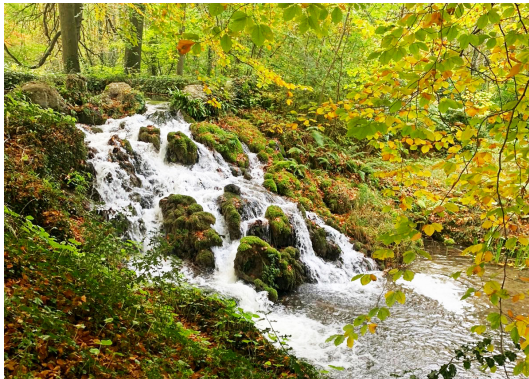


Chief Executive's Report

On submissions/observations received to the
Draft Naas Local Area Plan 2021 - 2027



**Appendix 2:
Transport Modelling Report**

Internal Memo

Comhairle Chondae
Chill Dara

Transportation Department
Aras Chill Dara,
Naas.



To: David Reel
Date: 31st May 2021
Re: Traffic Modelling – Proposed Data Centre Newhall / Jigginstown, Naas

1.0 Introduction:

Recently, the Transport Department in Kildare County Council completed the Naas / Sallins Transport Strategy. This transport strategy was developed to create a holistic transport plan for Naas and Sallins over the next two decades. One aspect of this transport strategy was to link future town development and land use zoning with transport considerations. This is to ensure that any future land use zonings do not negatively impact on the functioning of the transport network in Naas and Sallins. This is particularly important given the close proximity of the M7 and the M7 junctions, 9, 9A and 10 to Naas.

Following the completion of the Naas / Sallins Transport Strategy, the Planning Department requested that the Transport Department conduct additional traffic modelling to gauge the impacts of proposed data centers in sites at: Newhall / Jigginstown, Naas; and

- R409 Caragh Road, Naas.

The locations of these proposed data centers are shown in Figure 1 and Figure 2 below. The site area is approximately 106 acres and 91 acres respectively.

These data centers were not originally included in the strategic traffic model (using PTV VISUM software) developed for the Naas / Sallins Transport Strategy.

The purpose of this modelling exercise was to understand the impacts of additional trips generated by the data centers in these locations on the surrounding road network.

The modelling was undertaken in the following sequence:

- Impacts of a Data Centre in the Newhall / Jigginstown location assessed in isolation.
- Impacts of the R409 Caragh Road Location in isolation; and
- Combined impact of Date Centers in both sites assessed together.

2.0 Impacts of a Data Centre in the Newhall / Jigginstown location

Two options were modelled in terms of access to the site:

1. Access at Newhall Industrial Estate
2. Access at Devoy Link Road

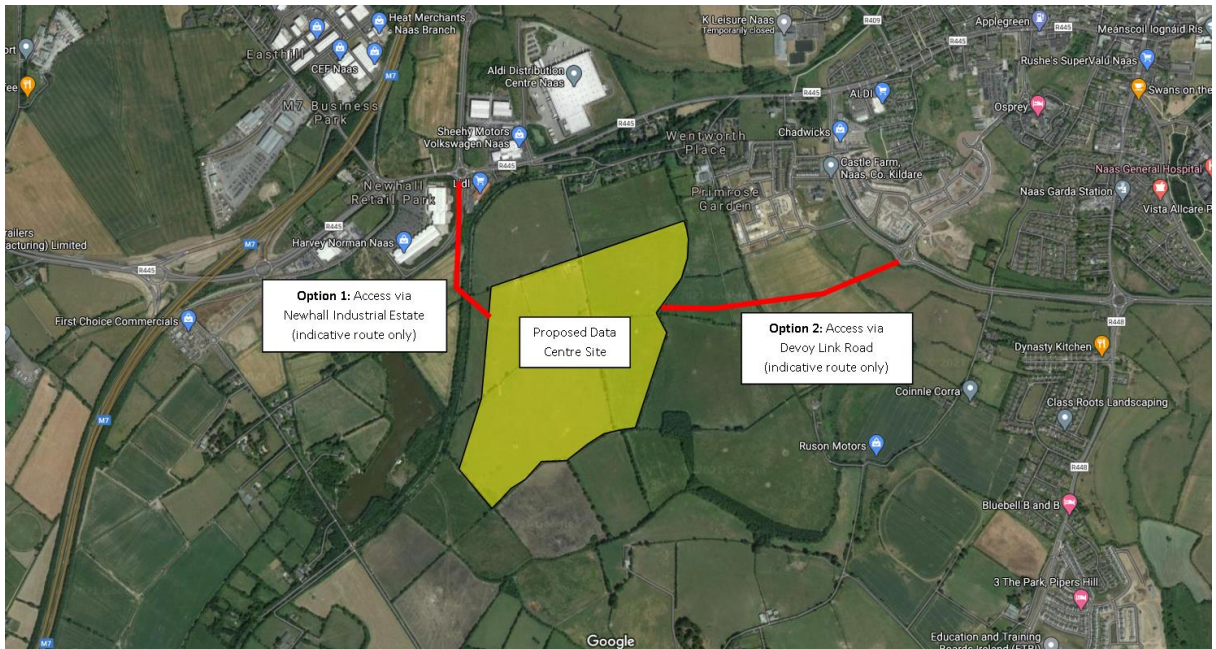


Figure 1: Location of Proposed Data Centre at Newhall / Jigginstown, Naas, Co. Kildare

3.0 Impacts of a Data Centre at the R409 Caragh Road

Three options were modelled in terms of access to the site:

1. Access from the R409
2. Access via M7 Business Park to the Bundle of Sticks Roundabout
3. Combined Access at R409 and via M7 Business Park



Figure 2: Location of Proposed Data Centre at R409 Caragh Road

4.0 Details of Traffic Modelling:

The new traffic modelling scenarios were run by Consultants AECOM in the Naas VISUM model for the AM and PM peak hours in the future years 2023 and 2030.

The proposed location of the data centers were not originally represented by specific zones in the Naas VISUM traffic model, so for the purposes of this exercise new zones were created, and the traffic demand adjusted in the traffic model to reflect this.

It was assumed that the data centers would generate a worst-case scenario of 50 departures and arrivals in the AM and PM peak hours (151 employees / 3 shifts per day).

The outputs of the traffic model included the following:

- Updated traffic models (2023/2030 AM & PM Do-Min and Do-Something).
- Difference plots (vehicle flows).
- Volume/Capacity Ratios.
- Queue lengths; and
- Network Statistics.

These outputs allowed for the analysis of the impact of the data center proposals, particularly on key junctions in the vicinity of the proposed development such as the M7 junction 10.

Access options to the data center sites were modelled separately, and in combination, so that they could be directly compared and to inform the selection of the preferred access point.

2.2 Traffic Modelling Results:

This section presents the outputs of the traffic modelling and discusses the impact of the data centre on the road network, compared to the do-minimum scenario. It also addresses the question as to which access point is preferable from a traffic perspective.

2.3 Network Statistics – Newhall / Jigginstown Location

Network statistics from across the traffic model network are presented in the tables below. The main points to note are as follows:

- Overall, the impact of the data centre is relatively minor in terms of increase in vehicle-kilometers and travel time
- The data centre scenario which is accessed via the Devoy link road performs slightly worse than the alternative access point via the Newhall Industrial Estate
- This suggests that the access via the Newhall Industrial Estate is preferable from a traffic perspective

Demand	Do Min	Data Centre Newhall Access	Data Centre Devoy Access
2023 AM	20,515	20,615	20,615
2023 PM	18,223	18,323	18,323
2030 AM	24,239	24,339	24,339
2030 PM	21,644	21,744	21,744

Difference	Data Centre Newhall Access	Data Centre Devoy Access
2023 AM	100	100
2023 PM	100	100
2030 AM	100	100
2030 PM	100	100

% Difference	Data Centre Newhall Access	Data Centre Devoy Access
2023 AM	+ 0.5%	+0.5%
2023 PM	+ 0.5%	+ 0.5%
2030 AM	+ 0.4%	+ 0.4%
2030 PM	+ 0.5%	+ 0.5%

Vehicle-kilometres	DM	Data Centre Newhall Access	Data Centre Devoy Access
2023 AM	198,624	199,502	199,557
2023 PM	181,804	182,628	182,689
2030 AM	242,037	242,875	242,575
2030 PM	221,341	222,208	222,314

Difference	Data Centre Newhall Access	Data Centre Devoy Access
2023 AM	877	933
2023 PM	825	886
2030 AM	838	538
2030 PM	867	973

% Difference	Data Centre Newhall Access	Data Centre Devoy Access
2023 AM	+0.4%	+ 0.5%
2023 PM	+0.5%	+ 0.5%
2030 AM	+0.3%	+ 0.2%
2030 PM	+0.4%	+ 0.4%

Travel Time (hrs)	DM	Data Centre Newhall Access	Data Centre Devoy Access
2023 AM	4,560	4,604	4621
2023 PM	3,514	3,544	3548
2030 AM	7,245	7,320	7358
2030 PM	5,256	5,328	5307

Difference	Data Centre Newhall Access	Data Centre Devoy Access
2023 AM	44	61
2023 PM	30	34
2030 AM	75	114
2030 PM	72	51

% Difference	Data Centre Newhall Access	Data Centre Devoy Access
2023 AM	+ 1.0%	+ 1.3%
2023 PM	+ 0.9%	+1.0%
2030 AM	+ 1.0%	+ 1.6%
2030 PM	+ 1.4%	+ 1.0%

2.4 Network Statistics – R409 Caragh Road Location

Network statistics from across the traffic model network are presented in the tables below. The main points to note are as follows:

- Overall, the impact of the data center is relatively minor in terms of increase in vehicle-kilometers and travel time
- The data center scenario which is accessed via the M7 Business Park road performs slightly worse than the alternative access point via the R409
- This suggests that the access via the R409 is preferable from a traffic perspective

Demand	Do Min	R409	M7 BP	Both
2023 AM	20515	20615	20615	20615
2023 PM	18223	18323	18323	18323
2030 AM	24239	24339	24339	24339
2030 PM	21644	21744	21744	21744

Difference	R409	M7 BP	Both
2023 AM	100	100	100
2023 PM	100	100	100
2030 AM	100	100	100
2030 PM	100	100	100

% Difference	R409	M7 BP	Both
2023 AM	0.5%	0.5%	0.5%
2023 PM	0.5%	0.5%	0.5%
2030 AM	0.4%	0.4%	0.4%
2030 PM	0.5%	0.5%	0.5%

Vehicle-kilometres	DM	R409	M7 BP	Both
2023 AM	198624	199486	199550	199452
2023 PM	181804	182647	182705	182608
2030 AM	242037	242883	242851	242810
2030 PM	221341	222154	222290	222109

Difference	R409	M7 BP	Both
2023 AM	862	925	828
2023 PM	843	902	804
2030 AM	847	814	774
2030 PM	813	949	769

% Difference	R409	M7 BP	Both
2023 AM	0.4%	0.5%	0.4%
2023 PM	0.5%	0.5%	0.4%
2030 AM	0.3%	0.3%	0.3%
2030 PM	0.4%	0.4%	0.3%

Travel Time (hrs)	DM	R409	M7 BP	Both
2023 AM	4560	4602	4601	4599
2023 PM	3514	3538	3537	3538
2030 AM	7245	7312	7308	7333
2030 PM	5256	5305	5321	5311

Difference	R409	M7 BP	Both
2023 AM	43	42	39
2023 PM	25	24	24
2030 AM	68	63	89
2030 PM	49	65	55

% Difference	R409	M7 BP	Both
2023 AM	0.9%	0.9%	0.9%
2023 PM	0.7%	0.7%	0.7%
2030 AM	0.9%	0.9%	1.2%
2030 PM	0.9%	1.2%	1.0%

2.4 Network Statistics –Data Centre in both Newhall / Jigginstown Location and R409 Caragh Road Location

Network statistics from across the traffic model network are presented in the tables below. The main points to note are as follows:

- Overall, the impact of the data centers remains relatively minor in terms of increase in vehicle-kilometers and travel time
- However, this scenario is seen to increase vehicle-kilometers and travel time more than either of the scenarios in isolation and is therefore the least preferable scenario

Demand	Do Min	R409	M7 BP	Both
2023 AM	20515	20715	20715	20715
2023 PM	18223	18423	18423	18423
2030 AM	24239	24439	24439	24439
2030 PM	21644	21844	21844	21844

Difference	R409	M7 BP	Both
2023 AM	200	200	200
2023 PM	200	200	200
2030 AM	200	200	200
2030 PM	200	200	200

% Difference	R409	M7 BP	Both
2023 AM	1.0%	1.0%	1.0%
2023 PM	1.1%	1.1%	1.1%
2030 AM	0.8%	0.8%	0.8%
2030 PM	0.9%	0.9%	0.9%

Vehicle-kilometres	DM	R409	M7 BP	Both
2023 AM	198624	200355	200416	200312
2023 PM	181804	183468	183535	183433
2030 AM	242037	243660	243644	243618
2030 PM	221341	223040	223104	222945

Difference	R409	M7 BP	Both
2023 AM	1731	1792	1687
2023 PM	1665	1732	1630
2030 AM	1623	1607	1581
2030 PM	1699	1763	1604

% Difference	R409	M7 BP	Both
2023 AM	0.9%	0.9%	0.8%
2023 PM	0.9%	1.0%	0.9%
2030 AM	0.7%	0.7%	0.7%
2030 PM	0.8%	0.8%	0.7%

Travel Time (hrs)	DM	R409	M7 BP	Both
2023 AM	4560	4657	4653	4653
2023 PM	3514	3571	3572	3572
2030 AM	7245	7401	7394	7407
2030 PM	5256	5380	5404	5393

Difference	R409	M7 BP	Both
2023 AM	97	94	93
2023 PM	57	58	58
2030 AM	156	149	162
2030 PM	124	148	137

% Difference	R409	M7 BP	Both
2023 AM	2.1%	2.1%	2.0%
2023 PM	1.6%	1.7%	1.7%
2030 AM	2.2%	2.1%	2.2%
2030 PM	2.4%	2.8%	2.6%

Conclusion:

Traffic modelling of a data centre at Newhall / Jigginstown and R409 Caragh Road, Naas has been completed using the Naas VISUM model.

In the Newhall / Jigginstown scenario two access points were modelled, one via the Devoy link road and the other via the Newhall Industrial Estate.

In the R409 Caragh Road scenario two access points were modelled, one via the R409 Caragh Road and the other via the M7 Business Park.

The traffic modelling outputs showed very minor impacts of the data centre, either scenario, on the road network compared to the do-minimum model in both the 2023 and 2030 models.

However, the queue length plots indicate that, from a traffic perspective the Newhall Industrial Estate access point is preferable to the Devoy Link road access point. Similarly, queue length plots indicate that access from the R409 access is preferable to the M7 Business Park Access.

A combined scenario with a data centre in both R409 Caragh Road location and in Newhall Jigginstown Location indicated that the impact of the data centers remains relatively minor in terms of increase in vehicle-kilometers and travel time. However, this scenario is least preferred as it does result in a greater increase in vehicle-kilometers and travel time than either scenario in isolation.

The access point conclusions for the scenarios in isolation remain valid in the combined scenario.



Jonathan Hennessy

Executive Engineer



David Reel

A/Senior Engineer