

Leitrim County Council

**N4 Carrick-on-Shannon to
Dromod Project**

Enhanced Rail Service Model Test

27429-SYS-02-OS-RP-YT-000004

P01 | 09 September 2021

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

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1 Introduction

1.1 Purpose of this Note

This technical note has been developed to document the findings of an enhanced rail service model test carried out as part of Phase 2 (Options Selection) appraisal of the N4 Carrick-on-Shannon to Dromod Project. The TII National Transport Model (NTpM) has been utilised to carry out this analysis which is described in more detail in the following sections of this technical note.

1.2 Enhanced Rail Service Assumptions

As part of the Phase 2 appraisal of the N4 Carrick-on-Shannon to Dromod Project, Systra have used Transport Infrastructure Ireland's (TII's) National Transport Model (NTpM) to carry out an assessment of an enhanced rail service along the Sligo to Dublin railway line. The purpose of this test was to assess the impacts (in terms of potential mode shift and traffic flows on the N4) of providing an improved rail service between Sligo and Dublin. As this test required the analysis of multi-modal impacts, TII's variable demand model i.e. the NTpM was used for the test.

The enhanced rail service was assumed to be in place in 2030 and had the following attributes:

- One train every 30 minutes leaving Sligo from 05:40 to 08:40 AM (allows trains to serve all stops on the line and arrive in Dublin in time to get people to work by 9AM)
- One train every 30 minutes leaving Dublin from 05:00 to 08:00 AM (allows trains to serve all stops on the line and arrive in Sligo in time to get people to work by 9AM)
- Outside of the peak periods there is one service per hour until 10pm
- Train speeds were increased by 10%. This is to account for the improvements to the line such as the removal of existing level crossings

The above enhancements result in double the number of trains per day when compared to the existing situation and an end-to-end journey time of 170 minutes between Sligo and Dublin compared to 190 minutes today.

The results of this test, in terms of impacts on traffic flows, rail patronage and mode share are outlined in the following sections of this note. It should be noted that, the feasibility and cost of implementing the above service enhancements was not examined as part of this exercise. The assessment focuses on the likely impacts on traffic volumes along the existing N4 and rail patronage arising from the provision of the improved service.

2 Results of Phase 2 Modelling

2.1 Impact on N4 Traffic Volumes

Table 1 and Table 2 below show the change in AM peak hour Light Vehicle (car) flow and AADT flows, for each section of road between the rail stations along the N4 corridor, respectively. The Rail Test scenario has been compared to the Do-Minimum or “Reference Case” which is the 2030 future year with existing road network and rail service in place.

As shown, there is minimal impact on the forecast traffic volumes along the N4 as a result of the improved rail service.

Table 1: AM Peak hour traffic volumes changes on N4

N4 Section	Reference – AM Peak (LVs)	Rail Test – AM Peak (LVs)	Diff (LVs)	% Diff
Longford - Newtown Forbes	865	862	-3	-0.3%
Newtown Forbes - Dromod	593	592	-1	-0.2%
Dromod - Carrick-on-Shannon	591	590	-1	-0.2%
Carrick-on-Shannon - Boyle	535	533	-2	-0.3%
Boyle - Collooney	501	499	-2	-0.3%

Table 2: AADT flow changes on N4

N4 Section	Reference –AADT	Rail Test – AADT	Diff (LVs)	% Diff
Longford - Newton Forbes	12,608	12,558	-50	-0.4%
Newton Forbes - Dromod	7,897	7,874	-24	-0.3%
Dromod - Carrick-on-Shannon	8,316	8,291	-25	-0.3%
Carrick-on-Shannon - Boyle	8,540	8,506	-34	-0.4%
Boyle - Collooney	6,907	6,886	-21	-0.3%

2.2 Impact on Rail Passengers

Table 3 below shows the total boardings and alightings at each station along the line over a full day (15 hour modelled period – 07:00 to 22:00). This table shows that there is an overall increase in rail passengers of approximately 4% across all the stations between Sligo and Maynooth as a result of the proposed enhancements. The stations within the project study area (Carrick-on-Shannon and Dromod) see increases of between 10% - 11% on boardings and between 6% - 8% on alightings.

The station which sees the largest increase in rail passengers is Mullingar. This is because there is a large demand for trips between the town and Dublin. Following the increase in rail services, there is a switch from other modes (mostly bus) onto the improved rail service connecting Mullingar with Dublin.

Table 3: Daily Rail Passenger Boarding & Alighting

Rail Station	Reference		Rail Test		Diff	
	Boarding	Alighting	Boarding	Alighting	Boarding	Alighting
Maynooth Train Station	3,688	3,834	3,648	3,795	-40	-39
Kilcock Train Station	319	263	315	263	-4	0
Enfield Train Station	93	83	91	88	-2	+5
Mullingar Train Station	664	653	857	836	+193	+183
Edgeworthstown Train Station	151	147	153	147	+2	0
Longford Train Station	369	434	381	439	+12	+5
Dromod Train Station	71	90	78	97	+7	+7
Carrick-on-Shannon Train Station	100	109	111	116	+11	+7
Boyle Train Station	54	71	54	73	0	+2
Ballymote Train Station	81	120	102	135	+21	+15
Collooney Train Station	44	72	46	74	+2	+2
Sligo Train Station	633	556	708	639	+75	+83

2.3 Impact on mode Share

Table 4 below, provides a breakdown of the 15-hour travel demand by car, bus and rail for model zones located along the N4 corridor. The table compares the Rail Test (with service enhancements) to the reference case (today's road and rail services) scenario. This table shows that, overall, the combined Public Transport mode share marginally increases from 2.84% to 2.85% following the introduction of the proposed rail enhancements. Rail mode share increases from 1.28% to 1.33%, however, this increase is largely a result of transfer from bus which see a reduction in mode share (-0.03%) following the introduction of the enhanced rail service. The car mode share along the corridor shows only a very marginal reduction, going from 97.16% to 97.15%, as a result of the improvements to the rail service.

Table 4: N4 Corridor Mode Share

Mode	Reference Mode Share	Rail Test mode Share
Car	97.16%	97.15%
Rail	1.28%	1.33%
Bus	1.55%	1.52%

3 Conclusions

The modelling analysis outlined above shows that the introduction of an enhanced rail service along the Sligo to Dublin railway line is forecast to result in no meaningful impact on traffic levels, or the mode share for car use, along the existing N4. While the analysis did indicate that the service would result in an increase in rail patronage at the stations along the line, this was primarily as a result of a switch from bus to rail for journeys along the corridor.

Therefore, improvements to the rail service along the Sligo to Dublin corridor have been ruled out as a viable alternative to the N4 Carrick-on-Shannon to Dromod Project. Rail service improvements have therefore been dropped from the Stage 2 Alternatives consideration for the project and will not progress any further.