

12.0 TRAFFIC AND TRANSPORTATION

12.1 INTRODUCTION

12.1.1 Purpose of section

The purpose of this section is to assess the traffic impacts of the additional traffic movements that will be generated during the construction, operational and decommissioning phases of a proposed Art Data Centre, Substation and Grid Connection project, proposed in the townland of Tooreen and Cahernalough. The proposed development, referred to as the Art Data Centre – Ennis Campus, County Clare, is located on the northern side of the R352 Tulla Road approximately 1 km to the east of the M18 Motorway, which bypasses the Town of Ennis to the east.

The magnitude of the increase in traffic volumes experienced on the surrounding network and the forecast effects are identified during the construction, operational and decommissioning stages of the Proposed Development.

12.2 METHODOLOGY

The report adopts the guidance for such assessments set out by Transport Infrastructure Ireland (TII), in the document PE-PDV=02045-01 'Traffic and Transport Assessment Guidelines, May 2014' and also makes reference to the following;

- Rural Road Link Design, DN-GEO-03031, TII Publications, June 2017,
- Project Appraisal Guidelines for National Roads (Unit 5.3), PE-PAG-02017, TII Publications, May 2019,
- County Clare Development Plan 2017 to 2023 (as varied),
- Design Manual for Urban Roads and Streets, DoTTS, May 2019,
- National Cycle Manual, National Transport Authority, June 2011

The Traffic and Transport Section of this report is set out as follows:

- A review of the existing transport infrastructure in the vicinity of the proposed Art Data Centre, including existing and forecast traffic flows (Section 12.3 – Receiving Environment),
- A description of the nature of the proposed Art Data Centre and the traffic volumes that will be generated during the construction stage and when it is operational (Section 12.4 – Characteristics of Development),
- An assessment of the impacts of traffic generated by the proposed Art Data Centre on the surrounding road network (Section 12.5 – Potential Impacts of Development),
- Proposed mitigation measures (Section 12.6 – Remedial and Mitigation Measures),
- An assessment of the likely impacts of the Proposed Development (Section 12.7 – Predicted Impacts of the Proposed Development),
- An assessment of potential cumulative impacts with neighbouring developments (Section 12.8 – Cumulative Impacts), and,
- An assessment of residual impacts of traffic generated by the proposed Art Data Centre (Section 12.9 – Residual Impacts).

12.3 RECEIVING ENVIRONMENT

12.3.1 Site location and network summary

The location of the proposed Art Data Centre is located in the townland of Tooreen and Cahernalough, County Clare, and is shown in the context of the local road network in Figure 12.1 at the end of this chapter.

The site is located approximately 4.5 kms to the east of Ennis Town Centre and is accessed from the Regional R352 Tulla Road, which is a key commuter route, radiating from the town.

Adjacent to the site the R352 Tulla Road is a Type 2 single carriageway with a width of 7.0m and has a designated speed limit of 80 km/h.

Bordering the site to the west is the M18 motorway, which travels north to south and underpasses the R352 Tulla Road. Roundabout junctions are located either side of the M18 motorway. Access is provided to / from the M18 southbound lanes via the eastern roundabout (East Clare Roundabout) and to /from the M18 northbound lanes via the roundabout to the west (Tulla Road West Roundabout).

Travelling west of the Motorway in the direction of Ennis the R352 Tulla Road is accessed by residential development, both single accesses and estates, and by various other uses including retail, a service station and childcare facilities.

12.3.2 Base year traffic flows – years 2015 and 2019

Due to travel restrictions in place for the Covid-19 virus during the preparation of this EIAR, the collection of current year 2021 traffic counts was not possible. For this reason the following historic traffic count data was used as the base year 2015 traffic data set for the purpose of the traffic assessment;

Year 2015 data

- Classified turning count surveys undertaken at the East Clare Roundabout and the Tulla Road West Roundabout – These surveys were undertaken by ABACUS Ltd for the purpose of preliminary assessment of the subject site, and were collated for the AM (07:00 – 10:00) and PM (16:00 – 19:00) peak periods on a typical weekday in the month of July (Tuesday 21st July, 2015).
- Automatic Traffic Count Data (ATC) from the M18 between Junction 13 Tulla Road and Junction 14 Barefield Road – This data site is maintained by Transport Infrastructure Ireland (TII) with traffic count data available from 2015 to the present.

The classified turning count data provided all link flows and turning movements observed in the year 2015 at the 2 roundabouts during the AM and PM peak hours. A full listing of the traffic count for the roundabouts is included as Appendix 12.1.

Year 2015 to 2019

The M18 ATC data was used to;

- Provide link flows on the M18 main carriageway,
- To provide an indication of seasonal variation in traffic flows on the local road network. The observed counts were undertaken in the month of July, which

was recorded to be the second busiest month of the year. It was therefore determined that no seasonal adjustment of the observed counts was required.

- To determine a factor to convert the observed AM and PM peak hour traffic count data available from the 2015 surveys to all day traffic flows.
- To provide an indication of traffic growth between the observed survey year of 2015 and 2019, the year prior to the introduction of Covid-19 travel restrictions. From 2019 onward traffic growth rates issued by TII were used, as discussed subsequently in this report.

The M18 ATC Data referred to is included as Appendix 12.2.

The link count locations refer to in the assessment are shown in Figure 12.2 at the end of this chapter and are the following;

- Link 1 – The R352 Tulla Road to the east of the proposed Art Data Centre access junction
- Link 2 – The R352 Tulla Road to the west of the proposed Art Data Centre access junction
- Link 3 – The access road serving the proposed Art Data Centre
- Link 4 – The R352 Tulla Road between the M18 slip roundabouts
- Link 5 – The M18 slip road linking into the East Clare Roundabout
- Link 6 – The R352 Ennis Road
- Link 7 – Local access road from the Knockanean halting site linking into the Tulla Road West Roundabout
- Link 8 – The M18 slip road linking into the Tulla Road West Roundabout
- Link 9 – The M18 northbound carriageway to the north of the R352 Tulla Road
- Link 10 – The M18 southbound carriageway to the north of the R352 Tulla Road
- Link 11 – The M18 northbound carriageway to the south of the R352 Tulla Road
- Link 12 – The M18 southbound carriageway to the south of the R352 Tulla Road

The observed AM and PM peak turning counts for the year 2015 are shown by vehicle category in Figures A12.3.1 to A12.3.3 of Appendix 12.3. It should be noted that all turning count figures referred to in Section 12 of this EIAR are provided in Appendix 12.3.

Observed link flows are shown by time period for the observed year 2015 in Table 12.1, with the following key points to note:

- The AM and PM peak hours on the R352 Tulla Road and the M18 slip roads linking into both the East Clare and Tulla Road West Roundabouts were observed to be 08:00 to 09:00 and 17:00 to 18:00 respectively.
- From the M18 ATC data it was determined that all day traffic flows may be estimated from the following expression;

All day = 6.15 x (AM peak hour 08:00 – 09:00 flow + PM peak hour 17:00 – 18:00).

- On the R352 Tulla Road adjacent to the proposed Art Data Centre access junction (Link 1) 2-way traffic flows were observed to be relatively light during all periods, with flows observed as follows: AM peak hour = 272 vehicles, PM peak hour = 441 vehicles and All day = 4,385 vehicles.

- Traffic flows on the R352 Tulla Road increase significantly as the road approaches Ennis to the west of the M18 roundabouts with 2-way traffic flows at this location (Link 6) observed to be: AM peak hour = 623 vehicles, PM peak hour = 808 vehicles and All day = 8,801 vehicles.
- Of the 2 slip roads providing access to and from the M18 motorway, the one providing for southbound traffic movements linking into the East Clare Roundabout (Link 5) was observed to be the busier during the AM peak hour, providing for a 2-way flow of 352 vehicles, while the arm providing for northbound traffic linking into the Tulla Road West Roundabout (Link 8), was observed to be the busier during the PM peak hour, providing for a 2-way flow of 397 vehicles.
- The M18 just to the north of the R352 Tulla Road was recorded to have a daily 2-way traffic flow of 11,759 vehicles. It is noted that this is a relatively low volume of traffic for a motorway with a 2-way link capacity of 52,000 vehicles per day¹.

¹ Rural Road Link Design, DN-GEO-03031, June 2017, TII Publications

Table 12.1 Observed link flows, by time period and vehicle type, year 2015 (2-way flows)

Time period	Link	Observed Year 2015				
		cars / lgvs	HGVs	All vehs	% HGVs	PCUs
AM peak hour	1 Tulla Road east of site access	254	18	272	6.6%	282
	2 Tulla Road west of site access	254	18	272	6.6%	282
	3 Ste access	0	0	0	NA	0
	4 Tulla Road between roundabouts	515	19	534	3.6%	550
	5 M18 slip at East Clare roundabout	343	9	352	2.6%	362
	6 Ennis Road	601	22	623	3.5%	639
	7 Local access road	0	0	0	NA	0
	8 M18 slip at Tulla Road West roundabout	160	13	173	7.5%	185
	9 M18 motorway north of Tulla Road - n/b	334	20	354	5.6%	382
	10 M18 motorway north of Tulla Road - s/b	443	26	469	5.6%	506
	11 M18 motorway south of Tulla Road - n/b	334	20	354	5.6%	382
	12 M18 motorway south of Tulla Road - s/b	443	26	469	5.6%	506
PM peak hour	1 Tulla Road east of site access	422	19	441	4.3%	455
	2 Tulla Road west of site access	422	19	441	4.3%	455
	3 Ste access	0	0	0	NA	0
	4 Tulla Road between roundabouts	531	17	548	3.1%	562
	5 M18 slip at East Clare roundabout	197	8	205	3.9%	211
	6 Ennis Road	784	24	808	3.0%	825
	7 Local access road	7	0	7	0.0%	7
	8 M18 slip at Tulla Road West roundabout	386	11	397	2.8%	405
	9 M18 motorway north of Tulla Road - n/b	561	33	594	5.6%	641
	10 M18 motorway north of Tulla Road - s/b	467	28	495	5.6%	534
	11 M18 motorway south of Tulla Road - n/b	561	33	594	5.6%	641
	12 M18 motorway south of Tulla Road - s/b	467	28	495	5.6%	534
All Day	1 Tulla Road east of site access	4,157	228	4,385	5.2%	4,533
	2 Tulla Road west of site access	4,157	228	4,385	5.2%	4,533
	3 Ste access	0	0	0	NA	0
	4 Tulla Road between roundabouts	6,433	221	6,654	3.3%	6,839
	5 M18 slip at East Clare roundabout	3,321	105	3,426	3.1%	3,524
	6 Ennis Road	8,518	283	8,801	3.2%	9,004
	7 Local access road	43	0	43	0.0%	43
	8 M18 slip at Tulla Road West roundabout	3,358	148	3,506	4.2%	3,629
	9 M18 motorway north of Tulla Road - n/b	5,504	326	5,830	5.6%	6,287
	10 M18 motorway north of Tulla Road - s/b	5,597	332	5,929	5.6%	6,393
	11 M18 motorway south of Tulla Road - n/b	5,504	326	5,830	5.6%	6,287
	12 M18 motorway south of Tulla Road - s/b	5,597	332	5,929	5.6%	6,393

12.3.3 Future year traffic volumes – years 2027, 2029 and 2044

The key study years with respect to traffic impacts of the proposed Art Data Centre are as follows;

- Year 2027 – During construction and part operational. It is during this year that construction and operation traffic levels peak to generate the most traffic by the Art Data Centres during the lifetime of the proposed development.
- Year 2029 – First year fully operational, and,
- Year 2044 – First year operational + 15 years design year.

In order to produce forecast background traffic flows for these years from the observed 2015 traffic counts the following steps were undertaken.

Year 2015 to year 2019

Annual Average Daily Traffic (AADT) volumes on the M18 are available from the Automatic Traffic Count site maintained by TII located just to the north of the R352 Tulla Road. With AADTs of 9,802 and 13,215 recorded for the years 2015 and 2019, it may be derived that traffic growth during the interim was 34.8%. Year 2019 traffic flows were therefore determined by factoring 2015 traffic flows by 1.348.

As discussed previously, data from this count site will not be representative beyond 2019 due to Government travel restrictions in place for the Covid-19 pandemic.

Years 2019 +

For years of interest beyond the year 2019 traffic forecast produced by TII were referenced. Revised guidelines for forecasting annual growth in traffic volumes were produced by TII in May 2019². The annual growth rates for light vehicles for County Clare, and factors for the years relevant to this study, are shown in Tables 12.2 and Table 12.3. The figures show that traffic volumes are forecast to increase during the period from 2019 to 2027 by 13.2%, from 2019 to 2029 by 16.7% and by 23.0% during the period from 2019 to 2044, based on a medium growth scenario.

Similarly, the cumulative growth rates from the observed year 2015 to the years of interest are shown in Table 12.4 taking account of the observed growth up to 2019, and the TII growth forecasts thereafter. Total medium growth rates from the survey year of 2015 are forecast to be as follows: 2027 = 52.6%, 2029 = 57.4% and 2044 = 65.8%.

Background traffic flows are included for assessment years 2027, 2029 and 2044 in Tables 12.14 to 12.17 included as Appendix 12.4.

It should be noted that while the assumed peak construction year of 2027 may vary slightly, this will not alter the forecast outcomes and effects presented in this section of the EIAR. This is due to the annual growth rate for background traffic being just 1.56% (as shown in Table 12.2) and that traffic volumes generated by the Art Data Centre will remain unchanged regardless of construction year and opening year, as presented subsequently in Section 12.4.

² Project Appraisal Guidelines for National Roads (Unit 5.3), PE-PAG-02017, May 2019, TII Publications

The forecast AM and PM peak hour counts for the years 2019, 2027, 2029 and 2044 are shown in Figures A12.3.4 to A12.3.7 included as Appendix 12.3.

Table 12.2 TII traffic growth rates, light vehicles, County Clare

Year	Lights - Annual factor			Lights - Cumulative index		
	low	Medium	High	low	Medium	High
2019	1.0139	1.0156	1.0191	1.000	1.000	1.000
2020	1.0139	1.0156	1.0191	1.014	1.016	1.019
2021	1.0139	1.0156	1.0191	1.028	1.031	1.039
2022	1.0139	1.0156	1.0191	1.042	1.048	1.058
2023	1.0139	1.0156	1.0191	1.057	1.064	1.079
2024	1.0139	1.0156	1.0191	1.071	1.080	1.099
2025	1.0139	1.0156	1.0191	1.086	1.097	1.120
2026	1.0139	1.0156	1.0191	1.101	1.114	1.142
2027	1.0139	1.0156	1.0191	1.117	1.132	1.163
2028	1.0139	1.0156	1.0191	1.132	1.149	1.186
2029	1.0139	1.0156	1.0191	1.148	1.167	1.208
2030	1.0019	1.0038	1.0075	1.150	1.172	1.217
2031	1.0019	1.0038	1.0075	1.152	1.176	1.226
2032	1.0019	1.0038	1.0075	1.155	1.181	1.236
2033	1.0019	1.0038	1.0075	1.157	1.185	1.245
2034	1.0019	1.0038	1.0075	1.159	1.190	1.254
2035	1.0019	1.0038	1.0075	1.161	1.194	1.264
2036	1.0019	1.0038	1.0075	1.163	1.199	1.273
2037	1.0019	1.0038	1.0075	1.166	1.203	1.283
2038	1.0019	1.0038	1.0075	1.168	1.208	1.292
2039	1.0019	1.0038	1.0075	1.170	1.213	1.302
2040	1.0011	1.0029	1.0105	1.171	1.216	1.316
2041	1.0011	1.0029	1.0105	1.173	1.220	1.330
2042	1.0011	1.0029	1.0105	1.174	1.223	1.343
2043	1.0011	1.0029	1.0105	1.175	1.227	1.358
2044	1.0011	1.0029	1.0105	1.176	1.230	1.372

Table 12.3 TII derived traffic growth rates from 2019

Period	Cumulative index		
	low	Medium	High
2019 to 2027	1.117	1.132	1.163
2019 to 2029	1.148	1.167	1.208
2019 to 2044	1.176	1.230	1.372

Table 12.4 Combined traffic growth rates from 2015

Period	Cumulative index		
	low	Medium	High
2015 to 2027	1.505	1.526	1.568
2019 to 2029	1.548	1.574	1.629
2019 to 2044	1.586	1.658	1.849

12.3.4 Future environment

A review of the TII and Clare County Council web sites suggests that there are no existing highway proposals that would significantly alter traffic patterns in the proximity of the Proposed Development site located on the R352 Tulla Road just to the east of the M18 motorway.

12.4 CHARACTERISTICS OF THE DEVELOPMENT

12.4.1 Development content

The proposed Art Data Centre comprises of 6 data centres, an energy centre, associated fibre and grid connection and associated site infrastructure. A full description of the proposed development is provided in Section 2.3 with the site layout shown in Figure 2.1.

12.4.2 Construction phases

It is estimated that the Art Data Centre will be constructed over a 6.5 year period (80 months), commencing in December 2022, with construction forecast to be complete in July 2029. Construction will be undertaken in 3 overlapping phases, with the start and completion dates, together with the forecast duration of each phase, shown in Table 12.5. The time line of the construction phases are shown in the summary chart included as Appendix 12.5.

Table 12.5 Summary information for Art Data Centre by construction phase

	Pre-start	Phase 1	Phase 2	Phase 3
Start date	Dec-22	Jun-23	Sep-25	Jun-27
End date	Mar-23	Sep-25	Jul-29	Jul-29
Phase duration	4 months	2 years, 4 months	3 years, 11 months	2 years, 2 months
Elements constructed during phase	Site preparation	Primary infrastructure Substation 1 2 x Data Centres (Nos 2 & 3)	Energy Centre Vertical Farm 2 x Data Centres (Nos 4 & 5)	2 x Energy Centre 2 x Data Centres (Nos 1 & 6)

12.4.3 Traffic generation during construction

The estimation of the volumes of traffic movements generated by deliveries to and from the site were provided by the study team. The estimates were calculated based on the preliminary estimates of materials that will be delivered to and from the site by month for the duration of the construction period.

The estimation of the volumes of traffic movements generated by construction staff to and from the proposed development site was estimated based on trip generation estimates for a similar scale development with a similar construction methodology.

The daily trip generations during each month of the 6.5 year construction period are set out in the chart included as Appendix 12.5 with the following key observations made from previous similar developments and applied to the proposed Art Data Centre as follows;

Construction Staff Trips

- For the peak construction month, which is forecast to occur in month 61 at the end of Year 2027 it is estimated that a maximum 1,200 construction staff will be on site each day. While in practice a significant percentage of the daily workforce will travel to the site by buses organised by the contractor, in order to test the worst case scenario it is assumed that all will travel by car. Based on a modest estimate that the average car occupancy will be 1.5, this will result in a maximum number of 800 cars to and from the site generated by construction staff on site on one day.
- For each of the 3 phases it is determined that there will be a maximum of 474 staff car trips to / from the site per day, as shown in Table 12.6.
- For construction staff it is estimated that 40% and 5% of the daily total will arrive at, and leave from the site during the AM peak hour from 08:00 to 09:00, with the reverse applying to the PM peak hour from 17:00 to 18:00.

Construction HGV Trips

- HGV deliveries will be concentrated at the beginning of the construction phase with a maximum of 115 trips to / from the site during Phase 1, reducing to a maximum of 46 HGVs during Phase 2 and 39 HGVs during Phase 3. The forecast daily average for each phase is 46 trips per day for Phase 1, 13 trips for Phase 2 and 23 trips for Phase 3, as set out in Table 12.6.
- It is estimated that a total of 23,279 HGV trips to and from the site will be generated during Phase 1, with 13,217 during Phase 2 and 12,603 during Phase 3. Including a further 200 deliveries to and from the site during the site preparation stage, it is estimated that a total of 53,396 HGV movements to and from the site will be generated during the construction of the Art Data Centre within the 6.5 year construction period.

Table 12.6 Summary of Art Data Centre trip generation during construction, by phase and vehicle type (trips to and from site)

Trip category		Pre-start (4 months)	Phase 1 (2 years, 4 months)	Phase 2 (3 years, 11 months)	Phase 3 (2 years, 2 months)	Total
Staff car trips	Maximum / day	50	474	474	474	NA
	Average / day	50	340	276	352	NA
HGV trips	Maximum / day	3	115	46	39	NA
	Average / day	2	46	13	23	NA
	Total HGV trips in Phase	200	27,376	13,217	12,603	53,396

12.4.4 Traffic generation during operation

Estimates of the number of employees that will be employed on the completion of each of the 3 individual phases, together with an estimate of the number of staff employed when the proposed Art Data Centre (6 Data Centres plus Vertical Farm) is fully operational, is set out in Table 12.7. It is estimated that a total of 151 staff will be employed on site on the completion of each phase, with an additional 40 staff included for phase 2 which includes the vertical farm. It is estimated that a total of 493 staff will be employed on site on the completion of the Art Data Centre.

The number of daily staff trips estimated to be generated to and from the site on the completion of each phase are shown distributed throughout the day in Tables 12.8 and 12.9.

For Phases 1 and 3 (Table 12.8) it is estimated that 50 staff will arrive at the Proposed Development and 11 will leave during the AM peak hour from 08:00 to 09:00. For the same phases it is estimated that 11 staff will both arrive at and leave the site during the PM peak hour between 17:00 to 18:00. For Phase 2 (Table 12.9), which includes the Vertical Farm, it is estimated that an additional 40 staff will travel to the site during the AM peak hour and from the site during the PM peak hour.

The total number of staff trips that are estimated to be generated traveling to and from the site during the peak hours and on a daily basis on the completion of the proposed Art Data Centre are shown in Table 12.10. During the AM peak hour it is estimated that a total of 190 staff members will arrive at the site, with 33 exiting the site. During the PM peak hour it is forecast that 33 staff will access the site with 73 exiting. It is forecast that a total of 493 staff members will travel to / from the site each day when the Art Data Centre is fully operational.

A Travel Plan will be implemented at the Art Data Centre when operational aimed at promoting sustainable modes of travel and car sharing for staff in preference to single occupancy car trips. In order to assess the worst case scenario, however, for the purpose of the traffic impact assessment presented in Section 12.5 of this EIAR, it is assumed that all staff trips will be made by cars with single occupancy vehicles.

It is noted that an Outline Travel Plan for the Proposed Art Data Centre is included as Appendix 12.6.

Table 12.7 Trip generation for Art Data Centre during operation, number of staff per day

No of Data Centre Buildings	Purpose	Day shift	Night shift	Total
Phase 1	Security staff	11	11	22
	General staff	82	8	90
	Maintenance staff and visitors	39	0	39
	Total	132	19	151
Phase 2 (includes Vertical Farm)	Security staff	11	11	22
	General staff	122	8	130
	Maintenance staff and visitors	39	0	39
	Total	172	19	191
Phase 3	Security staff	11	11	22
	General staff	82	8	90
	Maintenance staff and visitors	39	0	39
	Total	132	19	151
All phases	Security staff	33	33	66
	General staff	286	24	310
	Maintenance staff and visitors	117	0	117
	Total	436	57	493

Table 12.8 Trip generation during operation for Art Data Centre Phase 1 and Phase 3, by time of arrival and departure, numbers of staff

Hour commencing	Security staff		General staff		Maintenance staff + visitors		All person trips	
	In	Out	In	Out	In	Out	In	Out
7:00	0	0	41	8	0	0	41	8
8:00	11	11	0	0	39	0	50	11
9:00	0	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	0	0
15:00	0	0	41	41	0	39	41	80
16:00	0	0	0	0	0	0	0	0
17:00	11	11	0	0	0	0	11	11
18:00	0	0	0	0	0	0	0	0
19:00	0	0	0	0	0	0	0	0
20:00	0	0	0	0	0	0	0	0
21:00	0	0	0	0	0	0	0	0
22:00	0	0	0	0	0	0	0	0
23:00	0	0	8	41	0	0	8	41
0:00	0	0	0	0	0	0	0	0
Total	22	22	90	90	39	39	151	151

Table 12.9 Trip generation during operation for Art Data Centre Phase 2, by time of arrival and departure, number of staff

Hour commencing	Security staff		General staff		Maintenance staff + visitors		All person trips	
	In	Out	In	Out	In	Out	In	Out
7:00	0	0	41	8	0	0	41	8
8:00	11	11	40	0	39	0	90	11
9:00	0	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	0	0
15:00	0	0	41	41	0	39	41	80
16:00	0	0	0	0	0	0	0	0
17:00	11	11	0	40	0	0	11	51
18:00	0	0	0	0	0	0	0	0
19:00	0	0	0	0	0	0	0	0
20:00	0	0	0	0	0	0	0	0
21:00	0	0	0	0	0	0	0	0
22:00	0	0	0	0	0	0	0	0
23:00	0	0	8	41	0	0	8	41
0:00	0	0	0	0	0	0	0	0
Total	22	22	130	130	39	39	191	191

Table 12.10 Summary of trip generation during operation for all Art Data Centre, AM and PM peak hours and all day, numbers of staff

Hour commencing	All operational staff	
	In	Out
08:00	190	33
17:00	33	73
All day	493	493

Once operational it is estimated that each of 6 data centres will generate 5 HGV trips to and from the site with 2 HGV trips generated to and from the site by the vertical farm resulting in 32 HGV trips to and from the site per day. Of the 32 HGV trips 7 were allocated to each of the AM and PM peak hours.

12.4.5 Art Data Centre test scenarios

The points in the construction and operational life of the proposed Art Data Centre that are critical in terms of traffic generation, and are therefore selected for the traffic impact element of the assessment, are as follows;

- **Art Data Centre Peak Construction Month - Year 2027** - This is forecast to be the worst case scenario in terms of total traffic generated during the entire construction and operational life of the proposed development. For this scenario Phase 1 is constructed and operational, while Phases 2 and 3 are during the peak construction period. This is forecast to be month 61 of the 80 month construction period as shown in the chart included as Appendix 12.5.
- **Art Data Centre Peak HGV delivery days - Year 2027** - This is forecast to be the worst case scenario in terms of the numbers of HGV trips travelling to and from the site. It is forecast that a maximum of 115 HGVs will travel to and from the site in one day. This is forecast to occur in month 14 of the 80 month construction period as shown in the chart included as Appendix 12.5.
- **Art Data Centre Average Construction Month - Year 2027** - This represents the average month of the construction period with daily trip generation determined to be 59% of the traffic volumes generated during the peak construction month.
- **Art Data Centre Fully Operational - Year 2029** – By September 2029 it is forecast that construction of Phases 1, 2 and 3 will be complete and the proposed Art Data Centre will be fully operational.
- **Art Data Centre Fully Operational – Opening year + 15 - Year 2044** – The year 2044 is tested as the opening year + 15 time horizon in accordance with TII guidelines.

The daily number of trips that are determined to be generated for each of the above scenarios are shown by test scenario, vehicle type and year in Table 12.11, with these trips translated to time period during the day in Table 12.12. Note that the figures shown in Table 12.11 are extracted from the resource chart included as Appendix 12.5.

A summary of the information provided in Table 12.12 is provided in Table 12.13 with the following points to note;

- For the peak construction days the majority of traffic is generated by construction and Phase 1 operational staff cars, with 951 cars traveling to and from the site per day. During the days it is estimated that 39 HGVs will travel to and from the site. On these days it is estimated that 2,089 2-way pcus will be generated by the site per day.
- For the busiest days in terms of HGV, it is estimated that 474 staff cars and 115 HGVs will travel to and from the site per day, totalling 1,500 2-way pcus per day,
- Once operational it is estimated that 493 staff cars and 32 HGVs will travel to and from the site per day, with a total of 1,140 2-way pcus per day,

Table 12.11 Traffic generation by test scenario, trip purpose and vehicle type

Traffic category	Phase	Vehicle type	Development scenario			
			Peak construction day (2027 month 61)	Peak construction for HGV trips (2024 month 14)	Fully operational	
					Year 2029	2044
Construction Traffic	Phase 1	HGV trips (to / from)	0	115	0	0
		HGV pcus (to / from)	0	276	0	0
		Cars/lgvs (to / from)	0	474	0	0
		Total 2-way pcus	0	1500	0	0
	Phase 2	HGV trips (to / from)	1	0	0	0
		HGV pcus (to / from)	2	0	0	0
		Cars/lgvs (to / from)	326	0	0	0
		Total 2-way pcus	657	0	0	0
	Phase 3	HGV trips (to / from)	28	0	0	0
		HGV pcus (to / from)	67	0	0	0
		Cars/lgvs (to / from)	474	0	0	0
		Total 2-way pcus	1082	0	0	0
	All construction traffic	HGV trips (to / from)	29	115	0	0
		HGV pcus (to / from)	70	276	0	0
		Cars/lgvs (to / from)	800	474	0	0
		Total 2-way pcus	1739	1500	0	0
Operational Traffic	Phase 1	HGV trips (to / from)	10	0	10	10
		HGV pcus (to / from)	24	0	24	24
		Cars/lgvs (to / from)	151	0	151	151
		Total 2-way pcus	350	0	350	350
	Phase 2	HGV trips (to / from)	0	0	12	12
		HGV pcus (to / from)	0	0	29	29
		Cars/lgvs (to / from)	0	0	191	191
		Total 2-way pcus	0	0	440	440
	Phase 3	HGV trips (to / from)	0	0	10	10
		HGV pcus (to / from)	0	0	24	24
		Cars/lgvs (to / from)	0	0	151	151
		Total 2-way pcus	0	0	350	350
	All operational traffic	HGV trips (to / from)	10	0	32	32
		HGV pcus (to / from)	24	0	77	77
		Cars/lgvs (to / from)	151	0	493	493
		Total 2-way pcus	350	0	1140	1140
All traffic	All traffic	HGV trips (to / from)	39	115	32	32
		HGV pcus (to / from)	94	276	77	77
		Cars/lgvs (to / from)	951	474	493	493
		Total 2-way pcus	2089	1500	1140	1140

Note: The figures in Table 12.11 are extracted from the chart included as Appendix 12.3

Table 12.12 Traffic generation by test scenario, trip purpose, time period and vehicle type

Scenario	Trip category	All day		AM peak hour		PM peak hour	
		In	Out	In	Out	In	Out
Peak construction day Tested for year 2027	Construction HGVs	29	29	3	1	1	3
	Construction cars	800	800	320	40	40	320
	Operational HGVs	10	10	2	2	2	2
	Operational cars	151	151	50	11	11	11
	All HGVs	39	39	5	3	3	5
	All HGV pcus	94	94	12	8	8	12
	All cars	951	951	370	51	51	331
	All pcus	1,045	1,045	382	59	59	343
	All 2-way pcus	2,089		441		402	
Average construction day Tested for year 2027	Construction HGVs	17	17	2	1	1	2
	Construction cars	464	464	189	24	24	189
	Operational HGVs	6	6	1	1	1	1
	Operational cars	88	88	29	6	6	6
	All HGVs	23	23	3	2	2	3
	All HGV pcus	54	54	7	5	5	7
	All cars	552	552	215	30	30	192
	All pcus	606	606	221	34	34	199
	All 2-way pcus	1,212		256		233	
Worst case construction day for HGVs Tested for year 2027 (15% of HGVs in Peak hours)	Construction HGVs	115	115	17	17	17	17
	Construction cars	474	474	190	24	24	190
	Operational HGVs	0	0	0	0	0	0
	Operational cars	0	0	50	11	11	11
	All HGVs	115	115	17	17	17	17
	All HGV pcus	276	276	41	41	41	41
	All cars	474	474	240	35	35	201
	All pcus	750	750	281	76	76	242
	All 2-way pcus	1,500		357		318	
Year 2029 & 2044 Phase 1 - Operational Phase 2 - Operational Phase 3 - Operational	Construction HGVs	0	0	0	0	0	0
	Construction cars	0	0	0	0	0	0
	Operational HGVs	32	32	6	6	6	6
	Operational cars	463	463	161	42	42	42
	All HGVs	32	32	6	6	6	6
	All HGV pcus	77	77	15	15	15	15
	All cars	493	493	190	33	33	73
	All pcus	570	570	205	48	48	88
	All 2-way pcus	1,140		254		137	

Note: The All-day figures in Table 12.12 are extracted from the chart included as Appendix 12.5

Table 12.13 Summary of traffic generation by test scenario, time period and vehicle type

Scenario	Vehicle type	All day			AM peak hour			PM peak hour		
		In	Out	2-way	In	Out	2-way	In	Out	2-way
Peak construction day	All HGVs	39	39	78	5	3	8	3	5	8
	All cars	951	951	1,902	370	51	421	51	331	382
	All pcus	1,045	1,045	2,089	382	59	441	59	343	402
Average construction day	All HGVs	23	23	45	3	2	5	2	3	5
	All cars	552	552	1,103	215	30	244	30	192	222
	All pcus	606	606	1,212	221	34	256	34	199	233
Worst case for HGV deliveries	All HGVs	115	115	230	17	17	35	17	17	35
	All cars	474	474	948	240	35	274	35	201	235
	All pcus	750	750	1,500	281	76	357	76	242	318
Year 2029 & 2044 Phase 1, 2 & 3 operational	All HGVs	32	32	64	6	6	13	6	6	13
	All cars	493	493	986	190	33	223	33	73	106
	All pcus	570	570	1,140	205	48	254	48	88	137

12.4.6 Art Data Centre traffic distribution

The distribution of traffic generated by the proposed Art Data Centre was estimated separately for staff trips and for deliveries of materials to the site.

Distribution of generated staff trips

It is considered that the optimum source of information to determine likely travel patterns for staff trips to and from the proposed Art Data Centre is the existing traffic patterns travelling into and out of the local road network via the R352 Tulla Road (to and from the directions of Ennis and Tulla) and via the M18 southbound and northbound slip lanes, to and from the M18 motorway. The traffic flows travelling on these links during peak hours reflect existing traffic patterns through the local network, and will include a significant number of vehicles traveling for the purpose of work. Using this information, the results would also appear to be logical with almost half (47%) of staff travelling to the Art Data Centre forecast to travel to / from Ennis.

Traffic flows for 2019 are shown for these links by direction in Table 12.14, together with the estimated percentage distribution of staff trips through the local road network. Based on these flows it is estimated that during the AM peak hour 47% of all staff trips will originate from the direction of Ennis, 28% from the direction of Tulla, with the remaining 25% arriving via the M18 slip roads. For corresponding traffic leaving the Art Data Centre during the PM peak hour it is estimated that the same 47% will travel in the direction towards Ennis, 28% towards Tulla with the remaining 25% accessing the M18 motorway.

Table 12.14 Trip distribution for staff / visitor trips based on 2019 link flows

Arm	AM peak hour				PM peak hour				All Day	
	From		To		From		To		% from	% to
	Flow	%	Flow	%	Flow	%	Flow	%		
R352 Tulla	276	28%	104	11%	255	20%	359	28%	24%	19%
M18 s/b	104	11%	384	39%	112	9%	173	14%	10%	26%
M18 n/b	140	14%	109	11%	400	31%	146	11%	23%	11%
R352 Ennis	469	47%	392	40%	510	40%	603	47%	44%	43%
Total	989	100%	989	100%	1277	100%	1281	100%	100%	100%

Distribution of generated HGV trips

While the location of the potential quarries that will supply materials during the construction phase are known (as will be discussed in Section 12.7.2), the quantities that each will supply is not known at this stage. The location of the providers of all other materials required to construct the Art Data Centre is also not known. For the purpose of this assessment the distribution of HGV trips during both the construction and operational stages of the development were assumed to be as follows;

- To / from M18 north – 40%
- To / from M18 south – 40%
- To / from R352 east – 20%.

While the above could vary significantly in practice, it is considered that it represents a realistic trip distribution for HGV traffic based on the location of quarries that could potentially provide materials during the construction of the proposed development, as discussed in Section 12.6.2, and the potential for other deliveries to be made via the M18 from the north and the south. It is also considered to be a worst case scenario as it concentrates HGV movements on the M18 / R352 Tulla Road roundabouts, which are critical junctions on the local network.

The forecast AM and PM peak trip distributions and trip generations are shown by vehicle type in Figures A12.3.8 to A12.3.18 included in Appendix 12.3.

12.4.7 Walking and cycling

While there is an existing footpath on the southern side of the R352 Tulla Road, there is currently no footpath on the northern side adjacent to the proposed development. As part of the Art Data Centre development it is proposed to provide a shared footpath and cycle lane on the northern side of the road from the proposed Art Data Centre access junction, westwards to the Clare East Clare Roundabout. It is also proposed to upgrade the existing footpath on the southern side of the road to a share footpath and cycle lane. An informal uncontrolled pedestrian crossing facility, comprising dropped kerbs and tactile paving is proposed across the R352 Tulla Road, in order to provide a continuous pedestrian link between the Art Data Centre and Ennis Town Centre.

Distances from the proposed Art Data Centre are shown at 0.5km intervals in Figure 12.3 at the end of this chapter in order to provide an indication of walk distances and between Art Data Centre and various locations in Ennis. Based on a conservative walk speed of 7 minutes per km (or 8.64 km per hour, which equates to 2.4m per second as is adopted in the design of pedestrian crossing) the estimated walk times to a few locations in Ennis are listed in Table 12.21. The figures show that it is estimated that the “Woodside” and “The Lane” residential estates are within 14 and 21 minutes’ walk respectively, with Ennis Town centre, which is located approximately 4.5 kms from the Art Data Centre, just over half an hour walk away (31.5 minutes).

The same information is shown in Table 12.15 for cycle trips. Based on a modest cycle speed of 30 km/h the residential estates would be within a 4 minute (Woodside) and 6 minute (The Lane) cycle, while it is estimated that it will take 9 minutes to cycle between the Art Data Centre and Ennis Town Centre.

Pedestrian access into the site is provided by a footpath adjacent to the main proposed vehicle access junction, with continuous footpaths provided within the campus to element comprising the Art Data Centre. Dropped kerbs and tactile paving are provided at all crossing points.

Table 12.15 Estimated walk and cycle times from the Art Data Centre

Location	Distance from Art Data Centre (kms)	Walk time (minutes)	Cycle time (minutes)
Woodside Estate	2	14	4
The Lane Estate	3	21	6
Ennis Town Centre	4.5	31.5	9

Covered cycle parking is distributed at various locations throughout the site with a total number of 126 spaces provided. This equates to 1 cycle parking space for every 2 employees that may be on site at any one time (it is estimated that 256 of the total 493 employees may be on site at any particular time of the day due to shifts), which is in excess of the 1 space per 10% of employees as suggested in the NTA Cycle manual.

12.4.8 Public transport

There are currently no local bus services in Ennis so at present bus would not be a mode of transport available for staff or visitors to the proposed site. It is, however, noted that the provision of local bus services on key routes in Ennis is fundamental to the National Transport Authorities Smarter Travel program, which requires the availability and the promotion of sustainable alternative modes of travel to the private car, as adopted in the current Clare Development Plan 2017 to 2023. While the assessment of the viability of a local Ennis bus route on the R352 Tulla Road is outside the remit of this assessment, given the quantum of residential and other development along the route, it is considered that the Tulla Road route would be an ideal location to pilot a local bus service. Given the relatively high numbers of staff that will be expected to travel to the Art Data Centre from Ennis, the proposed development would serve to enhance the viability of such a service. The Applicant would fully support the introduction of a local bus service on the R352 Tulla Road and would also consider the potential for the future bus route to terminate at the Art Data Centre campus. An area for a future bus terminus is included in the campus layout.

12.5 POTENTIAL IMPACTS OF THE DEVELOPMENT

12.5.1 Impact on link flows

The impact that the proposed Art Data Centre is forecast to have on link flows on the local road network during the construction period and when fully operational was assessed during the AM peak and PM peak hours, and during the course of one day. The results are set out in Tables 12.16 to 12.20, which are included as Appendix 12.4, for the following scenarios;

- Background traffic compared to with Art Data Centre peak construction traffic, year 2027 (Table 12.16),
- Background traffic compared to with Art Data Centre peak construction HGV deliveries, year 2027 (Table 12.17),
- Background traffic compared to with Art Data Centre average construction traffic, year 2027 (Table 12.18),
- Background traffic compared to with Art Data Centre fully operational traffic, year 2029 (Table 12.19), and,
- Background traffic compared to with Art Data Centre fully operational traffic, year 2044 (Table 12.20).

The salient points to note from the tables are as follows (It is noted that all commentary provided in section 12.5.1 refers to 2-way traffic flows, with the exception of references made to the M18 main carriageway, which are one-way flows);

Years 2027 peak construction months

During the peak construction months the maximum increase in 2-way traffic volumes is forecast to be on the R352 Tulla Road just to the west of the proposed Art Data access junction (Link 2). At this location it is forecast that the increase in traffic levels will be +318 vehicles (+77%) during the AM peak hour, +285 vehicles (+42%) during the PM peak hour, with an increase of 23% forecast throughout the day.

Other links forecast to be impacted the greatest during the peak construction phase are;

- The section of the R352 Tulla Road between the roundabouts (Link 4), which is forecast to incur an increase of +255 vehicles (+31%) during the AM peak hour,
- The Tulla Road to the east of the development access (Link 1) forecast to have an increase of 111 vehicles (+27%),
- The M18 Slip onto the Tulla Road West roundabout (Link 8) with an increase of +60 vehicles (+23%), and,
- The R352 leading to Ennis (Link 6) which is forecast to increase by 194 vehicle during the AM peak hour (+20%).

With respect to the impacts on the M18 motorway, the forecast maximum increase during any time period is forecast to be +54 vehicles (+10%), which will occur during the AM peak hour on the northbound carriageway of the motorway to the south of the R352 Tulla Road (Link 11). Over the course of the day the increase on traffic flows on the M18 during the peak construction days is forecast to be between 1% and 3%. It is noted that the M18 has significant spare link capacity on these worst case days, with a maximum daily flow of 18,435 vehicles forecast compared to a link capacity of 52,000 vehicles).

In terms of magnitude the forecast increases in traffic volumes during the PM peak is forecast, in general, to be similar to those during the AM peak hour.

Years 2027 peak HGV delivery months

During the days when the maximum number of HGV deliveries will be made to the site (up to 115 trips to and from the site) the maximum number of additional HGVs that will travel on the network in any one hour will be +27 HGV 2-way movements which will be on the R352 Tulla Road to the west of the proposed access junction (Link 2). During the AM peak hour this will result in a 98% increase in HGVs on this link and a 56% increase in traffic flows,

In terms of the impacts on the M18 slip road approaches to the Tulla Road Roundabouts, it is forecast that they will incur a maximum increase in 2-way HGV movements of 14 HGVs during the AM and PM peak hours.

Years 2027 average construction months

The impacts on average construction days will be significantly less than the peak months with development traffic at 59% of the volumes estimated for the peak months. Some key comparisons are;

- The maximum increase in 2-way traffic volumes on the R352 Tulla Road to the west of the proposed access junction (Link 2) will increase by 45% compared to 77% during the peak construction months,
- The maximum percentage increase on the M18 during the PM peak hour will be +6% compared to +10%

Years 2029 and 2044 fully operational

As the impacts on link flows are similar for both 2029 and 2044 when the Art Data Centre will be fully operational, the following is based on the year 2044 forecasts when overall traffic volumes will be higher.

Once the proposed Data Art Centre is fully operational a maximum increase in 2-way traffic volumes on the R352 Tulla Road just to the west of the proposed access (Link 2) is forecast to be +164 vehicles (+37%) during the AM peak hour, +95 vehicles (+13%) during the PM peak hour, with an increase of 11% forecast throughout the day.

Other links forecast to be impacted the greatest are the section of the R352 Tulla Road between the roundabouts (Link 4) which is forecast to incur an increase of 14% in traffic volume (+126 vehicles) during the AM peak hour, followed by Tulla Road to the east of the development access (Link 1, +53 vehicles), and the M18 Slip onto the Tulla Road West roundabout (Link 8, +33 vehicles), which are both forecast to incur a 12% increase in traffic volumes during the AM peak hour.

It is noted that compared to the AM peak hour forecast impacts are significantly less during the PM peak hour, and for the rest of the day.

With respect to the impacts on the M18 motorway, the forecast maximum increase during any time period is 1% both northbound and southbound once the proposed Art Data Centre is operational.

TII guidelines state that a detailed capacity assessment should be undertaken for junctions where the proposed development is forecast to result in an increase in traffic volumes of +10%, or +5% in instances where the network is already congested. This would suggest that in addition to the proposed access junction, detailed capacity tests should be undertaken for both the East Clare and Tulla Road West roundabouts on the R352 Tulla

Road. Detailed capacity tests as set out in the remainder of this section were therefore undertaken at the following junctions;

- Proposed access junction on the R352 Tulla Road,
- The East Clare Roundabout, and,
- The Tulla Road West Roundabout.

The forecast AM and PM peak turning flows are shown in terms of PCUs for each development scenario in Figures A12.3.19 to A12.3.23 included in Appendix 12.3.

12.5.2 Impacts on junction capacity

Junction capacity assessment method

The traffic impact of the proposed Art Data Centre was assessed at the proposed access junction and on the surrounding network using a combination of the industry recognised junction analysis programmes PICADY for priority junctions, and ARCADY for roundabouts. The capacity for each movement possible at the junction being assessed is determined from geometric data with the output used in the assessment as follows:

- Queue – This is the average queue forecast for each movement and is useful to ensure that queues will not interfere with adjacent junctions.
- Ratio of flow to capacity (RFC) – As suggested, this offers a measure of the amount of available capacity being utilised for each movement. Ideally each movement should operate at a level of no greater than 0.85, or at 85% of capacity.
- Delay – Output in minutes, this gives an indication of the forecast average delay during the time period modelled for each movement.

Scenarios modelled

For the proposed Art Data Centre access junction on the R352 Tulla Road the following scenarios were assessed;

- AM and PM peak hours,
- For development scenarios;
 - Year 2027 Art Data Centre peak construction day,
 - Year 2027 Art Data Centre peak HGV delivery days
 - Year 2027 Art Data Centre average construction day,
 - Year 2029 Art Data Centre fully operational,
 - Year 2044 Art Data Centre fully operational.

For the R352 Tulla Road / M18 slip road roundabouts (East Clare Roundabout and Tulla Road West Roundabout), the same scenarios as above were tested. In addition, year 2027, 2029 and 2044 with no Art Centre Development were also tested in order to determine the actual impact of the introduction of traffic generated by the proposed development.

Junction capacity test results for proposed Art Centre Access junction on the R352 Tulla Road

The results of the capacity test undertaken for the proposed Art Data Centre access junction on the R352 Tulla Road are set out in Table 12.21.

The maximum ratio of flow to capacity (RFC) for the proposed access junction is forecast to apply to traffic turning right out of the site onto the R352 Tulla Road during the PM peak

hour, and is forecast to occur during the peak construction scenario in the year 2027. For this movement the maximum RFC is forecast to be 61.6% (up to 85% is within capacity), with the corresponding maximum queue forecast to be 1.56 PCUs, which will occur on the internal access road, and delay to be 0.35 minutes (21 seconds), which will apply to traffic exiting the site.

For traffic turning right off the R352 Tulla Road into the site the maximum ratio of flow to capacity (RFC) of 19.7 % is forecast, with a corresponding maximum queue in the right turn lane proposed on the R352 Tulla Road forecast to be 0.24 PCUs with an associated delay of 0.13 minutes (8 seconds).

For the days when the peak number of HGV deliveries are made to the site, the only movement that has a higher RFC compared to the equivalent peak construction day discussed above, is the right turn from the development during the AM peak hour, which is forecast to have an RFC of 15%, with a corresponding queue of 0.18 PCUs and delay of 0.15 minutes (9 seconds)

Once fully operational in the future year 2044 the maximum RFC is forecast to apply to traffic turning right out of the development during both the AM (11.6%) and PM peak (11.2%) hours, with the maximum queue forecast to be 0.13 PCUs with corresponding delay of 0.16 minutes (10 seconds).

The result of the capacity tests show that during both peak hours, the proposed access junction is forecast to operate well within capacity without and significant queuing forecast for traffic exiting the site, or for traffic turning right into the site from the R352 Tulla Road.

Junction capacity test results for M18 / R352 Tulla Road East Clare Roundabout

The results of the capacity test undertaken for the East Clare Roundabout are set out in Table 12.22.

The maximum RFC forecast for this roundabout is forecast to occur during the peak construction period in the year 2027 and is forecast to apply to traffic on the R352 Tulla Road heading out of Ennis during the AM peak hour. For this arm a maximum RFC of 29.7% is forecast to apply for the no Art Data Centre development scenario, increasing to 44.3 with the inclusion of the Art Data Centre construction traffic. For the “without development” development scenario a maximum queue of 0.4 PCUs, and delay of 0.05 minutes (or 3 seconds) are forecast. These are forecast to increase marginally for the “with development” scenario with a maximum queue of 0.8 PCUs, and delay of 0.06 (or 4 seconds) are forecast.

It is noted that for the PM peak hour it is the same movement that is forecast to have the highest RFC, with the future year 2044 Art Data Centre fully operational scenario being the worst case. For this movement it is forecast that the RFC will increase from a “without development” level of 36.1%, increasing to 38.6% with the Art Data Centre traffic on the network. For the “without development” scenario, a maximum queue of 0.6 PCU, and delay of 0.05 (or 3 seconds) are forecast, with a negligible impact on these criteria for the “with development” scenario (maximum queue of 0.6 PCU, and delay of 0.06 (or 4 seconds).

It is noted that the maximum impacts that are forecast during the months when the maximum number of deliveries are made to the site will be similar, but marginally less than those set out above for the peak construction months. With respect to the impacts on the M18 slip road approach to the roundabout it is forecast that the worst case will be during the AM peak hour for the peak construction months in 2027, when an RFC of 7.6% for the “without development” scenario will increase to 11.9% with the Art Data Centre traffic introduced on

the network. For all scenarios tested, the maximum queuing for this movement is forecast to be less than 1 PCU. While in reality there will be occasions when minor queuing will occur, the assessment indicates that traffic generated by the proposed Art Data Centre will have a negligible impact on the M18 slip lane approach to the East Clare Roundabout.

The result of the capacity tests for the East Clare Roundabout forecasts that the existing roundabout will operate well within capacity for all scenarios up to and beyond the development future year of 2044.

Junction capacity test results for M18 / R352 Tulla Road West Roundabout

The results of the capacity test undertaken for the Tulla Road West Roundabout are set out in Table 12.23.

The maximum RFC for the Tulla Road West roundabout is forecast to occur during the peak construction period in the year 2027 and is also forecast to apply to traffic on the R352 heading out of Ennis during the AM peak hour. For this arm a maximum RFC of 35.0% is forecast to apply with no Art Data Centre development traffic, increasing to 47.5% with the proposed development construction traffic on the network. For the “without development” scenario a maximum queue of 0.51 PCUs is forecast with a corresponding delay of 0.06 (or 4 seconds) which is forecast to increase marginally to for the “with development” scenario to a maximum queue of 0.9 PCUs with a corresponding delay of 0.07 (or 4 seconds).

During the PM peak hour, it is the same movement that is forecast to have the highest RFC (outbound from Ennis on the R357), with the Art Data Centre fully operational in 2044 being marginally the worst case. For this movement it is forecast that the RFC will increase from a no development level of 42.1%, to 43.7% with the Art Data Centre traffic on the network. For the “without development” scenario, a maximum queue of 0.7 PCUs, and delay of 0.06 (or 4 seconds) are forecast, increasing marginally for the “with development” scenario to a maximum queue of 0.8 PCU, and delay of 0.07 (or 4 seconds).

As for the neighbouring East Clare Roundabout, it is noted that the maximum impacts that are forecast for the Tulla Road East Roundabout during the months when the maximum number of deliveries are made to the site will be similar, but marginally less than those set out above for the peak construction months. At the Tulla Road West roundabout during the critical peak construction months in 2027 it is forecast that the RFC for the M18 slip road approach to the roundabout will increase from a background level of 12.7% to 17.4% with the Art Data Centre traffic during the AM peak hour, and from 35.9% to 40.5% during the PM peak hour. For the worst case PM peak hour it is forecast that for the “without development” scenario there will be a maximum queue of 0.6 PCUs, with a corresponding delay of 0.07 minutes (or 4 seconds). For the “with development” scenario this is forecast to increase to a queue of 0.7 PCUs and delay of 0.08 minutes (5 seconds).

As for the M18 slip on the East Clare Roundabout, while in reality there will be occasions when minor queuing does occur, the assessment confirms that traffic generated by the proposed Art Data Centre will have a minimal impact on the M18 slip lane approach to the Tulla Road West Roundabout.

The result of the capacity tests for the Tulla Road West Roundabout forecasts that the existing roundabout will operate well within capacity for all scenarios up to and beyond the development future year of 2044.

The model output files for each of the 3 junctions are included for the “with Art Data Centre” peak construction, PM peak hour, year 2027, as Appendix 12.7.

Table 12.21 Junction capacity test results – Art Data Centre access junction on the R352 Tulla Road, with development traffic, by year and time period

Year	Arm	AM peak hour			PM peak hour		
		RFC	Q	Delay	RFC	Q	Delay
2027 (Average construction day)	Right turn from development	7.1	0.08	0.13	35.3	0.54	0.21
	Left turn from development	0.7	0.01	0.10	11.9	0.13	0.13
	Right turn into development	11.1	0.12	0.11	1.3	0.01	0.11
2027 (Peak construction day)	Right turn from development	12.4	0.14	0.15	61.6	1.56	0.35
	Left turn from development	1.3	0.01	0.11	24.8	0.33	0.19
	Right turn into development	19.7	0.24	0.13	2.3	0.02	0.11
2027 (Peak HGV delivery day)	Right turn from development	15.0	0.18	0.15	44.0	0.78	0.24
	Left turn from development	2.3	0.02	0.11	14.6	0.17	0.15
	Right turn into development	13.7	0.16	0.11	2.9	0.03	0.11
2029 (Fully operational)	Right turn from development	11.5	0.13	0.14	11.0	0.12	0.15
	Left turn from development	1.5	0.02	0.10	3.0	0.03	0.11
	Right turn into development	8.5	0.09	0.11	2.3	0.02	0.11
2044 (Fully operational)	Right turn from development	11.6	0.13	0.14	11.2	0.13	0.16
	Left turn from development	1.5	0.02	0.10	3.1	0.03	0.12
	Right turn into development	8.5	0.09	0.11	2.3	0.02	0.11

Table 12.22 Junction capacity test results - East Clare Roundabout, without and with development traffic,

by development scenario, year *r* and time period

Year	Arm	AM peak hour						PM peak hour					
		No development			With development			No development			With development		
		RFC	Q	Delay	RFC	Q	Delay	RFC	Q	Delay	RFC	Q	Delay
2027 (Average construction day)	R352 Ennis Road	29.7	0.4	0.05	38.2	0.6	0.05	33.1	0.5	0.05	35.0	0.5	0.05
	M18 slip	7.6	0.1	0.04	10.0	0.1	0.04	9.8	0.1	0.05	10.3	0.1	0.05
	R352 Tulla Road	19.9	0.2	0.04	21.9	0.3	0.04	18.9	0.2	0.04	28.3	0.4	0.05
2027 (Peak construction day)	R352 Ennis Road	29.7	0.4	0.05	44.3	0.8	0.06	33.1	0.5	0.05	36.4	0.6	0.06
	M18 slip	7.6	0.1	0.04	11.9	0.1	0.05	9.8	0.1	0.05	10.5	0.1	0.05
	R352 Tulla Road	19.9	0.2	0.04	23.2	0.3	0.05	18.9	0.2	0.04	35.1	0.5	0.06
2027 (Peak HGV delivery day)	R352 Ennis Road	29.7	0.4	0.05	40.2	0.7	0.06	33.1	0.5	0.05	36.4	0.6	0.06
	M18 slip	7.6	0.1	0.04	11.3	0.1	0.04	9.8	0.1	0.05	11.5	0.1	0.05
	R352 Tulla Road	19.9	0.2	0.04	24.0	0.3	0.05	18.9	0.2	0.04	30.5	0.4	0.05
2029 (Fully operational)	R352 Ennis Road	30.7	0.4	0.05	37.5	0.6	0.05	34.1	0.5	0.05	36.6	0.6	0.06
	M18 slip	8.0	0.1	0.04	10.0	0.1	0.04	10.2	0.1	0.05	11.1	0.1	0.05
	R352 Tulla Road	20.6	0.3	0.04	23.8	0.3	0.05	19.5	0.2	0.04	22.3	0.3	0.05
2044 (Fully operational)	R352 Ennis Road	32.4	0.5	0.05	39.3	0.6	0.06	36.1	0.6	0.05	38.6	0.6	0.06
	M18 slip	8.4	0.1	0.04	10.5	0.1	0.04	10.8	0.1	0.05	11.8	0.1	0.05
	R352 Tulla Road	21.7	0.3	0.04	25.0	0.3	0.05	20.6	0.3	0.05	23.4	0.3	0.05

Table 12.23 Junction capacity test results - Tulla Road West Roundabout, without and with development traffic, by development scenario, year and time period

Year	Arm	AM peak hour						PM peak hour					
		No development			With development			No development			With development		
		RFC	Q	Delay	RFC	Q	Delay	RFC	Q	Delay	RFC	Q	Delay
2027 (Average construction day)	R352 Ennis Road	35.0	0.5	0.06	42.2	0.7	0.06	38.7	0.6	0.06	39.7	0.7	0.06
	Local access	0.0	0.0	0.00	0.0	0.0	0.00	0.7	0.0	0.06	0.7	0.0	0.06
	R352 Tulla Road	22.2	0.3	0.04	23.3	0.3	0.04	21.3	0.3	0.04	28.5	0.4	0.05
	M18 slip	12.7	0.1	0.05	15.4	0.2	0.05	35.9	0.6	0.07	38.6	0.6	0.07
2027 (Peak construction day)	R352 Ennis Road	35.0	0.5	0.06	47.5	0.9	0.07	38.7	0.6	0.06	40.3	0.7	0.06
	Local access	0.0	0.0	0.00	0.0	0.0	0.00	0.7	0.0	0.06	0.7	0.0	0.06
	R352 Tulla Road	22.2	0.3	0.04	23.9	0.3	0.04	21.3	0.3	0.04	33.7	0.5	0.05
	M18 slip	12.7	0.1	0.05	17.4	0.2	0.05	35.9	0.6	0.07	40.5	0.7	0.08
2027 (Peak HGV delivery day)	R352 Ennis Road	35.0	0.5	0.06	43.2	0.8	0.06	38.7	0.6	0.06	40.1	0.7	0.06
	Local access	0.0	0.0	0.00	0.0	0.0	0.00	0.7	0.0	0.06	0.7	0.0	0.06
	R352 Tulla Road	22.2	0.3	0.04	24.3	0.3	0.04	21.3	0.3	0.04	29.6	0.4	0.05
	M18 slip	12.7	0.1	0.05	16.8	0.2	0.05	35.9	0.6	0.07	39.9	0.7	0.08
2029 (Fully operational)	R352 Ennis Road	36.0	0.6	0.06	41.5	0.7	0.06	39.9	0.7	0.06	41.4	0.7	0.06
	Local access	0.0	0.0	0.00	0.0	0.0	0.00	0.7	0.0	0.06	0.7	0.0	0.06
	R352 Tulla Road	22.9	0.3	0.04	24.6	0.3	0.04	22.0	0.3	0.04	23.9	0.3	0.05
	M18 slip	13.1	0.1	0.05	15.5	0.2	0.05	37.3	0.6	0.07	39.2	0.6	0.07
2044 (Fully operational)	R352 Ennis Road	38.0	0.6	0.06	43.5	0.8	0.06	42.1	0.7	0.06	43.7	0.8	0.07
	Local access	0.0	0.0	0.00	0.0	0.0	0.00	0.8	0.0	0.06	0.8	0.0	0.06
	R352 Tulla Road	24.2	0.3	0.04	25.9	0.3	0.05	23.2	0.3	0.05	25.2	0.3	0.05
	M18 slip	13.9	0.2	0.05	16.5	0.2	0.05	39.6	0.7	0.07	41.6	0.7	0.08

12.6 REMEDIAL AND MITIGATION MEASURES

This section summarises the mitigation measures proposed to minimise the effects of the proposed Art Data Centre during both the construction and operational stages.

12.6.1 Mitigation by design

Mitigation by design measures include the following;

- Selection of the most appropriate delivery routes to transport materials to and from the site, limiting the distance travelled on local and regional roads to a minimum.
- Where possible gravel and stone material will be obtained from borrow pits on site. For all sand, stone and cement required to be delivered to the site all materials will be sourced from suppliers that are both closest to the proposed development site, and also those that will minimise the amount of time / distance travelled by truck on local and regional roads. The quarries considered most suitable on this basis are discussed in Section 12.7.2.
- Construction of a new access junction in the form of a priority junction with right turn and left slip lanes on the R352 Tulla Road to provide access for all construction and operational traffic generated by the proposed Art Data Centre.

12.6.2 Construction Phase

The successful completion of the Art Data Centre will require significant coordination and planning, and a comprehensive set of mitigation measures will be in place before and during the construction stages in order to minimise the effects of the additional traffic generated on the adjacent road network. While a detailed **Traffic Management Plan (TMP)** will be submitted for agreement with the Road Section of Clare County Council well in advance of the construction phase of the proposed Art Data Centre, a preliminary **Outline Traffic Management Plan (OTMP)** incorporating all the likely potential mitigation measures is submitted as part of the CEMP included with the application documentation. The OTMP, and subsequently, the TMP, will be finalised and agreed with Clare County Councils Road Section and An Garda Síochána prior to construction works commencing on site. The TMP will include as a minimum the following:

Traffic Management Coordinator – A competent Traffic Management Co-ordinator will be appointed by the Client / Contractor for the duration of the project. This person will be the main point of contact for the public and public bodies, including Clare County Council and An Garda Síochána, for all matters relating to traffic management during the construction of the proposed Art Data Centre.

Delivery Programme – A programme of deliveries will be submitted to Clare County Council in advance of all deliveries to the Art Data Site, with preliminary daily traffic volumes included by construction month included as Appendix 12.5 of this EIA. The proposed development will be constructed over a 6.5 year period, commencing in December 2022, with completion forecast in July 2029.

Identification of delivery routes – These routes will be agreed and adhered to by all contractors. As discussed with Clare County Councils Road Section during pre-planning, where possible suppliers will be selected to minimise the amount of distance travelled by truck and HGV movements generated during the construction phase. While the origins of the suppliers of general construction materials and data centre components are not known at this stage, in relation to supply of sand, aggregate, stone and cement, which will comprise a significant proportion of HGV traffic generated during the construction phase, 3 quarries have been identified for consideration, with the locations and routes shown in Figure 12.4 at the end of this chapter, this shows;

- Quarry Option 1 - located in Bunratty the total distance to the Art Data site is 24 kms of which the majority of the route is on the M18 motorway, with only a short section of the L3122 north of Bunratty and the 1km section of the R352 between the M18 and the site access being on non-national roads.
- Quarry Option 2 - located in Toonagh north of Ennis, the total travel distance is just 11 kms of which 4 kms is on the R476, and 1 km on the R352 between the M18 and the site access.
- Quarry Option 3 – This quarry is 17 kms from the site and is located to the east of Tulla with the entire route on the R352 non-national road.

Discussions will be held with the Road Section of Clare County Council to discuss the traffic implications of each quarry location well in advance of the commencement of construction.

Traffic volumes and impacts of traffic during construction – A summary of the traffic volumes and the forecast impacts of additional traffic movements generated during the construction of the Art Data Centre, (as set out in detail in Table 12.9 of the EIA) is as follows;

Staff trips – It is forecast that during the busiest construction month (month 61 in the year 2027) a maximum of 1,200 construction staff will require to travel to and from the site per day. While a detailed travel plan will be prepared by the contractor, which will involve the transportation to and from the site by bus for a significant number of construction staff, the scenario tested in the EIAR assumes that all construction staff will travel by car, with an average of 1.5 staff to each car. For the busiest construction days, this will result in 800 car trips to and from the site per day, with 40% (320 car trips) travelling during the traditional peak hours. It is estimated that site staff will generate 464 cars trips to and from the site on an average day, with 189 travelling to the site during the AM peak hour and from the site during the PM peak hours.

HGV – It is noted that when considering HGV movements only, the busiest period is forecast to be early in Phase 1, when it is estimated that 115 HGV movements will require to travel to / from the site during one day, resulting in 12 trips per hour, or on average 1 load in and out of the site every 5 minutes.

Detailed capacity tests were undertaken at the proposed access junction on the R352 Tulla Road and the 2 roundabouts linking the M18 slip roads to the R352 Tulla Road (East Clare Roundabout and Tulla Road West roundabout, as shown in Figure 12.1 of the EIAR. At this preliminary stage it was assumed that 40% of all HGV trips will travel to/from the site via the M18 from the north, with the same amount to and from the M18 in the south. It was assumed that the remaining 20% would travel to and from the direction of the quarry located close to Tulla. For all cases the proposed access junction and roundabouts are forecast to operate well within capacity (maximum of 48% while up to 85% capacity is considered acceptable) with no queueing forecast for the M18 slip road approaches to the roundabouts (therefore no forecast risk of blocking back to M18 carriageway).

It is acknowledged that the above capacity assessment is based on uniform arrivals / departures to and from the site, and this will require to be co-ordinated between the supplier and site staff during the peak construction months. This will include the presence of construction staff (flagman) located at key junctions during peak delivery days and times who will be in constant 2-way radio contact. Continual monitoring of the M18 slip roads at the East Clare and Tulla Road West roundabouts will be undertaken during busing periods. It is noted that contingency measures are provided in the CEMP in the event that an incident occurs at the M18 slip approach to the Tulla Road West roundabout in order to avoid the build-up of HGVs queuing back to the main M18 carriageway. These measures involve the immediate re-routing of HGV movements off the M18 to temporary detours via the N85 and through Ennis.

Travel plan and parking for construction workers – While the traffic impact assessment included in Section 12.5 of the EIAR assumes the worst case scenario that all construction workers will drive to the site, the construction company will be required to implement a travel plan for construction staff, which will include the provision of buses to / from the site for a significant portion of the workforce.

Based on the worst case it is forecast that up to 800 parking spaces will be required to be available for site staff during the busiest month, reducing to 400 for an average month.

Information to locals – All residents and businesses in the area will be informed of any upcoming traffic related matters. Information will include the contact details of the Contract Project Co-ordinator, who will be the main point of contact for all queries from the public or local authority during normal working hours. An "out of hours" emergency number will also be provided.

A Pre and Post Construction Condition Survey – A pre-condition survey of roads associated with the proposed development will be carried out prior to construction commencement to record the condition of the road. A post construction survey will be carried out after works are completed. Where required the timing of these surveys will be agreed with the local authority. All road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the local authority engineers.

Liaison with the relevant local authority - Liaison with Clare County Councils Road Section and An Garda Síochána during the delivery of any abnormal loads, when an escort may be required.

Temporary traffic signs – As part of the traffic management measures temporary traffic signs will be put in place at all key junctions, including the new junction providing access to the site the R352 Tulla Road. All measures will be in accordance with the “*Traffic Signs Manual, Section 8 – Temporary Traffic Measures and Signs for Road Works*” (DoT now DoTT&S) and “*Guidance for the Control and Management of Traffic at Roadworks*” (DoTT&S). A member of construction staff (flagman) will be present at key junctions during peak delivery days and times. This will include the monitoring of traffic on the M18 slip roads at the East Clare and Tulla Road West roundabouts.

Delivery times of abnormal loads - The management plan will include the option to deliver any abnormal loads at night in order to minimise disruption to general traffic during the construction stage.

Additional measures - Various additional measures will be put in place in order to minimise the effects of the development traffic on the surrounding road network including wheel washing facilities on site and sweeping / cleaning of local roads as required.

Re-instatement works - All road surfaces and boundaries will be re-instated to pre-development condition, as agreed with the Road Section of Clare County Council. The roads conditions survey (and any other analyses required by the Roads Section of the Council) will be undertaken immediately prior to construction commencement of the project to assess the condition of the road network at that time and to agree any required works with the local authority. Such a survey would be repeated immediately after completion of the construction phase of the project in order to ensure that any reinstatement works were carried out to a satisfactory standard as required by the local authority.

Road Opening Licence – Roads works associated with the proposed access junction on the R352 Tulla Road will be undertaken in line with the requirements of a road opening licence as agreed with Clare County Council.

12.6.3 Operational Phase

In addition to the provision of the proposed access junction on the R352 Tulla Road that will provide access to the site for all traffic during the operational stage up to and beyond the test year of 2044, the following measures will be put in place as mitigation measure;

Travel Plan – While an outline Travel Plan is provided as part of the current planning application to Clare County Council (included as Appendix 12.6), a detailed plan will be developed prior to opening. The plan will be updated as each Data Centre is occupied, with the aim to encourage the use of sustainable modes of travel to the Art Data Centre, including walking, cycling, public transport (if an option) and car sharing / pooling.

The provision of a safe environment for all sustainable modes - Including footpaths and crossing facilities and cycle paths throughout the Art Data campus.

The provision of a safe internal road network - Including parking and delivery bays to provide a safe environment for all staff, visitors and deliveries to the site.

12.6.4 Mitigation during decommissioning

In the event that the Art Data Centre is decommissioned after the life of the proposed development a decommissioning plan, including material recycling / disposal and traffic management plan will be prepared for agreement with the local authority. The mitigation measures would be similar to those proposed during the construction phase.

12.7 PREDICTED IMPACTS OF THE PROPOSED DEVELOPMENT

12.7.1 Do Nothing

An alternative scenario to developing the proposed Art Data Centre would be to do nothing and leave the site as it is. For this scenario there will be no additional traffic generated or works carried out on the road network and therefore no effects with respect to traffic.

12.7.2 Construction Phase

Worst case Art Data Centre peak construction scenario - 2027 (as presented in Section 12.5)

Based on the worst case scenario that all construction staff trips are car-based, during the busiest months of the 6.5 year (80 month) construction period, the likely effects on the surrounding road network are forecast to be as follows:

Link flows and delays on R352 Tulla Road – Traffic volumes during peak hours on the R352 Tulla Road are forecast to increase by up to 77% just to the west of the proposed access junction during the AM peak hour, reducing to 23% during the course of the day. The junction capacity tests undertaken for the critical AM and PM peak hours indicate that the forecast increase in traffic flows will translate into relatively small impacts to general traffic flow in terms of delays and queues. It is therefore determined that the effects on traffic on the R352 Tulla Road will be negative, will be slight, and will be short term, lasting for approximately 18 months between the years 2026 to 2028.

Link flows and delays on M18 slip roads and the M18 – During these peak construction months peak hour traffic flows on the M18 slip roads linking into the R352 roundabouts are forecast to increase by between 12% and 23% during the peak hours, and by 7% during the course of the day. On the M18 main carriageway construction traffic during the peak months is forecast to result in between a 1% to 10% increase during peak hour flows, and 1% to 3% during the day. As for the R352 approaches to the roundabouts, the junction capacity tests undertaken for the AM and PM peak hours show that the additional traffic will relatively minor impacts to general traffic flow in terms of delays and queues on the M18 slip road approaches. It is, therefore, also determined that the effects on traffic on the M18 slip roads and on the M18 main carriageway will also be negative, will be slight, and will be short term, lasting for approximately 18 months between the years 2026 to 2028.

Average and lower than average construction scenario between 2023 and 2029

During the remaining 5 years construction period the impacts on the local network as a result of construction traffic will be less than for the peak construction scenario, as set out above. It is therefore determined that the effects on traffic on the R352 Tulla Road and on the M18 slip roads and main M18 carriageway will be negative, will be slight, and will be short term, lasting for approximately 5 year, between the years 2023 to 2029.

12.7.3 Operational Phase

Art Data Centre Fully Operational – 2029 to 2044

Additional traffic volumes that will be generated during the operational stage will be significantly less than an average construction day. It is therefore determined that the effects on traffic on the R352 Tulla Road, the M18 slip roads and the M18 main carriageway during the operational phase will be negative, will be slight, and will be long term, lasting for the life time of the Art Data Centre.

12.7.4 Decommissioning

It is forecast that the traffic related impacts during the decommissioning phase of the Art Data Centre will be similar, but significantly less than those determined for construction phase.

12.8 CUMULATIVE IMPACTS

The one significant pending development that could have the potential for cumulative traffic impacts with the Art Data Centre is the decommissioning of the Roche Pharmaceutical facility located in Clarecastle, County Clare. An assessment of the potential cumulative traffic effects with the proposed Art Data Centre was undertaken based on the following criteria;

- Project status (proposed to operational and the potential for developments periods of activity to overlap),
- Degree of overlap with the Proposed Development delivery highway network (low to high),
- Traffic volumes (low to high).

The construction of the proposed Art Data Centre will take place between the year 2023 to 2029, and will be operational for the foreseeable future. The works associated with the decommissioning of the Roche facility will take place between the years 2021 to 2024. In terms of project scheduling there is therefore an overlap in years 2023 and 2024.

With respect to the area of the road network that is impacted and the traffic volumes generated by both developments, the EIAR prepared for the Roche site identified the area impacted to be roads local to Clarecastle and the R458 between the site and Junction 11 of the M18, beyond which the “impact of traffic generated by the Proposed Development will be below the TII thresholds, therefore, an assessment of the traffic and transportation impacts beyond Junction 11 of the M18 is not required”. As set out in Section 12.5 of this EIAR, it is concluded that the effects of traffic generated by the Art Data Centre will be limited to the R352 Tulla Road and the slip roads of Junction 13 of the M18. It is therefore concluded that the potential for cumulative impacts will be imperceptible.

12.9 RESIDUAL IMPACTS

12.9.1 Construction stage

During the 6.5 year construction stage of the Art Data Centre, it is forecast that the additional traffic that will appear on the delivery routes indicated in Figure 12.1 will have a slight to moderate and temporary impact on existing road users, which will be minimised with the implementation of the mitigation measures included in the proposed traffic management plan.

12.9.2 Operational stage

During operational stage of the Art Data Centre, it is forecast that the effects on existing road users and businesses due to the additional traffic that will travel on the road network will be slight and will be minimised with the implementation of the mitigation measures included in the proposed Travel Plan.

12.9.3 Decommissioning

As stated above, in the event that the proposed Art Data Centre is decommissioned a decommissioning plan will be prepared and implemented in order to minimise the residual impacts during this stage. In the event that decommissioning of the site takes place the residual effects will be similar, but less than for the construction stage, and will have a slight to moderate and temporary impact on existing road users.

Clare Planning Authority - Inspection Purposes Only



Figure 12.1 Local road network

NOTES:
 PLANNING DRAWING ONLY

PROJECT:	Art Data Centre - Ennis Campus, Co Clare		
CLIENT:	Art Data Centres		SCALE: NTS
AL PROJECT NO:	7680	DATE:	02.06.22
		DRAWN BY:	AL

ALAN LIPSCOMBE
 TRAFFIC & TRANSPORT CONSULTANTS



Figure 12.2 Link locations for traffic assessment

NOTES:
 PLANNING DRAWING ONLY

PROJECT:	Art Data Centre - Ennis Campus, Co Clare		
CLIENT:	Art Data Centres		
SCALE:	NTS		
AL PROJECT NO:	7680	DATE:	02.06.22
		DRAWN BY:	

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 TRAFFIC & TRANSPORT CONSULTANTS



NOTES:
 PLANNING DRAWING ONLY

Figure 12.3 Distances from Art Data Centre to Ennis town centre

PROJECT:		Art Data Centre - Ennis Campus, Co Clare	
CLIENT:		Art Data Centre	
AL PROJECT NO:	8810	DATE:	02.06.22
		SCALE:	NTS
		DRAWN BY:	AL

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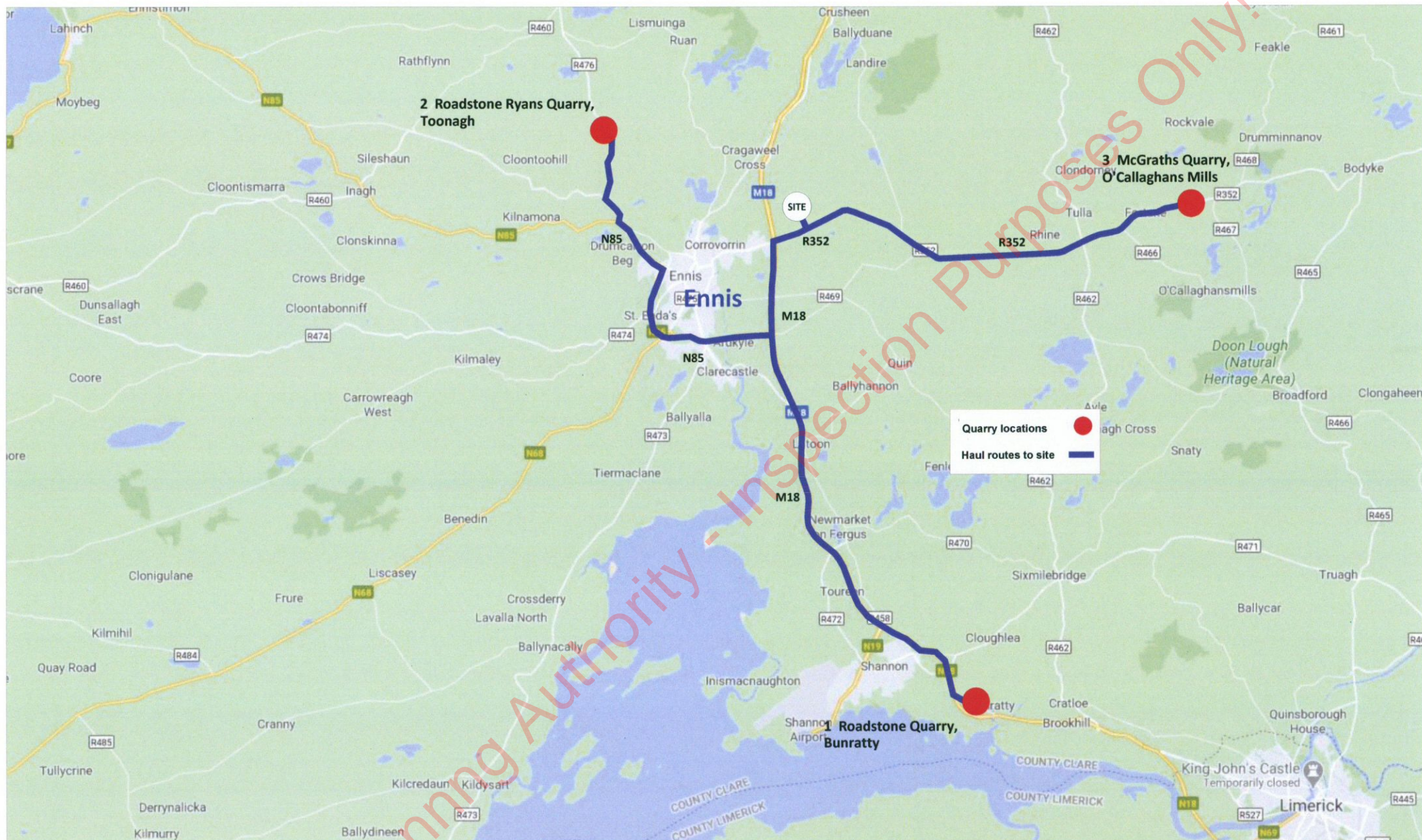


Figure 12.4 Locations of potential quarries for stone and ready mix concrete, and delivery routes

NOTES:
PLANNING DRAWING ONLY

PROJECT: Art Data Centre - Ennis Campus, Co Clare		SCALE: NTS
CLIENT: Art Data Centres		DRAWN BY: AI
PROJECT NO: 8810	DATE: 07.05.21	

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