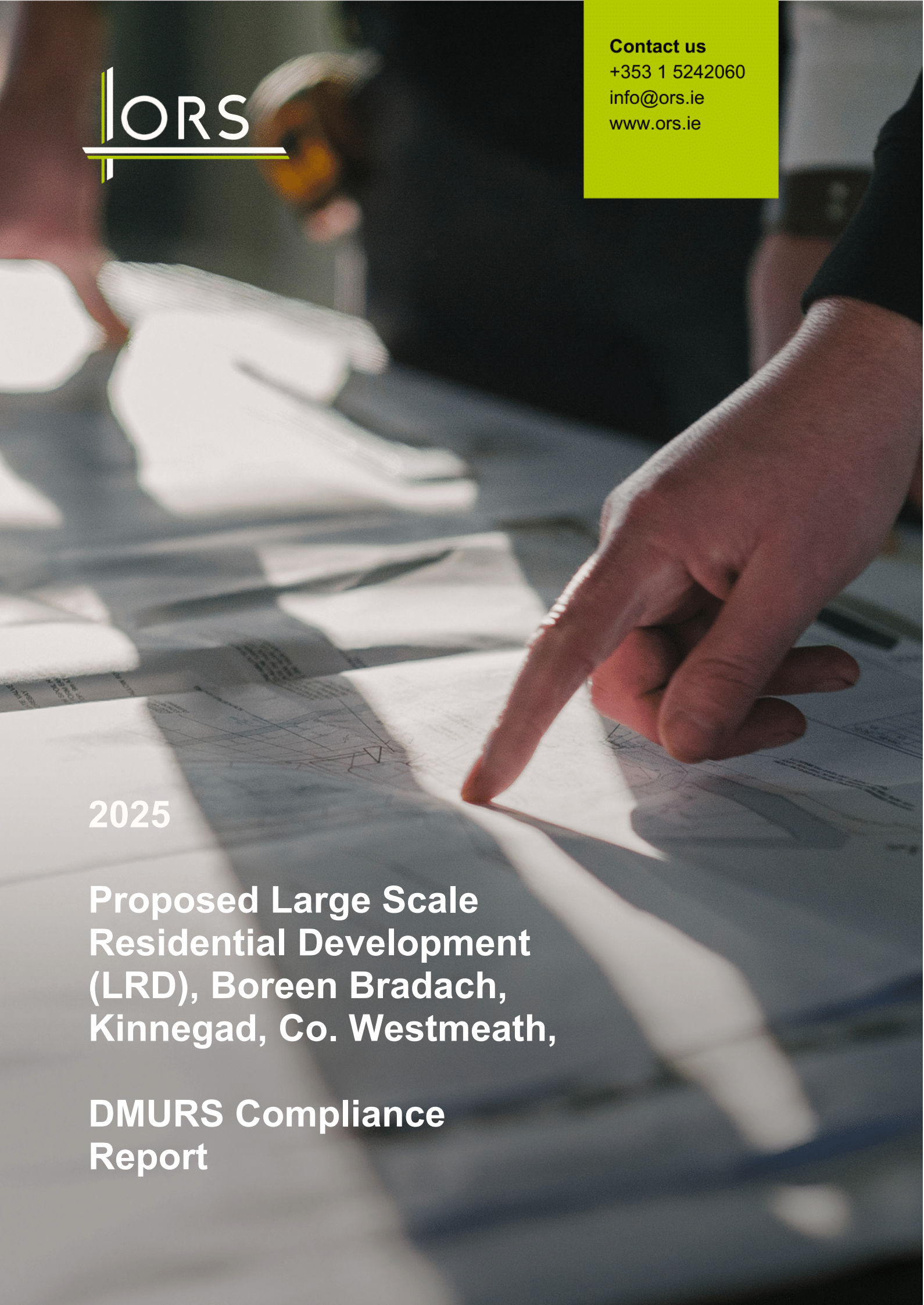
Appendix H – DMURS Compliance Statement Report



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2025

Proposed Large Scale Residential Development (LRD), Boreen Bradach, Kinnegad, Co. Westmeath,

DMURS Compliance Report

LRD, Boreen Bradach, Kinnegad, Co. Westmeath
DMURS Compliance Report

Document Control Sheet

Client:	JH Kinnie Ltd
Document No:	241139-ORS-XX-XX-RP-TR-13g-004

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1 Introduction

ORS has been commissioned by *JH Kinnie Ltd* to undertake a review for the proposed Large-Scale Residential Development (LRD) at Boreen Bradach, Kinnegad, Co. Westmeath ("The Development") in the context of compliance with The Design Manual for Urban Roads and Streets ("DMURS"). This document forms part of the planning application and should be read in conjunction with all drawings, reports, specifications, and particulars associated with the planning application.

The report provides comment on the main aspects of the development in terms of the DMURS engineering criteria including parking, sightlines, internal road widths, corner radii, pedestrian linkage, footpaths, internal road junctions, turning areas, horizontal deflections, cycle facilities and internal road markings

The site is located approximately 18km to the east of Mullingar town centre and approximately 0.6km north of the M4/M6 motorway (See **Figure 1.1**). The proposed site is a greenfield site. The application boundary extends to approximately 4.279 hectares, encompassing proposed offsite works as well as all onsite development.

The proposed development is bounded to the south by several existing businesses along the Main Street as well as the parish church. To the west by St Etchen's National School. To the north by an existing housing development, Bun Daire, and to the east by an existing road and another existing housing development, Riverside Lawns.

Entrance and exit to the proposed development site will be from Boreen Bradach Road that bounds the eastern edge of development boundary and connects to the R148/Main Street for Kinnegad.

Figure 1.1: Proposed Site Location, Kinnegad, Co. Westmeath – Approximate development boundary outlined in red. Source: Google Satellite imagery.

2 Description of The Development

The proposed development consist of the following:

A Large-Scale Residential Development (LRD) on a site at Boreen Bradach, Kinnegad, Co. Westmeath. The proposed development will comprise 129 no. houses (1 bed, 2 beds, 3 beds and 4 beds) and the provision of a crèche facility. Provision of car, cycle and motorbike parking. Provision of a new vehicular access and additional pedestrian/cyclist access from L-5014 (Boreen Bradach Road) and associated upgrades to the local road. All associated site development works and services provision, bin stores, residential private open space, public open space, substation, boundary treatments, landscaping and all associated site development works.

Figure 2.1: Finalised Site Layout Plan (From Architect).

3 DMURS Engineering Criteria

Guidance has been taken from the Department of Transport, Tourism and Sport document – "Design Manual for Urban Roads and Streets" (DMURS) for assessing the compliance of the proposed design, which is now seen as industry best practice in the development of road design suited to urban areas.

The drawings reviewed for this report were issued as part of the Planning Issue and this report has been produced in support of the planning application.

The list of drawings reviewed were as below with specific references made for each figure.

- 241139-ORS-ZZ-00-DR-TR-700
- 241139-ORS-ZZ-00-DR-TR-701
- 241139-ORS-ZZ-00-DR-TR-730
- 241139-ORS-ZZ-00-DR-TR-731
- 241139-ORS-ZZ-00-DR-TR-732
- 241139-ORS-ZZ-00-DR-TR-733

3.1 Parking

The parking provision proposed for the site is largely in-curtilage, off-street perpendicular parking that is associate with each dwelling. A limited number of on-street perpendicular bays associated with the proposed creche and parallel parking bays proposed on the existing road fronting the development have been provided also.

On-street parking refers to spaces that are directly adjacent to, and accessible from, the main vehicular carriageway, while off-street parking refers to parking provided within the proposed ownership boundary of the dwellings.

The parking provision can be broken down by area as follows

3.1.1 Off Street Perpendicular Parking Accessed from Shared Surface

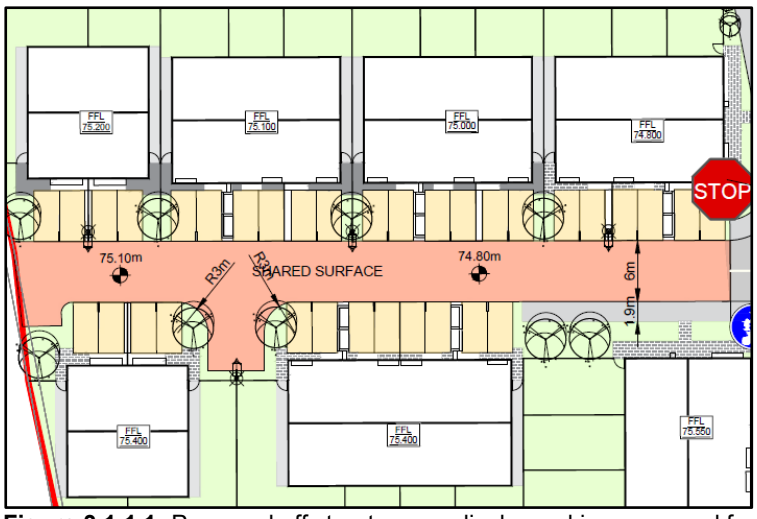


Figure 3.1.1.1: Proposed off street perpendicular parking accessed from shared surface in the west of the development (Source: ORS Drawing 241139-ORS-ZZ-00-DR-TR-700)

DMURS Section 4.4.9 recommends minimum dimensions of 4.8m deep by 2.4m for all perpendicular parking which has been provided across the site for all proposed perpendicular bays. Similarly, road widths of 6m are required where perpendicular parking is proposed on both sides of a street to enable parking movements for perpendicular spaces, this has been provided across the site where perpendicular parking is proposed on both sides, see section 3.3

The DMURS recommendation for perpendicular parking is to limit **on-street** perpendicular parking to one side of the street to encourage a greater sense of enclosure and ensure that parking does not dominate the streetscape. Although perpendicular parking has been provided on both sides of the shared surface in the extracted location above, the design is deemed compliant with the recommendations as the perpendicular parking is off-street and provided in a 'homezone' context, where the sense of enclosure is maintained with a low speed environment and the parking provision is not dominating the streetscape. There are no specific directives within DMURS for off-street parking and as such the proposal is considered compliant with the recommendations.

3.1.2 Off-Street Perpendicular Parking Accessed from an Estate Road

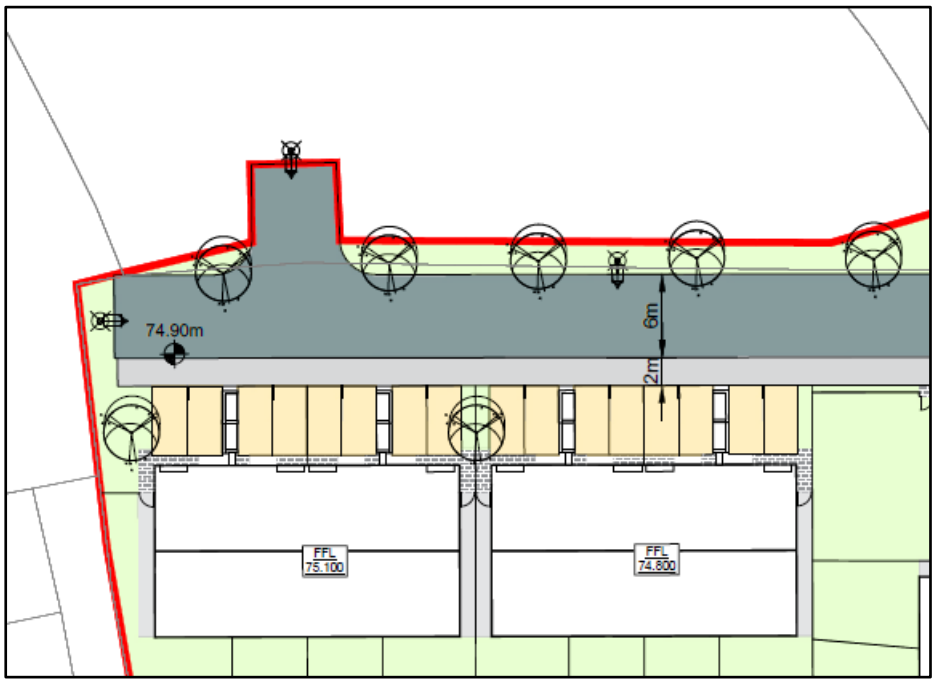


Figure 3.1.2.1 Single sided proposed off-street perpendicular parking accessed from an estate road in the northwest of the development (Source: ORS Drawing 241139-ORS-ZZ-00-DR-TR-700)

Similar to section 3.1.1, it should be noted that the recommendations of DMURS are restricted to on-street parking. However, the proposal limits the proposed in-curtilage parking to one side of the street and allows for a 6m wide road to enable parking movements. Consequently, the proposal is considered compliant with the overall DMURS recommendations.

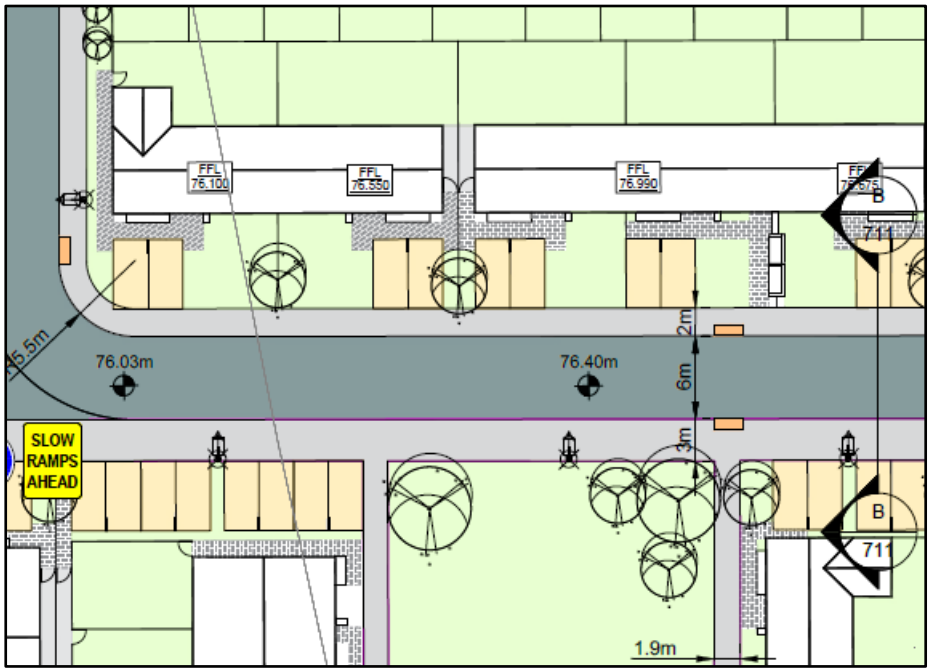


Figure 3.1.2.2 Dual Sided off-street perpendicular parking accessed from an estate road in the south of the development (Source: ORS Drawing 241139-ORS-ZZ-00-DR-TR-700)

At a number of locations across the site, off-street perpendicular parking has been proposed for each dwelling on both sides of the street. In these areas the parking has been separated from the estate road by the proposed footpaths and provided with a 6m road width to enable parking movements. Given the road width and the proposed footpaths separating the proposed parking the parking provision does not dominate the streetscape and can be considered DMURS compliant.

3.1.3 On-street parallel parking accessed from the existing road

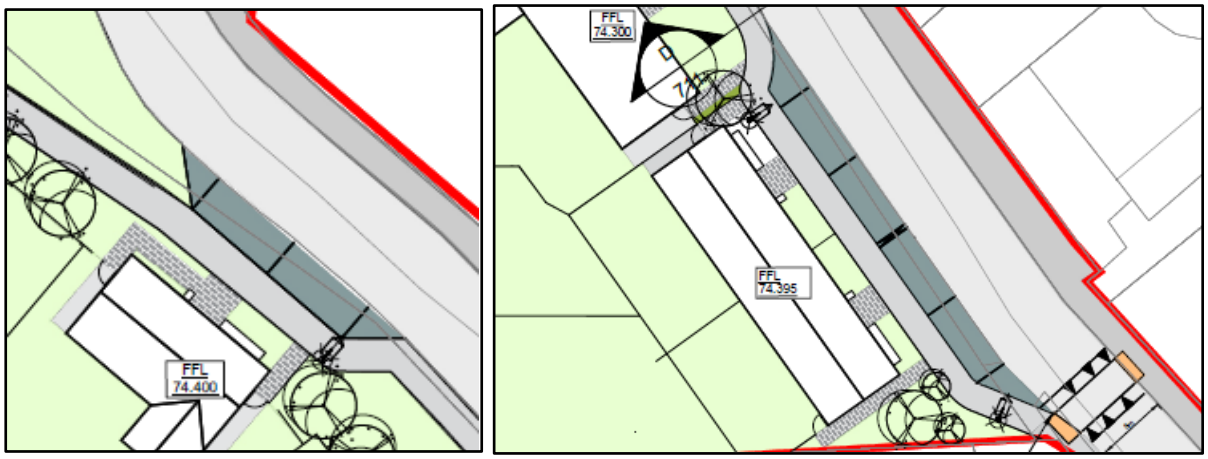


Figure 3.1.3.1 On-street parallel parking accessed from the existing road (Source: ORS Drawing 241139-ORS-ZZ-00-DR-TR-700)

6no. parallel parking bays are proposed to be provided on the existing road fronting the

development. These bays are proposed at 6m long by 2.5m in keeping with DMURS recommendations. The DMURS recommendation for parallel parking spaces is to limit the provision to 3 consecutive spaces per bay to reduce the visual impact which has been applied to the proposal with the bays to the south separated by linemarking to distinguish these into two spaces per bay.

3.2 Sightline Availability

Sightline visibility splays are informed by Table 4.2 of DMURS, where the Safe Stopping Distance (SSD) Standard is provided. This table is reproduced as **Figure 3.2.1** below. Visibility splays are typically applied at 2.4m from the stop line at priority junctions.

SSD STANDARDS

Design Speed (km/h)	SSD Standard (metres)
10	7
20	14
30	23
40	33
50	45
60	59

Forward Visibility

Design Speed (km/h)	SSD Standard (metres)
10	8
20	15
30	24
40	36
50	49
60	65

Forward Visibility on Bus Routes

Figure 3.2.1 – Table 4.2 from DMURS (Source, DMURS)

3.2.1 Junction Exiting the Site

The Development is located off an existing urban road with design speed of 30km/h (not on a bus route), as such the required SSD is 23m which is achievable at the junction on the entrance to The Development.

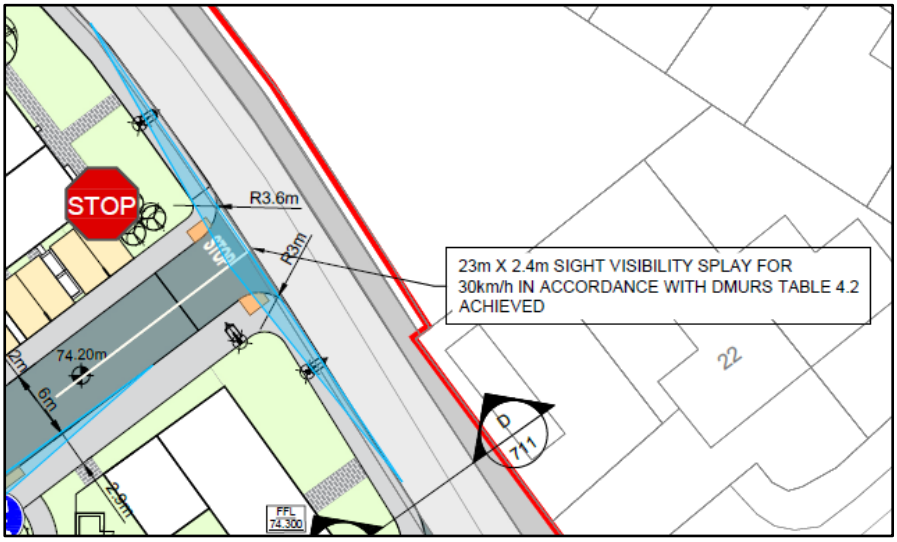


Figure 3.2.1.1 – Entrance road sightlines. (Source: ORS Drawing 241139-ORS-ZZ-00-DR-TR-700)

3.2.2 Internal Junctions

Within The Development, sightlines at junctions should extend to 23m due to The Development's design speed of 30km/h with no bus route proposed through The Development. This has been achieved at all internal junctions within The Development.

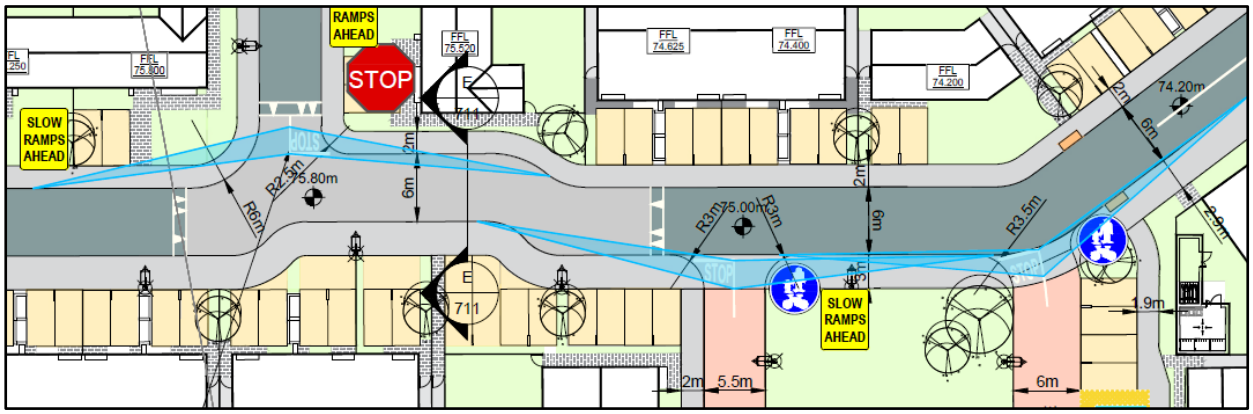


Figure 3.2.2.1 – Selection of internal junction sightlines achievieng 23m SSD. (Source: ORS Drawing 241139-ORS-ZZ-00-DR-TR-700)

3.3 Internal Road Widths

Carriageway widths are outlined in section 4.4.1 of DMURS. In the case of 'local' streets, lane widths should lie in the range 2.5m-2.75m (road width of 5m-5.5m), arterial and link streets within a development can extend to 2.75-3.25m (road width of 5.5-6.5m) for low to moderate design speeds as is the case with The Development under review.

Figure 4.55 from DMURS, reproduced as **Figure 3.3.1** below, provides some typical carriageway widths. The Development proposes a variety of carriageway widths from 5.5m to 6.0m through The Development, which is in accordance with the guidelines set out in DMURS for regular passenger vehicles at low to moderate design speeds.

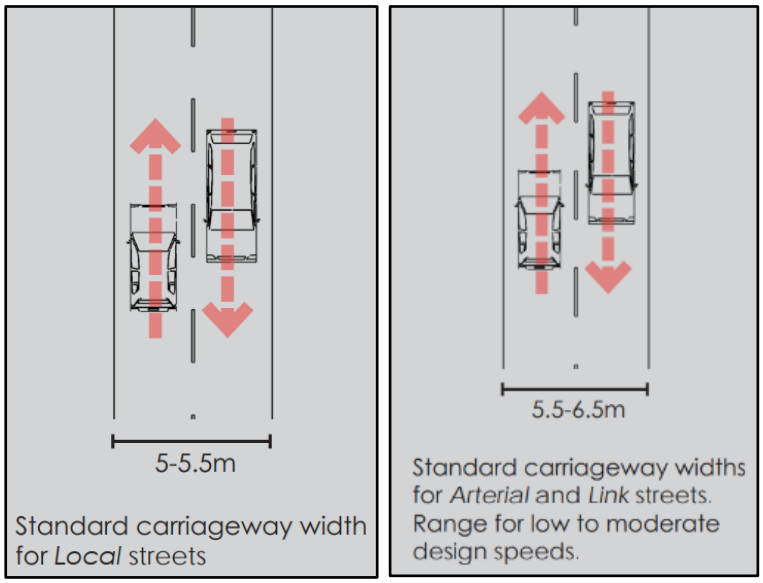


Figure 3.3.1: Extracts from Figure 4.55 from DMURS

Where off-street perpendicular parking is proposed on both sides of the street DMURS section 4.4.9 recommends a minimum carriageway width of 6m to facilitate the parking movements of passenger vehicles. While this is stated as too wide for 'Local Streets' a number of other measures have been included to ensure low vehicle speeds such as the use of shared surfaces, vertical deflections and landscaping which will slow vehicles as they approach these streets. Similarly, the local streets proposed at 6m wide are all cul-de-sacs where no through-traffic will be expected again limiting vehicle speed and expected traffic volumes.

The main estate road traversing the development at 6m width is considered acceptable as an 'Arterial' road and is also to be supplied with speed reduction measures in the form of raised tables providing a vertical deflection, chicanes providing horizontal deflection and raised tables which will all ensure vehicle speeds are lowered, see Section 3.9 for further detail.

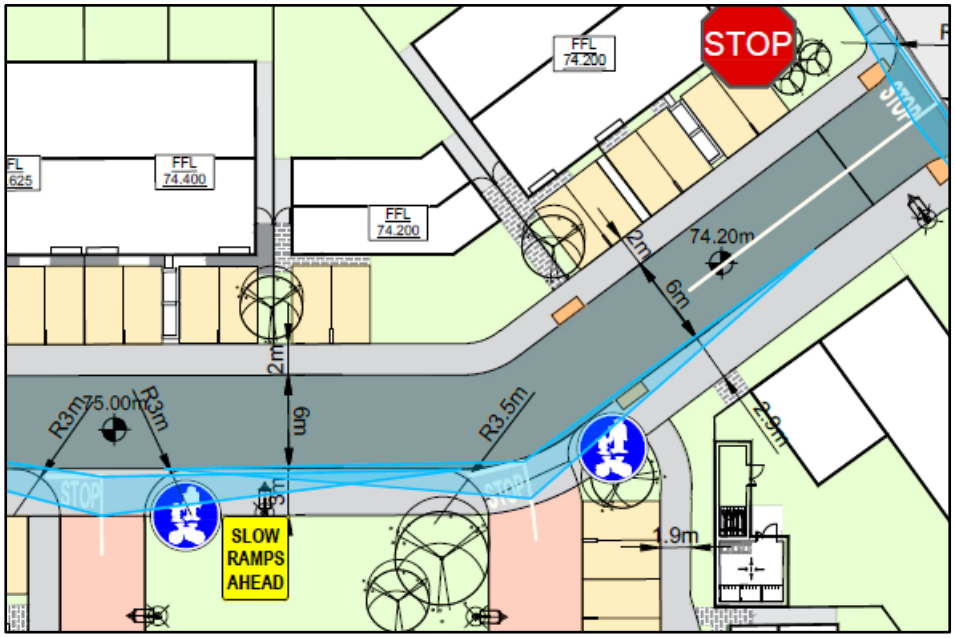


Figure 3.3.1 – 6m internal road width on main arterial estate road through The Development (Source: ORS Drawing 241139-ORS-ZZ-00-DR-TR-700)

3.4 Corner Radii

Reducing corner radii significantly improves pedestrian and cyclist safety at junctions by lowering the speed at which vehicles can turn corners and by increasing intervisibility between road users.

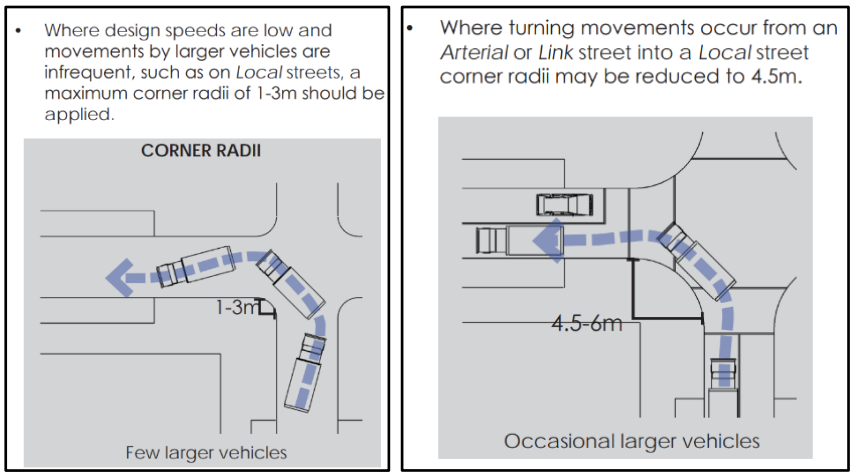


Figure 3.4.1 – Figure 4.43 from DMURS and text extract.

3.4.1 Main Access

The Development's proposed access entrance utilises corner radii of 3m and 3.6m which is suitable for the junction between an arterial street and a local street network expecting few larger vehicles.

3.4.2 Internal Junctions

The Development will also provide corner radii of between 2.2m and 6m for all internal junctions which is in accordance with Section 4.3.3 of DMURS.

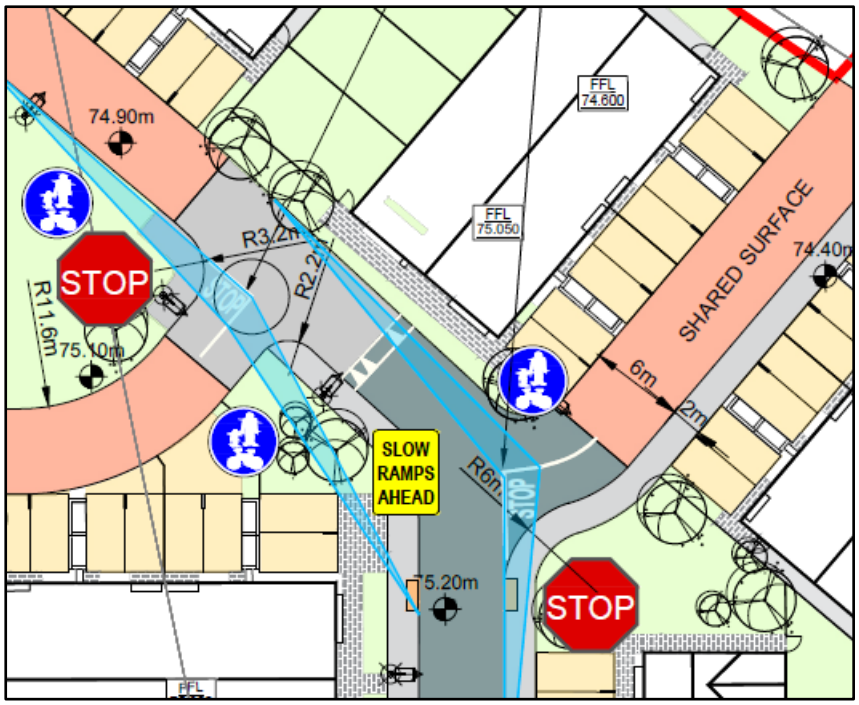


Figure 3.4.2.1 – Selection of Internal road junctioins with reduced corner radii. (Source: ORS Drawing 241139-ORS-ZZ-00-DR-TR-700)

3.5 Pedestrian Linkages and Crossing Points

The Development will provide pedestrian pathways throughout the site which will have uncontrolled crossing points with dropped kerbs and tactile paving. The pedestrian network will link the site internally and to the existing road fronting the development.

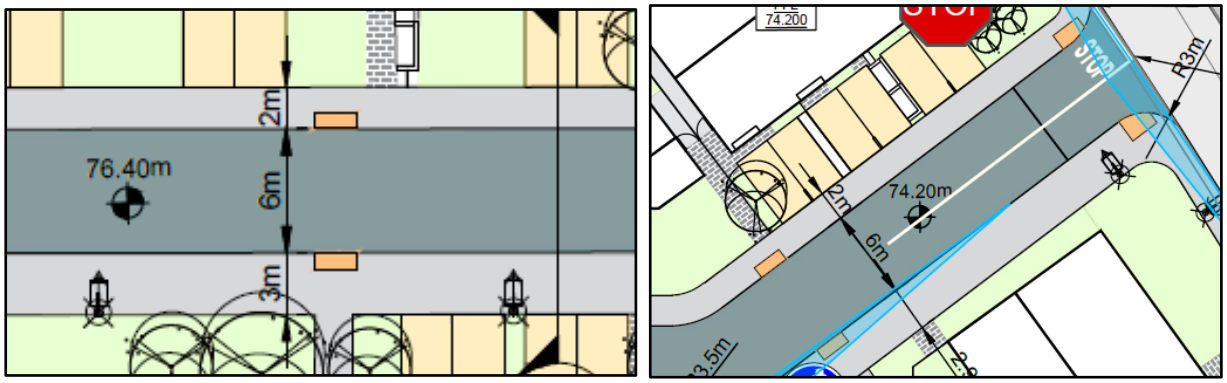


Figure 3.5.1 – Seclection of proposed uncontrolled pedestrian crossings throughout the development (Source: ORS Drawing 241139-ORS-ZZ-00-DR-TR-700)

3.6 Footpaths

Minimum footway widths within The Development should be 1.8m – the space needed for two wheelchairs to pass each other and in areas of low pedestrian activity as per **Figure 3.6.1.**

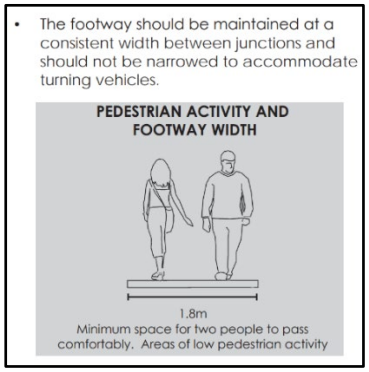


Figure 3.6.1 – Text and extract from figure 4.34 from DMURS.

All proposed footpaths throughout the proposed development are of the minimum 1.8m dimension or larger.

Outside of the proposed development, on the existing road fronting the development, there is a section of proposed footpath that is below the minimum width dimension at proposed 1.6m. This footpath however is constrained by the existing carriageway and the wall/ownership boundary of the adjacent church carpark and consequently the ability for the proposal to conform to the recommendations of DMURS is not achievable.

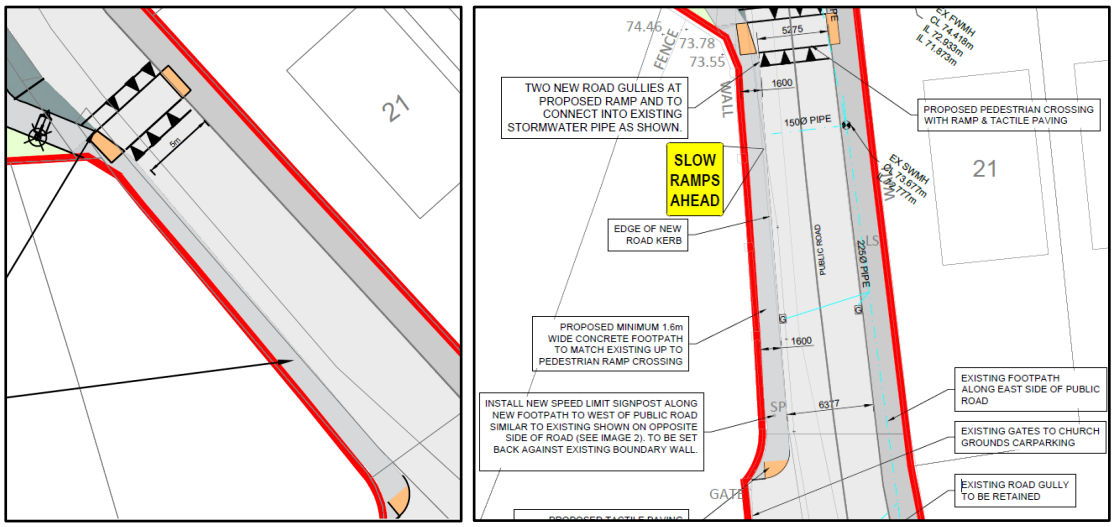
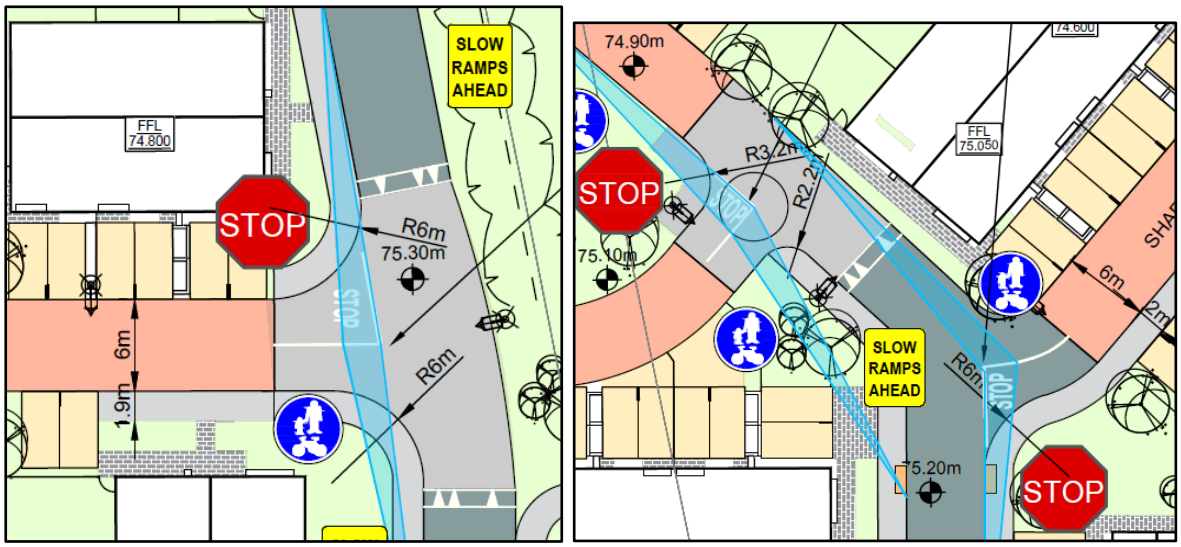


Figure 3.6.2 – Section of footpath fronting the development below the minimum 1.8m width dimension required by DMURS. (Source: ORS Drawing 241139-ORS-ZZ-00-DR-TR-700/701)

3.7 Internal Road Junctions

Priority junctions (i.e. Stop junctions) have been proposed for The Development and are appropriate for the low to medium traffic flows to be expected within the local streets of The Development. These junctions are coupled with tight corner radii as noted previously to reinforce the low-speed environment.



3.8 Turning Areas for Vehicles

All cul-de-sac/dead-end areas of The Development require turning areas for the expected passenger vehicles to manoeuvre and for fire tender and refuse vehicles to operate effectively. Turning heads provided should be in accordance with Figure 2.2 of "Recommendations for Site Development Works for Housing Areas" as shown in **Figure 3.8.1** below or confirmed accessible

by refuse and fire tender design vehicles using a swept path analysis (autotrack) to ensure sufficient space to allow for refuse vehicles to turn at dead-ends, or the reverse manouvre detailed from the estate road, a maximum of 30m reversing is generally considered acceptable.

Autotrack drawings have been provided at planning which detail the movements of the fire tender and refuse vehicles through the site. Please refer to drawings 241139-ORS-ZZ-00-DR-TR-730 and 241139-ORS-ZZ-00-DR-TR-731 for further detail.

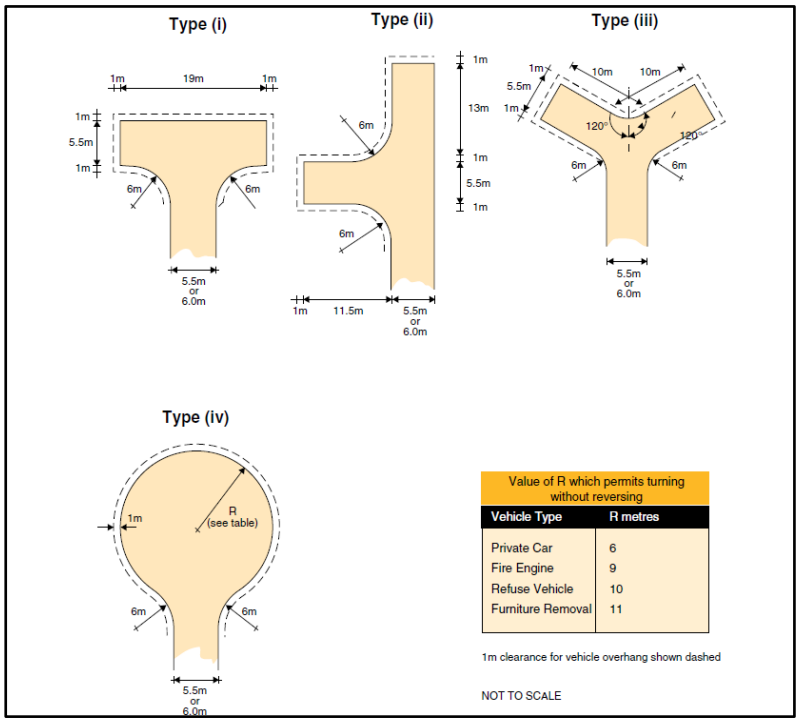


Figure 3.8.1 – Figure 2.2 of Recommendation for Site Development Works for Housing Areas.

Figure 3.8.2 - Selection of turning head areas throughout the development with refuse vehicle movements autotracked to confirm accessibility (Source: ORS drawing 241139-ORS-ZZ-00-DR-TR-731)

3.9 Horizontal Alignment & Deflections

The road network within The Development has been designed to provide horizontal deflections in terms of chicanes and street narrowing for secondary streets where appropriate and where perpendicular parking arrangements allow. These deflections limit wide, straight stretches of the road network in accordance with section 4.4.7 of DMURS and reinforce the low-speed environment.

These features have been designed in compliance with section 4.4.7 of DMURS and are effective in limiting forward visibility to reinforce the low-speed environment.

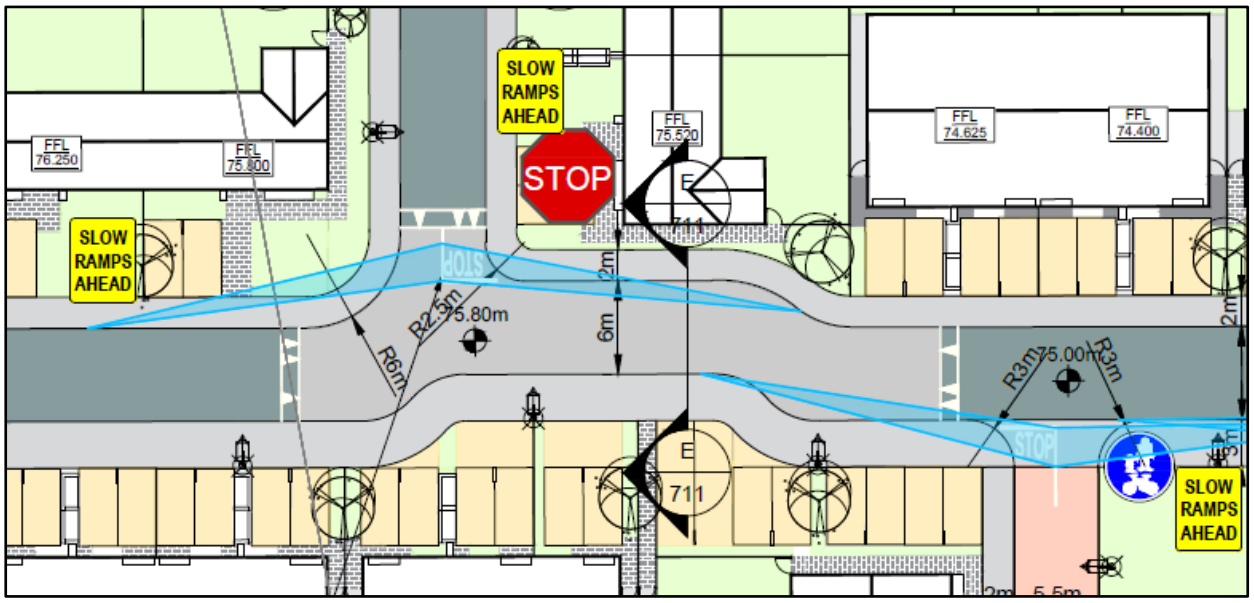


Figure 3.9.1 – Proposed chicane on proposed main estate road providing horizontal deflections to limit vehicle speeds. (Source: ORS Drawing 241139-ORS-ZZ-00-DR-TR-700)

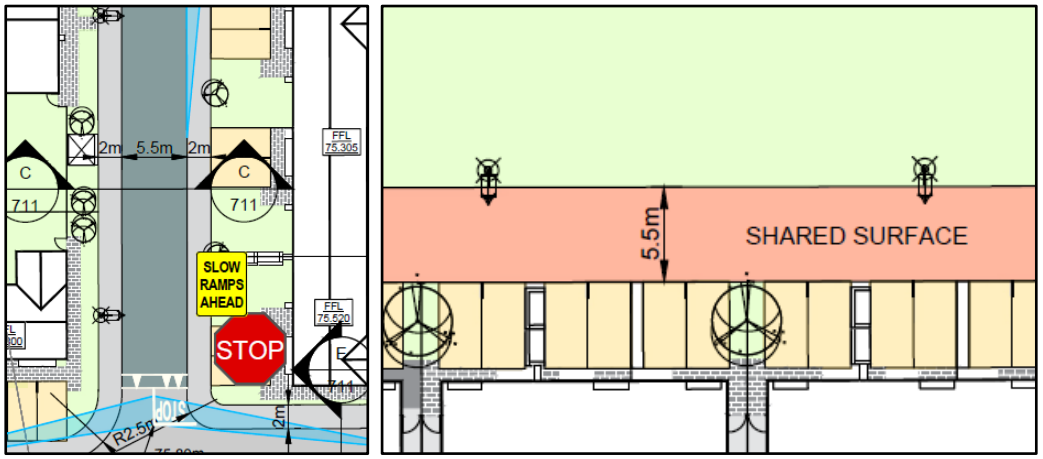


Figure 3.9.2 – Proposed street narrowing on secondary estate roads and shared surfaces reinforcing low speed environment to limit vehicle speeds. (Source: ORS Drawing 241139-ORS-ZZ-00-DR-TR-700)

3.10 Cycle Facilities

A 3m wide shared pedestrian/cyclist surface is proposed to traverse the development on the south side of the site linking the entrance to the site on the east and throught to the St Etchen's school on the west side neighbouring the development.

Elsewhere in the development cyclists will be expected to share the roads with vehicles within the development . This is in accordance with the recommendations of DMURS section 4.3.5 which states "*On lightly-trafficked/low-speed streets, designers are generally directed to create Shared Streets where cyclists and motor vehicles share the carriageway".*

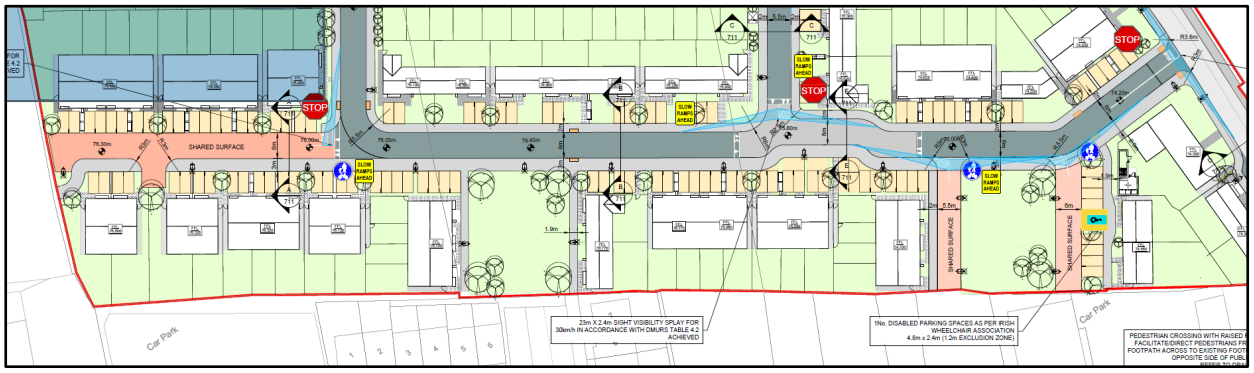


Figure 3.10.1 – proposed shared pedestrian cycleway through the proposed development. (Source: ORS Drawing 241139-ORS-ZZ-00-DR-TR-700)

3.11 Bus Stops

There is no bus stop proposed within the internal road network of The Development or on the road fronting The Development.

3.12 Internal Road Markings & Signage

Section 4.2.4 of DMURS notes that the principal source for guidance on signage and line marking is the Department of Transport's 'Traffic Signs Manual' which should be implemented where appropriate throughout the development.

DMURS also states that:
"*Designers should use this discretion with regard to the self-regulating characteristics of streets and the impact of signs/line marking on the value of place when applying the TSM. In this regard:* ***Minimal signage is required on Local streets*** *due to their low speed nature and low movement function. The generally lightly trafficked nature of these streets means that the use of signage can be minimised, and in some cases eliminated altogether.*

The requirements for signage on Arterial and Link streets will be higher than on Local streets. The use of signage should be kept to the minimum requirements of the TSM, particularly where place values are very high, such as in the Centre context.

Designers should also note that a Regulatory sign may not be required as a 'regulation' or a 'mandatory requirement'. Designers may conclude that a Regulatory sign may not be needed due to the self-regulating nature of the street and/or in order to reduce the overall amount of

signage used."

Consequently the provision of signage and linemarking is at the discretion of the designer for low-speed local-streets as proposed throughout the development and focus should be given to the main estate road/arterial street. Notwithstanding the above, the proposed signage and linemarking for the development is appropriate in aiding the navigation of the proposed development and ensuring that vehicle movements are regulated appropriately, particularly at junctions between the central estate road and dead-end areas by notifying drivers of the potential for pedestrians on proposed shared surfaces, indicating required vehicle stopping and highlighting vertical deflections throughout the development.

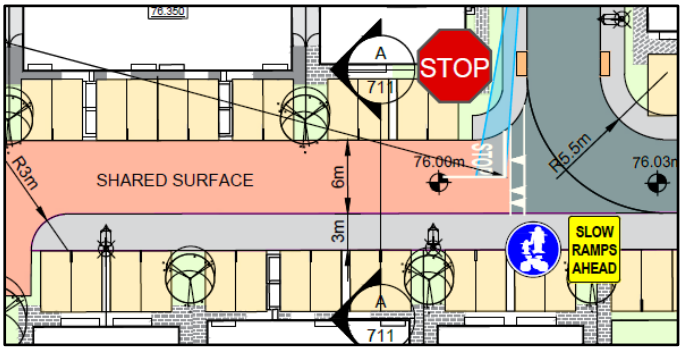


Figure 3.12.1 – Proposed signage and linemarking between shared surfaces and main estate road within the development. (Source: ORS Drawing 241139-ORS-ZZ-00-DR-TR-700)

4 Conclusion

The site has been designed with the consideration of pedestrians, cyclists and various vehicular road users in mind with appropriate design for the movement of all through the development in accordance with the recommendations of DMURS for local streets in a low-speed environment. No significant issues were identified as part of the DMURS review.

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Appendix J – Speed Survey Report

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Transportation Letter

Speed Survey Results, Proposed Large-Scale Residential Development (LRD), Boreen Bradach, Kinnegad, Co. Westmeath

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24th February 2025

Roads Department
Westmeath County Council
Áras an Chontae, Mount Street,
Mullingar
Co. Westmeath

Re: Speed Survey Results – R148/Kingsbury Junction, Kinnegad

Dear Sir/Madam,

Following our Stage 2 meeting concerning the proposed Large-Scale Residential Development (LRD) at Boreen Bradach, Kinnegad, Co. Westmeath, and in response to the proposed installation of a tabletop ramp at the junction between Main Street (R148) and Kingsbury (Boreen Bradach) in Kinnegad, we conducted a comprehensive speed survey from 11th to 13th February 2025.

This letter outlines our findings and recommendations and will accompany the planning application.

1. Survey Methodology and Data Collection

The survey was conducted by IDASO using automatic traffic counters positioned at the subject location, see **Figure 1** below. Data was collected over a 72-hour period (Tuesday 11th through Thursday 13th February 2025), providing a representative sample of typical weekday traffic patterns.

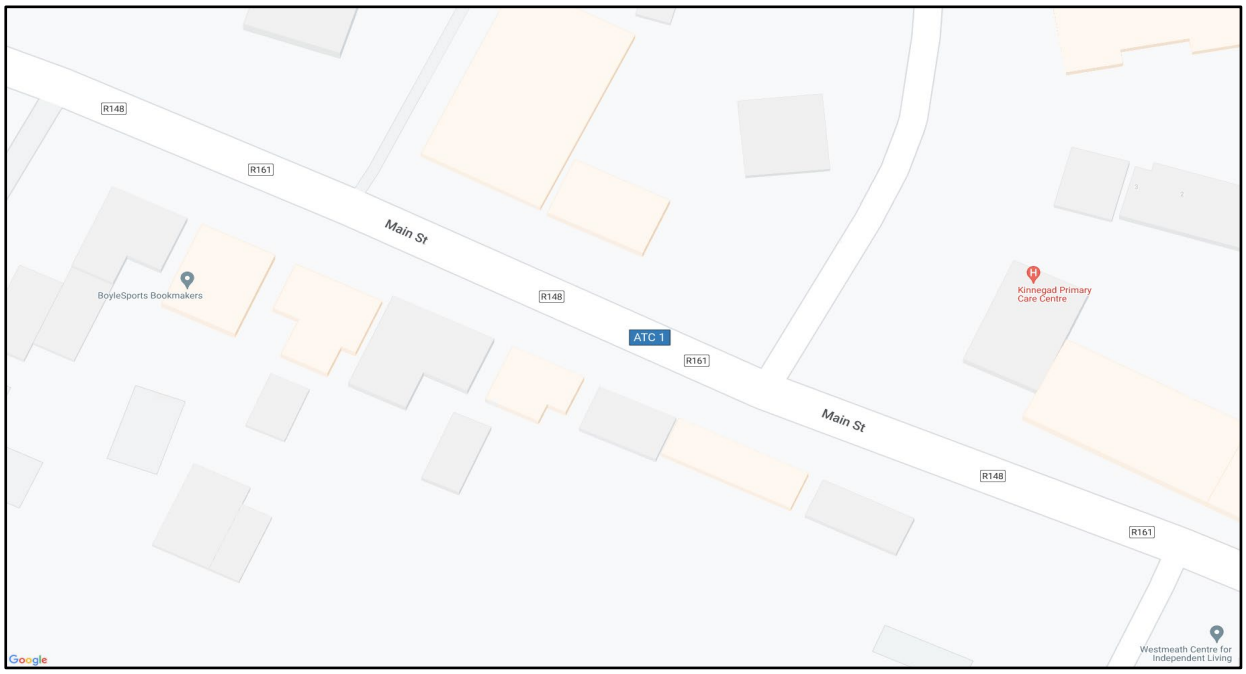

Figure 1: Traffic Counts Location

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2. Key Findings

Our analysis of the speed survey data reveals the following:

- 85th Percentile Speed: 44.7 KPH overall (42.3 KPH westbound, 46.7 KPH eastbound)
- Average Speed: 34.6 KPH
- Speed Distribution:
  - 85% of vehicles travel between 20-50 KPH
  - Less than 2% of vehicles exceed 60 KPH
- AADT Traffic Volume: 6,344 PCUs.

3. Assessment Against DMURS

According to the Design Manual for Urban Roads and Streets (DMURS), traffic calming measures such as speed tables are typically warranted when there is evidence of speed-related safety issues, i.e. the 85th percentile speeds significantly exceed the posted speed limit, and the principal aim should be to slow vehicles without causing undue discomfort. Additionally, raised tables are generally more appropriate for Local Streets and Centres rather than link roads.

Our survey demonstrates that:

- The 85th percentile speed (44.7 KPH) is below the posted speed limit of 50 KPH;
- The average speed (34.6 KPH) indicates general compliance with appropriate urban speeds;
- The site inspection confirmed that the existing priority T-junction with STOP markings provides adequate traffic control; and
- The current configuration with designated parking spaces between the main carriageway and footpath already provides a traffic calming effect.

4. Recommendation

Based on the speed survey results, traffic volume analysis, and assessment against DMURS, we do not recommend the installation of a tabletop ramp at the junction between Main Street (R148) and Kingsbury (Boreen Bradach) for the following reasons:

- **Compliance with Speed Limits:** The 85th percentile speed is already below the posted limit, demonstrating good driver compliance;
- **Traffic Function Compatibility:** The AADT of 6,344 PCUs indicates a Link Street function where free-flowing traffic should be maintained with appropriate controls;
- **Existing Traffic Control:** The current priority junction with STOP markings provides appropriate control;
- **Proportionality:** A speed table would introduce unnecessary discomfort for compliant drivers and bus passengers; and
- **DMURS Principles:** DMURS emphasises that traffic calming measures should be proportionate to speed-related issues; the data does not support such intervention at this location.

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5. Conclusion

In light of the findings, we believe a tabletop ramp is **not necessary** at this stage.

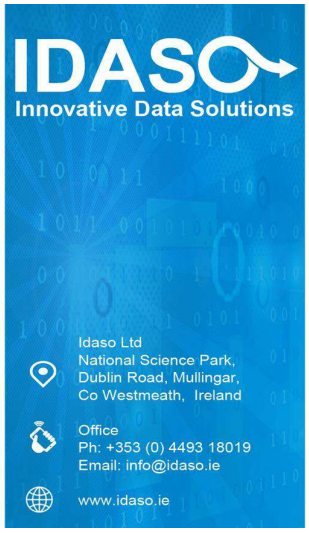
We would be happy to discuss our findings further, if necessary. Please feel free to contact me directly with any questions.

Kind regards,

Angeliki Kalatha
Senior Transportation Engineer
a.kalatha@ors.ie

Enclosures:

- Detailed Speed Survey Data Report (IDASO Survey 25081)



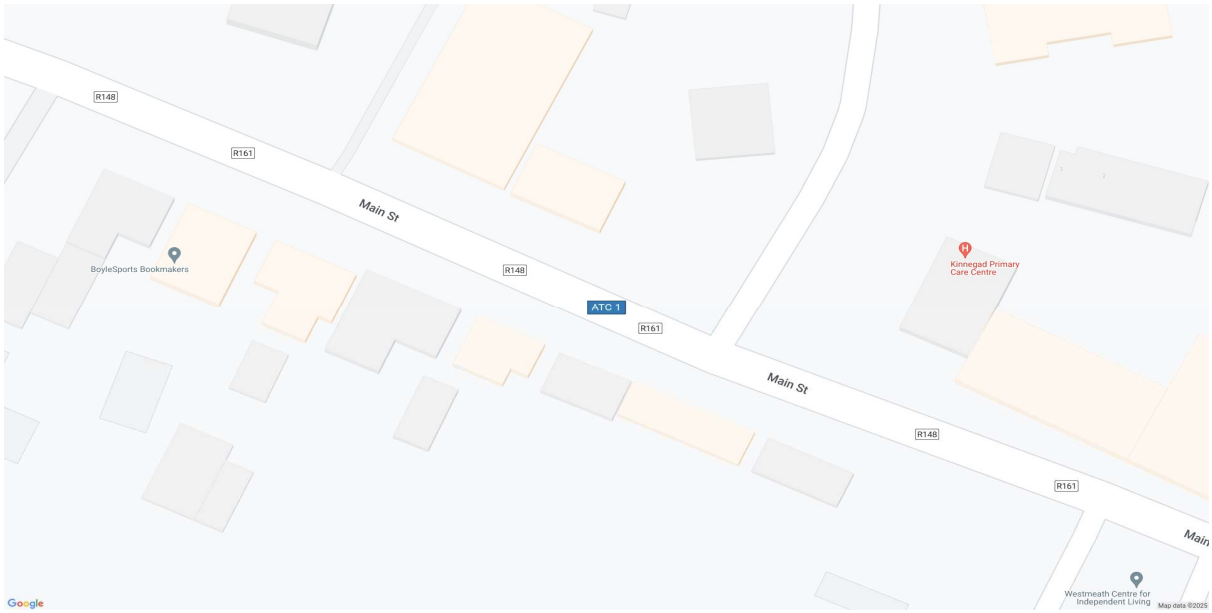
Data Analysis Services
Traffic-Transportation- Commercial-Innovation

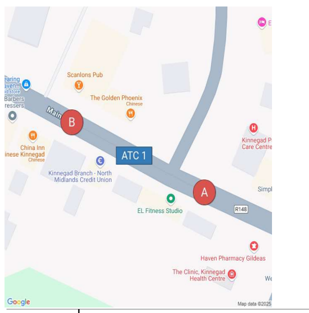
25081 - Kinnegad, Co. Westmeath

with compliments

IDASO

Survey Name: 25081 - Kinnegad, Co. Westmeath
Date: Tue 11 Feb 2025 — Thu 13 Feb 2025

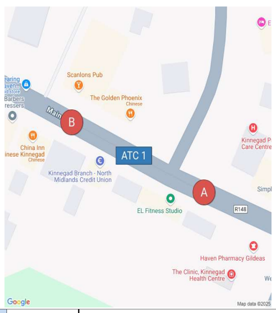




IDASO

Survey Name: 25081 - Kinnegad, Co. Westmeath
Site: ATC 1
Location: R161
Date: Tue 11-Feb-2025
AM Peak: 08:34 — 09:34 **Total:** 506
PM Peak: 16:43 — 17:43 **Total:** 522
15 Min Peak: 15:07 — 15:22 **Total:** 159
Overall 15 Min Peak: 08:55 — 09:10 **Total:** 163 **Date:** 12/02/2025

Note: Queues happening from 9 - 9:15 AM & 17:30 - 18:00 PM.

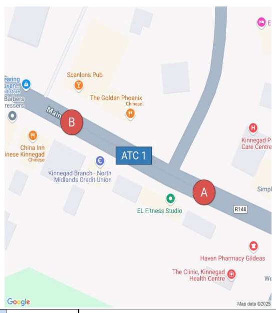


IDASO

Survey Name: 25081 - Kinnegad, Co. Westmeath
Site: ATC 1
Location: R161
Date: Wed 12-Feb-2025
AM Peak: 08:36 — 09:36 **Total:** 498
PM Peak: 16:34 — 17:34 **Total:** 562
15 Min Peak: 08:55 — 09:10 **Total:** 163

	Westbound (A => B)								Mean Speed	85% Speed	Eastbound (B => A)								Mean Speed	85% Speed
TIME	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	PCU	(KPH)	(KPH)	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	PCU	(KPH)	(KPH)
00:00	0	2	0	0	0	0	2	2	45.1	45.4	0	3	0	0	0	1	4	5	49.4	54.1
00:15	0	4	0	0	0	0	4	4	50.4	55.2	0	1	0	0	0	0	1	1	20.8	20.8
00:30	0	4	0	0	0	0	4	4	41.1	43.5	0	1	0	0	0	0	1	1	37.8	37.8
00:45	0	0	1	0	0	0	1	1	51.5	51.5	0	0	0	0	0	0	0	0	0.0	0.0
H/TOT	0	10	1	0	0	0	11	11	46.2	55.1	0	5	0	0	0	1	6	7	42.7	54.7
01:00	0	2	0	0	0	1	3	4	43.6	46.2	0	2	0	0	1	0	3	4.3	44.8	47.3
01:15	0	2	1	0	0	0	3	3	47.4	51.1	0	0	0	0	0	0	0	0	0.0	0.0
01:30	0	4	0	0	0	0	4	4	52.0	55.6	0	0	0	0	0	0	0	0	0.0	0.0
01:45	0	2	0	0	0	0	2	2	49.2	49.4	0	1	0	0	0	0	1	1	54.6	54.6
H/TOT	0	10	1	0	0	1	12	13	48.3	54.6	0	3	0	0	1	0	4	5.3	47.3	55.2
02:00	0	2	0	0	0	0	2	2	52.8	53.3	0	0	0	0	0	0	0	0	0.0	0.0
02:15	0	2	0	0	0	0	2	2	45.0	45.7	0	0	1	0	0	0	1	1	61.6	61.6
02:30	0	0	0	0	0	1	1	2	42.1	42.1	0	1	0	0	0	0	1	1	57.8	57.8
02:45	0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0.0	0.0
H/TOT	0	4	0	0	0	1	5	6	47.6	52.3	0	1	1	0	0	0	2	2	59.7	59.9
03:00	0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0.0	0.0
03:15	0	0	0	0	1	0	1	2.3	51.0	51.0	0	1	0	0	0	0	1	1	59.7	59.7
03:30	0	0	1	0	0	0	1	1	61.8	61.8	0	3	0	0	0	0	3	3	57.8	59.2
03:45	0	0	1	0	0	0	1	1	50.0	50.0	0	1	2	0	0	0	3	3	60.9	63.6
H/TOT	0	0	2	0	1	0	3	4.3	54.2	55.3	0	5	2	0	0	0	7	7	59.4	78.6
04:00	0	3	0	0	0	0	3	3	74.8	85.1	0	5	0	0	0	0	5	5	54.5	59.2
04:15	0	1	0	0	0	0	1	1	62.6	62.6	0	4	1	0	0	0	5	5	53.1	59.3
04:30	0	1	0	0	0	0	1	1	39.8	39.8	0	7	0	0	0	0	7	7	54.3	65.5
04:45	0	1	1	0	0	0	2	2	58.6	58.9	0	7	0	0	0	0	7	7	50.8	58.3
H/TOT	0	6	1	0	0	0	7	7	63.4	94.5	0	23	1	0	0	0	24	24	53.1	62.4
05:00	0	1	0	0	0	0	1	1	66.8	66.8	0	8	1	1	0	0	10	10.5	55.2	70.4
05:15	0	2	1	0	0	0	3	3	41.1	46.9	0	17	8	0	0	0	25	25	59.8	69.3
05:30	0	6	1	0	0	0	7	7	45.2	59.4	0	36	4	2	2	0	44	47.6	47.9	53.2
05:45	0	3	1	0	0	0	4	4	51.2	54.6	0	49	11	3	0	1	64	66.5	45.1	54.6
H/TOT	0	12	3	0	0	0	15	15	47.4	62.4	0	110	24	6	2	1	143	149.6	49.3	58.5
06:00	0	9	1	2	0	0	12	13	43.6	49.4	0	48	13	1	0	0	62	62.5	49.0	56.1
06:15	0	6	3	0	0	1	10	11	50.5	66.4	0	32	6	2	1	1	42	45.3	48.3	57.2
06:30	0	5	0	1	0	0	6	6.5	52.5	63.0	0	35	9	2	0	1	47	49	48.0	55.8
06:45	0	8	0	1	0	0	9	9.5	40.6	51.2	0	33	13	1	0	1	48	49.5	47.5	51.0
H/TOT	0	28	4	4	0	1	37	40	46.2	57.3	0	148	41	6	1	3	199	206.3	48.2	55.8
07:00	0	12	2	2	1	0	17	19.3	40.4	48.1	0	31	8	0	0	1	40	41	46.1	54.0
07:15	0	18	4	4	1	0	27	30.3	42.7	52.4	0	39	8	2	2	0	51	54.6	45.2	52.5
07:30	0	21	5	0	0	1	27	28	40.1	51.2	0	37	12	1	0	4	54	58.5	43.5	50.6
07:45	0	23	5	1	0	0	29	29.5	40.4	49.1	0	51	7	1	0	1	60	61.5	43.2	50.4
H/TOT	0	74	16	7	2	1	100	107.1	41	49.2	0	158	35	4	2	6	205	215.6	44.4	51.3
08:00	0	34	3	0	0	0	37	37	32.8	44.8	0	62	14	1	0	2	79	81.5	34.9	45.5
08:15	0	27	6	1	0	0	34	34.5	40.1	47.3	0	45	9	1	0	1	56	57.5	43.2	49.2
08:30	0	31	4	1	0	0	36	36.5	40.3	48.8	0	35	10	3	1	0	49	51.8	43.2	48.8
08:45	0	45	5	2	0	0	52	53	36.8	44.3	1	42	14	2	0	0	59	59.4	36.1	42.2
H/TOT	0	137	18	4	0	0	159	161	37.4	46.6	1	184	47	7	1	3	243	250.2	38.8	47.2
09:00	0	76	11	2	1	0	90	92.3	27.5	34.7	0	40	5	3	0	1	49	51.5	38.6	45.3
09:15	0	32	2	0	0	0	34	34	34.7	45.7	0	96	16	4	1	0	117	120.3	33.3	40.0
09:30	0	30	3	0	0	0	33	33	36.8	44.3	0	56	10	1	0	0	67	67.5	34.3	41.2
09:45	0	38	5	4	1	0	48	51.3	32.4	39.1	0	41	6	6	0	0	53	56	34.7	42.1
H/TOT	0	176	21	6	2	0	205	210.6	31.3	40.9	0	233	37	14	1	1	286	295.3	34.7	41.8
10:00	0	44	5	3	0	1	53	55.5	30.6	37.2	0	39	2	0	1	0	42	43.3	35.6	42.0
10:15	0	41	4	1	1	0	47	48.8	32.0	40.8	0	25	4	1	0	2	32	34.5	31.7	39.3
10:30	0	46	6	4	0	0	56	58	29.4	35.8	0	40	1	2	0	0	43	44	31.3	40.5
10:45	0	41	6	1	0	0	48	48.5	32.6	41.1	0	31	4	4	0	0	39	41	34.2	41.7
H/TOT	0	172	21	9	1	1	204	210.8	31	39	0	135	11	7	1	2	156	162.8	33.3	40.8
11:00	0	40	2	2	0	1	45	47	27.1	37.4	0	36	5	2	0	1	44	46	33.9	40.4
11:15	0	52	6	3	0	0	61	62.5	24.8	34.3	0	37	3	2	1	0	43	45.3	31.0	43.0
11:30	0	33	7	3	0	0	43	44.5	34.5	40.0	0	29	6	1	0	0	36	36.5	28.6	36.4
11:45	0	46	2	2	0	0	50	51	32.2	39.2	0	42	4	2	0	0	48	49	32.1	44.0
H/TOT	0	171	17	10	0	1	199	205	29.3	37.9	0	144	18	7	1	1	171	176.8	31.5	40.8
12:00	0	41	6	3	0	0	50	51.5	29.7	38.8	0	44	9	3	1	0	57	59.8	31.9	39.2
12:15	0	43	12	1	1	0	57	58.8	29.7	39.9	0	34	2	4	1	0	41	44.3	31.9	38.3
12:30	0	42	3	2	0	0	47	48	33.0	44.1	0	52	5	0	1	0	58	59.3	33.0	38.8
12:45	0	42	2	2	1	0	47	49.3	32.6	37.9	0	46	7	4	0	1	58	61	30.3	40.6
H/TOT	0	168	23	8	2	0	201	207.6	31.1	39.6	0	176	23	11	3	1	214	224.4	31.8	39.2
13:00	0	46	5	1	0	0	52	52.5	29.2	36.1	0	60	8	1	0	0	69	69.5	32.1	39.8
13:15	0	36	4	1	0	0	41	41.5	30.4	37.7	0	31	2	1	1	1	36	38.8	31.8	38.0
13:30	0	46	5	2	0	0	53	54	32.6	40.7	0	34	3	2	0	0	39	40	33.6	43.6
13:45	0	57	8	1	0	0	66	66.5	28.5	41.8	0	37	4	0	2	0	43	45.6	32.4	39.0
H/TOT	0	185	22	5	0	0	212	214.5	30.1	39	0	162	17	4	3	1	187	193.9	32.4	39.4
14:00	0	41	3	1	1	1	47	49.8	31.7	36.9	0	50	4	2	0	0	56	57	32.9	40.7
14:15	0	36	10	2	2	1	51	55.6	30.8	39.0	0	42	5	1	0	1	49	50.5	29.7	40.3
14:30	0	45	5	3	0	0	53	54.5	29.4	36.7	0	43	6	1	0	0	50	50.5	32.9	39.4
14:45	0	64	9	2	0	0	75	76	27.8	36.9	0	30	7	3	0	0	40	41.5	30.5	39.5
H/TOT	0	186	27	8	3	2	226	235.9	29.6	37.4	0	165	22	7	0	1	195	199.5	31.6	39.9
15:00	0	53	7	1	0	0	61	61.5	27.8	38.2	0	63	7	3	0	0	73	74.5	29.9	40.4
15:15	0	54	7	2	1	0	64	66.3	27.6	37.9	0	51	5	1	0	0	57	57.5	32.8	40.5
15:30	0	51	8	3	0	1	63	65.5	29.0	35.0	0	39	6	1	0	0	46	46.5	29.7	36.7
15:45	0	58	7	3	1	1	70	73.8	29.6	36.9	0	47	10	0	0	0	57	57	27.1	35.1
H/TOT	0	216	29	9	2	2	258	267.1	28.5	36.9	0	200	28	5	0	0	233	235.5	29.9	38.7
16:00	0	63	6	1	0	0	70	70.5	29.1	35.7	0	37	4	1	0	0	42	42.5	32.6	39.7
16:15	0	72	8	2	0	0	82	83	29.2	37.2	0	46	3	3	0	2	54	57.5	31.0	37.5
16:30	0	52	12	1	1	0	66	67.8	21.8	34.4	0	35	6	0	0	0	41	41	28.3	38.4
16:45	0	63	10	3	1	0	77	79.8	30.3	39.3	0	53	9	1	0	0	63	63.5	35.3	43.0
H/TOT	0	250	36	7	2	0	295	301.1	27.8	37.6	0	171	22	5	0	2	200	204.5	32.1	39.6
17:00	1	69	13	2	2	0	87	90	30.4	38.0	0	39	4	0	0	1	44	45	32.4	40.1
17:15	0	63	13	4	1	1	82	86.3	21.6	28.2	0	40	2	2	1	0	45	47.3	28.2	36.4
17:30	0	62	6	2	0	2	72	75	28.1	40.0	1	40	7	0	0	0	48	47.4	34.2	40.6
17:45	0	72	12	1	1	1	87	89.8	31.6	39.5	0	31	3	2	1	0	37	39.3	36.5	43.8
H/TOT	1	266	44	9	4	4	328	341.1	28	38.2	1	150	16	4	2	1	174	179	32.7	40.4
18:00	0	62	8	0	0	3	73	76	24.0	33.1	0	41	6	0	0	0	47	47	28.8	37.2
18:15	0	58	7	3	0	1	69	71.5	25.9	35.0	0	36	4	1	0	0	41	41.5	35.3	41.6
18:30	0	65	8	1	0	1	75	76.5	34.2	42.7	0	33	3	0	0	0	36	36	32.5	43.0
18:45	0	53	9	2	0	0	64	65	33.5	40.1	0	35	3	1	0	0	39	39.5	34.5	39.3
H/TOT	0	238	32	6	0	5	281	289	29.4	38.1	0	145	16	2	0	0	163	164	32.6	40.6
19:00	0	53	6	1	1	0	61	62.8	34.4	41.3	0	35	3	0	0	1	39	40	39.0	47.8
19:15	0	65	7	0	0	1	73	74	34.5	42.8	0	15	6	0	0	0	21	21	35.6	40.9
19:30	0	43	4	0	0	0	47	47	38.7	46.8	0	23	3	1	0	0	27	27.5	42.4	50.9
19:45	0	31	2	0	0	0	33	33	39.6	51.2	0	26	4	0	0	0	30	30	40.4	48.5
H/TOT	0	192	19	1	1	1	214	216.8	36.2	43.4	0	99	16	1	0	1	117	118.5	39.5	47.7
20:00	0	25	9	0	1	0	35	36.3	38.6	44.6	0	24	2	0	0	0	26	26	42.4	52.2
20:15	0	28	8	3	0	0	39	40.5	38.2	48.4	0	20	1	0	0	0	21	21	35.6	46.1
20:30	0	22	1	1	0	0	24	24.5	39.5	48.3	0	14	4	0	0	0	18	18	40.0	49.4
20:45	0	24	7	0	0	0	31	31	41.6	55.0	0	19	1	0	0	1	21	22	37.5	49.8
H/TOT	0	99	25	4	1	0	129	132.3	39.4	49	0	77	8	0	0	1	86	87	39.1	49.1
21:00	0	20	0	0	0	2	22	24	39.8	48.8	0	16	3	0	0	0	19	19	39.5	44.8
21:15	0	17	1	0	0	0	18	18	44.9	52.1	0	11	0	0	0	0	11	11	40.2	49.0
21:30	0	26	3	0	0	0	29	29	39.2	47.6	0	16	1	0	0	0	17	17	39.7	48.3
21:45	0	17	2	0	0	0	19	19	45.0	60.2	0	10	3	0	0	0	13	13	43.5	56.1
H/TOT	0	80	6	0	0	2	88	90	41.8	48.8	0	53	7	0	0	0	60	60	40.6	49.9
22:00	0	10	2	0	0	0	12	12	45.9	52.7	0	10	2	0	0	1	13	14	51.5	65.7
22:15	0	8	1	0	0	0	9	9	38.8	49.1	0	11	4	0	0	0	15	15	35.2	46.5
22:30	0	3	2	0	0	0	5	5	48.2	51.8	0	8	1	0	0	0	9	9	37.5	57.6
22:45	0	7	2	0	0	0	9	9	43.9	58.4	0	9	2	0	0	0	11	11	36.7	50.0
H/TOT	0	28	7	0	0	0	35	35	43.9	53.2	0	38	9	0	0	1	48	49	40.4	58.5
23:00	0	10	0	0	0	2	12	14	42.0	54.1	0	10	0	0	1	1	12	14.3	35.8	44.0
23:15	0	5	1	1	0	0	7	7.5	43.1	50.7	0	1	1	0	1	0	3	4.3	38.9	45.6
23:30	0	8	0	0	0	0	8	8	39.0	58.5	0	3	2	0	0	0	5	5	42.3	55.3
23:45	0	3	1	0	0	0	4	4	40.2	43.1	0	3	1	0	0	0	4	4	44.0	44.6
H/TOT	0	26	2	1	0	2	31	33.5	41.2	51.1	0	17	4	0	2	1	24	27.6	38.9	50.5
24 TOT	1	2734	377	98	21	24	3255	3354.7	32.1	42	2	2602	405	90	20	28	3147	3244.8	36.4	46.9

	Westbound (A => B)								Mean Speed	85% Speed	Eastbound (B =>			
TIME	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	PCU	(KPH)	(KPH)	M/C	CAR	LGV	OGV1
00:00	0	1	1	0	0	0	2	2	42.8	43.9	0	3	0	0
00:15	0	1	0	0	0	0	1	1	44.9	44.9	0	2	1	0
00:30	0	5	0	0	0	0	5	5	43.6	44.6	0	2	0	0
00:45	0	0	1	0	0	0	1	1	52.5	52.5	0	1	0	0
H/TOT	0	7	2	0	0	0	9	9	44.6	56.4	0	8	1	0
01:00	0	1	1	0	0	1	3	4	45.2	46.0	0	0	0	0
01:15	0	2	0	0	0	0	2	2	55.3	55.9	0	1	0	0
01:30	0	2	0	0	0	0	2	2	52.0	52.4	0	1	0	0
01:45	0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0
H/TOT	0	5	1	0	0	1	7	8	50	60.1	0	2	0	0
02:00	0	2	0	0	0	0	2	2	47.1	47.3	0	1	0	0
02:15	0	0	0	0	0	0	0	0	0.0	0.0	0	1	0	0
02:30	0	1	1	0	0	0	2	2	57.9	58.8	0	2	0	0
02:45	0	0	0	0	0	0	0	0	0.0	0.0	0	2	0	1
H/TOT	0	3	1	0	0	0	4	4	52.5	53.9	0	6	0	1
03:00	0	0	0	0	0	0	0	0	0.0	0.0	0	1	0	0
03:15	0	1	0	0	0	0	1	1	55.4	55.4	0	1	0	0
03:30	0	0	1	0	0	0	1	1	58.9	58.9	0	3	0	0
03:45	0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0
H/TOT	0	1	1	0	0	0	2	2	57.2	57.3	0	5	0	0
04:00	0	0	0	0	0	0	0	0	0.0	0.0	0	3	1	0
04:15	0	0	0	0	0	0	0	0	0.0	0.0	0	4	1	0
04:30	0	3	0	0	0	0	3	3	41.3	42.7	0	5	1	1
04:45	0	1	1	1	0	0	3	3.5	40.9	42.3	0	6	0	0
H/TOT	0	4	1	1	0	0	6	6.5	41.1	50.4	0	18	3	1
05:00	0	3	0	0	0	0	3	3	47.8	50.4	0	6	2	2
05:15	0	1	1	0	0	0	2	2	59.4	59.4	0	15	4	1
05:30	0	2	2	0	0	0	4	4	41.8	47.4	0	37	11	2
05:45	0	9	1	1	0	0	11	11.5	41.3	52.0	0	49	15	1
H/TOT	0	15	4	1	0	0	20	20.5	44.2	57	0	107	32	6
06:00	0	5	1	1	0	0	7	7.5	43.6	52.9	0	37	15	2
06:15	0	4	2	0	0	0	6	6	47.5	64.6	0	31	12	5
06:30	0	5	3	1	1	0	10	11.8	39.3	55.0	0	35	9	0
06:45	0	9	2	0	0	0	11	11	43.7	64.5	0	27	9	0
H/TOT	0	23	8	2	1	0	34	36.3	43	54.4	0	130	45	7
07:00	0	7	0	3	0	0	10	11.5	38.1	47.3	0	38	15	1
07:15	0	20	2	5	0	0	27	29.5	40.9	49.8	0	36	11	0
07:30	0	20	4	1	0	0	25	25.5	44.2	55.6	1	39	11	2
07:45	0	39	5	1	0	1	46	47.5	37.3	48.2	0	59	17	5
H/TOT	0	86	11	10	0	1	108	114	39.9	49.7	1	172	54	8
08:00	0	30	1	0	0	1	32	33	33.9	42.2	0	63	11	3
08:15	0	26	5	4	0	0	35	37	39.7	48.8	0	56	5	1
08:30	0	34	9	2	0	0	45	46	36.4	45.8	0	47	8	7
08:45	0	49	5	1	0	0	55	55.5	38.8	46.6	0	44	10	0
H/TOT	0	139	20	7	0	1	167	171.5	37.4	45.8	0	210	34	11
09:00	0	71	9	1	0	1	82	83.5	35.8	44.2	0	56	11	1
09:15	0	32	3	1	1	0	37	38.8	35.2	44.2	0	70	13	4
09:30	0	31	2	5	0	0	38	40.5	31.5	40.1	0	53	4	2
09:45	0	33	6	0	1	1	41	43.3	36.1	43.8	0	24	6	0
H/TOT	0	167	20	7	2	2	198	206.1	35	43.6	0	203	34	7
10:00	0	32	2	1	1	0	36	37.8	31.9	43.5	0	39	5	1
10:15	0	25	5	2	0	0	32	33	27.8	37.2	0	42	8	4
10:30	0	45	3	3	2	1	54	59.1	29.4	39.1	0	35	6	0
10:45	0	30	4	0	1	0	35	36.3	35.2	44.5	0	31	7	1
H/TOT	0	132	14	6	4	1	157	166.2	30.9	40.1	0	147	26	6
11:00	0	40	7	0	1	0	48	49.3	30.8	39.7	0	34	2	0
11:15	0	34	8	0	0	1	43	44	32.8	41.8	0	41	0	1
11:30	0	38	2	6	0	0	46	49	31.9	41.4	0	32	8	3
11:45	0	47	4	2	0	0	53	54	28.5	36.3	0	40	3	0
H/TOT	0	159	21	8	1	1	190	196.3	30.9	39.8	0	147	13	4
12:00	0	45	4	2	2	1	54	58.6	32.4	39.6	0	22	4	1
12:15	1	52	5	1	0	0	59	58.9	29.9	37.1	1	47	4	1
12:30	0	42	4	0	0	0	46	46	29.9	38.6	0	33	7	2
12:45	0	50	6	2	0	0	58	59	31.6	41.1	1	37	7	1
H/TOT	1	189	19	5	2	1	217	222.5	31	38.5	2	139	22	5
13:00	0	56	4	0	0	0	60	60	32.8	40.1	0	44	5	1
13:15	0	34	3	0	0	0	37	37	32.3	38.3	0	28	7	0
13:30	0	49	7	1	0	0	57	57.5	34.0	41.0	1	32	4	1
13:45	0	49	14	1	0	0	64	64.5	31.6	39.4	0	38	5	0
H/TOT	0	188	28	2	0	0	218	219	32.7	40	1	142	21	2
14:00	1	44	8	1	1	0	55	56.2	31.4	38.8	0	54	9	3
14:15	0	52	1	2	1	0	56	58.3	30.7	39.6	1	48	10	2
14:30	0	59	9	4	1	0	73	76.3	28.1	36.1	0	48	2	0
14:45	0	64	10	2	1	0	77	79.3	32.5	41.9	0	37	4	0
H/TOT	1	219	28	9	4	0	261	270.1	30.6	38.8	1	187	25	5
15:00	0	56	10	3	0	2	71	74.5	30.5	40.5	0	71	5	2
15:15	0	55	10	1	0	1	67	68.5	34.7	41.6	0	40	6	3
15:30	0	50	12	3	1	2	68	72.8	28.1	39.5	0	31	6	0
15:45	0	65	9	5	0	0	79	81.5	30.8	38.3	0	26	5	2
H/TOT	0	226	41	12	1	5	285	297.3	31	39.6	0	168	22	7
16:00	0	65	14	0	1	0	80	81.3	30.6	40.7	0	40	10	1
16:15	0	69	9	4	0	1	83	86	29.1	36.9	1	44	10	1
16:30	0	68	11	4	1	1	85	89.3	28.6	37.1	0	57	4	0
16:45	0	61	10	1	2	0	74	77.1	30.8	38.1	0	36	9	0
H/TOT	0	263	44	9	4	2	322	333.7	29.7	38	1	177	33	2
17:00	0	76	16	4	1	0	97	100.3	29.9	36.7	0	44	4	0
17:15	1	72	9	3	1	0	86	88.2	26.6	36.7	0	45	8	1
17:30	0	61	16	2	0	0	79	80	18.3	25.2	1	41	7	1
17:45	0	51	9	0	0	1	61	62	17.4	22.5	0	48	5	2
H/TOT	1	260	50	9	2	1	323	330.5	23.8	34.4	1	178	24	4
18:00	0	65	5	3	0	0	73	74.5	32.1	40.0	0	38	7	2
18:15	0	60	5	2	0	1	68	70	33.9	41.4	0	45	7	0
18:30	0	73	7	1	2	1	84	88.1	33.0	40.4	0	38	4	0
18:45	0	71	10	0	1	2	84	87.3	33.1	42.1	0	20	7	1
H/TOT	0	269	27	6	3	4	309	319.9	33	40.9	0	141	25	3
19:00	0	42	11	1	1	0	55	56.8	32.8	40.2	0	54	4	2
19:15	0	52	4	2	0	2	60	63	32.9	41.7	0	30	1	1
19:30	0	47	2	0	0	0	49	49	35.8	43.2	0	34	1	1
19:45	0	39	6	3	0	0	48	49.5	37.4	44.5	0	21	5	0
H/TOT	0	180	23	6	1	2	212	218.3	34.6	42.8	0	139	11	4
20:00	0	39	5	0	0	1	45	46	37.3	43.1	0	36	5	1
20:15	0	37	7	1	0	0	45	45.5	38.5	46.3	0	27	3	0
20:30	0	39	4	0	0	0	43	43	38.2	49.7	1	17	2	0
20:45	0	31	4	1	0	0	36	36.5	40.6	49.1	0	13	2	1
H/TOT	0	146	20	2	0	1	169	171	38.6	46.8	1	93	12	2
21:00	0	22	4	0	0	1	27	28	41.3	48.8	0	19	4	0
21:15	0	17	5	0	0	0	22	22	40.5	46.4	0	13	2	0
21:30	0	16	3	0	0	0	19	19	43.2	52.3	0	19	0	0
21:45	0	17	2	0	0	0	19	19	39.7	50.6	0	14	0	0
H/TOT	0	72	14	0	0	1	87	88	41.1	48.8	0	65	6	0
22:00	0	9	1	0	0	0	10	10	41.4	50.9	0	4	1	0
22:15	0	17	3	0	0	0	20	20	54.2	73.4	0	6	3	0
22:30	0	11	1	1	0	0	13	13.5	43.2	53.1	0	5	1	0
22:45	0	7	0	1	0	0	8	8.5	42.0	52.3	0	12	0	0
H/TOT	0	44	5	2	0	0	51	52	47	58.9	0	27	5	0
23:00	0	7	0	1	0	0	8	8.5	43.4	49.9	0	4	1	1
23:15	0	9	1	1	0	0	11	11.5	42.1	57.1	0	7	0	0
23:30	0	6	2	0	0	0	8	8	42.6	45.0	0	1	0	0
23:45	0	3	0	0	0	0	3	3	33.3	34.9	0	6	1	0
H/TOT	0	25	3	2	0	0	30	31	41.7	49.5	0	18	2	1
24 TOT	3	2822	406	106	25	24	3386	3493.7	32.8	42.4	8	2629	450	86



IDASO

Survey Name: 25081 - Kinnegad, Co. Westmeath
Site: ATC 1
Location: R161
Date: Thu 13-Feb-2025
AM Peak: 08:33 — 09:33 **Total:** 512
PM Peak: 16:53 — 17:53 **Total:** 573
15 Min Peak: 08:56 — 09:11 **Total:** 159

A)				Mean Speed	85% Speed		Westbound (A => B)								Mean Speed	85% Speed	Eastbound (B => A)								Mean Speed	85% Speed
OGV2	**PSV**	**TOT**	**PCU**	**(KPH)**	**(KPH)**	**TIME**	**M/C**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**TOT**	**PCU**	**(KPH)**	**(KPH)**	**M/C**	**CAR**	**LGV**	**OGV1**	**OGV2**	**PSV**	**TOT**	**PCU**	**(KPH)**	**(KPH)**
0	0	3	3	58.4	61.5	00:00	0	5	1	0	0	0	6	6	45.0	55.2	0	3	0	1	0	0	4	4.5	47.6	50.8
0	0	3	3	51.7	54.6	00:15	0	3	0	0	0	0	3	3	35.0	39.0	0	2	0	0	0	0	2	2	36.7	36.8
0	0	2	2	53.3	53.9	00:30	0	4	0	0	0	0	4	4	49.2	51.6	0	0	0	0	0	0	0	0	0.0	0.0
0	0	1	1	70.9	70.9	00:45	0	4	0	0	0	0	4	4	36.9	41.7	0	0	0	0	0	0	0	0	0.0	0.0
0	0	9	9	56.4	68.7	**H/TOT**	0	16	1	0	0	0	17	17	42.3	51.3	0	5	0	1	0	0	6	6.5	44	60.2
0	0	0	0	0.0	0.0	01:00	0	2	0	0	0	0	2	2	44.4	44.7	0	1	0	0	0	0	1	1	40.7	40.7
0	0	1	1	51.4	51.4	01:15	0	0	1	0	1	0	2	3.3	46.2	46.5	0	0	0	0	0	0	0	0	0.0	0.0
0	0	1	1	46.6	46.6	01:30	0	0	0	0	0	0	0	0	0.0	0.0	0	1	0	0	0	0	1	1	50.4	50.4
0	0	0	0	0.0	0.0	01:45	0	1	0	0	0	0	1	1	63.1	63.1	0	0	0	0	0	0	0	0	0.0	0.0
0	0	2	2	49	49.2	**H/TOT**	0	3	1	0	1	0	5	6.3	48.9	50.4	0	2	0	0	0	0	2	2	45.5	46
0	0	1	1	23.4	23.4	02:00	0	0	1	0	0	0	1	1	55.5	55.5	0	1	1	0	0	0	2	2	43.3	43.6
0	0	1	1	53.4	53.4	02:15	0	1	1	0	0	0	2	2	68.9	69.1	0	0	0	0	0	0	0	0	0.0	0.0
0	0	2	2	50.0	50.4	02:30	0	1	0	0	0	1	2	3	39.5	39.7	0	2	0	0	0	0	2	2	53.2	54.0
0	0	3	3.5	49.8	54.0	02:45	0	1	0	0	0	0	1	1	65.9	65.9	0	1	0	0	0	0	1	1	52.3	52.3
0	0	7	7.5	46.6	55.3	**H/TOT**	0	3	2	0	0	1	6	7	56.4	70.8	0	4	1	0	0	0	5	5	49	53.1
0	0	1	1	45.0	45.0	03:00	0	2	1	0	0	0	3	3	51.4	52.8	0	1	1	0	0	0	2	2	50.0	50.2
0	0	1	1	51.8	51.8	03:15	0	0	1	0	0	0	1	1	60.4	60.4	0	2	0	0	0	0	2	2	53.8	53.9
0	1	4	5	49.1	56.8	03:30	0	0	0	0	0	0	0	0	0.0	0.0	0	1	0	0	0	1	2	3	56.3	58.3
0	0	0	0	0.0	0.0	03:45	0	1	0	0	0	0	1	1	53.9	53.9	0	0	0	1	0	0	1	1.5	59.2	59.2
0	1	6	7	48.8	58.4	**H/TOT**	0	3	2	0	0	0	5	5	53.7	56.3	0	4	1	1	0	1	7	8.5	54.2	72.9
0	0	4	4	60.1	62.2	04:00	0	0	0	0	0	0	0	0	0.0	0.0	0	1	1	1	0	0	3	3.5	56.0	57.4
0	0	5	5	53.6	56.8	04:15	0	1	0	0	0	0	1	1	42.3	42.3	0	5	2	0	0	0	7	7	51.7	59.9
0	0	7	7.5	48.1	60.3	04:30	0	2	0	0	0	0	2	2	55.3	56.8	0	9	0	0	0	0	9	9	58.1	71.8
0	0	6	6	50.0	53.5	04:45	0	2	0	0	0	0	2	2	47.3	47.3	0	5	1	0	0	0	6	6	49.7	62.7
0	0	22	22.5	52.1	61.9	**H/TOT**	0	5	0	0	0	0	5	5	49.5	50.3	0	20	4	1	0	0	25	25.5	54	62.6
0	0	10	11	56.5	69.1	05:00	0	1	0	0	0	0	1	1	34.6	34.6	0	10	4	1	0	0	15	15.5	52.7	65.6
0	0	20	20.5	53.1	58.8	05:15	0	0	1	0	0	0	1	1	80.3	80.3	0	17	4	0	0	0	21	21	53.2	67.8
0	0	50	51	48.6	61.4	05:30	0	2	0	0	0	0	2	2	20.3	21.0	0	35	11	3	1	0	50	52.8	50.2	56.6
2	1	68	72.1	46.9	55.6	05:45	0	8	1	1	1	0	11	12.8	37.4	51.3	0	42	8	2	0	1	53	55	50.7	58.5
2	1	148	154.6	48.9	57.4	**H/TOT**	0	11	2	1	1	0	15	16.8	37.8	51.6	0	104	27	6	1	1	139	144.3	51.1	59.2
0	0	54	55	48.9	56.6	06:00	0	7	1	1	2	0	11	14.1	39.9	49.5	0	53	14	3	0	0	70	71.5	46.8	55.3
0	2	50	54.5	51.2	58.9	06:15	0	3	2	1	0	0	6	6.5	44.6	59.1	0	26	5	3	0	0	34	35.5	49.3	58.2
0	1	45	46	46.0	54.3	06:30	0	6	1	1	0	0	8	8.5	39.4	54.0	0	26	9	0	1	2	38	41.3	49.5	58.1
0	1	37	38	46.0	52.8	06:45	0	9	1	0	0	1	11	12	46.5	52.1	0	41	9	1	0	2	53	55.5	46.0	52.1
0	4	186	193.5	48.2	55.7	**H/TOT**	0	25	5	3	2	1	36	41.1	42.6	52.1	0	146	37	7	1	4	195	203.8	47.6	55.2
1	2	57	60.8	46.7	53.7	07:00	0	16	0	5	0	0	21	23.5	36.0	43.9	0	37	10	2	2	1	52	56.6	44.2	50.0
0	1	48	49	42.4	51.0	07:15	0	11	5	3	0	0	19	20.5	41.3	49.9	0	37	7	2	0	0	46	47	43.1	50.0
1	2	56	59.7	42.3	48.7	07:30	0	22	4	0	0	0	26	26	41.3	53.8	0	44	10	3	0	1	58	60.5	40.7	49.8
0	2	83	87.5	40.5	46.9	07:45	0	31	2	1	0	0	34	34.5	40.5	45.2	0	59	8	2	1	2	72	76.3	41.0	48.4
2	7	244	257	42.7	49.7	**H/TOT**	0	80	11	9	0	0	100	104.5	39.9	46.3	0	177	35	9	3	4	228	240.4	42.1	49.7
0	1	78	80.5	39.6	44.0	08:00	0	28	4	0	0	0	32	32	36.2	46.1	0	59	10	2	2	2	75	80.6	37.9	44.9
1	1	64	66.8	40.0	47.4	08:15	0	21	9	1	0	0	31	31.5	39.2	46.4	0	37	7	2	0	0	46	47	45.3	51.3
1	0	63	67.8	38.8	45.6	08:30	0	34	4	1	0	1	40	41.5	37.8	45.5	0	49	10	4	1	0	64	67.3	41.8	48.8
1	0	55	56.3	37.0	43.5	08:45	0	58	13	1	0	0	72	72.5	36.0	45.7	0	49	5	2	1	0	57	59.3	37.1	42.4
3	2	260	271.4	38.9	45.6	**H/TOT**	0	141	30	3	0	1	175	177.5	37	45.7	0	194	32	10	4	2	242	254.2	40.1	48.4
0	1	69	70.5	36.5	42.6	09:00	0	67	2	1	0	1	71	72.5	33.4	41.6	0	57	6	0	0	0	63	63	36.3	42.0
0	0	87	89	36.8	42.6	09:15	0	33	5	0	1	0	39	40.3	32.9	41.8	0	76	15	4	1	0	96	99.3	37.2	44.4
0	0	59	60	34.6	41.0	09:30	0	36	1	3	0	0	40	41.5	35.2	43.9	1	35	7	3	0	0	46	46.9	35.3	44.5
0	0	30	30	35.7	44.1	09:45	0	31	4	3	0	0	38	39.5	31.5	39.2	0	40	2	5	0	0	47	49.5	36.1	46.0
0	1	245	249.5	36.1	42.5	**H/TOT**	0	167	12	7	1	1	188	193.8	33.3	41.6	1	208	30	12	1	0	252	258.7	36.4	44.3
0	1	46	47.5	35.6	44.3	10:00	0	38	4	6	2	1	51	57.6	30.9	38.1	0	29	2	0	0	0	31	31	33.1	44.9
1	1	56	60.3	31.4	39.0	10:15	0	32	3	0	1	0	36	37.3	34.5	43.4	0	41	3	1	1	1	47	49.8	35.3	41.6
0	1	42	43	33.3	43.9	10:30	0	35	3	3	1	0	42	44.8	32.7	39.5	0	34	6	1	0	1	42	43.5	31.6	38.8
1	0	40	41.8	38.4	45.7	10:45	1	27	3	2	1	0	34	35.7	33.6	38.7	0	35	3	0	2	0	40	42.6	33.6	41.0
2	3	184	192.6	34.4	43	**H/TOT**	1	132	13	11	5	1	163	175.4	32.7	39.5	0	139	14	2	3	2	160	166.9	33.5	41
0	2	38	40	32.4	42.9	11:00	1	41	2	1	1	1	47	49.2	31.0	40.0	0	44	3	0	1	0	48	49.3	32.8	39.9
1	0	43	44.8	34.3	43.0	11:15	0	38	5	3	1	0	47	49.8	30.8	38.5	0	39	3	3	0	0	45	46.5	37.0	43.8
0	0	43	44.5	35.7	46.1	11:30	0	44	11	2	0	0	57	58	30.4	37.9	2	38	6	2	1	0	49	50.1	32.3	38.5
0	0	43	43	31.5	41.0	11:45	0	48	1	4	1	1	55	59.3	31.2	39.2	0	45	3	0	0	0	48	48	33.1	40.6
1	2	167	172.3	33.5	43	**H/TOT**	1	171	19	10	3	2	206	216.3	30.9	38.7	2	166	15	5	2	0	190	193.9	33.8	41.3
0	1	28	29.5	34.8	42.5	12:00	0	44	8	2	1	1	56	59.3	30.7	39.8	0	38	8	1	1	0	48	49.8	34.3	41.0
1	0	54	55.2	31.7	38.2	12:15	0	38	5	3	0	0	46	47.5	29.8	37.5	0	30	6	1	0	1	38	39.5	31.2	39.3
1	0	43	45.3	32.7	38.1	12:30	0	44	0	1	0	0	45	45.5	32.1	40.5	0	30	5	0	1	0	36	37.3	32.7	44.5
1	2	49	52.2	33.0	40.9	12:45	0	58	6	2	0	0	66	67	30.7	38.6	0	43	3	2	0	1	49	51	31.6	40.7
3	3	174	182.2	32.8	39.2	**H/TOT**	0	184	19	8	1	1	213	219.3	30.8	38.6	0	141	22	4	2	2	171	177.6	32.5	41
0	0	50	50.5	29.6	36.8	13:00	0	68	7	0	1	0	76	77.3	30.1	39.0	0	38	5	5	0	0	48	50.5	31.7	39.2
0	0	35	35	32.4	38.2	13:15	0	49	6	0	1	0	56	57.3	30.0	38.8	1	33	3	1	0	0	38	37.9	31.6	41.8
2	0	40	42.5	36.7	43.9	13:30	0	48	4	1	0	0	53	53.5	30.3	37.9	1	36	2	1	0	0	40	39.9	32.3	41.0
0	0	43	43	32.2	39.9	13:45	0	54	9	3	1	0	67	69.8	31.2	37.5	2	39	3	2	0	0	46	45.8	34.3	39.3
2	0	168	171	32.6	39.9	**H/TOT**	0	219	26	4	3	0	252	257.9	30.4	38.1	4	146	13	9	0	0	172	174.1	32.5	40.1
0	0	66	67.5	33.5	40.3	14:00	1	34	5	4	0	0	44	45.4	33.4	39.4	0	42	3	1	0	0	46	46.5	35.5	43.5
0	1	62	63.4	33.5	41.9	14:15	1	40	10	3	1	0	55	57.2	30.6	37.3	0	48	4	2	0	0	54	55	32.6	38.2
1	0	51	52.3	26.4	37.7	14:30	0	62	2	3	0	0	67	68.5	30.7	38.5	0	37	2	3	0	0	42	43.5	29.3	36.0
0	0	41	41	35.8	44.2	14:45	0	55	7	0	0	0	62	62	31.1	41.3	1	32	7	2	0	0	42	42.4	36.9	46.8
1	1	220	224.2	32.3	41	**H/TOT**	2	191	24	10	1	0	228	233.1	31.3	38.5	1	159	16	8	0	0	184	187.4	33.6	41.8
0	0	78	79	31.7	39.4	15:00	0	59	2	2	1	0	64	66.3	34.1	46.5	0	75	10	3	0	1	89	91.5	32.5	39.7
0	2	51	54.5	32.9	39.3	15:15	0	38	9	3	1	0	51	53.8	31.8	40.1	2	45	6	3	0	1	57	58.3	31.5	38.7
1	0	38	39.3	31.2	40.2	15:30	0	60	7	3	1	0	71	73.8	29.3	37.5	0	41	4	2	0	0	47	48	31.4	40.2
0	1	34	36	33.0	41.1	15:45	0	59	6	0	0	0	65	65	34.8	43.3	0	42	3	2	1	0	48	50.3	36.3	43.6
1	3	201	208.8	32.1	39.6	**H/TOT**	0	216	24	8	3	0	251	258.9	32.5	41.4	2	203	23	10	1	2	241	248.1	32.8	41
1	0	52	53.8	31.9	39.1	16:00	0	57	5	0	0	0	62	62	28.4	35.9	0	39	3	1	0	0	43	43.5	32.5	39.9
0	0	56	55.9	31.6	38.9	16:15	0	74	14	1	1	0	90	91.8	25.3	34.7	0	43	2	1	0	0	46	46.5	32.5	38.4
0	0	61	61	34.3	40.1	16:30	0	72	7	5	1	1	86	90.8	31.0	38.9	0	50	5	0	1	1	57	59.3	30.3	37.3
0	1	46	47	31.3	39.6	16:45	0	79	12	0	1	0	92	93.3	31.6	39.8	0	42	9	2	1	0	54	56.3	31.1	36.4
1	1	215	217.7	32.4	39.4	**H/TOT**	0	282	38	6	3	1	330	337.9	29.1	37.9	0	174	19	4	2	1	200	205.6	31.5	38.9
2	0	50	52.6	33.5	42.4	17:00	0	63	18	5	0	0	86	88.5	27.9	35.6	0	42	3	1	1	1	48	50.8	35.4	41.0
0	0	54	54.5	31.5	35.4	17:15	0	75	11	4	0	0	90	92	21.8	30.3	0	39	5	0	0	0	44	44	30.0	37.4
0	0	50	49.9	25.4	33.9	17:30	0	71	10	2	1	0	84	86.3	20.3	28.9	0	55	3	0	0	0	58	58	25.4	35.9
0	0	55	56	29.7	34.7	17:45	0	69	9	0	0	1	79	80	24.5	36.3	0	44	6	2	1	0	53	55.3	32.9	43.7
2	0	209	213	30	36.5	**H/TOT**	0	278	48	11	1	1	339	346.8	23.6	32.5	0	180	17	3	2	1	203	208.1	30.7	39.9
0	0	47	48	36.5	42.6	18:00	0	75	12	0	1	0	88	89.3	32.9	39.8	0	45	4	1	0	1	51	52.5	33.4	40.4
1	1	54	56.3	34.9	42.1	18:15	0	61	12	3	1	1	78	81.8	32.7	37.5	0	47	5	1	0	1	54	55.5	32.8	40.7
1	0	43	44.3	34.0	40.8	18:30	0	66	10	1	1	0	78	79.8	31.1	38.9	0	39	4	0	1	0	44	45.3	36.6	43.0
0	0	28	28.5	37.3	44.7	18:45	0	61	6	1	2	1	71	75.1	32.0	38.4	0	39	4	1	0	0	44	44.5	36.4	45.2
2	1	172	177.1	35.5	42.3	**H/TOT**	0	263	40	5	5	2	315	326	32.2	38.5	0	170	17	3	1	2	193	197.8	34.6	41.7
0	1	61	63	35.2	41.8	19:00	0	57	11	0	0	0	68	68	35.6	43.1	1	44	6	1	0	0	52	51.9	38.0	45.2
0	1	33	34.5	32.8	41.8	19:15	0	70	3	0	0	2	75	77	36.3	42.4	0	39	3	0	0	1	43	44	37.0	42.2
1	0	37	38.8	36.6	47.7	19:30	0	46	5	2	0	0	53	54	39.6	48.5	0	25	3	1	0	0	29	29.5	40.0	50.0
0	0	26	26	37.6	47.4	19:45	0	28	7	0	0	0	35	35	39.5	47.5	0	32	1	0	0	0	33	33	39.7	45.4
1	2	157	162.3	35.4	45.6	**H/TOT**	0	201	26	2	0	2	231	234	37.3	45	1	140	13	2	0	1	157	158.4	38.4	45.5
0	1	43	44.5	35.9	42.6	20:00	0	40	3	1	0	0	44	44.5	38.2	46.0	0	25	1	1	0	1	28	29.5	37.3	46.1
0	0	30	30	35.5	44.3	20:15	0	39	7	2	0	1	49	51	39.0	48.5	0	22	4	0	0	0	26	26	38.7	51.5
0	0	20	19.4	43.8	53.4	20:30	0	35	3	0	0	0	38	38	38.9	46.0	0	22	2	0	0	0	24	24	42.0	54.8
0	0	16	16.5	42.9	51.2	20:45	0	23	7	1	0	1	32	33.5	43.2	53.9	0	15	3	0	0	0	18	18	41.8	50.6
0	1	109	110.4	38.3	45.9	**H/TOT**	0	137	20	4	0	2	163	167	39.6	47.7	0	84	10	1	0	1	96	97.5	39.7	51.1
0	1	24	25	38.7	47.7	21:00	0	28	3	0	0	1	32	33	41.9	55.3	0	17	2	0	0	1	20	21	40.8	52.3
0	0	15	15	43.5	54.2	21:15	0	28	3	1	0	0	32	32.5	36.3	44.1	0	23	2	0	0	0	25	25	37.2	48.4
0	0	19	19	43.2	52.6	21:30	0	21	3	3	0	0	27	28.5	42.9	50.9	0	6	2	0	0	0	8	8	40.0	56.8
0	1	15	16	36.2	46.8	21:45	0	14	1	0	0	0	15	15	41.5	52.4	0	9	2	0	0	0	11	11	39.7	53.8
0	2	73	75	40.3	50.2	**H/TOT**	0	91	10	4	0	1	106	109	40.4	49.9	0	55	8	0	0	1	64	65	39.1	51.9
0	1	6	7	46.9	62.8	22:00	0	18	1	0	0	0	19	19	39.0	46.1	0	20	2	0	0	1	23	24	40.4	51.3
0	0	9	9	46.5	60.1	22:15	0	16	3	0	0	0	19	19	43.4	53.6	0	9	0	0	0	0	9	9	51.6	59.7
0	0	6	6	37.7	45.7	22:30	0	15	0	0	0	0	15	15	35.9	49.6	0	10	4	0	0	0	14	14	39.2	45.3
0	0	12	12	43.4	52.2	22:45	0	10	0	0	0	0	10	10	37.9	50.5	0	8	1	0	0	0	9	9	43.8	56.1
0	1	33	34	43.9	54.7	**H/TOT**	0	59	4	0	0	0	63	63	39.4	48.3	0	47	7	0	0	1	55	56	42.5	54.8
0	0	6	6.5	46.1	53.6	23:00	0	15	0	0	0	0	15	15	41.1	52.4	0	6	1	0	0	0	7	7	41.2	47.7
0	0	7	7	46.6	64.5	23:15	0	16	1	1	0	1	19	20.5	40.4	48.8	0	5	2	0	0	0	7	7	45.5	59.0
0	0	1	1	56.4	56.4	23:30	0	4	0	0	0	0	4	4	42.6	47.1	0	5	0	0	0	0	5	5	47.0	51.5
0	1	8	9	46.4	62.3	23:45	0	4	0	0	0	0	4	4	50.4	60.5	0	3	1	0	0	1	5	6	43.6	50.8
0	1	22	23.5	46.8	55.8	**H/TOT**	0	39	1	1	0	1	42	43.5	41.8	52.4	0	19	4	0	0	1	24	25	44.2	50.9
23	37	3233	3338.1	36.9	46.3	**24 TOT**	4	2917	378	107	30	18	3454	3562.1	32.8	42.3	11	2687	365	98	23	27	3211	3310.3	37.1	47.1

IDASO

Survey Name: 25081 - Kinnegad, Co. Westmeath
Site: ATC 1
Location: R161
Date: Tue 11 Feb 2025 — Thu 13 Feb 2025

Note: Queues happening from 9 - 9:15 AM & 17:30 - 18:00 PM.

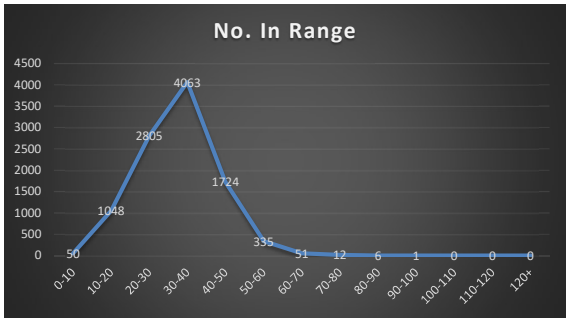
Speed Survey

Cummulative 85% Speed	44.7 KPH
Cummulative Minimum Speed	3.9 KPH
Cummulative Maximum Speed	99.1 KPH
Cummulative Average Speed	34.6 KPH

Westbound (A => B)

No. of Vehicles	10095
85% Speed	42.3 KPH
Minimum Speed	4.2 KPH
Maximum Speed	99.1 KPH
Average Speed	32.6 KPH

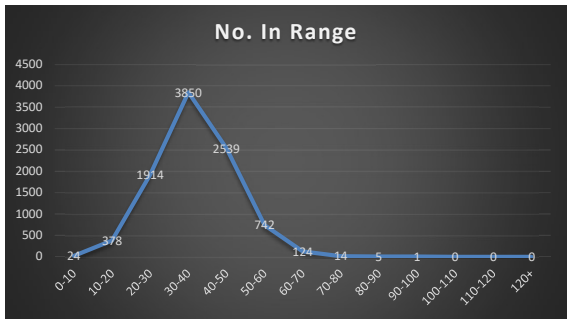
Speed KPH	No. In Range
0-10	50
10-20	1048
20-30	2805
30-40	4063
40-50	1724
50-60	335
60-70	51
70-80	12
80-90	6
90-100	1
100-110	0
110-120	0
120+	0



Eastbound (B => A)

No. of Vehicles	9591
85% Speed	46.7 KPH
Minimum Speed	3.9 KPH
Maximum Speed	92.5 KPH
Average Speed	36.8 KPH

Speed KPH	No. In Range
0-10	24
10-20	378
20-30	1914
30-40	3850
40-50	2539
50-60	742
60-70	124
70-80	14
80-90	5
90-100	1
100-110	0
110-120	0
120+	0



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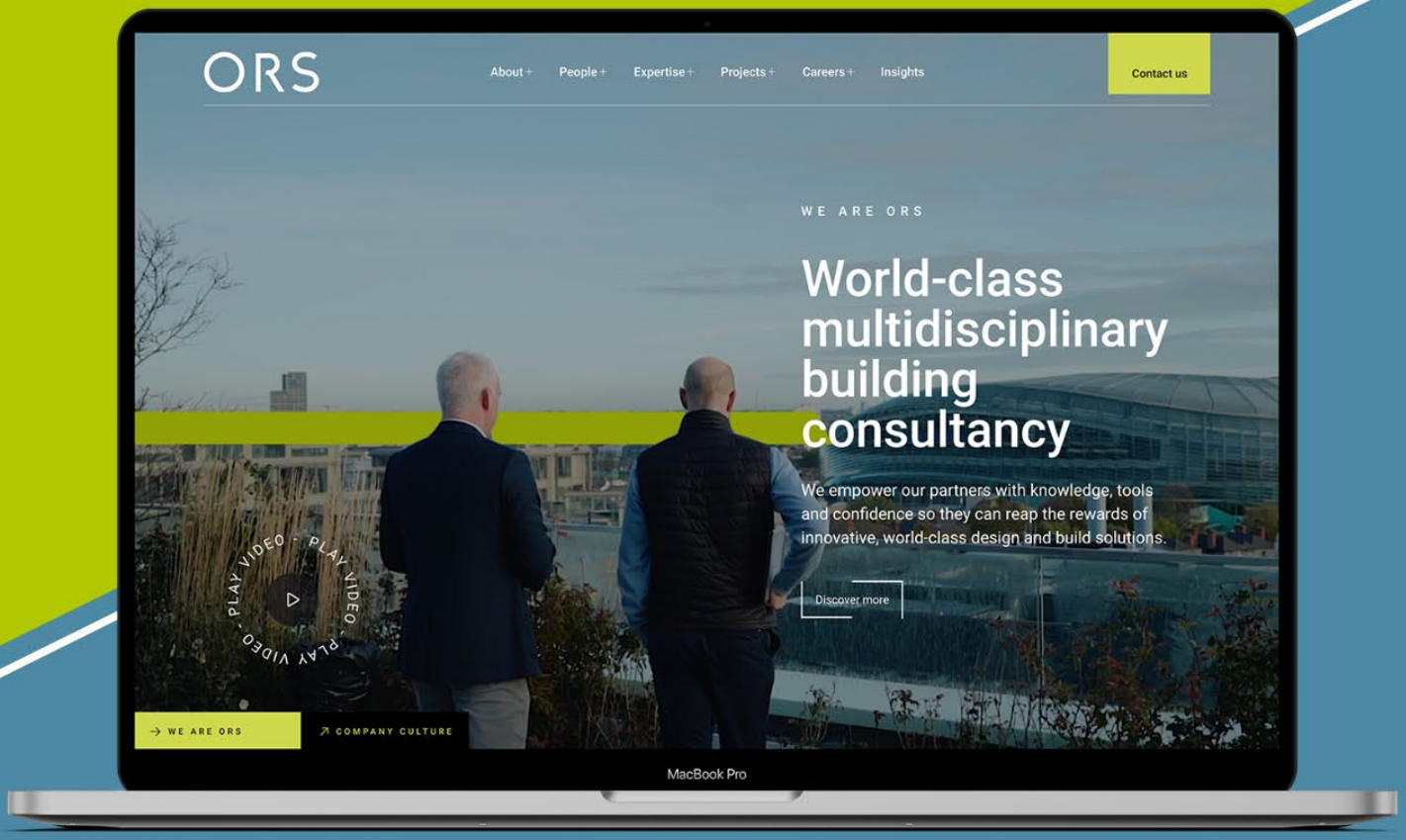

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2025

Residential Development, Kinnegad, Co. Westmeath - Planning Application Civil Specification

ENGINEERING A SUSTAINABLE FUTURE

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2025
Civil Specification

ENGINEERING A SUSTAINABLE FUTURE

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1 MATERIALS

This section must be read in conjunction with the relevant ORS civil drawings where additional information relevant to the forms of construction to be used under this contract is given.

1.1 European & British Standard Quality

All materials used in the Contract shall be in accordance with the latest relevant British Quality Standard.

1.2 Cement and Cement Combination Type

Cement shall comply with the relevant British Standard BS EN 206-1 Section 5.1.2 & BS EN 197 in conjunction with Table 1 in BS 8500-2). All cement shall be delivered to the site in sealed containers or bulk cement lorries of suitable design.

Supersulphated and high alumina cements shall not be used.

Written confirmation shall be provided that any proprietary grouts or mortars used in the works do not contain high alumina cement.

1.3 Cement Mortar

Cement mortar shall consist of Portland Cement (CEM I to BS 8500-2) and natural sand. The constituent materials shall be accurately gauged and mix in an approved manner in proportion by volume as follows:

For brickwork and pipe joints	1:3 Cement / Sand
For Rendering	1:3 Cement / Sand

1.4 Sand for Mortar

Sand used for mortar shall comply with the requirements of BS 1200 and the grading shall be to Table 1.

1.5 Sand for Mortar

Aggregates to be used in the production of concrete shall be obtained from an approved supplier and shall comply to BS EN 206-1 Section 5.1.3. All aggregates should be clean and uniformly graded to the maximum size specified.

Aggregate shall be free from all deleterious material with particular attention paid to these containing pyrites (the most common form of which being iron pyrites).

1.6 Water

Water shall comply with the requirements in Clause 5.1.4 of BS EN 206-1 and BS EN 1008:2002.

1.7 Ready Mixed Concrete and Concrete Mix Design

Ready-mixed concrete shall not be used on the works except with the prior permission of the Engineer. Application for such permission, must include the following information: -

a. Name and address of supplier and location of mixing plant.
b. Details of plant and facilities.
c. Details of method of delivery.
d. Source of aggregates.
e. Distance of mixing plant from site.

Concrete shall be in accordance with BS EN 206-1:2000. Details of the concrete mix are set out in the General Concrete Specification.

The normal clauses and requirements of this Specification shall apply to ready mixed concrete just as to concrete mixed on the site. If permission to use ready-mixed concrete is granted, the Contractor shall arrange: -

a. With the supplier for samples of aggregates and sample loads of each mix to be delivered to the site for examination and testing.
b. For inspections, checks and tests by the Engineer at the mixing plant or on the site at any time during the period of the Contract.
c. For meeting all costs, including transport, provision of apparatus, etc., in connection with the inspections, checks or tests.

With every load of concrete brought to the site there shall be a delivery note containing the following information: -

a. Data.
b. Time of loading concrete into vehicle.
c. Time of leaving mixing plant.
d. Mix of concrete.
e. Quantity of water added.
f. Time of adding water if different from (b).

The Contractor shall ensure that the following information is added by his representative on delivery of the concrete to site: -

a. Time of delivery.
b. Time load is finally placed in position.
c. Position placed.

The delivery note shall be handed to the Engineer for his retention at the end of each day's work.

1.8 Hard-core

'Hardcore' to be crushed rock or gravel complying with SR 21: 2014 Annex E. Refer to the Note in 1.10 below for further information.

1.9 Clause 803, Type A Granular Material

This material shall comprise those permitted for Type B material with the addition of natural sands and gravel and shall be within the following grading limits.

BS Sieve Size	% By WT Passing
75mm	100
38mm	85 – 100
10mm	45 – 100
5mm	25 – 85
600 micron	8 – 45
75 micron	0 – 10

All other requirements shall be as for Type B material.

1.10 Clause 804, Type B Granular Material

This material shall comprise crushed rock within the following grading limits:

BS Sieve Size	% By WT Passing
75mm	100
38mm	85 – 100
10mm	45 – 100
5mm	25 – 85
600 micron	8 – 45
75 micron	0 – 10

Testing shall be in accordance with the requirements of B.S 1377 Test 7A and all material used within 450mm of surface of the road shall be frost resistant as defined by the Standard Test specified in Transport and Road Research Laboratory Report No. LR90.

IMPORTANT NOTE: Fill Material under Concrete Roads, Slabs & Footpaths: Material to comply with I.S. EN 13242:2013 and with SR 21: 2014 Guidance on the use of I.S. EN 13242:2013 – Aggregates for unbound and hydraulically bound materials for use in civil engineering work and road construction. All unbound mixtures deposited within 500 mm, or any other distances described in Appendix 7/1 of the NRA Specification for Roadworks Series 800, of cement bound materials, concrete pavements, concrete structures or concrete shall comply with the requirements of SR 21 Annex E.

1.11 Waterproof Undelay

Underlay shall be waterproof building paper with fibrous reinforcement conforming to the general requirements for Class B1F paper for temporary purposes laid down in BS 1521. Alternatively, approved 1000 gauge impermeable plastic sheeting may be used.

1.12 Side Forms for Carriageways and Yard Slabs

Side forms for carriageway, or yard slabs shall be of steel. Curved or flexible forms shall be used for all curves of 60m radius or less. Flange braces shall extend out and on the base not less than two thirds the height of the form. All forms used shall be free from warps, twists and kinks and shall be true to line and level within a tolerance of 3mm in 3m and shall be so maintained throughout the work.

1.13 Steel Reinforcement for Road and Yard Slabs

Reinforcement for concrete road and yard slabs shall be hard drawn steel wire welded mesh complying with BS 4483. All steel reinforcement shall be free from loose rust, mill scale or other substances which might prevent proper adhesion to the concrete.

1.14 Dowel Bars and Tie Bars

Mild steel dowel bars and tie bars shall comply with the requirements of BS 4449 and shall be free from oil, paint, dirt, loose rust and scale.

Dowel bars for transverse expansion and contraction joints shall be straight, and free from burred edges or other irregularities which might restrict the free movement of the steel in the concrete.

1.15 Preformed Joint Filler

The joint filling material shall be pre-moulded, 25mm thick and of width equal to the thickness of the concrete slab plus 13mm. It shall be non-extruding and capable of adjusting itself to the changing width of the joints.

1.16 Joint Sealing Compound

Joints shall be sealed with a hot-poured, ductile, rubber / bitumen material which shall adhere readily to the concrete and to the preformed filler. It shall not be excessively soft or tacky at a temperature of 50°C nor brittle at a temperature of 0°C, and shall comply generally with the requirements of BS 2499 using Grades A1 or A2 as appropriate in accordance with the recommendations contained therein.

Alternatively, the joints shall be sealed with a special sealing compound as specified on the drawings / documentation. The Contractor shall comply with the manufacturer's instructions throughout.

1.17 Tack Coat

Bitumen emulsion shall be used for all tack coats and must conform to the requirements of BS 434 for Class A1 - 40 or K1 - 40. The rate of spread shall be 0.4 to 0.6 1/m² unless otherwise stated and the work shall comply with the requirements of BS 434: Part 2.

1.18 Flexible Surfacing (Carriageways)

The specification for the flexible surfacing to be used in the Contract is detailed in Drawings. Generally the materials used and the method of laying shall conform to the requirements of the relevant BS as follows:

Rolled Asphalt	BS 594
Dense Tarmacadam	BS4987
Medium Textured Tarmacadam	BS4987
Dense Bitumen Macadam	BS4987
Open Textured Bitumen Macadam	BS4987
Cold Asphalt	BS4987

1.19 Bituminous Sealing Grit

Bituminous sealing grit shall be made and applied in accordance with paragraph 2.3.7 and Appendix A8 of BS 4987.

1.20 Pre-coated Chippings

Chippings shall have the polished stone value required by the Contract when tested in accordance with BS EN 932 and the shape and grading of the chippings shall comply with the requirements of BS EN 13043. The nominal size shall be either 14mm or 20mm as required by the Contract and the size and shape index shall not be greater than 60.

The chippings shall be coated in accordance with BS 594 and the binder shall be of the same type and viscosity as the binder of the surfacing.

The chippings shall be coated in accordance with BS 594 and the binder shall be of the same type and viscosity as the binder of the surfacing.

1.21 Precast, Concrete Kerbs, Quadrants, Channels and Edging

The units shall be hydraulically pressed and the aggregate used shall comply with the requirements of BS EN 1339:2003. Purpose-made radius kerbs and channels shall be used for all radii of 12m or less. When kerb lines are required to be laid to radii of between 12 and 30m straight kerbs each 0.6m long shall be used. Dropped kerbing are to be used at vehicular crossings.

1.22 In-situ Concrete Kerbs

Cast in-situ kerbs shall, unless otherwise described in the Contact, be 300mm deep and 225mm wide, the standard height of the kerbs over the edge of the carriageway shall be between 125mm and 150mm except where vehicle access is to be provided. The kerbs shall be made with Class 35 / 20 concrete. The arris shall be bullnosed to 20mm radius. Expansion joints shall be formed with a double thickness of roofing felt inserted at not greater than 3m centres. The shuttering for the kerbs shall be such as to ensure a neat clean vertical face free from surface defects, fins, honeycombing etc. accurately formed to the line of the carriageway and free from undulations and waves. Where vehicular access is to be provided, kerbs shall have a height of 40mm above the channel level. There shall be a 1m long transitional length of

kerb between kerbs of standard height and 40mm high kerbs.

Where cast in-situ concrete kerbs adjoin a cast in-situ concrete footpath they shall be cast with the footpath and scribed with a line parallel to the face at a distance of 225m from the face. Kerb joints to line up with footpath slab joints.

2 WORKMANSHIP

2.1 Setting Out

The Contractor shall set out the whole of the works and shall be responsible for establishing and maintaining them correctly in accordance with the Contract Drawings or with such further drawings as may be supplied or directions that may be received from the Engineer.

Any work carried out incorrectly shall be taken out and replaced to the satisfaction of the Engineer and at the Contractor's expense.

2.2 Clearing Site

The Contractor shall remove buildings, walls, gates, fences, advertisements and other structures and obstructions, grub up and remove hedges, bushes and shrubs and clear the site of the works at such time and only to the extent required by the Engineer. The material so obtained shall, so far as suitable be reserved and stacked for further use, all rubbish and material unsuitable for use, in the opinion of the Architect, shall be removed from the site by the Contractor.

2.3 Clearing Hedges

All holes resulting from the clearance of hedges and their roots shall be filled with approved material which shall be consolidated to the level of the adjacent ground.

2.4 Felling Trees

Where either shown on the drawings or directed by the Engineer trees shall be uprooted or cut down as near to ground level as possible and removed from the site. Stumps and tree roots shall, unless otherwise directed the Engineer, be grubbed up and deposited off the site in dumps to be provided by the contractor. Holes left by the stumps or roots shall, within one week, be filled with Clause 803 material, unless otherwise directed and compacted to the relevant clause in this specification.

No tree of any type or girth shall be felled, trimmed or otherwise damaged unless a specific order is issued in writing by the Engineer.

No separate allowance will be made for the felling of tress of less than 500mm girth, or for the removal of stumps of less than 150mm diameter. Allowance for such items shall be assumed to have been made in the sums entered against hedge-clearance or excavation in the Bills of Quantities.

2.5 Extent of Excavation

Excavation for roads and drains shall be carried out to such length and area as may be considered desirable by the Engineer. Any ground which is excavated to a greater depth than is required due to an error on the part of the Contractor shall be filled with approved material to the correct level. If, in the opinion of the Engineer the bottom of the excavation does not provide a satisfactory bearing the Contractor shall excavate to such extra depth and fill with such material as the Engineer may order to the required levels.

2.6 Excavation for Road Structures

Excavation to formation for carriageways, verges and pavings, shall be to the lines, levels and contours shown on the Drawings, and shall be to such depth below finished road or paving level as is required according to the specified thickness to form the road structures. All excavated material shall be removed and deposited in embankments or otherwise as directed and any surplus taken to tip. When completed the formation shall be at the required level and parallel to the required finished surface of the road.

2.7 Filling to Road Structures

Material for use as filling to formation level under roads, footways and verges shall consist of imported material approved by the Engineer. It shall be deposited and compacted in layers not exceeding 300mm deep in the loose and the moisture content of each layer shall be adjusted to the satisfaction of the Engineer by watering through a rose or allowing to dry out as the case may be. Each separate layer shall be thoroughly compacted by continuous rolling with a smooth wheel roller of eight to ten tonnes in weight.

2.8 Trimming of Formation of Carriageway

Immediately prior to the laying of the sub-base material, the formation of the carriageway shall be trimmed and adjusted true to the required finished levels, including rolling with one pass of an eight to ten ton smooth-wheeled roller if considered necessary by the Engineer, whose approval to the preparation work must in any case be obtained before each layer of material is placed.

The true formation of the carriageway shall not be run over by works traffic, nor shall it be allowed to weather, but shall be covered with 1,000 gauge terram and the sub-base material immediately the formation is approved. The formation of the carriageway shall when tested with a 3m straight edge have no depression greater than 25mm.

2.9 Cold Weather Working

No material in frozen condition shall be incorporated in the Works neither shall material for use in road pavements be laid on any surface which is frozen or covered with ice.

2.10 Use of Surfaces for Construction Traffic

Construction traffic used on pavements under construction shall be suitable in relation to the thickness of the courses it traverses in order that damage is not caused to the sub-grade for the material already constructed.

2.11 Sub-Base to Carriageway

The first layer of filling to be laid on the formation will be the sub-base as shown on the Drawings. The material shall be uniformly spread and not tipped in heaps, and consolidated by a smooth wheeled roller of 8 to 10 tonnes in weight to the required levels and to the specified minimum consolidated thickness. If any clay or mud work through the surface the affected areas shall be cut out as directed by the Engineer and replaced with fresh material as specified.

2.12 Compactation

Compaction of formation and / or sub-base shall be carried out to Clause 802 Table 8/1 of the TII Publication Specification for Works. All soft areas which develop during compaction shall be removed and replaced with approved materials and compacted in layers not exceeding 225mm in depth.

SUB-BASES & ROADBASES

Compaction Requirements for Granular, Cement-bound, Granular & Soil-Cement Materials				
		Number of passes for		
Type compaction of plant	Category	Not Greater Than 100mm Layer	Not Greater Than 150mm Layer	Not Greater Than 225mm Layer
Smooth wheeled roller	Mass per metre width of roll - 2700 - 5400kg More than 5400kg			
Pneumatic type roller	Mass per wheel: 4000 - 6000kg 6000 - 8000kg 8000 - 12000kg More than 12000kg	 12 12 10 08	 Unsuitable Unsuitable 16 12	 Unsuitable Unsuitable Unsuitable Unsuitable
Vibratory Roller	Mass per metre width of a vibrating roll: 700 - 1300kg 1300 - 1800kg 1800 - 2300kg 2300 - 2900kg 2900 - 3600kg 3600 - 4300kg 4300 - 5000kg More than 5000kg	 16 06 04 03 03 02 02 02	 Unsuitable 16 06 05 05 04 04 03	 Unsuitable Unsuitable 10 09 08 07 06 05
Vibrating Plate Compactor	Mass per m² of base-plate: 1400 - 1800kg	08 05	Unsuitable 08	Unsuitable Unsuitable

	1800 - 2100kg More than 2100kg	03	06	10
Vibro-tamper	Mass 50 - 65kg 65 - 75kg More than 75kg	 04 03 02	 08 06 04	 Unsuitable 10 08
Power rammer of dropping weight compactor	Mass 100 - 500kg More than 500kg	 05 05	 08 08	 Unsuitable 12

2.13 Concrete Mix Design

Mixes for the Classes concrete shown in the following Table shall be designed by the Contractor:

Concrete Grade	Max Aggregate Size mm	Min Cement Content kg/m³	Max Free Water / Cement Ratio	Min. 28 Day Compressive Strength	
				Prelim. Test N/mm²	Works Test N/mm²
45 35 30 20 Lean Mix	20 20 20 40 40	450 300 275 220 N/A	0.4 0.6 0.65 0.75 N/A	55 45 40 30 20	45 35 30 20 9.5

The cement content in any mix shall not exceed 530 kg/m³ of concrete. The quantity of water used shall not exceed that required to produce a concrete with sufficient workability to be placed and compacted where required. The Contractor shall make laboratory trial mixes using the aggregate proposed for the work. The trial mixes shall be made in the presence of the Engineer or his representative and shall be repeated until the proportions necessary to produce a concrete complying in all respects with the requirements of the specification have been determined. The proportions shall be adjusted as work proceeds if it is shown that the mix is unrepresentative of the concrete produced by the mixing machinery or if the concrete is incapable of being placed and compacted by the machinery being used.

When additives are specified or approved for concrete these shall be included in the mix for the assessment of all cube strengths.

2.14 Air-Entrained Concrete

The total quantity of air in air-entrained concrete shall be 4½% ± 1½% by volume.
The air entraining agent, which must be based on vinsol resin to BS EN 480, BS EN 480 and

must include a water-reducing agent, shall be added at the mixer in accordance with the manufacturer's instructions. The air content of each batch shall be checked by means of pressure air meter and at all such times as test specimens are made. This check shall be carried out at least six times per day.

Where air-entrained concrete is specified, adjustments to the cement and / or water content of the mix will be necessary and these must be determined by trial mixes before concreting work commences to ensure that the concrete design strength is obtained.

2.15 Concrete Mixing

Concrete shall be mixed in approved machines equipped with means whereby the quantity of water added to each batch of concrete may be accurately controlled. The mixer drum shall be turned a sufficient number of times to mix the materials dry and a minimum mixing time of one minute shall be allowed after the water is added. The entire contents of the drum shall be discharged before any materials for the succeeding mix are placed therein. Only such quantities of concrete as are required for immediate use shall be mixed at any time. All concrete to be placed shall be in such a condition that it is capable of being fully compacted. Any concrete which has not been compacted into its final position within 2 hours shall be replaced by fresh concrete.

Any condemned concrete shall be removed from the site or disposed of as directed. Concrete shall at all times be kept free from deleterious matter and shall not be placed directly on the ground before placing into its final position. Metal or timber sheeting of adequate area shall be used for this purpose and the surface shall be wetted and brushed clean of all surplus concrete once in every hour during use and at the end of each period of work.

Under no circumstances shall concrete mixers be sited on completed carriageways, nor shall any aggregates or other materials be deposited on or within the limits of the proposed highway. The discharge of cement slurry, or washings from mixers, over a completed carriageway, or into adjacent drains, sewers or gullies is forbidden.

2.16 Placing and Compaction of Concrete

No concreting shall be carried out neither shall mortar or grout be used in a descending air temperature in the shade of 5ºC nor shall such materials be used until the rising air temperature in the shade reaches 5ºC. No concrete shall be dropped into any part of the works from a height greater than 2.0m. It shall be lowered in skips or by other means approved by the Engineer. Concrete shall be adequately compacted by ramming, tamping or vibration as may be particularly specified for each part of the works to ensure that the finished concrete is as dense as possible and free from voids, tightly packed around reinforcement and has a close-knit surface free from laitance and froth.

2.17 Cube Tests for Grade 45, 35 and Grade 30 Concrete

During the progress of concreting 150mm cubes shall be made, cured and tested all in accordance with. BS EN 12350. When required the cubes shall be sent to a testing laboratory approved by the Engineer. All cubes shall be cast in the presence of the Engineer's Representative and their reference numbers shall be submitted to the Engineer in a weekly report. The location from which the samples have been taken for each cube shall be noted in

each report together with the date on which the cube was made.

Cubes shall be made in pairs at intervals each day, each pair being from a different batch of concrete. This rate of testing shall be continued until such time as the Engineer may order a reduction in the number of specimens required. One of each pair of cubes shall be tested at 28 days and the result of this test shall provide the basis of assessing compliance with the requirements for strength. The other cube of each pair shall be tested at 7 days to provide an early indication of any changes in the quality of concrete being produced. The 7-day strength should attain two thirds of the 28-day strength.

If the minimum crushing strength is not so attained the Contractor shall without expense to the Employer, cut cores from locations selected by the Engineer. Where this is done the strength of cores when tested in accordance with BS 1881 will be accepted as taking precedence over the cube strengths in determining the strength of concrete. Correction for age of concrete from which cores are taken shall be made in accordance with CP 114, Table 9.

2.18 Testing of Grade 20 Concrete

The testing requirements for this Class of concrete shall be as for Classes 35 and 30 except that the frequency of testing shall be at the discretion of the Engineer. It is intended here that cubes shall be taken at any time according to the purpose for which this Class of concrete is being used, but in any case, sufficiently frequent to ensure consistency in quality and strength with that of the trial mix.

2.19 Cost of Concrete Cube Tests

The Contractor shall provide the materials for and bear the cost of all works tests including labour, moulds, transport, fees, laboratory fees and all other expenses, and these costs shall be deemed to be included in the rates tendered against “concrete” in the Bill of Quantities.

2.20 Waterproof Underlay

Approved 1200 gauge impermeable plastic sheeting to be used. The sheet shall be lapped at least 300mm and any damaged areas shall be replaced immediately

2.21 Concrete Carriageway and Yard Slabs

The concrete shall be uniformly spread and levelled and be compacted by means of an approved type of power-operated vibrating unit mounted on the tamping beam. The surface level of the concrete shall be made up to such extent as is required during the course of compaction and the vibrating beam applied for such length of time as will produce a concrete of maximum density throughout the entire area and thickness of the slab, without producing segregation of the fine and coarse ingredients of the concrete. Special care shall be taken to ensure that the edges and corners of the slab are completely compacted.

The slabs shall be laid by the “alternate bay” method of construction. No formwork shall be struck and no tamping off newly-laid bays shall be done until the Engineer has given his approval thereto. A 75mm wide thin strip of steel shall be laid along the edge of the adjacent concrete for its protection during tamping.

The surface of the concrete shall be finished true to level and contour. A finish with a slight degree of roughness is required, but he surface must be close knit and uniform. Surface irregularities as revealed by a 3m straight edge shall not exceed 6mm.

Openings 150mm larger than the overall size of the manhole including 150mm concrete surround, shall be left in the concrete slabs for manhole covers. Openings of the relevant size and to the same specification shall be left for gully frames.

The curing of concrete carriageway slabs shall be carried out by means of an approved proprietary brand of spray to manufacturer's instructions except in times of frost when the following procedure shall be adopted.

Immediately after the compaction of the concrete has been completed a shield of approved waterproof material shall be provided mounted on a light framework so as not to touch the concrete surface. The shield shall extend for a distance sufficient to ensure that the whole of the newly laid concrete is adequately protected and shall remain in position for 24 hours. Immediately after the removal of the protective shield a curing blanket of waterproof paper or other approved material, shall be laid over the slab and remain in position for a period of at least 14 days.

No traffic shall be allowed on the concrete carriageway within 14 days of its completion or 7 days if rapid hardening cement is used unless the Engineer should agree to reduce the period.

2.22 Reinforcement in Carriageways and Yard Slabs

Reinforcement shall lap at least one complete mesh, and be wired at laps and shall be maintained in its correct position whilst concreting is in progress. The reinforcement shall be placed in the position whilst concreting is in progress. The reinforcement shall be placed in the position equivalent to the upper third point in the slab thickness subject to a minimum cover of 60mm and terminate no more than 80mm and no less than 40mm short of the edges of the slabs.

At the time of placing, reinforcement shall be free from rust or coatings of any character which would tend to destroy the bond between the steel and the concrete shall be inspected and passed by the Engineer before it is covered with concrete.

2.23 Forms for Carriageway and Yard Slabs

Forms shall be of steel and shall be of depth equal to or greater than the thickness of the slab. The forms shall be of approved section and construction and shall be perfectly straight or suitably curved to comply with the requirements of Clause 2.30, have a broad base and be of sufficient stiffness to withstand, without displacement or distortion, the passage of the compacting plant. They shall be provided with an efficient locking device to ensure continuity of line and level through joints with steel pins to hold them in position. The forms shall be set true to line and level and shall be supported on thoroughly compacted material for their entire length. They shall be inspected for alignment before concreting commences and forms varying by more than the specified carriageway tolerance shall be taken up and reset. Packing up forms with pieces of slate, etc. shall not be permitted. All formwork shall be thoroughly cleaned and well-greased or oiled before concrete is placed and shall remain in position after the concrete is placed for at least 48 hours.

2.24 Laying of Flexible Surfacing to Carriageways and Yard Slabs

Work involving the use of bitumen or any combination thereof shall not be continued if the temperature of the surface to be covered is at or falls below 2ºC. Nor shall it be resumed until the temperature of the surface to be covered is at or rising above 2ºC. If the surface to be covered is cleaned by the use of water the surface must be allowed to dry before any surfacing material is laid. Immediately prior to the laying of flexible surfacing the Contractor shall clean the surface of the base to remove all foreign matter and the surface must be inspected by the Engineer before proceeding with the laying of the flexible material. All gully ramps are removed at this stage.

The surfacing shall be spread by an approved mechanical paver and consolidated to the required thickness by a roller of not less than eight tonnes in weight.
The material shall be rolled in a longitudinal direction from the side to the centre of the carriageway, overlapping on successive passes by at least half the width of the last roll. Rollers shall not stand on newly laid material while there is risks that the material will be deformed. Where the laying of the wearing course is included in the same contract, it shall immediately follow the laying of the base course, but no wearing course shall be laid on any section of the road until the Engineer is satisfied that the base course is laid to his satisfaction.

In areas where, due to difficulties of access, compaction is not possible by roller such areas shall be thoroughly punned until the same degree of compaction is achieved. Where pre-coated chippings are to be rolled into the wearing course all drainage channels adjacent to kerbs shall be kept free of chippings for a width of 300mm. Over the remainder of the carriageway the minimum texture depth of the chippings shall be 3mm. The level of any point on the surface of each of the pavement courses shall conform to that shown on the drawings and shall when tested with a 3m straight edge have no depression greater than 10mm.

Where joints between laying widths, or transverse joints have to be made in wearing courses they shall be cut back to a vertical face which shall be coated completely with a grade of hot tar or hot bitumen suitable for the purpose immediately before the adjacent area is laid. In two stage construction where basecourse only is required as a first stage the basecourse shall be treated as a wearing course for the purposes of joint treatment. All joints shall be offset at least 300mm from parallel joints in the layer beneath.

2.25 Tolerances

The surface level of each layer of construction and of the prepared formation shall not deviate vertically at any point from the true level by more than the permitted tolerances indicated below.

Flexible ± 10mm
Basecourse ± 10mm
Sub-Base ± 20mm
Formation ± 25mm

In the case of flexible surfacing the wearing course on completion of construction is permitted to be 10mm high or low except, where the application of a latter in combination with the basecourse upper limit would result in a reduction of the specified thickness of the wearing

course greater than 15%.

2.26 Kerb Foundations

Precast concrete kerbs shall be laid as the placing of the concrete foundation proceeds. The concrete foundation shall be placed over a minimum width of 300mm and to an initial thickness of 200mm in order that the foundation may be consolidated to the required minimum thickness of 150mm by the laying of the kerbs themselves. The actual uncompacted thickness may have to be adjusted in the light of experience as work proceeds. The kerbs must be laid on the foundation before the concrete's initial set has taken place but in any case no later than 30 minutes after the concrete has been placed. Protection from weather shall be provided by a shield of plastic sheeting, supported so as not to touch the concrete surface until the kerbs are backed with 150mm concrete haunching.

2.27 Laying of Kerbing

The kerb shall be laid to a true alignment vertically and horizontally and be full bedded. After the kerb line has been approved by the Engineer the kerbs shall be haunched immediately with 150mm thickness of Grade 20 concrete to within 50mm of the top of the kerb. Purpose made radius kerbs shall be used for all curves of radius 12m or less. Straight kerbs of length 600mm shall be used for curves of radius exceeding 12m and straight kerbs of length 1m for curves of radius exceeding 30m and for all straight runs. The height of the kerbs above finished road surface shall be between 125mm and 150mm maximum. The Contractor shall take precautions to prevent the dislodgement of kerbs by vehicular traffic and shall make good any damaged kerbs.

2.28 Trimming of Side Slopes

The side slopes of cuttings and embankments shall be trimmed to such inclinations as are shown on the drawings or to such other profile or slope as the Engineer may direct but not exceeding in inclination of 1 in 1½.

2.29 Soiling of Side Slopes, Berms & Verges

The soiling of embankments cuttings, etc. shall be carried out to a consolidated thickness of 150mm. Prior to placing topsoil the areas shall be cleared of all brickbats, rubbish, large stones and all extraneous matter. Where seeding or planting is to follow, the surface shall be raked and cross raked or harrowed and Cambridge rolled, and rolled and cross-rolled until a fine till is obtained.

Residential Development, Kinnegad, Co. Westmeath
Planning Application
Civil Specification

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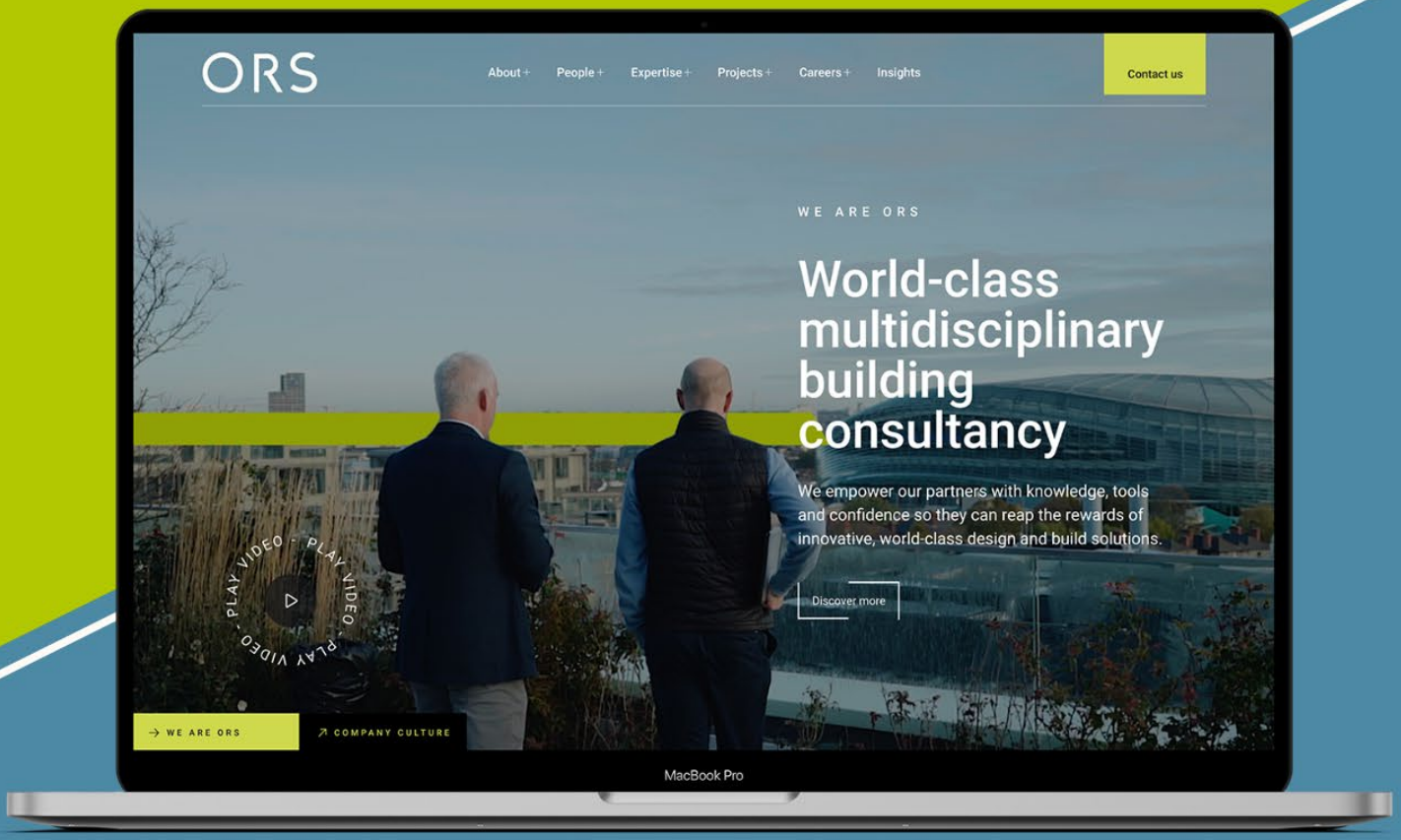

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2025
Civil Specification

ENGINEERING A SUSTAINABLE FUTURE

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1 MATERIALS

This section must be read in conjunction with the relevant ORS civil drawings where additional information relevant to the forms of construction to be used under this contract is given.

1.1 European & British Standard Quality

All materials used in the Contract shall be in accordance with the latest relevant British Quality Standard.

1.2 Cement and Cement Combination Type

Cement shall comply with the relevant British Standard BS EN 206-1 Section 5.1.2 & BS EN 197 in conjunction with Table 1 in BS 8500-2). All cement shall be delivered to the site in sealed containers or bulk cement lorries of suitable design.

Supersulphated and high alumina cements shall not be used.

Written confirmation shall be provided that any proprietary grouts or mortars used in the works do not contain high alumina cement.

1.3 Cement Mortar

Cement mortar shall consist of Portland Cement (CEM I to BS 8500-2) and natural sand. The constituent materials shall be accurately gauged and mix in an approved manner in proportion by volume as follows:

For brickwork and pipe joints	1:3 Cement / Sand
For Rendering	1:3 Cement / Sand

1.4 Sand for Mortar

Sand used for mortar shall comply with the requirements of BS 1200 and the grading shall be to Table 1.

1.5 Sand for Mortar

Aggregates to be used in the production of concrete shall be obtained from an approved supplier and shall comply to BS EN 206-1 Section 5.1.3. All aggregates should be clean and uniformly graded to the maximum size specified.

Aggregate shall be free from all deleterious material with particular attention paid to these containing pyrites (the most common form of which being iron pyrites).

1.6 Water

Water shall comply with the requirements in Clause 5.1.4 of BS EN 206-1 and BS EN 1008:2002.

1.7 Ready Mixed Concrete and Concrete Mix Design

Ready-mixed concrete shall not be used on the works except with the prior permission of the Engineer. Application for such permission, must include the following information: -

a. Name and address of supplier and location of mixing plant.
b. Details of plant and facilities.
c. Details of method of delivery.
d. Source of aggregates.
e. Distance of mixing plant from site.

Concrete shall be in accordance with BS EN 206-1:2000. Details of the concrete mix are set out in the General Concrete Specification.

The normal clauses and requirements of this Specification shall apply to ready mixed concrete just as to concrete mixed on the site. If permission to use ready-mixed concrete is granted, the Contractor shall arrange: -

a. With the supplier for samples of aggregates and sample loads of each mix to be delivered to the site for examination and testing.
b. For inspections, checks and tests by the Engineer at the mixing plant or on the site at any time during the period of the Contract.
c. For meeting all costs, including transport, provision of apparatus, etc., in connection with the inspections, checks or tests.

With every load of concrete brought to the site there shall be a delivery note containing the following information: -

a. Data.
b. Time of loading concrete into vehicle.
c. Time of leaving mixing plant.
d. Mix of concrete.
e. Quantity of water added.
f. Time of adding water if different from (b).

The Contractor shall ensure that the following information is added by his representative on delivery of the concrete to site: -

a. Time of delivery.
b. Time load is finally placed in position.
c. Position placed.

The delivery note shall be handed to the Engineer for his retention at the end of each day's work.

1.8 Hard-core

'Hardcore' to be crushed rock or gravel complying with SR 21: 2014 Annex E. Refer to the Note in 1.10 below for further information.

1.9 Clause 803, Type A Granular Material

This material shall comprise those permitted for Type B material with the addition of natural sands and gravel and shall be within the following grading limits.

BS Sieve Size	% By WT Passing
75mm	100
38mm	85 – 100
10mm	45 – 100
5mm	25 – 85
600 micron	8 – 45
75 micron	0 – 10

All other requirements shall be as for Type B material.

1.10 Clause 804, Type B Granular Material

This material shall comprise crushed rock within the following grading limits:

BS Sieve Size	% By WT Passing
75mm	100
38mm	85 – 100
10mm	45 – 100
5mm	25 – 85
600 micron	8 – 45
75 micron	0 – 10

Testing shall be in accordance with the requirements of B.S 1377 Test 7A and all material used within 450mm of surface of the road shall be frost resistant as defined by the Standard Test specified in Transport and Road Research Laboratory Report No. LR90.

IMPORTANT NOTE: Fill Material under Concrete Roads, Slabs & Footpaths: Material to comply with I.S. EN 13242:2013 and with SR 21: 2014 Guidance on the use of I.S. EN 13242:2013 – Aggregates for unbound and hydraulically bound materials for use in civil engineering work and road construction. All unbound mixtures deposited within 500 mm, or any other distances described in Appendix 7/1 of the NRA Specification for Roadworks Series 800, of cement bound materials, concrete pavements, concrete structures or concrete shall comply with the requirements of SR 21 Annex E.

1.11 Waterproof Undelay

Underlay shall be waterproof building paper with fibrous reinforcement conforming to the general requirements for Class B1F paper for temporary purposes laid down in BS 1521. Alternatively, approved 1000 gauge impermeable plastic sheeting may be used.

1.12 Side Forms for Carriageways and Yard Slabs

Side forms for carriageway, or yard slabs shall be of steel. Curved or flexible forms shall be used for all curves of 60m radius or less. Flange braces shall extend out and on the base not less than two thirds the height of the form. All forms used shall be free from warps, twists and kinks and shall be true to line and level within a tolerance of 3mm in 3m and shall be so maintained throughout the work.

1.13 Steel Reinforcement for Road and Yard Slabs

Reinforcement for concrete road and yard slabs shall be hard drawn steel wire welded mesh complying with BS 4483. All steel reinforcement shall be free from loose rust, mill scale or other substances which might prevent proper adhesion to the concrete.

1.14 Dowel Bars and Tie Bars

Mild steel dowel bars and tie bars shall comply with the requirements of BS 4449 and shall be free from oil, paint, dirt, loose rust and scale.

Dowel bars for transverse expansion and contraction joints shall be straight, and free from burred edges or other irregularities which might restrict the free movement of the steel in the concrete.

1.15 Preformed Joint Filler

The joint filling material shall be pre-moulded, 25mm thick and of width equal to the thickness of the concrete slab plus 13mm. It shall be non-extruding and capable of adjusting itself to the changing width of the joints.

1.16 Joint Sealing Compound

Joints shall be sealed with a hot-poured, ductile, rubber / bitumen material which shall adhere readily to the concrete and to the preformed filler. It shall not be excessively soft or tacky at a temperature of 50°C nor brittle at a temperature of 0°C, and shall comply generally with the requirements of BS 2499 using Grades A1 or A2 as appropriate in accordance with the recommendations contained therein.

Alternatively, the joints shall be sealed with a special sealing compound as specified on the drawings / documentation. The Contractor shall comply with the manufacturer's instructions throughout.

1.17 Tack Coat

Bitumen emulsion shall be used for all tack coats and must conform to the requirements of BS 434 for Class A1 - 40 or K1 - 40. The rate of spread shall be 0.4 to 0.6 1/m² unless otherwise stated and the work shall comply with the requirements of BS 434: Part 2.

1.18 Flexible Surfacing (Carriageways)

The specification for the flexible surfacing to be used in the Contract is detailed in Drawings. Generally the materials used and the method of laying shall conform to the requirements of the relevant BS as follows:

Rolled Asphalt	BS 594
Dense Tarmacadam	BS4987
Medium Textured Tarmacadam	BS4987
Dense Bitumen Macadam	BS4987
Open Textured Bitumen Macadam	BS4987
Cold Asphalt	BS4987

1.19 Bituminous Sealing Grit

Bituminous sealing grit shall be made and applied in accordance with paragraph 2.3.7 and Appendix A8 of BS 4987.

1.20 Pre-coated Chippings

Chippings shall have the polished stone value required by the Contract when tested in accordance with BS EN 932 and the shape and grading of the chippings shall comply with the requirements of BS EN 13043. The nominal size shall be either 14mm or 20mm as required by the Contract and the size and shape index shall not be greater than 60.

The chippings shall be coated in accordance with BS 594 and the binder shall be of the same type and viscosity as the binder of the surfacing.

The chippings shall be coated in accordance with BS 594 and the binder shall be of the same type and viscosity as the binder of the surfacing.

1.21 Precast, Concrete Kerbs, Quadrants, Channels and Edging

The units shall be hydraulically pressed and the aggregate used shall comply with the requirements of BS EN 1339:2003. Purpose-made radius kerbs and channels shall be used for all radii of 12m or less. When kerb lines are required to be laid to radii of between 12 and 30m straight kerbs each 0.6m long shall be used. Dropped kerbing are to be used at vehicular crossings.

1.22 In-situ Concrete Kerbs

Cast in-situ kerbs shall, unless otherwise described in the Contact, be 300mm deep and 225mm wide, the standard height of the kerbs over the edge of the carriageway shall be between 125mm and 150mm except where vehicle access is to be provided. The kerbs shall be made with Class 35 / 20 concrete. The arris shall be bullnosed to 20mm radius. Expansion joints shall be formed with a double thickness of roofing felt inserted at not greater than 3m centres. The shuttering for the kerbs shall be such as to ensure a neat clean vertical face free from surface defects, fins, honeycombing etc. accurately formed to the line of the carriageway and free from undulations and waves. Where vehicular access is to be provided, kerbs shall have a height of 40mm above the channel level. There shall be a 1m long transitional length of

kerb between kerbs of standard height and 40mm high kerbs.

Where cast in-situ concrete kerbs adjoin a cast in-situ concrete footpath they shall be cast with the footpath and scribed with a line parallel to the face at a distance of 225m from the face. Kerb joints to line up with footpath slab joints.

2 WORKMANSHIP

2.1 Setting Out

The Contractor shall set out the whole of the works and shall be responsible for establishing and maintaining them correctly in accordance with the Contract Drawings or with such further drawings as may be supplied or directions that may be received from the Engineer.

Any work carried out incorrectly shall be taken out and replaced to the satisfaction of the Engineer and at the Contractor's expense.

2.2 Clearing Site

The Contractor shall remove buildings, walls, gates, fences, advertisements and other structures and obstructions, grub up and remove hedges, bushes and shrubs and clear the site of the works at such time and only to the extent required by the Engineer. The material so obtained shall, so far as suitable be reserved and stacked for further use, all rubbish and material unsuitable for use, in the opinion of the Architect, shall be removed from the site by the Contractor.

2.3 Clearing Hedges

All holes resulting from the clearance of hedges and their roots shall be filled with approved material which shall be consolidated to the level of the adjacent ground.

2.4 Felling Trees

Where either shown on the drawings or directed by the Engineer trees shall be uprooted or cut down as near to ground level as possible and removed from the site. Stumps and tree roots shall, unless otherwise directed the Engineer, be grubbed up and deposited off the site in dumps to be provided by the contractor. Holes left by the stumps or roots shall, within one week, be filled with Clause 803 material, unless otherwise directed and compacted to the relevant clause in this specification.

No tree of any type or girth shall be felled, trimmed or otherwise damaged unless a specific order is issued in writing by the Engineer.

No separate allowance will be made for the felling of tress of less than 500mm girth, or for the removal of stumps of less than 150mm diameter. Allowance for such items shall be assumed to have been made in the sums entered against hedge-clearance or excavation in the Bills of Quantities.

2.5 Extent of Excavation

Excavation for roads and drains shall be carried out to such length and area as may be considered desirable by the Engineer. Any ground which is excavated to a greater depth than is required due to an error on the part of the Contractor shall be filled with approved material to the correct level. If, in the opinion of the Engineer the bottom of the excavation does not provide a satisfactory bearing the Contractor shall excavate to such extra depth and fill with such material as the Engineer may order to the required levels.

2.6 Excavation for Road Structures

Excavation to formation for carriageways, verges and pavings, shall be to the lines, levels and contours shown on the Drawings, and shall be to such depth below finished road or paving level as is required according to the specified thickness to form the road structures. All excavated material shall be removed and deposited in embankments or otherwise as directed and any surplus taken to tip. When completed the formation shall be at the required level and parallel to the required finished surface of the road.

2.7 Filling to Road Structures

Material for use as filling to formation level under roads, footways and verges shall consist of imported material approved by the Engineer. It shall be deposited and compacted in layers not exceeding 300mm deep in the loose and the moisture content of each layer shall be adjusted to the satisfaction of the Engineer by watering through a rose or allowing to dry out as the case may be. Each separate layer shall be thoroughly compacted by continuous rolling with a smooth wheel roller of eight to ten tonnes in weight.

2.8 Trimming of Formation of Carriageway

Immediately prior to the laying of the sub-base material, the formation of the carriageway shall be trimmed and adjusted true to the required finished levels, including rolling with one pass of an eight to ten ton smooth-wheeled roller if considered necessary by the Engineer, whose approval to the preparation work must in any case be obtained before each layer of material is placed.

The true formation of the carriageway shall not be run over by works traffic, nor shall it be allowed to weather, but shall be covered with 1,000 gauge terram and the sub-base material immediately the formation is approved. The formation of the carriageway shall when tested with a 3m straight edge have no depression greater than 25mm.

2.9 Cold Weather Working

No material in frozen condition shall be incorporated in the Works neither shall material for use in road pavements be laid on any surface which is frozen or covered with ice.

2.10 Use of Surfaces for Construction Traffic

Construction traffic used on pavements under construction shall be suitable in relation to the thickness of the courses it traverses in order that damage is not caused to the sub-grade for the material already constructed.

2.11 Sub-Base to Carriageway

The first layer of filling to be laid on the formation will be the sub-base as shown on the Drawings. The material shall be uniformly spread and not tipped in heaps, and consolidated by a smooth wheeled roller of 8 to 10 tonnes in weight to the required levels and to the specified minimum consolidated thickness. If any clay or mud work through the surface the affected areas shall be cut out as directed by the Engineer and replaced with fresh material as specified.

2.12 Compactation

Compaction of formation and / or sub-base shall be carried out to Clause 802 Table 8/1 of the TII Publication Specification for Works. All soft areas which develop during compaction shall be removed and replaced with approved materials and compacted in layers not exceeding 225mm in depth.

SUB-BASES & ROADBASES

Compaction Requirements for Granular, Cement-bound, Granular & Soil-Cement Materials				
		Number of passes for		
Type compaction of plant	Category	Not Greater Than 100mm Layer	Not Greater Than 150mm Layer	Not Greater Than 225mm Layer
Smooth wheeled roller	Mass per metre width of roll - 2700 - 5400kg More than 5400kg			
Pneumatic type roller	Mass per wheel: 4000 - 6000kg 6000 - 8000kg 8000 - 12000kg More than 12000kg	 12 12 10 08	 Unsuitable Unsuitable 16 12	 Unsuitable Unsuitable Unsuitable Unsuitable
Vibratory Roller	Mass per metre width of a vibrating roll: 700 - 1300kg 1300 - 1800kg 1800 - 2300kg 2300 - 2900kg 2900 - 3600kg 3600 - 4300kg 4300 - 5000kg More than 5000kg	 16 06 04 03 03 02 02 02	 Unsuitable 16 06 05 05 04 04 03	 Unsuitable Unsuitable 10 09 08 07 06 05
Vibrating Plate Compactor	Mass per m² of base-plate: 1400 - 1800kg	08 05	Unsuitable 08	Unsuitable Unsuitable

	1800 - 2100kg More than 2100kg	03	06	10
Vibro-tamper	Mass 50 - 65kg 65 - 75kg More than 75kg	 04 03 02	 08 06 04	 Unsuitable 10 08
Power rammer of dropping weight compactor	Mass 100 - 500kg More than 500kg	 05 05	 08 08	 Unsuitable 12

2.13 Concrete Mix Design

Mixes for the Classes concrete shown in the following Table shall be designed by the Contractor:

Concrete Grade	Max Aggregate Size mm	Min Cement Content kg/m³	Max Free Water / Cement Ratio	Min. 28 Day Compressive Strength	
				Prelim. Test N/mm²	Works Test N/mm²
45 35 30 20 Lean Mix	20 20 20 40 40	450 300 275 220 N/A	0.4 0.6 0.65 0.75 N/A	55 45 40 30 20	45 35 30 20 9.5

The cement content in any mix shall not exceed 530 kg/m³ of concrete. The quantity of water used shall not exceed that required to produce a concrete with sufficient workability to be placed and compacted where required. The Contractor shall make laboratory trial mixes using the aggregate proposed for the work. The trial mixes shall be made in the presence of the Engineer or his representative and shall be repeated until the proportions necessary to produce a concrete complying in all respects with the requirements of the specification have been determined. The proportions shall be adjusted as work proceeds if it is shown that the mix is unrepresentative of the concrete produced by the mixing machinery or if the concrete is incapable of being placed and compacted by the machinery being used.

When additives are specified or approved for concrete these shall be included in the mix for the assessment of all cube strengths.

2.14 Air-Entrained Concrete

The total quantity of air in air-entrained concrete shall be 4½% ± 1½% by volume.
The air entraining agent, which must be based on vinsol resin to BS EN 480, BS EN 480 and

must include a water-reducing agent, shall be added at the mixer in accordance with the manufacturer's instructions. The air content of each batch shall be checked by means of pressure air meter and at all such times as test specimens are made. This check shall be carried out at least six times per day.

Where air-entrained concrete is specified, adjustments to the cement and / or water content of the mix will be necessary and these must be determined by trial mixes before concreting work commences to ensure that the concrete design strength is obtained.

2.15 Concrete Mixing

Concrete shall be mixed in approved machines equipped with means whereby the quantity of water added to each batch of concrete may be accurately controlled. The mixer drum shall be turned a sufficient number of times to mix the materials dry and a minimum mixing time of one minute shall be allowed after the water is added. The entire contents of the drum shall be discharged before any materials for the succeeding mix are placed therein. Only such quantities of concrete as are required for immediate use shall be mixed at any time. All concrete to be placed shall be in such a condition that it is capable of being fully compacted. Any concrete which has not been compacted into its final position within 2 hours shall be replaced by fresh concrete.

Any condemned concrete shall be removed from the site or disposed of as directed. Concrete shall at all times be kept free from deleterious matter and shall not be placed directly on the ground before placing into its final position. Metal or timber sheeting of adequate area shall be used for this purpose and the surface shall be wetted and brushed clean of all surplus concrete once in every hour during use and at the end of each period of work.

Under no circumstances shall concrete mixers be sited on completed carriageways, nor shall any aggregates or other materials be deposited on or within the limits of the proposed highway. The discharge of cement slurry, or washings from mixers, over a completed carriageway, or into adjacent drains, sewers or gullies is forbidden.

2.16 Placing and Compaction of Concrete

No concreting shall be carried out neither shall mortar or grout be used in a descending air temperature in the shade of 5ºC nor shall such materials be used until the rising air temperature in the shade reaches 5ºC. No concrete shall be dropped into any part of the works from a height greater than 2.0m. It shall be lowered in skips or by other means approved by the Engineer. Concrete shall be adequately compacted by ramming, tamping or vibration as may be particularly specified for each part of the works to ensure that the finished concrete is as dense as possible and free from voids, tightly packed around reinforcement and has a close-knit surface free from laitance and froth.

2.17 Cube Tests for Grade 45, 35 and Grade 30 Concrete

During the progress of concreting 150mm cubes shall be made, cured and tested all in accordance with. BS EN 12350. When required the cubes shall be sent to a testing laboratory approved by the Engineer. All cubes shall be cast in the presence of the Engineer's Representative and their reference numbers shall be submitted to the Engineer in a weekly report. The location from which the samples have been taken for each cube shall be noted in

each report together with the date on which the cube was made.

Cubes shall be made in pairs at intervals each day, each pair being from a different batch of concrete. This rate of testing shall be continued until such time as the Engineer may order a reduction in the number of specimens required. One of each pair of cubes shall be tested at 28 days and the result of this test shall provide the basis of assessing compliance with the requirements for strength. The other cube of each pair shall be tested at 7 days to provide an early indication of any changes in the quality of concrete being produced. The 7-day strength should attain two thirds of the 28-day strength.

If the minimum crushing strength is not so attained the Contractor shall without expense to the Employer, cut cores from locations selected by the Engineer. Where this is done the strength of cores when tested in accordance with BS 1881 will be accepted as taking precedence over the cube strengths in determining the strength of concrete. Correction for age of concrete from which cores are taken shall be made in accordance with CP 114, Table 9.

2.18 Testing of Grade 20 Concrete

The testing requirements for this Class of concrete shall be as for Classes 35 and 30 except that the frequency of testing shall be at the discretion of the Engineer. It is intended here that cubes shall be taken at any time according to the purpose for which this Class of concrete is being used, but in any case, sufficiently frequent to ensure consistency in quality and strength with that of the trial mix.

2.19 Cost of Concrete Cube Tests

The Contractor shall provide the materials for and bear the cost of all works tests including labour, moulds, transport, fees, laboratory fees and all other expenses, and these costs shall be deemed to be included in the rates tendered against “concrete” in the Bill of Quantities.

2.20 Waterproof Underlay

Approved 1200 gauge impermeable plastic sheeting to be used. The sheet shall be lapped at least 300mm and any damaged areas shall be replaced immediately

2.21 Concrete Carriageway and Yard Slabs

The concrete shall be uniformly spread and levelled and be compacted by means of an approved type of power-operated vibrating unit mounted on the tamping beam. The surface level of the concrete shall be made up to such extent as is required during the course of compaction and the vibrating beam applied for such length of time as will produce a concrete of maximum density throughout the entire area and thickness of the slab, without producing segregation of the fine and coarse ingredients of the concrete. Special care shall be taken to ensure that the edges and corners of the slab are completely compacted.

The slabs shall be laid by the “alternate bay” method of construction. No formwork shall be struck and no tamping off newly-laid bays shall be done until the Engineer has given his approval thereto. A 75mm wide thin strip of steel shall be laid along the edge of the adjacent concrete for its protection during tamping.

The surface of the concrete shall be finished true to level and contour. A finish with a slight degree of roughness is required, but he surface must be close knit and uniform. Surface irregularities as revealed by a 3m straight edge shall not exceed 6mm.

Openings 150mm larger than the overall size of the manhole including 150mm concrete surround, shall be left in the concrete slabs for manhole covers. Openings of the relevant size and to the same specification shall be left for gully frames.

The curing of concrete carriageway slabs shall be carried out by means of an approved proprietary brand of spray to manufacturer's instructions except in times of frost when the following procedure shall be adopted.

Immediately after the compaction of the concrete has been completed a shield of approved waterproof material shall be provided mounted on a light framework so as not to touch the concrete surface. The shield shall extend for a distance sufficient to ensure that the whole of the newly laid concrete is adequately protected and shall remain in position for 24 hours. Immediately after the removal of the protective shield a curing blanket of waterproof paper or other approved material, shall be laid over the slab and remain in position for a period of at least 14 days.

No traffic shall be allowed on the concrete carriageway within 14 days of its completion or 7 days if rapid hardening cement is used unless the Engineer should agree to reduce the period.

2.22 Reinforcement in Carriageways and Yard Slabs

Reinforcement shall lap at least one complete mesh, and be wired at laps and shall be maintained in its correct position whilst concreting is in progress. The reinforcement shall be placed in the position whilst concreting is in progress. The reinforcement shall be placed in the position equivalent to the upper third point in the slab thickness subject to a minimum cover of 60mm and terminate no more than 80mm and no less than 40mm short of the edges of the slabs.

At the time of placing, reinforcement shall be free from rust or coatings of any character which would tend to destroy the bond between the steel and the concrete shall be inspected and passed by the Engineer before it is covered with concrete.

2.23 Forms for Carriageway and Yard Slabs

Forms shall be of steel and shall be of depth equal to or greater than the thickness of the slab. The forms shall be of approved section and construction and shall be perfectly straight or suitably curved to comply with the requirements of Clause 2.30, have a broad base and be of sufficient stiffness to withstand, without displacement or distortion, the passage of the compacting plant. They shall be provided with an efficient locking device to ensure continuity of line and level through joints with steel pins to hold them in position. The forms shall be set true to line and level and shall be supported on thoroughly compacted material for their entire length. They shall be inspected for alignment before concreting commences and forms varying by more than the specified carriageway tolerance shall be taken up and reset. Packing up forms with pieces of slate, etc. shall not be permitted. All formwork shall be thoroughly cleaned and well-greased or oiled before concrete is placed and shall remain in position after the concrete is placed for at least 48 hours.

2.24 Laying of Flexible Surfacing to Carriageways and Yard Slabs

Work involving the use of bitumen or any combination thereof shall not be continued if the temperature of the surface to be covered is at or falls below 2ºC. Nor shall it be resumed until the temperature of the surface to be covered is at or rising above 2ºC. If the surface to be covered is cleaned by the use of water the surface must be allowed to dry before any surfacing material is laid. Immediately prior to the laying of flexible surfacing the Contractor shall clean the surface of the base to remove all foreign matter and the surface must be inspected by the Engineer before proceeding with the laying of the flexible material. All gully ramps are removed at this stage.

The surfacing shall be spread by an approved mechanical paver and consolidated to the required thickness by a roller of not less than eight tonnes in weight.
The material shall be rolled in a longitudinal direction from the side to the centre of the carriageway, overlapping on successive passes by at least half the width of the last roll. Rollers shall not stand on newly laid material while there is risks that the material will be deformed. Where the laying of the wearing course is included in the same contract, it shall immediately follow the laying of the base course, but no wearing course shall be laid on any section of the road until the Engineer is satisfied that the base course is laid to his satisfaction.

In areas where, due to difficulties of access, compaction is not possible by roller such areas shall be thoroughly punned until the same degree of compaction is achieved. Where pre-coated chippings are to be rolled into the wearing course all drainage channels adjacent to kerbs shall be kept free of chippings for a width of 300mm. Over the remainder of the carriageway the minimum texture depth of the chippings shall be 3mm. The level of any point on the surface of each of the pavement courses shall conform to that shown on the drawings and shall when tested with a 3m straight edge have no depression greater than 10mm.

Where joints between laying widths, or transverse joints have to be made in wearing courses they shall be cut back to a vertical face which shall be coated completely with a grade of hot tar or hot bitumen suitable for the purpose immediately before the adjacent area is laid. In two stage construction where basecourse only is required as a first stage the basecourse shall be treated as a wearing course for the purposes of joint treatment. All joints shall be offset at least 300mm from parallel joints in the layer beneath.

2.25 Tolerances

The surface level of each layer of construction and of the prepared formation shall not deviate vertically at any point from the true level by more than the permitted tolerances indicated below.

Flexible ± 10mm
Basecourse ± 10mm
Sub-Base ± 20mm
Formation ± 25mm

In the case of flexible surfacing the wearing course on completion of construction is permitted to be 10mm high or low except, where the application of a latter in combination with the basecourse upper limit would result in a reduction of the specified thickness of the wearing

course greater than 15%.

2.26 Kerb Foundations

Precast concrete kerbs shall be laid as the placing of the concrete foundation proceeds. The concrete foundation shall be placed over a minimum width of 300mm and to an initial thickness of 200mm in order that the foundation may be consolidated to the required minimum thickness of 150mm by the laying of the kerbs themselves. The actual uncompacted thickness may have to be adjusted in the light of experience as work proceeds. The kerbs must be laid on the foundation before the concrete's initial set has taken place but in any case no later than 30 minutes after the concrete has been placed. Protection from weather shall be provided by a shield of plastic sheeting, supported so as not to touch the concrete surface until the kerbs are backed with 150mm concrete haunching.

2.27 Laying of Kerbing

The kerb shall be laid to a true alignment vertically and horizontally and be full bedded. After the kerb line has been approved by the Engineer the kerbs shall be haunched immediately with 150mm thickness of Grade 20 concrete to within 50mm of the top of the kerb. Purpose made radius kerbs shall be used for all curves of radius 12m or less. Straight kerbs of length 600mm shall be used for curves of radius exceeding 12m and straight kerbs of length 1m for curves of radius exceeding 30m and for all straight runs. The height of the kerbs above finished road surface shall be between 125mm and 150mm maximum. The Contractor shall take precautions to prevent the dislodgement of kerbs by vehicular traffic and shall make good any damaged kerbs.

2.28 Trimming of Side Slopes

The side slopes of cuttings and embankments shall be trimmed to such inclinations as are shown on the drawings or to such other profile or slope as the Engineer may direct but not exceeding in inclination of 1 in 1½.

2.29 Soiling of Side Slopes, Berms & Verges

The soiling of embankments cuttings, etc. shall be carried out to a consolidated thickness of 150mm. Prior to placing topsoil the areas shall be cleared of all brickbats, rubbish, large stones and all extraneous matter. Where seeding or planting is to follow, the surface shall be raked and cross raked or harrowed and Cambridge rolled, and rolled and cross-rolled until a fine till is obtained.

Appendix L – Correspondences to Westmeath County Council and Irish Water

David Goaley

From: David Goaley
Sent: Wednesday 12 February 2025 16:05
To: Pat Kavanagh; Kenneth Cowap; Mark Gallagher
Cc: Sean O'Neill; Sean Corcoran; Mathew Sheehan; Mark Heslin; Liam Hussey; Sean Maguire; Angeliki Kalatha; Adam Price; Trevor Sadler; cleavy@mcorm.com; swalsh@mcorm.com
Subject: RE: 241139 - Kinnegad LRD [Filed 05 Mar 2025 11:56]
Attachments: 241139-ORS-ZZ-00-DR-TR-701.pdf

Categories: Filed by Mail Manager

Hi Pat,

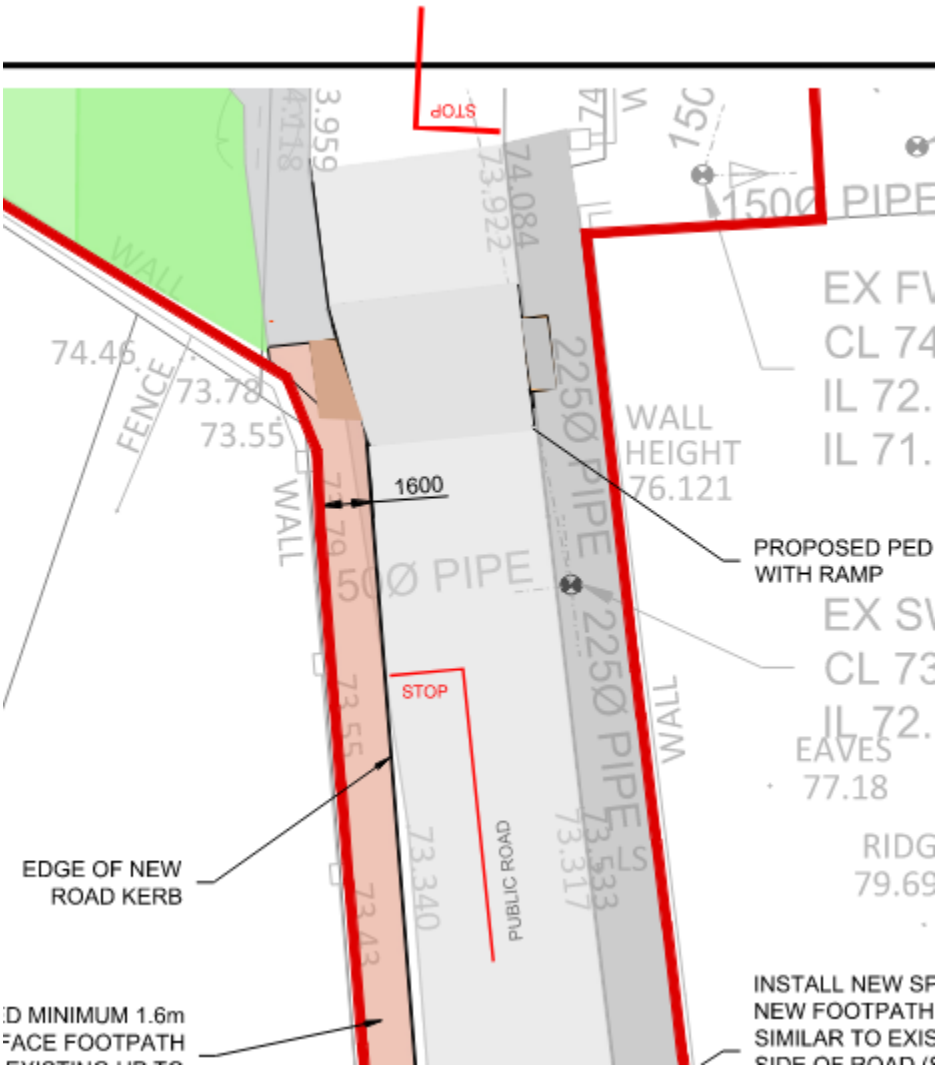
Just coming back to you in regard to our previous discussions on public footpath requirements for Kinnegad LRD planning application. We note on the attached drawing that we had shown both; raised pedestrian crossing and new public footpath.

But to note, we originally proposed a raised pedestrian crossing ramp to facilitate pedestrian crossing on Boreen Bradach Road to compensate for lack of public footpath on western side of road. This would be considered as **option 1**.

Option 2 was to install a new 1.6m wide footpath along western side of public road to link existing footpath with proposed development footpath.

Alternatively, **option 3** as per below image, we could install public footpath as requested along with stop lines on either side where we have reduced road width to control traffic movement. This would be reviewed as part of RSA report as well. Note we have not shown any pedestrian crossing (tactile paving) at this location as there is potential for confusion with vehicles using stop line and pedestrians at uncontrolled crossing.

Can you confirm of the three options outlined above, what would be LA preference, so we can detail as part of planning application? We look forward to hearing from you. Any queries feel free to get in contact with me.



Kind regards,

David Goaley
Chartered Engineer

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From: Pat Kavanagh <pkavanagh@westmeathcoco.ie>
Sent: Monday 13 January 2025 9:54 am
To: David Goaley <d.goaley@ors.ie>; Kenneth Cowap <Kenneth.Cowap@westmeathcoco.ie>
Cc: Sean O'Neill <sean.oneill@corcom.ie>; Sean Corcoran <Sean.Corcoran@corcom.ie>; Mathew Sheehan <Mathew.Sheehan@corcom.ie>; Mark Heslin <m.heslin@ors.ie>; Liam Hussey <l.hussey@ors.ie>; Sean Maguire <sean@mcgplanning.ie>; Angeliki Kalatha <a.kalatha@ors.ie>; Adam Price <a.price@ors.ie>; Trevor Sadler <trevor@mcgplanning.ie>; cleavy@mcorm.com; swalsh@mcorm.com
Subject: RE: 241139 - Kinnegad LRD [Filed 13 Jan 2025 10:25]

David,
We could reduce the footpath to 1.6m.

Pat

From: David Goaley <d.goaley@ors.ie>
Sent: Monday, January 13, 2025 9:36 AM
To: Pat Kavanagh <pkavanagh@westmeathcoco.ie>
Cc: Sean O'Neill <sean.oneill@corcom.ie>; Sean Corcoran <Sean.Corcoran@corcom.ie>; Mathew Sheehan <Mathew.Sheehan@corcom.ie>; Mark Heslin <m.heslin@ors.ie>; Liam Hussey <l.hussey@ors.ie>; Sean Maguire <sean@mcgplanning.ie>; Angeliki Kalatha <a.kalatha@ors.ie>; Adam Price <a.price@ors.ie>; Trevor Sadler <trevor@mcgplanning.ie>; cleavy@mcorm.com; swalsh@mcorm.com
Subject: RE: 241139 - Kinnegad LRD

Hi Pat,

Just wondering if you got a chance to review below query for Kinnegad Planning? Thanks

Kind regards,

David Goaley
Chartered Engineer

ORS | A World-Class Multidisciplinary Building Consultancy

www.ors.ie | +353 1554 7543 | d.goaley@ors.ie
Dublin | Cork | Mullingar | Galway | Donegal | Waterford

From: David Goaley
Sent: Friday 20 December 2024 5:13 pm
To: pkavanagh@westmeathcoco.ie
Cc: Sean O'Neill <sean.oneill@corcom.ie>; Sean Corcoran <Sean.Corcoran@corcom.ie>; Mathew Sheehan <Mathew.Sheehan@corcom.ie>; Mark Heslin <m.heslin@ors.ie>; Liam Hussey <l.hussey@ors.ie>; Sean Maguire <sean@mcgplanning.ie>; Angeliki Kalatha <a.kalatha@ors.ie>; Adam Price <a.price@ors.ie>; Trevor Sadler <trevor@mcgplanning.ie>; cleavy@mcorm.com; swalsh@mcorm.com
Subject: 241139 - Kinnegad LRD [Filed 20 Dec 2024 17:13]

Hi Pat,

We are just following up on our Stage 2 LRD meeting that we had on the proposed planning application for Kinnegad housing.

I know at the meeting it was discussed in regard to providing a linkage pedestrian footpath down the western side of Boreen Bradach. We noted at the meeting that there might not be adequate space to provide this new footpath between existing boundary walls. We have prepared a sketch drawing showing a potential 2.0m

footpath along the western side of Boreen Bradach, as requested. This 2.0m wide footpath matches footpath width on the opposite side of road. As noted on the drawing the road width is reduced down to approximately 4.87m wide when the new footpath is added.

We are just wondering with the existing road width reduced to an unacceptable level, if the proposal for a raised pedestrian ramp on Boreen Bradach would be acceptable in this instance?

SÉANADH: Níl an teachtaireacht seo beartaithe ach le húsáid ag an duine/na daoine ar a bhfuil sí dírithe. D'fhéadfadh go mbeadh sonraí pearsanta nó íogaire faoi dhaoine aonair, nó sonraí íogaire gnó, atá faoi phribhléid agus rúnda.

Mura tusa an faighteoir beartaithe, cuir in iúl don seoltóir láithreach trí fhreagra a thabhairt don ríomhphhost seo, agus ansin scrios an ríomhphost gan é a chur ar aghaidh, a phriontáil, a chóipeáil, a roinnt nó a úsáid in aon bhealach. Ba cheart sonraí pearsanta in aon fhormáid a phróiseáil de réir na Rialachán Ginearálta maidir le Cosaint Sonraí.

B'fhéidir nach gá gurb iad na tuairimí a chuirtear in iúl sa ríomhphost seo na tuairimí atá ag Comhairle Contae na hIarmhí.

Próiseálfar sonraí pearsanta a bhailímid uait de réir Fhógra Príobháideachta Chomhairlí Contae na hIarmhí. Tá Comhairle Contae na hIarmhí tar éis gach céim réasúnach a ghlacadh chun a chinntiú go bhfuil ríomhphoist slán agus go ndearnadh gach ceangaltán a sheiceáil le haghaidh víris. Cinntigh le do thoil go ndéantar gach teachtaireacht a scanadh, mar ní ghlacann an Chomhairle le haon dliteanas as éilliú nó damáiste do do chórais.

Ba chóir go mbeadh a fhios ag seoltóirí agus faighteoirí ríomhphoist go bhféadfadh sé go gcaithfí ábhar ríomhphoist a nochtadh mar fhreagairt ar iarratas mar gheall ar reachtaíocht um Chosaint Sonraí agus um Shaoráil Faisnéise na hÉireann, mar sin ba chóir a bheith cúramach maidir le hábhar."

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