



REMEDIAL ENVIRONMENTAL IMPACT ASSESSMENT

Ros an Mhíl Deep Water Quay

Chapter 14: Material Assets – Traffic & Transport

Department of Agriculture, Food and the Marine

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Appendix 14B – PICADY Junction Analysis

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14. Material Assets – Traffic & Transport

14.1 Introduction

This chapter of the remedial EIAR provides an assessment of the traffic and transport impacts associated with the works undertaken between January 2023 and May 2024 for the Ros an Mhíl Deep Water Quay development. The works undertaken prior to the expiry of the 2018 planning permission are included to facilitate the assessment of cumulative effects.

The assessment considers the potential impacts and effects that activities at the Site (as detailed in Chapter 2, Project Description) may have had on the traffic and transport infrastructure during the review period. The assessment will quantify the extent of trips generated by the works undertaken, and the impact of these trips on the local road network.

14.2 Methodology

14.2.1 Legislation, Policy and Guidance References

This chapter has been prepared in the context of the following:

- Galway County Council's Galway County Development Plan 2022-2028;
- The Transport Infrastructure Ireland (TII) Traffic and Transport Assessment (TTA) Guidelines PE-PDV-02045 May 2014;
- TII's Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections PE-PAG-02017 October 2021;
- TII's Rural Road Link Design DN-GEO-03031 May 2023;
- The UK Traffic Capacity of Urban Roads TA79/99; and
- The Environmental Protection Agency Guidelines on the Information to be Contained in Environmental Impact Assessment Reports May 2022 (EPA EIAR Guidelines).

14.2.2 Assessment Criteria

Existing baseline traffic volumes on the surrounding local road network have been established on the basis of on-site traffic surveys undertaken on the 30 April 2025 by the specialist traffic surveys' company Idaso, on behalf of MWP, and automatic traffic counter data from TII's online database for national roads.

The significance and duration of predicted impacts have been defined in accordance with the EPA EIAR Guidelines.

14.2.2.1 Forecasting Methods

Traffic capacity junction modelling analysis of the R372/R336/L1201 priority-controlled road junction has been carried out using TRL's computer software PICADY.

PICADY (Priority Intersection Capacity and Delay) is a computer software programme for calculating estimates of the capacity of major /minor road junctions, where the minor road is controlled by a stop or yield sign. The geometric details of the junction are supplied to the programme, together with details of traffic flows and turning movements. The programme analyses the junction in relation to the various traffic flows and calculates the capacity of each approach. The programme also calculates the average queue length on each approach and the average delay per vehicle. The average queue length may be displayed in graphical form.

PICADY is issued by the UK company, TRL.

14.3 Baseline Environment

14.3.1 Baseline Environment prior to January 2023

14.3.1.1 Roads and Transport Network

The Ros an Mhíl Deep Water Quay development site is located on the west side of the R372 Regional Road, at its west end. The R372 terminates adjacent to the site within the Údarás na Gaeltachta area. The R372 extends north east from the site through the Department of Agriculture, Food and the Marine (DAFM) area to the Galway County Council public roads' area. The R372 has a typical road carriageway width of 6.0 metres. Approximately 660 metres north east of the site, the R372 has a priority T-junction on its south west side with the L1200 Local Road. A Ros an Mhíl roads map is provided in **Figure 14-1**.



Figure 14-1: Ros an Mhíl Roads Map (1 of 2)

The R372 links with the R336 Regional Road at a crossroads priority junction with the L1201 Local Road, approximately 2.6 kms north east of the site. A footway is provided along the south east side of the R372 from

approximately 250 metres south west of the R372/R336/L1201 junction to Ros an Mhíl. Ros an Mhíl Community Centre is located adjacent to the north east end of the footway.

Scoil Colmcille is located approximately 1.8 kms north east of the site. Traffic calming warning signs and road markings are provided along the R372 on both approaches to the school. Recessed perpendicular car parking, located off the R372, is provided at the school on the north west side; and recessed parallel car parking is provided along the south east side of the R372, immediately north east of the school. A retail convenience shop is located opposite the school, with off-street parking.

The R372 has a 50 km/hour urban speed limit at Ros an Mhíl, from north east of Scoil Colmcille. A 25 km/hour speed limit is posted within the DAFM area from north east of the R372 roundabout junction at the entry access to the Ferry Terminal. Recessed bus parking is provided along the south west side of the R372 within the DAFM area, on the north east of the roundabout. A Stripe road marking pedestrian crossing is provided on the R372 on the south west of the roundabout, at the Ferry Car Park.

The main Ferry Car Park is located on the north west side of the R372, at the L1200 junction. A footway is provided along the north west side of the R372 between the main Ferry Car Park and the Ferry Terminal. A Fishery Harbour Public Car Park is provided at the western end of the R372, with a Stripe road marking pedestrian crossing.

Street lighting standards are provided along the R372 within the DAFM area, with on-street parking restrictions.

The L1200 has a typical road carriageway width of 5.3 metres and extends approximately 5.1 kms, from the R372 at Ros an Mhíl to the R372 in the south east.

Ros an Mhíl is served by the Bus Éireann number 424 public transport service that extends between Galway city and Lettermore.

The R336 extends from Galway city in the east to An Mám in the north west, via Maam Cross where it links with the N59 National Primary Road, as shown in **Figure 14-2**; and has a variable road carriageway width of up to circa 6.8 metres in the vicinity of its R372 junction. The N59 links Galway in the east with Clifton and Westport in the north west; and extends to the N4 National Primary Road south of Sligo in the north.

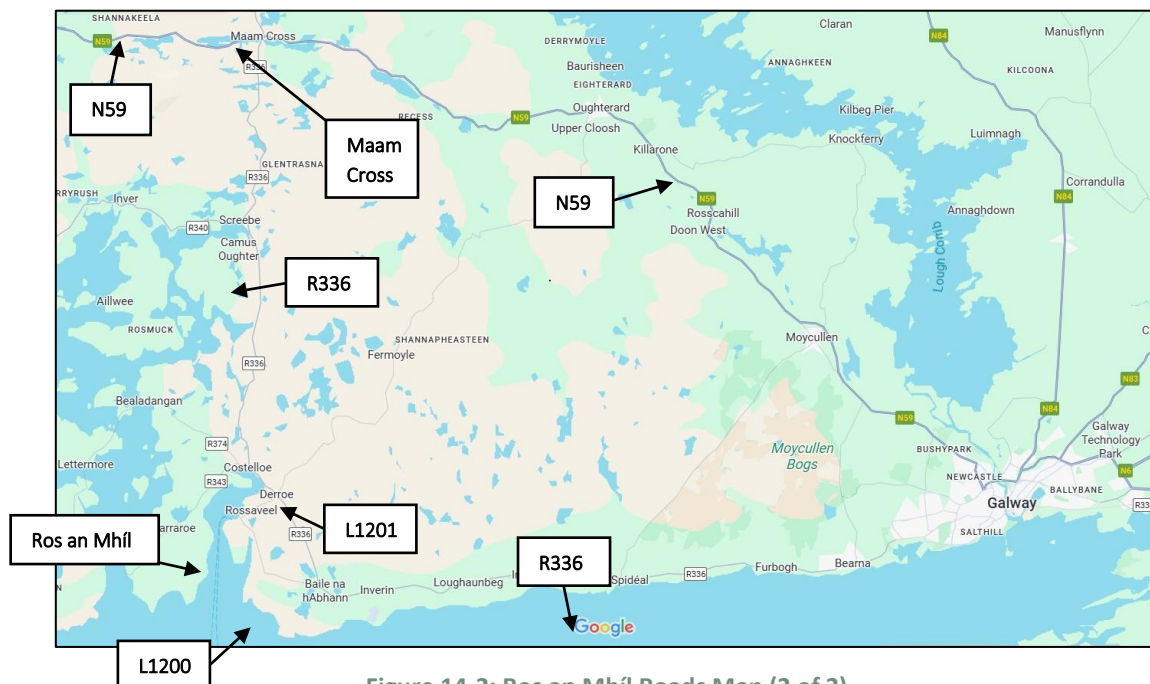


Figure 14-2: Ros an Mhíl Roads Map (2 of 2)

The R336, L1200 and R372 at Ros an Mhíl are part of the Wild Atlantic Way tourist route.

14.3.1.2 Traffic Volumes

On-site classified road traffic turning volumes were recorded by the specialist traffic surveys' company Idaso, on behalf of MWP, on Wednesday 30th April 2025, at the R372/R336/L1201 and L372/L1200/Ferry Car Park junctions, from 7.00 a.m. to 7.00 p.m. at 15 minutes' intervals. Full details of the surveys are provided in the Idaso traffic survey report in **Volume III Appendix 14A** of this rEIAR. The recorded morning and evening peak hours at each junction were 8.30 a.m. to 9.30 a.m. and 9.00 a.m. to 10.00 a.m., respectively; and 5.15 p.m. to 6.15 p.m. The recorded link and junction traffic volumes are provided in **Tables 14-1** and **14-2**, respectively.

Table 14-1: Recorded April 2025 Link Traffic Volumes

Location	Road Link	Total Two-Way Vehicles (HV's)		
		Morning Peak Hour	Evening Peak Hour	12-Hour
R372/R336/L1201 Junction	R336 South East	468 (21)	515 (9)	4,456 (160)
	R372	174 (13)	206 (2)	1,573 (89)
	R336 North West	538 (27)	574 (9)	5,039 (185)
	L1201	28 (3)	37 (0)	322 (12)
R372/L1200/Ferry Car Park Junction	R372 North East	132 (13)	143 (3)	1,078 (67)
	L1200	66 (4)	72 (2)	691 (26)
	R372 South West	97 (11)	119 (3)	716 (71)
	Ferry Car Park Access	11 (2)	8 (0)	83 (8)

Table 14-2: Recorded April 2025 Junction Traffic Volumes

Junction	Approach	Movement	Peak Hour Vehicles (HV's)	
			Morning Peak Hour	Evening Peak Hour
R372/R336/L1201	R336 North West Bound	Left	26 (3)	27 (1)
		Straight	167 (7)	287 (5)
		Right	1 (0)	7 (0)
	R372	Left	47 (2)	77 (1)
		Straight	2 (0)	6 (0)
		Right	28 (1)	43 (0)
	R336 South East Bound	Left	9 (1)	8 (0)
		Straight	243 (10)	147 (3)
		Right	65 (6)	48 (0)
	L1201	Left	3 (0)	4 (0)
		Straight	6 (1)	5 (0)

Junction	Approach	Movement	Peak Hour Vehicles (HVs)	
			Morning Peak Hour	Evening Peak Hour
R372/L1200/Ferry Car Park	R372 South West Bound	Right	7 (1)	7 (0)
		Left	23 (2)	22 (1)
		Straight	42 (7)	40 (1)
		Right	1 (0)	2 (0)
	L1201	Left	5 (0)	11 (0)
		Straight	1 (0)	2 (0)
		Right	28 (1)	22 (0)
	L372 North East Bound	Left	4 (1)	0 (0)
		Straight	35 (2)	57 (1)
		Right	9 (1)	11 (1)
	Ferry Car Park Access	Left	3 (1)	0 (0)
		Straight	0 (0)	4 (0)
		Right	2 (0)	0 (0)

The TII automatic traffic counter data for the west of Ireland tourist area national routes, including the N59 at Maam Cross, indicates that traffic volumes are highest during the summer tourist season, with highest volumes occurring during August. As Ros an Mhíl includes the Arran Island Ferries and the R336, L1200 and R372 at Ros an Mhíl are part of the Wild Atlantic Way tourist route, it is considered that highest traffic volumes would also occur during the summer tourist season, with highest volumes during August.

The TII automatic traffic counter data recorded for the N59 at Maam Cross, the nearest TII counter to Ros an Mhíl, on the same day/date as the April 30th 2025 Idaso surveys and for 2022, the latest available data prior to January 2023, including the 2022 full year Annual Average Daily Traffic (AADT) volumes and percentage of heavy goods vehicles (% HGVs), is provided in **Table 14-3**. The latest AADT data, for the latest full year, 2024, is also provided.

Table 14-3: TII Recorded N59 Traffic Volumes

Date	TII Recorded Total Two-Way Vehicles on N59 at Maam Cross			
	Morning Peak Hour	Evening Peak Hour	12-Hour	AADT (% HGVs)
Wednesday 30 th April 2025	302	361	3,238	
August 2022	408	432	4,074	
2022				3,319 (2.7%)
2024 (latest full year to 2025)				3,666 (2.6%)

The TII automatic traffic counter data recorded for the N59 at Maam Cross indicates the following:

- The morning peak hour traffic volumes during August 2022 were 35.0% higher than on the 30th April 2025;

- The evening peak hour traffic volumes during August 2022 were 19.7% higher than on the 30th April 2025;
- The 2022 AADT volumes were 2.5% higher than the 12-hour volumes on the 30th April 2025; and
- The 2024 (latest for year to 2025) AADT volumes were 10.5% higher than the 2022 AADT volumes.

Typical weekday non-peak summer tourist season 2022 morning and evening peak hour traffic volumes for the Ros an Mhíl roads have been determined on the basis of the TII recorded N59 2022/2024 AADT volumes' ratio applied to the Idaso recorded April 2025 traffic volumes. Peak season August 2022 morning and evening peak hour traffic volumes for the Ros an Mhíl roads have been determined on the basis of the TII recorded N59 August 2022/30th April 2025 morning and evening peak hour traffic volumes ratios applied to the Idaso recorded April 2025 traffic volumes. 2022 AADT volumes for the Ros an Mhíl roads have been determined on the basis of the TII recorded N59 2022 AADT/30th April 2025 12-hour traffic volumes ratio applied to the Idaso recorded April 2025 traffic volumes. These link and junction traffic volumes are provided in **Tables 14-4** and **14-5**, respectively.

Table 14-4: 2022 Baseline Link Traffic Volumes

Location	Road Link	Total Two-Way Vehicles (HVs)				AADT (HVs)
		Morning Peak Hour		Evening Peak Hour		
		Non-Peak Summer	August Peak Season	Non-Peak Summer	August Peak Season	
R372/R336/L1201 Junction	R336 South East	424 (19)	632 (28)	466 (8)	617 (10)	4,568 (164)
	R372	158 (12)	235 (18)	187 (2)	246 (3)	1,612 (91)
	R336 North West	487 (25)	727 (37)	520 (8)	687 (10)	5,165 (190)
	L1201	25 (3)	38 (4)	34 (0)	45 (0)	330 (12)
R372/L1200 Junction	R372 North East	120 (12)	178 (18)	130 (3)	172 (4)	1,105 (69)
	L1200	60 (4)	89 (6)	65 (2)	86 (3)	708 (27)
	R372 South West	88 (10)	131 (15)	108 (3)	142 (4)	734 (73)

Table 14-5: 2022 Baseline Junction Traffic Volumes

Junction	Approach	Movement	Peak Hour Vehicles (HVs)			
			Morning Peak Hour		Evening Peak Hour	
			Non-Peak Summer	August Peak Season	Non-Peak Summer	August Peak Season
R372/R336/L1201	R336 North West Bound	Left	24 (3)	36 (3)	25 (1)	32 (1)
		Straight	151 (6)	226 (9)	260 (5)	344 (6)
		Right	1 (0)	2 (0)	6 (0)	9 (0)

Junction	Approach	Movement	Peak Hour Vehicles (HVs)			
			Morning Peak Hour		Evening Peak Hour	
			Non-Peak Summer	August Peak Season	Non-Peak Summer	August Peak Season
	R372	Left	43 (2)	64 (3)	70 (1)	92 (1)
		Straight	2 (0)	3 (0)	5 (0)	8 (0)
		Right	25 (1)	38 (2)	39 (0)	51 (0)
	R336 South East Bound	Left	8 (1)	12 (1)	7 (0)	10 (0)
		Straight	220 (9)	328 (14)	133 (3)	176 (4)
		Right	59 (5)	88 (8)	44 (0)	58 (0)
	L1201	Left	3 (0)	4 (0)	4 (0)	5 (0)
		Straight	5 (1)	8 (1)	5 (0)	6 (0)
		Right	6 (1)	9 (1)	6 (0)	9 (0)

The TII Rural Road Link Design DN-GEO-03031 May 2023 rural road link capacities for road carriageway widths of 6.0 metres and 7.0 metres, respectively, with rural speed limits, are provided in **Table 14-6**. The TII rural road link capacities are an AADT capacity at Level of Service (LOS) D. TII does not provide rural road link capacities for rural roads with road carriageway widths of less than 6.0 metres.

Table 14-6: TII Rural Road Link Capacities

TII Rural Road Link		
Type	Carriageway Width (m)	AADT Capacity (Vehicles)
Type 3 Single	6.0	5,000
Type 2 Single	7.0	8,600

The estimated existing rural road link AADT volume/capacity ratios for the R372 and R336 rural roads in the vicinity of the subject development are provided in **Table 14-7**, on the basis of the TII Rural Road Link Design, for the year 2022.

Table 14-7: Estimated TII Regional Rural Road Link 2022 AADT Volume/Capacity Ratios

Rural Road with Rural Speed Limit	2022 AADT Vehicles	Estimated AADT Capacity (Vehicles) @ LOS D	Estimated AADT Volume/Capacity Ratio
R372 @ R336	1,612	5,000	32%
R336 North West	5,165	8,600	60%
R336 South East	4,568	8,600	53%

The rural R372 is operating within its estimated rural road link AADT capacity, with a 2022 volume/capacity ratio of circa 32%. The R336, north west and south east of it R372 junction, is operating within its estimated rural road link AADT capacity, with volume/capacity ratios of circa 60% and circa 53%, respectively.

The urban road link capacity of the R372 at Ros an Mhíl, within its 50 km/hour urban speed limit zone, estimated on the basis of the Traffic Capacity of Urban Roads TA79/99, is provided in **Table 14-8**. The capacity is per direction based on a 60/40 directional split.

Table 14-8: Estimated R372 Urban Road Link Capacity

Urban Road	Urban Road Link			
	Type	Lanes	Carriageway Width (m)	Capacity/Hour/Direction (Vehicles)
R372 @ Ros an Mhíl	UAP4	2	6.1	750

The estimated 2022 urban road link peak hour volume/capacity ratios for the R372 at Ros an Mhíl are provided in **Table 14-9**, on the basis of the Traffic Capacity of Urban Roads TA 79/99.

Table 14-9: Estimated R372 Urban Road Link 2022 Peak Hour Volume/Capacity Ratios

Urban Road	2022 Period	Highest Direction Peak Hour Vehicles	Estimated Capacity/Hour/Direction (Vehicles)	Estimated Volume/Capacity Ratio
R372 @ Ros an Mhíl	Non-Peak Summer	114	750	15%
	August Peak Season	151	750	20%

The urban R372 at Ros an Mhíl, within its 50 km/hour urban speed limit zone, is operating well within its estimated urban road link capacity, with highest volume/capacity ratios during the 2022 non-peak summer and August peak season peak hours of 15% and 20%, respectively.

14.3.2 Baseline Environment 26th January 2023 to 20th May 2024

14.3.2.1 Roads and Transport Network

The baseline environment roads and transport network during the period from 26th January 2023 to 20th May 2024 was as described in **Section 14.3.1.1**.

14.3.2.2 Traffic Volumes

The 2022, 2023 and 2024 AADT volumes and August morning and evening peak hour traffic volumes, recorded by TII at their automatic traffic counter on the N59 at Maam Cross, the nearest TII counter to Ros an Mhíl, are provided in **Table 14-10**.

Table 14-10: TII Recorded N59 Traffic Volumes

Year	TII Recorded Total Two-Way Vehicles on N59 at Maam Cross		
	August Morning Peak Hour	August Evening Peak Hour	AADT (% HGVs)
2022	408	432	3,319 (2.7%)
2023	435	456	3,550 (2.8%)
2024	439	452	3,666 (2.6%)

The TII automatic traffic counter data recorded for the N59 at Maam Cross indicates the following:

- The morning peak hour traffic volumes during August 2023 were 6.6% higher than during August 2022;
- The evening peak hour traffic volumes during August 2023 were 5.6% higher than during August 2022;
- The 2023 AADT volumes were 7.0% higher than the 2022 AADT volumes; and
- The 2024 AADT volumes were 10.5% higher than the 2022 AADT volumes.

Weekday non-peak summer tourist season 2023 and 2024 morning and evening peak hour traffic volumes for the Ros an Mhíl roads have been determined on the basis of the TII recorded N59 2023/2022 and 2024/2022 AADT volumes ratios applied, respectively, to the 2022 traffic volumes. Peak season August 2023 morning and evening peak hour traffic volumes for the Ros an Mhíl roads have been determined on the basis of the TII recorded N59 August 2023/August 2022 morning and evening peak hour traffic volumes ratios applied to the August 2022 traffic volumes. 2023 and 2024 AADT volumes for the Ros an Mhíl roads have been determined on the basis of the TII recorded N59 2023 AADT/2022 AADT and 2024 AADT/2022 AADT ratios applied, respectively, to the 2022 AADT volumes. These link and junction traffic volumes are provided in **Tables 14-11** and **14-12**, respectively.

Table 14-11: 2023 and 2024 Baseline Link Traffic Volumes

Location	Road Link	Total Two-Way Vehicles (HVs)							
		Morning Peak Hour			Evening Peak Hour			AADT (HVs)	
		2023 Non-Peak Summer	2024 Non-Peak Summer	2023 August Peak Season	2023 Non-Peak Summer	2024 Non-Peak Summer	2023 August Peak Season	2023	2024
R372/R336/L1201 Junction	R336 South East	454 (20)	469 (21)	674 (30)	499 (9)	515 (9)	652 (11)	4,888 (176)	5,048 (181)
	R372	169 (13)	175 (13)	251 (19)	200 (2)	207 (2)	260 (3)	1,725 (97)	1,781 (101)
	R336 North West	521 (27)	538 (28)	775 (39)	557 (9)	575 (9)	726 (11)	5,526 (203)	5,707 (210)
	L1201	27 (3)	28 (3)	41 (4)	36 (0)	38 (0)	48 (0)	353 (13)	365 (13)
R372/L1200 Junction	R372 North East	128 (13)	133 (13)	190 (19)	139 (3)	144 (3)	182 (4)	1,182 (74)	1,221 (76)
	L1200	64 (4)	66 (4)	95 (6)	70 (2)	72 (2)	91 (3)	758 (29)	782 (30)
	R372 South West	94 (11)	97 (11)	140 (16)	116 (3)	119 (3)	150 (4)	785 (78)	800 (81)

Table 14-12: 2023 and 2024 Baseline Junction Traffic Volumes

Junction	Approach	Movement	Peak Hour Vehicles (HVVs)					
			Morning Peak Hour			Evening Peak Hour		
			2023 Non-Peak Summer	2024 Non-Peak Summer	2023 August Peak Season	2023 Non-Peak Summer	2024 Non-Peak Summer	2023 August Peak Season
R372/R336/L1201	R336 North West Bound	Left	26 (3)	27 (3)	38 (3)	27 (1)	28 (1)	34 (1)
		Straight	162 (6)	167 (7)	241 (10)	278 (5)	287 (6)	363 (6)
		Right	1 (0)	1 (0)	2 (0)	6 (0)	7 (0)	10 (0)
	R372	Left	46 (2)	48 (2)	68 (3)	75 (1)	77 (1)	97 (1)
		Straight	2 (0)	2 (0)	3 (0)	5 (0)	6 (0)	8 (0)
		Right	27 (1)	28 (1)	41 (2)	42 (0)	43 (0)	54 (0)
	R336 South East Bound	Left	9 (1)	9 (1)	13 (1)	8 (0)	8 (0)	11 (0)
		Straight	235 (10)	243 (10)	350 (15)	142 (3)	147 (3)	186 (4)
		Right	63 (5)	65 (6)	94 (9)	47 (0)	49 (0)	61 (0)
	L1201	Left	3 (0)	3 (0)	4 (0)	4 (0)	4 (0)	5 (0)
		Straight	5 (1)	6 (1)	9 (1)	5 (0)	6 (0)	6 (0)
		Right	6 (1)	7 (1)	10 (1)	6 (0)	7 (0)	10 (0)

The estimated existing rural road link AADT volume/capacity ratios for the R372 and R336 rural roads in the vicinity of the subject development are provided in **Table 14-13**, on the basis of the TII Rural Road Link Design, for the years 2023 and 2024.

Table 14-13: Estimated TII Regional Rural Road Link 2023 and 2024 AADT Volume/Capacity Ratios

Rural Road with Rural Speed Limit	Year	AADT Vehicles	Estimated AADT Capacity (Vehicles) @ LOS D	Estimated AADT Volume/Capacity Ratio
R372 @ R336	2023	1,725	5,000	35%
	2024	1,781		36%
R336 North West	2023	5,526	8,600	64%
	2024	5,707		66%
R336 South East	2023	4,888	8,600	57%
	2024	5,048		59%

The rural R372 is operating within its estimated rural road link AADT capacity, with 2023 and 2024 volume/capacity ratios of circa 35% and 36%, respectively. The R336, north west and south east of it R372 junction, is operating within its estimated rural road link AADT, with 2023 and 2024 volume/capacity ratios of circa 64%, 66%, 57% and 59%, respectively.

The estimated 2023 and 2024 urban road link peak hour volume/capacity ratios for the R372 at Ros an Mhíl are provided in **Table 14-14**, on the basis of the Traffic Capacity of Urban Roads TA 79/99.

Table 14-14: Estimated R372 Urban Road Link 2023 and 2024 Peak Hour Volume/Capacity Ratios

Urban Road	Year/Period	Highest Direction Peak Hour Vehicles	Estimated Capacity/Hour/ Direction (Vehicles)	Estimated Volume/Capacity Ratio
R372 @ Ros an Mhíl	2024 Non-Peak Summer	126	750	17%
	2023 August Peak Season	159		21%
	2023 Non-Peak Summer	122		16%

The urban R372 at Ros an Mhíl, within its 50 km/hour urban speed limit zone, is operating well within its estimated urban road link capacity, with highest volume/capacity ratios during the 2024 non-peak summer, 2023 August peak season and 2023 non-peak summer peak hours of 17%, 21% and 16%, respectively.

14.4 Description of Likely Effects

14.4.1 Construction Phase Activities

A total of 15 months of construction works were completed between January 2023 and the 20th May 2024.

The previous development works included:

- Mobilisation and development of the construction compound and facilities;
- Reclamation works – Rock fill material was imported to reclaim land from the sea and raise the ground level to the high-water mark (+5mCD). This reclaimed land was then used as a construction surface;
- Sequential construction and movement of the 20 drilling and blasting platforms over the quay wall and berthing pocket using imported quarry rock;
- Dredging works to remove the blasted seabed and construct the protective berm around the quay wall trench;
- installation of 75m of rock armour revetments on the northern and southern ends of the reclamation area;
- Installation of the on-site concrete batching plant;
- Offsite manufacture and delivery of precast concrete caissons. 358 were manufactured and 92 were delivered to site;
- Offsite manufacture of the L-shaped blocks for wall and foundation beams;
- Installation of 48m of quay wall foundations.

Upon confirmation that the planning permission had expired and would not be extended, all construction materials, equipment and facilities were dismantled and removed from the site.

There are several factors that could affect water quality in the vicinity of the development. This includes effects from reclamation, dredging, blasting, pollution from oil/fuel spills, and sedimentation from flood events.

14.4.2 Mitigation Measures Applied

A suitable Traffic Management was put in place to reduce the impact on the surrounding environment. Equipment used in transport including trucks/ tractors/trailers were appropriate for the site. Machinery and other equipment were serviced regularly and the roads were kept clean and free from debris.

The traffic mitigation measures applied during the previous works included:

- The construction vehicles arrived at the site in a staggered manner, meaning not all vehicles arrived at site at the same time;
- Construction and development HGV traffic were prohibited from using the Ballynahown Road “Back-Road” to access the site, and were directed to use the R336;
- Construction traffic avoided the peak hours 8-9am and 5-6pm, and or otherwise as agreed with Galway County Council. At the very least a reduction in traffic movements was applied during these time periods; and,
- To address safety concerns HGV traffic was avoided during school closing times where possible,
- Traffic management was addressed in a Construction Traffic Management Plan to minimise impacts on local and tourist traffic. The CTMP was prepared in consultation with Galway County Council, Gardaí Síochána and emergency services and incorporated best practice implementation for the free-flow of traffic during the construction stage.

14.4.3 Traffic for previous works undertaken between 26th January 2023 and 10th July 2023

During the period of the valid planning permission, from 26th January 2023 to 10th July 2023, the total number of deliveries of stone to the site, both for filling and rock armour, was 15,023 heavy vehicle truck loads. The delivery trucks used comprised of two capacity sizes - 20 tonnes and 30 tonnes load carrying capacity.

The number of trucks entering and leaving the site varied but the maximum number of trucks per day was 300 truck loads. Deliveries in excess of 150 truck loads per day occurred for a period of three months, during the early part of 2023, when the valid planning permission was in place.

A maximum of 30 construction personnel were on site per day, including all management, engineering, tradesmen, general operatives and machine operators.

During the period of the valid planning permission, from 26th January 2023 to 10th July 2023, the Ros an Mhíl Deep Water Quay development construction site access included an access at the north east of the site, adjacent to the construction site compound, and an access at the southern end of the site. The construction site compound included temporary site offices, staff welfare facilities, staff car parking, and lay down areas.

Normal working hours during the construction period were Monday to Friday 8.00 a.m. to 8.00 p.m. and Saturday 8.00 a.m. to 3.00 p.m. All personnel arrived on site for 8.00 a.m., prior to the morning peak traffic hour; and some personnel left site prior to 8.00 p.m. including during the evening peak traffic hour.

The total peak daily, average daily and peak hour traffic volumes generate during construction between 26th January 2023 to 10th July 2023 are provided in **Table 14-15**.

Table 14-15: Construction Traffic Volumes 26th January to 10th July 2023

Period/Time	Construction Traffic Type	Vehicles (HVs)		
		Inbound	Outbound	Total Two-Way
Peak Daily (Maximum)	Deliveries	300 (300)	300 (300)	600 (600)
	Personnel	30	30	60
	Total	330 (300)	330 (300)	660 (600)
Typical Daily (Weekday)	Deliveries	114 (114)	114 (114)	228 (228)
	Personnel	30	30	60
	Total	144 (114)	144 (114)	288 (228)
Morning Peak Hour	Deliveries	10 (10)	10 (10)	20 (20)
	Personnel	0	0	0
	Total	10 (10)	10 (10)	20 (20)
Evening Peak Hour	Deliveries	10 (10)	10 (10)	20 (20)
	Personnel	0	10	10
	Total	10 (10)	20 (10)	30 (20)

The quarry sourced construction materials' deliveries to site from 26th January 2023 to 10th July 2023 were via the R336, both east and north west of its R372 junction. The vast majority of construction personnel also travelled to and from site via the R336, and its R372 junction, with a relatively low minority proportion of circa 10% travelling via the L1200 on some days.

The 2023 link and junction traffic volumes, with the authorised construction works undertaken from 26th January 2023 to 10th July 2023, are provided in **Tables 14-16** and **14-17**, respectively.

Table 14-16: 26th January 2023 to 10th July 2023 Link Traffic Volumes with Construction

Location	Road Link	2023 Morning Peak Hour		2023 Evening Peak Hour		Typical Daily	
		Total Vehicles (HVs) With Construction	Change	Total Vehicles (HVs) With Construction	Change	Total Vehicles (HVs) With Construction	Change
R372/R336/L1201 Junction	R336 South East	464 (30)	+10 (10)	514 (19)	+15 (10)	5,032 (290)	+144 (114)
	R372	189 (33)	+20 (20)	230 (23)	+30 (20)	2,013 (325)	+288 (228)
	R336 North West	531 (37)	+10 (10)	572 (19)	+15 (10)	5,670 (316)	+144 (114)
	L1201	27 (3)	0	36 (0)	0	353 (13)	0
R372/L1200 Junction	R372 North East	148 (33)	+20 (20)	169 (23)	+30 (20)	1,470 (302)	+288 (228)
	L1200	64 (4)	0	71 (2)	+1	764 (29)	+6
	R372 South West	114 (31)	+20 (20)	146 (23)	+30 (20)	1,073 (306)	+288 (228)

Table 14-17: 26th January 2023 to 10th July 2023 Junction Traffic Volumes with Construction

Junction	Approach	Movement	2023 Morning Peak Hour Vehicles (HVs)	2023 Evening Peak Vehicles (HVs)
R372/R336/ L1201	R336 North West Bound	Left	31 (8)	32 (6)
		Straight	162 (6)	278 (5)
		Right	1 (0)	6 (0)
	R372	Left	51 (7)	85 (6)
		Straight	2 (0)	5 (0)
		Right	32 (6)	52 (5)
	R336 South East Bound	Left	9 (1)	8 (0)
		Straight	235 (10)	142 (3)
		Right	68 (10)	52 (5)
	L1201	Left	3 (0)	4 (0)
		Straight	5 (1)	5 (0)
		Right	6 (1)	6 (0)

The authorised construction works undertaken from 26th January 2023 to 10th July 2023 increased morning and evening peak hour traffic volumes by 20 vehicles and 30 vehicles, respectively, on the R372; and by 10 vehicles and 15 vehicles, respectively, on the R336. The equivalent typical daily increases were 288 vehicles and 144 vehicles, respectively.

The estimated 2023 rural road link Average Daily Traffic (ADT) volume/capacity ratios for the R372 and R336 rural roads in the vicinity of the subject development, with the authorised construction works undertaken from 26th January 2023 to 10th July 2023, are provided in **Table 14-18**, on the basis of the TII Rural Road Link Design.

Table 14-18: Estimated TII Regional Rural Road Link 26th January 2023 to 10th July 2023 ADT Volume/Capacity Ratios with Construction

Rural Road with Rural Speed Limit	ADT Vehicles	Estimated ADT Capacity (Vehicles) @ LOS D	Estimated ADT Volume/Capacity Ratio
R372 @ R336	2,013	5,000	40%
R336 North West	5,670	8,600	66%
R336 South East	5,032	8,600	59%

The rural R372 operated within its estimated rural road link ADT capacity, during the authorised construction works undertaken from 26th January 2023 to 10th July 2023, with a volume/capacity ratio of circa 40%, compared to 35% without construction. The R336, north-west and south-east of it R372 junction, operated within its estimated rural road link ADT capacity, during the authorised construction works undertaken from 26th January 2023 to 10th July 2023, with volume/capacity ratios of 66% and 59%, respectively, compared to ratios of 64% and 57%, respectively, without construction.

The estimated 2023 urban road link peak hour volume/capacity ratio for the R372 at Ros an Mhíl, with the authorised construction works undertaken from 26th January 2023 to 10th July 2023, are provided in **Table 14-19**, on the basis of the Traffic Capacity of Urban Roads TA 79/99.

Table 14-19: Estimated R372 Urban Road Link 26th January 2023 to 10th July 2023 Peak Hour Volume/Capacity Ratio with Construction

Urban Road	Highest Direction Peak Hour Vehicles	Estimated Capacity/Hour/ Direction (Vehicles)	Estimated Volume/Capacity Ratio
R372 @ Ros an Mhíl	142	750	19%

The urban R372 at Ros an Mhíl, within its 50 km/hour urban speed limit zone, operated well within its estimated urban road link capacity, during the authorised construction works undertaken from 26th January 2023 to 10th July 2023, with a highest volume/capacity ratio of 19%, compared to 16% without construction.

The existing R372/R336/L1201 junction has been analysed using the computer modelling software PICADY, for the 2023 morning and evening peak hour volumes, during the authorised construction works period from 26th January 2023 to 10th July 2023, both with and without construction.

Full details of the PICADY junction capacity analysis are provided in **Volume III Appendix 14B** of this rEIAR. The results are summarised in **Table 14-20**.

Table 14-20: PICADY R372/R336/L1201 Junction Capacity Analysis 26th January 2023 to 10th July 2023

26 th January 2023 to 10 th July 2023 Peak Hour	Development Scenario	Highest Ratio of Flow to Capacity (RFC) @ 15 Minutes Intervals	Highest Mean Maximum Queue Length (vehicles) @ 15 Minutes Intervals	Highest Junction Delay per Vehicle Movement (minutes) for Total Time Period
Morning Peak Hour	Without Construction	0.148	0.3	0.19
	With Construction	0.188	0.3	0.20
Evening Peak Hour	Without Construction	0.241	0.3	0.16
	With Construction	0.305	0.4	0.16

PICADY identifies a Ratio of Flow to Capacity (RFC) of 0.900 as the practical capacity of a junction.

The PICADY analysis indicates that the existing R372/R336/L1201 junction operated well within practical capacity, without any significant traffic queues and delays, during the authorised construction works period from 26th January 2023 to 10th July 2023, both with and without construction.

The existing R372/R336/L1201 junction operated with a highest RFC of 0.305 and delays per vehicle of up to 0.20 minutes, with construction. These compare with a highest RFC of 0.241 and delays per vehicle of up to 0.19 minutes, without construction.

14.4.3.1 Traffic Effect Rating

On the basis of the EPA Guidelines, the authorised construction works undertaken from 26th January 2023 to 10th July 2023, had **slight to moderate temporary and local negative effects** on the operating capacity of the road networks. See **Table 14-21** below.

At the start of the construction works, the DAFM was contacted by the Local Primary School Board of Management (Scoil Colmcille) regarding safety concerns they have for the school children because of the speed of some of the construction traffic passing the school. This was immediately resolved by the contractor by ensuring construction HGV movements to and from the site were restricted during the periods of the Scoil Colmcille school starting time of 8.45 a.m. and 9.00 a.m. and finishes times from 2.30 p.m. and 2.50 p.m.

Table 14-21: Construction Phase Traffic Effects 26 Jan 2023 to 10 July 2023

Impact	Quality of Effect	Post-Mitigation Significance	Spatial Extent	Duration	Other Relevant Criteria
Increased Traffic on road network	Negative	Slight to Moderate	Local	Temporary	Direct
School Safety concerns	Negative	Moderate	Local	Brief	Direct

14.4.4 Traffic for Previous Works between 11th July 2023 and 20th May 2024

During the period of the unpermitted development works from 11th July 2023 to 20th May 2024, the total number of deliveries was circa 645 heavy vehicle truck loads.

A total of 4,700 tonnes of rock for filling was delivered to site during the unpermitted development works from 11th July 2023 to 20th May 2024, via a total of 205 truckloads.

A total of 1,322 m³ (2,247 tonnes) of rock armour was imported during the unpermitted development works from 11th July 2023 to 20th May 2024, but was not used on site and was subsequently removed off site. A combination of 20 tonnes and 30 tonnes trucks were used to transport the materials

A total of 400 m³ (680 tonnes) of concrete making materials (sand, gravel and cement, etc.) were delivered to site during the unpermitted development works period.

The deliveries during the unpermitted development works period also included 92 truckloads that delivered 92 caissons, which were subsequently removed from site and returned to the manufacturers for storage; two L-shaped units at one unit per delivery; and 48 foundation beams, via six truck loads.

A total of 40 foundation beams were removed from site and returned to the manufacturers for storage, via four truck loads.

All the construction compound facilities were removed from site, including the concrete patching plant and 210 m³ (357 tonnes) of concrete making materials, via 30 truckloads.

A maximum of 30 construction personnel were on site per day, including all management, engineering, tradesmen, general operatives and machine operators.

During the period of the unpermitted development works from 11th July 2023 to 20th May 2024, the Ros an Mhíl Deep Water Quay development construction site access included an access at the north east of the site, adjacent

to the construction site compound, and an access at the southern end of the site. The construction site compound included temporary site offices, staff welfare facilities, staff car parking, and lay down areas.

Normal working hours during the construction period were Monday to Friday 8.00 a.m. to 8.00 p.m. and Saturday 8.00 a.m. to 3.00 p.m. All personnel arrived on site for 8.00 a.m., prior to the morning peak traffic hour; and some personnel left site prior to 8.00 p.m. including during the evening peak traffic hour.

The total peak daily, average daily and peak hour traffic volumes generate during the unpermitted development works from 11th July 2023 to 20th May 2024 are provided in **Table 14-22**.

Table 14-22: Construction Traffic Volumes 11th July 2023 to 20th May 2024

Period/Time	Construction Traffic Type	Vehicles (HVs)		
		Inbound	Outbound	Total Two-Way
Peak Daily (Maximum)	Deliveries	30 (30)	30 (30)	60 (60)
	Personnel	30	30	60
	Total	60 (30)	60 (30)	120 (60)
Typical Daily (Weekday)	Deliveries	3 (3)	3 (3)	6 (6)
	Personnel	30	30	60
	Total	33 (3)	33 (3)	66 (6)
Morning Peak Hour	Deliveries	1 (1)	1 (1)	2 (2)
	Personnel	0	0	0
	Total	1 (1)	1 (1)	2 (2)
Evening Peak Hour	Deliveries	1 (1)	1 (1)	2 (2)
	Personnel	0	10	10
	Total	1 (1)	11 (1)	12 (2)

The construction materials' deliveries to and from site from 11th July 2023 to 20th May 2024 were via the R336, both east and north west of its R372 junction. The vast majority of construction personnel also travelled to and from site via the R336, and its R372 junction, with a relatively low minority proportion of circa 10% travelling via the L1200 on some days.

The 2023 and 2024 link and junction traffic volumes, with the unpermitted development construction works from 11th July 2023 to 20th May 2024, are provided in **Tables 14-23, 14-24 and 14-25**, respectively.

Table 14-23: 11th July 2023 to 20th May 2024 Peak Hour Link Traffic Volumes with Construction

Location	Road Link	Morning Peak Hour With Construction				Evening Peak Hour With Construction			
		2023 August Peak Season		2024 Non Peak Summer		2023 August Peak Season		2024 Non Peak Summer	
		Total Vehicles (HVs)	Change	Total Vehicles (HVs)	Change	Total Vehicles (HVs)	Change	Total Vehicles (HVs)	Change
	R336 South East	675 (31)	+1 (1)	470 (22)	+1 (1)	658 (12)	+6 (1)	521 (10)	+6 (1)

Location	Road Link	Morning Peak Hour With Construction				Evening Peak Hour With Construction			
		2023 August Peak Season		2024 Non Peak Summer		2023 August Peak Season		2024 Non Peak Summer	
		Total Vehicles (HVs)	Change	Total Vehicles (HVs)	Change	Total Vehicles (HVs)	Change	Total Vehicles (HVs)	Change
R372/R336/ L1201 Junction	R372	253 (21)	+2 (2)	177 (15)	+2 (2)	272 (5)	+12 (2)	219 (4)	+12 (2)
	R336 North West	776 (40)	+1 (1)	539 (29)	+1 (1)	732 (12)	+6 (1)	581 (10)	+6 (1)
	L1201	41 (4)	0	28 (3)	0	48 (0)	0	38 (0)	0
R372/L1200 Junction	R372 North East	192 (21)	+2 (2)	135 (15)	+2 (2)	194 (6)	+12 (2)	156 (5)	+12 (2)
	L1200	95 (6)	0	66 (4)	0	92 (3)	+1	73 (2)	+1
	R372 South West	142 (18)	+2 (2)	99 (13)	+2 (2)	162 (6)	+12 (2)	131 (5)	+12 (2)

Table 14-24: 11th July 2023 to 20th May 2024 Typical Daily Link Traffic Volumes with Construction

Location	Road Link	Typical Daily			
		2023 Typical Daily with Construction		2024 Typical Daily with Construction	
		Total Vehicles (HVs)	Change	Total Vehicles (HVs)	Change
R372/R336/ L1201 Junction	R336 South East	4,921 (179)	+33 (3)	5,081 (184)	+33 (3)
	R372	1,791 (103)	+66 (6)	1,847 (107)	+66 (6)
	R336 North West	5,559 (206)	+33 (3)	5,740 (213)	+33 (3)
	L1201	353 (13)	0	365 (13)	0
R372/L1200 Junction	R372 North East	1,248 (80)	+66 (6)	1,287 (84)	+66 (6)
	L1200	758 (35)	+6	788 (30)	+6
	R372 South West	851 (84)	+66 (6)	866 (87)	+66 (6)

Table 14-25: 11th July 2023 to 20th May 2024 Junction Traffic Volumes with Construction

Junction	Approach	Movement	2023 Morning Peak Hour Vehicles (HVs)		2023 Evening Peak Vehicles (HVs)	
			2023 August Peak Season	2024 Non-Peak Summer	2023 August Peak Season	2024 Non-Peak Summer
R372/R336/L1201	R336 North West Bound	Left	39 (4)	28 (4)	35 (2)	29 (2)
		Straight	241 (10)	167 (7)	363 (6)	287 (6)
		Right	2 (0)	1 (0)	10 (0)	7 (0)

Junction	Approach	Movement	2023 Morning Peak Hour Vehicles (HVs)		2023 Evening Peak Vehicles (HVs)	
			2023 August Peak Season	2024 Non-Peak Summer	2023 August Peak Season	2024 Non-Peak Summer
	R372	Left	68 (3)	48 (2)	102 (1)	82 (1)
		Straight	3 (0)	2 (0)	8 (0)	6 (0)
		Right	42 (3)	29 (2)	60 (1)	49 (1)
	R336 South East Bound	Left	13 (1)	9 (1)	11 (0)	8 (0)
		Straight	350 (15)	243 (10)	186 (4)	147 (3)
		Right	94 (9)	65 (6)	61 (0)	49 (0)
	L1201	Left	4 (0)	3 (0)	5 (0)	4 (0)
		Straight	9 (1)	6 (1)	6 (0)	6 (0)
		Right	10 (1)	7 (1)	10 (0)	7 (0)

The unpermitted development construction works from 11th July 2023 to 20th May 2024 increased morning and evening peak hour traffic volumes by two vehicles and twelve vehicles, respectively, on the R372; and by one vehicle and six vehicles, respectively, on the R336. The equivalent typical daily increases were 66 vehicles and 33 vehicles, respectively.

The estimated 2023 and 2024 rural road link Average Daily Traffic (ADT) volume/capacity ratios for the R372 and R336 rural roads in the vicinity of the subject development, with the unpermitted development construction works from 11th July 2023 to 20th May 2024, are provided in **Table 14-26**, on the basis of the TII Rural Road Link Design.

Table 14-26: Estimated TII Regional Rural Road Link 11th July 2023 to 20th May 2024 ADT Volume/Capacity Ratios with Construction

Rural Road with Rural Speed Limit	Year	ADT Vehicles	Estimated ADT Capacity (Vehicles) @ LOS D	Estimated ADT Volume/Capacity Ratio
R372 @ R336	2023	1,791	5,000	36%
	2024	1,847		37%
R336 North West	2023	5,559	8,600	65%
	2024	5,740		67%
R336 South East	2023	4,921	8,600	57%
	2024	5,081		59%

The rural R372 operated within its estimated rural road link ADT capacity, during the unpermitted development construction works from 11th July 2023 to 20th May 2024, with a volume/capacity ratio of up to circa 37%, compared to 36% without construction. The R336, north west and south east of it R372 junction, operated within its estimated rural road link ADT capacity, during the unpermitted development construction works from 11th July 2023 to 20th May 2024, with volume/capacity ratios of up to circa 67% and 59%, respectively, compared to ratios of 66% and 59%, respectively, without construction.

The estimated 2023 and 2024 urban road link peak hour volume/capacity ratios for the R372 at Ros an Mhíl, with the unpermitted development construction works from 11th July 2023 to 20th May 2024, are provided in **Table 14-27**, on the basis of the Traffic Capacity of Urban Roads TA 79/99.

Table 14-27: Estimated R372 Urban Road Link 11th July 2023 to 20th May 2024 Peak Hour Volume/Capacity Ratios with Construction

Urban Road	Year/Period	Highest Direction Peak Hour Vehicles	Estimated Capacity/Hour/Direction (Vehicles)	Estimated Volume/Capacity Ratio
R372 @ Ros an Mhíl	2023 August Peak Season	170	750	23%
	2024 Non-Peak Summer	137		18%

The urban R372 at Ros an Mhíl, within its 50 km/hour urban speed limit zone, operated well within its estimated urban road link capacity, during the unpermitted development construction works from 11th July 2023 to 20th May 2024, with a highest volume/capacity ratio of 23%, compared to 21% without construction.

The existing R372/R336/L1201 junction has been analysed using the computer modelling software PICADY, for the 2023 August peak season morning and evening peak hour volumes (which are higher than the 2024 non-summer peak), during the unpermitted development construction works from 11th July 2023 to 20th May 2024, both with and without construction.

Full details of the PICADY junction capacity analysis are provided in **Volume III Appendix 14B** of this rEIAR. The results are summarised in **Table 14-28**.

Table 14-28: PICADY R372/R336/L1201 Junction Capacity Analysis 11th July 2023 to 20th May 2024

11 th July 2023 to 20 th May 2024 Peak Hour	Development Scenario	Highest Ratio of Flow to Capacity (RFC)	Highest Mean Maximum Queue Length (vehicles)	Highest Junction Delay per Vehicle Movement (minutes) for Total Time Period
		@ 15 Minutes Intervals	@ 15 Minutes Intervals	
Morning Peak Hour	Without Construction	0.244	0.5	0.22
	With Construction	0.249	0.5	0.22
Evening Peak Hour	Without Construction	0.337	0.5	0.17
	With Construction	0.364	0.6	0.17

PICADY identifies a Ratio of Flow to Capacity (RFC) of 0.900 as the practical capacity of a junction.

The PICADY analysis indicates that the existing R372/R336/L1201 junction operated well within practical capacity, without any significant traffic queues and delays, during the unpermitted development construction works from 11th July 2023 to 20th May 2024, both with and without construction.

The existing R372/R336/L1201 junction operated with a highest RFC of 0.364 and delays per vehicle of up to 0.22 minutes, with construction. These compare with a highest RFC of 0.337 and delays per vehicle of up to 0.22 minutes, without construction.

14.4.4.1 Traffic Effect Rating

On the basis of the EPA Guidelines, the unpermitted development construction works from 11th July 2023 to 20th May 2024, had slight to moderate temporary local negative effects. See **Table 14-29** below.

Table 14-29: Construction Phase Traffic Effect: 10m July 2023 to 20 May 2024

	Quality of Effect	Post-Mitigation Significance	Spatial Extent	Duration	Other Relevant Criteria
Increased Traffic on road network	Negative	Slight	Local	Temporary	Direct

14.5 Current Status (Post-Construction) Traffic Effects

The site was completely cleared of all equipment, facilities and materials when works ceased on the 20th May 2024. The site remains un-used and has been fenced off. Consequently, there are currently no traffic effects associated with the site.

14.6 Remedial Mitigation and Residual Effects

As the mitigation measures identified above were adhered to moderate effects on the traffic occurred during the construction of the works completed to date. There is no need for any remedial traffic mitigation measures. On the basis of the EPA EIAR Guidelines, the construction phase had slight to moderate temporary negative residual traffic effects.

Table 14-30: Residual Effects: Material Assets - Traffic and Transport

Impact/Activity/Receptor	Quality of Effect	POST-Mitigation Significance Rating	Remedial Mitigation Measures	Residual Significance Rating
Increased Traffic on road network	Negative	Slight to Moderate	None	Slight to Moderate
School Safety concerns	Negative	Slight to Moderate	None	Slight to Moderate

14.7 Cumulative Effects

No significant other developments, in the vicinity of the subject development, were constructed, or commenced operations, during the subject development construction. The foregoing assessment includes traffic generated by proposed other developments in the recorded traffic baselines.

On the basis of the EPA EIAR Guidelines, the cumulative effects of the subject development construction with any other developments was slight to moderate negative effects and temporary to short term.

No additional remedial construction mitigation measures were required.

14.8 Risk of Major Accidents and Disasters

During construction, there were no road traffic accidents on public roads used by traffic volumes generated by the subject development construction works that resulted in delays to traffic generated by the works and to other traffic. Traffic generated by the construction works were not involved in road traffic collisions.