Corridor Preference**

Further comments made included:

- preferences of route due to impact of route / other routes to respondents interested property / land;
- proximity to house for privacy / noise;
- proximity to previously discussed Mooncoin bypass with potential to integrate; and
- certain routes would result in houses having roads to front and back of houses.

Information and / or local knowledge shared included:

- concern over drainage outfall and issues of water impacting land;
- impact to property infrastructure;
- impact on cattle movement;
- concern over Increase speed limits;
- impact to land / vegetation / established gardens;
- current difficulty in crossing main street to shop; and
- concern over impacts to businesses during construction, with proposals to reduce impacts.

### 6.2.2 Public Consultation – Preferred Route Corridor

A public consultation of the Preferred Route Corridor Option was held in July and August 2019, including a public information event at the community centre in Mooncoin village on the 23<sup>rd</sup> of July 2019. Staff from both Kilkenny County Council and Tramore House attended on the 23<sup>rd</sup> of July. A total of 15 submissions were received, 9 by post and 6 by e-mail. The following is a summary of the comments received as part of various submissions received on foot of the public consultation relating to the Preferred Route Corridor:

- objection to the proposed closing of the L7416, (Grange Road);
- concerns over access for HGVs to commercial property and potential negative impacts to business;
- concerns in relation to proposed speed limits;
- impact on movement of cows;
- concerns over access onto new alignment for agricultural vehicles;
- concerns over the proposed provision of footpaths both sides of new alignment;
- impact to property, environment and established gardens;
- impact to existing drainage;
- concerns that properties will be impacted again in the future by the N24 Waterford to Cahir Scheme;
- concerns over dumping on the L7416 if it is made into a cul de sac;
- concerns in relation to severance of agricultural lands;
- request that drainage and sightlines exiting a particular residence be taken in to consideration as part of the detailed design;
- request for the provision of an animal and/or vehicle underpass;
- concerns in relation to existing and proposed drainage flooding adjacent lands;
- concerns over proposed access onto new alignment for cars, with specific reference to visibility, sightlines and speed limits.

In addition to the above some submissions, requested additional consultation within a private forum to deal with issues specific to their concerns. One submission included a map outlining alternative proposals for a route drawn in pen, similar to Corridor Option 2 but more on-line with obvious impacts to residential and commercial properties.

### 6.3 Engineering Assessment

The following are a list of the aspects examined by the design team as part of the Engineering Assessment of the Preliminary Design Options on Table 6.1

- Traffic Assessment & Route Cross-Section – Refer to Chapter 3 for details
- Technical Standards (Design)
- Junctions, access & interaction of scheme with existing road network
- Structure including river road & rail bridges, culverts & underpasses
- Geology & Groundwater
- Earthworks
- Road Safety Impact Assessment
- Drainage
- Construction or Constructability
- Service Conflicts
- Land & Property

### 6.3.1 Traffic & Route Cross-Section

A traffic and route cross-section assessment has been carried out in Chapter 3. The emerging cross-section identified is a Type 1 Single Carriageway. Consequently, Preliminary Design Option 2A is considered Least Preferred on the basis that this option incorporates a Type 2 Single Carriageway with a capacity at Level of Service D of only 8,600 AADT over its entire length. Option 1A, 1B, 1C, 1D, 2B, 3A and 3B shall be ranked as 1 and Option 2A shall be ranked as 2.

### 6.3.2 Technical Standards (Design)

All Preliminary Design Options and variations therein have been designed in accordance with the TII Design Manual for Roads and Bridges, in particular TD9 Road Link Design DN-GEO-03031. The geometric standards are outlined in table 6.4. The standards assessment is indicative only and based on the preliminary horizontal and vertical profiles developed for each Preliminary Design Option.

Preliminary Design Option	Design Speed (kph)	Minimum Radius (m)	Maximum Gradient (%)	Length of Maximum Gradient (m)	Potential Number of Relaxation/Departures
1A	100	255	5.0	56	1R / 1D
1B	100	255	4.9	112	1R / 1D
1C	100	255	4.9	109	1R / 1D
1D	100	255	4.1	115	1R / 1D
1E	100	255	4.1	115	1R / 1D
2A	100	255	4.1	120	1R / 1D
2B	100	255	4.1	121	1R / 1D
3A	100	255	4.8	115	1R / 1D
3B	100	255	4.8	115	1R / 1D

**Table 6.4: Summary of Geometric Standards for the nine Route Options**

Under this heading there is considered no significant variation which would warrant the application of a ranking order of Preliminary Design Options. All options shall be ranked as 1.

### 6.3.3 Preliminary Junction Strategy & Access

All Preliminary Design or Corridor Options will tie-in to the existing N24 at location A on the eastern side and either B and / or C on the western side. Access will be provided to the redundant section of the N24 for all options. The preliminary proposals for local road locations are provided in Table 6.4 on the next page and should be read in conjunction with Figure A2.3 in Appendix 2 for local road locations and chainage references.

Preliminary Design Option	LS7421 Ch750 LHS	LT74163 Ch1450 LHS	LS7416 Ch1550 RHS	LS7414 Ch2200 LHS
1A	No Impact	No Impact	Proposed Closure	No Impact
1B	No Impact	No Impact	Proposed Closure	No Impact
1C	No Impact	No Impact	Proposed Closure	N24 Access Maintained
1D	No Impact	No Impact	Proposed Closure	N24 Access Maintained
1E	No Impact	No Impact	Proposed Closure	N24 Access Maintained
2A	No Impact	N24 Access Maintained	N24 Access Maintained	No Impact
2B	No Impact	N24 Access Maintained	N24 Access Maintained	No Impact
3A	No Impact	No Impact	Proposed Closure	N24 Access Maintained
3B	No Impact	No Impact	Proposed Closure	N24 Access Maintained

**Table 6.5: Preliminary Local Road Provisions**

It is noted that one of the objectives of this project as stated in Chapter 2 is “to reduce the level of private access on the national road network and to provide a more forgiving roadside”. Consequently, Preliminary Design options 2A and 2B are Least Preferred due to the extent of existing public and private access, which would have to be retained and facilitated on the mainline, albeit at reduced levels over the current situation. This is primarily due to the online nature of these options and their proximity to the existing N24 and associated roadside development. Option 1A, 1B, 1C, 1D, 3A and 3B shall be ranked as 1 and Options 2A, 2 B shall be ranked as 2.

#### 6.3.4 Structures

It is anticipated that a new culvert will be provided to realign the Skelpstown Stream under all options. There are no other structures planned at this stage for the N24 Carrick Road Improvement Scheme. All options shall be ranked as 1.

#### 6.3.5 Geology & Groundwater

A Geology & Hydrogeology assessment is provided in section 4.2.2 of this report along with Figures A4.4 to A4.9 in Appendix 4. The geological and groundwater features described will apply equally to all route Corridors with Karst considered a geotechnical design risk under all Preliminary Design Options. Rock may also be encountered to the western end of all options. Further Ground Investigation will be required during Phase 3 Design. All options shall be ranked as 1.

#### 6.3.6 Earthworks Balance

The table below outlines the earthworks for the 9 Preliminary Design options including the maximum height of embankments, maximum cut depths, the total amount of cut and fill and the quantities of materials that would need to be imported or disposed of during construction. It is assumed that 60% of

excavated material will be suitable for re-use or can be processed so as to be suitable. A ranking of routes is also provided based on the preliminary earthworks information.

Route Option	Excavation (m3)	Fill (m3)	Surplus to Disposal	Import (m3)	Maximum Cut depth (m)	Maximum Embankment height (m)	Ranking
1A	57,705	5,399	52,306	0	2.3	6.5	4
1B				0	4.2	2.1	3
1C				0	3.9	2.3	3
1D	7,534	88,183	3,014	83,663	1.4	7.7	5
1E	9,199	101,428	3,680	95,909	1.4	7.7	6
2A	10,895	5,475	5,420	0	0.6	2.4	1
2B	16,090	5,604	10,486	0	0.6	2.4	2
3A	43,848	50,682	17,539	24,373	4.8	6.3	4
3B	50,582	57,920	20,233	27,571	4.8	6.3	5

**Table 6.6 Earthworks Balance for Preliminary Route Options**

### 6.3.7 Road Safety – Stage F1 Road Safety Audit

A Stage F1 Road Safety Audit (RSA) was undertaken. Within the Road Safety Audit report Corridor 1 emerged as the preferred route, with 1A being the preferred Preliminary Design Option. The junction location on 1A to the redundant section of the existing N24 on the eastern or Mooncoin Village end was also identified as the preferred location for such a junction.

Preliminary Design Options 2A and 2B, which are online for a significant proportion of the option length, provided the least benefit on safety grounds. Consequently, these options were considered least preferred within the Stage F1 RSA report.

Option 1B, 1C, 1D, 1E, 3A and 3B shall be ranked as 2 or Medium Preference options for the purposes of this assessment.

### 6.3.8 Drainage

A detailed drainage design has not been undertaken at this stage. However, consideration has been given to the following in relation to the 9 route options.

- Watercourses crossed;
- Estimated number of outfalls required;
- Estimated number of outfalls to cSAC catchment (e.g. Skelptown Stream to the River Suir);
- Any existing flood events within the Study Area

The Skelptown Stream is the only watercourse crossed by all route options. For all route options, a diversion of the watercourse will be required along with a proposed new culvert and headwalls. Based on an assessment of the OPW online portal one known flood event was recorded to the eastern end

of study area on the N24 in the townland of Polrone. Some information on localized flooding and drainage issues was obtained during the Public Consultation and discussions with Kilkenny County Council Area Office Staff. These locations are identified as follows:

- On the N24 towards the Mooncoin end of the 2+1 carriageway road.
- Along and adjacent to the Local Road LT4163 Ch1450 LHS (See Figure 4.1 in Chapter 4) south of the Study Area.

A more detailed assessment of the above mentioned flooding and local drainage issues will be undertaken during Phase 3 design, including drainage requirements in important Aquifers e.g. Regionally Important Aquifers (Rk & Rf);

All route options on the western end will outfall to the Skelpstown Stream via an attenuation pond. Pending review during Phase 3 Design outfall on the eastern side will also be via attenuation pond to an existing Kilkenny County Council surface water pipe at circa. Ch270 on all Preliminary Design Options in the townland of Pollrone. See Appendix 7 also. Attenuation is also being incorporated because all outfall water will eventually discharge to the River Suir SAC.

Under this heading there is considered no significant variation which would warrant the application of a ranking order of Preliminary Design Options. All options shall be ranked as 1.

### **6.3.9 Construction or Constructability**

The main aspects, which impact the constructability of a particular route option, are listed as follows.

1. Percentage or extent of work on-line as opposed to “greenfield” sites.
2. National road crossings.
3. Watercourse crossings.
4. Local Road & Local Track Crossings.

The items listed above from 1 to 4 are of particular importance in terms of constructability. The following table gives preliminary details of the above aspects for each of the route options.

Route Option	Percentage of Work Online	Local Roads & Local Track Crossings	Number of National Road Crossings	Number of Watercourse Crossings
1A	36%	2	0	1
1B	36%	2	0	1
1C	36%	2	0	1
1D	45%	2	0	1
1E	45%	2	0	1
2A	73%	3	1	1
2B	73%	3	1	1
3A	34%	3	0	1
3B	34%	3	0	1

**Table 6.7: Constructability Items Considered**

It can be surmised from the above table that the level of interaction with live traffic is likely to be very significant for Preliminary Design Options 2A and 2B due to the percentage of online work required and interaction with the existing national route. Traffic Management for this route would be very difficult in addition to the management of local access and disruption. Consequently, under constructability these options are least preferred and shall be ranked as 2 all other routes shall be ranked as 1.

### 6.3.10 Potential Service Conflicts

The construction of any of the route options will necessitate the temporary or permanent diversion or relocation of existing utilities and services. The phasing of this work is generally done in advance of construction or in the early stages of construction. Known services present in the Study Area include:

- ESB
- Eir
- Irish Water
- Storm Water (Kilkenny Co. Council)

It is noted that the above-mentioned services are predominantly located along the existing N24 and therefore offline routing to the north of the existing N24 within the Study Area is unlikely to encounter services, whereas online improvement and tie-in locations will impact existing services to varying degrees. See Services drawings in Appendix 8. Refer also to percentage of Work online in the previous section 6.3.9. Consequently, Preliminary Design Options 2A and 2B are Least Preferred. Option 1A, 1B, 1C, 1D, 1E, 3A and 3B shall be ranked as 1, whilst Options 2A and 2B shall be ranked as 2.



### 6.3.11 Land & Property

The land and property aspects examined as part of this section are listed and detailed in the following table for each route option.

Route Option	Number of Agricultural Properties Impacted	Number of Residential Dwellings which may be directly impacted by the route options	Ranking
1A	21	4	1
1B	21	5	2
1C	21	5	2
1D	21	6	3
1E	22	6	4
2A	23	11	6
2B	23	12	7
3A	27	4	4
3B	28	4	5

**Table 6.8: Land & Property Aspects**

### 6.3.12 Engineering Conclusion & Matrix

Table 6.9 provides a summary of the Engineering Assessment for each route option. An overall score has been provided in the table for the route options, based on the sum of the rankings under each engineering aspect or heading.

Based on the overall ranking of the engineering assessment as shown in the table, the Preliminary Design Options with a High Preference are deemed to be 1A, 1B and 1C. The options with a low preference are 2A and 2B. All other routes are deemed to have a medium preference.

<b>Engineering Heading</b>	<b>1A</b>	<b>1B</b>	<b>1C</b>	<b>1D</b>	<b>1E</b>	<b>2A</b>	<b>2B</b>	<b>3A</b>	<b>3B</b>
Traffic & Route Cross-section	1	1	1	1	1	2	1	1	1
Technical Standards (Design)	1	1	1	1	1	1	1	1	1
Preliminary Junction Strategy & Access	1	1	1	1	1	2	2	1	1
Structures	1	1	1	1	1	1	1	1	1
Geology & Groundwater	1	1	1	1	1	1	1	1	1
Earthworks Balance	4	3	3	5	6	1	2	4	5
Road Safety - Stage F1 Road Safety Audit	1	2	2	2	2	3	3	2	2
Drainage	1	1	1	1	1	1	1	1	1
Construction or Constructability	1	1	1	1	1	2	2	1	1
Potential Service Conflicts	1	1	1	1	1	2	2	1	1
Land & Property	1	2	2	3	4	6	7	4	5
<b>Total Engineering Score</b>	<b>14</b>	<b>15</b>	<b>15</b>	<b>18</b>	<b>20</b>	<b>22</b>	<b>23</b>	<b>18</b>	<b>20</b>

Table 6.9: Engineering Assessment Matrix

## 6.4 Environmental Assessment

### 6.4.1 Air Quality

Due to the geographical extent and size of the minor scheme being considered the Operational stage Air Quality impacts for this project are considered to be negligible as the anticipated impact of higher speeds will be potentially balanced by reduced braking over the existing N24. All existing potential receptors (existing properties) have been identified within 300m of the Preliminary Design Options below.

Preliminary Design Option	No of properties within 300m	No of properties further away from the National Road	No of properties closer to the National Road	Ranking
1A-1C	32	27	5	2
1D-1E	43	37	6	1
2A-2B	31	23	8	4
3A-3B	42	33	9	3

**Table 6.10: Assessment of Air Quality Receptors within 300m of the options**

### 6.4.2 Noise & Vibration

Due to the limited geographical extent and size of the minor scheme being considered, the number of dwellings within 300m of the project have been identified along with the number of properties that are closer to or further away from the driving or running lanes on the national route. Existing national road traffic will in effect transfer to all route options.

Preliminary Design Option	No of properties within 300m	No of properties further away from the National Road	No of properties closer to the National Road	Ranking
1A-1C	32	27	5	2
1D-1E	43	37	6	1
2A-2B	31	23	8	4
3A-3B	42	33	9	3

**Table 6.11: Assessment of Noise Receptors within 300m of the options**

Mitigation measures if any shall be considered for the preferred route on a case-by-case basis having regard to the above table. It should be noted that requirements for the control of noise and vibration including the monitoring of same, will be implemented during the construction phase.

Reference shall also be made during Phase 3 to the 2014 TII Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes.

### 6.4.3 Landscape & Visual

The project is set in a low sensitivity landscape and due to its size and extent its impacts on landscape and visual quality is anticipated to be limited. Based on a review of Kilkenny County Council's 2014-2020 County Development Plan there are no protected views in the vicinity of options. The Study Area is located within a Landscape Character Type defined as "Lowland" within the County Development Plan.

The performance of all route options under these sub-criteria is considered "Not significant or neutral" and consequently all options will be ranked as 1. It is assumed that landscaping including the provision of new hedgerows and trees shall be incorporated into any new roadside boundary, subject to clear zone requirements as per TII Standards.

### 6.4.4 Ecology & Biodiversity

An Ecological Assessment Report and Appropriate Assessment Screening Report was prepared by Ecofact in April 2018 on the Corridor Options.

It is considered that Hedgerows and Treelines are likely to be severed during the construction of any of the scheme options, as well as the habitat loss and disturbance of other habitats of 'Local Importance'. It is noted that Corridor Option 2 (Green) would have the least implications for habitat loss out of the three scheme options, as such Corridor 2 impact was evaluated as imperceptible negative. This impact of Corridor 1 and 3 are evaluated as being slight negative in the local context. No significant impacts regarding non-native invasive species are envisaged to arise as the NRA / TII biosecurity guidelines will be followed.

No significant water quality impacts are envisaged to arise due to the small Skelpstown Stream and the implementation of NRA / TII guidelines for the crossing of watercourses. All three route options cross this stream.

No significant impacts on mammals are envisaged to arise because of the proposed development, as long as all relevant NRA / TII guidelines are followed. It is noted that pre-construction bat and mammal surveys will also be undertaken at a later date nonetheless.

Providing mitigations and guidelines are followed correctly, all impacts should be slight negative throughout the construction phase. Impacts throughout the operational phase are considered imperceptible negative as the N24 is an existing road. It is noted that all three scheme options would not give rise to significant impacts on the ecology of the study area. It is concluded therefore that the proposed N24 Carrick Road Improvement Scheme can be appropriately built and operated without significant effects on, designated areas, flora and fauna, providing mitigation is strictly followed.

The Appropriate Assessment Screening report by Ecofact was issued to the competent authority (Kilkenny County Council). Subject to further review and detail during Phase 3 Design and the inclusion of certain measures and guidelines the Competent Authority concluded that *“Having regard to the nature of the project and distances involved and that no part of proposed development is located within or adjoining the Lower River Suir SAC or any other Natura 2000 designated site, I consider that the proposed N24 Carrick Road Improvement Scheme will not give rise to any direct, indirect or cumulative impacts which would have the potential to significantly affect the conservation interests of the Lower River Suir SAC or any other Natura 2000 designated site. I consider the project can be screened out and does not need to proceed to stage 2 NIS.*

*However, as there is hydrological pathway links between proposed development and the Lower River Suir (SAC) there are aspects of the AA Screening report which requires further detail and consultation to be more robust and rule out significant environmental effects”*

The performance of all route options under these sub-criteria is considered “Not significant or neutral” based on the competent authority report and Ecofact report on the Lower River Suir SAC. Based on the reduced impact locally on hedgerows as indicated above it proposed to rank Options 2A and 2B as 1 with all other options being ranked as 2.

The Ecological Assessment Report and Appropriate Assessment Screening Report prepared by Ecofact in April 2018 on the Corridor Options, in addition to the report by the competent authority is provided in Appendix 6.

#### **6.4.5 Archaeology Cultural Heritage**

The assigned TII project Archaeologist has carried out an assessment on the route corridor options and concluded that Corridor Option Green was the Least Preferred option for the following reasons:

- It has the greatest number of impacts on the identified heritage sites;
- One of the impacts (and possibly a second) is on an upstand derelict masonry building which map regression analysis suggests is a building depicted on the historic mapping (1<sup>st</sup> edition OS 6inch survey) of the area.
- It has the greatest impact on historic boundaries, impacting three of them at five separate locations.

A count of the direct impacts would suggest that the Blue Route (Corridor 1) should be assessed as having a lesser impact than the Magenta Route (two direct impacts from the Blue Route, versus five direct impacts from the Magenta Route are on the sites of buildings depicted on the historic mapping, which have been demolished. Overall, the ranking of route options based on their impacts on the historic environment would be as follows:

- Least Preferred: Green (Corridor 2)
- Most Preferred: Magenta and Blue (Corridor 1 & 3)

Consequently, the following ranking order shall be applied to the Preliminary Design Options.

- 1A, 1B, 1C, 1D, 1E, 3A and 3B shall be ranked as 1
- 2A and 2B shall be ranked as 2

The Archaeological and Cultural Heritage Report prepared by the TII on the Corridor Options is provided in Section A5.2 of Appendix 5.

#### 6.4.6 Land Use

Given the rural nature and limited extents of this minor project the impact on land and property lost to the project are considered to be fully reflected in the preliminary land costs contained within the Option Comparison Cost Estimates.

Published Display Corridor	Preliminary Design Option	Land & Property Estimates (€m)
1	1A-1C	0.93
1-3	1D	0.89
1-3	1E	0.97
2	2A	0.95
	2B	1.24
3	3A	1.01
	3B	1.04

**Table 6.12: Land & Property Preliminary Costs Estimates (taken from OCCE)**

In order to avoid double counting the ranking for all options under the Land Lost Heading shall be 0. For any future project appraisal under this heading the impact shall be scored as 3 or “minor or slightly negative” subject to further assessment and review at Phase 3 Design.

#### 6.4.7 Water Resources

All corridor and preliminary Design Options will both cross and outfall to the existing Skelpstown Stream. Consequently, all Preliminary Design Options shall be ranked as 1.

Required mitigation and other measures shall be implemented for watercourses as per reports contained within Appendix 9.

#### 6.4.8 Environmental Conclusion & Matrix

Table 6.13 below provides a summary of the Environmental assessment for the Preliminary Design Option. As can be seen the variations or differences in the rankings between the Preliminary Design Options is marginal and this is to be expected given the limited geographic extents of the N24 Carrick Road Improvement Scheme. The highest ranking under all 9 options is 4 under Noise and Vibration and Air Quality.

Based on the overall score the routes with a High Preference are 1D and 1E. The route options with a Low Preference are 2A and 2B. All other options are deemed to have a medium preference.

<b>Environmental Heading</b>	<b>1A</b>	<b>1B</b>	<b>1C</b>	<b>1D</b>	<b>1E</b>	<b>2A</b>	<b>2B</b>	<b>3A</b>	<b>3B</b>
Air Quality (Receptors Ranking)	2	2	2	1	1	4	4	3	3
Noise & Vibration (Receptors Ranking)	2	2	2	1	1	4	4	3	3
Landscape & Visual	1	1	1	1	1	1	1	1	1
Ecology & Biodiversity	2	2	2	2	2	1	1	2	2
Archaeology & Cultural Heritage	1	1	1	1	1	2	2	1	1
Land Use (Covered in Option Cost Comparison Estimates)	0	0	0	0	0	0	0	0	0
Water Resources	1	1	1	1	1	1	1	1	1
<b>Total Environmental Score &gt;&gt;</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>7</b>	<b>7</b>	<b>13</b>	<b>13</b>	<b>11</b>	<b>11</b>

**Table 6.13: Environmental Assessment Matrix (N24 Carrick Road Minor Scheme)**

## 6.5 Economy Assessment

Option Comparison Cost Estimates have been developed for Preliminary Design Options. See Table 6.1 for description of options and Appendix 7 for drawings. For the purposes of Economic Assessment Options 1A-1C have been combined as one option on the basis that the differences relate to amendments to alignment and junction access proposals locations, with the same cross-section. The Option Comparison Cost Estimates are shown on the table below.

Published Display Corridor	Preliminary Design Option	Published Indicative Tie-In	Proposed Length (km)	OCCE (€m)	Rank
1	1A-1C	A-B	1.88	<b>6.68</b>	3
1-3	1D	A-B-C	2.25	<b>8.38</b>	6
1-3	1E	A-B-C	2.25	<b>8.82</b>	7
2	2A	A-B	1.87	<b>5.90</b>	1
	2B	A-B	1.87	<b>6.55</b>	2
3	3A	A-C	2.29	<b>7.55</b>	4
	3B	A-C	2.29	<b>7.78</b>	5

**Table 6.14: Route Option Comparison Cost Estimates (OCCE)**

It is anticipated that Exchequer funding will be required in its entirety, due to the rural and confined nature of the project extents in the context of a minor scheme. In this regard, the project is unlikely to attract non-exchequer funding locally, nationally or internationally.

### 6.5.1 Transport Efficiency & Effectiveness

The current and future AADT is provided on the table below. The Preliminary Design Option 2A is considered Least Preferred on the basis that this option incorporates a Type 2 Single Carriageway with a capacity at Level of Service D of only 8,600 AADT over its entire length. This capacity is likely to be exceeded with the 15-year period following scheme opening in 2020.

Base Year & Projected AADT (THRDO ATC1)				
Year	2017	2020	2035	2050
Base	7875	-	-	-
Low	-	8074	8734	8814
Central	-	8144	9263	9736
High	-	8173	9478	10205

**Table 6.14: Base Year & Projected AADT THRDO ATC 1 (See also Appendix 3 for location)**

In addition, Preliminary Design Options 2A and 2B will need to facilitate a level of private access locally on the basis that they are the closest options to the existing N24 and have the highest percentage of online upgrade, when compared to other options. This will limit the level of overtaking and the average



speeds that can be achieved along the mainline within its design life when compared to other routes. On the basis of this and the above Preliminary Design Options 1A, 1B, 1C, 1D, 3A and 3B shall be ranked 1, with 2A and 2B being ranked 2.

### 6.5.2 Wider Economic Impacts

As the scheme will deliver modest reductions in Journey times on a relatively short section of the N24 between Carrick-On-Suir and Waterford the scheme will have a negligible to low impact in terms of wider economic impacts. All Preliminary Design Options will be ranked as 1 under this heading.

### 6.5.3 Economy Results

Based on the summary table below the Funding or Option Comparison Cost Estimates are considered the determining factor. The Preliminary Design Options with a High Preference are deemed to be 1A, 1B, 1C, 2A and 2B. The options with a Low Preference are deemed to be options 1D and 1E. All other routes are deemed to have a Medium Preference.

Economy Heading	1A	1B	1C	1D	1E	2A	2B	3A	3B
Funding (Option Comparison Cost Estimates)	3	3	3	6	7	1	2	4	5
Transport Efficiency & Effectiveness	1	1	1	1	1	2	2	1	1
Wider Economic Impacts	1	1	1	1	1	1	1	1	1
Transport Reliability & Effectiveness	1	1	1	1	1	2	1	1	1
<b>Total Economy Score &gt;&gt;</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>9</b>	<b>10</b>	<b>6</b>	<b>6</b>	<b>7</b>	<b>8</b>

**Table 6.15: Economy Assessment Matrix (N24 Carrick Road Minor Scheme)**

## 6.6 Economy - Incremental Analysis

In order to further inform the Economy assessment, an Incremental Analysis was undertaken on all of the Preliminary Design Options using the outputs from the simple appraisal cost benefit analysis process described in section 7.3 of this report. The objective of this analysis is to get an indication of the appropriate level of investment intervention for this scheme in terms of Preliminary Design Options developed, including the varying cross-sections proposed within the options.

Incremental Analysis involves the comparison of pairs of scheme alternatives or options starting with those of least intervention, which are those with the lowest present value of costs as defined in the Simple Appraisal, to identify the most favourable option and appropriate level of intervention. This is done through the calculation of an 'Incremental Cost Benefit Ratio' (ICBR) for pairs of scheme options.

The IBCR is calculated as follows, where, e.g., option A is compared with option B, and where option B has a greater present value of costs:

$$IBCR = (PVB B - PVB A) / (PVC B - PVC A),$$

(PVB is the present value of benefits for the option in question and PVC is the present value of costs)

In each comparison, if the additional benefits yielded by the higher level option equal more than twice the additional investment required, i.e. if the IBCR is greater than 2, then the higher option is considered more appropriate and is retained for comparison with subsequent scheme options. In this case, the lesser option is rejected. Where the additional costs do not result in the required level of increase in benefits, the higher option is rejected and the lesser option is carried forward. In this manner, the option representing the best economic return for the appropriate level of investment is identified from all options.

Please note that the Incremental Analysis will not be included within Stage 2 Preliminary Option Assessment. However, the outcome will assist in assessing the viability of the increased levels of intervention incorporated into the Preliminary Design Options, having regard to the Integration objective in Chapter 2 i.e. *“To complement any existing and / or proposed future major schemes for the N24”*.

The results of the analysis are provided on table 6.16. As can be seen the Preliminary Design Option 1A-1C with a Type 1 Single Carriageway and a financial requirement of €6.68m (OCCE) is considered the appropriate level of intervention for the N24 Carrick Road Improvement Scheme (Minor Scheme), having regard to the level of benefits achievable within the Study Area related to journey times and vehicle speeds.

01 INCREMENTAL ANALYSIS INCLUDING ANY RESIDUAL VALUE (10 Year Residual Period for Options 1A-1C, 1D, 2B, 3A, with a 15 Year Residual Period for Options 1E & 3B)							
Level of Intervention >>>>	2A	2B	1A-1C	3A	3B	1D	1E
Increasing OCE	5.90	6.55	6.68	7.55	7.78	8.38	8.82
Present Value of Benefits (PVB)	3.67	6.28	7.27	7.39	7.93	8.45	9.06
Present Value of Costs (PVC)	4.70	5.25	5.29	5.99	6.16	6.61	6.96
Net Present Value (NPV)	-1.03	1.02	1.97	1.40	1.77	1.84	2.10
Benefit to Cost Ratio (BCR)	0.78	1.20	1.37	1.23	1.29	1.28	1.30
<b>Incremental Analysis Scenario:</b>	<b>2A* → 2B</b>	<b>2B* → 1A-1C</b>	<b>1A-1C* → 3A</b>	<b>1A-1C* → 3B</b>	<b>1A-1C* → 1D</b>	<b>1A-1C* → 1E</b>	
Incremental Present Value of Benefits (IPVB)	2.60	0.99	0.12	0.67	1.18	1.79	
Incremental Present Value of Costs (IPVC)	0.56	0.04	0.69	0.87	1.32	1.67	
Incremental Net Present Value (INPV)	2.05	0.95	-0.57	-0.20	-0.13	0.13	
Incremental Benefit to Cost Ratio (IBCR)	4.69	23.13	0.18	0.77	0.90	1.08	
IBCR > 2	Yes	Yes	No	No	No	No	
Option to carry forward	2B	1A-1C	1A-1C	1A-1C	1A-1C	1A-1C	1A-1C

02 INCREMENTAL ANALYSIS EXCLUDING RESIDUAL VALUE							
Level of Intervention >>>>	2A	2B	1A-1C	3A	3B	1D	1E
Increasing OCE	5.90	6.55	6.68	7.55	7.78	8.38	8.82
Present Value of Benefits (PVB)	3.67	5.20	6.02	6.10	6.10	7.00	7.00
Present Value of Costs (PVC)	4.70	5.25	5.29	5.99	6.16	6.61	6.96
Net Present Value (NPV)	-1.03	-0.05	0.72	0.11	-0.06	0.39	0.04
Benefit to Cost Ratio (BCR)	0.78	0.99	1.14	1.02	0.99	1.06	1.01
<b>Incremental Analysis Scenario:</b>	<b>2A* → 2B</b>	<b>2B* → 1A-1C</b>	<b>1A-1C* → 3A</b>	<b>1A-1C* → 3B</b>	<b>1A-1C* → 1D</b>	<b>1A-1C* → 1E</b>	
Incremental Present Value of Benefits (IPVB)	1.53	0.81	0.08	0.08	0.98	0.98	
Incremental Present Value of Costs (IPVC)	0.56	0.04	0.69	0.87	1.32	1.67	
Incremental Net Present Value (INPV)	0.98	0.77	-0.61	-0.79	-0.34	-0.69	
Incremental Benefit to Cost Ratio (IBCR)	2.76	19.03	0.11	0.09	0.74	0.59	
IBCR > 2	Yes	Yes	No	No	No	No	
Option to carry forward	2B	1A-1C	1A-1C	1A-1C	1A-1C	1A-1C	1A-1C

Table 6.16: Incremental Analysis of Preliminary Design Options

### 6.7 Stage 1 – Preliminary Option Assessment Matrix

As required under the TII Project Management Guidelines 2019 a Stage 1 Route Selection Framework Matrix needs to be developed in order to determine which Preliminary Design Options should be progressed to Stage 2 Project Appraisal. This process brings together the Engineering Assessment, the Environmental Assessment and the Economy Assessment as described in sections 6.3 to 6.5 of this report.

The table below summarises the results of the Stage 1 preliminary option assessment process and identifies the routes, which should be carried forward to the next stage.

Preliminary Design Options	Engineering	Environment	Economy	Progress to Project Appraisal
1A	HP	MP	HP	Yes
1B	HP	MP	HP	Yes
1C	HP	MP	HP	Yes
1D	MP	HP	LP	NO
1E	MP	HP	LP	NO
2A	LP	LP	HP	NO
2B	LP	LP	HP	NO
3A	MP	MP	MP	YES
3B	MP	MP	MP	YES

HP	HIGH PREFERENCE
MP	MEDIUM PREFERENCE
LP	LOW PREFERENCE

**Table 6.16: Preliminary Option Assessment Framework Matrix**

Based on the above results it is proposed to carry Corridor 1 (Blue) and Corridor 3 (Magenta) forward to the Project Appraisal Stage or Stage 2 of the Route Selection. There are five Preliminary Design Options being carried forward, namely option 1A-1C for Corridor 1 and 3A-3B for Corridor 3.

## 7 STAGE 2 – PROJECT APPRAISAL MATRIX

### 7.1 Overview & Proposed Route Corridor Options

Following the completion of the Stage 1 Preliminary Assessment in Chapter 6, two of the original Route Corridor Options have now been brought forward to the Project Appraisal Stage for the N24 Carrick Road Improvement Scheme. These are listed as follows and shown on Figure 6.1 in Chapter 6.

- Corridor 1 Blue (A-B) 1.9km
- Corridor 3 Magenta (A-C) 2.3km

All Corridor Options traverse through the townland's of Clonmore, Grange and Pollrone to the west of Mooncoin village. Consequently the geographical extent and associated impacts or effects are limited to a relatively small local area.

Within the above mentioned Corridor Options 5 Alignment or Preliminary Design Options were developed and are summarised in Table 7.1. As previously advised some of the Preliminary Design Options were developed in consideration of the sustainability of the route in the context of the N24 Waterford to Cahir project as mentioned above. Preliminary Design Option 1A-1C covers 3 no. potential variations in alignment and access to the redundant existing N24.

This chapter will provide a summary of the Project Appraisal of options. In line with the previously published Project Appraisal Plan (PAP) dated August 2018, the Project Appraisal of options for the N24 Carrick Road Improvement Scheme will be appraised in line with the guidance in the DTTaS CAF, which requires a Multi-Criterial Analysis (MCA) to be undertaken in order to assess both the quantitative and qualitative impacts of all feasible options.

The Multi-Criteria Analysis (MCA) / Project Appraisal Balance Sheet (PABS) shall be based on the proposed template provided in Appendix 4 of the previously published PAP. It is also proposed to populate the following elements within the MCA or PABS in accordance with Unit 14 of the TII Project Appraisal Guidelines (PAG):

#### Environment:

- Air Quality;
- Noise & Vibration;
- Landscape & Visual;
- Land Use; and
- Water Resources.

#### Economy:

- Transport Efficiency & Effectiveness, excluding Journey Time & Vehicle Operating Cost Benefits;
- Wider Economic Impact; and

- Transport Reliability plus Quality.

Safety:

- Collision Reduction; and
- Security.

Accessibility & Social Inclusion:

- Vulnerable Groups; and
- Deprived Geographic Areas.

Integration:

- Transport Integration;
- Land Use Integration;
- Geographical Integration; and
- Integration with Other Government Policies (Integration with, National, Regional and Local Policy).

Physical Activity.

All remaining sub-criteria / elements required under the main headings to complete the MCA shall be considered under Unit 12 of the PAG and any other relevant PAG units or TII guidance documents referenced therein. These sub-criteria are identified as follows:

Economy:

- Transport Efficiency & Effectiveness in terms of \*Journey Time & Vehicle Operating Cost Benefits; and
- Funding Impacts including \* Present Value of Costs.

(\*NOTE: Elements obtained from Cost Benefit Analysis Sketch Appraisal)

Environment:

- Ecology Biodiversity\*
- Archaeology & Cultural Heritage\*

(\*NOTE: These elements are covered in Reports in Appendix 5 and 6)

The proposed approach for the MCA of the options carried forward to Project Appraisal as outlined above is considered commensurate with the complexity, size, geographic extent and associated rural nature of the proposed N24 Carrick Road Improvement Scheme.

Published Display Corridor	Published Indicative Tie-In	Preliminary Design Option	Length (Km)	Drawing No. (See Appendix 7)	Type 2 Single	Type 1 Single	* Type 2 Dual Platform (28.5m)	OCE	Comments / Description
1	A - B	1A	1.88	KK1613403-P2-RS-001-004	Ch0 - Ch415	Ch415 - End	-	6.68	No specific future proofing built into the Design Option(s) for the potential N24 Waterford to Cahir Project, which is currently at Phase 0. However the overall route corridor is considered to be compatible with a potential future major road project, based on the previously identified Preferred Route for the N24 Mooncoin Bypass in 2003. In this regard see also Design Options 1D & 1E below.  As the difference between Design Options 1A, 1B & 1C only relates to minor variations in alignment and side road options, one overall Option Comparison Estimate has been prepared for Preliminary Design Options 1A - 1C. This is consistent with the TII PAG.
	A - B	1B	1.88	KK1613403-P2-RS-001-008	Ch0 - Ch415	Ch415 - End	-		
	A - B	1C	1.88	KK1613403-P2-RS-009-0012	Ch0 - Ch415	Ch415 - End	-		
3	A - C	3A	2.29	KK1613403-P2-RS-040-043	Ch0 - Ch415	Ch415 - End	-	7.55	Alignment & option length will facilitate future widening for the potential N24 Waterford to Cahir Project, which is currently at Phase 0 (Based on the assumption of a Type 2 Dual Carriageway). Route follows part of the previously identified Mooncoin Bypass Preferred Route.
	A - C	3B	2.29	KK1613403-P2-RS-040-044	Ch0 - Ch415	Ch415 - Ch1050	Ch1050 - End	7.78	* Type 2 Dual Platform incorporated as indicated with alignment & option length to facilitate the potential future N24 Waterford to Cahir Project, which is currently at Phase 0. Route follows part of the previously identified Mooncoin Bypass Preferred Route.

\* A Type 2 Dual Platform provides an overall width of 28.5m including potential future verges plus cycle tracks, with a Type 1 Single Carriageway road pavement width of 12.3m from Ch950 or Ch1050-End. If selected this design option and associated cross-section would be subject to TII approval via an early departure application. The inclusion of this element has the potential to limit the future local impacts on the double in terms of any larger scheme i.e. possible future N24 Waterford to Cahir Major Scheme.

**Table 7.1: Project Appraisal Preliminary Design Options and Corridors (See also Appendix 7)**

## 7.2 Economic Appraisal (In accordance with Unit 12.0 of the Project Appraisal Guidelines)

Option Comparison Cost Estimates have been developed for Project Appraisal. See Table 7.1 for description of options and Appendix 7 for drawings. For the purposes of Economic Assessment Options 1A-1C have been combined as one option on the basis that the differences relate to amendments to alignment and junction access proposals locations, with the same cross-section. The Option Comparison Cost Estimates are shown on the table below.

Published Display Corridor	Preliminary Design Option	Published Indicative Tie-In	Proposed Length (km)	OCCE (€m)
1	1A-1C	A-B	1.88	6.68
3	3A	A-C	2.29	7.55
	3B	A-C	2.29	7.78

**Table 7.2: Route Option Comparison Cost Estimates (OCCE)**

The main differences between the Corridor Options is alignment and length.

### 7.2.1 Cost Benefit Analysis – Sketch Appraisal

The cost benefit analysis identifies whether the cost of the proposed scheme outweighs the benefits of construction. The costs of the scheme are derived from the option comparison estimates (see table 7.2 above) and the benefits are generated through reductions in travel time, vehicle operating costs, accident numbers.

The purpose of the cost benefit analysis at Phase 2 Route Selection is simply to identify a route preference or ranking i.e. which routes are preferred, least preferred or intermediate in terms of the Economic Appraisal.

The cost benefit analysis was carried out using the Project Appraisal Guidelines (PAG) Unit 12 Simple Appraisal tool. The Simple appraisal compares the do-minimum scenario (without scheme) with the do-something scenario (with the scheme) for each route option. In addition to the option, comparison estimates developed for the Observed AADT in 2017 of 7875 is used for all options. The average speeds used in the Simple Appraisal are:

- Existing Average Speed 71Kph; and
- Forecast Average Speed 85kph (Project Appraisal Options in Table 7.1)

The economic viability of a scheme is confirmed when the Net Present Value is positive and the Benefit to Cost Ratio is greater than 1.0. Table 7.3 summaries the results of the Cost Benefit Analysis. Whilst all Preliminary Design Options developed have been considered in the Simple appraisal for completeness, only the Project Appraisal Routes in Table 7.1 shall be considered in this chapter.



SUMMARY OF SIMPLE APPRAISAL: N24 Carrick Road Improvement Scheme - Phase 2												
Published Display Corridor	Preliminary Design Option	Published Indicative Tie-In	Proposed Length (km)	OCCE (€m)	Journey Time Benefits (€m)	Vehicle Operating Costs Benefits (€m)	Residual Value (€m)	Present Value of Benefits (PVB) incl. Residual Value (€m)	Present Value of Costs (PVC) (€m)	Net Present Value (NPV)* (€m)	Benefit to Cost Ratio (BCR)	Benefit to Cost Ratio (BCR) incl. Residual Value
1	1A-1C	A-B	1.88	<b>6.68</b>	6.09	-0.07	1.25	7.27	5.29	<b>0.72</b>	<b>1.14</b>	<b>1.37</b>
1-3	1D	A-B-C	2.25	<b>8.38</b>	7.14	-0.14	1.45	8.45	6.61	<b>0.39</b>	<b>1.06</b>	<b>1.28</b>
1-3	1E	A-B-C	2.25	<b>8.82</b>	7.14	-0.14	2.06	9.06	6.96	<b>0.04</b>	<b>1.01</b>	<b>1.30</b>
2	2A	A-B	1.87	<b>5.90</b>	3.63	0.04	0.00	3.67	4.70	<b>-1.03</b>	<b>0.78</b>	<b>0.78</b>
	2B	A-B	1.87	<b>6.55</b>	5.18	0.02	1.07	6.28	5.25	<b>-0.05</b>	<b>0.99</b>	<b>1.20</b>
3	3A	A-C	2.29	<b>7.55</b>	6.50	-0.40	1.29	7.39	5.99	<b>0.11</b>	<b>1.02</b>	<b>1.23</b>
	3B	A-C	2.29	<b>7.78</b>	6.50	-0.40	1.83	7.93	6.16	<b>-0.06</b>	<b>0.99</b>	<b>1.29</b>

\* NPV calculation on TII Simple Appraisal Spreadsheet excludes the Residual Value.

NOTES:

- 1 A Residual Period of 10 Years has been assumed for Preliminary Design Options 1A-1C, 1D, 2B & 3A based on remaining capacity in terms of AADT beyond the 30 Year Appraisal Period.
- 2 A Residual Period of 15 Years has been assumed for Preliminary Design Options 1E & 3B based on remaining capacity in terms of AADT beyond the 30 Year Appraisal Period & the provision of a wider platform for future proofing over part of these options. Refer also to Preliminary Option Design drawings.
- 3 Option 2A is a Type 2 Single Carriageway throughout and consequently a reduced forecast average speed has been assumed with a zero Residual Period. In this regard it is anticipated that capacity in terms of AADT (8,600 AADT for Type 2 Single) is likely to be exceeded within circa 20 Years of the 30 Year Appraisal Period. It is also anticipated that local access will be required onto the mainline albeit at a reduced level, thereby further reducing the extent of overtaking provision and vehicle speeds on the mainline.
- 4 For Option 2B a reduced forecast average speed has been assumed. In this regard it is anticipated that local access will be required onto the mainline albeit at reduced levels, thereby reducing the extent of overtaking provision and vehicle speeds on the mainline.

Table 7.3: Simple Appraisal of Preliminary Design Options

The results of the Simple Appraisal of Project Appraisal Routes show that Corridor 1 (Blue) Preliminary Design Options 1A-1C is the optimum route in terms of the benefit to cost ratio. This route is considered preferred in terms of the Economic Appraisal when appraised in accordance with Unit 12.0 of the Project Appraisal Guidelines. It is noted that benefits for this project are primarily related to improvements in journey times.

### 7.3 Environment

**Air Quality:** Due to the geographical extent and size of the minor scheme being considered the operational stage air quality impacts for this project are considered negligible, as the anticipated impact of higher speeds will be potentially balanced by reduced braking over the existing N24. As Corridor 1 is closer than Corridor 2 to the existing N24 and as it is slightly shorter leading to a decrease in vehicle kilometers it is considered that Corridor 1 should be considered to provide a not significant or neutral description and Corridor 3 will have a minor or slightly negative description under this appraisal sub criteria.

**Noise and Vibration:** In general, as the new alignment moves further away from existing properties the operational stage noise and vibration impacts for this project are considered slightly positive. Corridor 1 has fewer receptors impacted than Corridor 3 as previously assessed in section 6.4.2 above. Therefore, we consider that Corridor 3 should have a not significant or neutral description and corridor 1 will have a minor or slightly positive description under this appraisal sub criteria.

**Landscape and Visual Quality:** as set out in section 6.4.3 above, project is set in a low sensitivity landscape and due to its size and extent its impacts on landscape and visual quality is anticipated to be limited. Based on a review of Kilkenny County Council's 2014-2020 County Development Plan there are no protected views in the vicinity of options. Consequently, both corridors have a not significant or neutral description under this appraisal sub criteria.

**Biodiversity:** an Ecological Assessment Report and Appropriate Assessment Screening Report was prepared by Ecofact in April 2018 on the Corridor Options. There are no significant impact difference between Corridor 1 and 3 with both being considered minor or slightly negative. Consequently, both corridors have a minor or slightly negative description under this appraisal sub criteria.

**Cultural, Archaeological and Architectural Heritage:** the assigned TII project Archaeologist has carried out an assessment on the route corridor options and concluded that there was no difference between Corridor 1 and Corridor 3. Consequently both corridors have a minor or slightly negative description under this appraisal sub criteria.

**Land Use:** As the impact of land lost to the project is reflected in the element of project costs (ie land acquisition), therefore both corridors will be assessed the same to avoid double counting. As there is both severance and agricultural land loss on both corridors and considering the extents, it is determined that both corridors will have a minor or slightly negative description under this appraisal sub criteria.

**Water Resources:** both Corridor 1 and Corridor 3 have similar proposals with regard to drainage. At the start of the scheme, it is proposed to use an existing drainage outfall with provision of attenuation in

advance of this. At the end of the scheme, both Corridors cross and outfall to the existing Skelpstown Stream with proposed attenuation in advance of the outfall. Consequently, it is proposed that both corridors have a minor slightly positive description under this appraisal sub criteria.

## 7.4 Economy

**Transport Efficiency and Effectiveness:** as identified in section 3.4.1 of PAG Unit 7.0, Economic efficiency and effectiveness is measured by the willingness to pay of the consumer, the financial impact on the transport providers and the effects on government finance. These factors are generally captured through Cost Benefit Analysis (CBA). CBA analyses how projects could increase overall welfare, after allowing for economic costs. If benefits exceed costs or if the Benefits/Cost Ratio (BCR) exceed 1, then the project should add to overall welfare of society. CBA analysis was undertaken on preliminary designs relevant to both Corridor 1 and Corridor 3 using the TII Simple Appraisal Tool. The outputs from this analysis are presented in Table 7.3 above with BCR of 1.14 and 1.02 indicated for Corridor 1 and Corridor 3 respectively and as such both options can be considered have a moderately positive description. As identified in section 7.1 above quantitative analysis will be carried out in terms Journey Time & Vehicle Operating Cost Benefits. As summarized in Table 7.3 above, Corridor 3 delivers marginally better Journey time benefits. However in terms of vehicle operating costs Corridor 1 is better. Consequently, it is proposed that both corridors have a moderately positive description under this appraisal sub criteria.

**Wider Economic Impacts:** as per 3.4.2 of PAG Unit 7.0, when considering wider economic impacts, a scheme should be analysed under a number of different sub headings:

- Competition in market; transport can affect the competitiveness of a market by reducing the cost of accessing markets. Considering the scale of the proposed scheme both, Corridor 1 and Corridor 3 would be anticipated to score not significant or neutral with regard to this.
- Agglomeration; benefits arise when markets or firms derive additional productivity from being closer together, Again, considering the scale of the proposed scheme, both Corridor 1 and Corridor 3 would be anticipated to score not significant or neutral with regard to this.
- Inward Investment; the potential of the proposed project in attracting sustainable inward investment. Again, considering the scale of the proposed scheme, both Corridor 1 and Corridor 3 would be anticipated to score not significant or neutral with regard to this.
- Labour Supply; better transport links may increase a market's employment catchment. Again, considering the scale of the proposed scheme, both Corridor 1 and Corridor 3 would be anticipated to score not significant or neutral with regard to this.

Consequently, it is proposed that both corridors have a not significant or neutral description under the appraisal sub criteria, Wider Economic Impacts

**Transport Reliability and Quality:** Under this sub criterion, it is proposed that both Corridor 1 and Corridor 3 should provide a minor or slightly positive description. Both corridors will provide alignments and cross sections that are in accordance with the DMRB. Again, both corridors are considered equal due to extents.

**Funding:** As it is anticipated that funding will be provided by the exchequer therefore both corridors could be considered to have a not significant or neutral description on that basis. However, as per section 7.1 above quantitative analysis is to be carried out on this with regard to the Present Value of Costs (PVC). With reference to Table 7.3 above PVC for Corridor 1 is 5.29m€ and PVC for Corridor 1 is 5.99m€. In respect to this, it is proposed that Corridor 1 will have a minor or slightly positive description and Corridor 3 will have a not significant or neutral description under this appraisal sub criteria.

## 7.5 Safety Appraisal

**Collision Reduction:** As both corridors are anticipated to limit change to collision rate (maintain at below or twice below average rate), both corridors are anticipated to score a not significant or neutral with regard to this sub criteria

**Security:** as both corridors allow for the provision of either footpaths or hardsholders allowing access to Vulnerable Road Users, it is considered that both corridors will have a moderately positive description under this appraisal sub criteria.

## 7.6 Accessibility & Social Inclusion

**Vulnerable Groups:** Given the extents of the scheme, it is envisaged that there will be minimal Impacts with regard to Vulnerable Groups Therefore, it is considered that both corridors will have a not significant or neutral description under this appraisal sub criteria.

**Deprived Areas:** given the proximity of both corridors to one another, and while the new road section will in general improve connectivity, there is negligible difference in their proximity to CLAR or RAPID areas. Based on this it is considered that both corridors will have a minor or slightly positive description under this appraisal sub criteria.

## 7.7 Integration

**Transport Integration:** as the scheme as a whole will enhance connectivity to Bus Eireann services in Mooncoin and to adjacent rail service it would be seen as providing a minor or slightly positive performance description. Owing to the extents of the scheme, the performance description would be the same for for both corridors concerning this appraisal sub-criterion.

**Land Use Integration:** both corridor options may again be considered equal owing to extents. The N24 Carrick Road Improvement Scheme in general meets the transport objectives of the “Southeast Regional and Planning Guidelines 2010- 2022” as layout in section 2.2.6 above also the “Kilkenny County Development Plan 2014 – 2020” as per section 2.27 above. Therefore, both corridors are considered to provide a minor or slightly positive performance description concerning this appraisal sub-criterion.

**Geographical Integration:** both corridors are considered to provide a minor or slightly positive performance description as they both comply with the strategic objectives as set out in the “National Development Framework – Project Ireland 2014 -2040” as per section 2.2.1 above.

**Integration with Government Policies:** as the N24 Carrick Road Improvement Scheme supports government policy and as the route is of regional importance, both corridors shall be considered to provide a minor or slightly positive performance description.

## 7.8 Physical Activity

Due to the Limited extents of the corridors, both options are similar when considering physical activity. In terms of pedestrians, both corridors allow for the provision of footpaths between Ch0 and Ch 415 as part of the standard Type 2 single carriageway proposal. From Ch 415 to the end of either route corridor, the provision of hard shoulders will encourage physical activity along the routes. Both corridors shall be considered to provide a moderately positive performance description concerning this appraisal sub-criterion.

## 7.9 Stage 2 Project Appraisal Matrix.

Further to the comments above, the Multi-Criterial Analysis was undertaken in accordance with Project Appraisal Plan, which was published in August 2018. As part of the Stage 2 Appraisal, the following matrix will compare Corridors 1 and Corridor 2.

The Following is the Integer Score to be assigned according to the scale of the impact:

- 7 – Major or highly positive;
- 6 - Moderately positive;
- 5 – Minor or slightly positive;
- 4 – Not significant or neutral;
- 3 - Minor or slightly negative;
- 2 - Moderately negative; or
- 1 – Major or highly negative.

<b>Criterion</b>	<b>Sub Criteria</b>	<b>Quantitative Assessment Corridor1</b>	<b>Qualitative Assessment Corridor 1</b>	<b>Score Corridor 1</b>	<b>Quantitative Assessment Corridor3</b>	<b>Qualitative Assessment Corridor 3</b>	<b>Score Corridor 3</b>
Environment	Air Quality		Not Significant or Neutral	4		Minor or Slightly Negative	3
	Noise & Vibration		Minor or Slightly Positive	5		Not Significant or Neutral	4
	Landscape & Visual		Not Significant or Neutral	4		Not Significant or Neutral	4
	Biodiversity		Minor or Slightly Negative	3		Minor or Slightly Negative	3
	Cultural Heritage		Minor or Slightly Negative	3		Minor or Slightly Negative	3
	Land Use		Minor or Slightly Negative	3		Minor or Slightly Negative	3
	Water Resources		Minor or Slightly Positive	5		Minor or Slightly Positive	5
Economy	Transport Efficiency and Effectiveness	Moderately Positive	Moderately Positive	6	Moderately Positive	Moderately Positive	6
	Wider Economic Impacts		Not Significant or Neutral	4		Not Significant or Neutral	4
	Transport Reliability and Quality		Minor or Slightly Positive	5		Minor or Slightly Positive	5

<b>Criterion</b>	<b>Sub Criteria</b>	<b>Quantitative Assessment Corridor1</b>	<b>Qualitative Assessment Corridor 1</b>	<b>Score Corridor 1</b>	<b>Quantitative Assessment Corridor3</b>	<b>Qualitative Assessment Corridor 3</b>	<b>Score Corridor 3</b>
	Funding	Minor or Slightly Positive	Not Significant or Neutral	5	Not Significant or Neutral	Not Significant or Neutral	4
Safety	Collision Reduction		Not Significant or Neutral	4		Not Significant or Neutral	4
	Security		Moderately Positive	6		Moderately Positive	6
Accessibility and Social Inclusion	Vulnerable Groups		Not Significant or Neutral	4		Not Significant or Neutral	4
	Deprived Areas		Minor or Slightly Positive	5		Minor or Slightly Positive	5
Integration	Transport Integration		Minor or Slightly Positive	5		Minor or Slightly Positive	5
	Land-Use Integration		Minor or Slightly Positive	5		Minor or Slightly Positive	5
	Geographic Integration		Minor or Slightly Positive	5		Minor or Slightly Positive	5
	Integration with other Government Policies		Minor or Slightly Positive	5		Minor or Slightly Positive	5
Physical Activity	Physical Activity		Moderately Positive	6		Moderately Positive	6
		Total Score Corridor 1		92	Total Score Corridor 3		89

Further to completion of the Project Appraisal Matrix, it has been determined that Corridor 1 is the preferred option using Multi Criterial Analysis.

## **8 STAGE 3 – PROJECT APPRAISAL BALANCE SHEET**

Further to completion of the Project Appraisal Matrix, it is determined that Corridor 1 is the preferred option. In summary Corridor 1 has been appraised as the preferred Option in respect to the Project Appraisal Guidelines for National Roads Unit 12.0 – Minor Projects (€5m to €20m) and as amended in the Project Appraisal Plan published in August 2018. In accordance with the PAP, a Project Appraisal Balance Sheet has been prepared for Corridor 1 and is available for review below.



PAG Unit 14 Project Appraisal Balance Sheet - Summary Table for Minor Projects (€0.5m to €5m) as defined by DN-GEO-03030									
Scheme Name:		Description:		Problems Identified:		Budget Cost €m			
N24 Carrick Road Improvement Scheme		1.9 Km of online and offline realignment and drainage upgrade.		Narrow substandard alignment					
Current Typical Carriageway Width:		Route No:		Speed Limit:	Proposed Carriageway Standard:				
Substandard crosssection (6.5m width)		N24		100kph	Type single Ch 0 to Ch415, Type 1 Single Ch415 to End				
Appraisal Criteria	Appraisal Sub-Criteria	Objectives (Guidance available in PAG Unit 3.0)	Qualitative Statement:			Sub-criteria Performance Description	Sub-criteria Score	Appraisal Criteria Score	
Environment	Air Quality	To reduce greenhouse gas emissions and in doing so reduce impact on air quality	Due to the size of the scheme the operational stage air quality impacts for the project are considered to be negligible as the anticipated impact of higher speeds will be potentially balanced by reduced braking			Not significant or Neutral	4	Neutral	
	Noise and vibration	To reduce impact of road related noise on nearby communities and dwellings	In general as the new alignment moves further away from existing properties, the impact is considered slightly positive			Minor or slightly positive	5		
	Landscape & visual quality	To minimise impact of scheme with regard to landscape and visual intrusion	The project is set in a low sensitivity landscape and due to its size and extent, its impact on landscape and visual quality is considered to be neutral			Not significant or Neutral	4		
	Biodiversity	To minimise impact of scheme with regard to River Suir SAC	Corridor does not impact River Suir SAC. Overall slight negative impact anticipated due to loss of hedgerow.			Minor or slightly negative	3		
	Cultural, Archaeological, Architectural Heritage	To minimise impact of scheme on Cultural, Archaeological and Architectural Heritage.	Minimal impact on sites of buildings that have been previously demolished, and are depicted on historic mapping			Minor or slightly negative	3		
	Land Use	To minimise impacts on agricultural holdings and reduce farm severance	Potential for 21 agricultural properties to be affected			Minor or slightly negative	3		
	Water resources	To incorporate measures which will minimise impact of the scheme on nearby watercourses	Localised Impact on nearby watercourses. Improvement in drainage in general with proposal to provide mitigation measures.			Minor or slightly positive	5		
Safety	Collision reduction	Maintain existing collision rate at below or twice below the national average rates while increasing design speed to be consistent with that of a single carriageway national primary route	Carriageway in accordance with DMRB standards along with hard shoulder and footpaths, to maintain collision rates at below or twice below national average	Current Rate:	0.0483 PIA/mvkm		Not significant or Neutral	4	Slightly Positive
				Proposed Rate (see PAG 6.11):	2 Lane Single carriageway > 60kph 0.080 PIA/mvkm				
	Security	To improve safety conditions for all road users including pedestrians and cyclists	Provision of footpaths and hard shoulders will enhance the security of pedestrians and cyclists.			Moderately positive	6		
Economy	Transport Efficiency and Effectiveness	To reduce Journey Times along the N24 and ensure that the crosssection will accommodate projected traffic flows.	Scheme delivers journey time savings and will accommodate projected flows	Current AADT:	7,875		Moderately positive	6	Slightly Positive
				Forecast 2050 HG AADT:	10,205				
	Wider economic impact	Support economic performance by improved transport infrastructure and reducing transport costs	The scheme does deliver a journey time saving however due to extents, it will have a negligible impact in relation to wider economic impact.			Not significant or Neutral	4		
	Transport Reliability and Quality	Improve journey time along route	Crosssection and alignment to DMRB Standards will lead to an increase in transport reliability			Minor or slightly positive	5		
Accessibility and Social Inclusion	Vulnerable groups	To improve access to key facilities such as employment and education for vulnerable groups	Owing to the extents of the project, it is likely to be not significant or neutral in respect of this.			Not significant or Neutral	4	Slightly Positive	
	Deprived geographic areas	To improve access to for deprived such as RAPID or CLAR areas in Kilkenny.	Slight improvement in access to Waterford City from rural areas in Kilkenny			Minor or slightly positive	5		
Integration	Transport integration	Improve network access to bus routes and rail.	Improves access to Bus Eireann Bus stops in Mooncoin and Train Station in Waterford			Minor or slightly positive	5	Slightly Positive	
	Land-use integration	Meet the transport objectives of regional and local planning	Scheme meets with Southeast Regional and Planning Guidelines 2010 - 2022. and also the Kilkenny County Development Plan 2014 - 2022			Minor or slightly positive	5		
	Geographical integration	Improve existing N24 National Route	N24 Waterford to Cahir is specifically mentioned in the National Development Plan - Project Ireland 2040			Minor or slightly positive	5		
	Integration with other government policies	Scheme supports government policy in the National Development Framework - Project Ireland 2040	The N24 is a national route of regional importance			Minor or slightly positive	5		
Physical Activity	Physical Activity	Provide facilities for pedestrians and cyclists	Proposed route to provide footpaths and hard shoulders for Pedestrians and Cyclists			Moderately positive	6	Moderately Positive	
<b>Overall Description of Scheme:</b>							<b>Slightly Positive</b>		

## **Appendix 1 – N24 Mooncoin Bypass Major Scheme**

Figure A1.1: N24 Mooncoin Bypass Major Scheme Study Area & Identified Route Options (Figure 2.1 Route Selection Report, 2003)

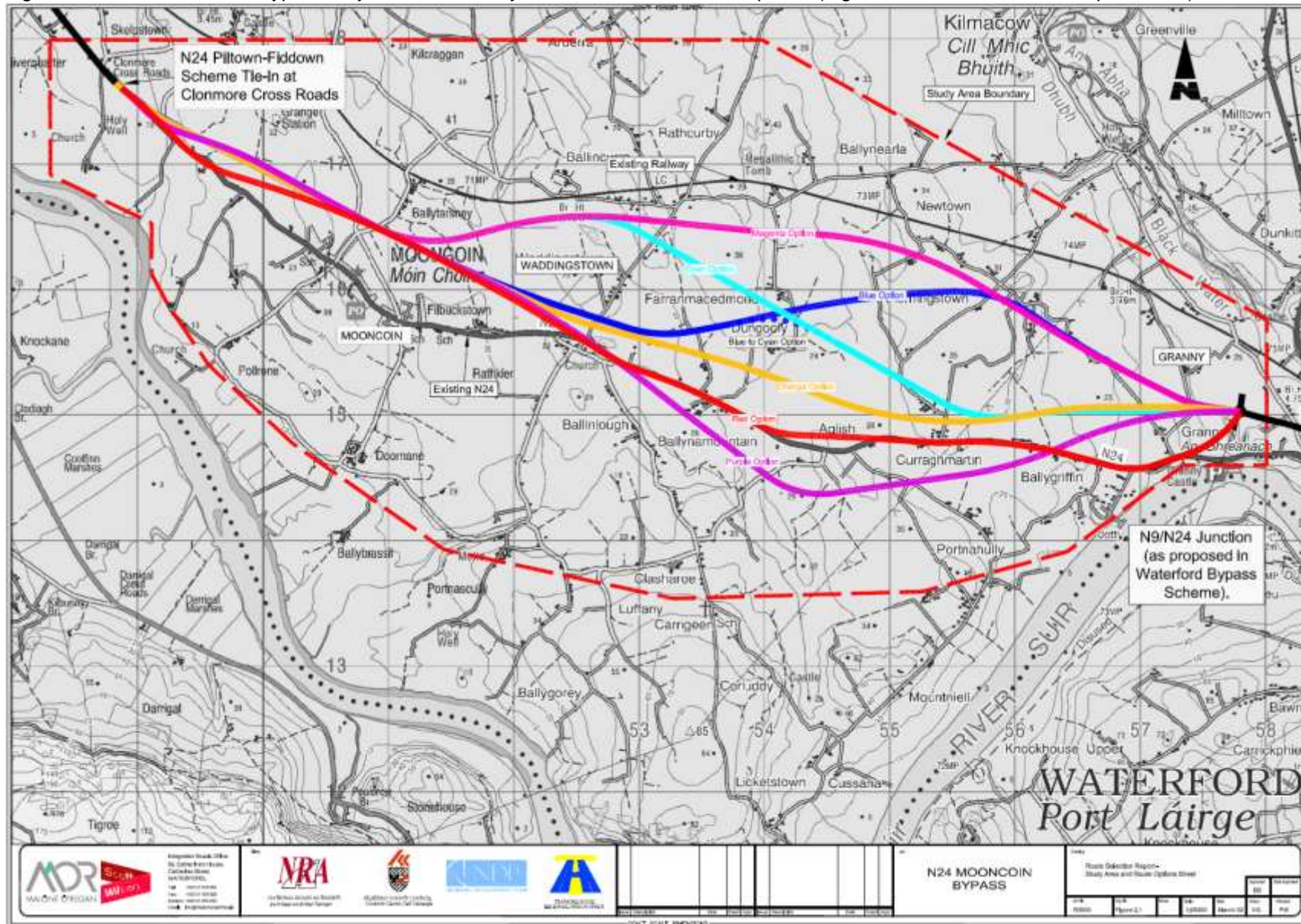


Figure A1.2: Published Preferred Route for the N24 Mooncoin Bypass (<https://www.kilkennycoco.ie/resources/eng/Services/mooncoinmap.gif>)



## **Appendix 2 – Drawings Related to Scheme Need**

Figure A2.1: Journey Time Surveys June 2017

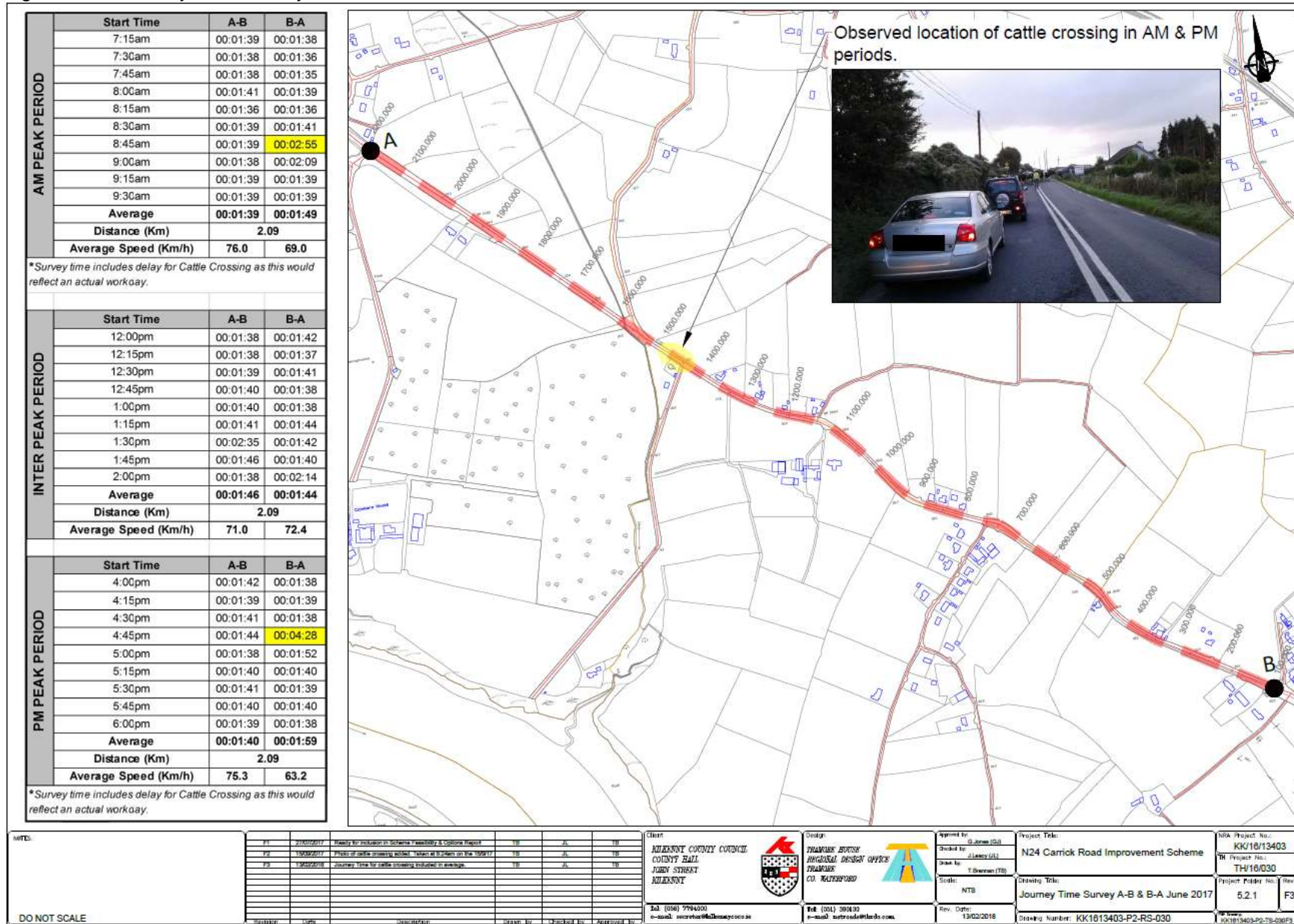


Figure A2.2: Existing Access Location & Type

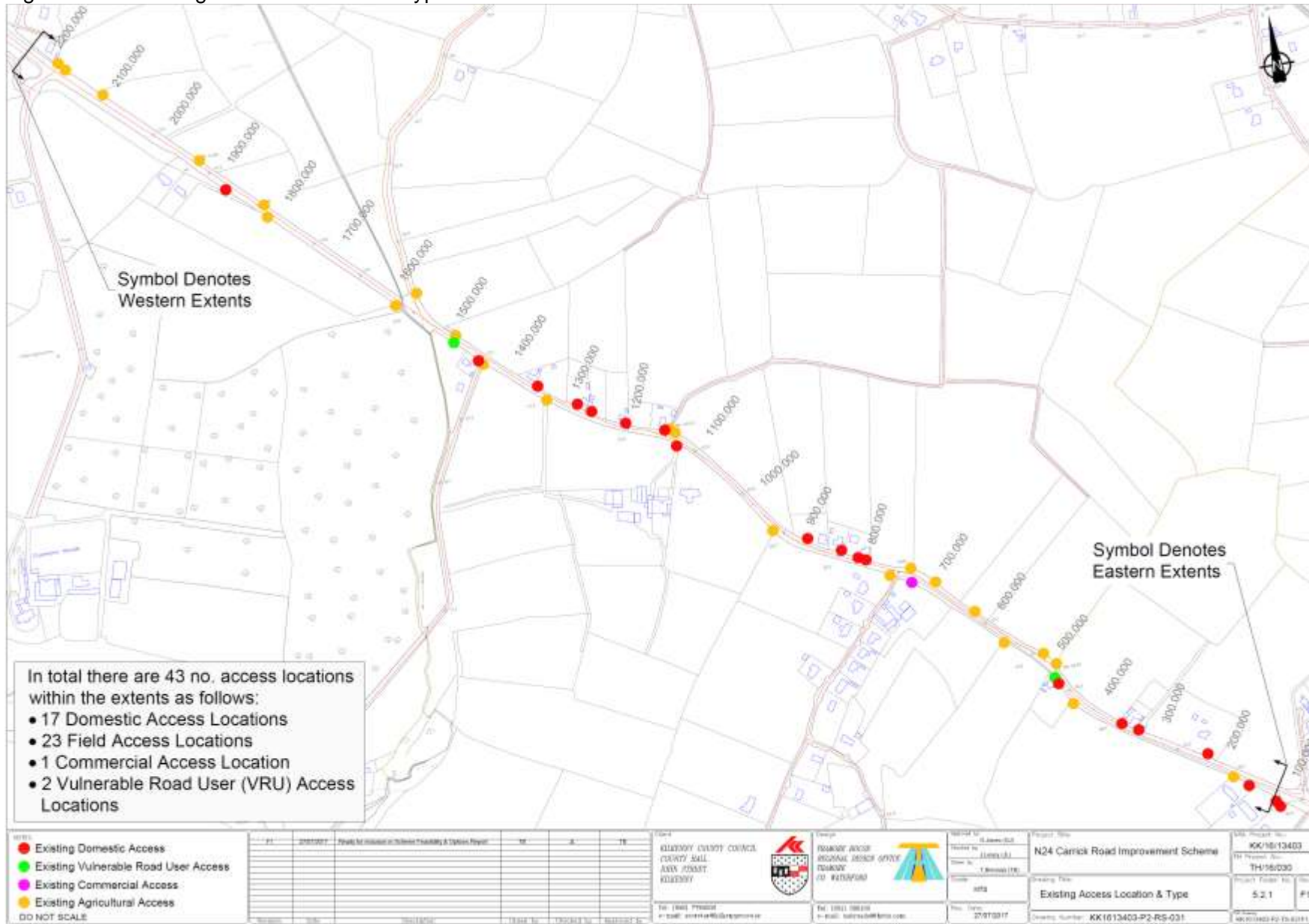
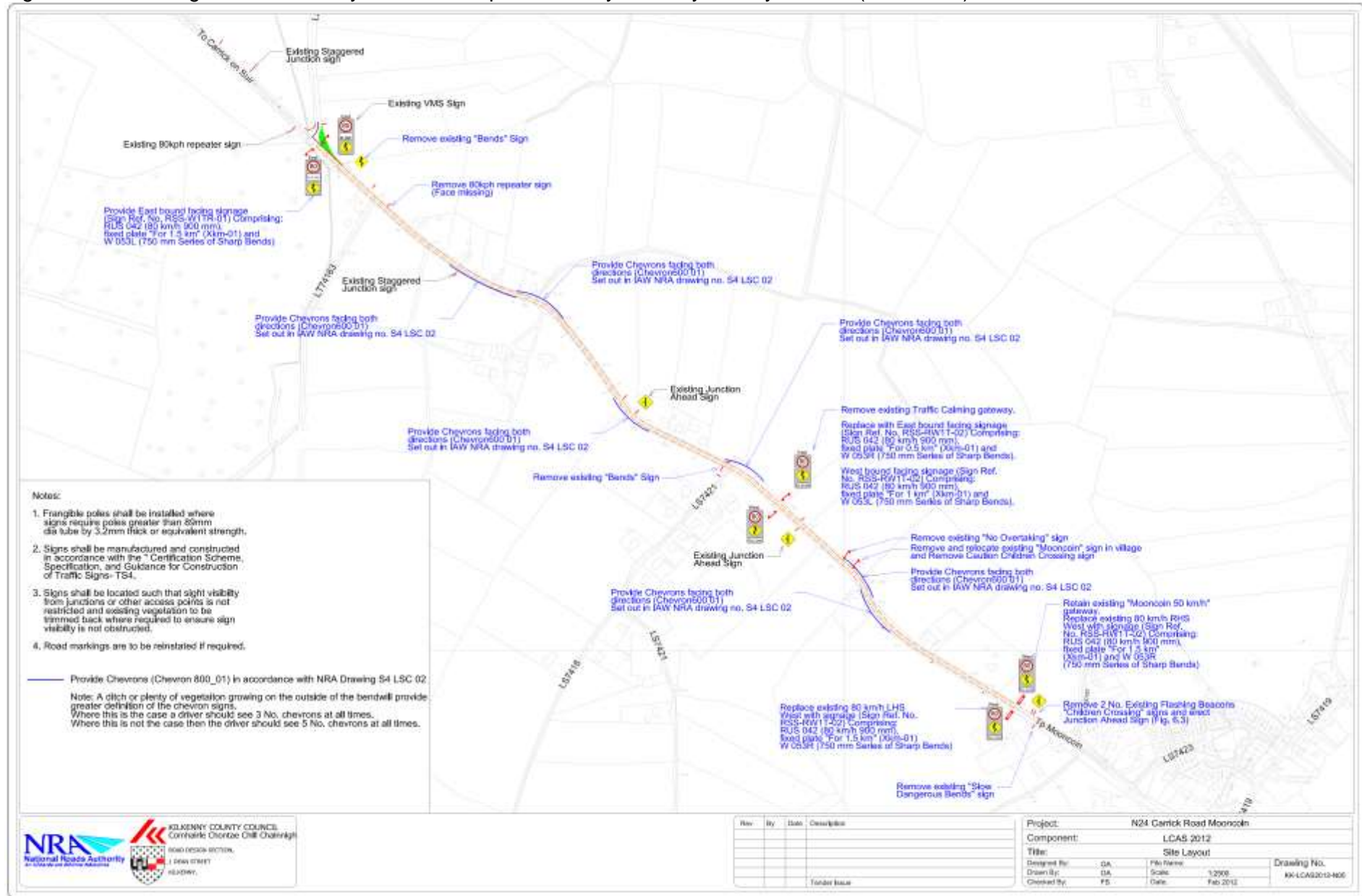


Figure A2.3: Existing N24 Road, with Horizontal & Vertical Alignment

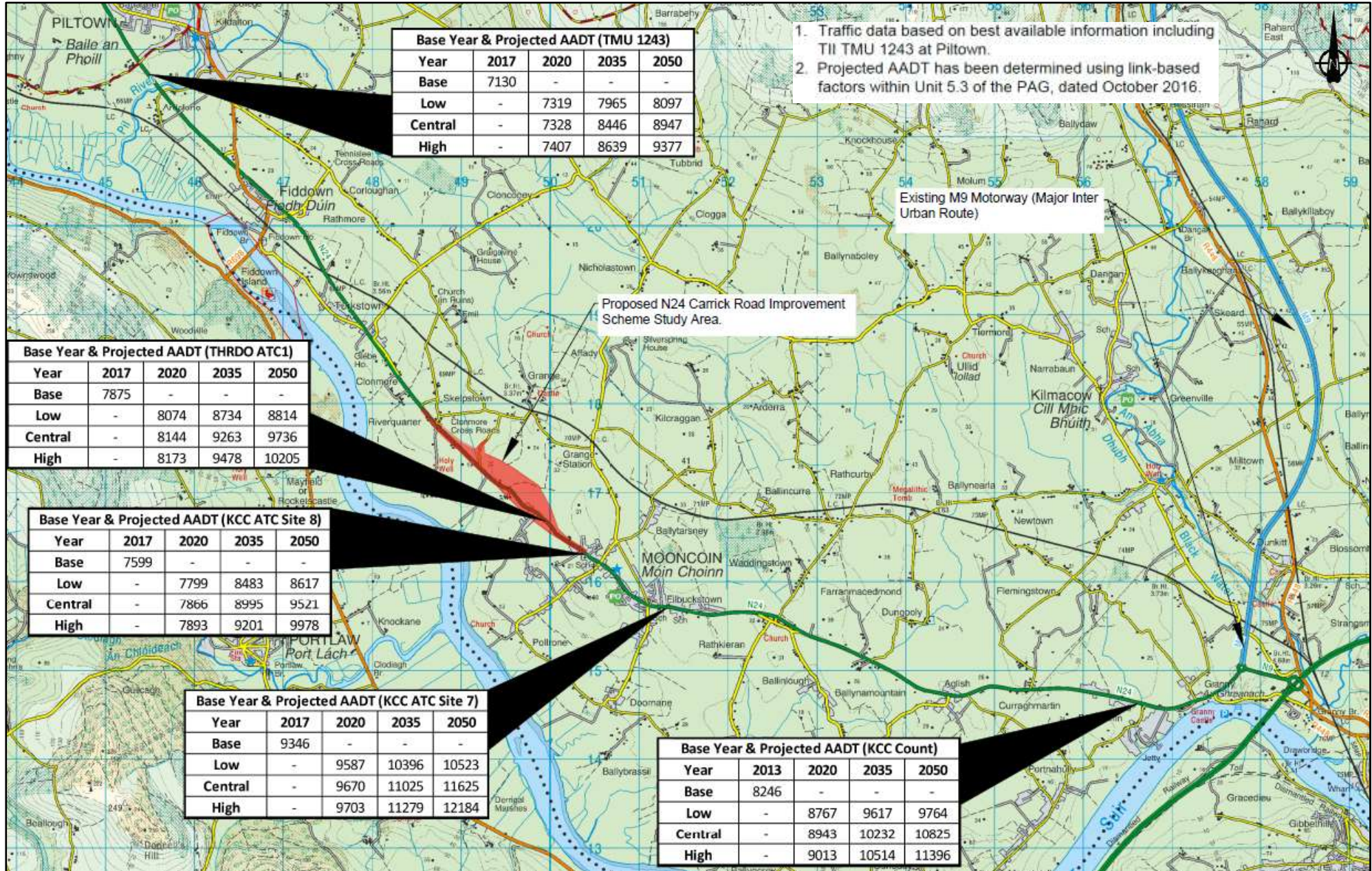




Figure A2.4: Existing Low Cost Safety Measures Implemented by Kilkenny County Council (circa 2012)



## **Appendix 3 – N24 Base Year & Projected Traffic**



## **Appendix 4 – Project Constraints**

Figure A4.1: NATURA 2000 Sites located within 15km of the proposed N24 Carrick Road Improvement Scheme.



Figure A4.2: NHAs and pNHAs located within 5km of the proposed N24 Carrick Road Improvement Scheme.

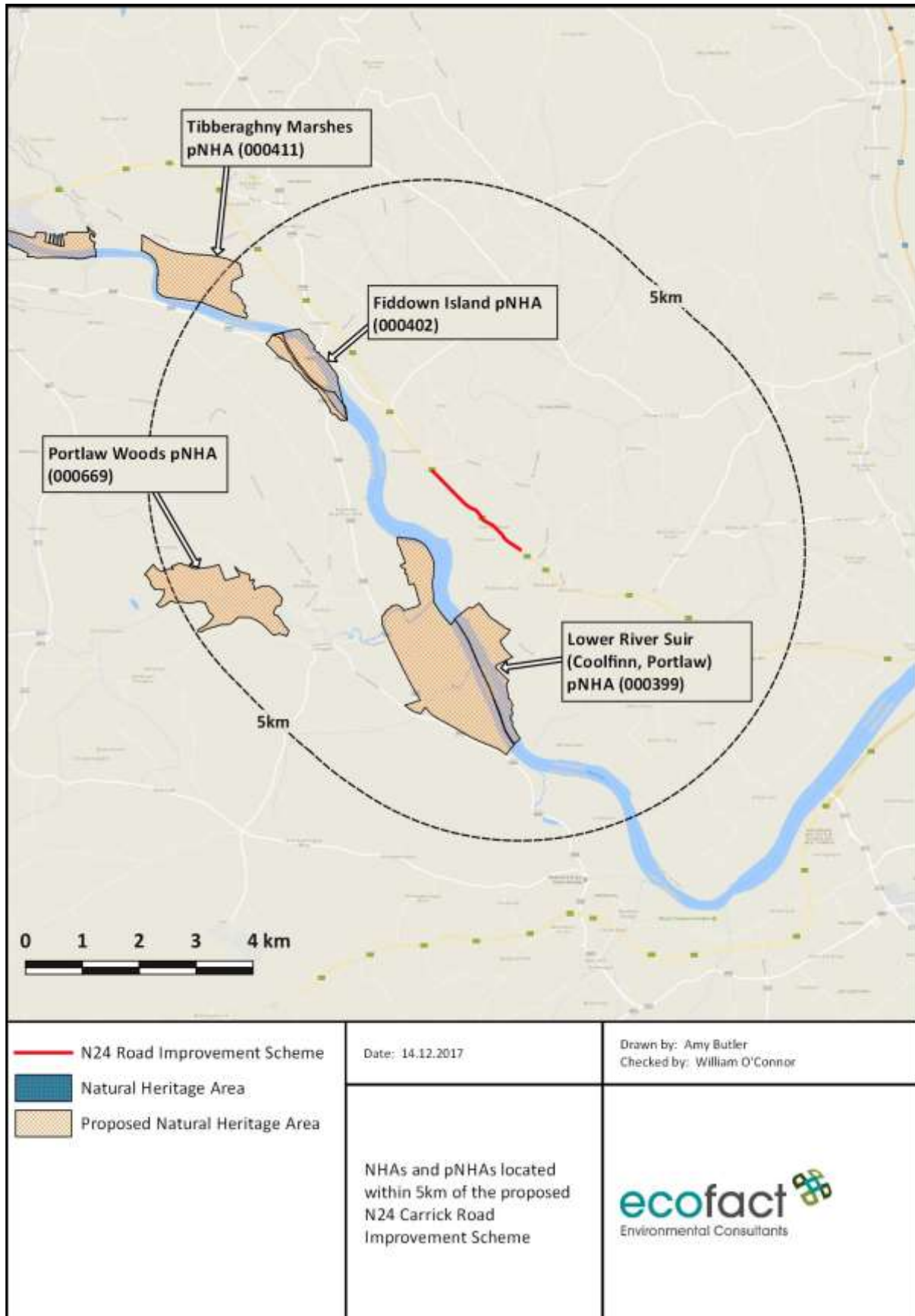


Figure A4.3: Existing Watercourse, SAC, Cultivated Orchards & Buildings incl. Dwellings.

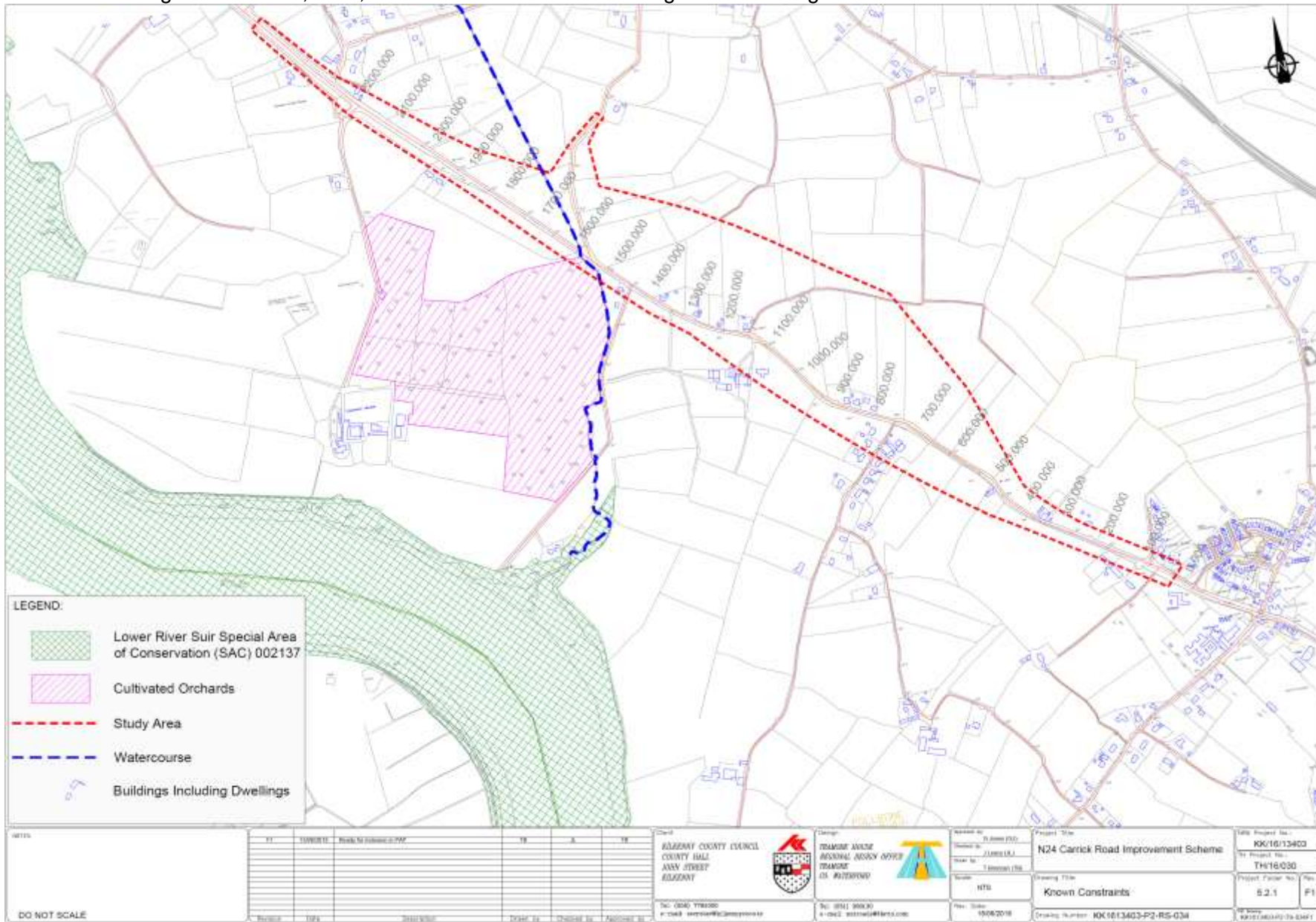


Figure A4.4: Bed Rock Geology 100K (GSI)

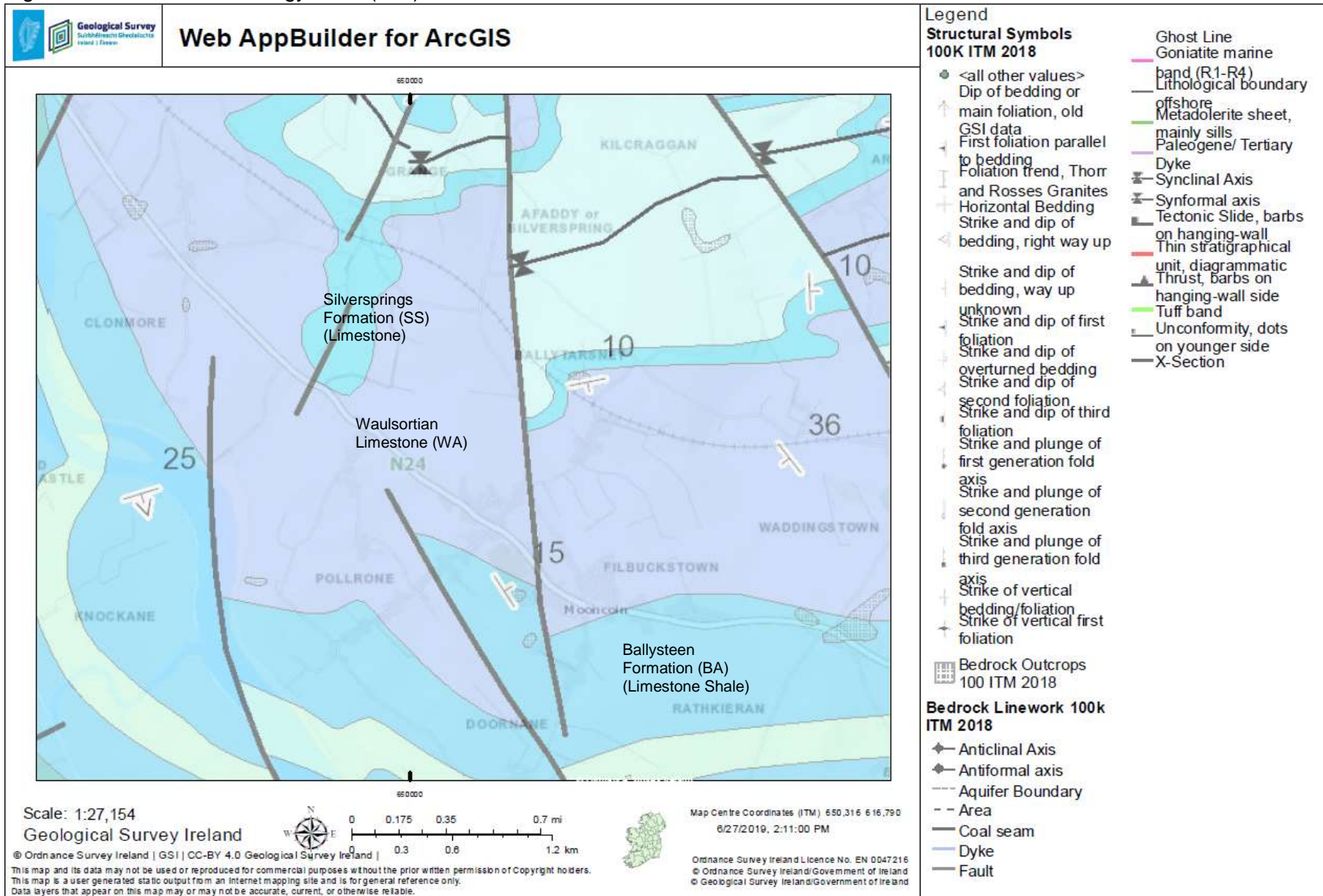




Figure A4.5: Subsoils (GSI)

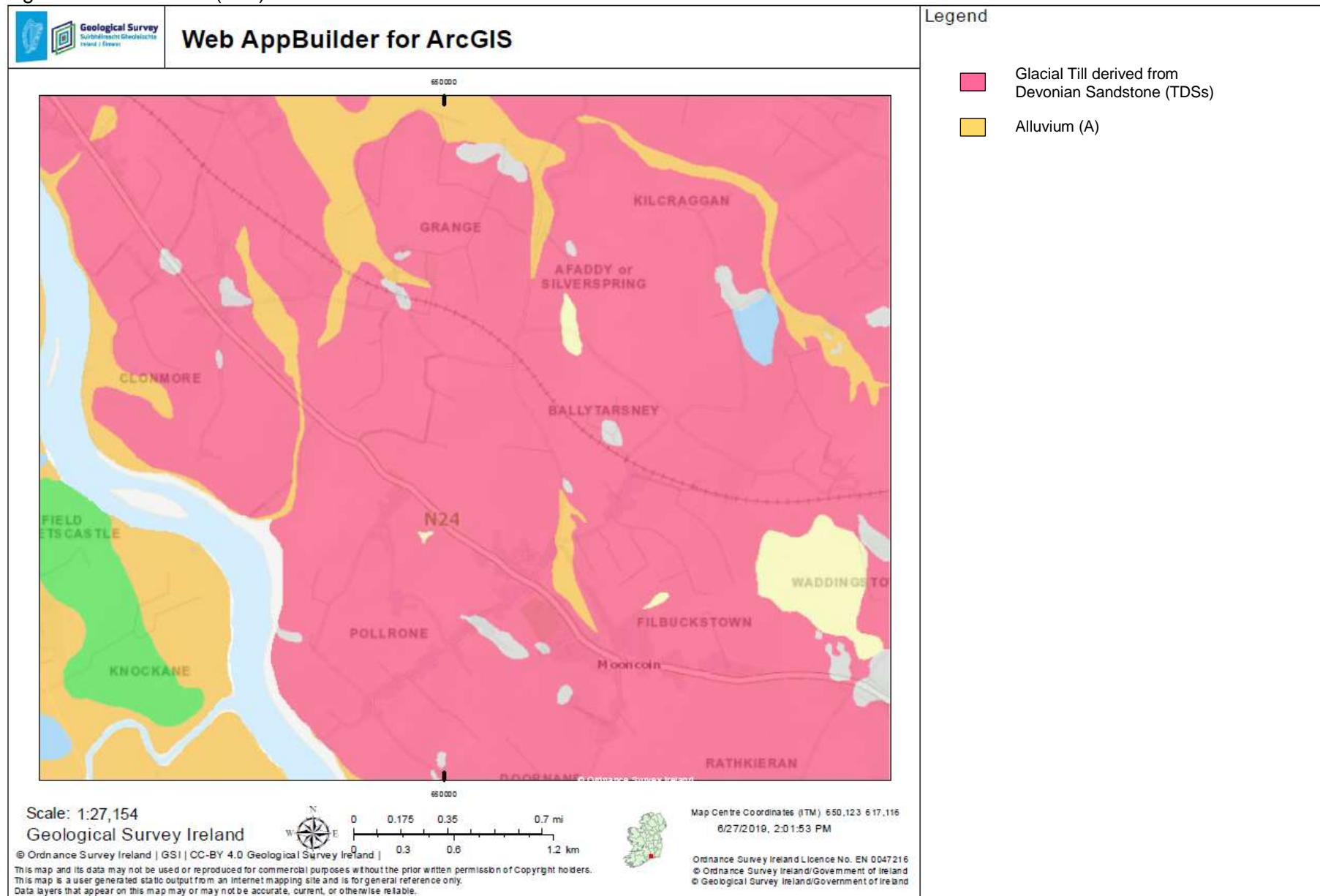


Figure A4.6: Subsoil Permeability (GSI)

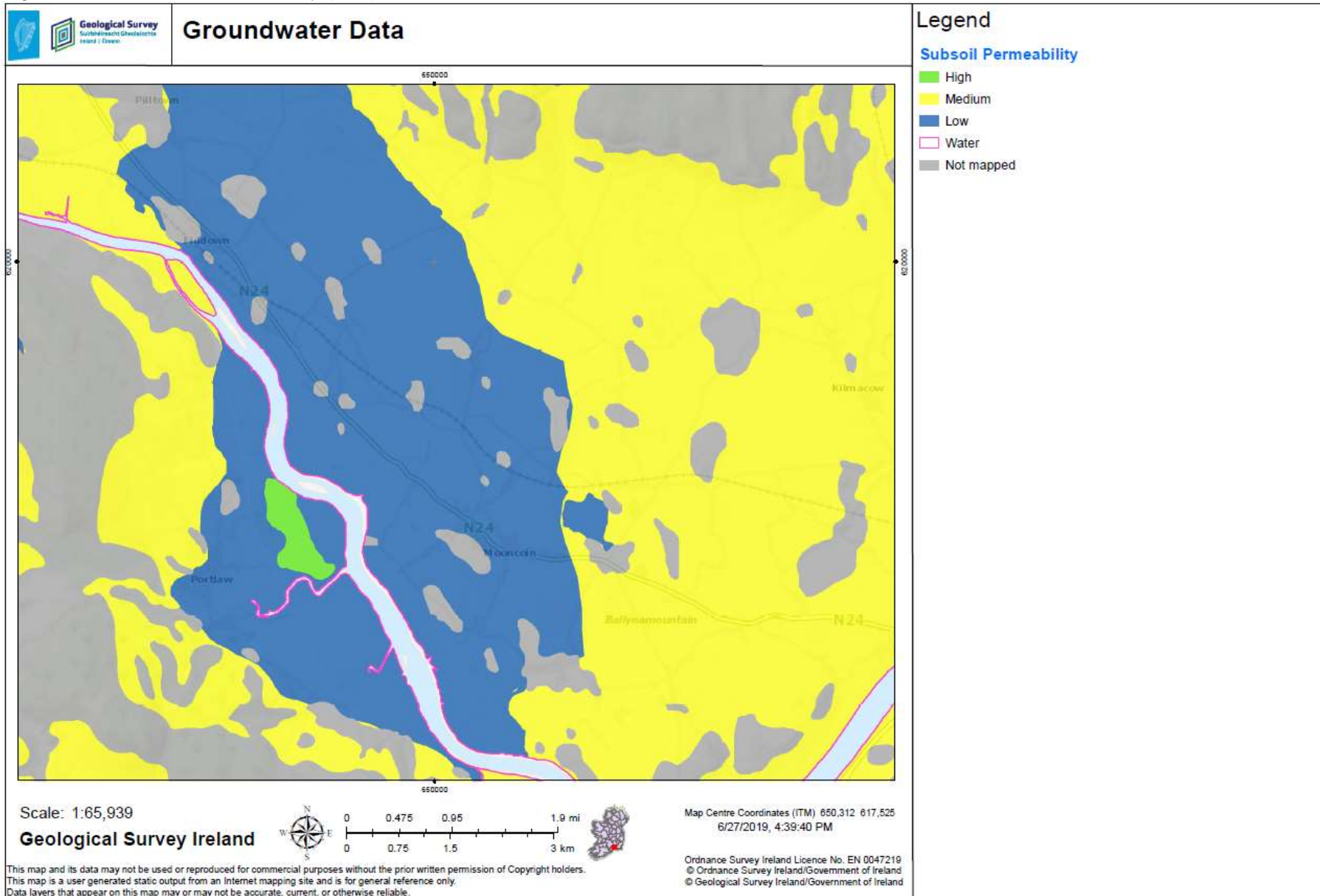


Figure A4.7: Bedrock Aquifer Type (GSI)

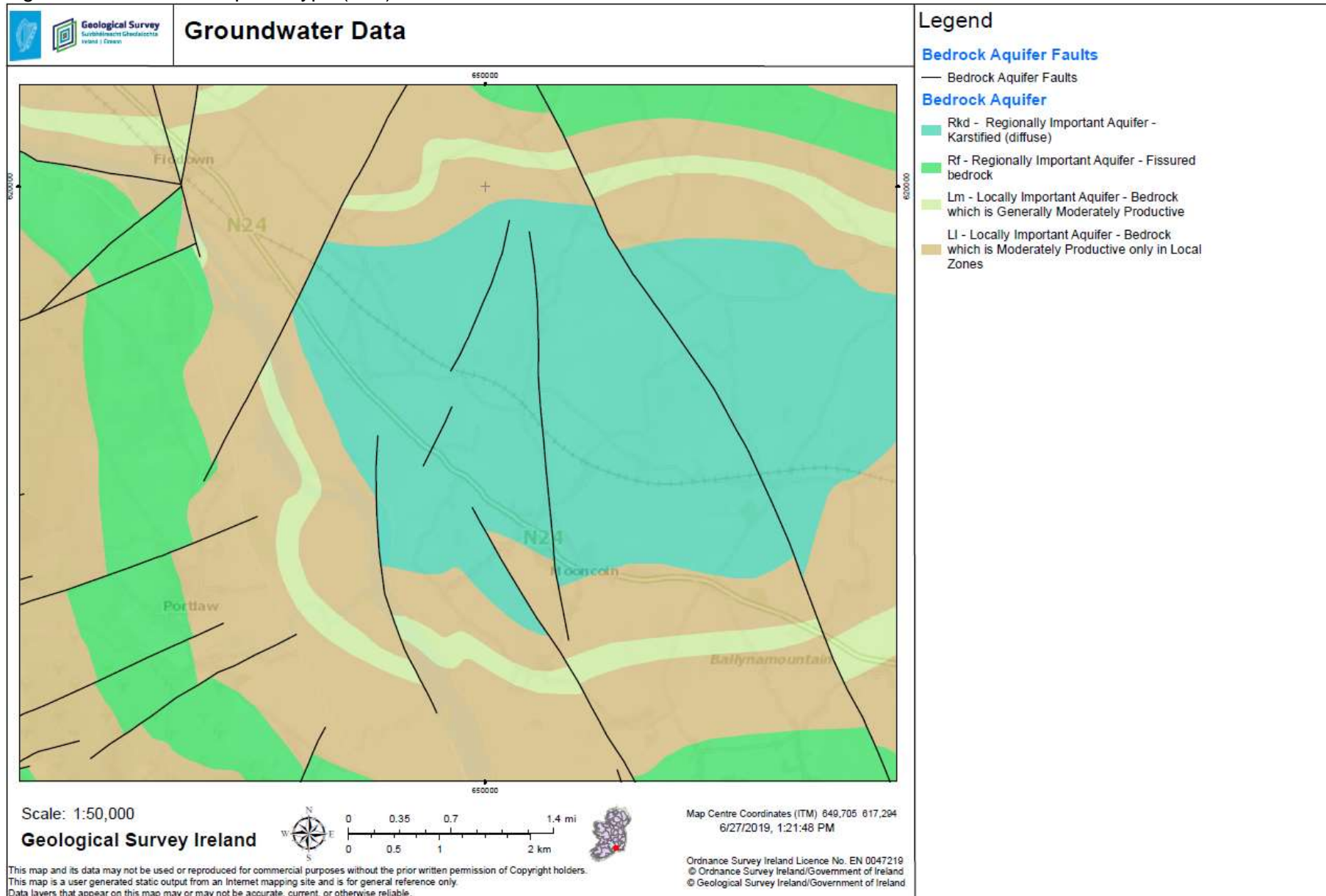


Figure A4.8: Groundwater Vulnerability (GSI)

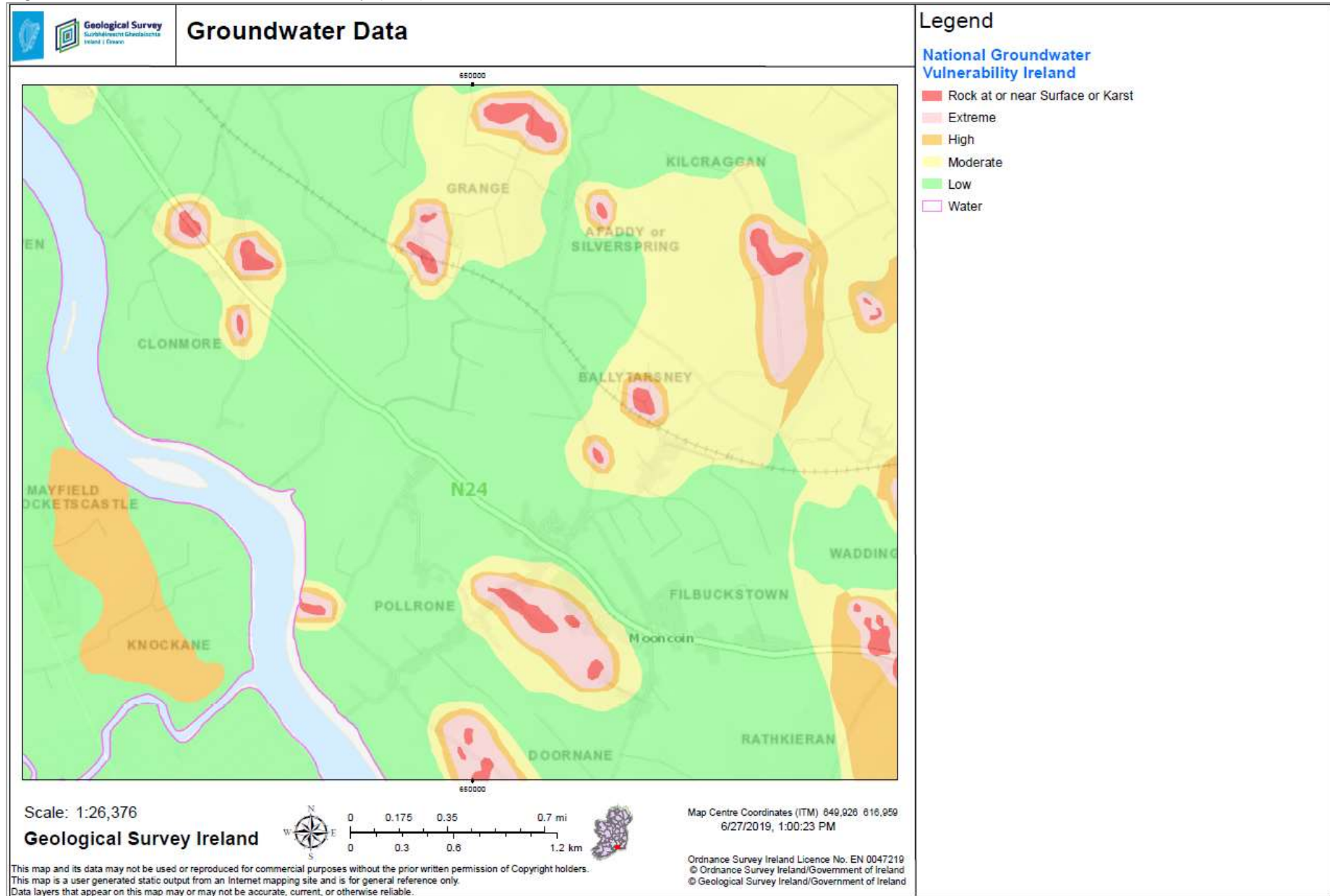


Figure A4.9: Karst Landforms (GSI)

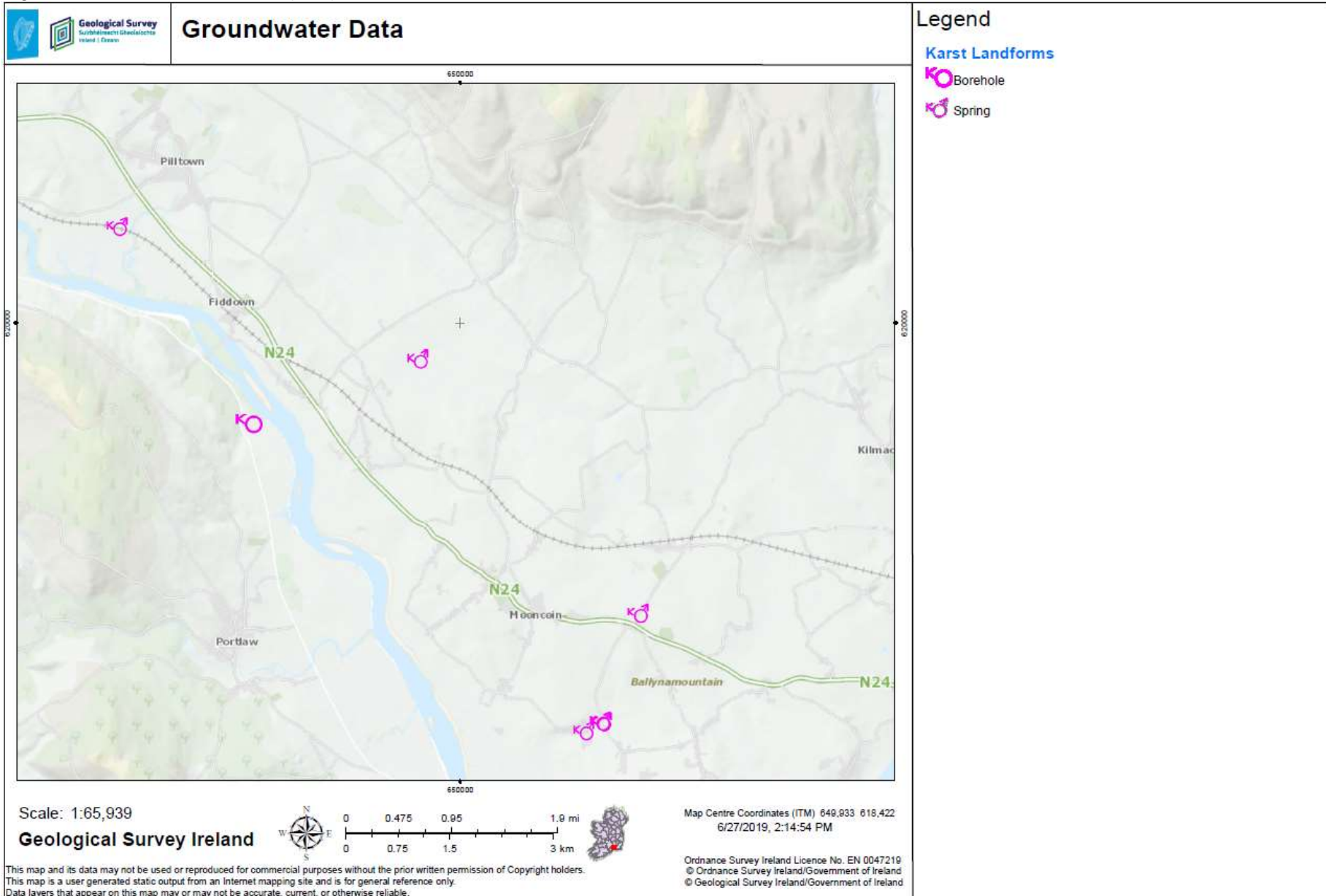


Figure A4.10: Landscape Character Types Kilkenny County Development Plan 2014-2020 (Red Square Denotes approximate Study Area Location)

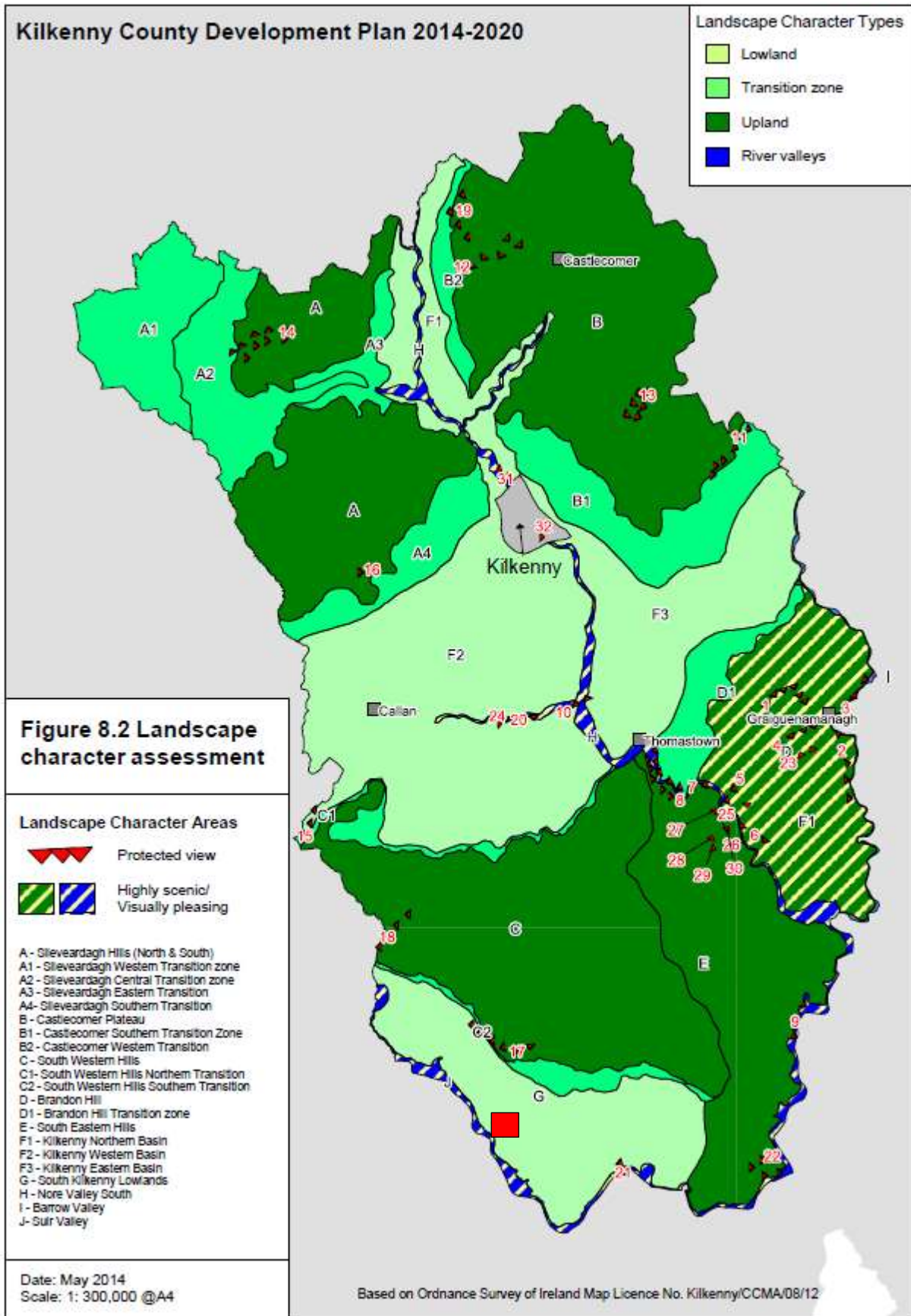
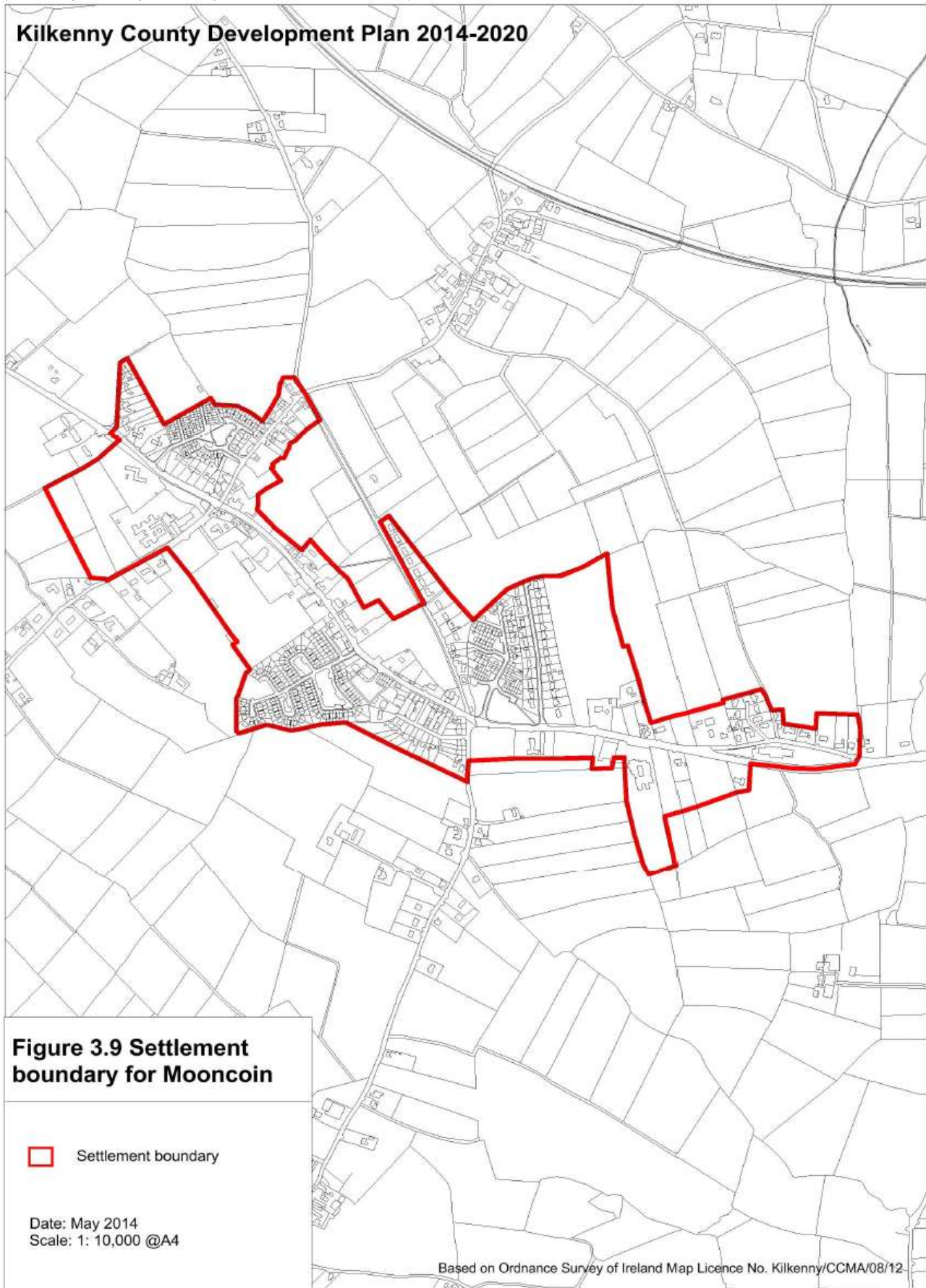


Figure A4.11: Settlement Boundary where development will be considered on a case-by-case basis (Kilkenny County Development Plan 2014-2020)



## **Appendix 5 – Archaeology, Architectural & Cultural Heritage Reports**



Section A5.1: Preliminary Archaeology & Cultural Heritage Assessment Report 2018

**N24 Carrick Road Improvement Scheme, Co. Kilkenny**

**Route options – archaeological, architectural and cultural heritage impact assessment report**

**Author:** James Eogan, Senior Archaeologist, Transport Infrastructure Ireland

**Checked by:** Bernice Kelly, Archaeologist, Transport Infrastructure Ireland

**Status:** Final

**Issue date:** 05/07/2019

*N24 Carrick Road route options – historic environment impact assessment report*

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*N24 Carrick Road route options – historic environment impact assessment report***1. Introduction**

Tramore House RDO has been commissioned by Kilkenny County Council to examine options to improve road safety on the N24 Carrick Road which extends northwestwards from the village of Mooncoin for a distance of approximately 2 km (i.e. in the direction of Fiddown and Piltown) (Fig. 1).

TII's Archaeology and Heritage Section was asked to carry out an assessment of the impacts of the route options on the historic environment.

**2. Proposed development**

A corridor (24.7 hectares) was defined within which three route options have been identified. The corridor encompasses the existing N24 road and extends for approximately 2.1 km (northwest – southeast) and is up to 0.21 km wide. A Preliminary Archaeological Assessment Report was prepared in advance of identification of the route options<sup>1</sup>.

Three route options identified are:

Route	Description	Length (km)
Magenta	Mostly off-line	2.288
Blue	Mostly off-line	1.843
Green	Mostly on-line	1.884

**3. Legislative background**

All archaeological monuments listed on the Register of Historic Monuments (RHM), the Record of Monuments and Places (RMP) or the register of national monuments are protected under the National Monuments Acts 1930–2014. A monument—as defined by Section 2 of the Act—includes, in effect, all man-made structures of whatever form or date except buildings habitually used for ecclesiastical purposes. Further definitions of terms such as archaeology, archaeological object, architectural heritage, heritage building, heritage gardens and parks, heritage objects and monuments are provided by the Heritage Act 1995.

Section 12(1) of the National Monuments (Amendment) Act 1994 provided for the establishment of the RMP. Monuments listed in the RMP manual and marked on the RMP maps are known as 'recorded monuments'. Under Section 12, any works at or in close proximity to such a monument require two months' notice to the Minister for Culture, Heritage and the Gaeltacht (DCHG).

Under Section 14 of the National Monuments (Amendment) Act 2004, works in the vicinity of a national monument of which the Minister or a local authority are the owners or the guardians, or in respect of which a preservation order is in force, require Ministerial Consent.

The Planning and Development Act 2000-2010 requires that a local authority set up and maintain a Record of Protected Structures which consists of a list of structures that are of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest. Designation confers

<sup>1</sup> Eogan, J. (Jan-2018) *N24 Carrick Road Improvement Scheme, Co. Kilkenny. Preliminary archaeological assessment report – Route Selection phase.*

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protection on land and structures within the curtilage of the Protected Structure. Curtilage is not defined within the legislation but can be taken to include the parcel of land immediately associated with the structure and which is (or was) in use for the purposes of the structure (DoEHLG 2004, 191). In the case of a country house the curtilage may include such features as the stable buildings, coach-house, gate piers, gates, walled garden and lawns, unless they are located at a distance from the main building.

Attendant grounds are defined as lands which lie outside the curtilage of a protected structure, but are intrinsic to its appreciation, function or setting (*ibid.*, 192). The entire demesne of a country house may be considered as attendant grounds, along with any structures/features within it such as follies, plantations, earthworks and lakes. However, structures/features within the attendant grounds are not automatically protected and require specific inclusion in the Record of Protected Structures (*ibid.*).

The Planning and Development Act 2000-2010 also requires that a planning authority include an objective in its development plan to preserve the character of a place, area, group of structures or townscape if it is of the opinion that its inclusion is necessary for the preservation of the character of that area. Such an area is known as an Architectural Conservation Area (ACA) and is defined as a place, area, group of structures or townscape that is of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest or that contributes to the appreciation of a protected structure (Kilkenny County Council 2014, 120).

#### 4. Planning Context

The Kilkenny County Development Plan 2014–2020 sets out the Council's objectives in terms of the protection and promotion of built and cultural heritage. The plan states 'Built heritage includes all man-made features, buildings, and structures in the environment. It includes our rich and varied archaeological and architectural heritage'<sup>2</sup>.

##### 4.1. Archaeological Heritage

Kilkenny County Council's policies in relation to safeguarding the county's archaeological heritage are set out in Section 8.3.1. Policies, standards and objectives that are of particular relevance to this project are set out below.

Development management standards:

- Endeavour to preserve in situ all archaeological monuments, whether on land or underwater, listed in the Record of Monuments and Places (RMP), and any newly discovered archaeological sites, features, or objects by requiring that archaeological remains are identified and fully considered at the very earliest stages of the development process and that schemes are designed to avoid impacting on the archaeological heritage.
- To require archaeological assessment, surveys, test excavation and/or monitoring for planning applications in areas of archaeological importance if a development proposal is likely to impact upon in-situ archaeological monuments, their setting and archaeological remains.

<sup>2</sup> [http://www.kilkennycoco.ie/eng/Services/Planning/Development-Plans/Development\\_Plans\\_2014-2020/Adopted-County-Plan-for-printing.pdf](http://www.kilkennycoco.ie/eng/Services/Planning/Development-Plans/Development_Plans_2014-2020/Adopted-County-Plan-for-printing.pdf), pg. 114 – 141. Accessed 26/06/2019.

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- Ensure that development within the vicinity of a Recorded Monument is sited and designed appropriately so that it does not seriously detract from the setting of the feature or its zone of archaeological potential. Where upstanding remains of a Recorded Monument exist a visual impact assessment may be required to fully determine the effect of any proposed development.
- Require the retention of surviving medieval plots and street patterns and to facilitate the recording of evidence of ancient boundaries, layouts etc. in the course of development.
- Safeguard the importance of significant archaeological or historic landscapes from developments that would unduly sever or disrupt the relationship, connectivity and/or inter-visibility between sites.

The following policy is relevant to the watercourse named the Skelpstown Stream.

#### 8.3.1.2 Underwater Archaeology

Any development near watercourses, be they freshwater or in marine/coastal areas, should take into account the potential to encounter underwater cultural heritage. Such sites may include sources of underwater cultural heritage such as shipwrecks, fishtraps, fording points, bridges, intertidal kelp grids, etc. as well as artefactual material from an underwater context. ... Any development either above or below water, including to river banks or coastal edges, within the vicinity of a site of archaeological interest shall not be detrimental to the character of the archaeological site or its setting.

Objective 8I: Protect archaeological sites and monuments (including their setting), underwater archaeology, and archaeological objects, including those that are listed in the Record of Monuments and Places, and in the Urban Archaeological Survey of County Kilkenny or newly discovered sub-surface and underwater archaeological remains.

## 4.2 Architectural Heritage

Kilkenny County Council's policies in relation to safeguarding the county's architectural heritage are set out in Section 8.3.5. Policies, standards and objectives that are of particular relevance to this project are set out below.

#### 8.3.5.1 Record of Protected Structures

Protecting architectural heritage is an important function of the planning authority, particularly in a county like Kilkenny where the built heritage has such a strong role to play in ensuring the continued economic prosperity of the place. Each development plan must include policy objectives to protect structures or parts of structures of special interest within its functional area. The primary means of achieving this is to include a Record of Protected Structures (RPS) for the functional area within the development plan. A planning authority is obliged to include in the RPS every structure, which, in its opinion, is of architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest.

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A protected structure, unless otherwise stated in the RPS, includes the interior of the structure, land lying within the curtilage, any other structures lying within that curtilage and their interiors, plus all fixtures and features which form a part of the interior or exterior of any of these structures.

Objective 8J: To facilitate and support the implementation of existing (and any further) conservation plans, as resources allow.

Objective 8K: To ensure the protection of the architectural heritage of County Kilkenny by including all structures considered to be of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest in the Record of Protected Structures.

Objective 8L: To carry out a review of the Record of Protected Structures.

Objective 8M: To complete digital mapping of the Record of Protected Structures.

Objective 8N: To promote principles of best practice in conservation and the use of appropriate materials and repair techniques through the administration of the Conservation Grants Scheme and the Structures at Risk Fund, funded by the Department of Arts, Heritage and the Gaeltacht.

Objective 8O: To provide assistance to owners of protected structures in undertaking essential repairs and maintenance by the provision of relevant information.

Objective 8P: To respond to the Ministerial recommendation to include in the Record of Protected Structures, structures which have been identified as being of Regional, National or International significance in the National Inventory of Architectural Heritage survey of the city and county published in 2006, and to consider for inclusion those rated of local significance.

The following policy is of general relevance.

#### 8.3.10 The Vernacular Built Heritage

The vernacular built heritage consists of buildings and settlements historically created by local people from local materials and resources to meet local needs following local traditions. The response to the local environment gave rise to construction techniques which vary from region to region, often with great subtlety. This type of building is often undervalued because it does not represent 'great architecture' and because of associations with poverty and a perception that the buildings have become obsolete. The value of these buildings lies in the regional distinctiveness and identity that they confer on a place and their importance as an embodiment of the accumulated wisdom and cultural traditions of the people who built and lived in them.

Development Management Standard [relevant standards only]:

- To apply the conservation principles and guidelines in practice as set out in the ICOMOS Charter on the Built Vernacular Heritage (Mexico 1999) when considering proposals to adapt vernacular buildings to meet contemporary living standards and needs.
- To promote the retention and re-use of the vernacular built heritage through increasing public awareness of its potential for re-use and its adaptability to change.

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The following policy is of general relevance.

#### 8.4 Cultural Heritage

Cultural heritage includes aspects of heritage such as traditions, practices, knowledge and skills which are an expression of our culture. In Kilkenny our cultural heritage includes oral history, placenames, folklore, local history and sport. It also encompasses features of cultural heritage interest such as mass rocks, mass paths, rag trees and vernacular gates which are locally significant and add to the distinctive character and sense of place of an area. The Council will preserve, protect and where necessary enhance, significant heritage objects such as mass rocks and holy wells and/or other significant cultural features that form part of the cultural heritage of the County.

## 5. Methodology

In accordance with Transport Infrastructure Ireland guidelines a study area was defined for the purposes of identifying and assessing the potential impacts of the proposed project on the historic environment (Fig. 2). The study area was 3 km long (northwest – southeast) and 0.5 km wide and encompasses parts of the townlands of Clonmore, Grange and Pollrone in the civil parishes of Clonmore and Pollrone, in the barony of Iverk (Fig. 3). A preliminary archaeological and architectural heritage impact assessment was undertaken in 2017 and 2018<sup>3</sup>.

Three route options have been defined, and their anticipated heritage impacts assessed. This is a report of that desk-based assessment. The following sources were consulted:

1. National Monuments Service, Record of Monuments and Places (1996) – manual and maps
2. National Monuments Service, Historic Environment Viewer – map viewer<sup>4</sup>
3. National Monuments Service, list of list of the national monuments in State care, Co. Kilkenny<sup>5</sup>
4. National Inventory of Architectural Heritage<sup>6</sup>
5. Survey of Historic Gardens and Designed Landscapes<sup>7</sup>
6. Kilkenny County Council, Record of Protected Structures – Kilkenny County (2014)<sup>8</sup> and Kilkenny City and Environs & Kilkenny County Record of Protected Structures (18 Additions and 1 Deletion) as ratified by Kilkenny County Council on 19th February 2018<sup>9</sup>

<sup>3</sup> Eogan, J, *N24 Carrick Road Improvement Scheme, Co. Kilkenny. Preliminary archaeological assessment report – Route Selection phase* (Jan. 2018).

<sup>4</sup> <http://webgis.archaeology.ie/historicenvironment/>. Accessed 26/06/2019.

<sup>5</sup> <https://www.archaeology.ie/sites/default/files/medias/pdf/monuments-in-state-care-kilkenny.pdf>. Accessed 27/06/2019.

<sup>6</sup> <http://www.buildingsofireland.ie/niah/highlights.jsp?county=KK>. Accessed 26/06/2019.

<sup>7</sup> <http://www.buildingsofireland.ie/cgi-bin/viewcounty.cgi?county=10>. Accessed 26/06/2019.

<sup>8</sup> <http://www.kilkennycoco.ie/eng/Services/Planning/Conservation/Kilkenny-County-Rps-2014.pdf>. Accessed 26/06/2019.

<sup>9</sup> <https://www.kilkennycoco.ie/eng/Services/Planning/Conservation/RPS-18-Additions-and-1-Deletion-19th-Feb-2018.pdf>. Accessed 26/06/2019



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7. Heritage Maps – map viewer<sup>10</sup>
8. Geological Survey of Ireland Spatial resources – map viewer<sup>11</sup>
9. Environmental Protection Agency, catchments mapping and data<sup>12</sup>

Following completion of the desk-based assessment specific locations and features were inspected from the public road in August 2017 and February 2018. No archaeological walkover has been undertaken of the route options.

## 6. Topography, geology, drainage and landuse

The route options are located in the valley of the River Suir, at an elevation of between 10 m and 30 m OD. The underlying bedrock is classified by the Geological Survey of Ireland as being Carboniferous limestone, the principal bedrock in the study area belongs to the Waulsortian Limestones Formation, though in part of Grange td these are overlain by bedded chert & dark-grey limestone of the Silversprings Formation<sup>13</sup>. This landscape was glaciated and as a result the subsoils within the study area are classified as Devonian Sandstone Till<sup>14</sup>. Where drainage is poor the soils within the study area are classified as Surface Water Gleys / Ground Water Gleys, however, the better drained areas have soils classified as Acid Brown Earths / Brown Podzolics<sup>15</sup>. The Skelpstown Stream is associated with localised deposits of Alluvial soils<sup>16</sup>.

Apart from those lands drained by the Skelpstown Stream<sup>17</sup>, the lands within the study area drain directly into the Middle Suir Estuary<sup>18</sup>. The Skelpstown Stream rises in a spring just west of Skelpstown village and flows on a southerly course to the River Suir. It is culverted under the existing N24 (CHS-15). On the northern side of the N24 the natural course of the stream appears to have been straightened, originally it may have been co-incident with the Clonmore/Grange townland boundary (see Section 8.2 below).

The land within the study area is subject to a variety of agricultural uses including tillage, grassland and commercial fruit growing, in part of Clonmore.

<sup>10</sup> <https://www.heritagemaps.ie/WebApps/HeritageMaps/index.html>. Accessed 26/06/2019.

<sup>11</sup> <http://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af218e87e4c0ab2f0de2aaac3c228>. Accessed 26/06/2019.

<sup>12</sup> <https://www.catchments.ie/maps/>. Accessed 26/06/2019.

<sup>13</sup> [http://spatial.dcenr.gov.ie/imf/imf.jsp?site=GSI\\_Simple](http://spatial.dcenr.gov.ie/imf/imf.jsp?site=GSI_Simple). Accessed 26/06/2019.

<sup>14</sup> <https://www.heritagemaps.ie/WebApps/HeritageMaps/index.html?extent=-7.3514,52.2840,-7.2264,52.3361>. Accessed 26/06/2019.

<sup>15</sup> <https://www.heritagemaps.ie/WebApps/HeritageMaps/index.html?extent=-7.3514,52.2840,-7.2264,52.3361>. Accessed 26/06/2019.

<sup>16</sup> <https://www.heritagemaps.ie/WebApps/HeritageMaps/index.html?extent=-7.3514,52.2840,-7.2264,52.3361>. Accessed 26/06/2019.

<sup>17</sup> [https://www.catchments.ie/maps/?layer=river&code=IE\\_SE\\_165040430](https://www.catchments.ie/maps/?layer=river&code=IE_SE_165040430). Accessed 26/06/2019.

<sup>18</sup> [https://www.catchments.ie/maps/?layer=transitional&code=IE\\_SE\\_100\\_0330](https://www.catchments.ie/maps/?layer=transitional&code=IE_SE_100_0330). Accessed 26/06/2019.

*N24 Carrick Road route options – historic environment impact assessment report***7. Placenames, Archaeological and Historical Background**

The modern townland names through which the route options run are mostly derive from Irish:

Townland	Irish	Meaning	Civil Parish	Barony
Clonmore <sup>19</sup>	<i>Cluain Mhór</i>	'great meadow'	Clonmore	Iverk
Grange <sup>20</sup>	n/a <sup>21</sup>		Pollrone	Iverk
Pollrone <sup>22</sup>	<i>Poll Ruain</i>	'[St.] Ruan's pool'	Pollrone	Iverk

The townland names reflect the topography and natural features (Pollrone), associations with historic personages (Pollrone) and historic agricultural practice and land ownership (Clonmore and Grange).

While the N24 is now the principal transport link between Waterford and Carrick-on-Suir, until the late 17th century the easiest and probably most frequent mode of travel was by boat along the River Suir. The main route for road traffic, as depicted on Petty's 'A General Mapp of Ireland' (1689), was by road west from Waterford, following the valley of the Clodiagh River and then northwards to Carrick-on-Suir via Mothel<sup>23</sup>.

**8. Description of the archaeological, architectural and cultural heritage of the area**

As noted above some of the townland names through which the route options run reflect past agricultural practice and land ownership. However, there are few upstanding archaeological remains in the landscape, probably due to many centuries of agricultural activity, particularly ploughing associated with tillage. There are three archaeological monuments listed on the Sites and Monuments Record within 0.5 km of the route options<sup>24</sup>. These are all located in Clonmore and are associated with ecclesiastical activity. The overgrown remains of the late medieval parish church dedicated to St. Canice (CHS-01, KK042-006001) and associated graveyard (CHS-02, KK042-006002) are approximately 440 m southwest of the nearest point on the route options. The site of a holy well (CHS-03, KK042-007), also dedicated to St Canice, is located approximately 335 m southwest of the southwest of the nearest point on the route options.

According to Carrigan, Clonmore was the centre of an Episcopal manor (comprising the townlands of Clonmore and Killanaspick, as well as lands in the townlands of Filbuckstown, Waddingstown, Ballinalough and Rathkieran<sup>25</sup>), from the 13th to at least the late 15th century. Carrigan notes that there was a manor in Pollrone in the mid-14th century<sup>26</sup>. The manorial centre was probably located outside the study area close to Pollrone Church. There are no records of contemporary archaeological remains within the study area in Pollrone. As noted above, the townland name 'Grange' indicates the probability

<sup>19</sup> <https://www.logainm.ie/1277.aspx>. Accessed 26/06/2019.

<sup>20</sup> <https://www.logainm.ie/27669.aspx>. Accessed 26/06/2019.

<sup>21</sup> The placename suggests the likelihood that this townland was the outlying farm of a late medieval monastic institution, worked by lay brothers

<sup>22</sup> <https://www.logainm.ie/26488.aspx>. Accessed 26/06/2019.

<sup>23</sup> <http://downsurvey.tcd.ie/down-survey-maps.php>. Accessed 10/04/2017.

<sup>24</sup> <http://webgis.archaeology.ie/NationalMonuments/FlexViewer/>. Accessed 26/06/2019.

<sup>25</sup> W. Carrigan, 1905 *The History And Antiquities of the Diocese of Ossory*, Vol. 4, pg. 147 – 8

<sup>26</sup> W. Carrigan, 1905 *The History And Antiquities of the Diocese of Ossory*, Vol. 4, pg. 149 – 51

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that this townland was an outlying farm of a late medieval monastic institution, worked by lay brothers. No information has been found to identify which monastic institution this might have been.

### 8.1. Evidence for the historic environment from cartographic sources

This part of county Kilkenny is depicted on a number of maps from the 17th century onwards. The 17th and 18th maps are generally at a large scale and do not depict much detail. The Ordnance Survey carried out detailed surveys in the 19th century which led to the production of maps at scales of six inches and 25 inches to the mile, these maps provide a great deal of detail of the landscape, landuse and settlement of the study area.

Neither the present N24 road nor Mooncoin village are depicted on the Down Survey maps (1656) or on Herman Moll's *New Map of Ireland* (1714)<sup>27</sup>. However, the road is shown as the route from Waterford to Carrick-on-Suir by Taylor and Skinner in their volume of *Maps of the Roads of Ireland* (1777)<sup>28</sup>. Clonmore is named on this map, however, the name seems to be applied to the Clonmore House landed estate; on this map Mooncoin is not named as a settlement. The depiction of the route on the Taylor & Skinner map suggests that the straight stretch of the Mooncoin to Carrick-on-Suir road between Clonmore Cross and the culvert (CHS-13) was constructed post-1777.

### 8.2. Previous archaeological excavations

The Database of Irish Excavation Reports<sup>29</sup> was searched. The only excavation identified that was carried out in proximity to the route options was test excavation (CHS-09) conducted to investigate a curving field boundary in advance of construction of the N25 Piltown to Fiddown Bypass in Clonmore. This excavation did not uncover any features of archaeological significance<sup>30</sup>. The site of the test excavation is located approximately 135 m northwest of the western end of the Magenta Route option.

### 8.3. Culturally and historically significant boundaries

One section of a boundary between two civil parishes and seven sections of boundaries between townlands are crossed by the route options. The boundaries of the civil parishes probably originated in the late medieval period, some townland boundaries may have originated in the early medieval period.

#### Parish boundaries

Boundary	Description
Clonmore with Pollrone	South of the existing N24: The boundary is formed by the Skelpstown Stream. North of existing N24: Hedgerow along west side of local road. The curving alignment of the road and hedgerow suggests that originally the Skelpstown Stream may have flowed to the east of its current course.

<sup>27</sup> 'Appendix 9' in P. O'Keeffe and T. Simington *Irish Stone Bridges History and Heritage* (revised edition) 2016

<sup>28</sup> G. Taylor and A. Skinner (1777) *Maps of the Roads of Ireland*, map no. 63.

<http://www.askaboutireland.ie/reading-room/digital-book-collection/digital-books-by-subject/geography-of-ireland/taylor-skinner-maps-of-ih/>. Accessed 26/06/2019.

<sup>29</sup> <http://www.excavations.ie/>. Accessed 26/06/2019.

<sup>30</sup> Excavation licence no. 00E0292 <http://www.excavations.ie/report/2000/Kilkenny/000292/>. Located at ITM 648371 618177. Accessed 26/06/2019.

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## Townland boundaries

Boundary	Description
Clonmore with Grange †	A hedgerow along west side of local road. The curving alignment of the road and hedgerow suggests that originally the Skelpstown Stream may have flowed to the east of its current course.
Clonmore with Pollrone †	The boundary is formed by the Skelpstown Stream.
Grange with Pollrone	The boundary runs eastwards from Clonmore along the centreline of the existing N24 until it turns northwards where it is formed by a field boundary (earthen bank and hedgerow).

† – Coincides with the Clonmore / Pollrone parish boundary

#### 8.4. Architectural Heritage

The 19th century St. Kieran's Church and the adjacent former Presentation Convent are located in the village of Mooncoin, approximately 275 m east of the eastern end of the route options. These structures are listed in the Co. Kilkenny Record of Protected Structures<sup>31</sup> and on the National Inventory of Architectural Heritage (NIAH)<sup>32</sup>. Approximately 305 m southwest of the route options in Clonmore, at the western end of the scheme, the gates (CHS-05) and gate lodge (CHS-04) associated with Clonmore House are also listed on the NIAH. There are no recorded historic gardens or designed landscapes impacted by any of the route options<sup>33</sup>.

#### 8.5. Roadside Memorial

A roadside memorial (CHS-27) is located on the northern side of the N24 in Clonmore along a straight stretch of road. It commemorates the death of Linda Holden of Clonmore, Mooncoin, who died as a result of a road traffic accident on 04/03/1991.

### 9. Route Option Impact Assessments

None of the route options impact on any site or structure listed on the statutory Record of Monuments and Places or the Kilkenny County Council Record of Protected Structures, nor do they impact on any site or structure listed on the non-statutory Sites and Monuments Record or the National Inventory of Architectural Heritage.

The following tables list the impacts that the route options have on identified sites of heritage value.

<sup>31</sup> <http://www.kilkennycoco.ie/eng/Services/Planning/Conservation/Kilkenny-County-Rps-2014.pdf>. Accessed 26/06/2019.

<sup>32</sup> <http://www.buildingsofireland.ie/niah/highlights.jsp?county=KK>. Accessed 26/06/2019.

<sup>33</sup> <http://www.buildingsofireland.ie/cgi-bin/viewcounty.cgi?county=10>. Accessed 26/06/2019.

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Table 9.1 Magenta Route Option – total length 2.288 km

CHS no.	RMP / NIAH no.	Townland	Class	Description	ITM E	ITM N	Type of impact
CHS-10	n/a	Clonmore	Buildings (site of)	Demolished, occupied by the realigned N24 and an access road to dwelling and lands.	648588	617887	Direct
CHS-12	n/a	Clonmore	Building (site of)	Demolished, occupied by a modern dwelling and outbuildings. Elements of the easternmost building depicted on the historic mapping may be incorporated in one of the outbuildings.	648703	617791	Direct
CHS-13	n/a	Clonmore	Buildings (site of)	Demolished, occupied by the realigned N24 Clonmore Cross junction.	648694	617765	Direct
CHS-19	n/a	Pollrone	Building and buildings (site of)	Demolished, occupied by a dwelling house and a ruined stone-built building to the east. Map regression analysis suggests that this may be the easternmost building depicted on the historic mapping.	650070	616554	Direct

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CHS no.	RMP / NLAH no.	Townland	Class	Description	ITM E	ITM N	Type of impact
CHS-27	n/a	Clonmore	Memorial	Roadside memorial on the north side of the N24, comprising a polished stone headstone on a cut limestone plinth erected in front of a rendered and painted concrete wall with painted concrete coping. It commemorates Linda Holden of Clonmore, Mooncoin, who died as a result of a road traffic accident on 04/03/1991.	648900	617586	Direct
CHS-28	n/a	Clonmore and Grange	Historic boundary	Hedgerow along local road.	649137	617472	Direct
CHS-29	n/a	Grange and Pollrone	Historic boundary	N24 and field boundary (earthen bank and hedgerow).	649960	616671	Direct

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Table 9.2 Blue Route Option – total length 1.884 km

CHS no.	RMP / NIAH no.	Townland	Class	Description	ITM E	ITM N	Type of impact
CHS-15		Clonmore	Bridge / culvert	The route is a minimum distance of approximately 5 m upstream from the upstream headwall the culvert.	649162	617310	Indirect
CHS-19		Pollrone	Building and buildings (site of)	Demolished, occupied by a dwelling house and a ruined stone-built building to the east. Map regression analysis suggests that this may be the easternmost building depicted on the historic mapping.	650070	616554	Direct
CHS-27		Clonmore	Memorial	Roadside memorial on the north side of the N24, comprising a polished stone headstone on a cut limestone plinth erected in front of a rendered and painted concrete wall with painted concrete coping. It commemorates Linda Holden of Clonmore, Mooncoin, who died as a result of a road traffic accident on 04/03/1991.	648900	617586	Direct
CHS-28		Clonmore and Grange	Historic boundary	Hedgerow along local road.	649147	617372	Direct
CHS-29		Grange and Pollrone	Historic boundary	N24 and field boundary (earthen bank and hedgerow).	649960	616671	Direct

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Table 9.3 Green Route Option – total length 1.843 km

CHS no.	RMP / NIAH no.	Townland	Class	Description	ITM E	ITM N	Type of impact
CHS-15		Clonmore	Bridge / culvert	The culvert has a concrete parapet on its upstream side, this appears to be built over a masonry headwall. The downstream side could not be inspected.	649162	617310	Direct
CHS-16		Pollrone	Buildings	A derelict single-storey stone-built building located on the north side of the existing N24. Map regression analysis suggests that this is likely to be the building depicted on the historic mapping	649199	617284	Direct
CHS-17		Pollrone	Buildings (site of)	A derelict single storey stone-built building which map regression analysis suggested was the the fourth building depicted on the historic mapping stood in field to the west of a modern dwelling. It has recently been demolished.	649201	617253	Direct
CHS-19		Pollrone	Building and buildings (site of)	Demolished, occupied by a dwelling house and a ruined stone-built building to the east. Map regression analysis suggests that this may be the easternmost building depicted on the historic mapping.	650070	616554	Direct



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CHS no.	RMP / NLAH no.	Townland	Class	Description	ITM E	ITM N	Type of impact
CHS-27		Clonmore	Memorial	Roadside memorial on the north side of the N24, comprising a polished stone headstone on a cut limestone plinth erected in front of a rendered and painted concrete wall with painted concrete coping. It commemorates Linda Holden of Clonmore, Mooncoin, who died as a result of a road traffic accident on 04/03/1991.	648900	617586	Direct
CHS-28		Clonmore and Grange	Historic boundary	Hedgerow along local road.	649161	617321	Direct
CHS-29		Grange and Pollrone	Historic boundary	N24 road centreline. The Green Route impacts on two segments of this townland boundary.	649282 649524	617207 617052	Direct
CHS-29		Grange and Pollrone	Historic boundary	N24 and field boundary (earthen bank and hedgerow).	649960	616671	Direct
CHS-30		Clonmore and Pollrone	Historic boundary	Stream.			Direct

## 10. Comparison of Route Options

This assessment of the three route options has identified and characterised their anticipated impact on identifiable elements of the historic environment i.e. the archaeological, architectural and cultural heritage.

Table 10.1 Comparison of route options

CHS no.	RMP / NIAH no.	Townland	Class	Magenta	Blue	Green
CHS-10		Clonmore	Buildings (site of)	Direct		
CHS-12		Clonmore	Building (site of)	Direct		
CHS-13		Clonmore	Buildings (site of)	Direct		
CHS-15		Clonmore	Bridge / culvert		Indirect	Direct
CHS-16		Pollrone	Buildings			Direct
CHS-17		Pollrone	Buildings (site of)			Direct
CHS-19		Pollrone	Building and buildings (site of)	Direct	Direct	Direct
CHS-27		Clonmore	Memorial	Direct	Direct	Direct
CHS-28		Clonmore and Grange	Historic boundary	Yes	Yes	Yes
CHS-29		Grange and Pollrone	Historic boundary	Yes	Yes	Yes (3 no. locations)
CHS-30		Clonmore and Pollrone	Historic boundary			Yes
Direct impacts				5	2	5
Indirect impacts				0	1	0
Impact on historic boundaries				2	2	5

### 10.1. Impacted Sites with Statutory Protection

None of the route options impact on archaeological sites which have been designated National Monuments, have been entered on the Register of Historic Monuments or are listed in the Record of Monuments and Places.

None of the route options impact on buildings or structures that are listed in the County Kilkenny Record of Protected Structures.

### 10.2. Impacted Sites Included in Non-Statutory Listings

None of the route options impact on archaeological sites listed in the Sites and Monuments Record (SMR).

None of the route options impact on buildings or structures listed in the National Inventory of Architectural Heritage (NIAH).

### 10.3. Direct Impacts

Five Direct impacts from the Magenta Route option have been identified. These impacts are on four sites of buildings depicted on the historic mapping CHS-10, CHS-12, CHS-13 and CHS-19. It is likely that a derelict stone building at CHS-19 is the upstanding remains of one of the buildings depicted on

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the historic mapping. The fifth direct impact is on a roadside memorial which commemorates the place of death of a victim of a road traffic accident in 1991 (CHS-27).

Two direct impacts from the Blue Route option have been identified. One of these impacts is on the site of buildings depicted on the historic mapping (CHS-19). It is likely that a derelict stone building at CHS-19 is the upstanding remains of one of the buildings depicted on the historic mapping. The second direct impact is on a roadside memorial which commemorates the place of death of a victim of a road traffic accident in 1991 (CHS-27).

Five Direct impacts from the Green Route option have been identified. These impacts are on the culvert which carried a stream under the existing N24 (CHS-15). A masonry building depicted on the historic mapping (CHS-16) will also be directly impacted. Two locations of groups of buildings depicted on the historic mapping will be impacted (CHS-17 and CHS-19). It is likely that a derelict stone building at CHS-19 is the upstanding remains of one of the buildings depicted on the historic mapping. The fifth direct impact is on a roadside memorial which commemorates the place of death of a victim of a road traffic accident in 1991 (CHS-27).

#### 10.4. Direct Impacts on Historic Boundaries

All route options impact on a section of the historic boundary between the Civil Parishes of Clonmore and Pollrone (CHS-28 and CHS-30).

All the route options impact on a section of the historic boundary between the townlands of Grange and Pollrone (CHS-29).

The Magenta Route option also impacts on a section of the historic boundary (CHS-28) between the townlands of Clonmore and Grange.

The Blue Route option also impacts on a section of the historic boundary (CHS-28) between the townlands of Clonmore and Grange.

The Green Route option also impacts on the historic boundary (CHS-30) between Clonmore and Pollrone as well as two additional sections of the Grange and Pollrone townland boundary (CHS-29) where it runs along the existing N24.

#### 10.5. Indirect Impacts

The southern extents of the Blue Route option comes within 5 m of the headwall of the culvert through which the Skelptown Stream flows under the existing N24 (CHS-15). Cartographic evidence indicates that a culvert has been located here since at least the late-1830s.

No other indirect impacts have been identified.

## 11. Conclusion

Comparison of the three route options indicates that the Green Route option is the least preferred option, this is for the following reasons:

1. it has the greatest number of impacts on identified heritage sites

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2. one of the impacts (and possibly a second) is on an upstanding derelict masonry building which map regression analysis suggests is a building depicted on the historic mapping (1st edition OS 6-inch survey) of the area.
3. it has the greatest impact on historic boundaries, impacting three of them at five separate locations.

A count of direct impacts would suggest that the Blue Route should be assessed as having a lesser impact than the Magenta Route (two direct impacts from the Blue Route, versus five direct impacts from the Magenta Route), however, both routes have the same impact on CHS-19 and CHS-27 and the additional impacts from the Magenta Route are on the sites of buildings depicted on the historic mapping which have been demolished.

Table 11.1 Ranking of route options based on their impacts on the historic environment

Least preferred	Green
Most preferred	Magenta and Blue

## 12. Recommendations

Once the preferred route is identified further work will have to be carried out to refine the assessment of its impact on the historic environment and so that appropriate mitigation measures can be designed for individual sites.

1. A more detailed assessment of the potential impacts on the archaeological, architectural and cultural heritage will be carried out once a detailed scheme design is available and specific mitigation proposals will be developed in accordance with the relevant TII Guidelines.
2. Impacts on identified archaeological, architectural and cultural heritage sites should be minimised. If impacts cannot be avoided a strategy for mitigation of the impacts should be drawn up in accordance with TII standards and guidelines.
3. Once the preferred route has been identified a geophysical survey should be commissioned to identify locations containing sub-surface archaeological remains.
4. Subject to planning approval, pre-construction archaeological assessment of land acquired for road construction should be carried out in accordance with TII archaeological standards.

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**Figures**



Fig. 1 Scheme location.

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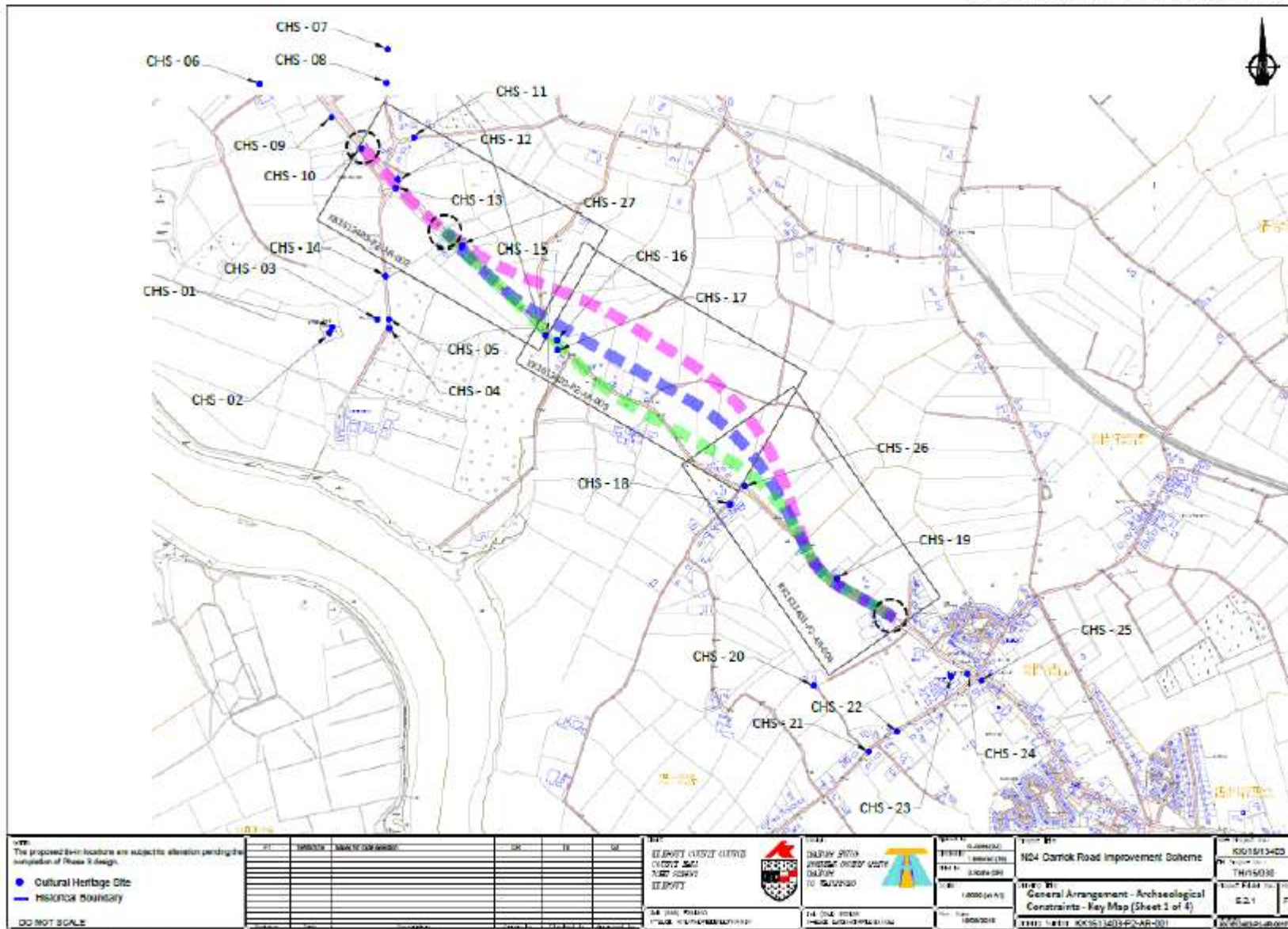


Fig. 2 Extent of route options. Locations of heritage sites identified in this and the previous assessment indicated.

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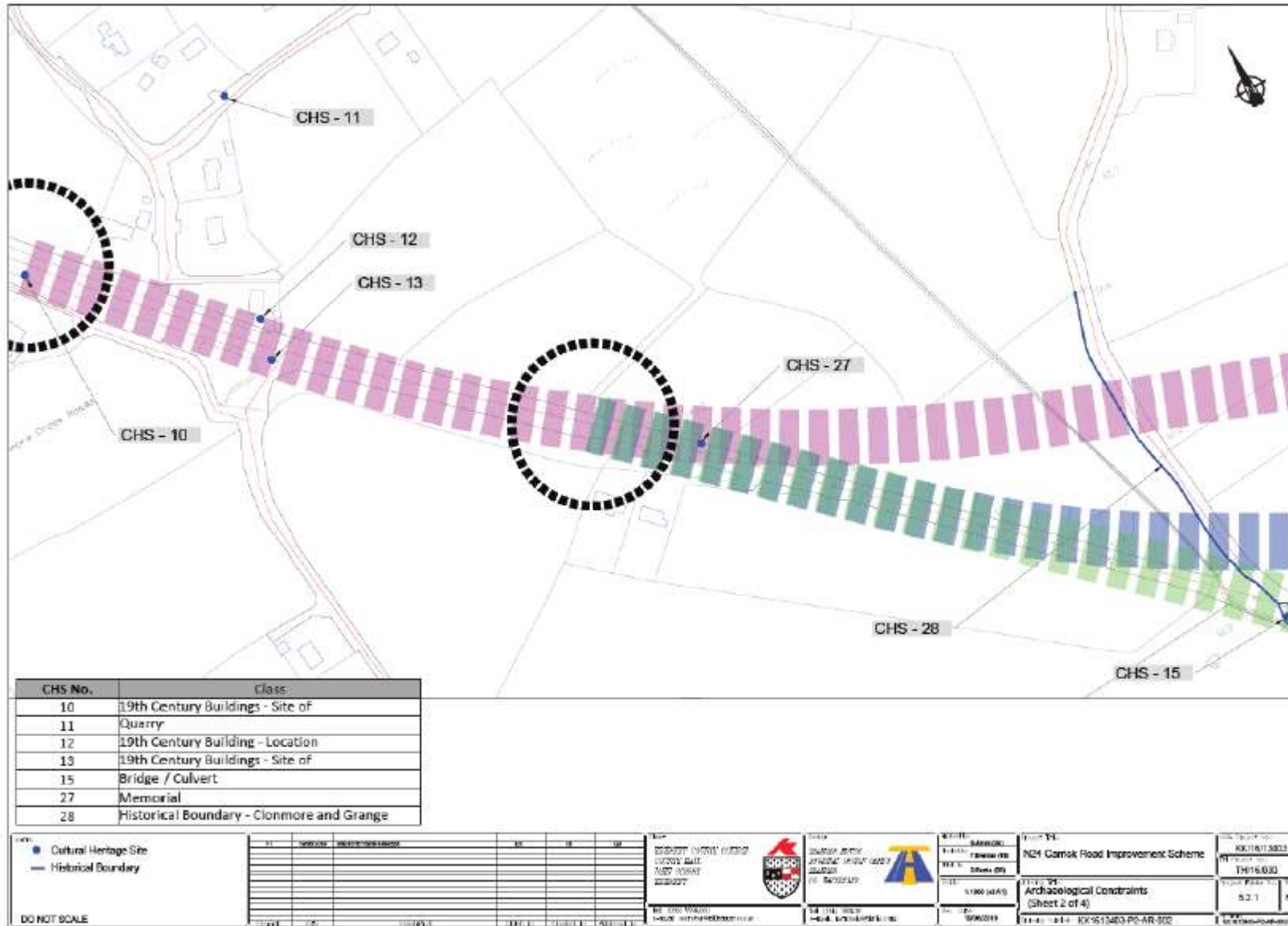


Fig. 3 Route options – western end of project. Locations of heritage sites identified in this and the previous assessment indicated.

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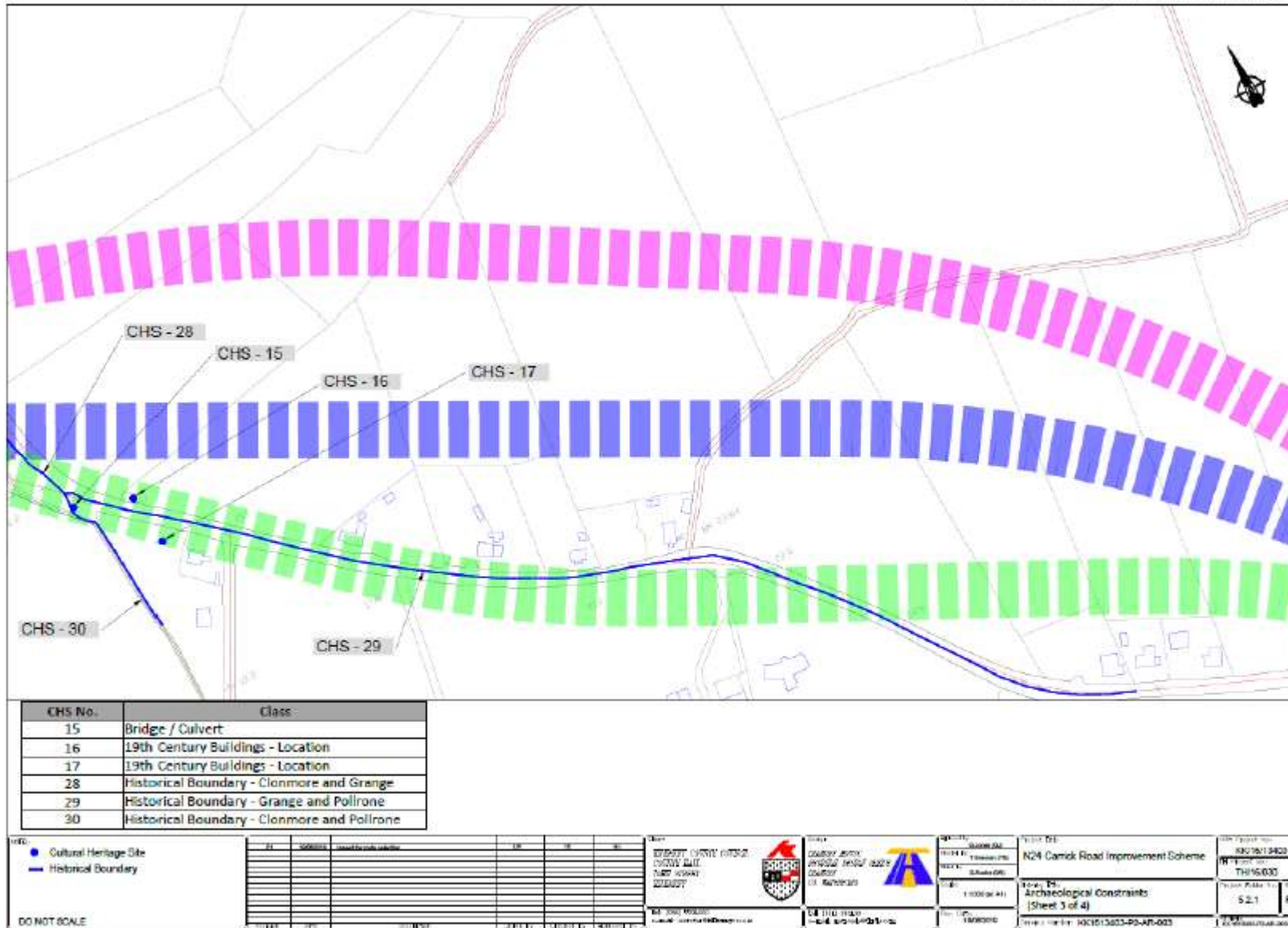


Fig. 4 Route options – middle portion of project. Locations of heritage sites identified in this and the previous assessment indicated.



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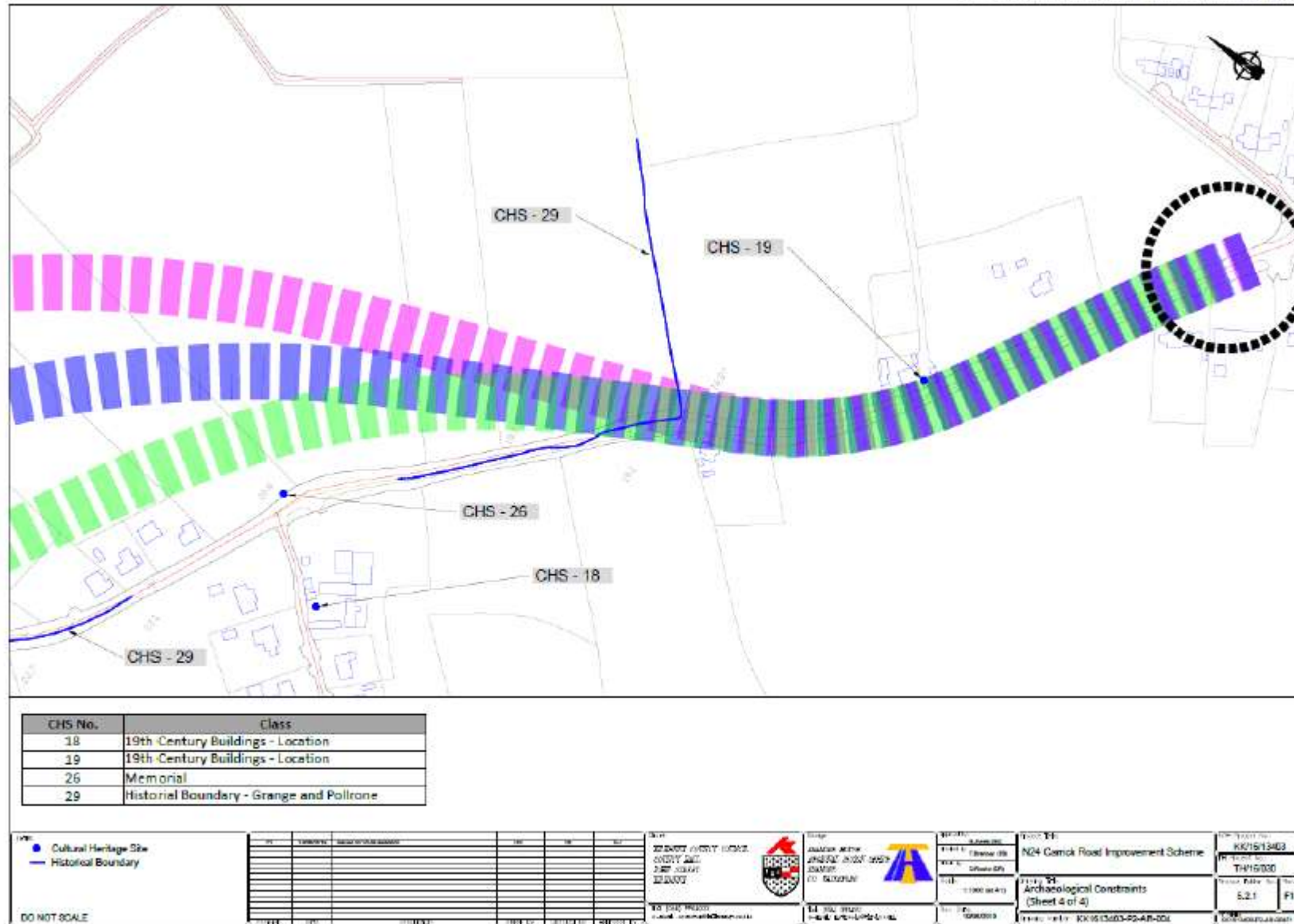


Fig. 5 Route options – eastern end of project. Locations of heritage sites identified in this and the previous assessment indicated.

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**Plates**



Pl. 1 Clonmore, Looking east along the Green and Blue Route options.



Pl. 2 Lands at Clonmore, looking northeast, along the Magenta Route option.



Pl. 3 Lands at Clonmore, looking northwest, along the Green, Blue and Magenta Route options.



Pl. 4 Lands at Clonmore, looking southwest, along the Magenta Route option.



Pl. 5 The Skelstown Stream in Clonmore, taken from CHS-15 looking north, where it is crossed by the Blue Route. CHS-26 is visible to the right.



Pl. 6 Lands at Grange, looking east along the Magenta Route.

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Pl. 7 Lands at Grange, looking northeast along the Magenta Route.



Pl. 8 Lands at Grange, looking southeast along the Blue Route.



Pl. 9 Lands at Grange, looking north, across the Magenta, Blue and Green Route options.



Pl. 10 Lands at Grange, looking northwest along the Magenta, Blue and Green route options.



Pl. 11 CHS-12 from south.



Pl. 12 CHS-16 from east.

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Pl. 13 CHS-17 from north.



Pl. 14 CHS-19 from south.



Pl. 15 CHS-27 from south.



Pl. 16 CHS-28 from east.

*N24 Carrick Road route options – historic environment impact assessment report***Catalogue of Cultural Heritage Sites (CHS)**

Lists all sites that have been assigned a CHS number during the course of the preliminary archaeological assessment and route option impact assessment

CHS no.	RMP / NIAH no.	Townland	Class	1st edition 6 inch map (1839)	1st edition 25 inch map (1901)	Present condition <sup>24</sup>	ITM E	ITM N	Route Option Impacts		
									Magenta	Blue	Green
CHS-01	KK042-006001-	Clonmore	Church	Labelled 'Clonmore Church (in ruins)'	Labelled 'Clonmore Church (in ruins)'	Upstanding.	648496	617337	None	None	None
CHS-02	KK042-006002-	Clonmore	Graveyard	Labelled 'Grave Yard'	Labelled 'Grave Yard'	Upstanding.	648488	617319	None	None	None
CHS-03	KK042-007----	Clonmore	Ritual site - holy well	Labelled 'Toberaghcanice'	Labelled 'Toberaghcanice', drain depicted flowing southwest from well past graveyard.	Pasture field.	648637	617361	None	None	None
CHS-04	NIAH 12404221	Clonmore	Gate lodge	A long rectangular building is depicted on the northside of a T-junction between the Clonmore Cross to Clonmore road and a road extending eastwards.	The present gate lodge building is depicted on the east side of the driveway of Clonmore House.	Upstanding.	648673	617333	None	None	None
CHS-05	NIAH 12404222	Clonmore	Gates / railings / walls	No gateway is depicted.	The location of the gateway is indicated, though the gateway itself is not depicted.	Upstanding.	648672	617361	None	None	None
CHS-06	n/a	Clonmore	Settlement	Nucleated settlement labelled 'Clonmore'	Nucleated settlement labelled 'Riverquarter'	Riverquarter village.	648269	618087	None	None	None
CHS-07	n/a	Clonmore	Settlement	Nucleated settlement labelled 'Skelptown'	Nucleated settlement labelled 'Skelptown'	Skelptown village.	648669	618196	None	None	None
CHS-08	n/a	Clonmore	Building & limekiln	A single rectangular building is depicted in an triangular enclosure, a limekiln is depicted at the southwest corner of the building	The enclosure is depicted at this location, but no structures are shown.	Occupied by the Skelptown Access Road	648666	618091	None	None	None

<sup>24</sup> Ascertained from examination of OSI aerial photographs, satellite imagery (i.e. Digital Globe, Bing and Google Maps), Google Street View and inspection from the public road

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CHS no.	RMP / NIAH no.	Townland	Class	1st edition 6 inch map (1839)	1st edition 25 inch map (1901)	Present condition <sup>34</sup>	ITM E	ITM N	Route Option Impacts:		
									Magenta	Blue	Green
CHS-09	n/a	Clonmore	Building	A single rectangular building within a sub-rectangular enclosure on the south side of the Mooncoin to Piltown road (N24). The building does not face directly onto the road.	A small rectangular field is depicted at this location, but no structures are shown.	Agricultural land.	648494	617984	None	None	None
CHS-10	n/a	Clonmore	Buildings	A cluster of three or four small buildings on the south side of the Mooncoin to Piltown road (N24). The buildings face directly onto the road.	The two easternmost buildings have been demolished and replaced by two buildings set back from the roadside.	Demolished, occupied by the realigned N24 and an access road to dwelling and lands.	648588	617887	Direct	None	None
CHS-11	n/a	Clonmore	Quarry	Quarry (rock) depicted extending through two fields along north side of the roadway leading to Grange village.	Depicted, labelled 'Quarry (disused)'.	Occupied by gardens associated with dwelling houses.	648750	617921	None	None	None
CHS-12	n/a	Clonmore	Building	A single rectangular building within a triangular enclosure on the north side of the Mooncoin to Piltown road (N24), immediately east of Clonmore Cross. The building does not face directly onto the road.	A second smaller building has been constructed at the east end of the plot, its gable faces onto the Mooncoin to Piltown road.	Demolished, occupied by a modern dwelling and outbuildings. Elements of the easternmost building depicted on the historic mapping may be incorporated in one of the outbuildings.	648703	617791	Direct	None	None

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CHS no.	RMP / NIAH no.	Townland	Class	1st edition 6 inch map (1839)	1st edition 25 inch map (1901)	Present condition <sup>24</sup>	ITM E	ITM N	Route Option Impacts:		
									Magenta	Blue	Green
CHS-13	n/a	Clonmore	Buildings	Two buildings within an elongated sub-rectangular plot on the south side of the Mooncoin to Piltown road (N24), the plot extends southwest to the Clonmore Cross to Clonmore road. The larger of the buildings is rectangular and faces directly onto the Mooncoin to Piltown road. The smaller building has a square plan and is set back from the road.	The linear plot has been combined with a triangular field to the west to create a larger triangular plot. Three buildings (one of which may incorporate the rectangular building depicted on the 6" survey) are grouped around a courtyard open to the east and accessed off the Mooncoin to Piltown road.	Demolished, occupied by the realigned N24 Clonmore Cross junction.	648694	617765	Direct	None	None
CHS-14	n/a	Clonmore	Building	A single rectangular building is depicted on the west side of the road leading to Clonmore Church and Grave Yard.	No building depicted at this location.	Agricultural land.	648663	617495	None	None	None
CHS-15	n/a	Clonmore	Bridge / culvert	The Mooncoin to Piltown road (N24) is depicted crossing an unnamed stream which rises in a spring just west of Skelptown village. The natural course of the stream appears to have been altered so that the road crosses it at right angles.	The map shows that the course of the stream has been realigned for approx. 860 m upstream of the bridge / culvert. It is not clear if any alteration was made to the bridge / culvert.	The N24 crosses the stream at the same location. The culvert has a concrete parapet on its upstream side, this appears to be built over a masonry headwall. The downstream side was overgrown and could not be inspected.	649162	617310	None	Indirect	Direct

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CHS no.	RMP / NIAH no.	Townland	Class	1st edition 6 inch map (1839)	1st edition 25 inch map (1901)	Present condition <sup>H</sup>	ITM E	ITM N	Route Option Impacts:		
									Magenta	Blue	Green
CHS-16	n/a	Pollrone	Buildings	A cluster of three small buildings on the north side of the Mooncoin to Piltown road (N24). The buildings face directly onto the road.	The two easternmost buildings have been demolished.	A derelict single-storey stone-built building located on the north side of the existing N24. Map regression analysis suggests that this is likely to be the building depicted on the historic mapping	649199	617284	None	None	Direct
CHS-17	n/a	Pollrone	Buildings	A cluster of four buildings on the south side of the Mooncoin to Piltown road (N24) in a triangular enclosure. One building faces directly onto the road, parallel to it. Two buildings extend perpendicular from the roadside. A fourth building is located at the back of the plot.	The two buildings perpendicular to the Mooncoin to Piltown road (N24) have been combined.	A derelict single storey stone-built building which map regression analysis suggested was the fourth building depicted on the historic mapping stood in field to the west of a modern dwelling. It has recently been demolished. A tubular metal gate indicates the former access on the road side.	649201	617253	None	None	Direct
CHS-18	n/a	Pollrone	Buildings	Two buildings located on the east side of a side road extending southwest from the Mooncoin to Piltown road (N24). One of them is L-shaped, they are arranged around a courtyard open to the northwest (i.e. facing the road).	A building has been added to the rear (southeast) of the buildings grouped around the courtyard.	Occupied by a farmhouse and outbuildings grouped around a courtyard.	649737	616784	None	None	None



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CHS no.	RMP / NIAH no.	Townland	Class	1st edition 6 inch map (1839)	1st edition 25 inch map (1901)	Present condition <sup>34</sup>	ITM E	ITM N	Route Option Impacts:		
									Magenta	Blue	Green
CHS-19	n/a	Pollrone	Buildings	Three buildings are located along the north side of the Mooncoin to Piltown road (N24). One rectangular building faces directly onto the road, a T-shaped building extends back from the road and forms a courtyard with the other building. The third building is located across a laneway east of the road-side building and is oriented perpendicular to the road.	The T-shaped building has been altered so that it is a rectangular building on the north side of the courtyard.	Demolished, occupied by a dwelling house and a ruined stone-built building to the east. Map regression analysis suggests that this may be the easternmost building depicted on the historic mapping.	650070	616554	Direct	Direct	Direct
CHS-20	n/a	Pollrone	Buildings	A cluster of five buildings approx. 325 m southwest of the Mooncoin to Piltown road (N24) located at the end of a laneway. The buildings are grouped around a courtyard	Seven individual buildings are depicted. Some of these may have replaced buildings depicted on the earlier survey.	Occupied by a modern dwelling and farmyard.	649998	616220	None	None	None
CHS-21	n/a	Pollrone	Building	A single rectangular building located at the southern corner of a triangular field, faces onto the Mooncoin to Pollrone road.	No building depicted at this location.	Occupied by a modern dwelling.	650170	616017	None	None	None
CHS-22	n/a	Pollrone	Building	A single small rectangular building located in a small triangular plot. The building projects into the Mooncoin to Pollrone road.	A second small building has been added to the west of the earlier building.	Occupied by a modern dwelling.	650256	616078	None	None	None
CHS-23	n/a	Pollrone	Building	A single L-shaped building on the south side of and facing onto the Mooncoin to Piltown road (N24) just west of Mooncoin village. The building is located at the north end of a triangular plot.	No building depicted at this location. The location is part of the lands associated with St Eieran's church.	Occupied by the church carpark.	650425	616249	None	None	None

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CHS no.	RMP / NIAH no.	Townland	Class	1st edition 6 inch map (1839)	1st edition 25 inch map (1901)	Present condition <sup>34</sup>	ITM E	ITM N	Route Option Impacts:		
									Magenta	Blue	Green
CHS-24	n/a	Pollrone	Buildings	An F-shaped building on the north side of and facing onto the Mooncoin to Piltown road (N24) just west of Mooncoin village. A small square building is depicted directly to the north. The buildings are located within a trapezoidal plot.	A third building, L-shaped plan, has been built facing onto the Mooncoin to Piltown road (N24).	Occupied by two dwellings.	650477	616257	None	None	None
CHS-25	n/a	Mooncoin	Settlement	Nucleated settlement labelled 'Mooncoin'.	Nucleated settlement labelled 'Mooncoin'.	Mooncoin village	650521	616236	None	None	None
CHS-26	n/a	Grange	Memorial	Not depicted	Not depicted	Roadside memorial on the north side of the N24 close to a junction with a local road. Comprises a low mortared random rubble stone wall into which a limestone plaque has been inserted. To the front a rectangular gravelled area is retained by a stone surround. It commemorates Mark Coughlan who died on 17/06/2000.	649783	616841	None	None	None

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CHS no.	RMP / NIAH no.	Townland	Class	1st edition 6 inch map (1839)	1st edition 25 inch map (1901)	Present condition <sup>34</sup>	ITM E	ITM N	Route Option Impacts:		
									Magenta	Blue	Green
CHS-27	n/a	Clonmore	Memorial	Not depicted	Not depicted	Roadside memorial on the north side of the N24. Comprises a polished stone headstone on a cut limestone plinth erected in front of a rendered and painted concrete wall with painted concrete coping. It commemorates Linda Holden of Clonmore, Mooncoin, who died as a result of a road traffic accident on 04/03/1991.	648900	617586	Direct	Direct	Direct
CHS-28	n/a	Clonmore and Grange	Historic boundary	Boundary along the west side of a local road. Depicted as a boundary between the Civil Parishes of Pollrone and Clonmore and the townlands of Grange and Clonmore.	No change to location or extents. Classified as the 'Union & R.D. Bdy' between Carrick-on-Suir and Waterford Poor Law Unions and Carrick-on-Suir No.3 and Waterford No. 2 Rural Districts.	Hedgerow along local road.	n/a	n/a	Yes	Yes	Yes
CHS-29	n/a	Grange and Pollrone	Historic boundary	Boundary depicted as running along centre of Mooncoin to Piltown road (N24), west of Mooncoin it turns north and runs along a field boundary. Depicted as a boundary between the Civil Parishes of Pollrone and Clonmore and the townlands of Grange and Pollrone.	No change to location or extents.	N24 road centreline and field boundary (earthen bank and hedgerow).	n/a	n/a	Yes	Yes	Yes (3 no. locations)

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CHS no.	RMP / NLAH no.	Townland	Class	1st edition 6 inch map (1839)	1st edition 25 inch map (1901)	Present condition <sup>24</sup>	ITM E	ITM N	Route Option Impacts:		
									Magenta	Blue	Green
CHS-30	n/a	Clonmore and Pollrone	Historic boundary	Stream. Depicted as a boundary between the Civil Parishes of Pollrone and Clonmore and the townlands of Pollrone and Clonmore.	No change to location or extents. Classified as the 'Union & R.D. Bdy' between Carrick-on-Suir and Waterford Poor Law Unions and Carrick-on-Suir No.3 and Waterford No. 2 Rural Districts.	Stream (Skelpstown Stream).	n/a	n/a	None	None	Yes

## **Appendix 6 – Ecology & Biodiversity**

Section A6.1: Ecofact Ecological Assessment Report\* – Route Corridor Options

\*Ecofact Ecological Assessment Report is currently “interim”, based on route corridors outlined within the report. A final ecological assessment report will be issued and based on final design of scheme.

## N24 Carrick Road Improvement Scheme, Co. Kilkenny Route Options

### Ecological Assessment Report



24<sup>th</sup> September 2019  
INTERIM REPORT FOR INFORMATION PURPOSES ONLY



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## EXECUTIVE SUMMARY

The current document provides an ecological assessment of options under consideration for the N24 Carrick Road Improvement Scheme. This report assesses the potential impacts of options being considered, on flora and fauna. All three proposed scheme options are assessed in the current report although it is noted that only one of these options will be constructed. This is an indicative interim report for the purpose of route selection only. Ecofact visited the proposed development site during December 2017. The current report will be finalised for the selected route at preliminary design stage.

The proposed works do not lie within any SAC or SPA. The closest SAC is the Lower River Suir SAC; a full assessment of this designated site is completed in a separate 'Screening for Appropriate Assessment' Report. No significant impacts on any Natura 2000 sites are considered likely for any of the route options being considered; based on information available to date. No NHAs are located within 5km of the proposed development. The closest pNHA to the proposed realignment is the Lower River Suir (Cooifinn, Portlawn) pNHA, ca.1km south-west, followed by the Fiddown Island pNHA, located ca. 1.7km north-west. No pathways for impacts on these pNHAs are identified due to their geological separation from the proposed site.

In general, the habitats on the proposed development site are of Local importance at most and are habitats that are widespread and common across Ireland. A total of 11 habitats were recorded in the study area during the current survey with evaluations ranging from 'No ecological importance' to 'Local Importance, Higher Value'. No Annex I Habitats, rare plants or protected plant species or habitats occur within the proposed development site.

No protected Fauna were recorded during the current survey of the proposed development site. It is considered likely that Badgers, Stoat and Otter occur within the wider study area although no evidence of these species was found during the current survey. Bats are likely to be present in the study area, but no known roosts are affected. Some of the mature hedgerows within the area may be important for bat commuting and foraging.

Direct loss of habitat is inevitable for all three options, however most habitats that will be affected are evaluated as being of 'Local Importance'. Corridor 2 is considered to have the least implications for habitat loss, as it mostly follows the existing N24 layout. However, any of the three routes can be built while avoiding significant ecological impacts.

No significant impacts on mammals are considered likely to arise as a result of the proposed development. However, NRA guidelines for bats, watercourses, biosecurity, and mammals will need to be followed. Pre-construction surveys for Bats and Mammals will also be undertaken at a later date. The Skelstown 16 Stream is not considered to be an important aquatic habitat and is unlikely to contain salmonids, lampreys or crayfish due to its small size.





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INTERIM REPORT



## 1. INTRODUCTION

The proposed road improvement scheme for the N24 Carrick Road involves three broad minor scheme corridor options with varying lengths of 1.9km to 2.3km. All three options will be assessed in the current report although it is noted that only one of these options will be constructed. The plans for the scheme are presented in Appendix 1.

This report assesses the potential impacts of the proposed N24 Carrick Road Improvement Scheme on terrestrial and aquatic flora and fauna (ecology). The aim of the study is to identify features of ecological interest along the proposed alignments that may present constraints to development or where special mitigation is necessary. An evaluation is made of the scientific or conservation value of the sites identified and the potential for adverse impacts affecting designated sites following the implementation of appropriate mitigation at design stage.

The proposed N24 Carrick Road Improvement Scheme does not lie within any SAC or SPA. However, the Lower River Suir SAC is located approximately 423m south-west of the development, so there are pathways for potential effects. A standalone Screening for Appropriate Assessment Report has been prepared.

This assessment has been prepared in light of current guidance including 'Advice Notes on Current Practice in the preparation of Environmental Impact Statements' (EPA, 2003), 'Guidelines on the Information to be contained in Environmental Impact Statements' (EPA, 2002) along with the 'Guidelines for Ecological Impact Assessment' (Institute of Ecology and Environmental Management, 2006) and NRA 'Guidelines for Assessment of Ecological Impacts of National Road Schemes' (2009).

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Figure 1 Location of N24 Carrick Road Improvement Scheme showing Lower River Suir SAC (002137).



## 2. METHODOLOGY

### 2.1 Guidelines and legislative context

The current assessment has been prepared taking account of the Environmental Protection Agency's (EPA) 'Guidelines on the Information to be contained in Environmental Impact Statements' (EPA, 2002) and 'Advice Notes on Current Practice (in the Preparation of Environmental Impact Statements)' (EPA, 2003) and also the 'Guidelines for Ecological Impact Assessment' (Institute of Ecology and Environmental Management, 2006). The Heritage Council publication 'Best Practice Guidance for Habitat Survey & Mapping' (Smith et al., 2011) was also referenced for habitat mapping.

### 2.2 Desk study

A desktop study was carried out to identify features of ecological importance within the study area and surrounding region. The ecological assessment included designated and sensitive areas in the vicinity of the study area, to enable sufficient assessment to identify and quantify any significant impacts on the habitats, flora and fauna likely to arise from the proposed development and operation of the road improvement scheme.

Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Proposed Natural Heritage Areas (pNHAs) in the vicinity of the proposed development site were identified. This information was collated by accessing the NPWS website.

The online database hosted by the Irish National Biodiversity Data Centre (NBDC) ([www.biodiversityireland.ie](http://www.biodiversityireland.ie)) was also utilised to assess the importance of the study area for mammals and bats. Other sources accessed to gather information on bats in the study area included The Bat Conservation Trust's report 'Distribution Atlas of Bats in Britain and Ireland 1980-1999' (Richardson, 2000). The 'Irish Red Data Book 2: Vertebrates - Threatened Mammals, Birds, Amphibians and Fish in Ireland' (White 1993) and the updated 'Irish Red List No. 3: Terrestrial Mammals' (Marnell et al. 2009) were also reviewed.

### 2.3 Field Survey

The proposed development site was visited during December 2017, outside of the growing season. A walkover habitat survey was undertaken during daylight hours. The habitats present in the study area were categorised and photographed and particular attention was paid to the primary habitats and land take to be directly affected by the proposed development, with regard to 'Best Practice Guidance for Habitat Surveying and Mapping' (Smith et al., 2011). Habitat mapping was aided by aerial photography and habitats were assessed and categorised as per 'A Guide to Habitats in Ireland' by J.A. Fossitt (2000). The length of the scheme options and environs were also inspected for evidence of ecological features of high conservation concern such as those flora and fauna that occur in the closest Natura 2000 sites.

### 2.4 Evaluation

The evaluation of impact significance is a combined function of the value of the affected feature (its ecological importance), the type of impact and the magnitude of the impact. It is therefore necessary to identify the value of ecological features within the study area in order to evaluate the significance and magnitude of possible impacts. Ecological features are assessed on a scale ranging from international-national-county-local. The local scale is approximately equivalent to one 10 km square



but can be operationally defined to reflect the character of the area of interest. This scheme, taken from NRA (2009) is shown in Appendix 3. The Criteria for assessing impact magnitude is also included in Appendix 3.

### 3. DESCRIPTION OF PROJECT CHARACTERISTICS

For the N24 Carrick Road Improvement Scheme, three broad minor scheme corridor options have been developed. The length of the corridor options vary from 1.9km to 2.3km. Only one of the three options in the proposal will be constructed. One new drainage outfall to an existing watercourse is anticipated, and will be required on the western end of the scheme for all route options. It is also anticipated that realignment of this said watercourse will be required. An existing piped road drainage system and associated outfall shall be used on the eastern side. Land-take and hedgerow removal will be required for all three corridor options to varying degrees. A new road drainage system discharging to the outfall locations mentioned above will be required along all of the corridor options. It is assumed that the final drainage designs will include attenuation within filter drains or separate attenuation ponds / grassed open ditches in advance of discharge to waters. All three scheme corridor options are illustrated in Figure 2 along with the nearest Special Area of Conservation: Lower River Suir SAC (002137). Project specific preliminary design drawings and details of the proposed scheme cross-section options are indicated in drawings in Appendix 1.

### 4. RECEIVING ENVIRONMENT

#### 4.1 Designated Areas

##### 4.1.1 Natura 2000 Sites

The proposed works do not lie within any SAC or SPA. The closest Special Area of Conservation is the Lower River Suir SAC (Site Code: 002137), located ca. 423m south-west of the development. This Natura 2000 site will be discussed in the current report however it is noted that a full assessment of this designated site is completed in a Screening for Appropriate Assessment Report prepared by Ecofact. SACs and SPAs within 15km of the proposed development is illustrated in Figure 2 below.

##### 4.1.2 Natural Heritage Areas

Natural Heritage Areas (NHAs) are sites of national ecological importance in the Republic of Ireland. NHAs and pNHAs within 5km of the proposed development are illustrated in Figure 3. No NHAs are located within 5km of the proposed development.

##### 4.1.3 Other

Proposed Natural Heritage Areas are also sites of national ecological importance in the Republic of Ireland. NHAs and pNHAs within 5km of the proposed development are illustrated in Figure 3. The closest pNHA to the proposed realignment is the Lower River Suir (Cooltrin, Portlaoise) pNHA (Site Code: 000399), ca. 1km south-west, followed by the Fiddown Island pNHA (Site Code: 000402), located ca. 1.7km north-west.

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Figure 2 Natura 2000 Sites located within 15km of the proposed N24 Carrick Road Improvement Scheme.

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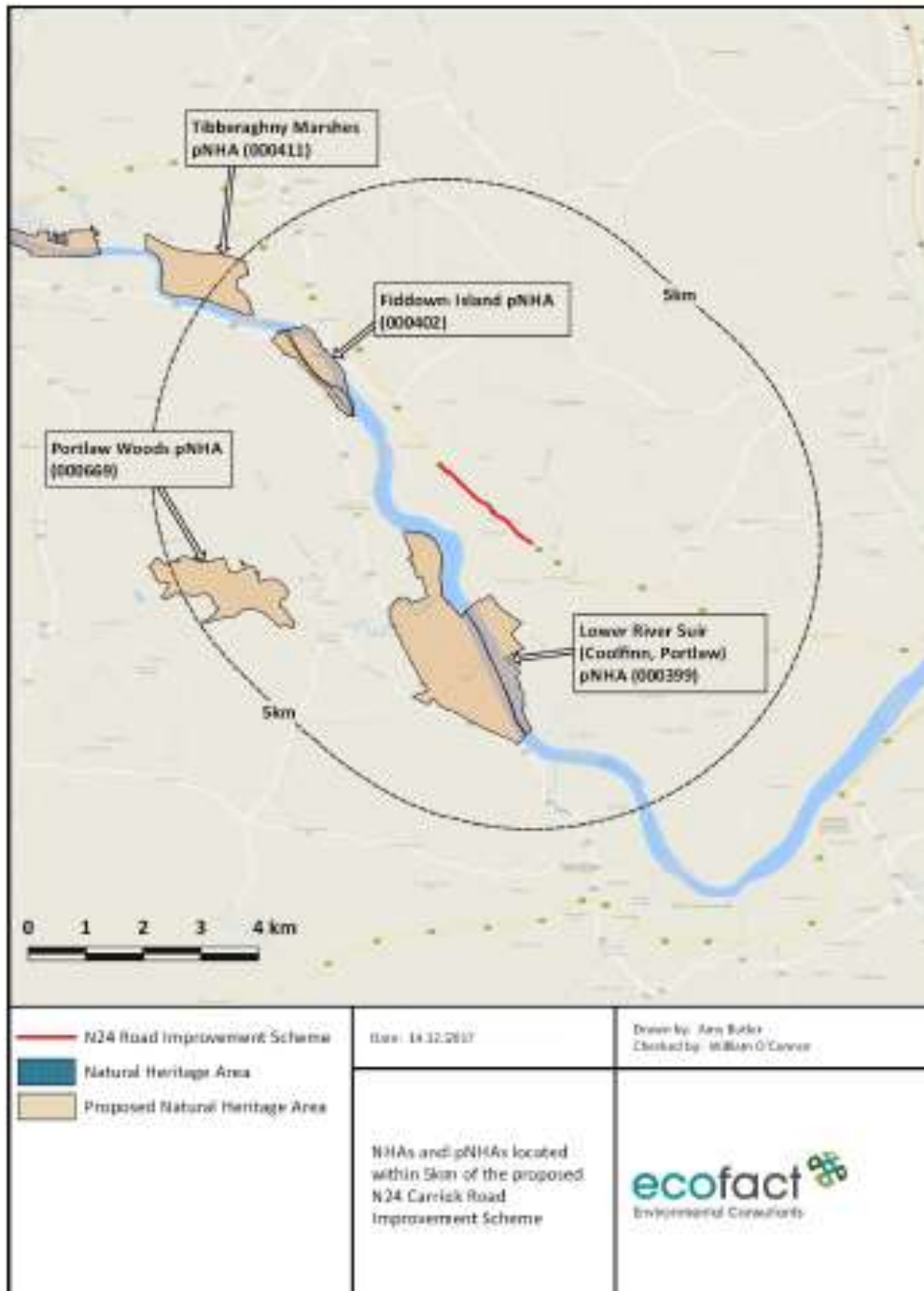


Figure 3 NHAs and pNHAs located within 5km of the proposed N24 Carrick Road Improvement Scheme.





## 4.2 Flora

In general the habitats on the proposed development site are of Local Importance and are habitats that are widespread and common across Ireland. A total of 11 habitats were recorded on the proposed development site: Arable Crops (BC1), Wet Grassland (GS4), Amenity Grassland (Improved) (GA2), Improved Agricultural Grassland (GA1), Buildings and Artificial Surfaces (BL3), Hedgerows (WL1), Mixed Broadleaved / Conifer Woodland (WD2), Horticultural Land (BC2), Treelines (WL2), Scrub (WS1), Eroding / upland Rivers (FW1). It is noted again that the walkover habitat survey was undertaken during the winter months outside of the growing season. No records of Fossitt Wetlands are located within the study area. No Annex I Habitats occur within the proposed development site. No rare plants, protected species or protected habitats occur on the proposed development site. Habitats present along the proposed N24 Carrick Road Improvement Scheme study area are illustrated below in Figures 4a and 4b, for the northern and southern sections of the scheme respectively. The different habitat types (as classified according to Fossitt, 2000) recorded from within the proposed development area are listed in Table 1 and described individually below.

Table 1 List of the habitat types recorded from the proposed site along the N24 Carrick Road Improvement Scheme (according to Fossitt, 2000).

Habitat name	Habitat Code	Ecological Importance
Arable Crops	BC1	Local Importance
Wet Grassland	GS4	Local Importance
Amenity Grassland	GA2	Local Importance
Improved Agricultural Grassland	GA1	Local Importance
Buildings and Artificial Surfaces	BL3	No Ecological Importance
Hedgerows	WL1	Local Importance, Higher Value
Mixed Broadleaved / Conifer Woodland	WD2	Local Importance, Higher Value
Horticultural Land	BC2	Local Importance
Treelines	WL2	Local Importance, Higher Value
Scrub	WS1	Local Importance
Eroding / Upland River	FW1	Local Importance

### 4.2.1 Arable Crops (BC1)

The Arable Crops habitat type is found mainly to the south of the scheme north-west of Mooncoin town, with one section located to the north of scheme on the left hand side. This habitat type encompasses agricultural land that is cultivated and managed for the production of arable crops, including cereals (wheat, barley, oats, maize) and root, leaf, energy or fibre crops such as beets, turnips, rape and flax. Common species that may be abundant in this habitat type include: Common Poppy (*Papaver rhoeas*), Bladder Campion (*Silene vulgaris*), Common Corn Marigold (*Chrysanthemum segetum*) and knotgrasses (*Polygonum* spp.) (Fossitt, 2000).

Evaluation: This habitat is evaluated as being of 'Local Importance'.

### 4.2.2 Wet Grassland (GS4)

Wet Grassland occurs in the northern section of the scheme mostly to the right hand side, with one small section located on the left hand side just north of the scheme.

Wet grassland typically occurs on wet or waterlogged mineral or organic soils that are poorly drained, and can be found on sloping or flat ground in upland and lowland areas. In some cases this habitat type can be influenced by seasonal or periodic flooding such as in the River Shannon Callows or the



wet grasslands of turlough basins. This habitat type also consists of areas of poorly-drained farmland that has not recently been improved. The most common species that can be found in this type of habitat include rushes (*Juncus effusus*, *J. acutiflorus*, *J. articulatus*, *J. inflexus*), Yorkshire-fog (*Hoicus lanatus*), Marsh Foxtail (*Alopecurus geniculatus*) and small sedges (*Carex flacca*, *C. hirta*, *C. ovalis*) (Fossitt, 2000).

Evaluation: This species-poor grassland habitat has been evaluated as being of 'Local Importance'.

#### 4.2.3 Amenity Grassland (Improved) (GA2)

Amenity Grassland in the study area occurs mostly to the southern and middle sections of the scheme, in the form of recreational or landscaped grasslands.

This habitat type is typically species-poor or improved, and is managed for purposes other than grass production. It encompasses amenity, recreational or landscaped grasslands, but excludes farmland. Broadleaved herbs such as Daisy (*Bellis perennis*), Dandelion (*Taraxacum* spp.), clovers (*Trifolium* spp.) and plantains (*Plantago* spp.) are common. Amenity grassland is typically associated with lawns and other managed grassland areas in gardens, parks, grounds of various buildings or institutions, golf course fairways, grassy sports fields and race courses.

Evaluation: This habitat is evaluated as being of 'Local Importance'.

#### 4.2.4 Improved Agricultural Grassland (GA1)

Improved Agricultural Grassland is the most abundant habitat type on the proposed development site.

Improved Agricultural Grassland (GA1) consists of heavily modified or intensively managed grassland typically used for grazing and / or silage making. This habitat type is generally species-poor with abundant Rye-grass (*Lolium* sp.) often associated with White Clover (*Trifolium repens*). Improved Agricultural Grassland comprises of monoculture grasslands and rye-grass leys which typically form part of an arable rotation. Common species which can be found in this type of habitat include Meadow grasses (*Poa* spp.), Dandelion (*Taraxacum* spp.), thistles (*Cirsium arvense*, *C. vulgare*), and docks (*Rumex* spp.) (Fossitt, 2000).

Evaluation: This species-poor grassland habitat has been evaluated as being of 'Local Importance'.

#### 4.2.5 Buildings and Artificial Surfaces (BL3)

Buildings and Artificial Surfaces were present on the site in the form of roads, residential housing and commercial buildings.

Buildings and artificial surfaces is a broad habitat category that includes areas of built land comprising of domestic, industrial, agricultural and community buildings as well as derelict stone buildings and ruins. This habitat category also consists of artificial surfaces such as cement, tarmac, bricks, blocks, paving stones, astroturf, pavements, runways etc. Greenhouses, polytunnels and refuse dumps are not included in this category (Fossitt, 2000).

Evaluation: This habitat is evaluated as being of no ecological value.



#### 4.2.6 Hedgerows (WL1)

Hedgerows are common in the study area however those located close to the N24 road were considered to be sparse, highly maintained and of poor quality.

Hedgerows typically form field or property boundaries and consist of linear strips of shrubs and occasional trees. The majority of hedgerows are planted and can occur on raised banks created from the digging of drainage ditches. Typical species that occur in hedgerows include Hawthorn (*Crataegus monogyna*), Gorse (*Ulex europaeus*), Dog-rose (*Rosa canina*), Blackthorn (*Prunus spinosa*). Species of trees which can be frequently found within hedgerows are Hazel (*Corylus avellana*), Ash (*Fraxinus excelsior*) and Willows (*Salix* spp.) (Fossitt, 2000).

Evaluation: This habitat is evaluated as being of 'Local Importance, Higher Value'. This type of habitat is valuable to wildlife for protection and movement.

#### 4.2.7 Mixed Broadleaved / Conifer Woodland (WD2)

Mixed Broadleaved / Conifer Woodland occurs on the site in small scattered sections with the most notable section located on the right hand side to the north of the scheme.

This habitat type includes woodland areas with mixed stands of broadleaves trees and conifers, where both types have a minimum cover of 25%, and a maximum of 75%. The trees may either be native or non-native species.

Evaluation: This habitat is evaluated as being of 'Local Importance, Higher Value'. This habitat type is valuable to wildlife for protection and movement.

#### 4.2.8 Horticultural Land (BC2)

Horticultural land exists on the proposed development site on the left hand side of the scheme to the north. This habitat type is present in the form of orchards.

Horticultural land includes areas of land that are cultivated and managed for the production of vegetables, fruit crops, culinary or aromatic herbs, flowers and other ornamental plants. It also comprises market gardens, tree nurseries, garden centres, greenhouses, polythene tunnels and smaller vegetable plots in gardens and allotments (Fossitt, 2000).

Evaluation: This habitat is evaluated as being of 'Local Importance'.

#### 4.2.9 Treelines (WL2)

Treelines are relatively sparse and scattered on the proposed development site and occur mostly to the north of the scheme.

Treelines includes a single or narrow line of trees that are greater than 5m in height and like hedgerows; they typically occur at field or property boundaries. Hedgerows that are dominated by trees greater than 5m in height are also included within this category. Most treelines are planted and are spaced apart. The majority of treelines comprise non-native tree species such as Sycamore (*Acer pseudoplatanus*), Beech (*Fagus sylvatica*), Limes (*Tilia* spp.), some poplars (*Populus* spp.), Horse Chestnut (*Aesculus hippocastanum*) and conifers (Fossitt, 2000).



**Evaluation:** This habitat is evaluated as being of 'Local Importance, Higher Value'. This type of habitat is valuable to wildlife for protection and movement.

#### 4.2.10 Scrub (WS1)

This habitat type is sparse within the proposed development area and occurs in scattered areas mostly to the southern section of the scheme.

Scrub encompasses areas that are dominated by at least 50% cover of shrubs, stunted trees or brambles. The canopy height is generally less than 5m, or 4m in the case of wetland areas. Common species found in this habitat type include spinose plants such as Hawthorn (*Crataegus monogyna*), Blackthorn (*Prunus spinosa*) and Gorse (*Ulex europaeus*) (Fossitt, 2000).

**Evaluation:** This habitat is evaluated as being of 'Local Importance'.

#### 4.2.11 Eroding / Upland Rivers (FW1)

The Skelstown 16 Stream on the proposed development site is classified as an Eroding / Upland River and is located within the Suir catchment. This stream flows from north-east to south-west and crosses through the middle of the scheme. It was noted during the walkover survey that this stream has a low sluggish flow and lots of instream vegetation. It is also noted that this stream flows into the River Suir at which point it is classified by the WFD as a transitional waterbody, i.e. an estuary.

Eroding / Upland Rivers consist of watercourses that are actively eroding and where there is little to no sediment deposition. This typically includes the upland sections of natural watercourses where gradients are steep and water flow is fast and turbulent. The watercourses included in this habitat type are typically smaller and shallower than 'depositing / lowland rivers' (FW2) and include small mountain streams that can dry out periodically if a distinct channel exists or wetland plants are present (Fossitt, 2000).

**Evaluation:** This habitat is evaluated as being of 'Local Importance'. This evaluation is due to the fact that this stream has a low flow and is not considered to have the potential to cater for a large diversity of aquatic flora and fauna.

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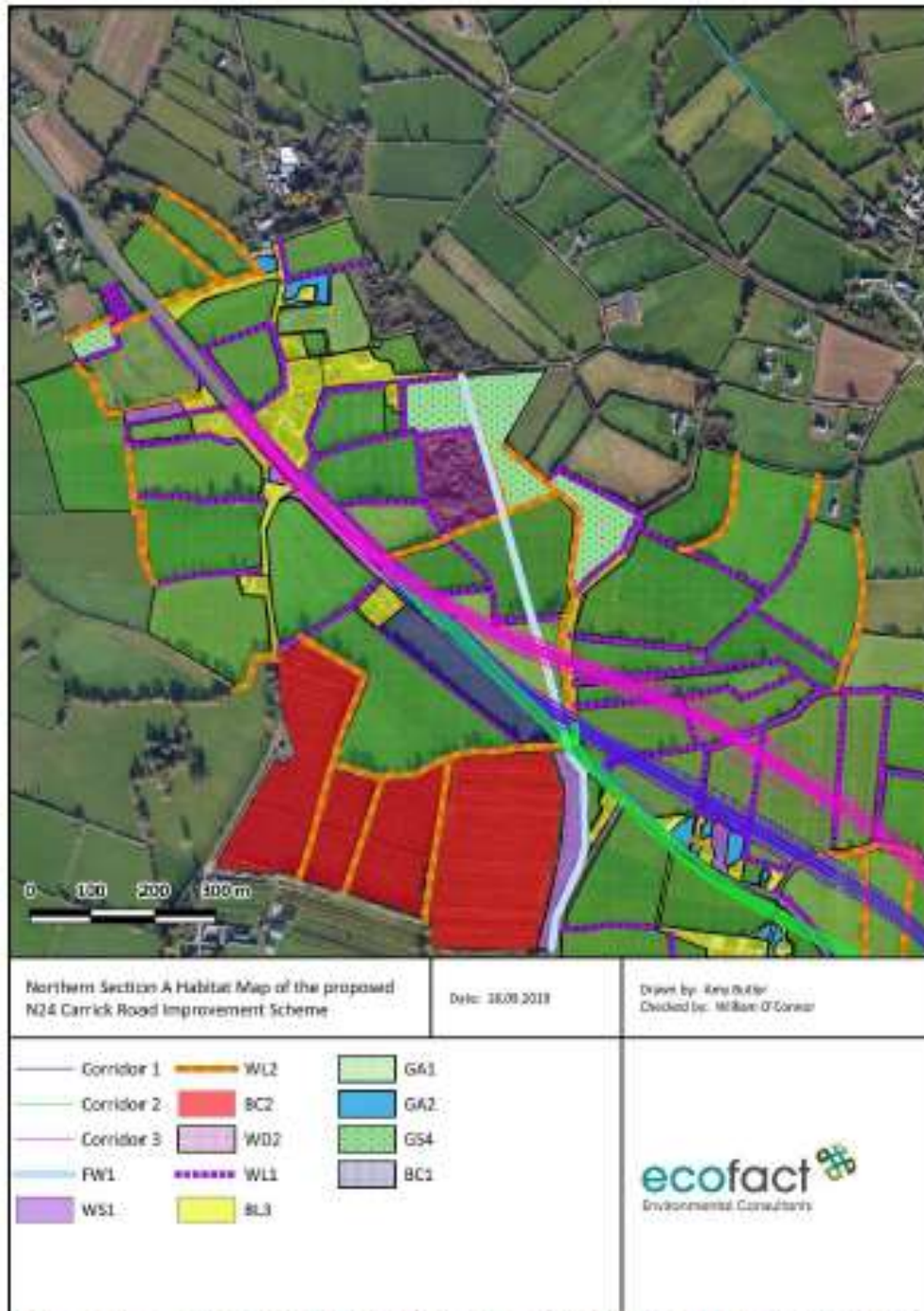


Figure 4a Northern Section A Habitat Map of the proposed N24 Carrick Road Improvement Scheme.

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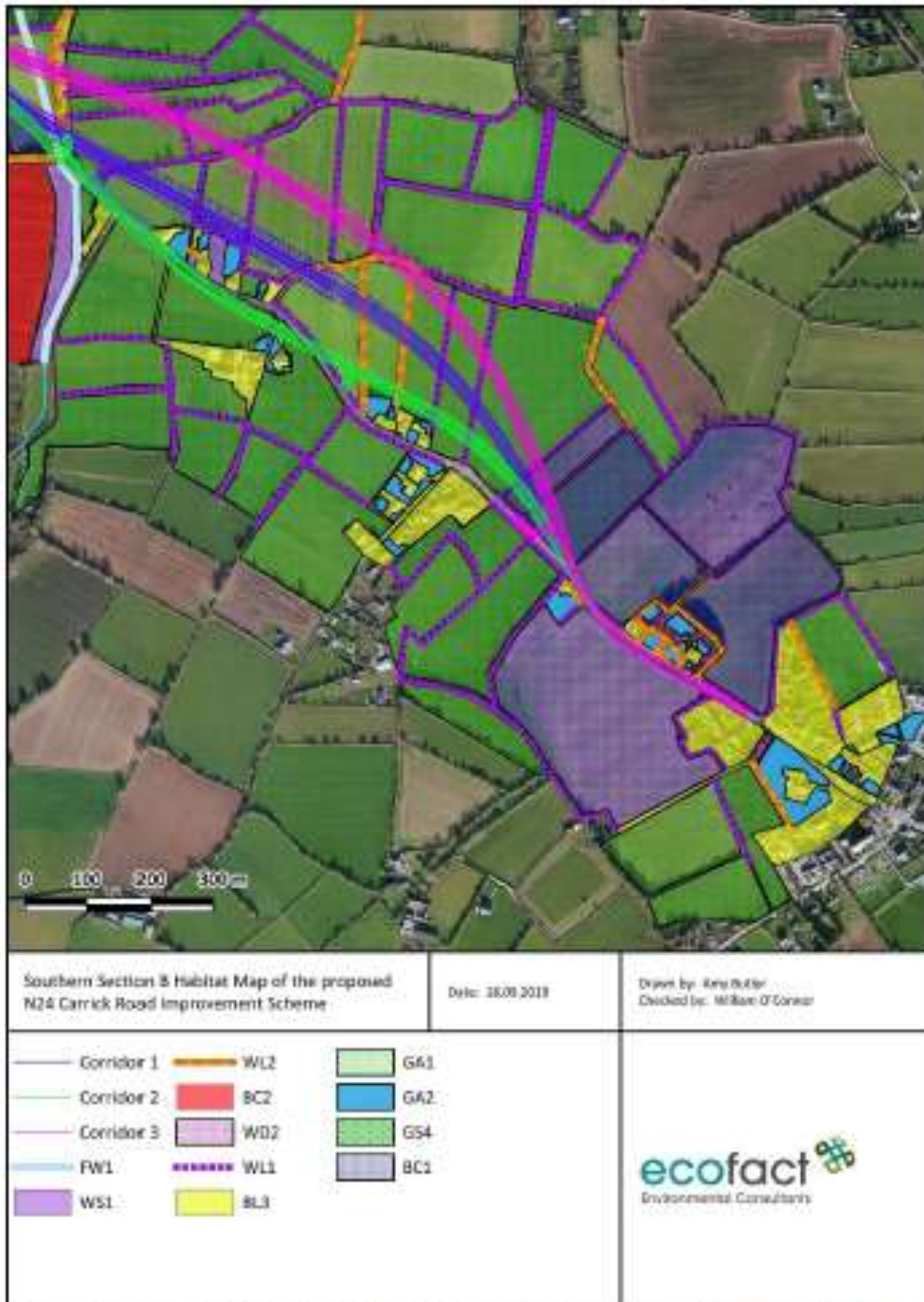


Figure 4b Southern Section B Habitat Map of the proposed N24 Carrick Road Improvement Scheme.



## 4.3 Fauna

### 4.3.1 Non-volant Mammals

No evidence of otters was found in the Skeelstown 16 Stream during the current survey. This stream is considered to be too small to support otters and does not appear to support fish. However, otters can use small streams like this to pass through the general countryside.

The only mammal recorded within the study area was Rabbit *Cryptolagus cuniculus*, which are widespread and common throughout Ireland and are not protected. Rabbit burrows and droppings were recorded in the study area. During the walkover survey fox droppings were also found which indicated that foxes are using the proposed development site. It is noted that although no evidence of Badger *Meles meles* Setts were found, it is likely that they are present within the wider study area due to the fact that Co. Kilkenny holds the highest badger density in Ireland (Chris Smal, 1995). The NBDC online maps also hold records of Badger within the study area, located in 1km squares near the River Nore surrounding Ballyragget. The NBDC online maps also hold records of Irish Stoat *Mustela erminea hibernica* at Curraghmore House in Portlaoise which is located south-west of the proposed development. It is considered likely that Stoat use habitats adjacent to the River Suir although no evidence was found during the current surveys. Due to the potential lapse of time between the current surveys and the construction of the development, pre-construction mammal surveys will also be undertaken at a later date prior to the commencement of construction.

Evaluation: Other mammals in the study area are evaluated as being of 'Local Importance'.

### 4.3.3 Bats

The National Biodiversity Data Centre (NBDC) maps landscape suitability for bats based on Lundy *et al.*, (2011). The maps are a visualisation of the results of the analyses based on a 'habitat suitability' index. The index ranges from 0 to 100, with 0 being least favourable and 100 most favourable for bats. Table 2 below gives the suitability of the study area for the bat species found in Ireland (based on NBDC) along with their Irish Red List Status (from Mameil *et al.*, 2009). The overall assessment of bat habitats for the current study area is given as 42.11. This is considered to be a low rating however, the ratings for some individual species, such as 67 for Brown Long-eared Bat, is considered to be very high.

During the current survey, no evidence of bat roosting was recorded in any of the trees affected by the proposed development though trees were checked from the ground only. It was noted that some mature hedgerows on the site showed some potential for bats. Due to the potential lapse of time between the current surveys and the construction of the development, pre-construction bat surveys will also be undertaken at a later date prior to the commencement of construction.

Evaluation: Due to the low suitability rating and the presence of the existing N24 road, the study area was evaluated as being of 'Local Importance, Higher Value' at most to foraging bats. All bats are strictly protected (Annex V)

### 4.3.4 Birds

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During the current survey, a variety of common small passerine species associated with hedgerow, scrub and grassland habitats were identified within the study area. No protected bird species were noted during the current surveys.

Evaluation: Birds in the study area are evaluated as being of 'Local Importance'.

Table 2 Suitability of the study area for the bat species previously recorded in the Carrick Road area (based on the NBDC data). Irish Red List status also indicated (based on Marnell et al., 2009).

Common name	Scientific name	Suitability Index	Irish red list status
All bats	-	42.11	
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	61	Least Concern
Leisler's bat	<i>Nyctalus leisleri</i>	52	Near Threatened
Natterer's bat	<i>Myotis nattereri</i>	59	Least Concern
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	48	Least Concern
Brown long-eared bat	<i>Plecotus auritus</i>	67	Least Concern
Lesser horseshoe bat	<i>Rhinolophus hipposideros</i>	4	Least Concern
Whiskered bat	<i>Myotis mystacinus</i>	40	Least Concern
Daubenton's bat	<i>Myotis daubentonii</i>	40	Least Concern
Nathusius's pipistrelle	<i>Pipistrellus nathusii</i>	8	Least Concern

#### 4.3.5 Fish

Fish species for which the Lower River Suir SAC is designated are assessed in the accompanying Screening Report. The Skepstown 16 Stream is considered to be too small to support fish, with the exception of Three spined sticklebacks.

Evaluation: Fish are unlikely to occur.

#### 4.3.6 Reptiles and Amphibians

No reptile or amphibian habitat was recorded within the study area during the current survey. There are no records of Common Lizard *Lacerta vivipara* within the study area according to the NBDC online maps.

Evaluation: Common frog probably use the Skepstown 16 Stream, and they are a protected species so would be of 'Local Importance, Higher Value'.

#### 4.3.7 Aquatic macroinvertebrates

The EPA do not carry out biological monitoring on the Skepstown 16 Stream, likely because it is very small with little flow and a low gradient. It does not provide a suitable habitat for protected macroinvertebrates.

Evaluation: Local Importance.





#### 4.3.8 Terrestrial Invertebrates

With reference to the habitats that were recorded on the proposed development site, it is assumed that a generalised terrestrial invertebrate community will occur in the study area, in line with typical species that are present in farmland areas throughout Co. Kilkenny.

Evaluation: Terrestrial Invertebrates within the study area are evaluated as being of 'Local Importance'.

#### 4.4 Key ecological receptors

The key ecological receptors identified from the ecological interests (designated sites, habitats, flora and fauna) recorded within the study area are presented in Table 3.

Table 3 Identification of key ecological receptors within the zone of influence (based on NRA, 2009).

Ecological receptors	Summary description of the ecological receptors	Evaluation of the ecological receptors (Key ecological receptors are those identified as being > local importance (lower value))
Lower River Suir SAC	The River Suir is designated under the Lower River Suir SAC. This site is designated for the presence of a variety of conservation interests including fish communities and aquatic macroinvertebrates. It is considered unlikely that Freshwater Pearl Mussel or White-clawed Crayfish would be found in the River Suir adjacent to the proposed site due to a lack of suitable habitat. No suitable spawning or nursery habitat for Twaité Shad, Salmon or Lamprey species exists in this estuarine stretch of the River. However, these species may migrate through this part of the watercourse.	This SAC is of international importance and supports Annex II species. The River Suir is designated within the SAC.
Hedgerows (WL1)	Network of hedgerow habitats which function as wildlife corridors.	Local importance, Higher Value
Treelines (WL2)	Network of treeline habitats which function as wildlife corridors.	Local importance, Higher value
Mixed Broadleaved / Conifer Woodland (WD2)	Scattered woodland habitats within the site are important to wildlife for protection and movement.	Local importance, Higher Value



## 5. POTENTIAL IMPACTS

### 5.1 Designated Areas

The potential impacts on designated areas arising from the proposed N24 Carrick Road Improvement scheme area discussed and assessed in the accompanying Screening Report.

No NHAs are located within 5km of the proposed scheme and therefore no impacts on NHAs are envisaged to arise as a result of the development.

The Lower River Suir (Coolfinn, Portlaoise) pNHA is located ca. 1km from the proposed scheme area, and the Fiddown Island pNHA is located ca. 1.7km north-west. As part of the boundary of the Lower River Suir (Coolfinn, Portlaoise) pNHA is located within the Lower River SAC, impacts on the pNHA are similar to those to the SAC. Impacts on the Lower River Suir SAC are discussed and assessed in the Screening Report.

### 5.2 Flora

All the habitats in the study area of the proposed N24 Carrick Road Improvement Scheme are typical and common habitats that can be found in Co. Kilkenny and throughout Ireland. Table 4 below summarises the habitats that would be affected by each of the three scheme options for the N24 Carrick Road Improvement Scheme.

**Table 4** Summary of the Habitats that would be affected by each of the three scheme options for the N24 Carrick Road Improvement Scheme.

Scheme Option	Habitat Type Affected
Corridor 1	Arable Crops (BC1); Hedgerows (WL1); Improved Agricultural Grassland (GA1); Treelines (WL2); Scrub (WS1); Buildings and Artificial Surfaces (BL3); Amenity Grassland (GA2); Eroding / upland Rivers (the Skelepstown 16 Stream) (FW1)
Corridor 2	Arable Crops (BC1); Hedgerows (WL1); Improved Agricultural Grassland (GA1); Treelines (WL2); Buildings and Artificial Surfaces (BL3); Eroding / upland Rivers (the Skelepstown 16 Stream) (FW1); Scrub (WS1); Amenity Grassland (GA2)
Corridor 3	Arable Crops (BC1); Hedgerows (WL1); Improved Agricultural Grassland (GA1); Treelines (WL2); Buildings and Artificial Surfaces (BL3); Eroding / upland Rivers (the Skelepstown 16 Stream) (FW1)

All of the habitats that each scheme option will likely sever are evaluated as being of 'Local Importance', with the exception of Hedgerows, Treelines, and Buildings and Artificial Surfaces, which are evaluated as being of 'Local Importance, Higher Value', 'Local Importance, Higher Value' and of no ecological value, respectively.

During the construction phase of the proposed road improvement scheme it is understood that direct loss of habitat will occur at locations which differ from the current existing N24 layout. The habitats that will be affected by each scheme option are listed above, and it is noted that Hedgerows and Treelines will be severed. Habitat loss is unavoidable however it is not considered to have the potential to have a significant effect on the study area due to their low ecological value. Landscaping that will be required will also compensate more for the loss of habitats of ecological value, such as Hedgerows and Treelines. Corridor 2 of the proposal will cut through the least amount of habitats as it is similar to the existing N24 layout. For options Corridor 1 and 3, the potential impact of habitat loss is evaluated as being slight negative, short-term and in the local context. For Corridor 2, the potential



Impact of habitat loss is evaluated as being Imperceptible negative, temporary and in the local context.

As the NRA 'Guidelines for the crossing of watercourses during the construction of National Road Schemes' (NRA, 2006) will be followed for the proposed development, no significant impacts on water quality are envisaged to arise. For all of the considered options, the potential impact on water quality is evaluated as being slight negative, temporary and in the local context.

As the NRA guidelines on 'The Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads' (NRA, 2010) will be followed, no significant impacts regarding non-native invasive species are envisaged to arise.

### 5.3 Fauna

#### 5.3.1 Non-volant Mammals

No impacts on Otters in the study area are envisaged to arise. Otters within the SAC are assessed in the accompanying Screening Report prepared by Ecofact. Potential impacts on Non-volant Mammals arising from corridor options 1 and 3 are evaluated as being slight negative, short-term and in the local context. Potential impacts on Non-volant mammals arising from Corridor option 2 are evaluated as being imperceptible negative, short-term and in the local context.

#### 5.3.2 Other mammals

No significant impacts are envisaged to arise on other mammals within the study area. Some minor disturbance impacts may arise on Rabbit, Fox and potentially badger and stoat but will not be significant. No derogation licenses will be required as no mammal dwellings were recorded on the proposed development site. Potential impacts on other mammals arising from corridor options 1 and 3 are evaluated as being slight negative, short-term and in the local context. Potential impacts on other mammals arising from Corridor option 2 are evaluated as being imperceptible negative, short-term and in the local context.

#### 5.3.3 Bats

No significant disturbance impacts on bats are envisaged as the N24 is an existing road unlikely to be utilised by foraging bats and NRA guidelines for the protection of bats will be followed during the construction phase (NRA, 2005b). It is considered that scheme Corridor 2 appears to have the least implications for bats as it mostly follows the existing layout of the N24 and does not sever a significant amount of mature hedgerows. Impacts on bats arising from corridor options 1 and 3 are evaluated as being slight negative, short-term and in the local context. Impacts on bats arising from corridor option 2 are evaluated as being imperceptible negative, short-term and in the local context.

#### 5.3.4 Birds

No significant impacts on birds are envisaged; therefore impacts are evaluated as being imperceptible negative, short-term and in the local context for all three options.

#### 5.3.5 Fish

No significant impacts on fish are envisaged to arise as a result of the proposed scheme. Fish present in the SAC are assessed in the accompanying Screening Report. No suitable habitat is considered to

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be present for protected fish in the Skelstown 16 Stream. Impacts on fish are evaluated as being slight negative, short-term and in the local context for all 3 options.

#### 5.3.6 Reptiles and Amphibians

No impacts on reptiles or amphibians are envisaged to arise from the proposed development. Impacts on reptiles and amphibians are evaluated as being slight negative, short-term and in the local context for all three options.

#### 5.3.7 Aquatic macroinvertebrates

No significant impacts on FPM or White-clawed Crayfish are envisaged to arise as a result of the proposed development. FPM and White-clawed Crayfish that may be present in the SAC are assessed in the accompanying Screening Report. No suitable habitat is considered to be present for protected aquatic macroinvertebrates in the Skelstown 16 Stream. Impacts on aquatic macroinvertebrates are evaluated as being slight negative, short-term and in the local context for all three options.

#### 5.3.8 Terrestrial Invertebrates

No significant impacts on a typical invertebrate community are envisaged to arise. Impacts on terrestrial invertebrates are evaluated as being imperceptible negative, temporary and in the local context for all three options.

### 5.4 Impact Integer Scores

Table 5 below provides the Integer Score for the order of magnitude for each route option considered in the current report (TII, 2016).

Table 5 Integer Scores for each impact for each route option considered in the current report (adapted from TII, 2016).

	Corridor 1	Corridor 2	Corridor 3
Habitats & Flora	3	4	3
Non-volant Mammals	3	4	3
Other Mammals	3	4	3
Bats	3	4	3
Birds	4	4	4
Fish	3	3	3
Reptiles and Amphibians	3	3	3
Aquatic Macroinvertebrates	3	3	3
Terrestrial Invertebrates	4	4	4



## 6. MITIGATION MEASURES

### 6.1 Designated Areas

The potential impacts on designated areas arising from the proposed N24 Carrick Road Improvement scheme area discussed and assessed in the Screening Report prepared by Ecofact.

No NHAs are located within 5km of the proposed scheme and therefore no mitigation measures are required.

The closest pNHA to the proposed realignment is the Lower River Suir (Coolfinn, Portlao) pNHA, followed by the Fiddown Island pNHA. No impacts are envisaged to arise that may affect these pNHAs due to geographical separation from the proposed development therefore no mitigation measures are required.

### 6.2 Flora

The manuals 'A Guide to Landscape Treatments for National Road Schemes in Ireland' (NRA, 2006b) as well as the NRA publication 'Guidelines on the Implementation of Landscape Treatments on National Road Schemes in Ireland' will be followed for the proposed development. Landscaping and new habitat creation will be of some benefit and is likely to result in a minor positive impact on flora and fauna in the study area in the medium to long-term.

Regarding non-native invasive species, the 'Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads' (NRA, 2010), will be followed in devising and implementing the Invasive Species Management Plan.

In relation to water quality the 'Guidelines for the crossing of watercourses during the construction of national road schemes' (NRA, 2008) will be followed.

### 6.3 Fauna

It is noted that no significant impacts on fauna are envisaged to arise and therefore no specific mitigation is required above the current NRA guidelines. However, despite this, basic mitigation for the protection of fauna as a precautionary measure is recommended below.

The new road scheme should be fenced with mammal fencing to ensure mammals will not attempt to cross the N24 road. It is recommended that artificial lighting along the route is kept to the minimum required for safety (as proposed). The following guidelines by the NRA will be followed during construction: 'Guidelines for the treatment of Badgers prior to the construction of National Road Schemes' (NRA, 2005a); 'Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes' (NRA, 2006a). It is noted again that no derogation licenses are required as no mammal dwellings were recorded on site. Due to the potential lapse of time between the current surveys and the construction of the development, pre-construction bat and mammal surveys will also be undertaken at a later date prior to the commencement of construction.

No heavy plant machinery should be in operation in times of darkness as a mitigation measure for foraging bats. Tree-felling should be undertaken in the period late August to late October/early November when bats (young and old) are capable of flight but not yet in hibernation. The following



guidelines by the NRA are recommended to be followed for the protection of bats: 'Guidelines for the Treatment of Bats during the construction of National Road Schemes' (NRA, 2005b).

Any vegetation clearance works or tree felling should take place outside of the bird nesting season, which runs from the 1<sup>st</sup> of March to the 31<sup>st</sup> of August each year. It is recommended that any newly planted trees / shrubs be native species. When working around existing trees on the site, care should be taken to conduct this work slowly to allow both common birds and mammals to flee the area during construction.

## 7. Residual Impacts

The predicted residual impacts of the proposed N24 Carrick Road Improvement scheme are those impacts that remain after implementation of the mitigation measures described above. The residual impacts have been classified as slight negative impact in relation to all ecological flora and fauna. It is deemed that all other potential impacts caused by the proposed development can currently be successfully mitigated to reduce the impacts to imperceptible, with no consequences on the surrounding environment. Any of the route options can be constructed while avoiding significant effects.

## 8. Conclusions

Three scheme corridor options with varying lengths of 1.9km to 2.3km have been considered. All three options were assessed in the current report although it is noted that only one of these options will be constructed. The plans for the scheme are presented in Appendix 1.

The potential impacts on the Lower River Suir SAC are discussed and assessed in the Screening Report.

It is considered that hedgerows and treelines are likely to be severed during the construction of any of the scheme options, as well as the habitat loss and disturbance of other habitats of 'Local Importance'. It is noted that Corridor 2 would have the least implications for habitat loss out of the three scheme options, which would result in the potential impact of habitat loss evaluated as being imperceptible negative, temporary and in the local context. No significant impacts regarding non-native invasive species are envisaged to arise as the NRA biosecurity guidelines will be followed.

No significant water quality impacts are envisaged to arise due to the small Skeelstown 16 Stream and the implementation of NRA guidelines for the crossing of watercourses. All three route options cross this stream.

No significant impacts on mammals are envisaged to arise as a result of the proposed development, as long as all relevant NRA guidelines are followed.

Providing mitigations and guidelines are followed correctly, all impacts should be at most slight negative throughout the construction phase. Impacts throughout the operational phase are considered to be imperceptible negative as the N24 is an existing road. It is noted that all three scheme options would not give rise to significant impacts on the ecology of the study area. It is concluded therefore that the proposed N24 Carrick Road Improvement Scheme can be appropriately built and operated without significant effects on, designated areas, flora and fauna, providing mitigation is strictly followed. This is an indicative interim report for the purpose of route selection only. Once final designs are agreed, the current report will be finalised.



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**PLATES**



Plate 1 Existing N24 road.



Plate 2 Skelptown 16 Stream (Segment Code: 16\_10766) which crossed the existing N24 road, December 2017.



Plate 3 Improved agricultural grassland adjoining the existing N24 road.

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Plate 4 Arable land adjacent to existing N24 road.



Plate 5 Orchard adjacent to existing N24 road.



Plate 6 Scrub adjacent to existing N24 road.

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Plate 7 Mammal trails; probably rabbits adjacent to existing N24 road.



Plate 8 Rabbit burrows are very common in this area.



Plate 9 Hedgerow with rabbits, adjacent to existing road scheme.

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Plate 10 Rabbits are very common in study area, stoats and foxes also likely to occur.



Plate 11 Well-developed hedgerow with bat potential.



Plate 12 Goats and Ivy-covered trees/hedgerows with bat potential.

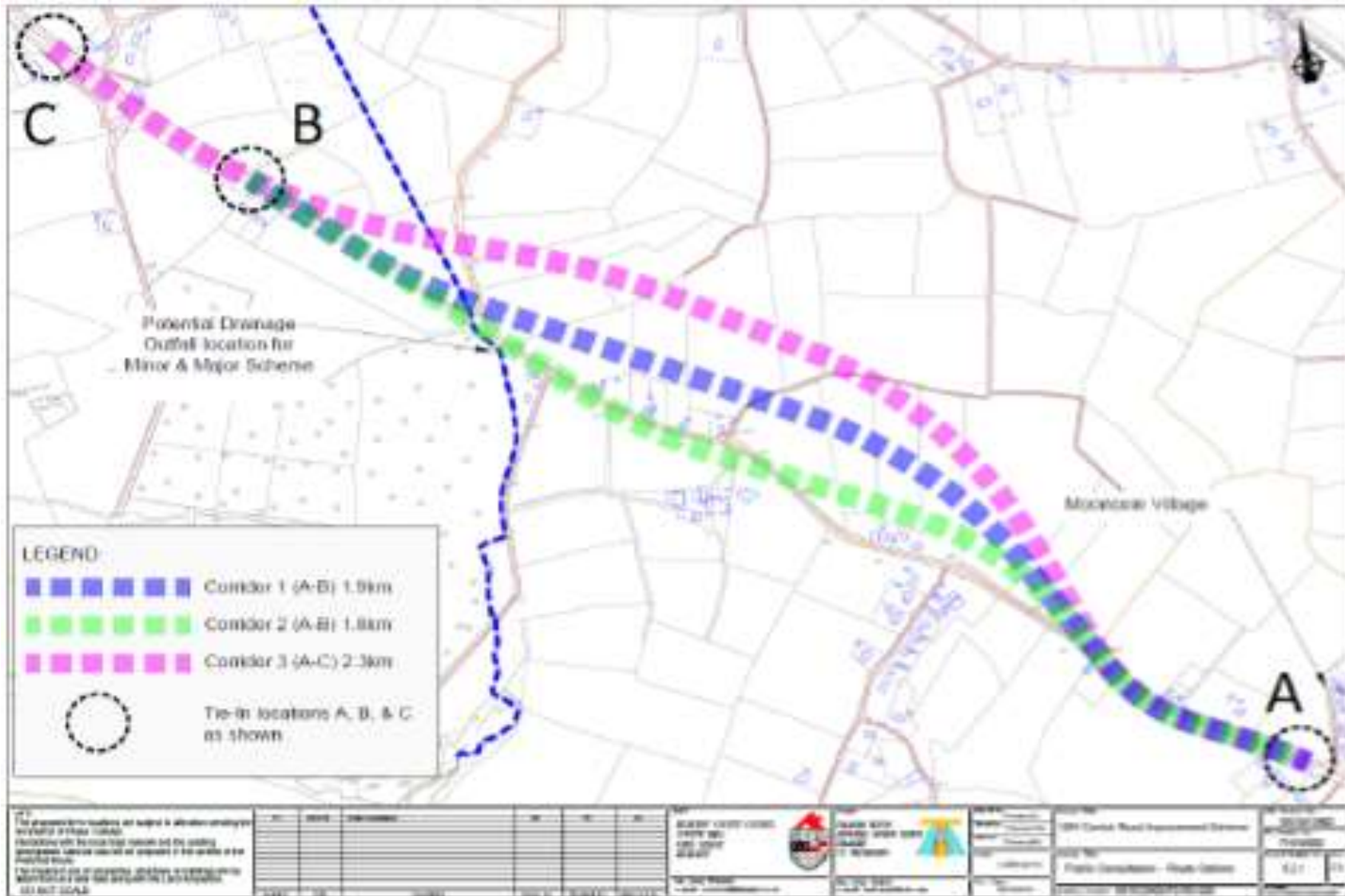
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**APPENDIX 1 PROJECT DRAWINGS**

INTERIM REPORT



## APPENDIX 2 NPWS Site Synopsis

**SITE NAME: LOWER RIVER SUIR SAC**  
**SITE CODE: 002137**

Lower River Suir SAC consists of the freshwater stretches of the River Suir immediately south of Thurles, the tidal stretches as far as the confluence with the Barrow/Nore immediately east of Cheekpoint in Co. Waterford, and many tributaries including the Clodiagh in Co. Waterford, the Lingaun, Anner, Nier, Tar, Aherlow, Miltien and Clodiagh in Co. Tipperary. The Suir and its tributaries flow through the counties of Tipperary, Kilkenny and Waterford.

Upstream of Waterford city, the swinging meanders of the Suir criss-cross the Devonian sandstone rim of hard rocks no less than three times as they leave the limestone-floored downfold below Carrick-on-Suir. In the vicinity of Carrick-on-Suir the river follows the limestone floor of the Carrick Syncline. Upstream of Clonmel the river and its tributaries traverse Upper Palaeozoic Rocks, mainly the Lower Carboniferous Visean and Toumalian. The freshwater stretches of the Clodiagh River in Co. Waterford traverse Silurian rocks, through narrow bands of Old Red Sandstone and Lower Avonian Shales, before reaching the carboniferous limestone close to its confluence with the Suir. The Aherlow River flows through a Carboniferous limestone valley, with outcrops of Old Red Sandstone forming the Gaitee Mountains to the south and the Sillevenamuck range to the north. Glacial deposits of sands and gravels are common along the valley bottom, flanking the present-day river course.

Alluvial wet woodland is a declining habitat type in Europe as a result of drainage and reclamation. The best examples of this type of woodland in the site are found on the islands just below Carrick-on-Suir and at Fiddown Island. Species occurring here include Almond Willow (*Salix triandra*), White Willow (*S. alba*), Rusty Willow (*S. cinerea* subsp. *oleifolia*), Osier (*S. viminalis*), with Yellow Iris (*Iris pseudacorus*), Hemlock Water-dropwort (*Oenanthe crocata*), Wild Angelica (*Angelica sylvestris*), Pendulous Sedge (*Carex pendula*), Meadowsweet (*Filipendula ulmaria*) and Common Valerian (*Valeriana officinalis*). The terrain is littered with dead trunks and branches and intersected with small channels which carry small streams to the river. The bryophyte and lichen floras appear to be rich. A small plot is currently being coppiced and managed by the National Parks and Wildlife Service. In the drier areas species such as Ash (*Fraxinus excelsior*), Hazel (*Corylus avellana*), Hawthorn (*Crataegus monogyna*) and Blackthorn (*Prunus spinosa*) occur.

Eutrophic tall herb vegetation occurs in association with the various areas of alluvial forest and elsewhere where the floodplain of the river is intact. Characteristic species of the habitat include Meadowsweet, Purple Loosestrife (*Lythrum salicaria*), Marsh Ragwort (*Senecio aquaticus*), Ground Ivy (*Glechoma hederacea*) and Hedge Bindweed (*Calyptegia sepium*).

Old oak woodlands are also of importance at the site. The best examples are seen in Portlaw Wood which lies on both sides of the Clodiagh River. On the south-facing side the stand is more open and the oaks (mainly Pedunculate Oak, *Quercus robur*) are well grown and spreading. Ivy (*Hedera helix*) and Bramble (*Rubus fruticosus* agg.) are common on the ground, indicating relatively high light conditions. Oak regeneration is dense, varying in age from 0-40 years and Holly (*Ilex aquifolium*) is fairly common but mostly quite young. Across the valley, by contrast, the trees are much more closely spaced and though taller, are poorly grown on average. There are no clearings; large oaks extend to the boundary wall. In the darker conditions, Ivy is much rarer and Holly much more frequent, forming a closed canopy in places. Oak regeneration is uncommon since there are as yet few natural



clearings. The shallowness of the soil on the north-facing slope probably contributes to the poor tree growth there. The acid nature of the substrate has induced a 'mountain' type oakwood community to develop. The site is quite species-rich throughout, including an abundance of mosses, liverworts and lichens. The rare lichen *Lobaria pulmonaria*, an indicator of ancient woodlands, is found here.

Inchinsquillib Wood consists of three small separate sloping blocks of woodland in a valley cut by the young Multeen River and its tributaries through acidic Old Red Sandstone and Silurian rocks. Two blocks, both with an eastern aspect, located to the north of the road, are predominantly of Sessile Oak (*Quercus petraea*) and Hazel, with Downy Birch (*Betula pubescens*), Ash and Holly. The ground flora is quite mixed with, for example, Wood-sedge (*Carex sylvatica*), Bluebell (*Hyacinthoides non-scripta*), Primrose (*Primula vulgaris*), Wood-sorrel (*Oxalis acetosella*), Pignut (*Conopodium majus*) and Hard Fern (*Blechnum spicant*). The base poor nature of the underlying rock is to some extent masked by the overlying drift. The third block, to the south of the road, and with a northern aspect, is a similar although less mature mixture of Sessile Oak, Birch and Holly. Here the influence of the drift is more marked, with the occurrence of Wood Anemone (*Anemone nemorosa*) amongst the ground flora.

Two stands of Yew (*Taxus baccata*) woods, a rare habitat in Ireland and the E.U., occur within the site. These are on limestone ridges at Shanbally and Cahir Park. Both are in woods planted with non-native species, including conifers. However, the area at Cahir Park is fairly substantial in size and includes some relatively undisturbed patches of wood and some very old trees. Regeneration of the Yew trees is mostly poor, due to competition from species such as Sycamore (*Acer pseudoplatanus*) and, at Shanbally, due to heavy grazing by goats. Other native species which occur with the Yew trees include Ash, Pedunculate Oak, Hazel and Spindle (*Euonymus europaeus*). Future prospects for these Yew woods are good as the sites are proposed for restoration under a Coillte E.U. LIFE programme.

Floating river vegetation is evident in the freshwater stretches of the River Suir and along many of its tributaries. Typical species found include Canadian Pondweed (*Elodea canadensis*), water-milfoil (*Myriophyllum* spp.), Fennel Pondweed (*Potamogeton pectinatus*), Curled Pondweed (*P. crispus*), Perfoliate Pondweed (*P. perfoliatus*), Pond Water-crowfoot (*Ranunculus peltatus*), other crowfoots (*Ranunculus* spp.) and the moss *Fontinalis antipyretica*. At a couple of locations along the river Opposite-leaved Pondweed (*Groenlandia densa*) occurs. This species is protected under the Flora (Protection) Order, 1999.

The Aherlow River is fast flowing and mostly follows a natural unmodified river channel. Submerged vegetation includes the aquatic moss *Fontinalis antipyretica* and Stream Water-crowfoot (*R. peltatus*), while shallow areas support species such as Reed Canary-grass (*Phalaris arundinacea*), Brooklime (*Veronica beccabunga*) and Water Mint (*Mentha aquatica*). The river bank is fringed in places with Alder (*Alnus glutinosa*) and willows (*Salix* spp.).

The Multeen River is fast flowing, mostly gravel-bottomed and appears to follow a natural unmodified river channel. Water-crowfoots occur in abundance and the aquatic moss *Fontinalis antipyretica* is also common. In sheltered shallows, species such as Water-cress (*Nasturtium officinale*) and water-starworts (*Callitriche* spp.) occur. The river channel is fringed for most of its length with Alder, Willow and a narrow strip of marshy vegetation.

Salt meadows occur below Waterford City in old meadows where the embankment is absent, or has been breached, and along the tidal stretches of some of the inflowing rivers below Little Island. There are very narrow, non-continuous bands of this habitat along both banks. More extensive areas are also seen along the south bank at Ballymakill, the east side of Little Island, and in three large salt





meadows between Ballynakill and Cheekpoint. The Atlantic and Mediterranean sub-types are generally intermixed. The species list is extensive and includes Red Fescue (*Festuca rubra*), orchises (*Atriplex* spp.), Sea Aster (*Aster tripolium*), Sea Couch (*Elymus pycnanthus*), frequent Sea Milkwort (*Glaux maritima*), occasional Wild Celery (*Apium graveolens*), Parsley Water-dropwort (*Oenanthe lachenallii*), English Scurvygrass (*Cochlearia anglica*) and Sea Arrowgrass (*Triglochin maritima*). These species are more representative of the Atlantic sub-type of the habitat. Common Cord-grass (*Spartina anglica*), is rather frequent along the main channel edge and up the internal channels. The legally protected (Flora (Protection) Order, 1999) Meadow Barley (*Hordeum secalinum*) grows at the landward transition of the saltmarsh. Sea Rush (*Juncus maritimus*), an indicator of the Mediterranean salt meadows, also occurs.

Other habitats at the site include wet and dry grassland, marsh, reedswamp, improved grassland, coniferous plantations, deciduous woodland, scrub, tidal river, stony shore and mudflats. The most dominant habitat adjoining the river is improved grassland, although there are wet fields with species such as Yellow Iris, Meadowsweet, rushes (*Juncus* spp.), Meadow Buttercup (*Ranunculus acris*) and Cuckooflower (*Cardamine pratensis*).

Cabragh marshes, just below Thurles, lie in a low-lying tributary valley into which the main river floods in winter. Here there is an extensive area of Common Reed (*Phragmites australis*) with associated marshland and peaty fen. The transition between vegetation types is often well displayed. A number of wetland plants of interest occur, in particular the Narrow-leaved Burrush (*Typha angustifolia*), Bottle Sedge (*Carex rostrata*) and Blunt-flowered Rush (*Juncus subnodulosus*). The marsh is naturally eutrophic but it has also the nutritional legacy of the former sugar factory which discharged into it through a number of holding lagoons, now removed. Production is high, which is seen in the size of such species as Celery-leaved Buttercup (*Ranunculus sceleratus*), as well as in the reeds themselves.

Throughout the Lower River Suir site are small areas of woodland other than those described above. These tend to be a mixture of native and non-native species, although there are some areas of semi-natural wet woodland with species such as Ash and willow. Cahir Park Woodlands is a narrow tract of mixed deciduous woodland lying on the flat-lying floodplain of the River Suir. This estate woodland was planted over one hundred years ago and it contains a large component of exotic tree species. However, due to original planting and natural regeneration there is now a good mix of native and exotic species. About 5 km north-west of Cashel, Ardmayle pond is a long, possibly artificial water body running parallel to the River Suir. It is partly shaded by planted Lime (*Tilia hybridus*), Sycamore and the native Alder. Growing beneath the trees are shade tolerant species such as Remote sedge (*Carex remota*).

The site is of particular conservation interest for the presence of a number of Annex II animal species, including Freshwater Pearl Mussel (both *Margaritifera margaritifera* and *M. margaritifera* subsp. *durrovensis* occur), White-clawed Crayfish, Salmon, Twaité Shad (*Alosa fallax fallax*), three species of Lampreys - Sea Lamprey, Brook Lamprey and River Lamprey, and Otter. This is one of only three known spawning grounds in the country for Twaité Shad.

The site also supports populations of several other animal species. Those which are listed in the Irish Red Data Book include Daubenton's Bat, Natterer's Bat, Pipistrelle Bat, Pine Marten, Badger, Irish Hare, Smelt and Common Frog. Breeding stocks of Carp are found in Kilsheelan Lake. This is one of only two lakes in the country which is known to have supported breeding Carp. Carp require unusually high summer water temperatures to breed in Ireland. As the site is therefore unusual in this regard, it may also support interesting invertebrate populations.



Parts of the site have also been identified as of ornithological importance for a number of Annex I (E.U. Birds Directive) bird species, including Greenland Whitefronted Goose (10), Golden Plover (1,490), Whooper Swan (7) and Kingfisher. Figures given in brackets are the average maximum counts from four count areas within the site for the three winters 1994-1997. Wintering populations of migratory birds use the site. Flocks are seen in Coolfinn Marsh and also along the reedbeds and saltmarsh areas of the Suir. Coolfinn supports nationally important numbers of Greylag Goose on a regular basis, with numbers between 600 and 700 recorded. Other species occurring include Mallard (21), Teal (159), Widgeon (26), Tufted Duck (60), Pintail (4), Pochard (2), Little Grebe (2), Black-tailed Godwit (20), Oystercatcher (16), Lapwing (993), Dunlin (101), Curlew (195), Redshank (28), Greenshank (4) and Green Sandpiper (1). Nationally important numbers of Lapwing (2,750) were recorded at Faithlegg in the winter of 1996/97. In Cabragh marshes there is abundant food for surface feeding wildfowl which total approximately 1,000 in winter. Widgeon, Teal and Mallard are numerous, and the latter has a large breeding population, with up to 400 in summer. In addition, less frequent species like Shoveler and Pintail occur and there are records for both Whooper and Bewick's swans. Kingfisher, a species that is listed on Annex I of the E.U. Birds Directive, occurs along some of the many tributaries throughout the site.

Land use at the site consists mainly of agricultural activities including grazing, silage production, fertilising and land reclamation. The grassland is intensively managed and the rivers are therefore vulnerable to pollution from run-off of fertilisers and slurry. Arable crops are also grown. Fishing is a main tourist attraction on stretches of the Suir and some of its tributaries, and there are a number of Angler Associations, some with a number of beats. Fishing stands and styles have been erected in places. Both commercial and leisure fishing takes place on the rivers. The Aherlow River is a designated Salmonid Water under the E.U. Freshwater Fish Directive. Other recreational activities such as boating, golfing and walking are also popular. Several industrial developments, which discharge into the river, border the site including three dairy related operations and a tannery.

The Lower River Suir contains excellent examples of a number of Annex I habitats, including the priority habitats alluvial forest and Yew woodland. The site also supports populations of several important animal species, some listed on Annex II of the Habitats Directive or listed in the Irish Red Data Book. The presence of two legally protected plants (Flora (Protection) Order, 1999) and the ornithological importance of the site adds further to the ecological interest and importance.



### APPENDIX 3 CRITERIA USED TO EVALUATE HABITATS AND IMPACTS

Table A3.1 Evaluation of ecological resources adapted from NRA (2009).

Evaluation	Criteria
International Importance	<ul style="list-style-type: none"> <li>• 'European Site' including Special Area of Conservation (SAC), Site of Community Importance (SCI), Special Protection Area (SPA) or proposed Special Area of Conservation</li> <li>• Proposed Special Protection Area (pSPA)</li> <li>• Site that fulfils the criteria for designation as a 'European Site' (see Annex II of the Habitats Directive, as amended)</li> <li>• Features essential to maintaining the coherence of the Natura 2000 network</li> <li>• Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive</li> <li>• Resident or regularly occurring populations (assessed to be important at the national level) of the following:               <ul style="list-style-type: none"> <li>◦ Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or</li> <li>◦ Species of animal and plants listed in Annex II and/or Annex IV of the Habitats Directive</li> </ul> </li> <li>• Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971)</li> <li>• World Heritage Site (Convention for the Protection of World Cultural &amp; Natural Heritage, 1972)</li> <li>• Biosphere Reserve (UNESCO Man &amp; The Biosphere Programme)</li> <li>• Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979)</li> <li>• Biogenetic Reserve under the Council of Europe</li> <li>• European Diploma Site under the Council of Europe</li> <li>• Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988)</li> </ul>
National Importance	<ul style="list-style-type: none"> <li>• Site designated or proposed as a Natural Heritage Area (NHA)</li> <li>• Statutory Nature Reserve</li> <li>• Refuge for Fauna and Flora protected under the Wildlife Acts</li> <li>• National Park</li> <li>• Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA); Statutory Nature Reserve; Refuge for Fauna and Flora protected under the Wildlife Act; and/or a National Park</li> <li>• Resident or regularly occurring populations (assessed to be important at the national level) of the following:               <ul style="list-style-type: none"> <li>◦ Species protected under the Wildlife Acts; and/or</li> <li>◦ Species listed on the relevant Red Data list</li> </ul> </li> <li>• Site containing 'viable areas' of the habitat types listed in Annex I of the Habitats Directive</li> </ul>
County Importance	<ul style="list-style-type: none"> <li>• Area of Special Amenity</li> <li>• Area subject to a Tree Preservation Order</li> <li>• Area of High Amenity, or equivalent, designated under the County Development Plan</li> <li>• Resident or regularly occurring populations (assessed to be important at the County level) of the following:               <ul style="list-style-type: none"> <li>◦ Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive</li> <li>◦ Species of animal and plants listed in Annex II and/or IV of the Habitats Directive</li> <li>◦ Species protected under the Wildlife Acts; and/or</li> <li>◦ Species listed on the relevant Red Data list</li> </ul> </li> </ul>

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	<ul style="list-style-type: none"> <li>• Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National Importance</li> <li>• County Important populations of species, or viable areas of semi-natural habitats or natural heritage features identified in the National or Local BAP, if this has been prepared.</li> <li>• Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the country</li> <li>• Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level</li> </ul>
Local importance (higher value)	<ul style="list-style-type: none"> <li>• Locally important populations or priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared</li> <li>• Resident or regularly occurring populations (assessed to be important at the Local level) of the following:                         <ul style="list-style-type: none"> <li>◦ Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive</li> <li>◦ Species of animal and plants listed in Annex II and/or IV of the Habitats Directive</li> <li>◦ Species protected under the Wildlife Acts; and/or</li> <li>◦ Species listed on the relevant Red Data list</li> </ul> </li> <li>• Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality</li> <li>• Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features or higher ecological value</li> </ul>
Local importance (lower value)	<ul style="list-style-type: none"> <li>• Sites containing small areas of semi-natural habitat that are of some local importance for wildlife;</li> <li>• Sites or features containing non-native species that are of some importance in maintaining habitat links</li> </ul>

Table A.2 Criteria for assessing impact magnitude (NRA, 2009).

Impact magnitude	Definition
No change:	No discernible change in the ecology of the affected feature.
Imperceptible impact:	An impact capable of measurement but without noticeable consequences.
Slight impact:	An impact which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate impact:	An impact that alters the character of the environment that is consistent with existing and emerging trends.
Significant impact:	An impact which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Profound impact:	An impact which obliterates sensitive characteristics.

Section A6.2: Ecofact Appropriate Assessment Screening Report\* – Route Corridor Options

\* Ecofact Appropriate Assessment Screening Report is currently “interim”, based on route corridors outlined within the report. A final assessment screening report will be issued and based on final design of the scheme.

## N24 Carrick Road Improvement Scheme, Co. Kilkenny Route Options

### Screening for Appropriate Assessment



24<sup>th</sup> September 2019  
INTERIM REPORT FOR PURPOSE OF ROUTE SELECTION



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## EXECUTIVE SUMMARY

The current document is an Indicative Pre-assessment Screening Report for the proposed N24 Carrick Road Improvement Scheme located near Mooncoin, Co. Kilkenny. It is noted that a Pre-assessment Screening cannot be undertaken at the preliminary design stage when options are still being considered. This is an Interim Report for the purpose of route selection only. As noted in DoEHLG (2010), if the Screening concludes that there is no potential for significant effects, no changes may be made to the proposal after this conclusion as it would invalidate the findings of the Screening. Therefore this is an Indicative Interim report only. A full pre-assessment screening will be carried out for the selected route at preliminary design stage and this will take all recent and relevant CJEU Rulings into account.

This report considers the three corridor options with lengths that vary from 1.9km to 2.3km. Only one of these schemes will be constructed however all three scheme options are considered comparatively in the current report. One new drainage outfall to an existing watercourse is anticipated, and will be required on the western end of the scheme for all route options. This report assesses whether the proposed works at these locations is likely to have a significant effect on the Natura 2000 site network. The final chosen route and a detailed design for same were not available at the time of preparing the current document.

The closest Special Area of Conservation is the Lower River Suir SAC (Site Code: 002137), located ca. 470m south-west of the development. This Natura 2000 site is hydrologically connected to the proposed development via the Skelstown 16 Stream.

It is concluded that there is no potential for significant impacts on the Lower River Suir SAC as all three scheme options will not be located within the boundary of the Lower River Suir SAC. There is a hydrological connection to the SAC via the Skelstown 16 Stream. However, this is a very small low gradient stream with limited ability to convey pollutants to the SAC. The River Suir is also a large dynamic estuary at this point which means that it is less sensitive than a freshwater stretch of the river with salmonid/trout spawning and nursery areas. It is noted that as this is a national road scheme, NRA guidelines for protecting watercourses and biosecurity will be implemented. It is also assumed the final drainage designs will include attenuation within filter drains or separate attenuation ponds / grassed open ditches in advance of discharge to receiving waters. It is noted that all three scheme options do not have the potential for significant impacts that could affect the conservation interests of the Lower River Suir SAC.

Therefore, it is considered that none of the options under consideration for the proposed N24 Carrick Road Improvement Scheme would give rise to any significant impacts on the Lower River Suir SAC. Of the three route options considered no route has emerged as a preferred option.

This Indicative Screening for Appropriate Assessment has thus determined that a Natura Impact Statement (AIS) would not be required for either of the three proposed N24 Carrick Road Improvement Scheme Options. As noted previously, the current report is an Interim report for the purpose of route selection only. A Full Pre-assessment Screening will be carried out for the selected route at preliminary design stage and this will take all recent and relevant CJEU Rulings into account.

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## 1. INTRODUCTION

The current document is an Indicative Pre-assessment Screening Report for the proposed N24 Carrick Road Improvement Scheme located near Mooncoin, Co. Kilkenny. It is noted that a Pre-assessment Screening cannot be undertaken when options are still being considered. This is an Interim Report for the purpose of route selection only. As noted in DoEHLG (2010), if the Screening concludes that there is no potential for significant effects, no changes may be made to the proposal after this conclusion as it would invalidate the findings of the Screening. Therefore this is an indicative Interim report only. A full pre-assessment screening will be carried out for the selected route at preliminary design stage and this will take all recent and relevant CJEU Rulings into account.

The current proposal includes the preliminary layouts of three broad minor scheme corridor options and all three scheme options are considered and compared in the current report. Only one of these options will be constructed. This report assesses whether the proposed works at these locations is likely to have a significant effect on the Natura 2000 site network. Effects upon the conservation objectives and qualifying interests (including habitats and species) within the affected designated areas are considered.

Appropriate Assessment is required under Article 6 of the Habitats Directive (92/43/EEC), in instances where a plan or project may give rise to significant effects upon a Natura 2000 site. Natura 2000 sites are those identified as sites of European Community Importance designated under the Habitats Directive (1992) or the Birds Directive (2009). This report assesses whether this development is likely to have a significant effect on the Natura 2000 site network. Effects upon the conservation objectives and qualifying interests (including habitats and species) within the affected designated areas are considered. The current document meets this requirement by providing a Screening Assessment of the development and follows the guidance for screening published by the Department of the Environment, Heritage and Local Government (DoEHLG 2010) 'Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities'.

According to DoEHLG (2010), screening is the process that addresses and records the reasoning and conclusions in relation to the first two tests of Article 6(3) of the EU Habitats Directive:

- (1) Whether a plan or project is directly connected to or necessary for the management of the site, and;
- (2) Whether a plan or project, alone or in combination with other plans and projects, is likely to have significant effects on a Natura 2000 site in view of its conservation objectives.

The current Screening Assessment therefore sets out to determine whether the proposed project, alone or in combination with other plans and projects, is likely to have significant effects on the Natura 2000 sites within the study area.

If the effects are deemed to be significant, potentially significant, or uncertain, or if the screening process becomes overly complicated, then the process must proceed to Stage 2 (AA). When assessing the significance of potential effects, DoEHLG (2010) recommends that "a precautionary approach is fundamental and, in cases of uncertainty, it should be assumed the effects could be significant".



## 1.1 Consultation

The following bodies provided information for this report, via publically available sources:

- National Parks and Wildlife Service (NPWS);
- National Biodiversity Data Centre (NBDC);
- Environmental Protection Agency (EPA).

## 1.2 Legislative context

Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora - 'The Habitats Directive', has been transposed into Irish law by The European Community (Natural Habitats) Regulations 1997 (S.I. No. 94/1997).

The 1997 Regulations were updated in 1998 by The European Communities (Natural Habitats) (Amendment) Regulations 1998 (S.I. No. 233/1998) to include Council Directive 97/62/EC which served to update Council Directive 92/43/EEC, adapting it to technical and scientific progress made in the intervening years.

The 1997 Regulations were again updated in 2005, by The European Communities (Natural Habitats) (Amendment) Regulations 2005 (S.I. No. 378/2005). This amendment served to consolidate the main nature conservation legislation enacted in Ireland, meaning The Wildlife Act 1976, The Wildlife (Amendment) Act 2000, The European Communities (Natural Habitats) Regulations 1997, The European Communities (Natural Habitats) (Amendment) Regulations 1998, and to draw direct reference upon Council Directive (2009/147/EC) on the conservation of wild birds - 'The Birds Directive'.

The Birds Directive (2009/147/EC) seeks to protect birds of special importance by the designation of Special Protection Areas (SPAs) whereas the Habitats Directive does the same for habitats and other species groups with Special Areas of Conservation (SACs). It lists certain rare habitats (Annex I) and species (Annex II) whose conservation is of community interest. It is the responsibility of each member state to designate SPAs and SACs, both of which will form part of Natura 2000, a network of protected areas throughout the European Community.

Article 6, paragraphs 3 and 4 of the Habitats Directive state that:

*6(3) Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.*

*6(4) If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.*

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*Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest.'*

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Figure 1 Natura 2000 Sites located within 15km of the proposed N24 Carrick Road Improvement Scheme.



## 2. METHODOLOGY

### 2.1 Desk study

A desktop study was undertaken to identify the extent and scope of the potentially affected designated Natura 2000 sites within the current study area in relation to the development site, including the Lower River Suir SAC (Site Code: 002137). The desktop study identified the qualifying interests (species and habitats) relevant to the designated sites within the area.

A review of published literature was undertaken in order to collate data on the receiving environment; a range of additional sources of information including scientific reports produced by, and information on the websites of the EPA, NPWS and the IFI were also reviewed. Information sources reviewed as part of the current assessment included NPWS site synopses, as well as protected species data held on the NPWS/NBDC online databases. A full bibliography of information sources reviewed is given in the reference section. Online aerial imagery was accessed to characterise the nature of proposed works locations near the Natura 2000 network.

### 2.2 Field Survey

The proposed development site was visited during December 2017. The scheme options and environs were inspected for evidence of ecological features of high conservation concern such as those fauna that occur in the closest Natura 2000 sites.

### 2.3 Assessment Methodology

The current Screening Assessment follows the guidance published by the Department of the Environment, Heritage and Local Government (DoEHLG 2010) 'Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities'. Based on these guidelines, the Appropriate Assessment process is a four staged approach described below:

**Stage One:** *Screening / Test of Significance* - the process which identifies the likely impacts upon a Natura 2000 site of a project or plan, either alone or in combination with other projects or plans, and considers whether these impacts are likely to be significant;

**Stage Two:** *Appropriate Assessment* - the consideration of the impact of the project or plan on the integrity of the Natura 2000 site, either alone or in combination with other projects or plans, with respect to the site's structure and function and its conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts;

**Stage Three:** *Assessment of Alternative Solutions* - the process which examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the Natura 2000 site; and

**Stage Four:** *Assessment Where Adverse Impacts Remain* - an assessment of compensatory measures where, in the light of an assessment of Imperative Reasons of Overriding Public Interest (IROPI), it is deemed that the project or plan should proceed.

The current report is a Screening Report and therefore makes Stage One assessment only.

According to DoEHLG (2010), screening can result in the following possible conclusions or outcomes:

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1. **AA is not required.** Screening establishes that the plan or project is directly connected with or necessary to the nature conservation management of the site.
2. **No potential for significant effects/AA is not required.** Screening establishes that there is no potential for significant effects and the project or plan can proceed as proposed. However, no changes may be made after this as this will invalidate the findings of screening. Documentation of the AA screening process, including conclusions reached and how decisions were made, must be kept on file.
3. **Significant effects are certain, likely or uncertain.** The plan or project must either proceed to Stage 2 (AA), or be rejected. Rejection of a plan or project that is too potentially damaging and/or inappropriate ends the process and negates any need to proceed to Stage 2 (AA).

The safeguards set out in Article 6(3) and (4) of the Habitats Directive are triggered not by certainty but by the possibility of significant effects. Thus, in line with the precautionary principle, it is unacceptable to fail to undertake an appropriate assessment on the basis that it is not certain that there are significant effects.

The approach to screening is likely to differ somewhat for plans and projects, depending on scale and on the likely effects. It is stated in DoEHLG (2010) that any Natura 2000 site within or adjacent to the proposed development area as well as any Natura 2000 sites within the likely zone of impact should be included for assessment. A distance of 15km is currently recommended by DoEHLG (2010) to loosely define the zone of impact in the case of plans but the distance could be much less than 15km, and in some cases less than 100m; this must be evaluated on a case-by-case basis with reference to the nature, size and location of the project, and the sensitivities of the ecological receptors, and the potential for in combination effects. In the case of the current project, where all proposed works are located outside of Special Areas of Conservation and Special Protection Areas, only the nearest Special Areas of Conservation and Special Protection Areas and / or those with downstream hydrological connectivity have been considered.

Again it is noted that the current report provides an indicative pre-assessment screening as final designs have not been agreed and options for the proposal are still being considered. As in DoEHLG, (2010), if the Screening concludes that there is no potential for significant effects, no changes may be made to the proposal after this conclusion as it would invalidate the findings of the Screening. Therefore this is an indicative interim report only. A full pre-assessment screening will be carried out for the selected route at the preliminary design stage and this will take all recent and relevant CJEU Rulings into account.

### 3. DESCRIPTION OF PROJECT CHARACTERISTICS

For the N24 Carrick Road Improvement Scheme, three broad minor scheme corridor options have been developed. The length of the corridor options vary from 1.9km to 2.3km. It is noted only one of these scheme options will be constructed. One new drainage outfall to an existing watercourse is anticipated, and will be required on the western end of the scheme for all route options. It is also anticipated that realignment of this said watercourse will be required. An existing piped road drainage system and associated outfall shall be used on the eastern side. Land-take and hedgerow removal will be required for all three corridor options to varying degrees. A new road drainage system discharging to the outfall locations mentioned above will be required along all of the corridor options.

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All three scheme corridor options are illustrated in Figure 2 along with the nearest Special Area of Conservation: Lower River Suir SAC (002137).

Project specific preliminary design drawings and details of the proposed scheme cross-section options are indicated in drawings in Appendix 1.

## 4 IDENTIFICATION OF RELEVANT NATURA 2000 SITES

### 4.1 Rationale for Appropriate Assessment Screening

Article 6 assessments are required under the Habitats Directive (92/43/EEC). In instances where a plan or project may give rise to significant effects upon a Natura 2000 site. Natura 2000 sites are those identified as sites of European Community importance designated under the Habitats Directive (Special Areas of Conservation, here after referred to as SACs) or the Birds Directive (Special Protection Areas, here after referred to as SPAs).

Following the guidelines set out by DoEHLG (2010) Appropriate Assessment Stage 1: Screening is the process that addresses and records the reasoning and conclusions in relation to the first two tests of Article 6(3); i.e. whether a plan or project can be excluded from Appropriate Assessment requirements because it is directly connected with or necessary to the management of the site; and the potential effects of a project or plan, either alone or in combination with other projects or plans, on a Natura 2000 site in view of its conservation objectives, and considering whether these effects will be significant.

According to DoEHLG (2010), screening is the process that addresses and records the reasoning and conclusions in relation to the first two tests of Article 6(3) of the EU Habitats Directive:

- (1) Whether a plan or project is directly connected to or necessary for the management of the site, and;
- (2) Whether a plan or project, alone or in combination with other plans and projects, is likely to have significant effects on a Natura 2000 site in view of its conservation objectives.

The proposed road improvement works near Mooncoin, Co. Kilkenny does not comply with the first screening test (i.e. the proposed works are not directly connected to or necessary for the management of any Natura 2000 site). The current Screening Assessment therefore sets out to determine whether the development, alone or in combination with other plans and projects, is likely to have significant effects on the Natura 2000 sites within the study area.

If the effects are deemed to be significant, potentially significant, or uncertain, or if the screening process becomes overly complicated, then the process must proceed to Natura Impact Statement. When assessing the significance of potential effects, DoEHLG (2010) recommends that "a precautionary approach is fundamental and, in cases of uncertainty, it should be assumed the effects could be significant".

### 4.2 Natura 2000 sites considered for the proposed works

The location of the N24 Carrick Road Improvement Scheme in the context of the Natura 2000 network is indicated in Figure 1. Special Areas of Conservation (SAC's) are sites of international importance because of the presence of habitats or species that are of European importance, listed on the EU Habitats Directive (1992). Special Protection Areas (SPA's) for birds are designated based on the

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presence of internationally significant populations of bird species, listed in Annex I of the EU Birds Directive (2009).

Special Areas of Conservation (SAC) and Special Protection Areas (SPAs) considered in the current screening are listed in Table 1. The proposed N24 Carrick Road Improvement Scheme does not lie within any SAC or any SPA. The closest Special Area of Conservation is the Lower River Suir SAC (Site Code: 002137), located ca. 470m south-west of the development. This site will be considered further in relation to potential impacts arising from the proposed development.

Hugginstown Fen SAC (Site Code: 000404) lies approximately 13.2km North-east of the proposed development. The Lower River Suir SAC and the Hugginstown Fen SAC are the only Special Areas of Conservation within 15km of the proposed development. The Hugginstown Fen SAC will not be considered further in the screening due to a lack of pathways for effects and the geological separation from the proposed development. No Special Protection Areas lie within 15km of the proposed development.

#### 4.2.1 Lower River Suir SAC

The Lower River Suir SAC comprises the freshwater stretches of the River Suir south of Thurles, the tidal stretches as far as the confluence with the Barrow / Nore immediately east of Cheekpoint in Co. Waterford, and many tributaries along the way. The Suir and its tributaries flow through counties Tipperary, Kilkenny and Waterford. This site is designated mostly for aquatic habitats and species. The Lower River Suir holds excellent examples of a number of Annex I habitats, including the priority habitats alluvial forest and Yew Woodland. The site also supports populations of several important species; some listed on Annex II of the Habitats Directive or listed in the Irish Red Data Book. The presence of two legally protected plants and the ornithological importance of the site adds further to the ecological interest and importance.

It is noted that the Lower River Suir SAC adjacent to the proposed development site is classified as a WFD Transitional Waterbody, i.e. an estuary. Estuaries have natural and dynamic levels of sediment and low sensitivities to pollution. No Freshwater Pearl Mussel habitat or White-clawed Crayfish habitat exist in this stretch of the river adjacent to the proposed development site. No Salmon, Twaité Shad or Lamprey nursery habitat is present along this stretch. In addition, no Salmon, Twaité Shad or Lamprey spawning habitats exist in this tidal section of the Lower River Suir SAC. Salmon, Twaité Shad and Lampreys would migrate through this estuarine section of the SAC. Atlantic Salt Meadows and Mediterranean Salt Meadows are notably dynamic habitats and are tolerant of sedimentation and pollution. It is considered that Otter may be present in this section of the Lower River Suir SAC.



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Table 1 Summary details of the designated Natura 2000 sites within 15km of proposed N24 Carrick Road Improvement Scheme in Co. Kilkenny considered in the current screening.

Natura 2000 Site	Conservation Interests	Included in the current Screening Assessment (Yes/No)	Distance (km)
Lower River Suir SAC (002137)	Atlantic salt meadows ( <i>Glaucis-Puccinellietalia maritima</i> ) [1330]	Yes (hydrological connection)	423m South-West
	Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410]	Yes (hydrological connection)	
	Water courses of plain to montane levels with the <i>Ranunculus fluitans</i> and <i>Callitriche-Batrachion</i> vegetation [3260]	No (No pathways for effects; not present in study area)	
	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]	No (No pathways for effects; not present in study area)	
	Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]	No (No pathways for effects; not present in study area)	
	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> ) [91E0]	No (No pathways for effects; not present in study area)	
	<i>Taxus baccata</i> woods of the British Isles [91J0]	No (No pathways for effects; not present in study area)	
	Freshwater Pearl Mussel ( <i>Margaritifera margaritifera</i> ) [1029]	No (No pathways for effects; not present in study area)	
	White-clawed Crayfish ( <i>Austropotamobius pallipes</i> ) [1092]	No (No pathways for effects; not present in study area)	
	Sea Lamprey ( <i>Petromyzon marinus</i> ) [1095]	Yes (hydrological connection)	
	Brook Lamprey ( <i>Lampetra planeri</i> ) [1096]	Yes (hydrological connection)	
	Lampetra fluviatilis (River Lamprey) [1099]	Yes (hydrological connection)	
	Twait Shad ( <i>Alosa fallax fallax</i> ) [1103]	Yes (hydrological connection)	
	Salmon ( <i>Salmo salar</i> ) [1106]	Yes (hydrological connection)	
Otter ( <i>Lutra lutra</i> ) [1355]	Yes (hydrological connection)		
Hugginstown Fen SAC (000404)	Alkaline fens [7230]	No (No pathways for effects; geological separation)	13.2km North-east

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Figure 2 Location of N24 Carrick Road Improvement Scheme showing Lower River Suir SAC (0021337).



## 5. ASSESSMENT OF EFFECTS

The potential direct, indirect and cumulative impacts on Natura 2000 sites identified in section 4 resulting from the proposed N24 Carrick Road Improvement Scheme are discussed below. Table 2 below summarises the impacts that may arise from the construction and operational phases of each of the three minor scheme options. Although the final route option has not been chosen, it is assumed that as the current proposal is for a National Road Scheme, the following guidelines will be followed during the construction phase of the project:

- 'Guidelines for the crossing of watercourses during the construction of National Road schemes' (NRA, 2008)
- 'The management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads' (NRA, 2010).

Table 2 Summary of the potential impacts for the construction and operational phases of each of the three minor scheme options for the N24 Carrick Road Improvement Scheme.

Scheme Option	Impacts during construction phase	Impacts during operational phase	Ranking of preference
Corridor 1	No significant impacts on the Lower River Suir SAC predicted	No significant impacts on the Lower River Suir SAC predicted	1
Corridor 2	No significant impacts on the Lower River Suir SAC predicted	No significant impacts on the Lower River Suir SAC predicted	1
Corridor 3	No significant impacts on the Lower River Suir SAC predicted	No significant impacts on the Lower River Suir SAC predicted	1

### 5.1 Assessment of potential direct impacts affecting Natura 2000 sites

#### 5.1.1 Construction Phase

None of the three options for the N24 Carrick Road Improvement Scheme would be located within the boundary of the Lower River Suir SAC. At their closest, Corridor 1, 2 and 3 would be located approximately 500m, 423m and 602m north-east of the Lower River Suir respectively. It is also noted that the Skelstown 16 Stream within the proposed development site is considered to be too small to have habitat suitable for the conservation interests of the SAC. There is no potential for direct impacts arising from the construction phase that would have the ability to affect the conservation interests of the SAC.

#### 5.1.2 Operational Phase

For the same reasons listed above in section 5.1.1, it is considered that there would be no direct impacts arising from the operational phase of the proposed road scheme that would affect the conservation interests of the Lower River Suir SAC.

### 5.2 Assessment of potential indirect impacts affecting Natura 2000 sites

Indirect (or secondary) impacts are defined as effects that are "caused by and result from the activity although they are later in time or further removed in distance, but still reasonably foreseeable" (Bowers-Marriott, 1997).



### 5.2.1 Construction Phase

The proposed N24 Carrick Road Improvement Scheme is located approximately 423m north-east of the Lower River Suir SAC. There is a hydrological connection to the SAC in the form of a stream that runs through the proposed development area; the Skepstown 16 Stream (EPA Segment Code: 16\_10766). This stream is ca. 1.4km in length. It was noted during the walkover survey that this stream has a low sluggish flow, a low gradient and is overgrown with instream vegetation. It is also noted that this stream flows into the River Suir, at which point the watercourse is classed as a WFD transitional waterbody, i.e. an estuary. Therefore, the sensitivity of the river to pollution is low. The total catchment Area of the Suir is 3553km<sup>2</sup> (EPA online maps). The EPA online hydrometric data system does not hold flow data for the Skepstown 16 Stream likely because it is such a small watercourse. The Skepstown 16 Stream is considered to be a weak hydrological connection with the SAC. This stream is also considered to be too small to contain the conservation interests of the SAC.

Road Schemes in general may cause impacts to water quality through run-off from construction, bank erosion, pollution due to substances such as hydrocarbons (including fuels and lubricants), waste concrete and waste water. However, in the case of the N24 Improvement Scheme, there is not considered to be a potential for significant impacts such as this on the conservation interests of the SAC. This is due to the weak hydrological connection via the Skepstown 16 Stream, the estuary of the River Suir at which this stream flows into, and that the NRA guidelines on the crossing of watercourses will be followed (NRA, 2006). It is noted that all three scheme options do not have the potential for significant impacts on water quality.

Typically, road schemes can have the potential to introduce and / or spread non-native invasive species. In the case of the N24 Carrick Road Improvement Scheme, the NRA biosecurity guidelines will be followed and therefore there will be no significant impacts arising regarding non-native invasive species. It is noted that all three scheme options do not have the potential for significant impacts in relation to non-native invasive species.

### 5.2.2 Operational Phase

There is an existing piped road drainage system and associated outfall located on the eastern side of the current N24 that will be used for the eastern side drainage for all three proposed scheme options. In addition, one new drainage outfall to an existing watercourse will be required on the western end for all route options. It is assumed the drainage system will include attenuation within filter drains or separate attenuation ponds / grassed open ditches in advance of discharge to receiving waters. Therefore it is not envisaged that any significant operational phase water quality impacts will arise.

## 5.3 Assessment of potential cumulative impacts affecting the Natura 2000 site

Cumulative impacts or effects are changes in the environment that result from numerous human-induced, small-scale alterations. Cumulative impacts can be thought of as occurring through two main pathways: first, through persistent additions or losses of the same materials or resource, and second, through the compounding effects as a result of the coming together of two or more effects (Bowers-Marrott, 1997).

The Natura 2000 form provided by the NPWS names and quantifies the threats, pressures and activities that have impacts on the corresponding Natura 2000 site as a whole (NPWS, 2015). The following threats and pressures are considered to have a high potential for negative impacts on the

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Lower River Suir SAC: Urbanised areas, human habitation; dykes and flooding defence in inland water systems; pollution to surface water; fertilisation; discharges. In the case of the current project, there is considered to be no potential for significant cumulative impacts taking into account the list of threats and pressures on the SAC. There will be no significant impacts regarding pollution to surface water due to the small size of the Skeipstown 16 Stream, the presence of instream vegetation and the low flow of the only hydrological connection to the estuarine section of the Lower River Suir SAC. It is noted that all three scheme options do not have the potential for significant cumulative impacts.

## 6. SCREENING STATEMENT WITH CONCLUSIONS

According to the guidance published by the DoEHLG (2010), Screening for Appropriate Assessment can either identify that an Appropriate Assessment is not required, where a project / proposal is directly related to the management of the site; or that there is no potential for significant effects affecting the Natura 2000 network; or that significant effects are certain, likely or uncertain (i.e., the project must either proceed to Stage 2 (AA) or be rejected).

The proposed development of the N24 Carrick Road Improvement Scheme is identified to lie approximately 470m north-east of the Lower River Suir SAC. It is hydrologically connected to the SAC via a slow flowing stream, the Skeipstown 16 Stream. The proposed works will take place upstream of a large estuary, meaning the sensitivities to water pollution are low and sediments are known to be naturally dynamic. There is no potential for direct impacts as none of the scheme options would be located within the boundary of the Lower River Suir SAC. There is no potential for significant indirect impacts during either the construction or operational phases. This is due to the weak hydrological connection to the SAC via the Skeipstown 16 Stream, the estuarine nature of the River Suir at this point, and the implementation of NRA guidelines (NRA, 2008). No significant impacts regarding non-native invasive species will arise as NRA biosecurity guidelines will be followed (NRA, 2010). No significant operational phase impacts will arise as the drainage system will include attenuation within filter drains or separate attenuation ponds / grassed open ditches in advance of discharge to receiving waters. All options assessed are preliminary layouts and are not detailed designs for the N24 Carrick Road Improvement Scheme. This comparative assessment concludes that any of the three scheme options could be built without any significant impacts on the conservation interests of the Lower River Suir SAC.

It is noted that this is an Indicative Pre-assessment Screening only. Pre-assessment Screening cannot be undertaken at the preliminary design stage when options are still being considered. This is an Interim Report for the purpose of route selection only. As noted in DoEHLG (2010), if the Screening concludes that there is no potential for significant effects, no changes may be made to the proposal after this conclusion as it would invalidate the findings of the Screening. Therefore this is an indicative interim report only. A full pre-assessment screening will be carried out for the selected route at the preliminary design stage and this will take all recent and relevant CJEU Rulings into account.

From examination of the information available, it is therefore considered that none of the three options put forward for the proposed N24 Carrick Road Improvement Scheme would give rise to any direct, indirect or cumulative impacts which would have the potential to significantly affect the conservation interests of the Lower River Suir SAC. For this reason, the current Screening for Appropriate Assessment has determined that a Natura Impact Statement (AIS) is not required for the proposed N24 Carrick Road Improvement Scheme. However, the final design of the chosen route will need to be examined again after selection and this will take all recent and relevant CJEU Rulings into account.

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**APPENDIX 1 PROJECT DRAWINGS**

INTERIM REPORT

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## APPENDIX 2 NPWS Site Synopses

**SITE NAME: LOWER RIVER SUIR SAC**  
**SITE CODE: 002137**

Lower River Suir SAC consists of the freshwater stretches of the River Suir immediately south of Thurles, the tidal stretches as far as the confluence with the Barrow/Nore immediately east of Cheekpoint in Co. Waterford, and many tributaries including the Clodiagh in Co. Waterford, the Lingaun, Anner, Nier, Tar, Aherlow, Multeen and Clodiagh in Co. Tipperary. The Suir and its tributaries flow through the counties of Tipperary, Kilkenny and Waterford.

Upstream of Waterford city, the swinging meanders of the Suir criss-cross the Devonian sandstone rim of hard rocks no less than three times as they leave the limestone-floored downfold below Carrick-on-Suir. In the vicinity of Carrick-on-Suir the river follows the limestone floor of the Carrick Syncline. Upstream of Clonmel the river and its tributaries traverse Upper Palaeozoic Rocks, mainly the Lower Carboniferous Visean and Toumalian. The freshwater stretches of the Clodiagh River in Co. Waterford traverse Silurian rocks, through narrow bands of Old Red Sandstone and Lower Avonian Shales, before reaching the carboniferous limestone close to its confluence with the Suir. The Aherlow River flows through a Carboniferous limestone valley, with outcrops of Old Red Sandstone forming the Galtee Mountains to the south and the Silevenamuck range to the north. Glacial deposits of sands and gravels are common along the valley bottom, flanking the present-day river course.

Alluvial wet woodland is a declining habitat type in Europe as a result of drainage and reclamation. The best examples of this type of woodland in the site are found on the Islands just below Carrick-on-Suir and at Fiddown Island. Species occurring here include Almond Willow (*Salix triandra*), White Willow (*S. alba*), Rusty Willow (*S. cinerea* subsp. *oleifolia*), Osier (*S. viminalis*), with Yellow Iris (*Iris pseudacorus*), Hemlock Water-dropwort (*Oenanthe crocata*), Wild Angelica (*Angelica sylvestris*), Pendulous Sedge (*Carex pendula*), Meadowsweet (*Filipendula ulmaria*) and Common Valerian (*Valeriana officinalis*). The terrain is littered with dead trunks and branches and intersected with small channels which carry small streams to the river. The bryophyte and lichen floras appear to be rich. A small plot is currently being coppiced and managed by the National Parks and Wildlife Service. In the drier areas species such as Ash (*Fraxinus excelsior*), Hazel (*Corylus avellana*), Hawthorn (*Crataegus monogyna*) and Blackthorn (*Prunus spinosa*) occur.

Eutrophic tall herb vegetation occurs in association with the various areas of alluvial forest and elsewhere where the floodplain of the river is intact. Characteristic species of the habitat include Meadowsweet, Purple Loosestrife (*Lythrum salicaria*), Marsh Ragwort (*Senecio aquaticus*), Ground Ivy (*Glechoma hederacea*) and Hedge Bindweed (*Calystegia sepium*).

Old oak woodlands are also of importance at the site. The best examples are seen in Portlaw Wood which lies on both sides of the Clodiagh River. On the south-facing side the stand is more open and the oaks (mainly Pedunculate Oak, *Quercus robur*) are well grown and spreading. Ivy (*Hedera helix*) and Bramble (*Rubus fruticosus* agg.) are common on the ground, indicating relatively high light conditions. Oak regeneration is dense, varying in age from 0-40 years and Holly (*Ilex aquifolium*) is fairly common but mostly quite young. Across the valley, by contrast, the trees are much more closely spaced and though taller, are poorly grown on average. There are no clearings; large oaks extend to the boundary wall. In the darker conditions, Ivy is much rarer and Holly much more frequent, forming a closed canopy in places. Oak regeneration is uncommon since there are as yet few natural clearings. The shallowness of the soil on the north-facing slope probably contributes to the poor tree growth there. The acid nature of the substrate has induced a 'mountain' type oakwood community to

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develop. The site is quite species-rich throughout, including an abundance of mosses, liverworts and lichens. The rare lichen *Lobaria pulmonaria*, an indicator of ancient woodlands, is found here.

Inchinsquillib Wood consists of three small separate sloping blocks of woodland in a valley cut by the young Muteen River and its tributaries through acidic Old Red Sandstone and Silurian rocks. Two blocks, both with an eastern aspect, located to the north of the road, are predominantly of Sessile Oak (*Quercus petraea*) and Hazel, with Downy Birch (*Betula pubescens*), Ash and Holly. The ground flora is quite mixed with, for example, Wood-sedge (*Carex sylvatica*), Bluebell (*Hyacinthoides non-scripta*), Primrose (*Primula vulgaris*), Wood-sorrel (*Oxalis acetosella*), Pignut (*Conopodium majus*) and Hard Fern (*Blechnum spicant*). The base poor nature of the underlying rock is to some extent masked by the overlying drift. The third block, to the south of the road, and with a northern aspect, is a similar although less mature mixture of Sessile Oak, Birch and Holly. Here the influence of the drift is more marked, with the occurrence of Wood Anemone (*Anemone nemorosa*) amongst the ground flora.

Two stands of Yew (*Taxus baccata*) woods, a rare habitat in Ireland and the E.U., occur within the site. These are on limestone ridges at Shanbally and Cahir Park. Both are in woods planted with non-native species, including conifers. However, the area at Cahir Park is fairly substantial in size and includes some relatively undisturbed patches of wood and some very old trees. Regeneration of the Yew trees is mostly poor, due to competition from species such as Sycamore (*Acer pseudoplatanus*) and, at Shanbally, due to heavy grazing by goats. Other native species which occur with the Yew trees include Ash, Pedunculate Oak, Hazel and Spindle (*Euonymus europaeus*). Future prospects for these Yew woods are good as the sites are proposed for restoration under a Collite E.U. LIFE programme.

Floating river vegetation is evident in the freshwater stretches of the River Suir and along many of its tributaries. Typical species found include Canadian Pondweed (*Elodea canadensis*), water-milfoil (*Myriophyllum* spp.), Fennel Pondweed (*Potamogeton pectinatus*), Curled Pondweed (*P. crispus*), Perfoliate Pondweed (*P. perfoliatus*), Pond Water-crowfoot (*Ranunculus peltatus*), other crowfoots (*Ranunculus* spp.) and the moss *Fornthais antipyretica*. At a couple of locations along the river Opposite-leaved Pondweed (*Groenlandia densa*) occurs. This species is protected under the Flora (Protection) Order, 1999.

The Aherlow River is fast flowing and mostly follows a natural unmodified river channel. Submerged vegetation includes the aquatic moss *Fornthais antipyretica* and Stream Water-crowfoot (*R. pectinatus*), while shallow areas support species such as Reed Canary-grass (*Phalaris arundinacea*), Brooklime (*Veronica beccabunga*) and Water Mint (*Mentha aquatica*). The river bank is fringed in places with Alder (*Alnus glutinosa*) and willows (*Salix* spp.).

The Muteen River is fast flowing, mostly gravel-bottomed and appears to follow a natural unmodified river channel. Water-crowfoots occur in abundance and the aquatic moss *Fornthais antipyretica* is also common. In sheltered shallows, species such as Water-cress (*Nasturtium officinale*) and water-starworts (*Callitriche* spp.) occur. The river channel is fringed for most of its length with Alder, Willow and a narrow strip of marshy vegetation.

Salt meadows occur below Waterford City in old meadows where the embankment is absent, or has been breached, and along the tidal stretches of some of the inflowing rivers below Little Island. There are very narrow, non-continuous bands of this habitat along both banks. More extensive areas are also seen along the south bank at Ballynakill, the east side of Little Island, and in three large salt meadows between Ballynakill and Cheekpoint. The Atlantic and Mediterranean sub-types are generally intermixed. The species list is extensive and includes Red Fescue (*Festuca rubra*), oraches

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(*Atriplex* spp.), Sea Aster (*Aster tripollum*), Sea Couch (*Elymus pycnanthus*), frequent Sea Milkwort (*Glaux maritima*), occasional Wild Celery (*Aplum graveolens*), Parsley Water-dropwort (*Oenanthe lachenalii*), English Scurvygrass (*Cochlearia anglica*) and Sea Arrowgrass (*Triglochin maritima*). These species are more representative of the Atlantic sub-type of the habitat. Common Cord-grass (*Spartina anglica*), is rather frequent along the main channel edge and up the internal channels. The legally protected (Flora (Protection) Order, 1999) Meadow Barley (*Hordeum secalinum*) grows at the landward transition of the saltmarsh. Sea Rush (*Juncus maritimus*), an indicator of the Mediterranean salt meadows, also occurs.

Other habitats at the site include wet and dry grassland, marsh, reedswamp, improved grassland, coniferous plantations, deciduous woodland, scrub, tidal river, stony shore and mudflats. The most dominant habitat adjoining the river is improved grassland, although there are wet fields with species such as Yellow Iris, Meadowsweet, rushes (*Juncus* spp.), Meadow Buttercup (*Ranunculus acris*) and Cuckooflower (*Cardamine pratensis*).

Cabragh marshes, just below Thurles, lie in a low-lying tributary valley into which the main river floods in winter. Here there is an extensive area of Common Reed (*Phragmites australis*) with associated marshland and peaty fen. The transition between vegetation types is often well displayed. A number of wetland plants of interest occur, in particular the Narrow-leaved Bulrush (*Typha angustifolia*), Bottle Sedge (*Carex rostrata*) and Blunt-flowered Rush (*Juncus subnodulosus*). The marsh is naturally eutrophic but it has also the nutritional legacy of the former sugar factory which discharged into it through a number of holding lagoons, now removed. Production is high, which is seen in the size of such species as Celery-leaved Buttercup (*Ranunculus sceleratus*), as well as in the reeds themselves.

Throughout the Lower River Suir site are small areas of woodland other than those described above. These tend to be a mixture of native and non-native species, although there are some areas of semi-natural wet woodland with species such as Ash and Willow. Cahir Park Woodlands is a narrow tract of mixed deciduous woodland lying on the flat-lying floodplain of the River Suir. This estate woodland was planted over one hundred years ago and it contains a large component of exotic tree species. However, due to original planting and natural regeneration there is now a good mix of native and exotic species. About 5 km north-west of Cashel, Ardmayle pond is a long, possibly artificial water body running parallel to the River Suir. It is partly shaded by planted Lime (*Tilia hybrids*), Sycamore and the native Alder. Growing beneath the trees are shade tolerant species such as Remote sedge (*Carex remota*).

The site is of particular conservation interest for the presence of a number of Annex II animal species, including Freshwater Pearl Mussel (both *Margaritifera margaritifera* and *M. margaritifera* subsp. *durrovensis* occur), White-clawed Crayfish, Salmon, Twaité Shad (*Alosa fallax fallax*), three species of Lampreys - Sea Lamprey, Brook Lamprey and River Lamprey, and Otter. This is one of only three known spawning grounds in the country for Twaité Shad.

The site also supports populations of several other animal species. Those which are listed in the Irish Red Data Book include Daubenton's Bat, Natterer's Bat, Pipistrelle Bat, Pine Marten, Badger, Irish Hare, Smelt and Common Frog. Breeding stocks of Carp are found in Kilsheelan Lake. This is one of only two lakes in the country which is known to have supported breeding Carp. Carp require unusually high summer water temperatures to breed in Ireland. As the site is therefore unusual in this regard, it may also support interesting invertebrate populations.

AA Screening: N24 Carrick Road Improvement Scheme, Co. Kilkenny  
September 2019



Parts of the site have also been identified as of ornithological importance for a number of Annex I (E.U. Birds Directive) bird species, including Greenland Whitefronted Goose (10), Golden Plover (1,490), Whooper Swan (7) and Kingfisher. Figures given in brackets are the average maximum counts from four count areas within the site for the three winters 1994-1997. Wintering populations of migratory birds use the site. Flocks are seen in Coolfinn Marsh and also along the reedbeds and saltmarsh areas of the Suir. Coolfinn supports nationally important numbers of Greylag Goose on a regular basis, with numbers between 600 and 700 recorded. Other species occurring include Mallard (21), Teal (159), Widgeon (26), Tufted Duck (60), Pintail (4), Pochard (2), Little Grebe (2), Black-tailed Godwit (20), Oystercatcher (16), Lapwing (993), Dunlin (101), Curlew (195), Redshank (28), Greenshank (4) and Green Sandpiper (1). Nationally important numbers of Lapwing (2,750) were recorded at Faltheagg in the winter of 1996/97. In Cabragh marshes there is abundant food for surface feeding wildfowl which total approximately 1,000 in winter. Widgeon, Teal and Mallard are numerous, and the latter has a large breeding population, with up to 400 in summer. In addition, less frequent species like Shoveler and Pintail occur and there are records for both Whooper and Bewick's swans. Kingfisher, a species that is listed on Annex I of the E.U. Birds Directive, occurs along some of the many tributaries throughout the site.

Land use at the site consists mainly of agricultural activities including grazing, silage production, fertilising and land reclamation. The grassland is intensively managed and the rivers are therefore vulnerable to pollution from run-off of fertilisers and slurry. Arable crops are also grown. Fishing is a main tourist attraction on stretches of the Suir and some of its tributaries, and there are a number of Angler Associations, some with a number of beats. Fishing stands and styles have been erected in places. Both commercial and leisure fishing takes place on the rivers. The Aherlow River is a designated Salmonid Water under the E.U. Freshwater Fish Directive. Other recreational activities such as boating, golfing and walking are also popular. Several industrial developments, which discharge into the river, border the site including three dairy related operations and a tannery.

The Lower River Suir contains excellent examples of a number of Annex I habitats, including the priority habitats alluvial forest and Yew woodland. The site also supports populations of several important animals species, some listed on Annex II of the Habitats Directive or listed in the Irish Red Data Book. The presence of two legally protected plants (Flora (Protection) Order, 1999) and the ornithological importance of the site adds further to the ecological interest and importance.

Section A6.3: Competent Authority Report (Kilkenny Co. Council Planning) on AA Screening

IR 501

**N24 Carrick Road Improvement Scheme – AA Screening**

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Denis,

Further to your email, I have reviewed attached Screening for Appropriate Assessment report of the proposed N24 Carrick Road Improvement Scheme located west of Mooncoin village, Co. Kilkenny and the accompany Ecological Assessment Report

The closest Special Area of Conservation is the Lower River Suir SAC (Site Code: 002137), located ca. 470m south-west of the development. This Natura 2000 site is hydrologically connected to the proposed development via the Skelpstown Stream. This is a very small low gradient stream with limited ability to convey pollutants to the SAC.

Having regard to the nature of the project and distances involved and that no part of proposed development is located within or adjoining the Lower River Suir SAC or any other Natura 2000 designated site, I consider that the proposed N24 Carrick Road Improvement Scheme will not give rise to any direct, indirect or cumulative impacts which would have the potential to significantly affect the conservation interests of the Lower River Suir SAC or any other Natura 2000 designated site. I consider the project can be screened out and does not need to proceed to stage 2 NIS.

However, as there is hydrological pathway links between proposed development and the Lower River Suir (SAC) there are aspects of the AA Screening report which requires further detail and consultation to be more robust and rule out significant environmental effects as follows:-

1. A Drainage Plan which clearly shows how proposed development will impact on existing watercourse, drainage and capacity in the area. Details should be provided on the proposed realignment of the Skepstown watercourse including proposed attenuation within filter drains or separate attenuation ponds / grassed open ditches in advance of discharge to receiving waters. The new drainage outfall to existing watercourse on the western end of the scheme for all route options should be detailed including existing outfall on the eastern side demonstrating appropriate design / best practice process measures to prevent surface run-off / water quality pollution.
2. Reference in the proposed design and implementation to the following guidelines:- Note this list is not exhaustive
  - Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes;
  - Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, During and Post-Construction of National Road Schemes;

- Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan.
  - Guidelines on protection of fisheries during construction works in and adjacent to waters
  - NRA guidelines for bats, watercourses, biosecurity, invasive species and mammals will need to be followed.
3. In addition to the three bodies already consulted i.e. National Parks and Wildlife Service (NPWS); National Biodiversity Data Centre (NBDC) and Environmental Protection Agency (EPA), it is recommended that the Southern Regional Fisheries Board also be contacted with and provided with the AA Screening and environmental report via publically available sources. The developer should comply with any requirements from same.
4. A Construction Environmental Management Plan (CEMP) should be submitted as part of the AA Screening Report / detailed design which can be passed on to any contractors which follows best environmental practice, outlines design / best practice process measures to prevent water / environmental pollution and includes both construction and operational stages. The duration of the works should be mentioned including invasive species management, traffic, dust, noise, waste storage and disposal management.

I would advice that below design / implementation measures are incorporated where appropriate and demonstrated in the project design and as part of a construction environmental management plan.

- During the construction phase of the development all plant, materials and fuel shall be suitably placed and stored, and all works carried out in such a manner so as to prevent the infiltration of silt bearing material or any potentially polluting matter to the Lower River Suir (SAC) and Skepstown Stream
- The applicant shall prior to commencement of development contact relevant staff from the National Parks and Wildlife Service to ensure proposed environmental mitigation measures identified in the Construction Environmental Management Plan (CEMP) are satisfactory in terms of protection of aquatic environment (water quality, flora and fauna etc) and shall comply with any further requirements as deemed necessary from same.
- If cast in place concrete is required, the applicant/ developer shall be required to ensure that work is done in the dry and effectively isolated from any water that may enter into the stream / River for a period sufficient to cure the concrete.
- The applicant/developer should, for the purposes of elimination impact, install silt trap / petrol interceptor at locations that will intercept construction run-offs to waters. Where site works involve the discharges of drainage water to the receiving water aquatic environment Traps should not be located immediately adjacent to the waters. A buffer zone should remain between the silt trap and the receiving waters with natural vegetation left intact so as to assist in silt interception and removal.



- The applicant /developer shall be required to effectively bridge any and all waters/streams which have to be traversed/reconfigured during site development and construction prior to commencement. The entry to or crossing of the waters, it's bed by construction plant and machinery is be prohibited because of the amount of uncontrolled sedimentation that would be generated.
  - The applicant/developer shall be required to ensure that all oils and fuels used to service plant and machinery during construction phase are stored in secure bunded areas, and particularly care and attention shall be taken during refueling and maintenance operations on plant and equipment.
  - During the construction phase of the development, the developer shall ensure that all operations at the site shall be managed and programmed in such a manner as to minimise waste production. The developer shall also ensure that procedures are in place to deal with any litter arising during the construction phase of the development. Wastes sent off site for recovery or disposal shall only be conveyed by an authorised waste contractor and transported from the proposed development site to an authorised site of recovery/disposal in a manner which will not adversely affect the environment. Dumping of spoil / waste / C&D etc or any other material is not permitted to enter into any water course.
  - The existing drainage stream at Skepstown shall not be negatively impacted by proposed works and design / best practice process measures shall form part of the design and operations so as to comply with current best practice
5. No detailed design of the chosen preferred route is enclosed. The final design of the chosen route should be examined again as the current AA assessment is based on preliminary drawings of three options only. All reference to mitigation measures in the language should be replaced with design, best practice and process as appropriate.

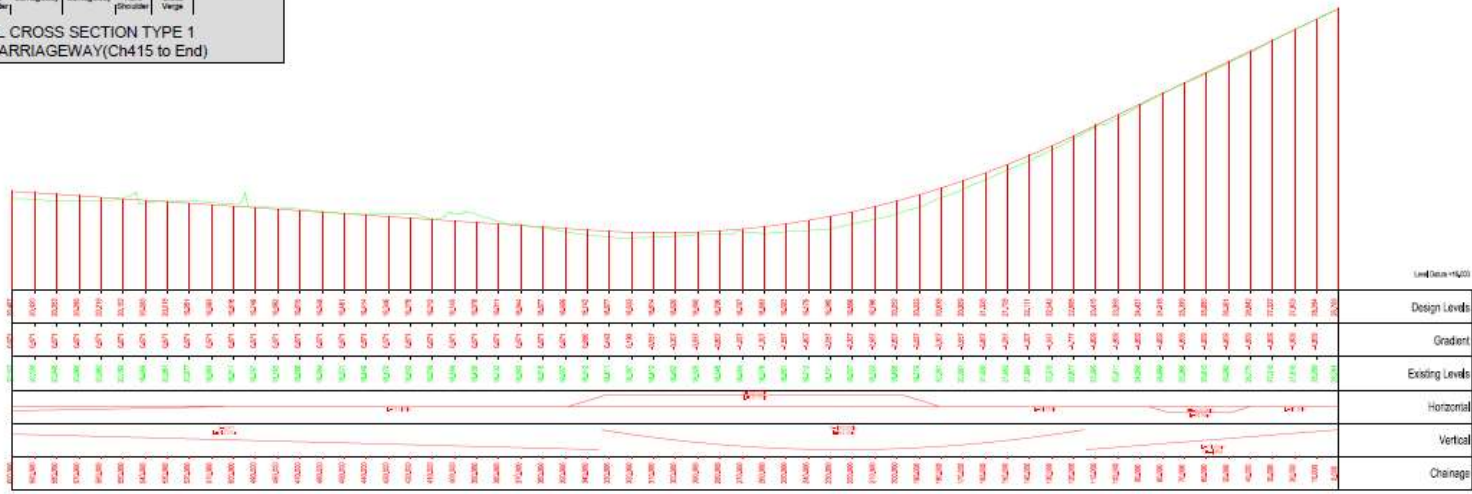
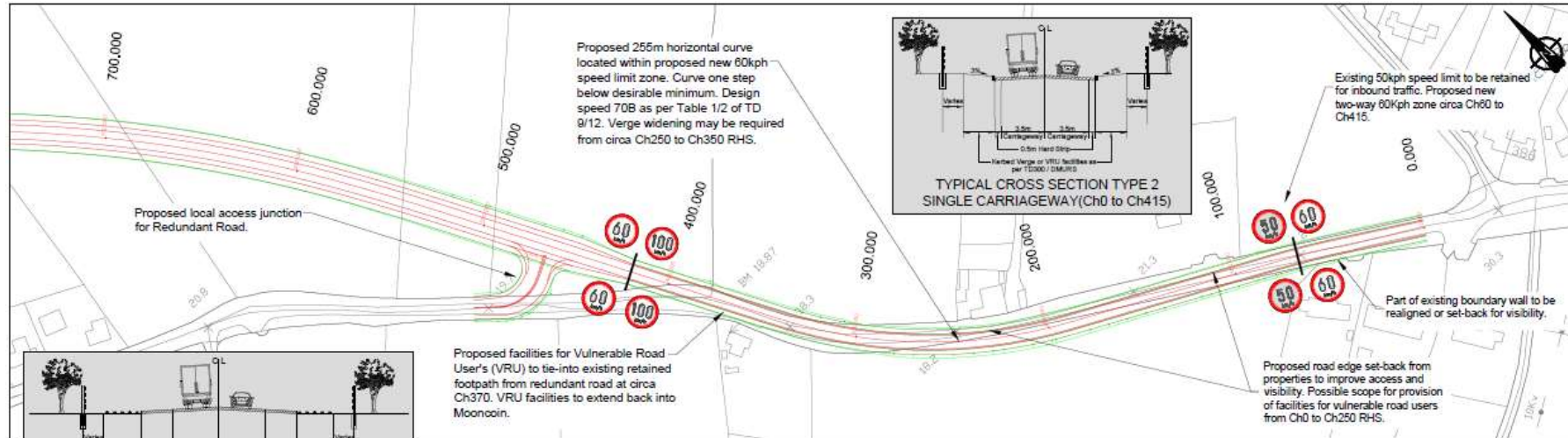
***Ross O'Shea***

**Date: 11/09/18**

## **Appendix 7 – Preliminary Design options**

Section A7.1: Preliminary Design Options 1A-1C (Corridor 1)





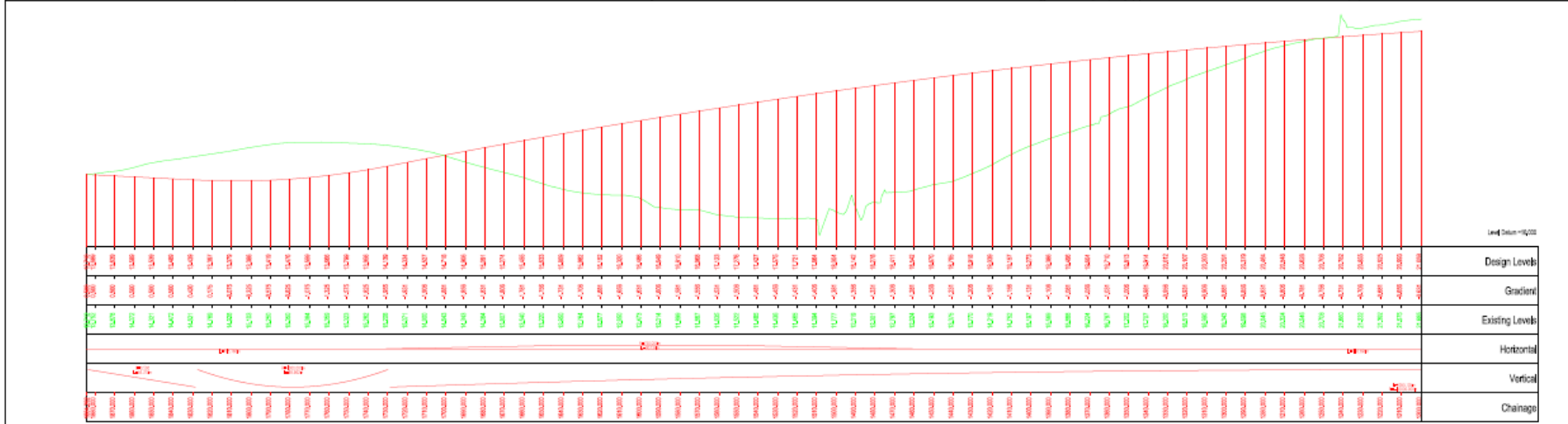
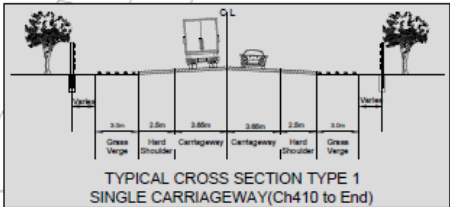
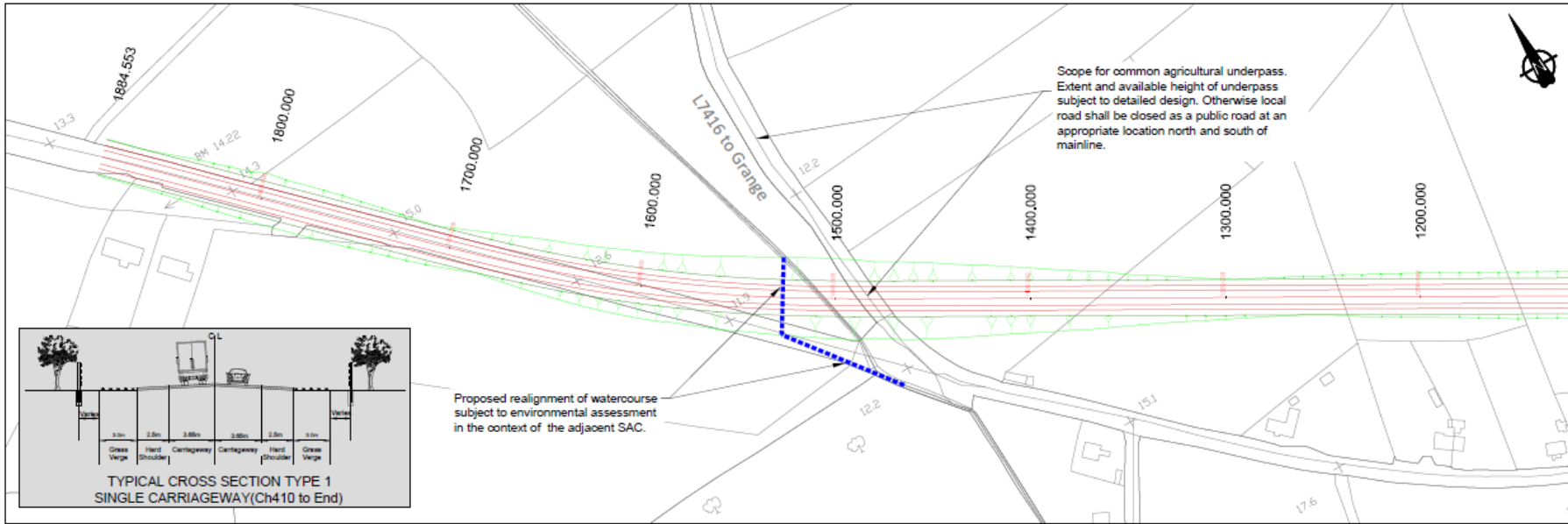
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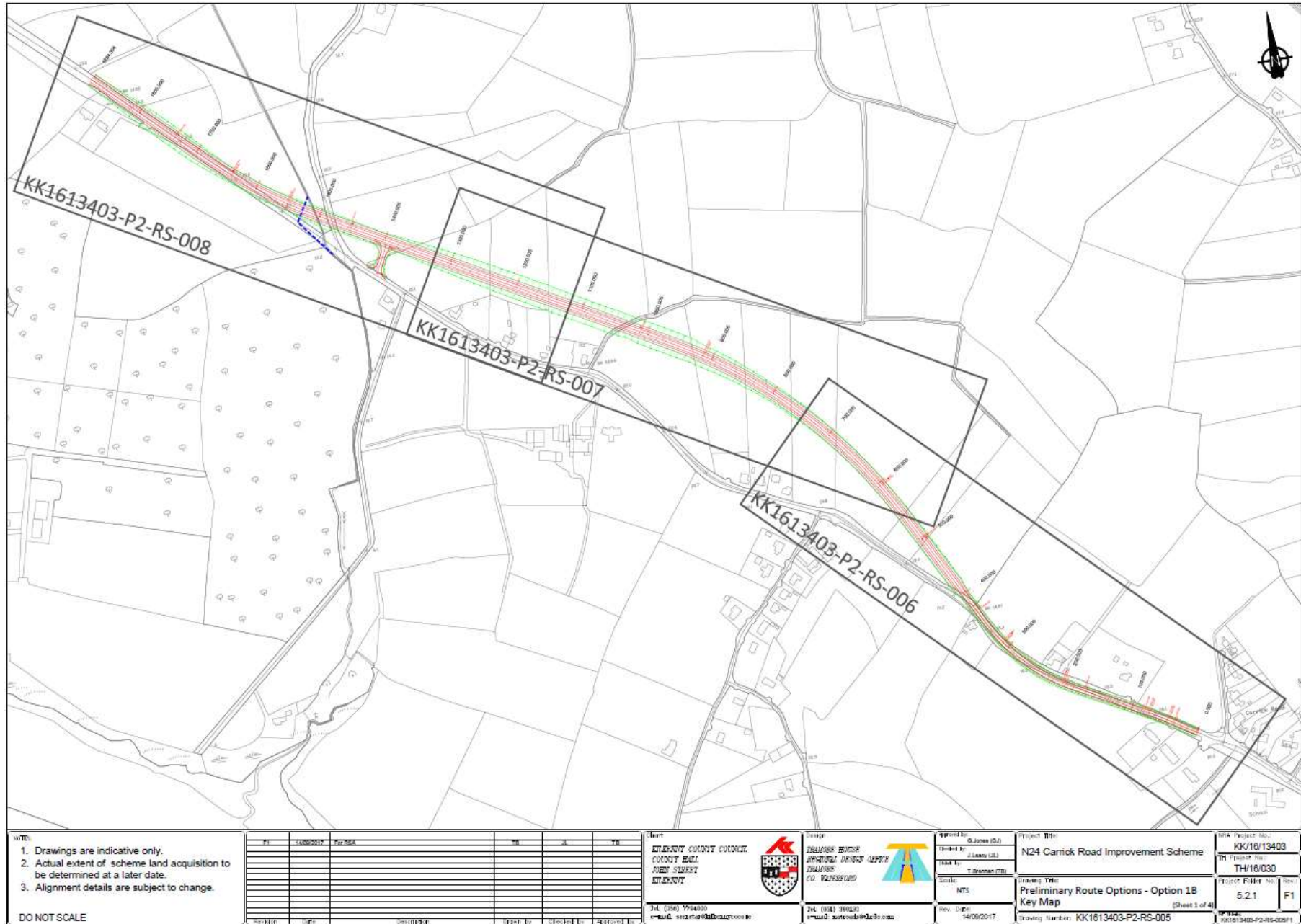
1. Drawings are indicative only.
2. Actual extent of scheme land acquisition to be determined at a later date.
3. Alignment details are subject to change.

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Drawn By: T. Swannan (TB)	Checked By: G. Jones (GJ)	Project Number: KK1613403-P2-RS-002	Revision: 14/09/2017







- NOTE:**
1. Drawings are indicative only.
  2. Actual extent of scheme land acquisition to be determined at a later date.
  3. Alignment details are subject to change.

DO NOT SCALE

NO	REVISION	DATE	BY	CHKD	APP'D

Client: **WATERFORD COUNTY COUNCIL**  
 COUNTY HALL  
 QUINN STREET  
 WATERFORD



Design: **TRAFALGAR ENGINEERING DESIGN GROUP**  
 TRAFALGAR  
 CO. WATERFORD



Approved By: G. Jones (C.C.)  
 Checked By: J. Lacey (C.C.)  
 Drawn By: T. Brennan (C.C.)

Project Title: **N24 Carrick Road Improvement Scheme**

Drawing Title: **Preliminary Route Options - Option 1B Key Map**  
 (Sheet 1 of 4)

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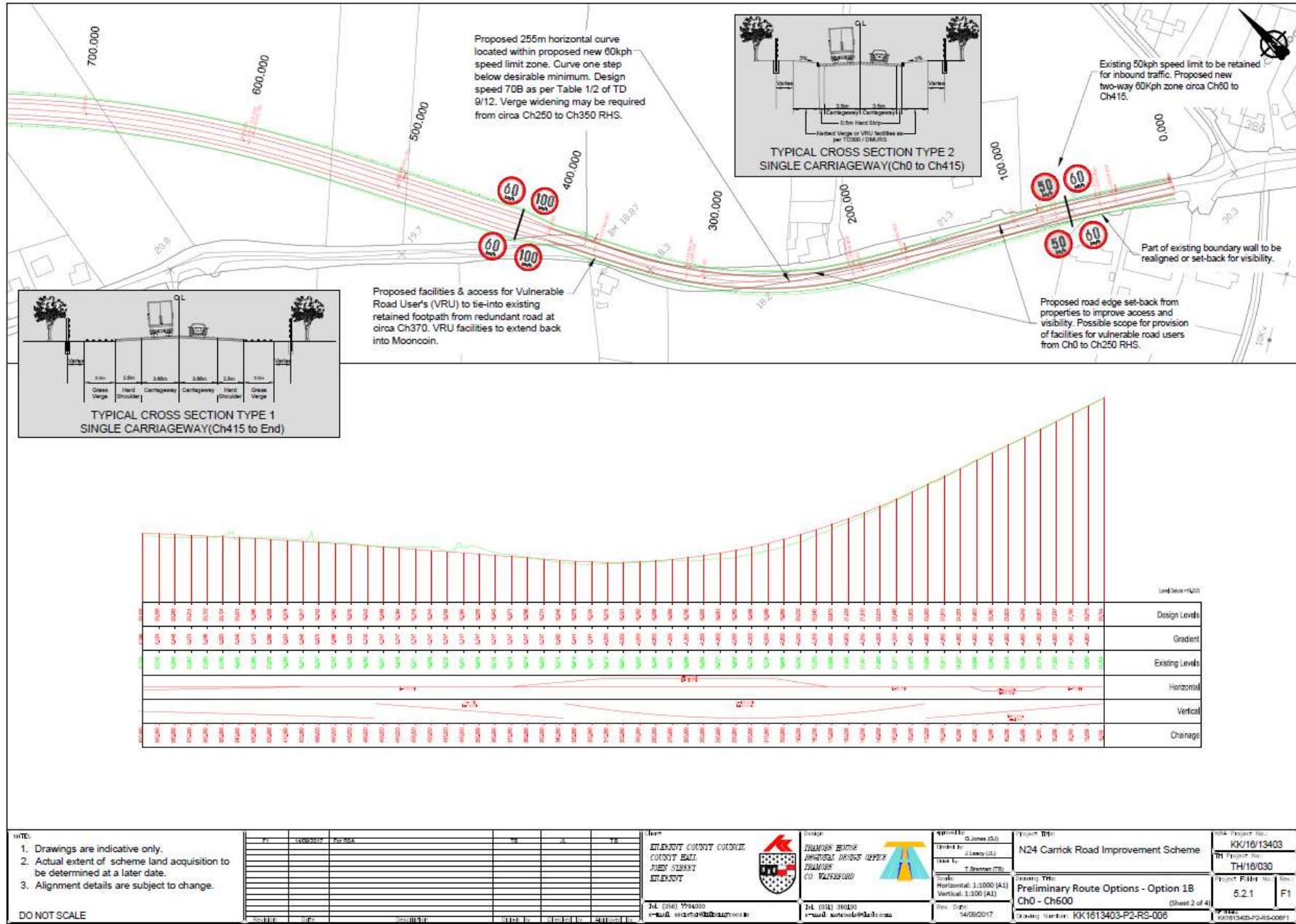
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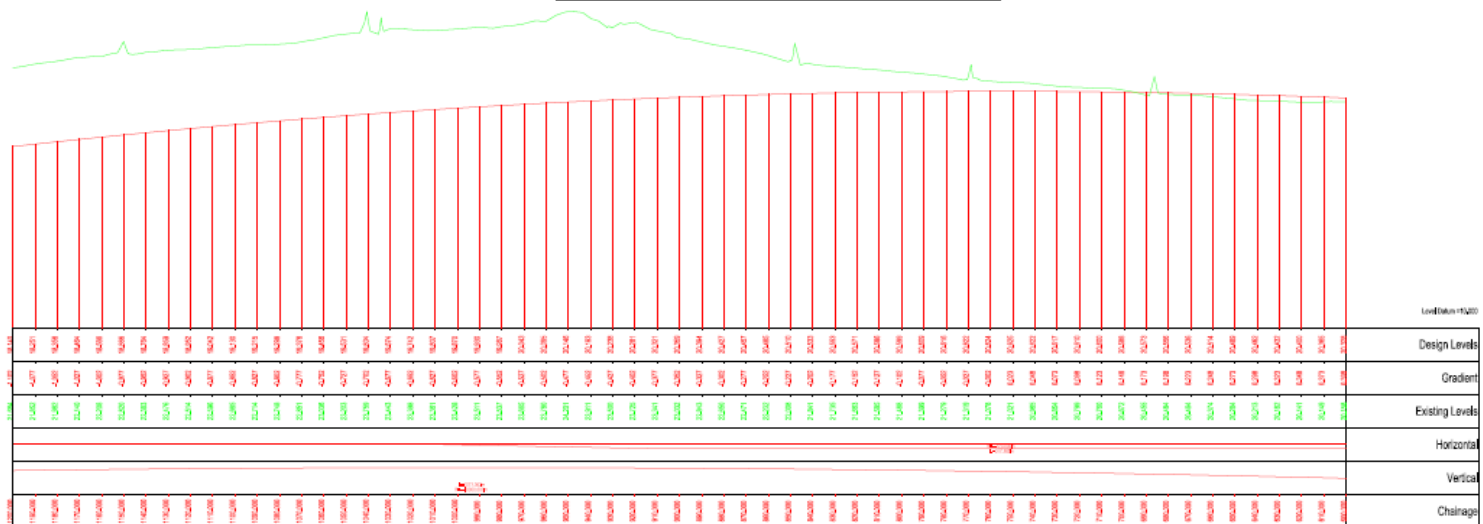
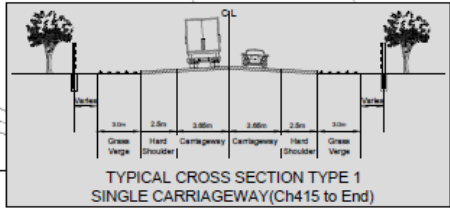
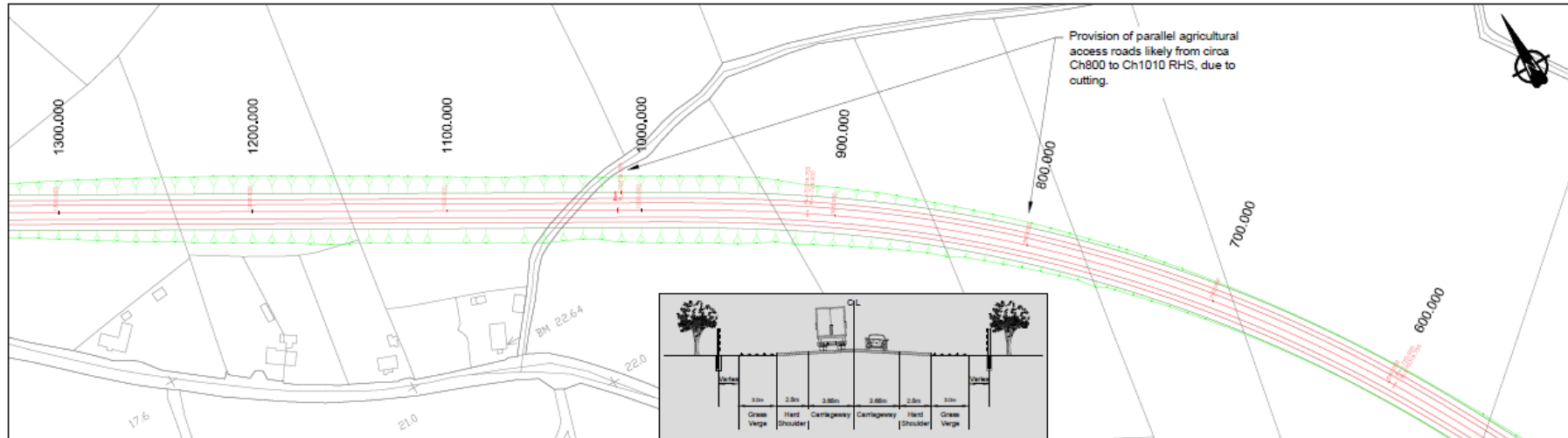
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Project File No: **5.2.1**

Rev: **F1**







- NOTES:
1. Drawings are indicative only.
  2. Actual extent of scheme land acquisition to be determined at a later date.
  3. Alignment details are subject to change.

DO NOT SCALE

NO.	DATE	BY	CHKD.	APPD.	REV.
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Client:  
**STURROVE COUNTY COUNCIL**  
 COUNTY HALL  
 JOEY STREET  
 STURROVE



Design:  
**JULIAN JONES**  
 JAMES JONES  
 JULIAN JONES  
 CO. WEXFORD

Drawn By: G Jones (GJ)  
 Checked By: S Lacey (SL)  
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Project Title:  
**N24 Carrick Road Improvement Scheme**

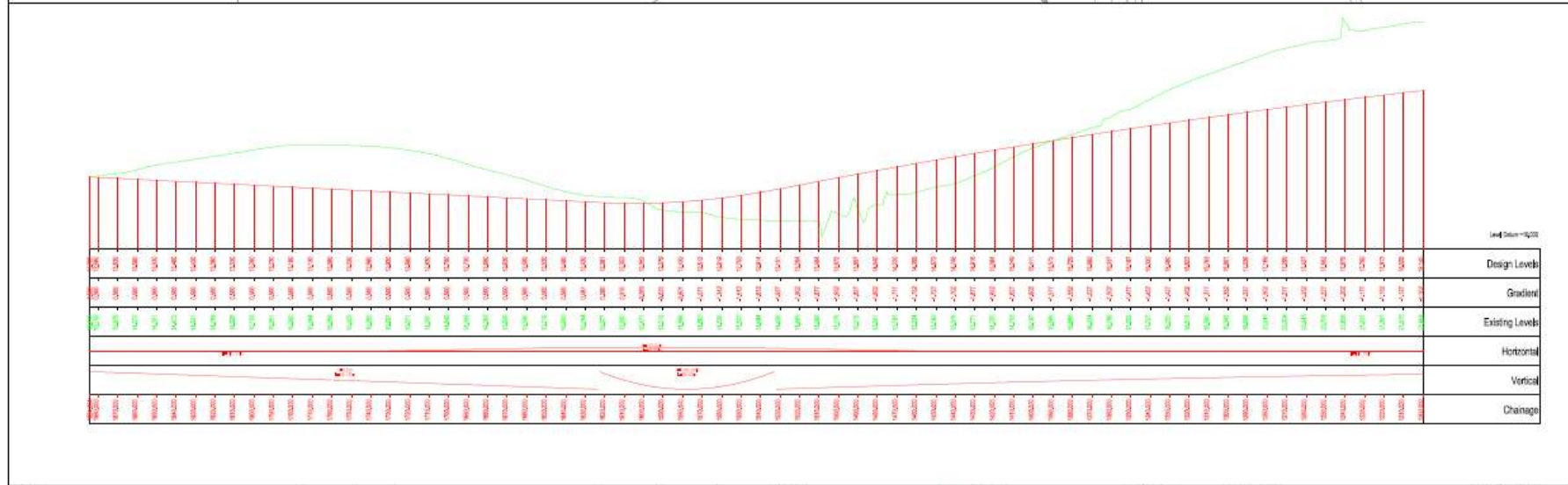
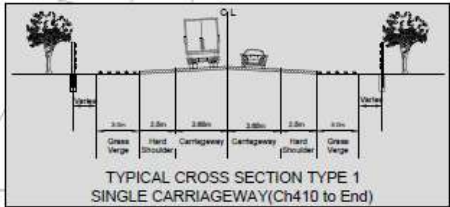
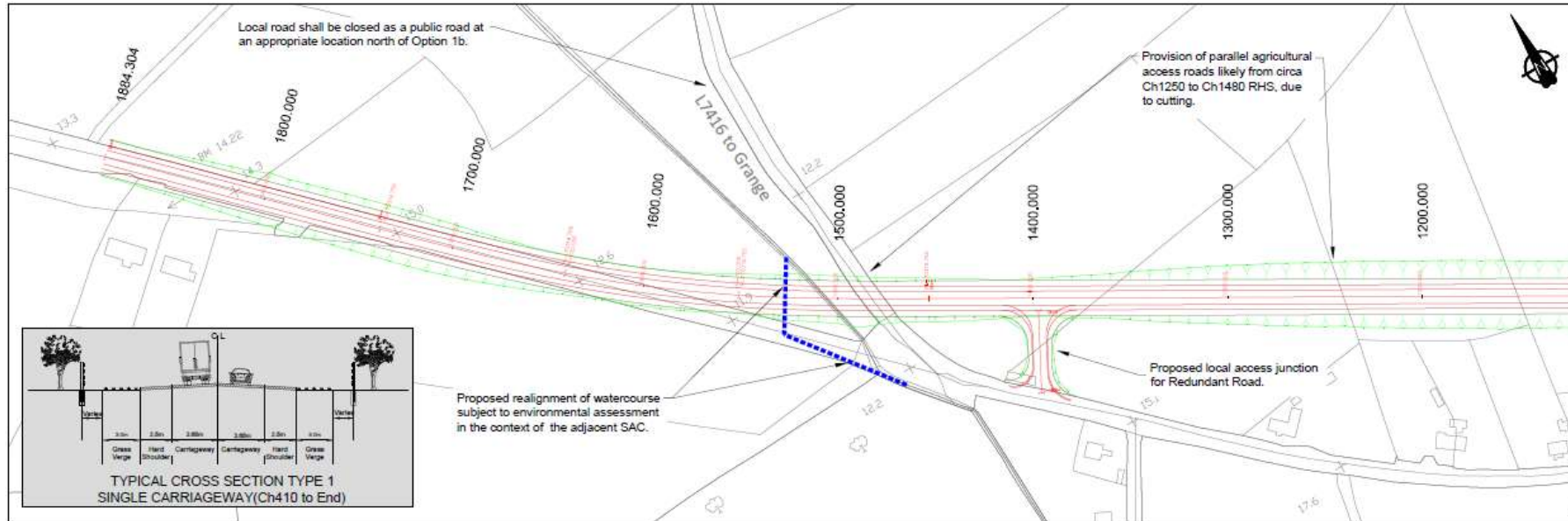
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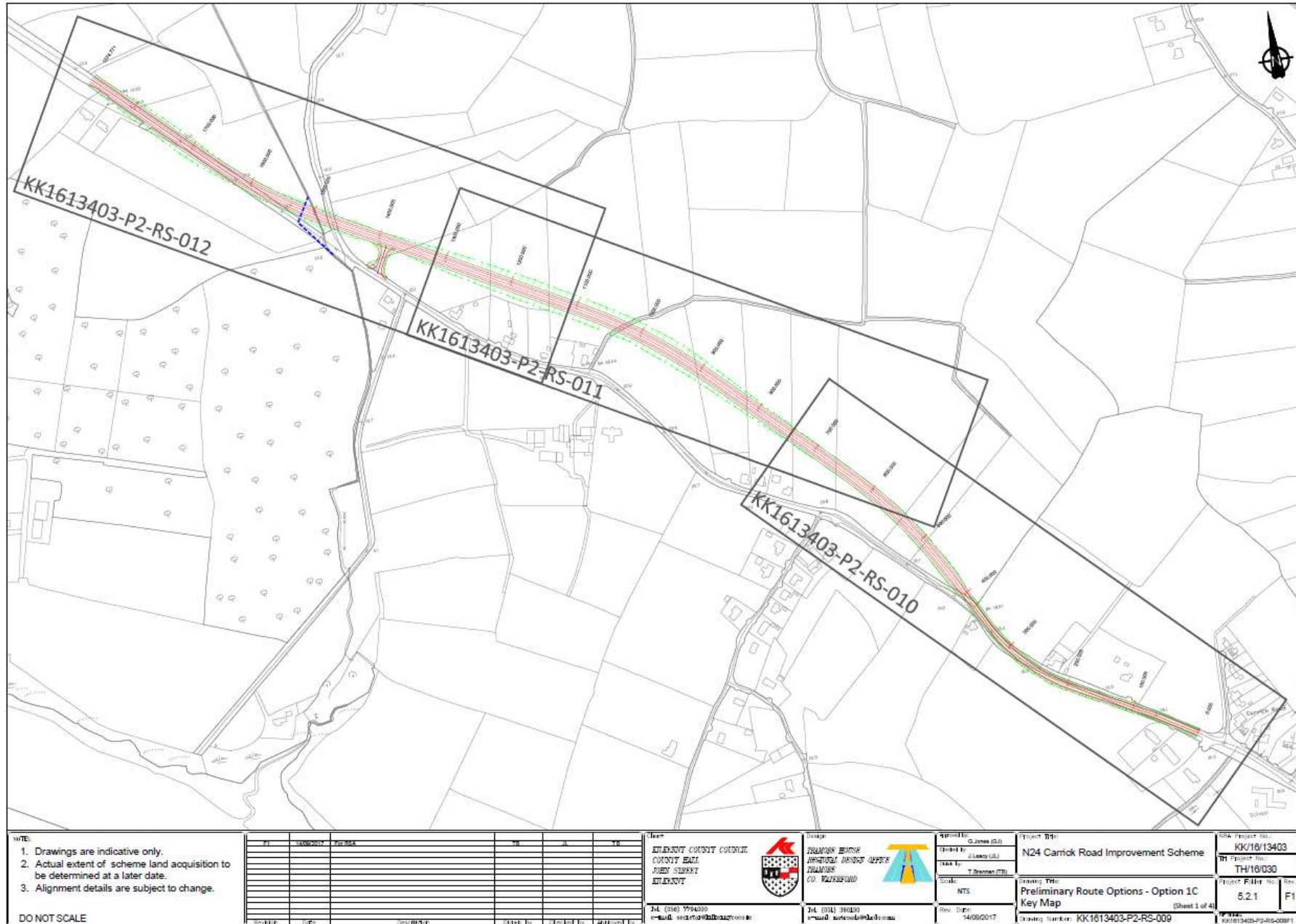
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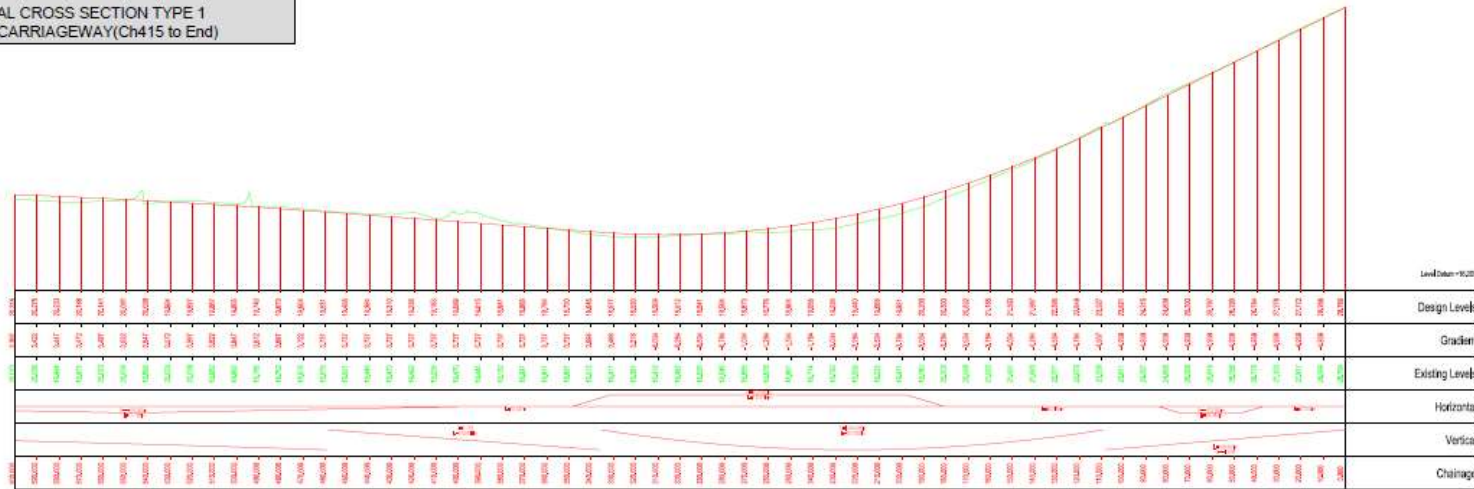
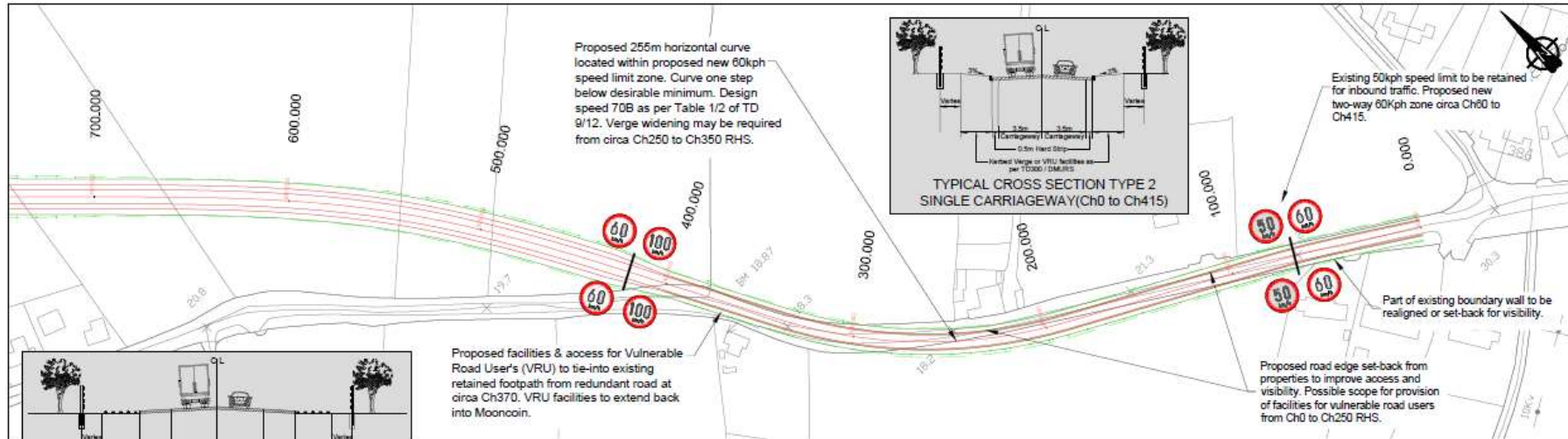
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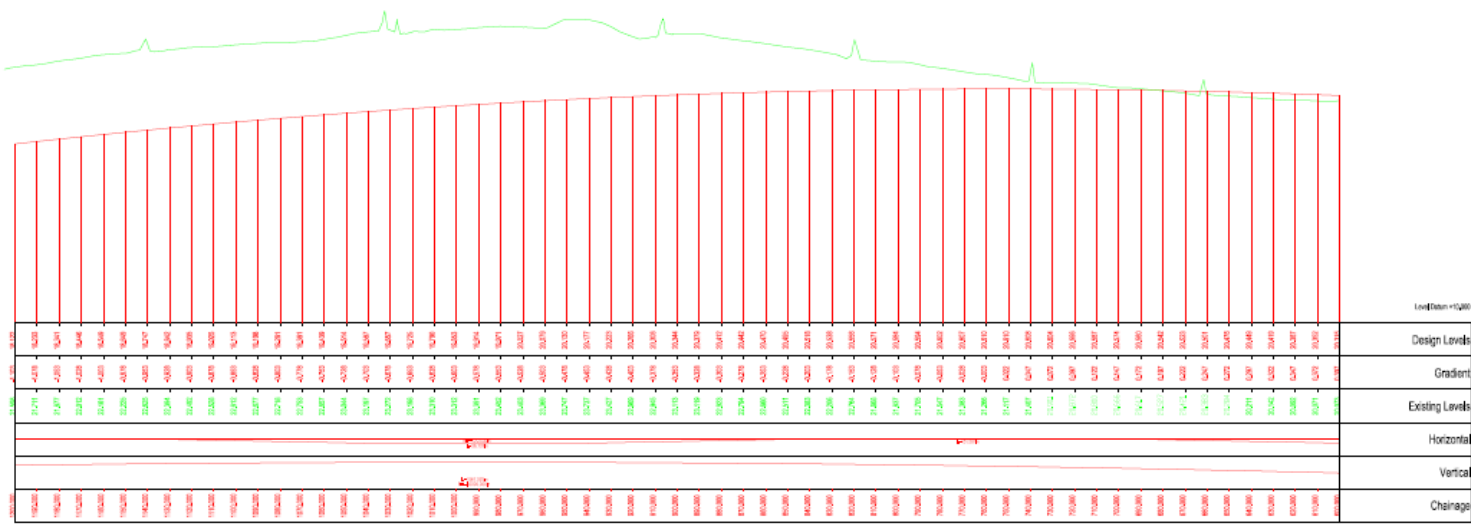
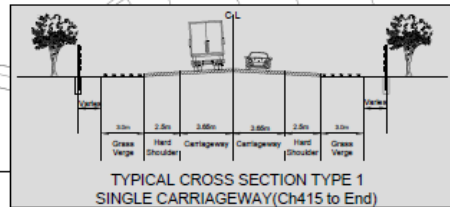
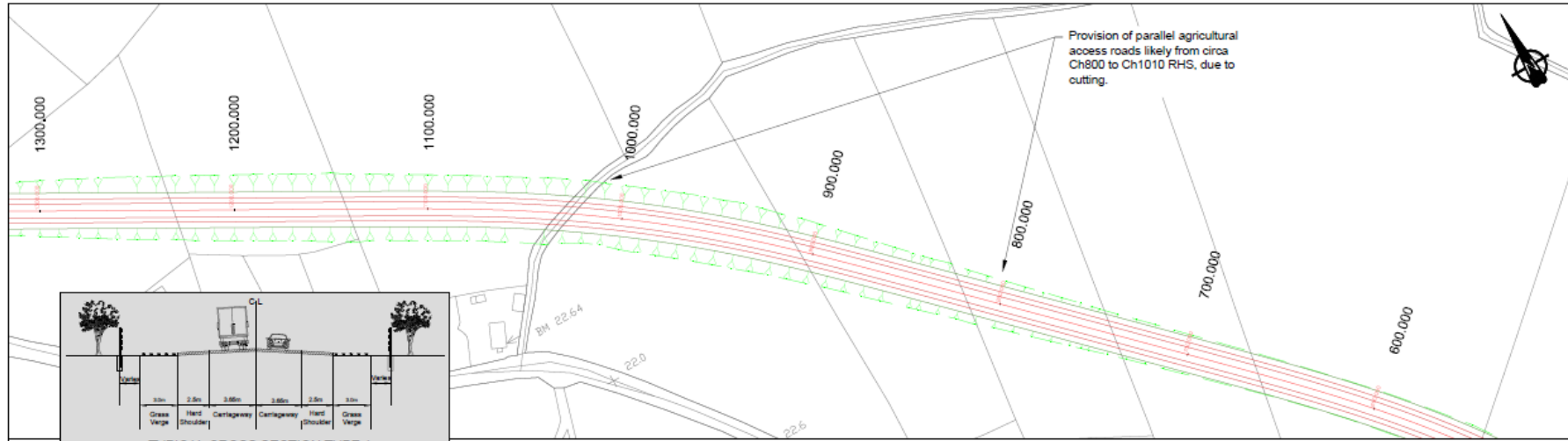


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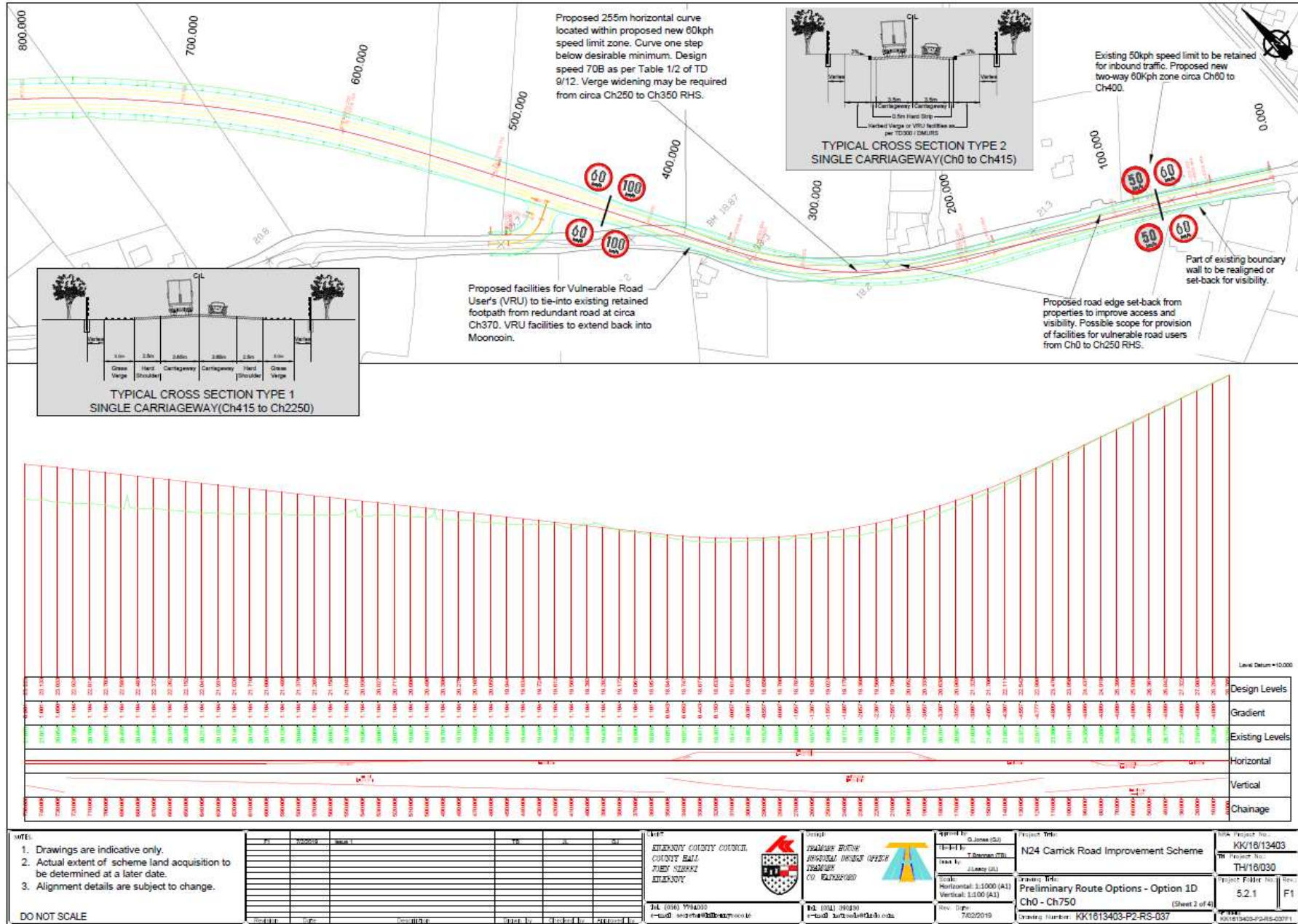
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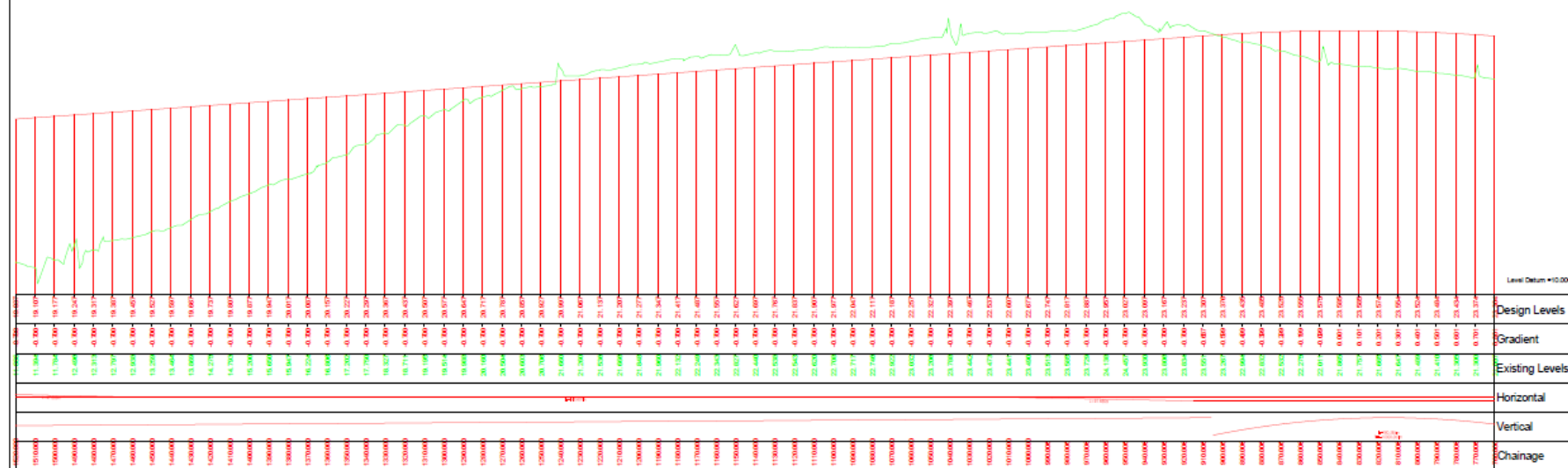
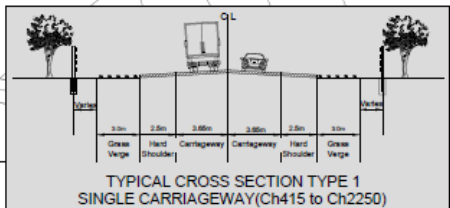
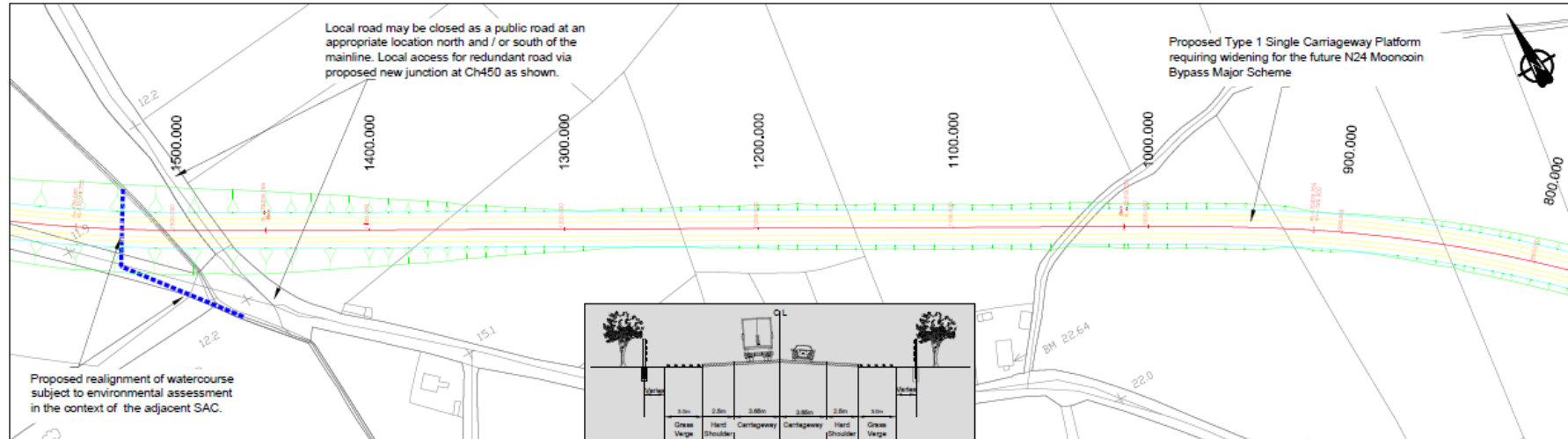


Section A7.2: Preliminary Design Options 1D-1E (Corridor 1-3)





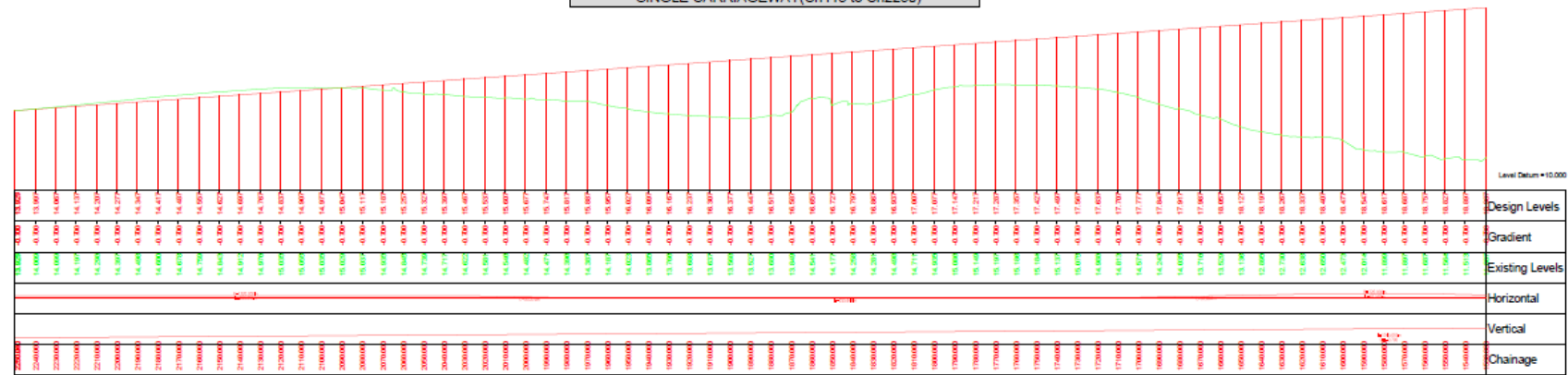
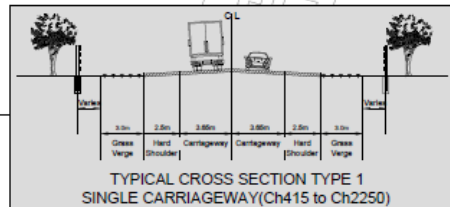
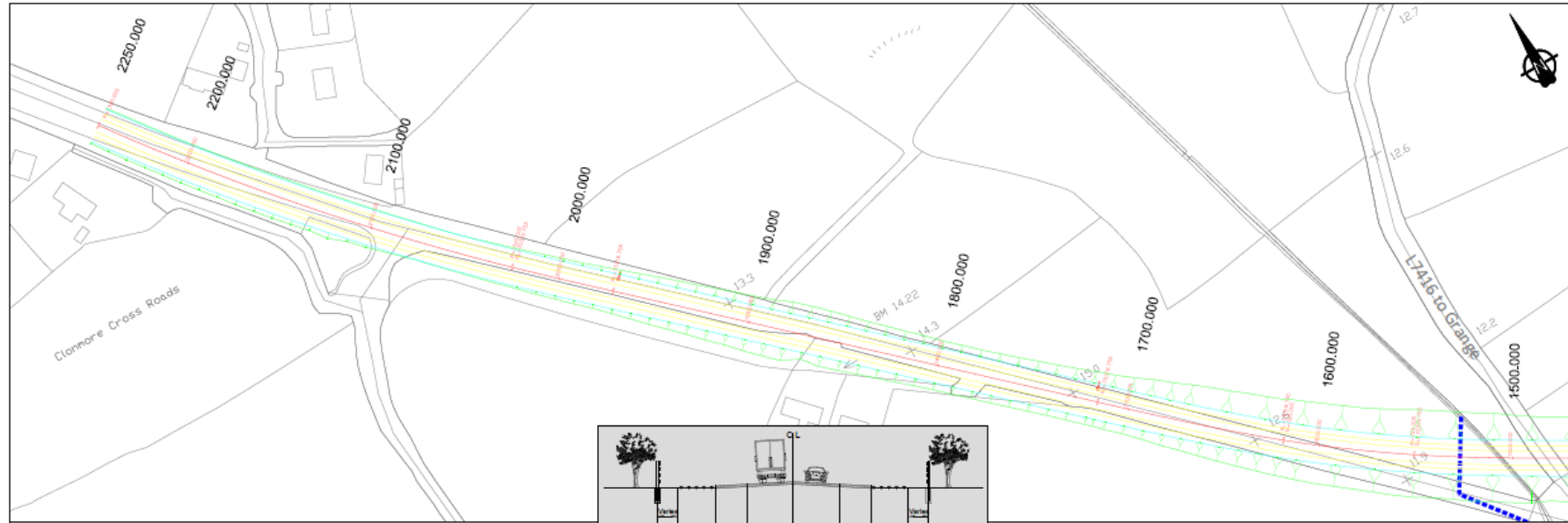




NOTE:  
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 3. Alignment details are subject to change.

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			CHECKED BY J. Leary (JL)	DRAWING TITLE Preliminary Route Options - Option 1d Ch760 - Ch1520 (Sheet 3 of 4)	PROJECT FIRM NO. 5.2.1
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NOTES:  
 1. Drawings are indicative only.  
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 3. Alignment details are subject to change.

DO NOT SCALE

SI	NO	DATE	BY	CHK	APP

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 COUNTY BAILIFF  
 PUEBY SHERIFF  
 KERRY

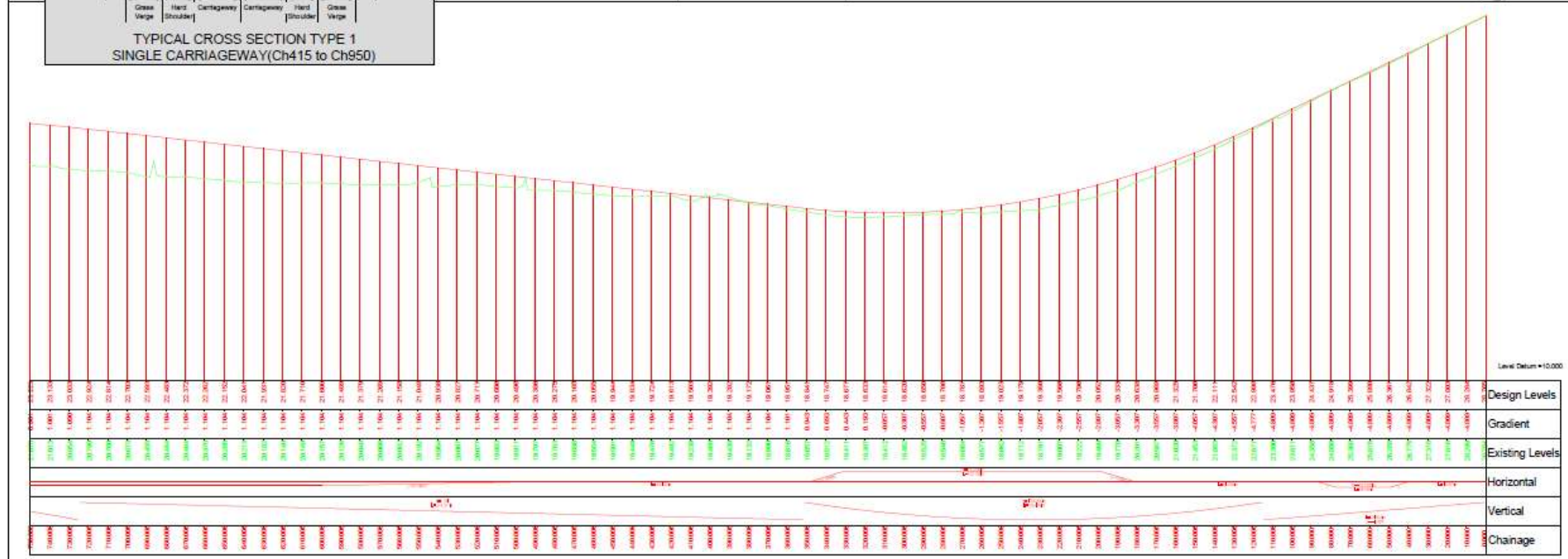
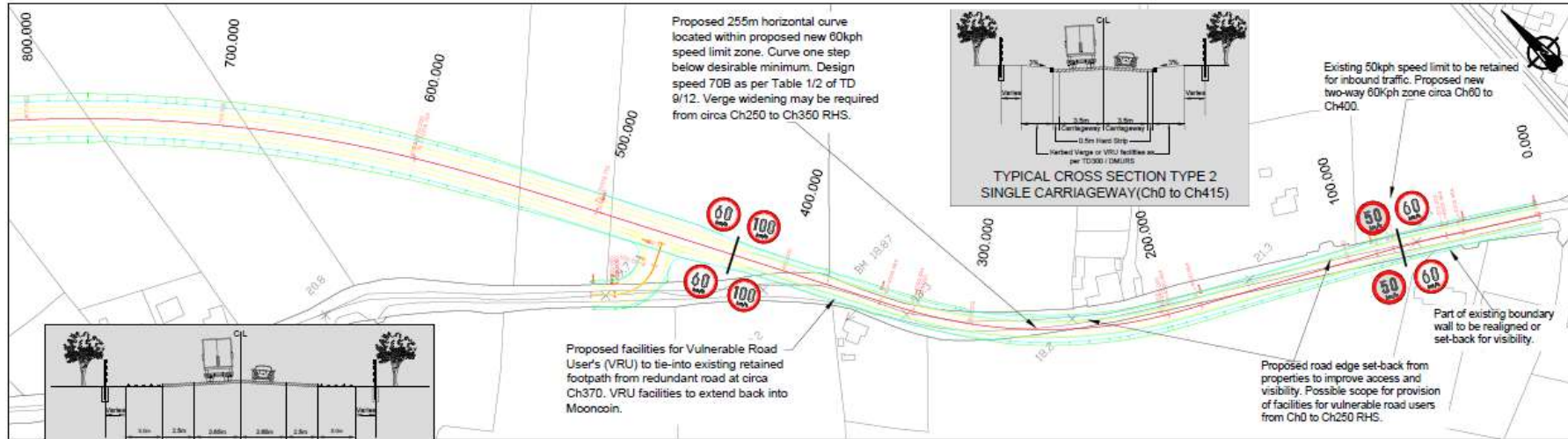
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 KERRY REGIONAL COUNCIL OFFICE  
 KERRY  
 CO. KERRY

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 Rev. Date: 7/02/2019  
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Project No: KK1613403  
 Project No: TH16/030  
 Project FHM No: 5.2.1  
 Rev: F1



NOTES: 1. Drawings are indicative only. 2. Actual extent of scheme land acquisition to be determined at a later date. 3. Alignment details are subject to change.	<table border="1"> <thead> <tr> <th>NO</th> <th>DATE</th> <th>BY</th> <th>REVISION</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>					NO	DATE	BY	REVISION	DESCRIPTION																					CLIENT: KILDENNY COUNTY COUNCIL COUNTY HALL TOWN SQUARE KILDENNY		PROJECT NO: 2016/0001 PROJECT NAME: N24 CARRICK ROAD IMPROVEMENT SCHEME	DRAWN BY: G. Jones (GJ) CHECKED BY: T. Brennan (TB) SCALE: NTS DATE: 7/02/2019	PROJECT NO: KK16/13403 PROJECT NAME: TH181030 PROJECT FILE NO: 5.2.1 SHEET NO: F2
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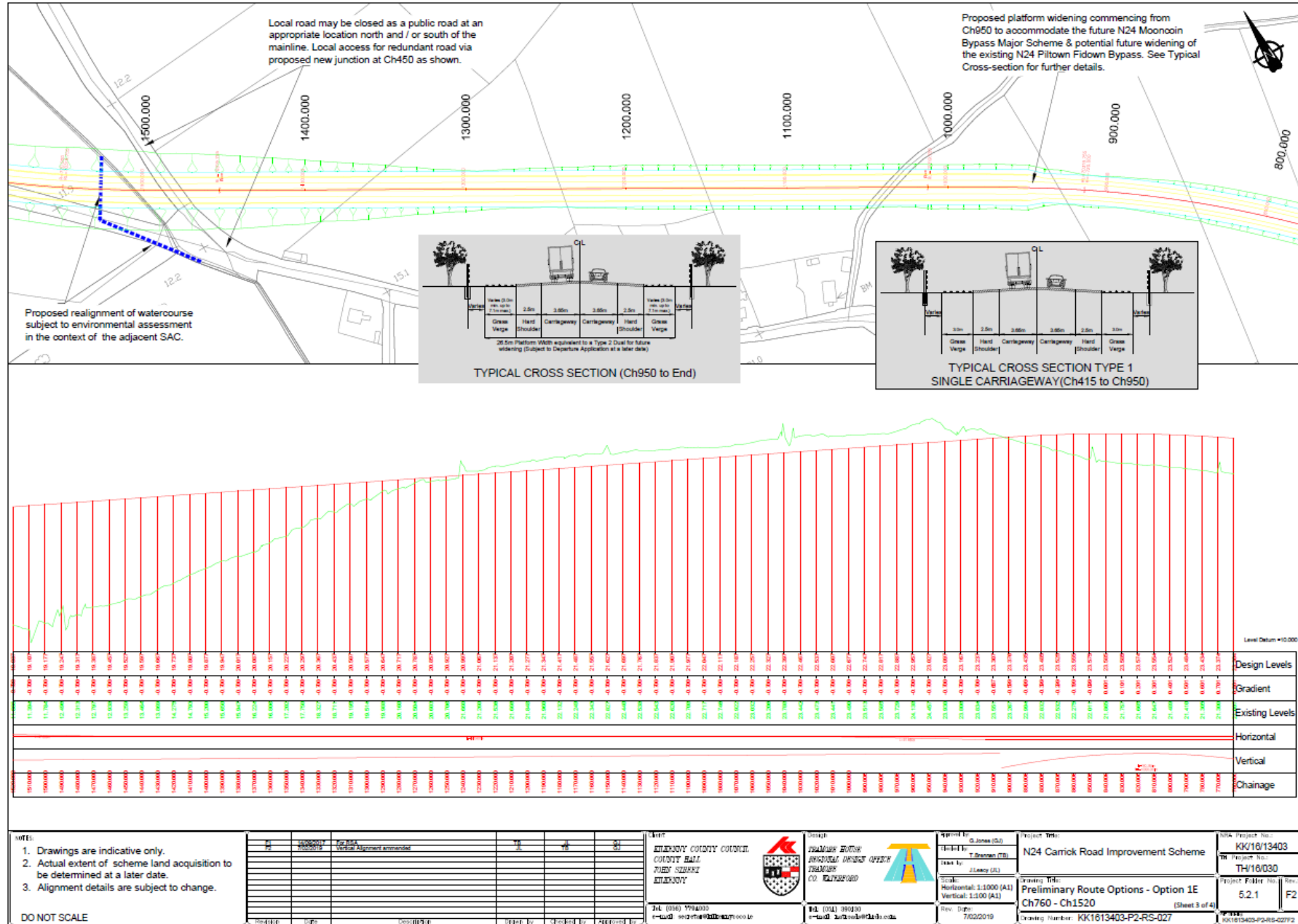


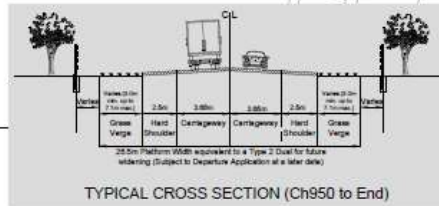
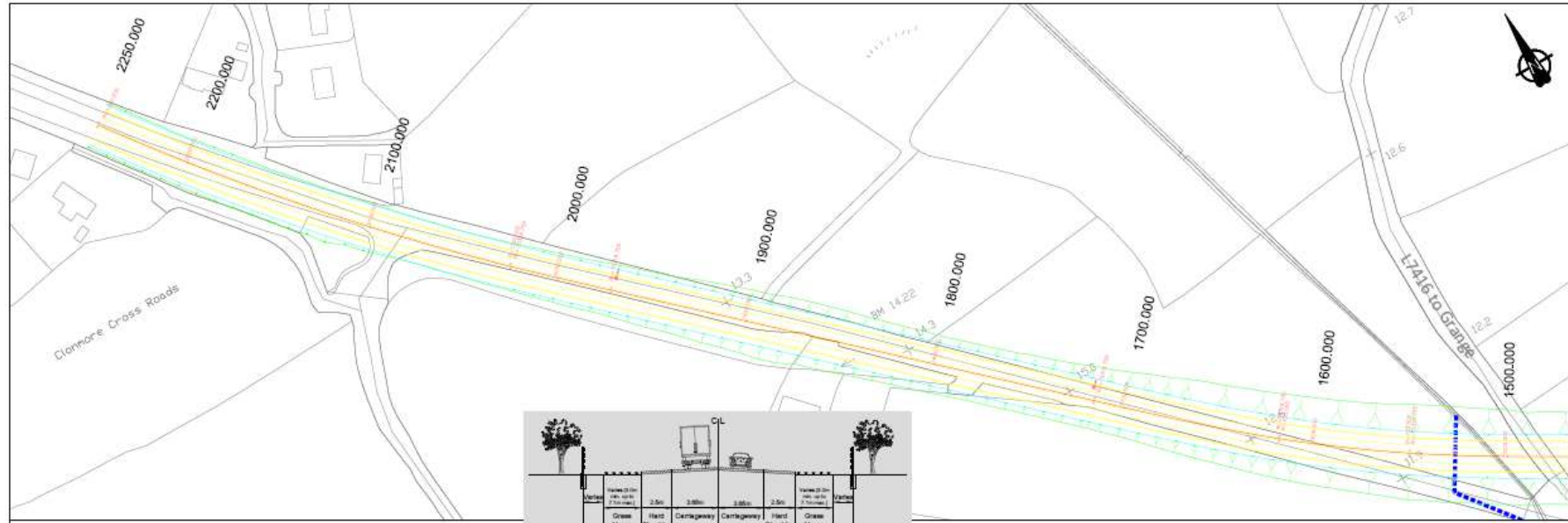
**NOTES:**

1. Drawings are indicative only.
2. Actual extent of scheme land acquisition to be determined at a later date.
3. Alignment details are subject to change.

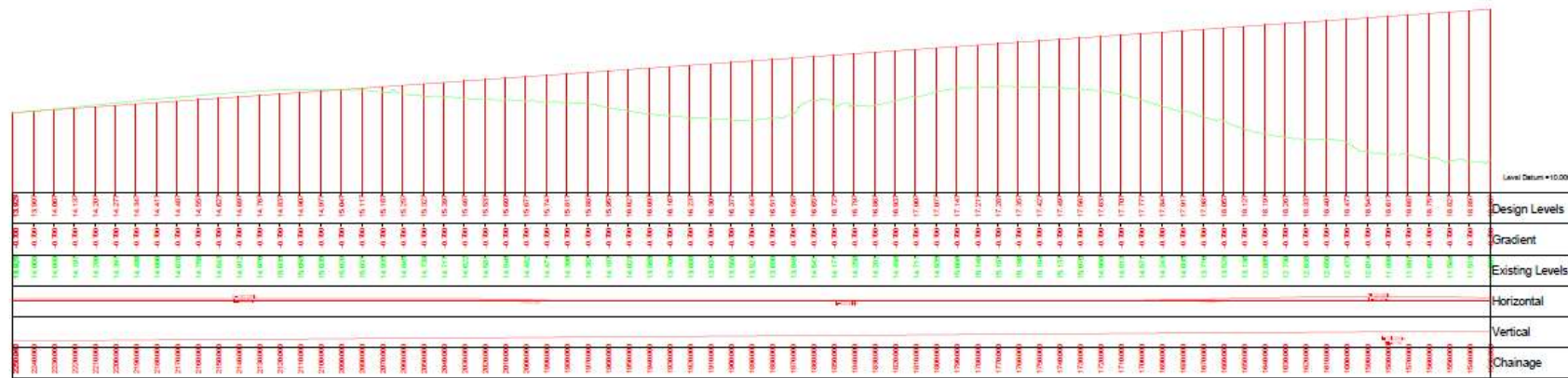
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--	--





TYPICAL CROSS SECTION (Ch950 to End)



note:  
 1. Drawings are indicative only.  
 2. Actual extent of scheme land acquisition to be determined at a later date.  
 3. Alignment details are subject to change.

DO NOT SCALE

NO.	DATE	BY	DESCRIPTION
1	16/03/2019	TH	Vertical Alignment amendment

Client:  
**KERRY COUNTY COUNCIL**  
 COUNTY HALL  
 JONES STREET  
 KERRY

Contract:  
**TRANSFORM EASTWAY**  
 INFRASTRUCTURE DESIGN OPTION  
 TRANSFORM  
 CO. KERRY

Approved By:  
 G. Jones (SU)  
 T. Brennan (CB)  
 J. Lacey (CL)

Project No:  
**N24 Carrick Road Improvement Scheme**

Drawing No:  
**Preliminary Route Options - Option 1E  
 Ch1530 - Ch2250**  
 (Sheet 4 of 4)

Scale:  
 Horizontal: 1:1000 (A4)  
 Vertical: 1:100 (A4)

Rev. Date:  
 7/02/2019

Drawing Number:  
**KK1613403-P2-RS-028**

Project No:  
**KK16/13403**

Project Title:  
**TH/16/030**

Project File No:  
**5.2.1**

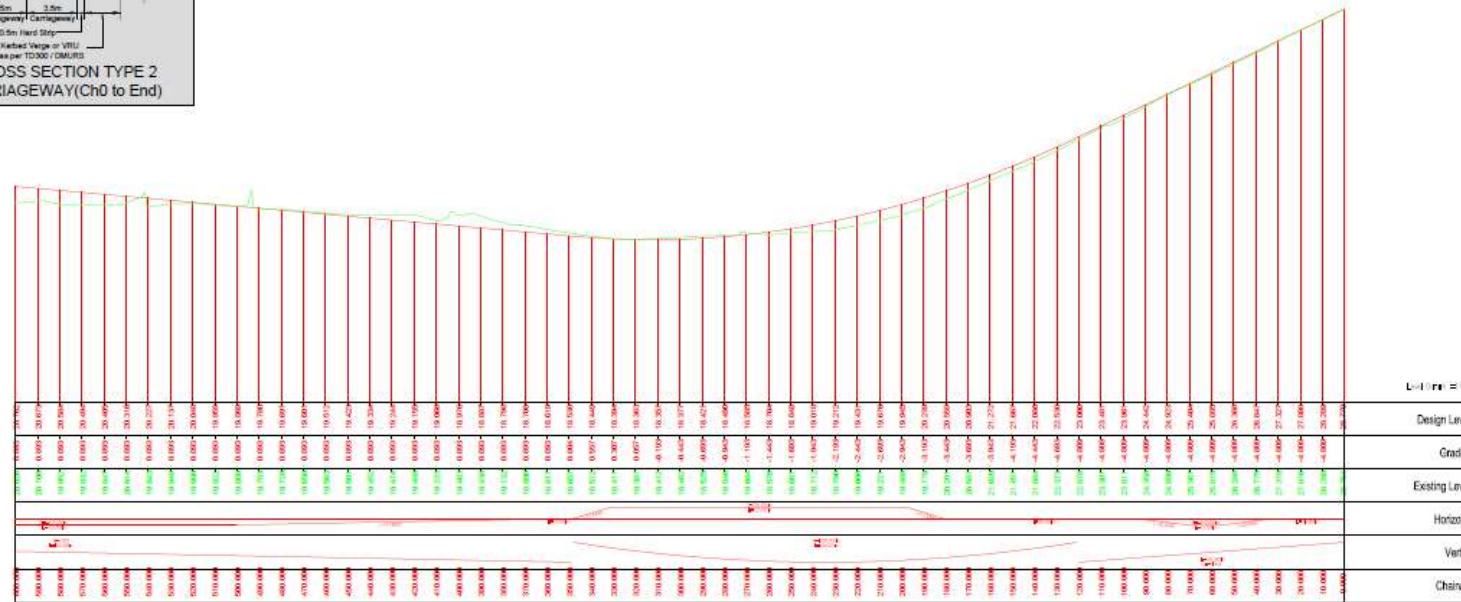
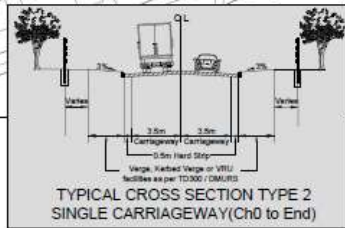
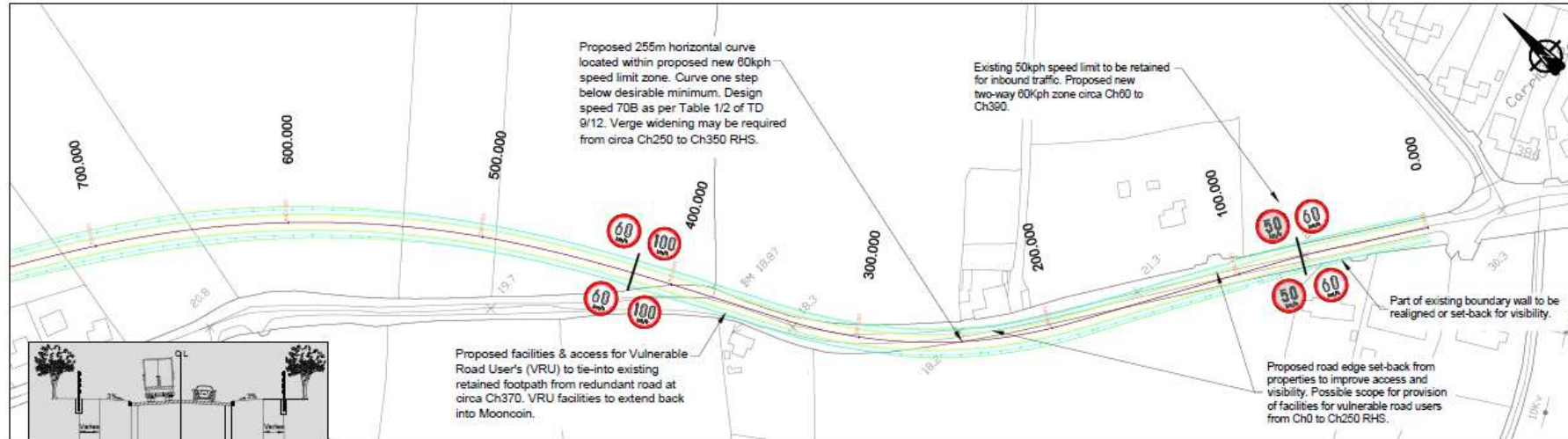
Sheet:  
**F2**



Section A7.3: Preliminary Design Options 2A-2B (Corridor 2)



<p><b>NOTES:</b></p> <ol style="list-style-type: none"> <li>1. Drawings are indicative only.</li> <li>2. Actual extent of scheme land acquisition to be determined at a later date.</li> <li>3. Alignment details are subject to change.</li> </ol> <p>DO NOT SCALE</p>	<table border="1"> <thead> <tr> <th>NO</th> <th>REVISION</th> <th>DATE</th> <th>BY</th> <th>CHKD</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	NO	REVISION	DATE	BY	CHKD						<p><b>CLIENT:</b>                  KERRY COUNTY COUNCIL                  COUNTY HALL                  FLEET SQUARE                  KERRY</p>	<p><b>DESIGNER:</b>                  T. JONES (S)                  T. JONES (S)                  J. LANEY (S)</p>	<p><b>PROJECT TITLE:</b>                  N24 Carrick Road Improvement Scheme</p>	<p><b>PROJECT NO.:</b>                  KK1613403</p>
	NO	REVISION	DATE	BY	CHKD										
<p><b>SCALE:</b>                  NTS</p>	<p><b>DATE:</b>                  24/05/2019</p>	<p><b>PROJECT TITLE:</b>                  Preliminary Route Options - Option 2A                  Key Map                  (Sheet 1 of 4)</p>	<p><b>PROJECT FIRM NO.:</b>                  5.2.1</p>	<p><b>PROJECT NUMBER:</b>                  KK1613403-P2-RS-013</p>	<p><b>PROJECT FIRM:</b>                  F2</p>										



- NOTE:
1. Drawings are indicative only.
  2. Actual extent of scheme land acquisition to be determined at a later date.
  3. Alignment details are subject to change.

Rev	Description	By	Check	Date
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2	Revised Alignment 30m at Keshik Train	JL	JK	20/05/2019

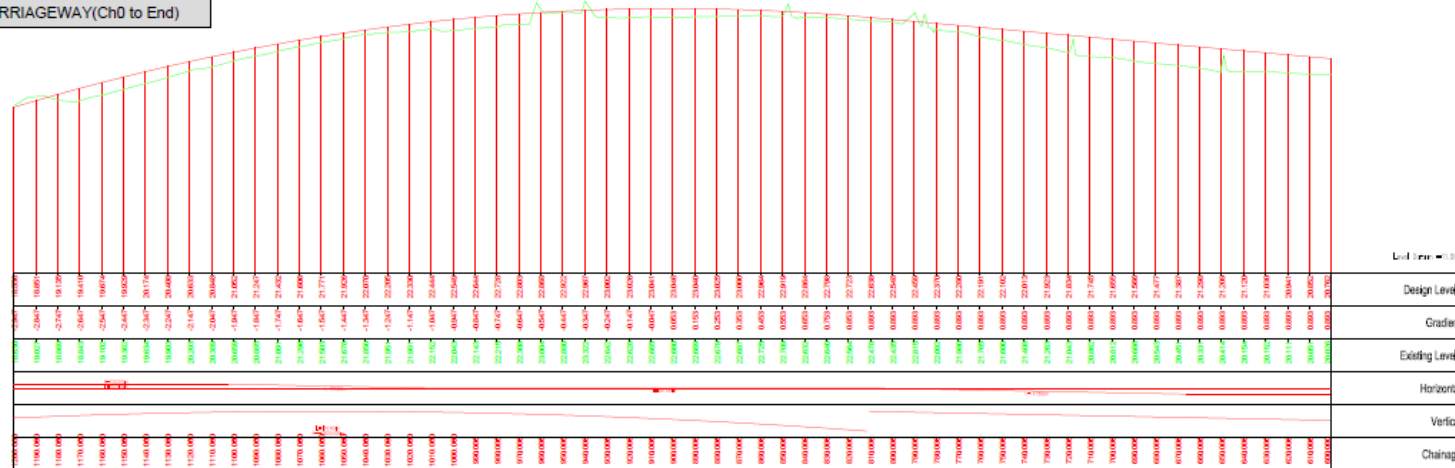
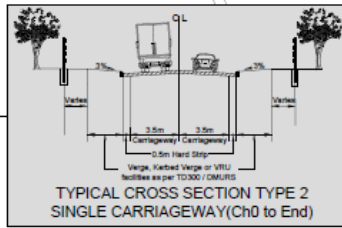
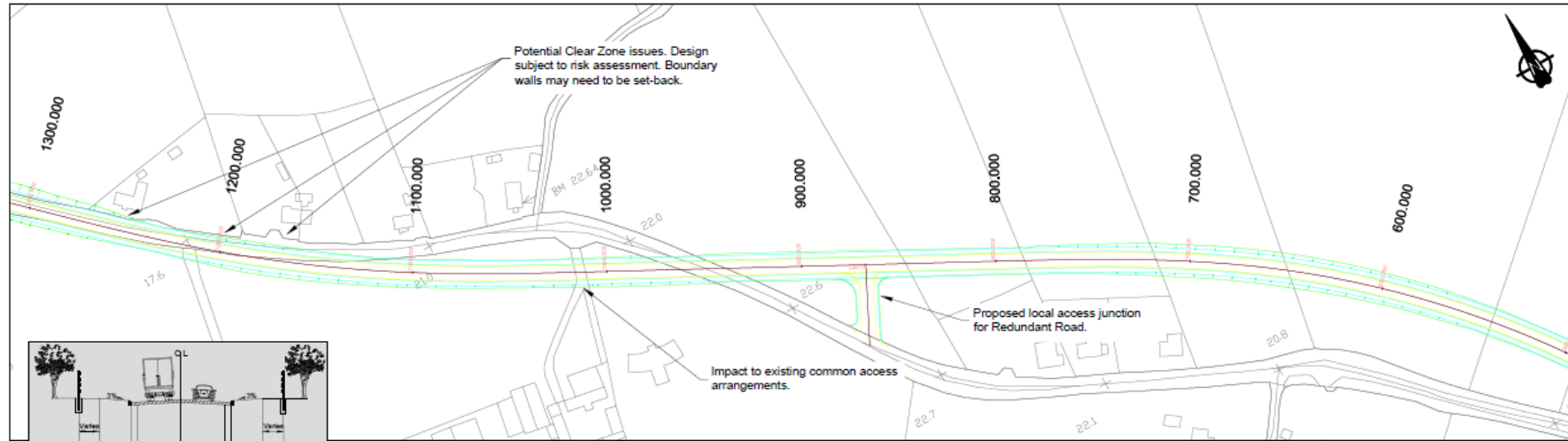
KERRY COUNTY COUNCIL  
 COUNTY HALL  
 FINEEN STREET  
 KERRY

PROJECT TITLE  
 PROJECT NO.  
 CLIENT

DRAWN BY  
 CHECKED BY  
 DATE

PROJECT TITLE  
 PROJECT NO.  
 DRAWING TITLE  
 SCALE  
 REV. DATE

PROJECT NO.  
 PROJECT FILE NO.  
 SHEET NO.

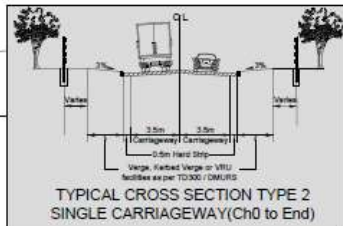
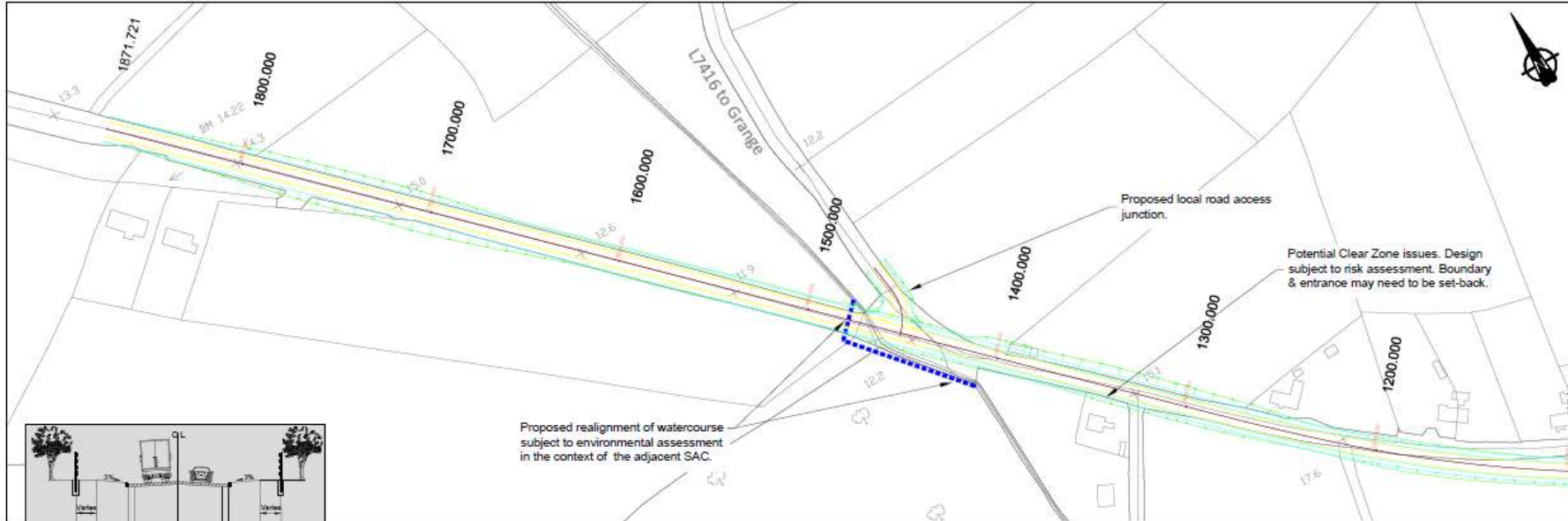


**NOTES:**

1. Drawings are indicative only.
2. Actual extent of scheme land acquisition to be determined at a later date.
3. Alignment details are subject to change.

DO NOT SCALE

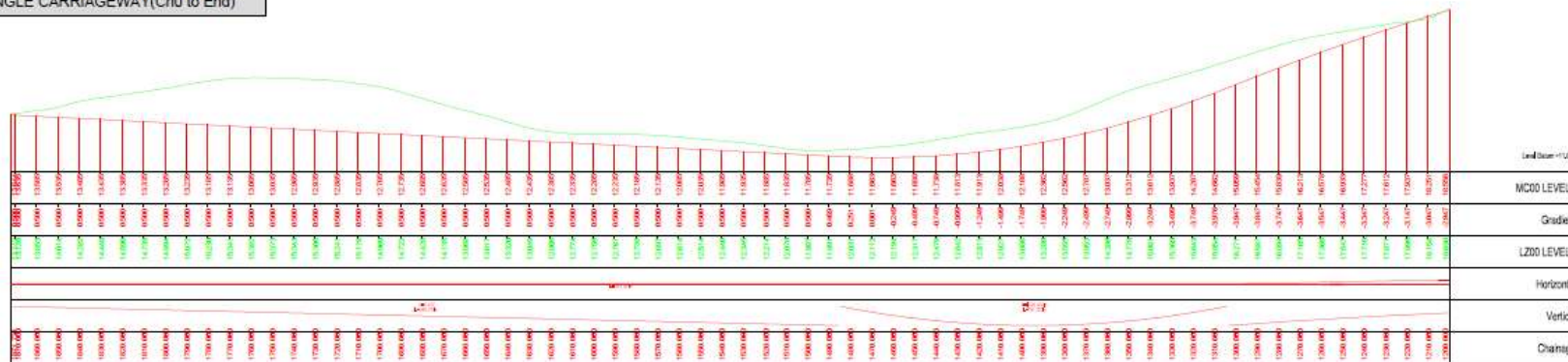
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Scale: 1:1000 (A1)	Scale: 1:1000 (A1)	Scale: 1:1000 (A1)	Project File No: F2	Rev. No: F2



Proposed realignment of watercourse  
subject to environmental assessment  
in the context of the adjacent SAC.

Proposed local road access  
junction.

Potential Clear Zone issues. Design  
subject to risk assessment. Boundary  
& entrance may need to be set-back.



- NOTE:
1. Drawings are indicative only.
  2. Actual extent of scheme land acquisition to be determined at a later date.
  3. Alignment details are subject to change.

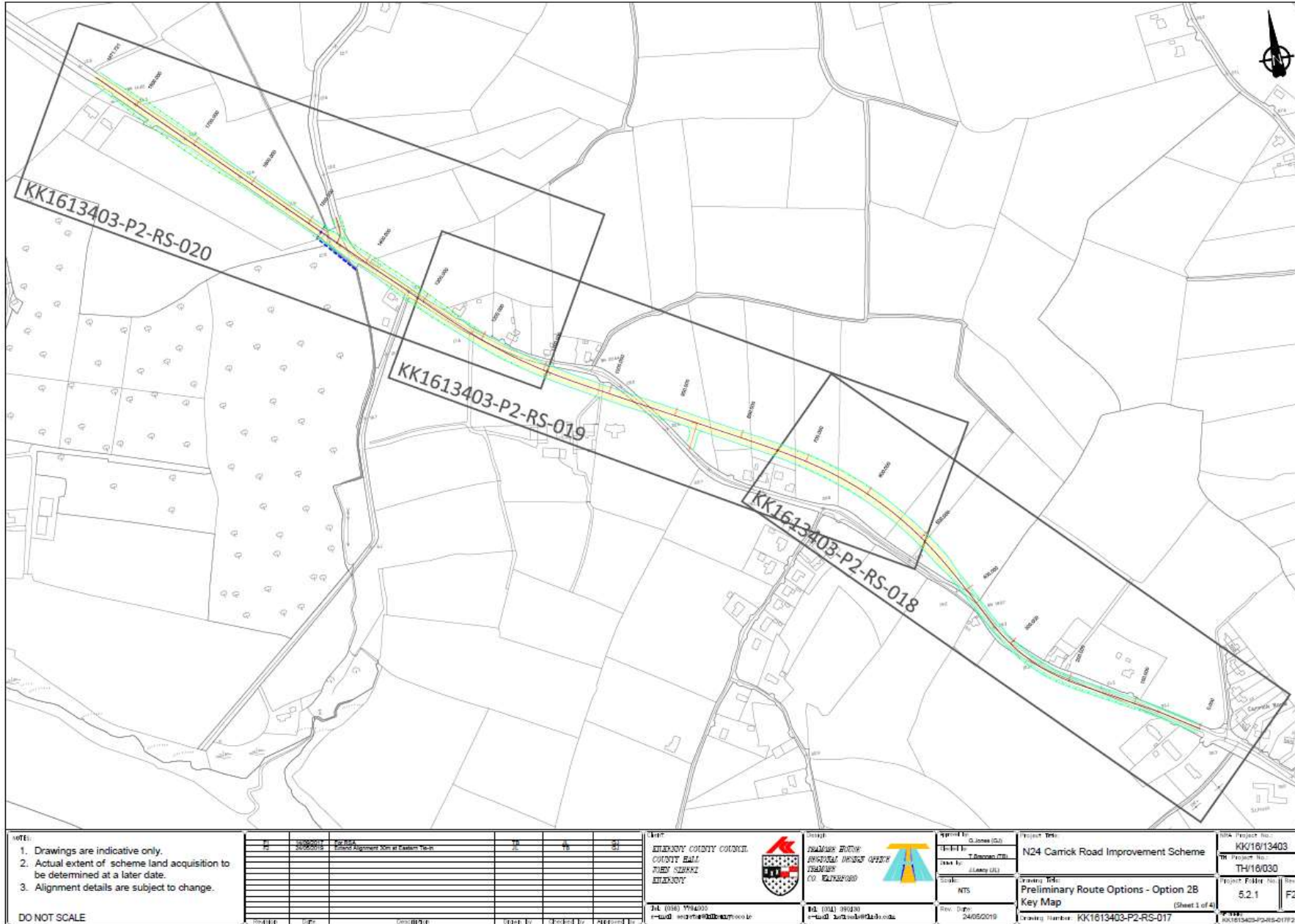
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5	14/05/2019	WJ	WJ	Issue for public consultation
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9	14/05/2019	WJ	WJ	Issue for public consultation
10	14/05/2019	WJ	WJ	Issue for public consultation

**EXETER COUNTY COUNCIL**  
 COUNTY HALL  
 POSEY SQUARE  
 EXETER  
 EX1 1HA  
 T: 01392 394200  
 E: [enquiries@exeter.gov.uk](mailto:enquiries@exeter.gov.uk)

**PRELIMINARY ROUTE**  
 ANKNEVELL WINDMILL OFFICE  
 JOZANMERE  
 CO. EXETER EX2 0RD  
 T: 01392 394200  
 E: [enquiries@exeter.gov.uk](mailto:enquiries@exeter.gov.uk)

PROJECT NO:  
 N24 Carrick Road Improvement Scheme  
 PROJECT TITLE:  
 Preliminary Route Options - Option 2A  
 Ch1200 - Ch1871.721  
 SHEET NO:  
 5.2.1 (Sheet 4 of 4)  
 DRAWING NUMBER:  
 KK1613403-P2-RS-016

DRAWN BY: G. Jones (DL)  
 CHECKED BY: T. Roper (DL)  
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 Vertical: 1:100 (A1)  
 DATE: 14/05/2019  
 PROJECT NO: KK16/13403  
 PROJECT TITLE: N24 Carrick Road Improvement Scheme  
 PROJECT FILE NO: TH16/030  
 PROJECT FILE NO: 5.2.1  
 DRAWING NO: F2



- NOTE:
1. Drawings are indicative only.
  2. Actual extent of scheme land acquisition to be determined at a later date.
  3. Alignment details are subject to change.

DO NOT SCALE

NO.	DATE	BY	DESCRIPTION
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3	20/05/2019	JK	Issue for public consultation
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7	20/05/2019	JK	Issue for public consultation
8	20/05/2019	JK	Issue for public consultation
9	20/05/2019	JK	Issue for public consultation
10	20/05/2019	JK	Issue for public consultation

WATERFORD COUNTY COUNCIL  
 COUNTY BAILEY  
 TOWN CLERK  
 WATERFORD

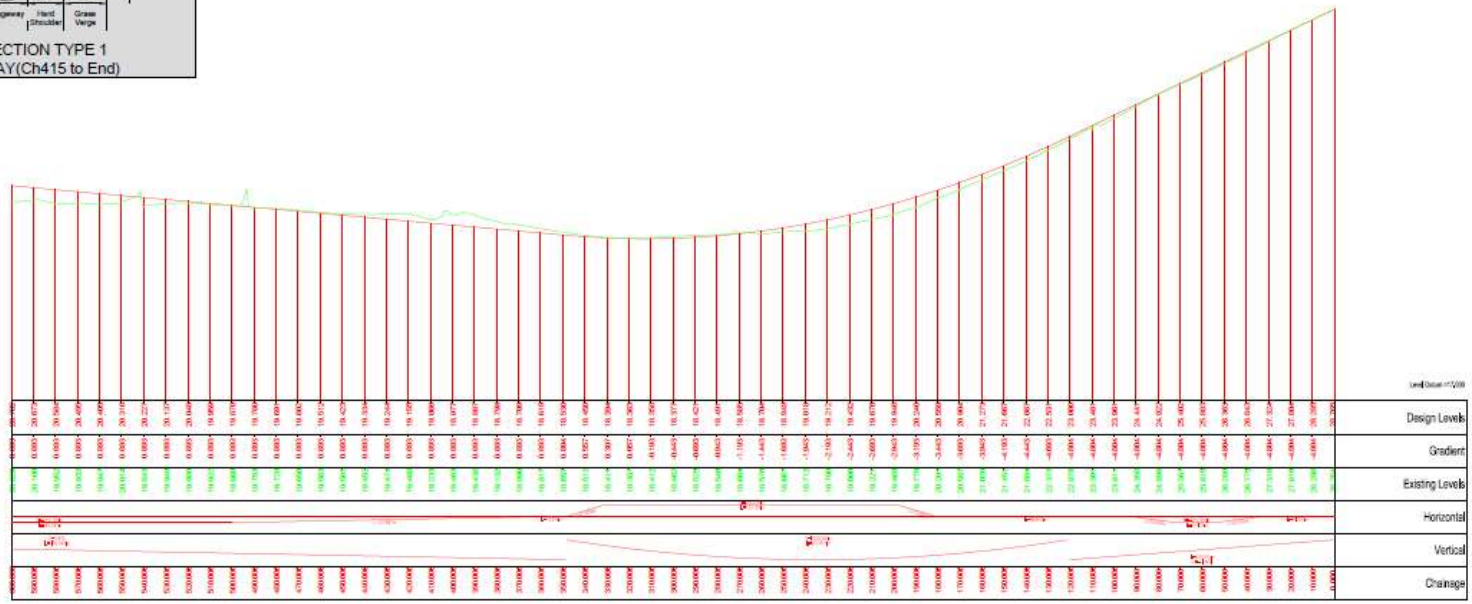
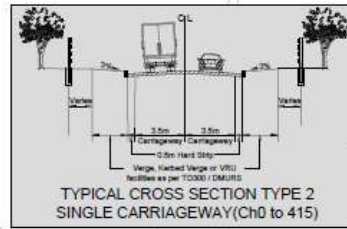
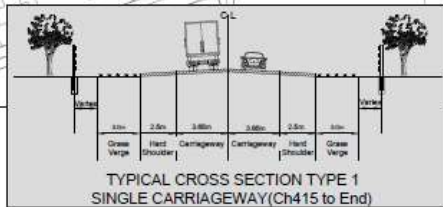
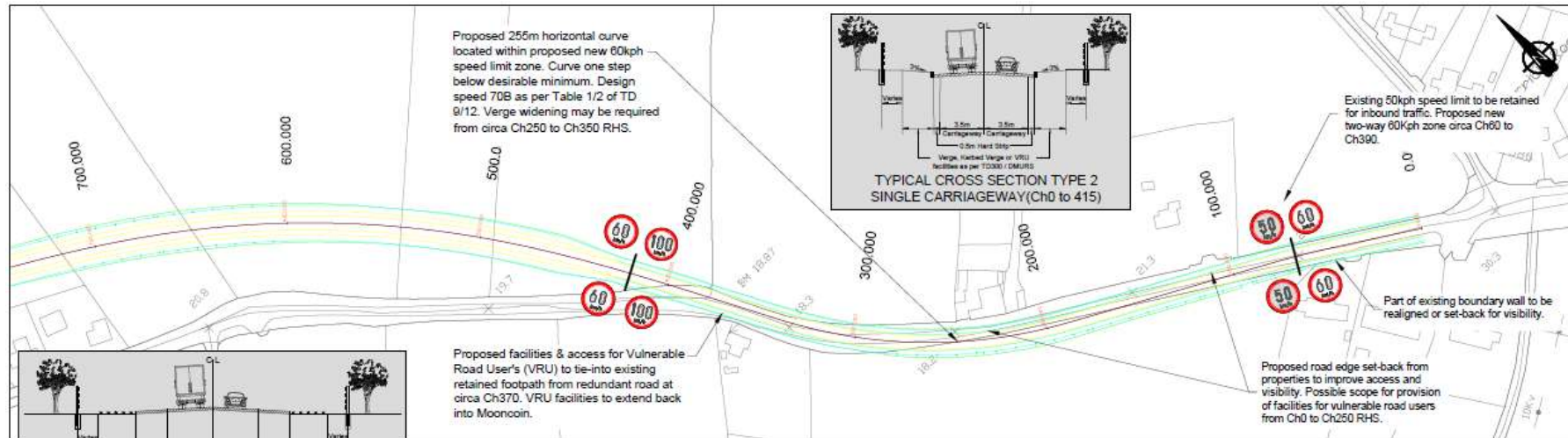


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 Project No.: KK1613403  
 Drawing No.: TH16/030  
 Project File No.: 5.2.1  
 Rev: F2

Author: G. Jones (JG)  
 Designer: T. Sweeney (TS)  
 Checker: E. Leahy (EL)  
 Scale: NTS  
 Date: 24/05/2019

Project Title: N24 Carrick Road Improvement Scheme  
 Drawing Title: Preliminary Route Options - Option 2B  
 Key Map  
 Drawing Number: KK1613403-P2-RS-017

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 Drawing Title: Preliminary Route Options - Option 2B  
 Key Map  
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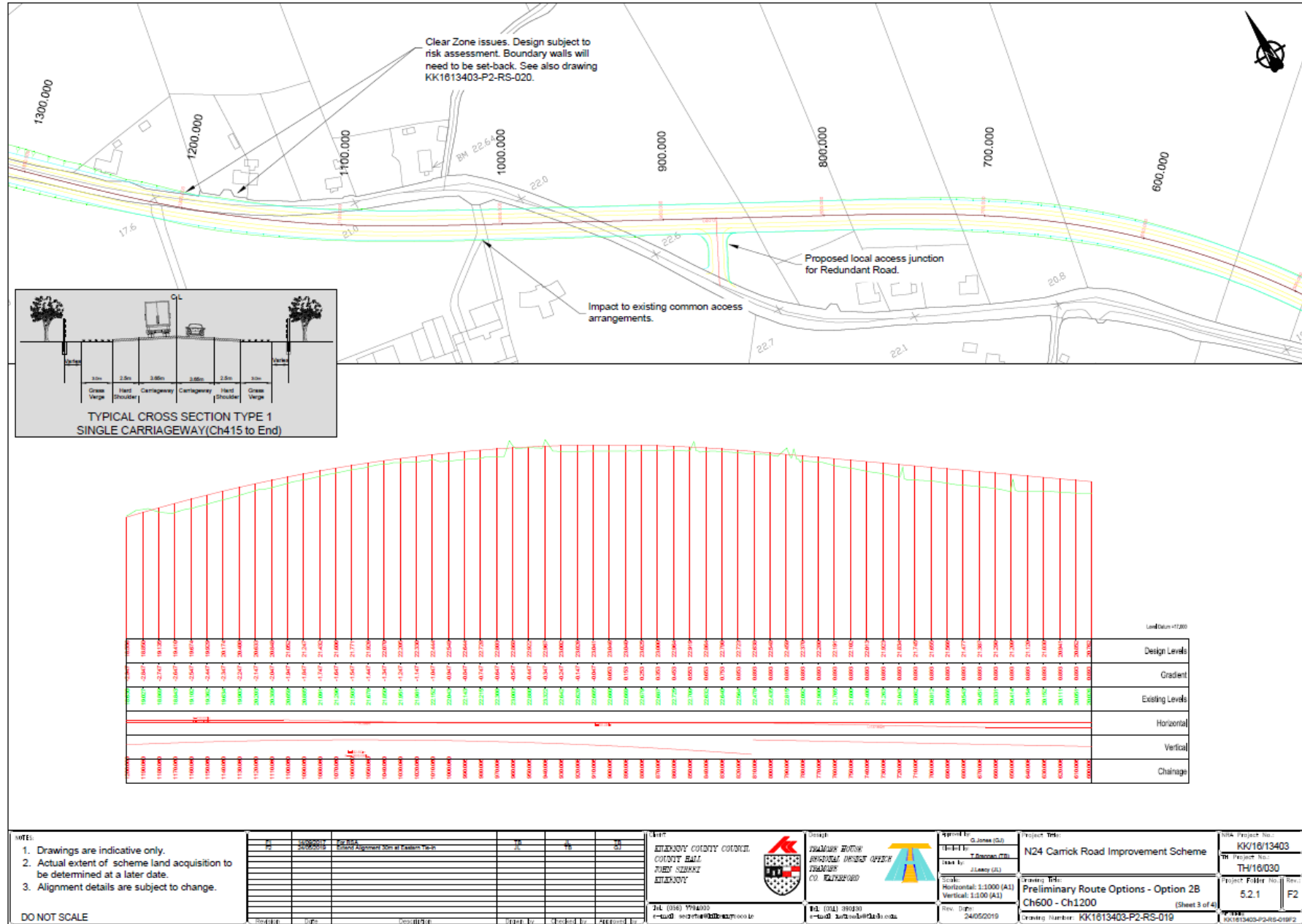
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2. Actual extent of scheme land acquisition to be determined at a later date.
3. Alignment details are subject to change.

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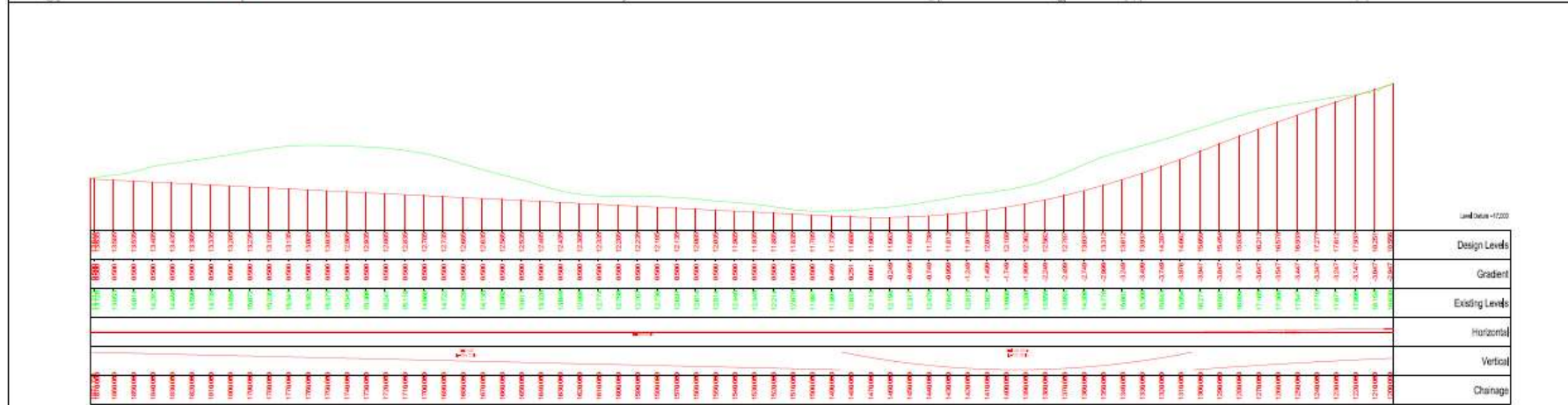
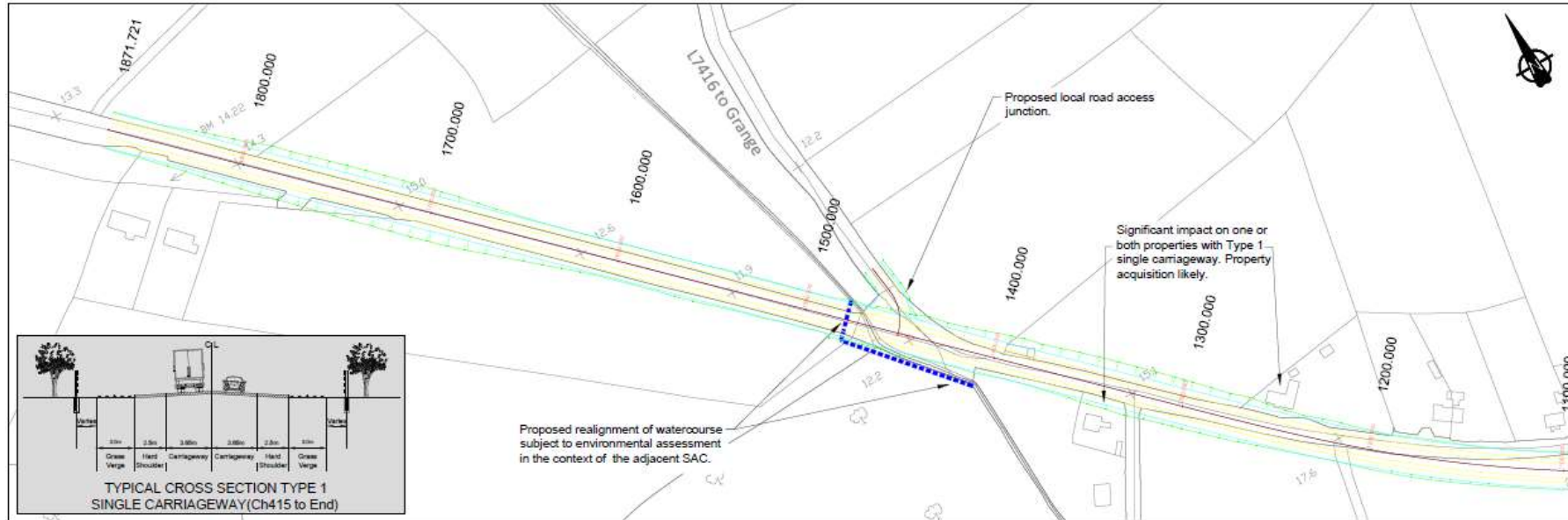
NO.	DATE	BY	CHKD.	DESCRIPTION
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CLIENT: <b>ENERGY COUNTY COUNCIL</b> COUNTY HALL JOY'S SILKIN ENNERNEY	PROJECT: <b>N24 Carrick Road Improvement Scheme</b>	DRAWING NO: <b>Preliminary Route Options - Option 2B                  Ch0 - Ch600</b>	SHEET NO: <b>24/05/2019</b>
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PROJECT NO: <b>KK/16/13403</b>	DRAWING TITLE: <b>Preliminary Route Options - Option 2B                  Ch0 - Ch600</b>	SHEET NO: <b>5.2.1</b>	SHEET TOTAL: <b>F2</b>
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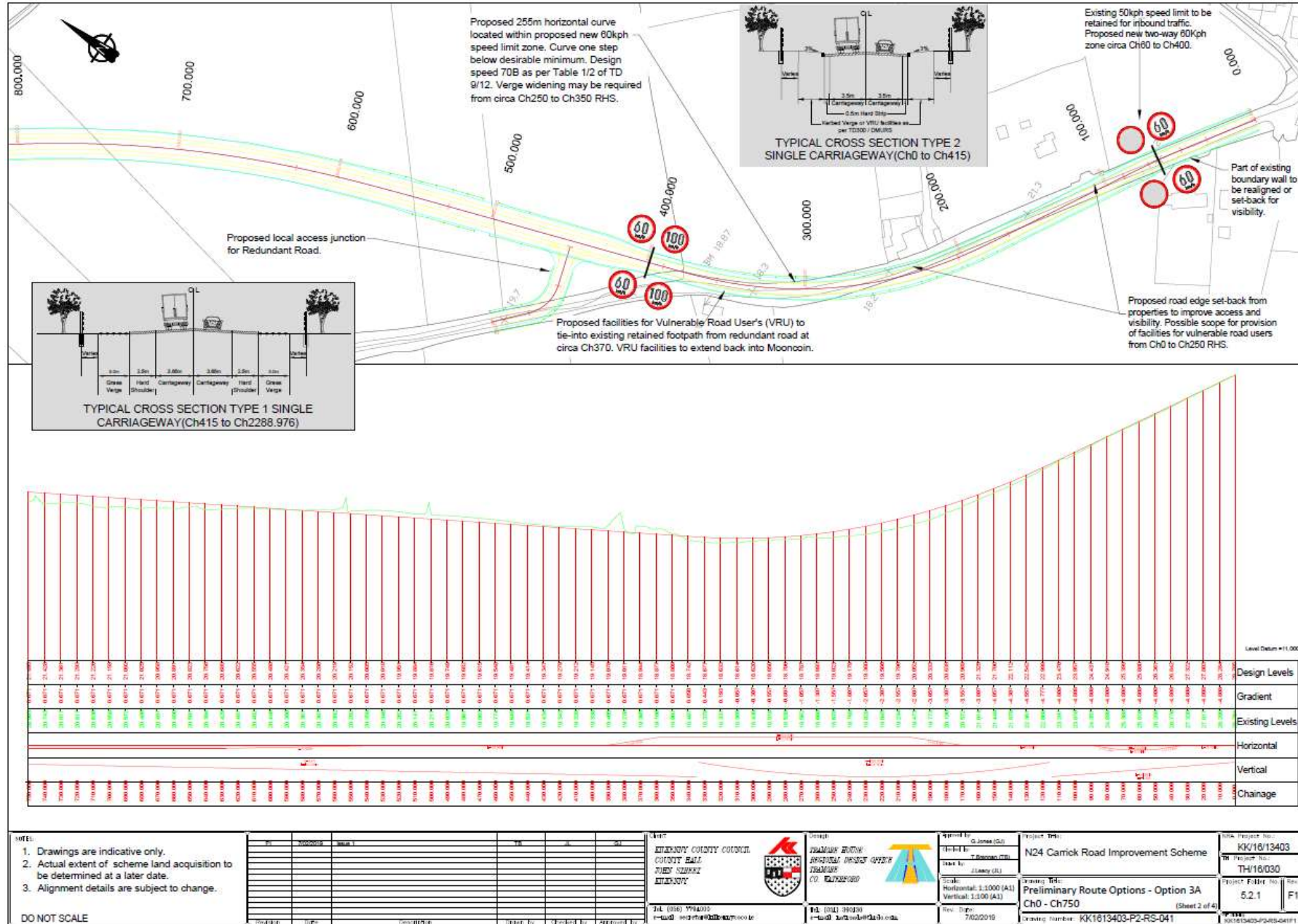


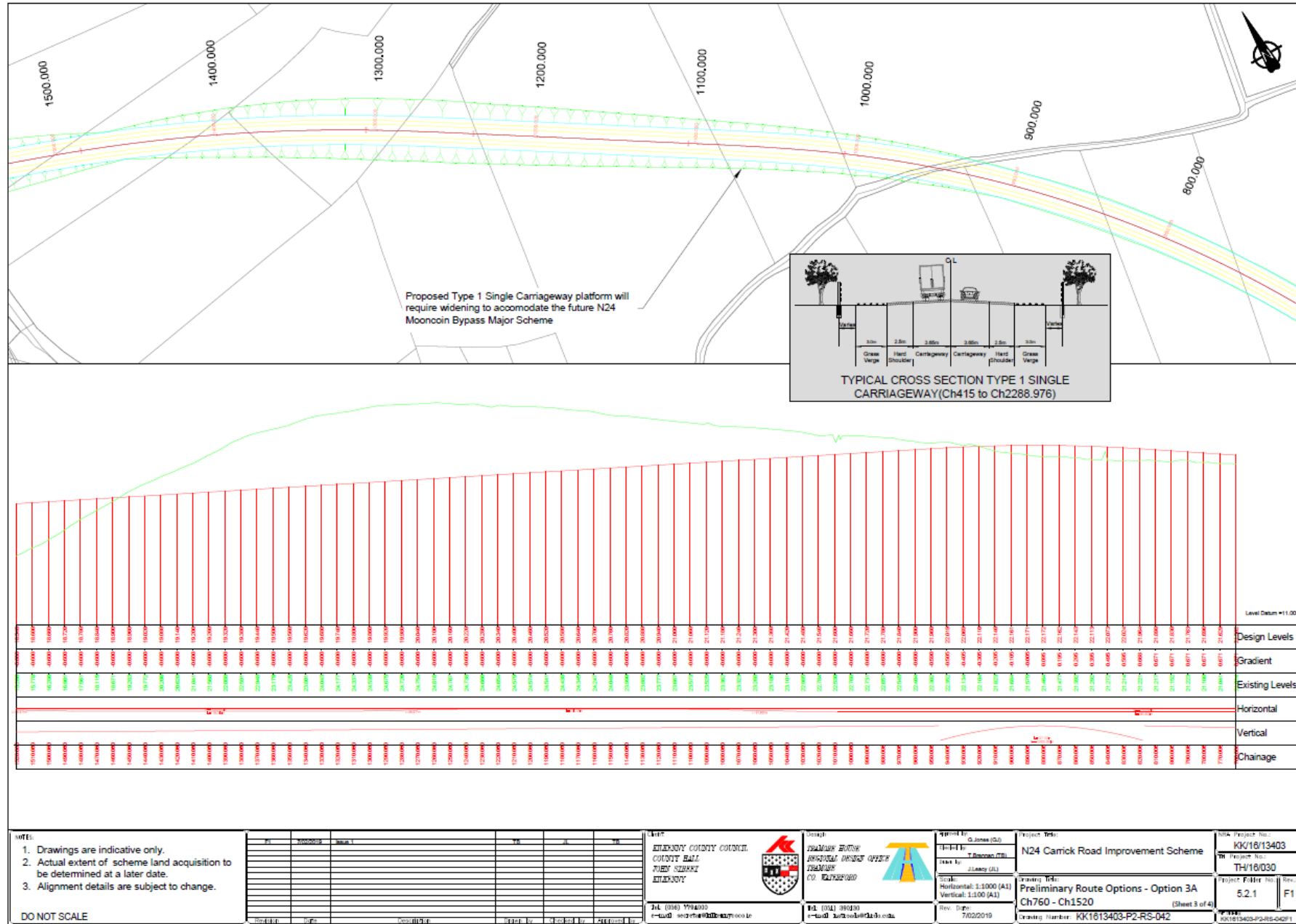
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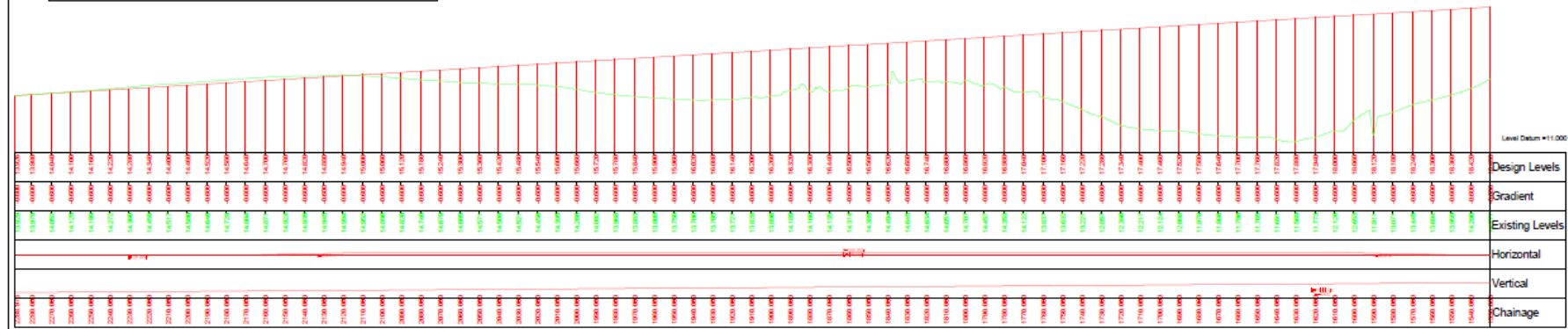
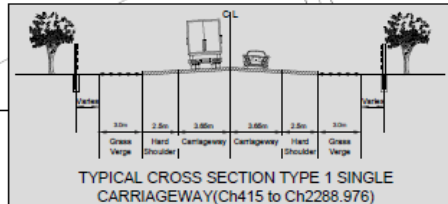
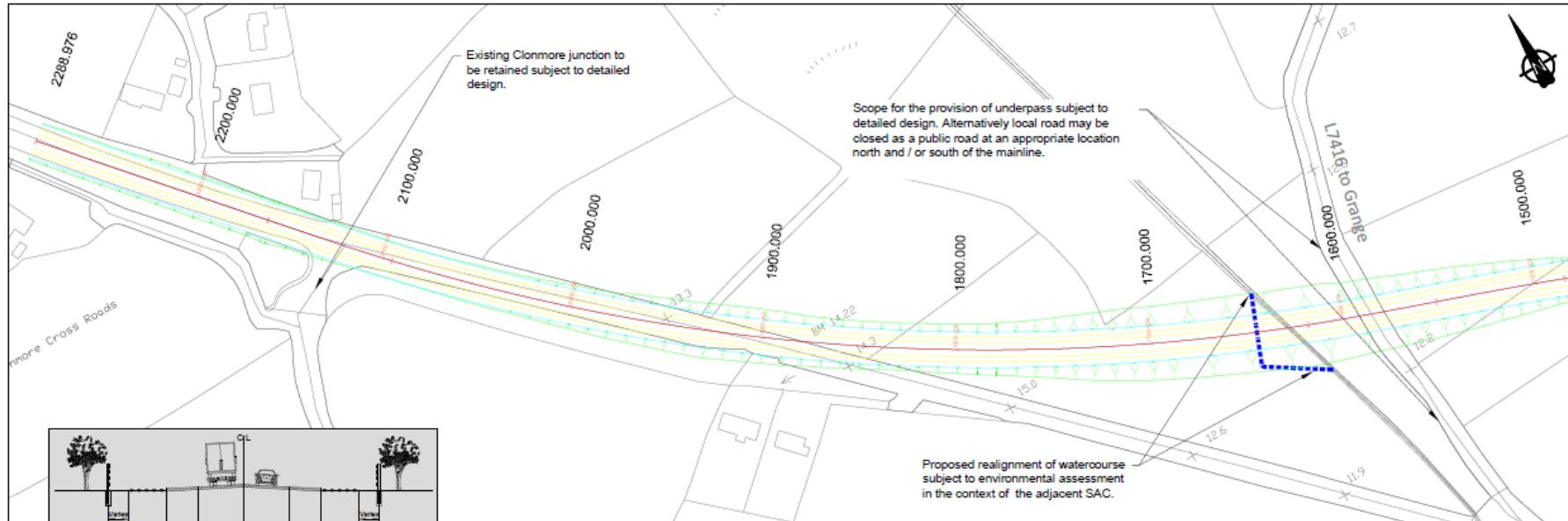
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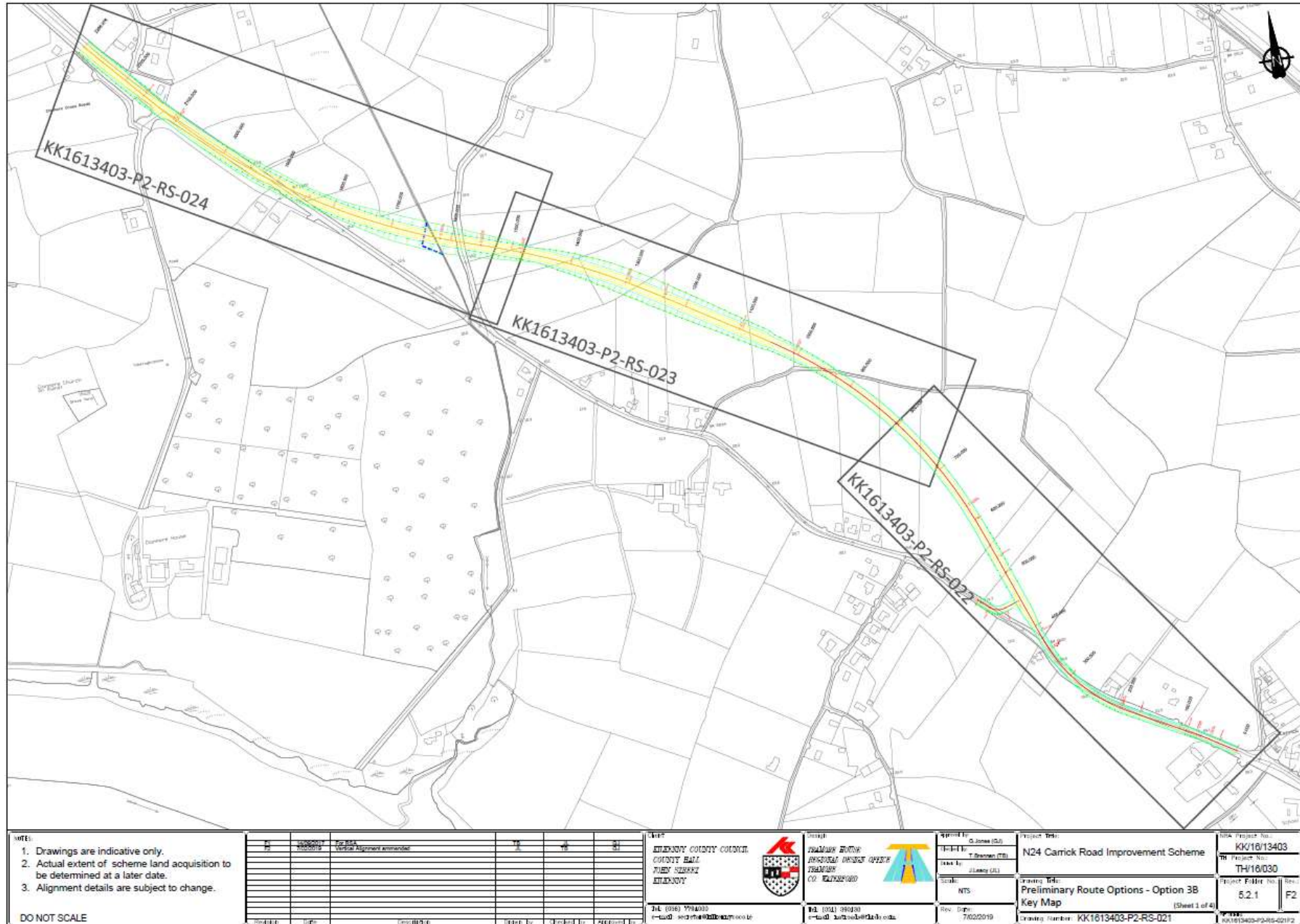
Section A7.4: Preliminary Design Options 3A-3B (Corridor 3)

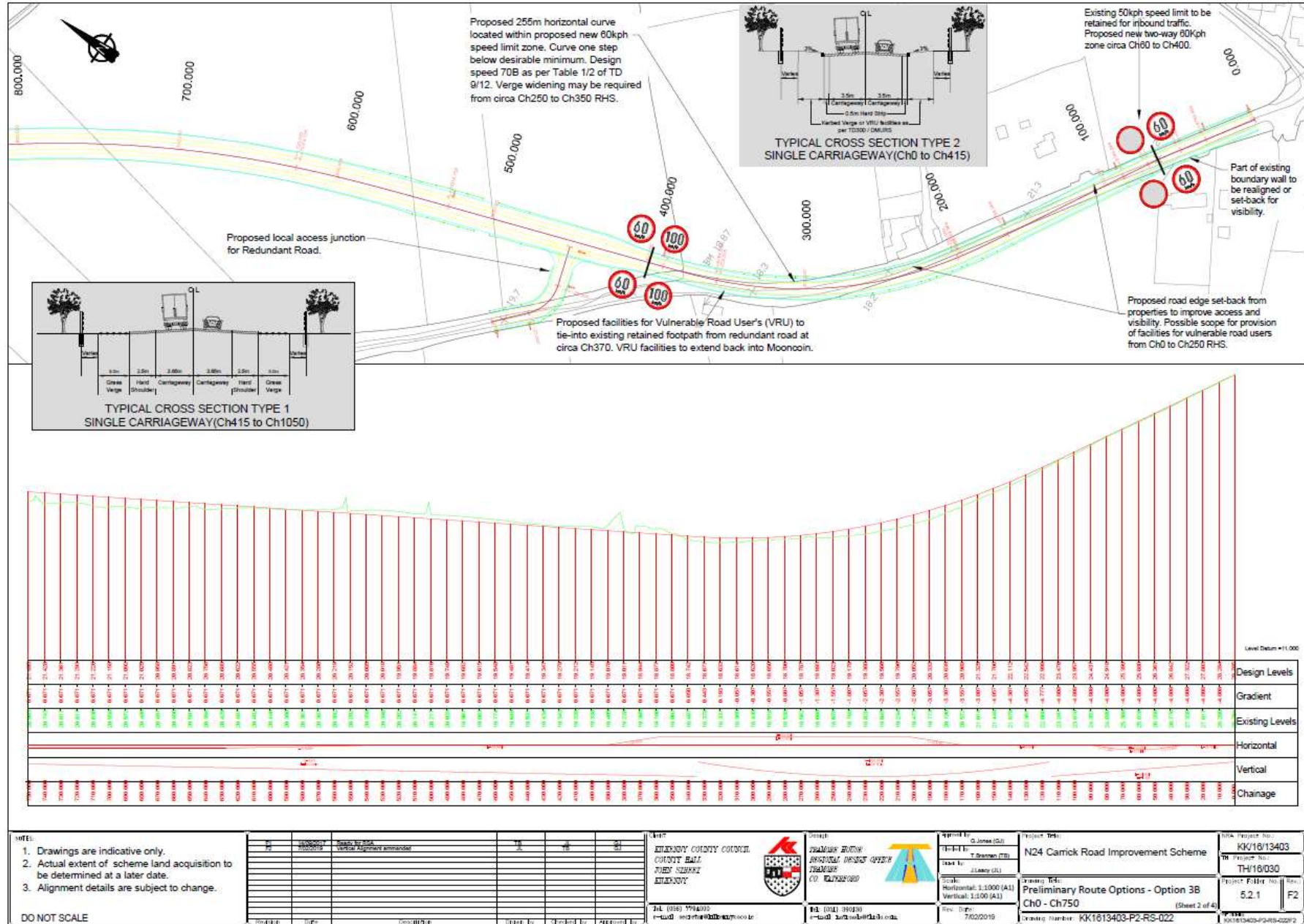






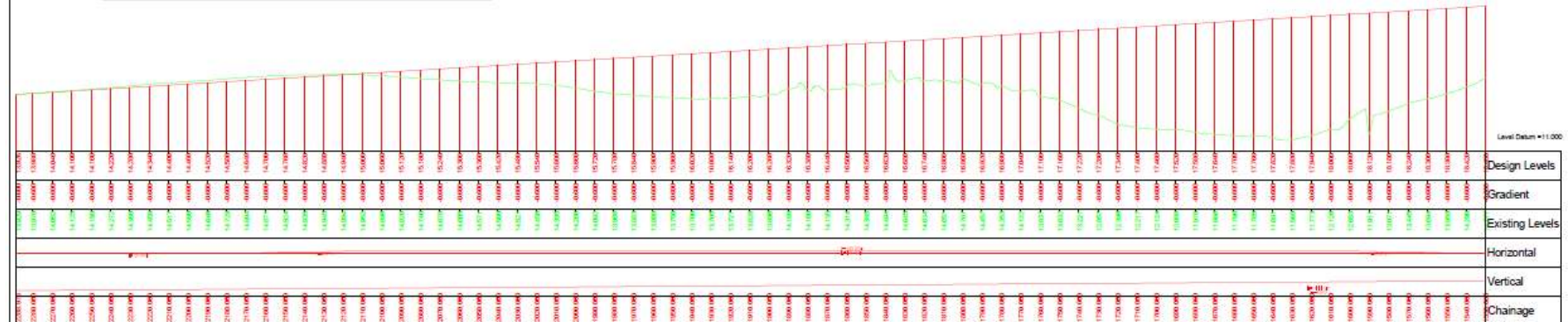
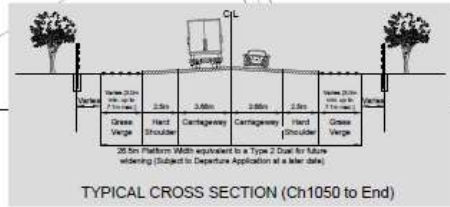
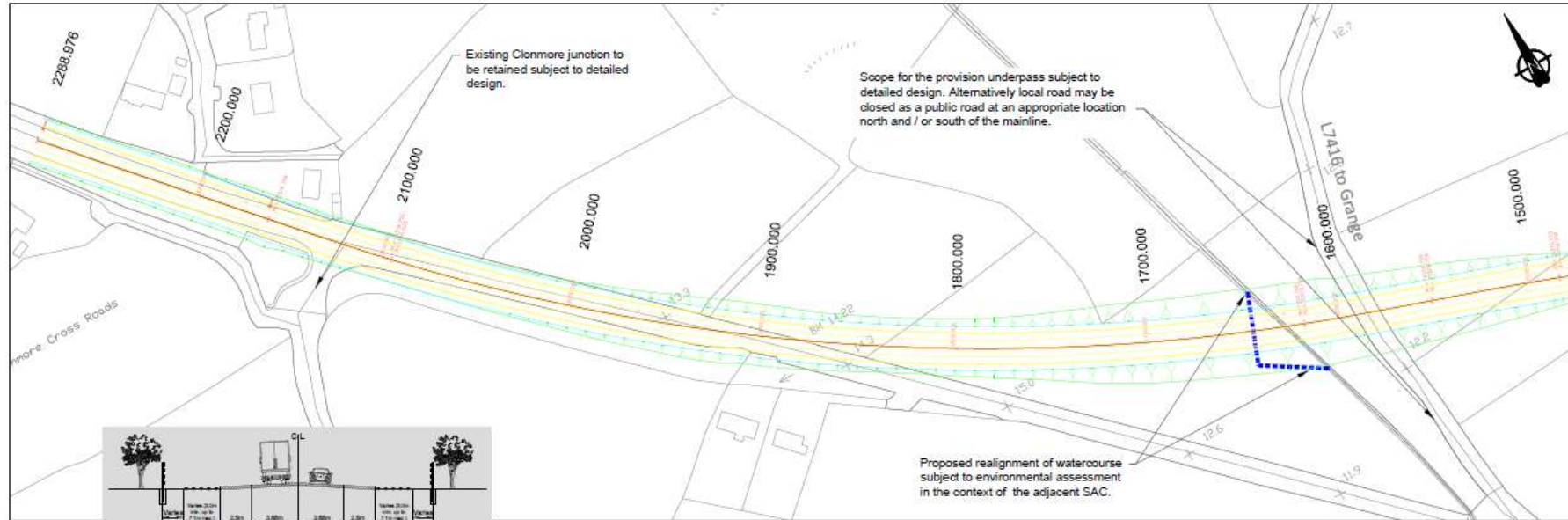








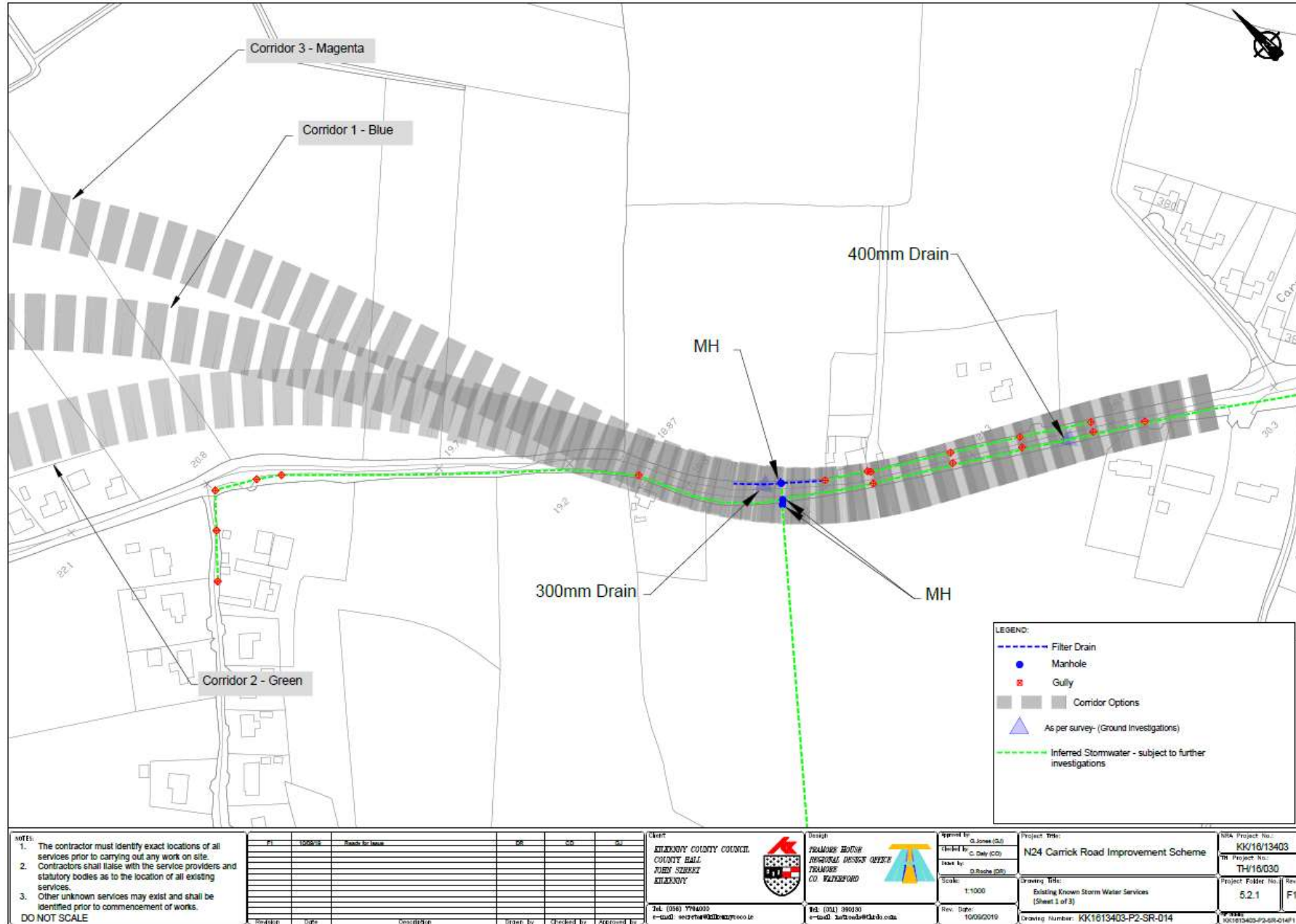




info: 1. Drawings are indicative only. 2. Actual extent of scheme land acquisition to be determined at a later date. 3. Alignment details are subject to change.	Date: 16/02/2019 For: Carrick Road Improvement Scheme	Client: KERRY COUNTY COUNCIL COUNTY HALL JAMES STREET KERRY	Consultant: KERRY COUNTY COUNCIL COUNTY HALL JAMES STREET KERRY	Scale: Horizontal: 1:1000 (A4) Vertical: 1:1000 (A4)	Project No: N24 Carrick Road Improvement Scheme Drawing No: Preliminary Route Options - Option 3B Ch1530 - Ch2288.976 (Sheet 4 of 4) Drawing Number: KK1613403-P2-RS-024	Project No: KK/16/13403 Drawing No: TH/16/030 Issue: 5.2.1 Sheet: F2
	Date: 16/02/2019 For: Carrick Road Improvement Scheme	Client: KERRY COUNTY COUNCIL COUNTY HALL JAMES STREET KERRY	Consultant: KERRY COUNTY COUNCIL COUNTY HALL JAMES STREET KERRY	Scale: Horizontal: 1:1000 (A4) Vertical: 1:1000 (A4)	Project No: N24 Carrick Road Improvement Scheme Drawing No: Preliminary Route Options - Option 3B Ch1530 - Ch2288.976 (Sheet 4 of 4) Drawing Number: KK1613403-P2-RS-024	Project No: KK/16/13403 Drawing No: TH/16/030 Issue: 5.2.1 Sheet: F2

## **Appendix 8 – Services Drawings**





NOTES:  
 1. The contractor must identify exact locations of all services prior to carrying out any work on site.  
 2. Contractors shall liaise with the service providers and statutory bodies as to the location of all existing services.  
 3. Other unknown services may exist and shall be identified prior to commencement of works.  
 DO NOT SCALE

PK	DATE	DESCRIPTION	BY	CHECKED BY	APPROVED BY

Client: KILKENNY COUNTY COUNCIL  
 COUNTY HALL  
 TOWN SQUARE  
 KILKENNY



Tel: (056) 7744000  
 e-mail: [secretary@kilkennycc.ie](mailto:secretary@kilkennycc.ie)

Project: TRANSPORT DESIGN  
 TRANSPORT DESIGN OFFICE  
 TRANSPORT  
 CO. WILTSHIRE



Tel: (041) 390300  
 e-mail: [info@transportdesign.co.uk](mailto:info@transportdesign.co.uk)

Approved by: G. Jones (SU)  
 Checked by: C. Daly (CO)  
 Drawn by: G. Roche (SU)

Scale: 1:5000  
 Rev. Date: 10/09/2019

Project Title: N24 Carrick Road Improvement Scheme

Drawing Title: Existing Known Storm Water Services (Sheet 1 of 3)

Drawing Number: KK1613403-P2-SR-014

N24 Project No.: KK1613403  
 Project No.: TH16/030  
 Project Folder No.: 5.2.1  
 Rev.: F1



- NOTES:**
1. The contractor must identify exact locations of all services prior to carrying out any work on site.
  2. Contractors shall liaise with the service providers and statutory bodies as to the location of all existing services.
  3. Other unknown services may exist and shall be identified prior to commencement of works.
- DO NOT SCALE**

#1	1006016	Bank to Lane	MR	CK	DL

Client  
**KILDENNY COUNTY COUNCIL**  
 COUNTY HALL  
 POBLY SQUARE  
 KILDENNY

Design  
**FRANKIE BROWN**  
 ARCHITECT DESIGN GROUP  
 78A/80B  
 CO. KILDENNY



Approved by: O.Jones (SU)  
 Checked by: C. Day (CO)  
 Drawn by: D.Booth (DR)

Project Title:  
**N24 Carrick Road Improvement Scheme**

Scale:  
 1:1000

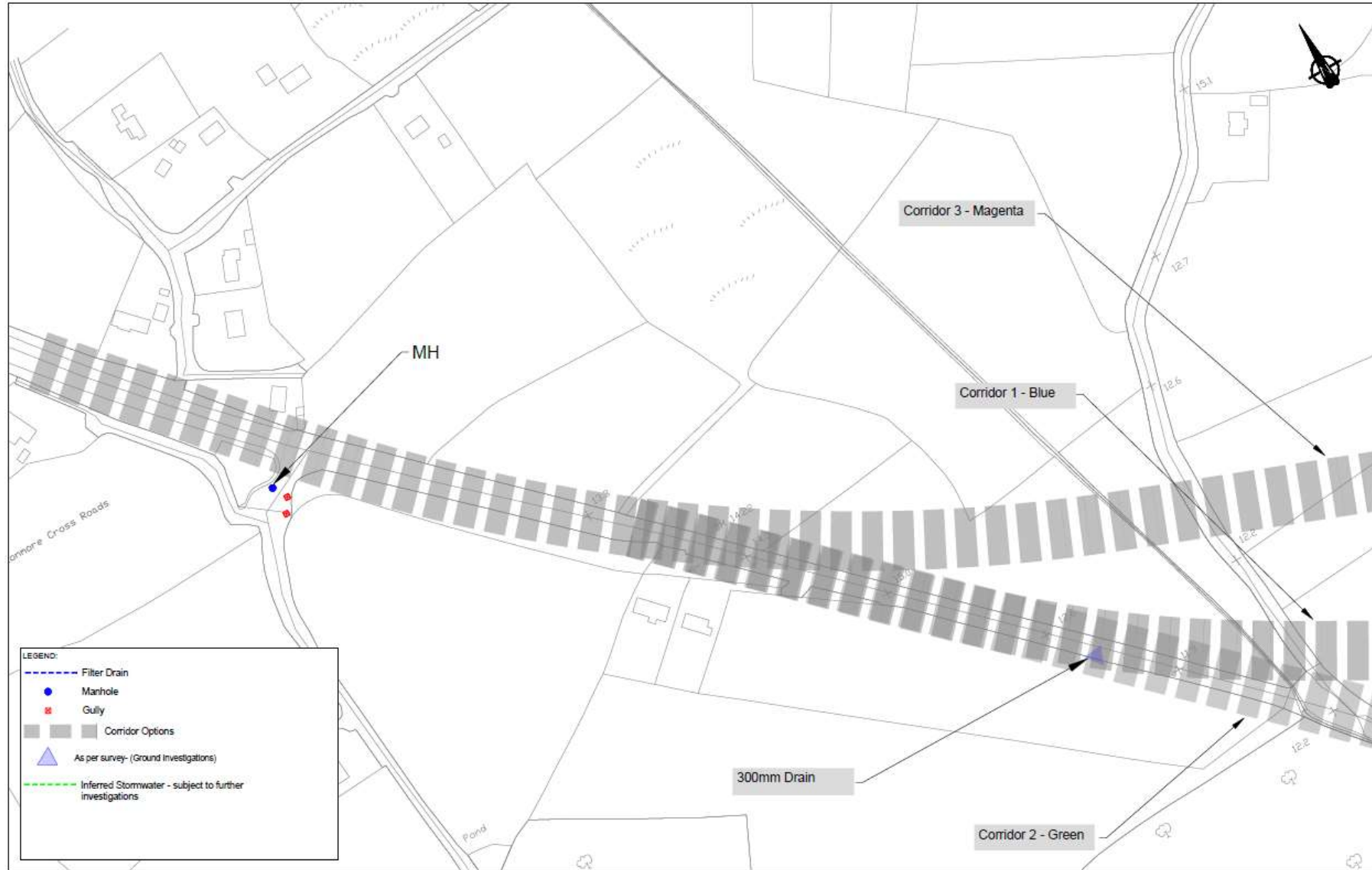
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Drawing Number:  
 KK1613403-P2-SR-015

Project No:  
 KK1613403

Project Title:  
 TH/16/030

Project Folder No. Rev:  
 5.2.1 F1

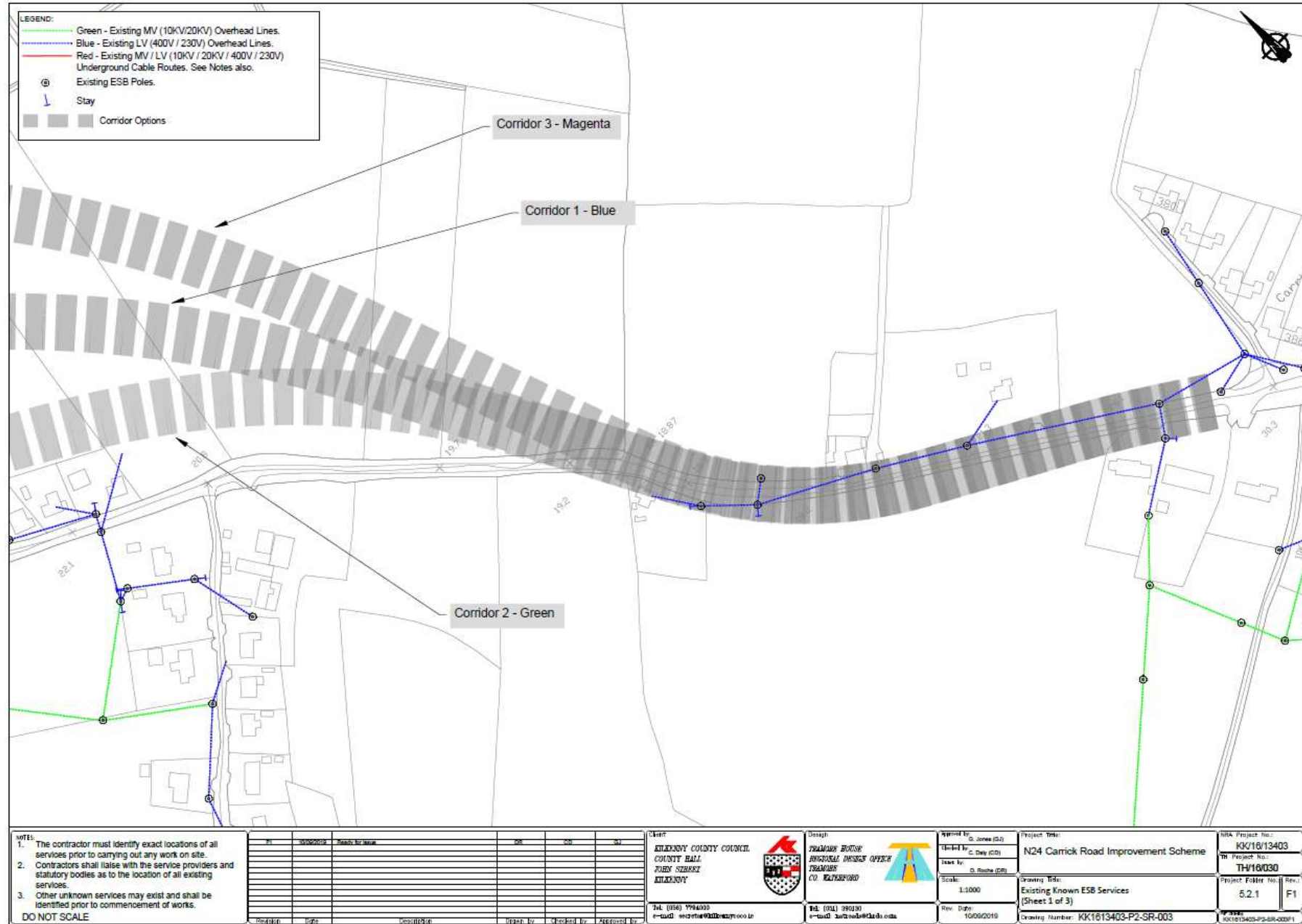


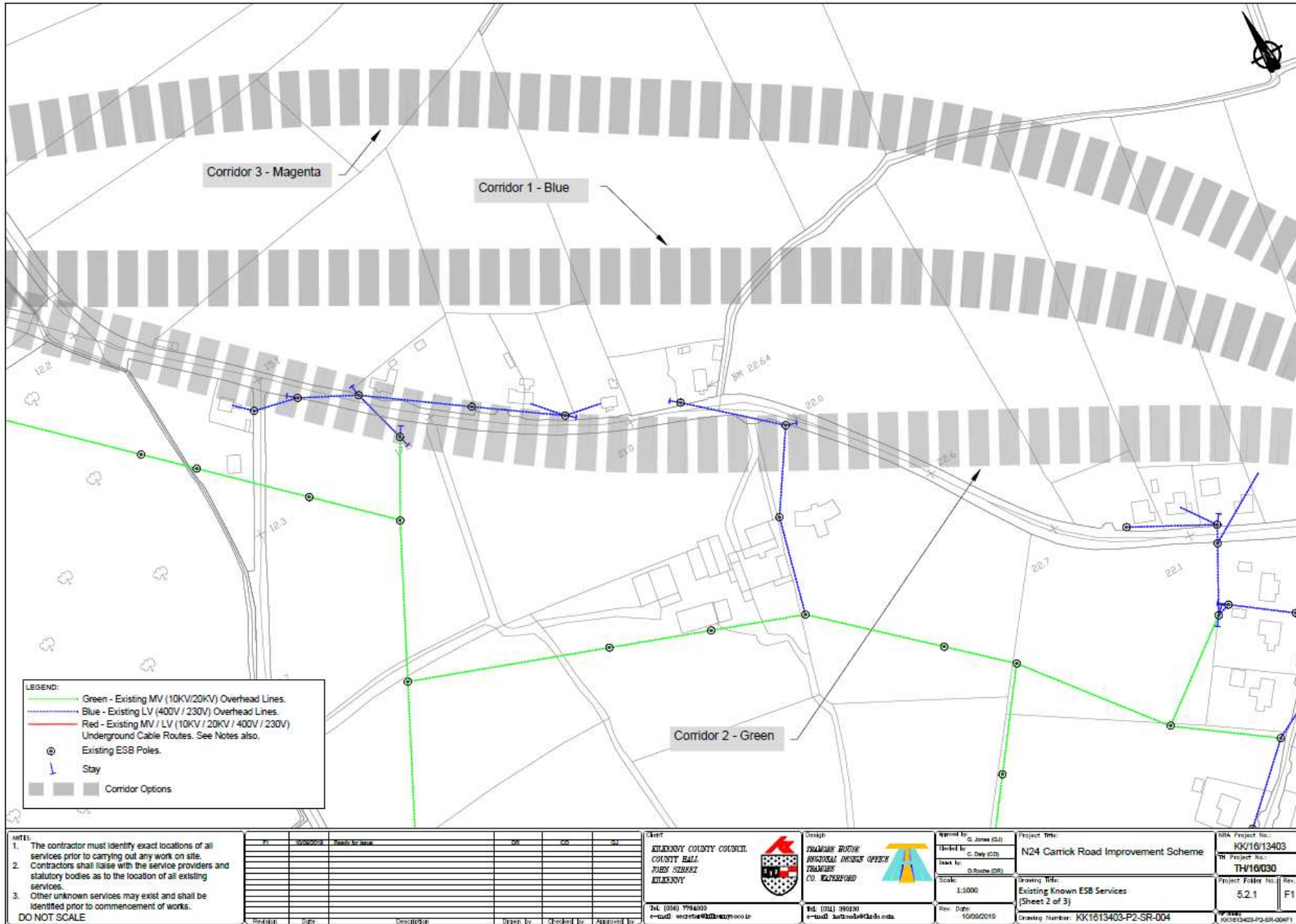
<p><b>NOTES:</b></p> <ol style="list-style-type: none"> <li>The contractor must identify exact locations of all services prior to carrying out any work on site.</li> <li>Contractors shall liaise with the service providers and statutory bodies as to the location of all existing services.</li> <li>Other unknown services may exist and shall be identified prior to commencement of works.</li> </ol> <p>DO NOT SCALE</p>	<table border="1"> <tr> <th>SI</th> <th>DATE</th> <th>ISSUED FOR</th> <th>BY</th> <th>CHECKED BY</th> <th>REVISION</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>	SI	DATE	ISSUED FOR	BY	CHECKED BY	REVISION																															<p>Client  <b>KERRY COUNTY COUNCIL</b>          COUNTY HALL          FINEE STREET          KERRY</p> <p>Drawn  <b>PAULINE BROWN</b>          REGIONAL DESIGN OFFICE          TRAMADON          CO. KERRY</p> <p>Approved by          G. Jones (SU)          D. Day (CD)          D. Roche (DR)</p> <p>Scale:          1:1000</p> <p>Rev. Date:          10/09/2019</p>	<p>Project Title:  <b>N24 Carrick Road Improvement Scheme</b></p> <p>Drawing Title:          Existing Known Storm Water Services          (Sheet 3 of 3)</p> <p>Drawing Number:          KK1613403-P2-SR-016</p>	<p>Project No.:  <b>KK16/13403</b></p> <p>Project No.:  <b>TH/16/030</b></p> <p>Project Folder No.:  <b>5.2.1</b></p> <p>Rev.:  <b>F1</b></p>
	SI	DATE	ISSUED FOR	BY	CHECKED BY	REVISION																																		
<p>Unit          Tel: (086) 794000          E-mail: info@kerrycc.ie</p> <p>Unit          Tel: (021) 816130          E-mail: pauline@tramadon.com</p>	<p>Project No.:  <b>KK16/13403-P2-SR-016</b></p>																																							



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	Tel: (0516) 779400 e-mail: secret@kilkennycoco.ie	Tel: (051) 89130 e-mail: info@transmarine.ie	Scale: Not To Scale	Drawing Title: Existing Known ESB Services (Key Map)	Rev: Date: 10/09/2019	Project File Ref No.: 5.2.1 Rev.: F1	Drawing Number: KK1613403-P2-SR-002
	DO NOT SCALE						



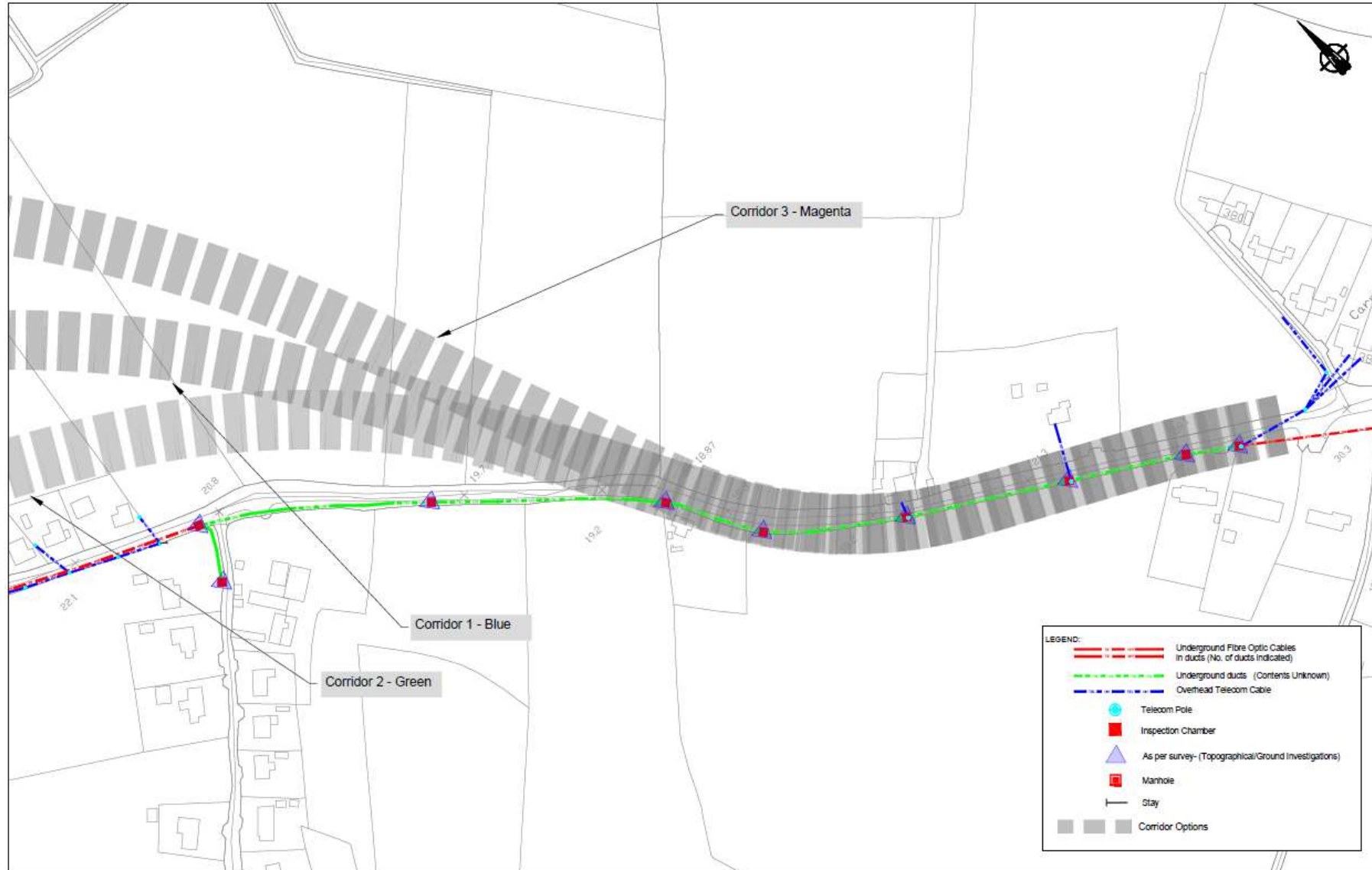




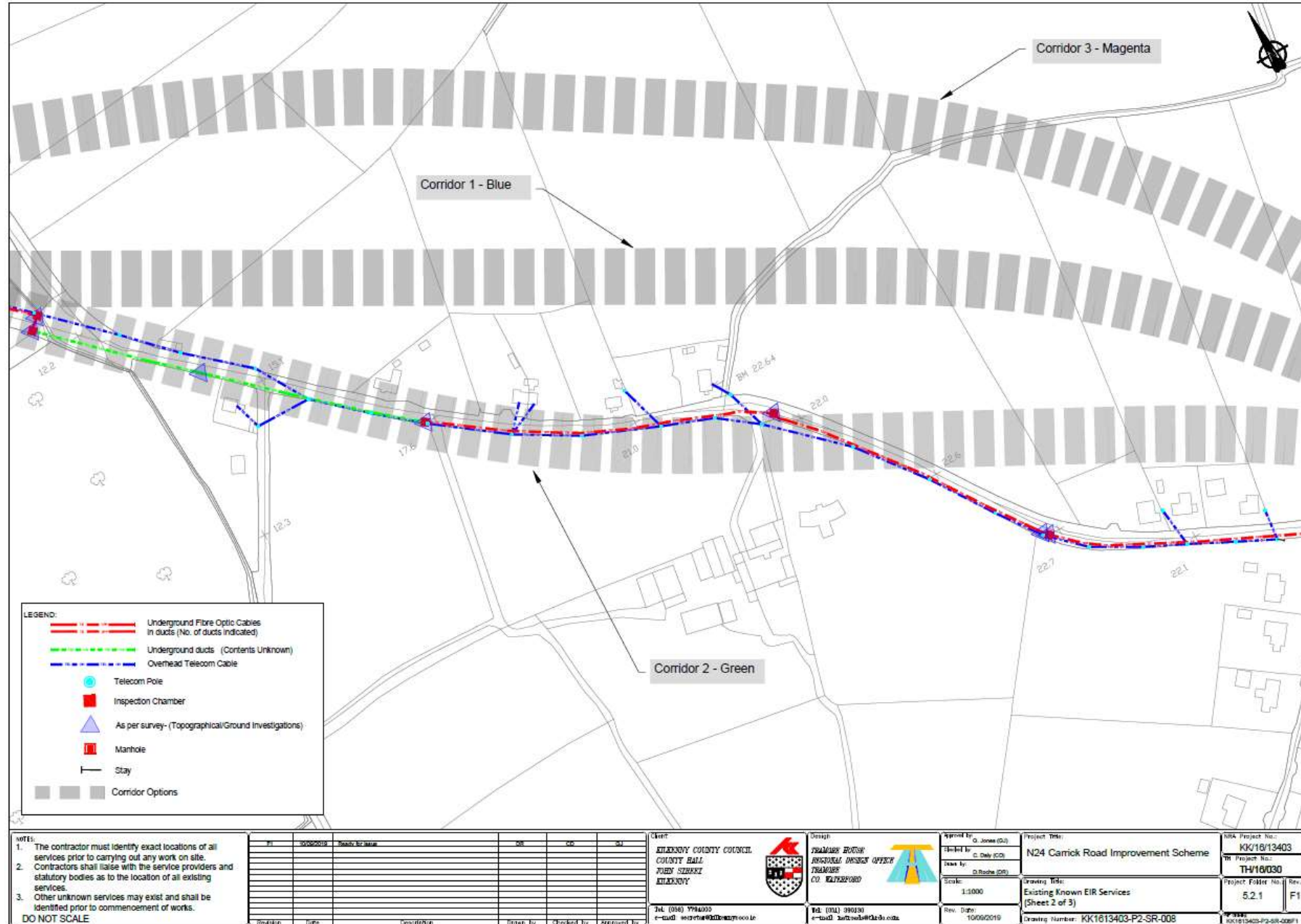


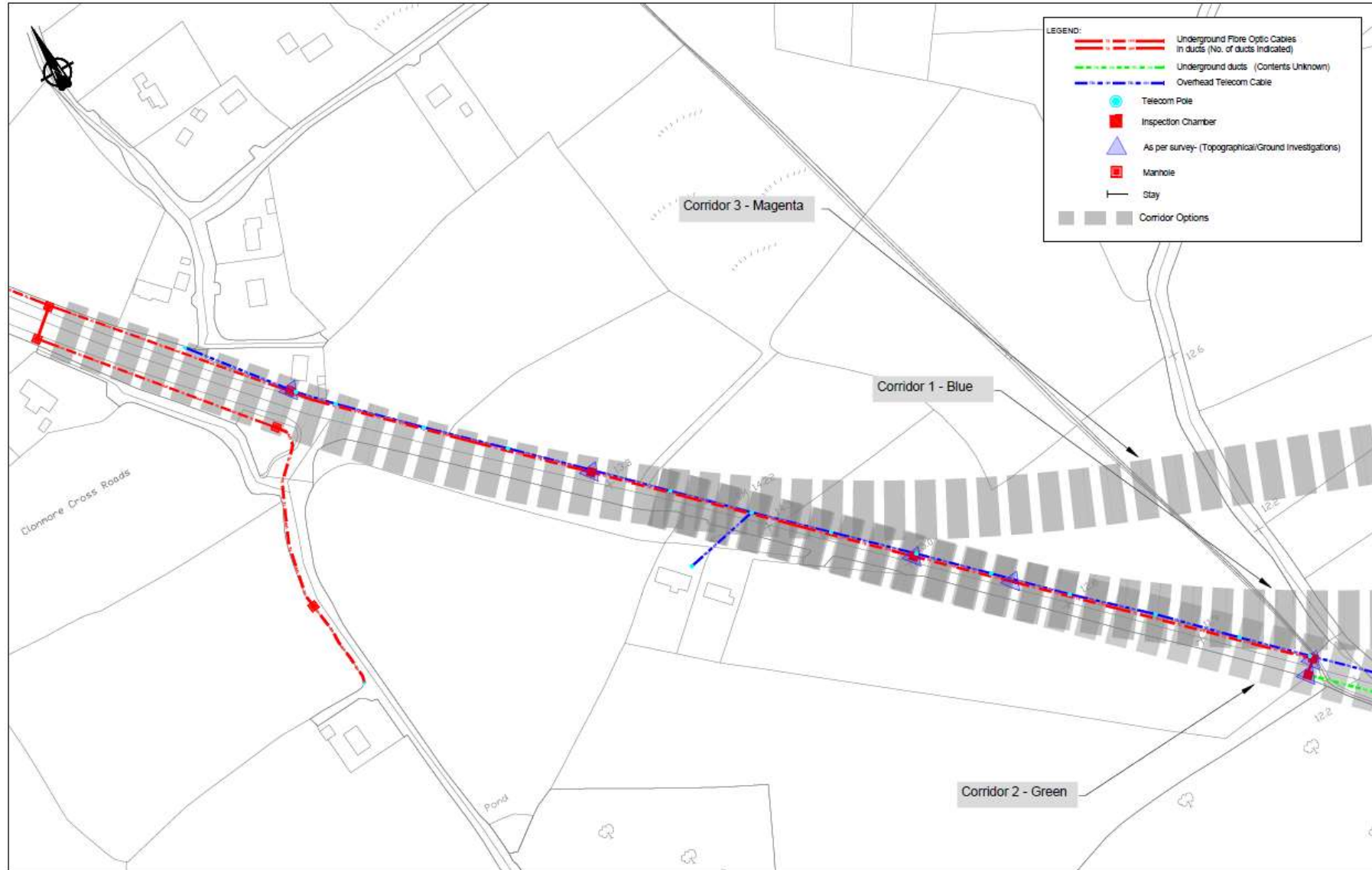


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	SI	NO	DATE	STATUS	BY	CHECKED	APPROVED																																																																												
Tel: (016) 994030 E-mail: info@transporteng.co.ie	Tel: (011) 80130 E-mail: info@transporteng.co.ie		Rev: Date: 10/09/2019		Drawing Number: KK1613403-P2-SR-008		Date: 10/09/2019		Drawing Number: KK1613403-P2-SR-008																																																																										





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	NO.	DATE	BY	REVISION																		
<p>Scale:          1:1000</p> <p>Rev. Date:          10/09/2019</p> <p>Drawing Number:  <b>KK1613403-P2-SR-007</b></p>	<p>Existing Title:          Existing Known EIR Services          (Sheet 1 of 3)</p>	<p>Project Folder No.:  <b>TH16030</b></p>	<p>Project File No.:  <b>5.2.1</b></p> <p>Rev.:  <b>F1</b></p>																			



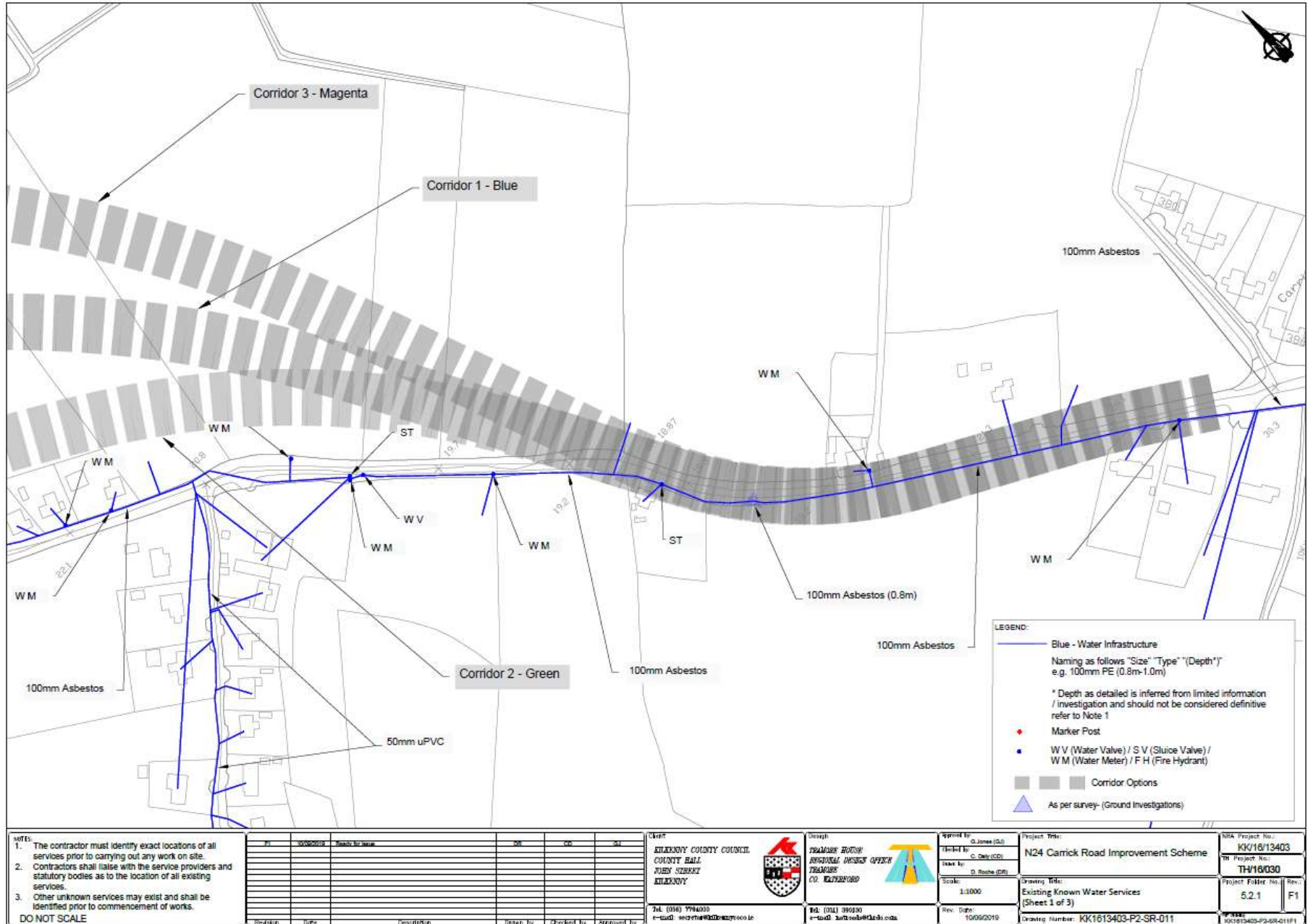


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	Tel: (0145) 779400 e-mail: secret@kerrycc.ie	Tel: (011) 39130 e-mail: info@frankie.com	Drawing Title: <b>Existing Known EIR Services</b> (Sheet 3 of 3)	Project Folder No.: 5.2.1 Rev.: F1	Drawing Number: <b>KK1613403-P2-SR-009</b>	
	Scale: 1:1000 Rev. Date: 10/05/2019	Drawing Number: <b>KK1613403-P2-SR-009</b>				



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DATE	BY	CHECKED BY	APPROVED BY																																
<p><b>Tel:</b> (056) 994000  <b>e-mail:</b> secret@kildennycc.ie</p>	<p><b>Tel:</b> (051) 994030  <b>e-mail:</b> info@rdo.ie</p>	<p><b>Scale:</b>                  Not To Scale</p>	<p><b>Project No.:</b>                  TH/16/030</p>	<p><b>Project Folder No.:</b>                  5.2.1</p>	<p><b>Revision:</b>                  F1</p>	<p><b>Rev. Date:</b>                  10/09/2019</p>	<p><b>Drawing Number:</b>                  KK1613403-P2-SR-010</p>	<p><b>File No.:</b>                  KK1613403-P2-SR-010F1</p>																											
<p><b>Existing Title:</b>                  Existing Known Water Services                  (Key Map)</p>	<p><b>Drawing Number:</b> KK1613403-P2-SR-010</p>																																		





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- DO NOT SCALE

NO	DESCRIPTION	DATE	BY	CHECKED BY	APPROVED BY

Client  
**MEIKENNY COUNTY COUNCIL**  
 COUNTY HALL  
 JOHN STREET  
 MEIKENNY

Design  
**FRANKIE BROWN**  
 ANSOLOG DESIGN GROUP  
 FRANKIE  
 CV. KILFERD

Approved by  
 G. Jones (SU)  
 Checked by  
 G. O'Leary (SU)  
 Drawn by  
 D. Roche (SU)

Project Title  
**N24 Carrick Road Improvement Scheme**

Scale  
 1:1000

Rev. Date  
 10/09/2019

Drawing Title  
 Existing Known Water Services  
 (Sheet 1 of 3)

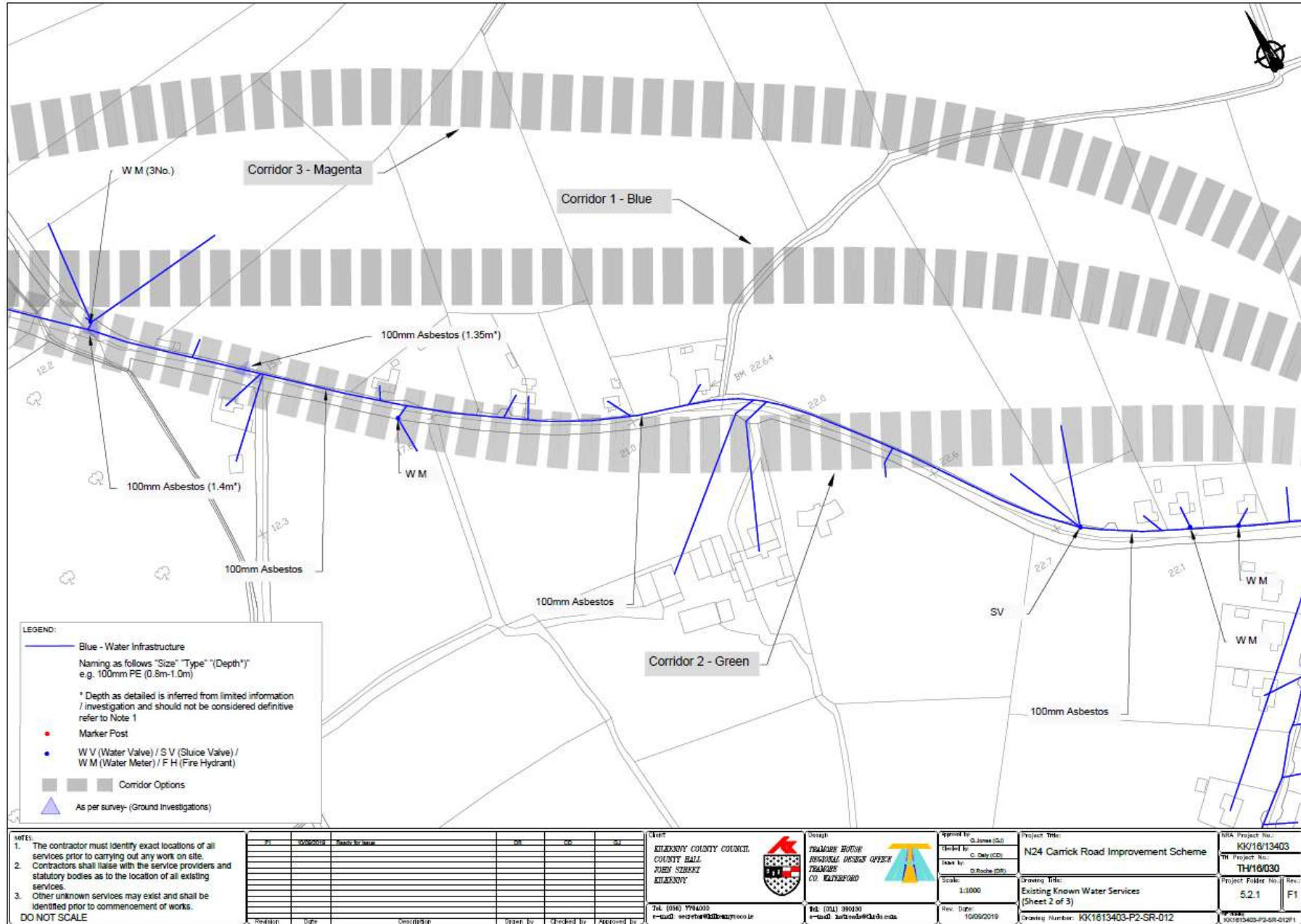
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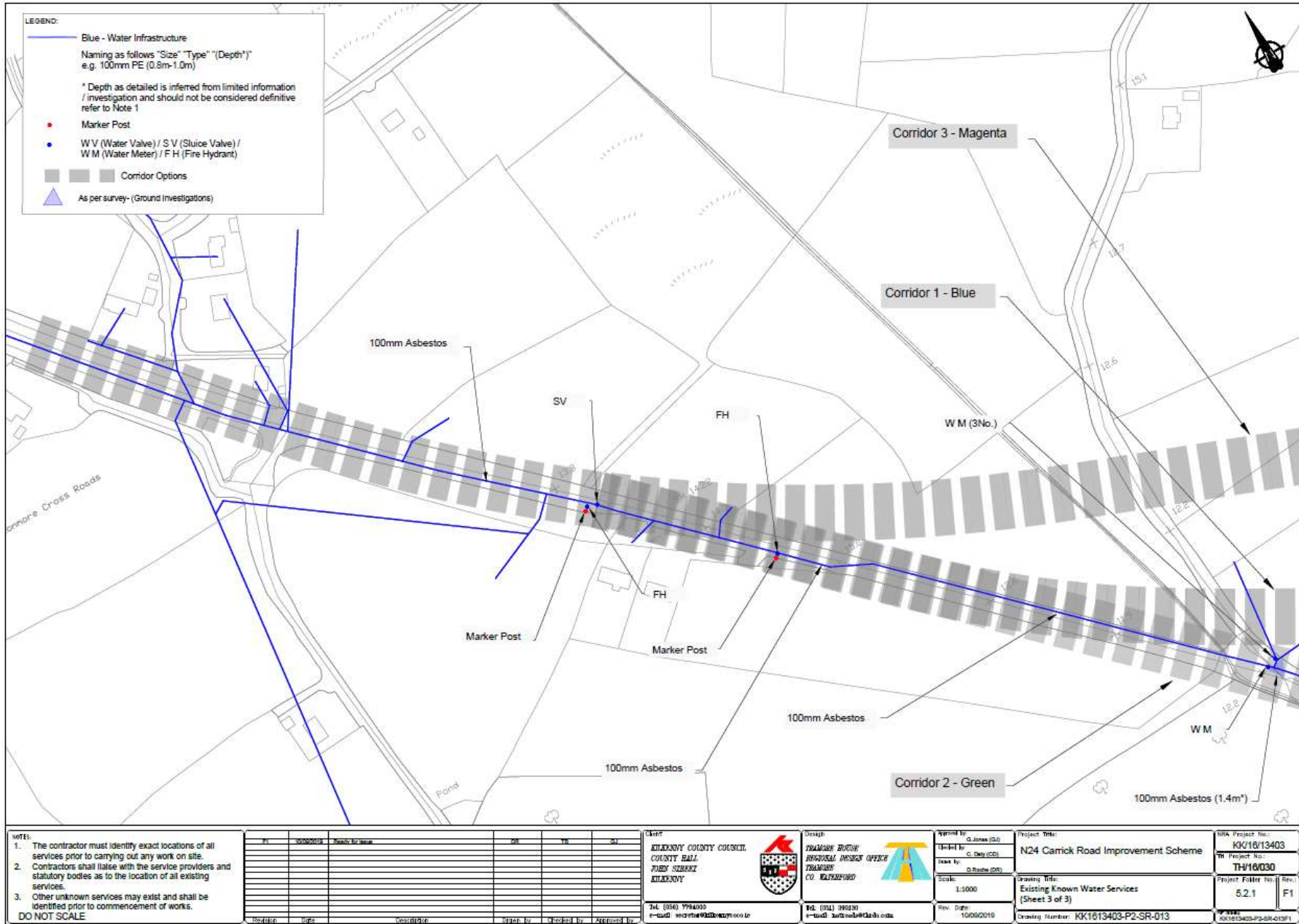
RFA Project No.  
**KK16/13403**

TH Project No.  
**TH16/030**

Project Folder No.  
 5.2.1

Rev.  
 F1





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- DO NOT SCALE

Rev	Date	By	Checked by	Approved by
1	10/09/2019	As per survey		

Client  
**KILKENNY COUNTY COUNCIL**  
 COUNTY HALL  
 POBY STREET  
 KILKENNY

Design  
**PRIMARV DESIGN**  
 ARCHITECTURAL DESIGN OFFICE  
 PRIMARV  
 CO. KILKENNY

Drawn by  
 G. Jones (GJ)  
 C. Daly (CD)  
 D. Roche (DR)

Project Title  
**N24 Carrick Road Improvement Scheme**

Scale  
 1:1000

Rev. Date  
 10/09/2019

Project No.  
**KK16/13403**

Project Folder No.  
**TH16/030**

Project Folder No. | Rev.  
**5.2.1 | F1**

Drawing No.  
**KK1613403-P2-SR-013**

**END OF REPORT**