

Meath MultiWay (NTC3)

*Bi-Modal Road / Rail
Development for Meath*



*GROWTH • PROSPERITY
SUSTAINABILITY
RESPONSIBILITY*

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Introduction

This paper outlines an alternative method for the development of transportation in Meath with major social, economic and environmental advantages, benefits for road and rail users, and a high ultimate return to the exchequer.

The paper proposes specific application of the National Transportation Corridors bi-modal road and rail development framework to the Dublin – Navan – Kells corridor. The NTC framework is based on the National Spatial Strategy (NSS), and the Dublin – Navan - Kells corridor follows one of the Strategic Radial Corridors identified in the NSS study.

It is strongly advised that this paper be read in conjunction with the broader NTC paper (*National Transportation Corridors V6CD*), available from this author.

Current Situation

Current transportation planning in Meath has been dominated by the proposal to build the M3 motorway. The M3 is a response to the dramatic growth in vehicle numbers and usage that has occurred since the early 1990s. Such growth has been the result of significantly increased economic activity, changing settlement patterns and general prosperity.

The provision of large road projects to accommodate this growth is a passive response, not an active one. Also, traffic growth in itself has not up until now been seen as problematic, and where debate on the issue has taken place, this has been framed mainly in terms of the availability of resources to build more roads, not in terms of the general problems inherent in such growth, which are now known to be very serious (see below).

The broad NTC paper shows how providing more roadspace has no effect on control of traffic growth. For example, despite the ongoing major road-building programme, vehicle numbers in Ireland surpassed the 2 million figure - envisaged for 2016 - as recently as last year. Further road traffic growth is expected to total 140% over the next ten years, if unchecked. This growth in vehicle numbers has also been accompanied by a step-change increase in their frequency of usage. The last ten years for instance has seen an explosion in commuter and “school run” car journeys, and dramatically increased journeys for shopping and leisure, encouraged by the development of “out-of-town” facilities usually accessible only by car. Expansion in private car use has also been matched by equivalent increases in HGV numbers and movements, again due to the general increase in economic activity, but also due to policies inhibiting the growth of railfreight¹.

Problems Inherent in a Roads-only Planning Approach

As mentioned, one of the problems has been the unquestioned assumption that road-building is beneficial. Unfortunately we now understand that;

- 1) **Motorways and dual carriageways do not control traffic growth; in fact the evidence is to the contrary²;**
- 2) **They contribute to climate change exacerbation³;**
- 3) **They contribute to continuing deterioration in air quality⁴;**
- 4) **They do not reduce congestion;**
- 5) **They facilitate ongoing, unsustainable out-of-town development;**
- 6) **They consequently can seriously damage the attractiveness of areas as a tourism destination;**
- 7) **They consequently can generate losses for local traders in urban areas;**
- 8) **They can seriously damage the landscape, heritage and historical amenity of the areas through which they pass;**
- 9) **They can reinforce long-distance commuting patterns, reducing regions to “commuter ghettos”;**
- 10) **They consume, both directly through construction, and indirectly through associated development after construction, very significant quantities of farmland that could otherwise be used for increased food production, carbon-sink afforestation and the growing of rapeseed as a source of biofuel;**
- 11) **They require extremely large investment envelopes, whereas a balanced approach would free up resources that could be used in other public services provision such as health, education, water supply, etc.**

Likewise, the road planning process is fraught with difficulties. Perhaps the chief problem is that roads are evaluated in isolation to other transport modes. This is an extremely important point. The lack of a joint road – rail planning framework up until now has meant that bodies such as local authorities and the NRA must plan roads as if they were the only transport mode available. This explains the extremely large scale of the current roads programme. Some other points⁵ should be noted:

- 1) Many Environmental Impact Statements on large-scale road projects point to cleaner engine technologies as partial evidence that the emissions impact from such schemes can be mitigated. In fact this only true where total vehicle numbers, and vehicle kms generated, remain static. In actuality, ever-increasing traffic volumes are negating the commendable emissions efficiencies being introduced by vehicle manufacturers
- 2) EISs also point to free-flow of traffic generated by new schemes as being beneficial, since a vehicle is at its most efficient, and at its least polluting, when cruising. Unfortunately, such free-flow is only available in the body of the motorway or dual-carriageway corridor. EISs are unable to quantify the impact of congestion and other problems that occur at motorway interchanges and at the beginning and end points of such schemes. Hence, though impacts may be lessened within the body of the scheme, this does not lessen the total impact result
- 3) Perhaps most seriously, EISs are unable to quantify the extent or impact of car-based housing, retail and leisure development that accompanies construction of new road alignments. Already in the case of the M3, more than 200 acres of land

adjacent to the proposed Blundelstown interchange have been transferred into the ownership of a local property developer⁶. These “out-of-town” developments contribute a further layer of serious congestion, emission and pollution effects that the established EIS process is unable to account for

However, it is vital to understand that these problems are a consequence of structural / policy configurations in the general planning process. Levelling criticism at the bodies concerned, as often occurs, is not a useful response and deflects attention from the root causes of the situation.

Some Important Comments on Public Transport Provision

The predilection for a predominantly roads-based solution to transportation requirements has been reinforced by some critical misperceptions in relation to the other modes currently available. These broadly are:

- 1) **That public transport “cannot pay its way”**
- 2) **That railways aren’t viable**
- 3) **That public transport is inherently inefficient**
- 4) **That public transport is inherently unattractive to the motorist**

Dealing with the first point, it is reasonable to assert that the popular loss-making perception of public transport has had a devastating effect on general policy-making, managerial and staff morale within transport concerns, and on public opinion.

These perceptions haven’t been helped by the centre-right policies of recent governments, nor by the prevailing economic orthodoxies in which all areas of human activity must have their financial costs and benefits.

Nevertheless, it is possible to work within these strictures and still show that public transport can be self-sufficient economically. This doesn’t have to involve privatisation of transportation bodies (often promoted in the belief that this will lead to cost savings, increased efficiency and greater market share); rather the key issue is how public transport modes have been accounted for.

Established research has shown that the rail, coach and bus modes generate indirect benefits to society and the economy in terms of various parameters such as time savings, road maintenance cost savings, vehicle maintenance cost savings, fuel consumption savings, accidents prevented, emissions reduced, congestion costs saved, and so on.

However, it is only recently that these cost savings have been accurately quantified, and though the author does not currently have information relating to the coach and bus modes, significant data is available for the rail mode via the *Strategic Rail Review* carried out by consultants Booz Allen Hamilton for the Department of Transport in 2003. The SRR showed that Irish railways had a value to society and the economy of €18 billion over the 20-year period 2003 to 2022⁷. An unadjusted extrapolation of this figure equates to **€900 million per annum**. Even unadjusted, this figure dwarfs the €406 million total funding to Iarnród Éireann in 2003⁸. Cont.../

Yet this figure has not been incorporated into the accounting structure, such that omitting this huge amount is equivalent to a large corporation omitting current assets from its balance sheet.

In this way, it is very clear how the loss-making perception of public transport is the result of accounting practices that are now known to be inaccurate, not any inherent characteristics of the rail, coach or bus modes.

On the second point, further extrapolation of the BAH data can be used to show that many rail projects previously dismissed as non-viable are not so after all⁹. Again, the omission of the substantial indirect benefits of the rail mode from the accounting regime has painted a completely false picture of rail economics, with very serious consequences. Thankfully this has now been reversed, and indeed the BAH data has been used in the development of the rail element of the NTC framework¹⁰.

Regarding the third point, the author would contend that inefficiencies in public transport are connected to a historically low level of investment, which in turn stems from the incorrect financial appraisal dealt with in points (1) and (2) above. It's important to remember that lack of investment is not simply related to equipment, infrastructure and resources, but critically is also related to personnel and staff productivity. It is self-evident that in regimes where cost-cutting and staff shortages are the norm, morale can never be particularly strong. Thus a general lack of investment must lead to low staff productivity and thus greater inefficiencies. This is also exacerbated by low public opinion, who must suffer the relatively poor quality of service resulting from the low level of investment. Staff on the "front line" are subjected to criticism and even abuse, thus impacting on morale even further.

It is fair to say that investment in public transport *has* been stepped up in recent years. But in the case of the railways, this has mainly been focussed on safety issues and on delivering improvements to Dublin-based commuter services. In general, the investment to date has been to "keep the railway going", cater for expanded demand in the Dublin area, and to add some improvements regionally (e.g. the Midleton line re-opening, the new Limerick to Ennis and Limerick – Junction to Waterford services). Though extremely welcome, this investment pales against the enormous resources currently being poured into the national roads programme, which enjoys 4 times the level of funding¹¹.

In summary therefore, efficiency in public transport is a function of proper investment levels, staff provision and development, and strong vision and commitment.

Finally, the fourth point, asserting that public transport is inherently unattractive to the motorist, is a reflection not of true unattractiveness, but of the relatively poor quality of service, poor vehicle design and lack of convenience that the passenger has traditionally had to endure. The good news is that new technologies (in particular, smart cards), new types of vehicle (minibuses, double-deck coaches), new materials in vehicle construction (permitting more attractive design) and innovations in timetabling ("turn up and go" and fixed frequencies) have all transformed the situation, making high-quality "door-to-door" public transport possible.

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The NTC3 / Meath MultiWay

An ideal candidate for applying the NTC framework is the north-western corridor out of Dublin. At present transportation development along this corridor has been defined solely in terms of an €800 million¹² motorway from Clonee to Kells. The enormous impact of this high-cost / relatively low-value project has been strongly resisted by community groups, environmentalists and leading authorities on heritage and archaeology. Apart from loss of land, community severance, unsustainable increases in vehicular emissions, and light and noise pollution, the current scheme will also severely curtail the area's unique heritage, and amenities such as the Hill of Tara, the Tara / Skryne Valley and Dalgan Park. Yet calls for the reopening of the railway from Clonsilla to Navan, with an extension to Kells, have been resisted due to the "excessive costs" involved¹³. Designating this corridor as an NTC – in this case the NTC3, or "Meath MultiWay" – would allow the NRA to upgrade the existing road to "Two-Plus-One" standard, some of the projected traffic having been allocated to the railway line. This substantially reduces the loadings on the road, and thus reduces the required width and allows other land-intensive design features such as interchanges to be minimised in size or eliminated. A portion of the very significant cost savings arising from this would permit the NRA to concentrate resources on secondary and tertiary roads in the area of the Corridor. Additionally, included in the NTC3 costings are the originally-planned bypasses of Dunshaughlin and Kells additional to Navan.

Iarnród Éireann would then use the balance of the outlay in the re-opening of the Clonsilla-Navan-Kells rail line. This project is laid out in more detail below.

Another critical feature of the NTC3 / Meath MultiWay would be the enhancement of local coach and bus services, cycling routes and pedestrian access within the corridor, and also, the creation of Local Interchanges - high-quality integrated road / rail / bus / stations, with freight distribution facilities - in each of the towns along the route (Fig. 8, Appendix IV). Thus all transportation modes would benefit from the total investment, with the balanced approach yielding high value due to enhanced mobility and competitiveness, greatly reduced environmental costs, "soft benefits" such as increases in the region's attractiveness as a location to live and work, and so on. These gains would translate into a higher return on the investment in due course.

The MultiWay in Detail

The MultiWay would comprise the following elements and programmes;

- **Further step-change expansion of the existing quality coach service**
- **High-quality, high-frequency and high-capacity rail link from Kells to Navan, Dunshaughlin, Ratoath, Ashbourne, Dunboyne and Clonsilla**
- **Bypasses of Kells, Navan and Dunshaughlin**
- **Intermediate N3 road sections widened to NRA "2 plus 1" format**
- **Comprehensive minibus network, connecting to MultiWay rail and bus interchanges**
- **Local Interchanges – rail and bus interchanges along the route, particularly where rail and road intersect**
- **Integrated smartcard ticketing, with regional branding**
- **Provision for double-deck coach and rail vehicles**

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- **Regional and local participation through Partnership Groups**
- **New Fuels programme – biodiesel for coaches and minibuses, or hybrid propulsion via biodiesel and electric sources. Biofuels to be sourced from farmers in the region via rapeseed plants processed into seedcake**
- **Location of main rail depot at Kells, creating local jobs**
- **Creation of cycle / pedestrian routes along the MultiWay, and heavily-used sections of the corridor**

MultiWay Rail and Coach Outline Demand Analysis

The key feature of the NTC concept is its ability to remove significant traffic volumes from the roads and to shift them on to the coach and rail modes. In this way, the NTC model is an active one, controlling and reducing traffic growth, rather than passively accommodating it.

Using a 16-hour-day timeframe, and input parameters adjusted to compensate for optimism bias¹⁴, it is possible to calculate outline figures for modal shift under the MultiWay.

Time U	Paths	Loadings	Time D	Paths	Loadings
7.00 9.20	8 Slots @ 0.750	2160	7.00 9.20	8 Slots @ 0.125	360
9.40 4.00	20 Slots @ 0.125	900	9.40 4.00	20 Slots @ 0.100	720
4.20 8.00	12 Slots @ 0.125	540	4.20 8.00	8 Slots @ 0.750 4 Slots @ 0.125	2160 180
8.40 11.00	8 Slots @ 0.125	360	8.40 11.00	8 Slots @ 0.125	360
Total 1		3960	Total 2		3780
Total 3	7740				
Yearly 1	2,020,140 x261				
Yearly 2	321,984 x104				
Total R	2,342,124				

Tables – Demand Analyses for NTC Rail (Above) & Coach (Below)

Time O	Paths	Loadings	Time I	Paths	Loadings
7.00 9.20	8 Slots @ 1	480	7.00 9.20	8 Slots @ 1	480
9.40 4.00	20 Slots @ 0.9	1080	9.40 4.00	20 Slots @ 0.9	1080
4.20 8.00	12 Slots @ 0.9	648	4.20 8.00	8 Slots @ 1 4 Slots @ 0.9	480 216
8.40 11.00	8 Slots @ 0.9	432	8.40 11.00	8 Slots @ 0.9	432
Total 1		2640	Total 2		2688
Total 3	5,328				
Yearly 1	1,390,608 x261				
Yearly 2	221,645 x104				
Total C	1,612,253				

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Assumptions (Rail):

20 minute headway;

6-car DMU;

DMU Capacity 360;

Peak Period Loading 75%;

Weekend Demand 40% of Weekday

Assumptions (Coach)

20 minute headway;

Single-deck Coach;

Coach Capacity 60;

Peak Period Loading 90%¹⁵

It can be seen that total annual use of high-quality rail and coach services on the MultiWay could be as high as **3,954,377** (Total R and Total C added).

Since the current average volume of traffic using the N3 today is approximately 8 million¹⁶, then the NTC figure, arrived at using reasonably conservative input parameters, represents almost **50%** of the current traffic load.

However, the MultiWay does not take into account modal shift that may occur on journeys originating much further north than Kells (e.g. Cavan or Donegal). Since several towns at the end of, or along, the current N3 are earmarked for rail development¹⁷ as part of other NTC schemes, and would also benefit from improved coach services, then a modest 25% modal shift of the remaining N3 traffic would yield a total figure of **4,954,377**, or roughly 5 million.

The MultiWay therefore has the potential to remove at best, two-thirds of the current traffic load from the N3. This significant finding is the key to obviating the need for large-scale alternative solutions such as the proposed M3, in that since the MultiWay actively removes traffic, it logically follows that additional road alignments are no longer required (traffic load being the governing concern). It follows too that the existing road can be upgraded, ironically having been divested of much of its current traffic load, and thus would actually benefit motorists by making driving safer and less stressful.

Note that the NTC concept embeds customer convenience principles. Indeed smartcards, as used now in London¹⁸, and widely on other transport systems around the world, are absolutely essential to ensure that people make the switch to the new rail services and expanded coach services as provided for under the MultiWay. These have been dealt with in more detail in the general NTCs paper, but it is important to re-state the key benefits of smartcards in that firstly they allow extremely easy transfer between modes (so that one can easily get a minibus to a rail station or coach stop without having to worry about change / tickets, etc.), and secondly they dispense with the need for cash and normal ticket purchase, both of which have been found to be a key deterrent to usage of public transport¹⁹. Introduction of smartcards can be made simply by stressing their similarity to the ubiquitous "Banklink" card (smartcards can actually be "topped up" at ATMs), and by applying attractive locally-related branding, similar to the phonecards of the late 1980s (for instance, cards could carry images of Trim Castle, Kells, the Tara complex, the River Boyne, and so on).

Additionally, it is important to stress other elements of the MultiWay proposal as important drivers of the shift away from the private car. Firstly, creation of a strong local minibus network is essential, and is dealt with in more detail below. This can be carried out under the existing Rural Transport Scheme, and in urban areas can be guided by the TURAS principles (also see below). Secondly, capacities can be significantly increased through using modern double-deck coaches. Double-decking of rail carriages is also possible, although this is a more complex issue²⁰. Thirdly,

great attention must be given to the design of minibus, coach and rail vehicles procured under the MultiWay scheme. These must have a high degree of comfort and user-friendliness, be aesthetically attractive, and where possible should include new types of facilities for the commuter, business and leisure customer. These measures are absolutely essential in order to encourage people to switch to rail / coach, and a good rule of thumb is to provide an equal level of comfort and facilities that people are used to in their cars.

Rail Element of the MultiWay

The Kells – Navan – Dublin corridor is fortunate in having two abandoned railway lines along its course; firstly the line from Kells to Navan, closed in 1961, and secondly the line from Navan to Dublin via Dunshaughlin, closed in 1963. In recent years sustained efforts have been made to re-open the latter route. In 2004, Iarnród Éireann commenced a feasibility study in association with Meath County Council into reopening, but only as far as Pace, near Dunboyne and adjacent to the proposed M3 interchange, the logic being that a Park & Ride site could be located here. The report has been recently published, and this has come out in favour of the proposal, costed at €156 million.

This work provides very useful information, and can be incorporated into the larger rail development scheme proposed under the MultiWay. Of particular importance is that both the Iarnród Éireann study and the MultiWay recommendations are for double-track in the Clonsilla – Navan corridor, and additionally, the IÉ study allows for northwards extension from Pace, to interface with a new alignment via Ashbourne and Ratoath proposed by Meath Co. Council (referred to here as the Ashbourne Deviation). The Ashbourne Deviation is a key part of the MultiWay, and is a prerequisite for the scheme's overall viability.

However the IÉ study does highlight one disturbing feature, and that is the unsustainably high cost of property acquisition for rail re-openings. For instance, the overall investment figure of €156 million contains construction costs of €108 million (the balance being allocated for railcar purchase). However of this €108 million, €35 million is made up of property acquisition costs, including legal fees, stamp duty and VAT. This represents approx. 32% of the total - a huge proportion. The impact of this is even more apparent when looked at in terms of cost-per-kilometre. Since the Clonsilla - Pace section of the Clonsilla - Navan - Kells corridor is just 7.5 km long, the cost of property acquisition per (double-track) kilometre comes to an extraordinary **€4.67 million**. It's worth bearing in mind that the typical width of land in a double-track rail corridor is approx. 10 metres. Such valuation, if used for the MultiWay, would therefore result in property costs *alone* of almost **€300 million**.

Clearly, the problem here seems to be the valuation of land as if it were classified as building land. Since the former rail alignments in Meath are commendably safeguarded under regional, county and local planning guidelines, it seems untenable that this land can be valued as building land, since the land is protected. Hence the values typically applied by e.g. the NRA for road projects should be used instead (these are based on farmland values, not building land values). Indeed, doing so results in property costs in the hundreds of thousands per kilometre, not millions. In the case of the MultiWay therefore, it is absolutely vital that legislation or other methods are used to bring land values for rail re-openings under control. Cont.../

Assuming these problems can be overcome the Clonsilla - Navan - Kells route offers excellent possibilities for passengers and freight, not least because of its proximity to the Dublin conurbation and thus the centre of the national rail network. Connections to the west and north-west are also made possible via the existing Dublin – Sligo line, and planned new services west from Mullingar and from Mullingar to Cavan²¹.

New Alignment / Navan - Kells

The original Clonsilla – Navan route was built by the Dublin & Meath Railway and opened in 1862. Different sections of the line were built to double-track standards, and this is important in terms of the capacity potential of the reopened route. The line as built was quite direct, with stations / halts at Dunboyne, Fairyhouse Bridge, Batterstown, Drumree, Kilmessan (junction for Athboy branch), Bective and Navan.

However the MultiWay project deals with the reality of changed population distribution in the region and incorporates a realistic and praiseworthy deviation proposed by Meath County Council in the Meath County Development Plan. This would leave the original route north of Dunboyne / Pace and proceed towards Ashbourne, then proceed west to take in the Ratoath area and provide a direct connection at Dunshaughlin, before re-joining the former alignment between the former Drumree and Kilmessan stations.

This deviation very significantly improves viability of the re-opening by properly taking in the largest population catchment areas, and opening up dramatic new journey possibilities. Importantly, the terrain is not difficult, being relatively level farming land, and the deviation adds just 3 miles approx. to the route length.

New stations would be provided at Hansfield, Dunboyne and Pace (as per the IÉ study), Ashbourne / Ratoath (single facility located between these centres), Dunshaughlin, Kilmessan and Bellinter (just south of Navan). At Navan itself consideration should be given to re-aligning the original junction so that all services can be concentrated on the station on the current Navan – Drogheda freight-only line, built by the Great Northern Railway of Ireland (see Fig 1 below). There is also room for a new freight distribution facility in the current area zoned Light Industrial, through which the new alignment would pass.

The remaining section to Kells was built by the Dublin & Drogheda Railway and opened in 1853. This was part of a longer branch which terminated at Oldcastle. The line was closed in 1961, but part of it was re-opened in 1977 to serve Tara Mines. The path of the former line is shown in Fig 2 below, and clearly either the former alignment can be re-used in this area, passing through the current mine site, or a short diversion, to the north or south, may be necessary.

Given the high population densities and additional provision for freight traffic, reopening from Clonsilla to Navan is proposed as double-track throughout, with single track from Navan to Kells, including a passing loop at the former Ballybeg station, approx. halfway along the latter route.

Scope also exists for branding services in the region with one identity for marketing and administration purposes. As mentioned, smartcard ticketing and dedicated minibus connections would make journeys as convenient as possible and significantly

boost potential ridership. A wide variety of services, including local, regional and long distance, would be accommodated, with the route design reflecting this.

Railfreight is a key part of the MultiWay programme. All relevant points would be provided with the most modern freight handling facilities, e.g. MiniModal (small containers) and Intermodal (larger ISO containers). The route offers excellent possibilities for freight traffic, with fast connections to Dublin port and potential for transhipment from the M50 in the Blanchardstown area.

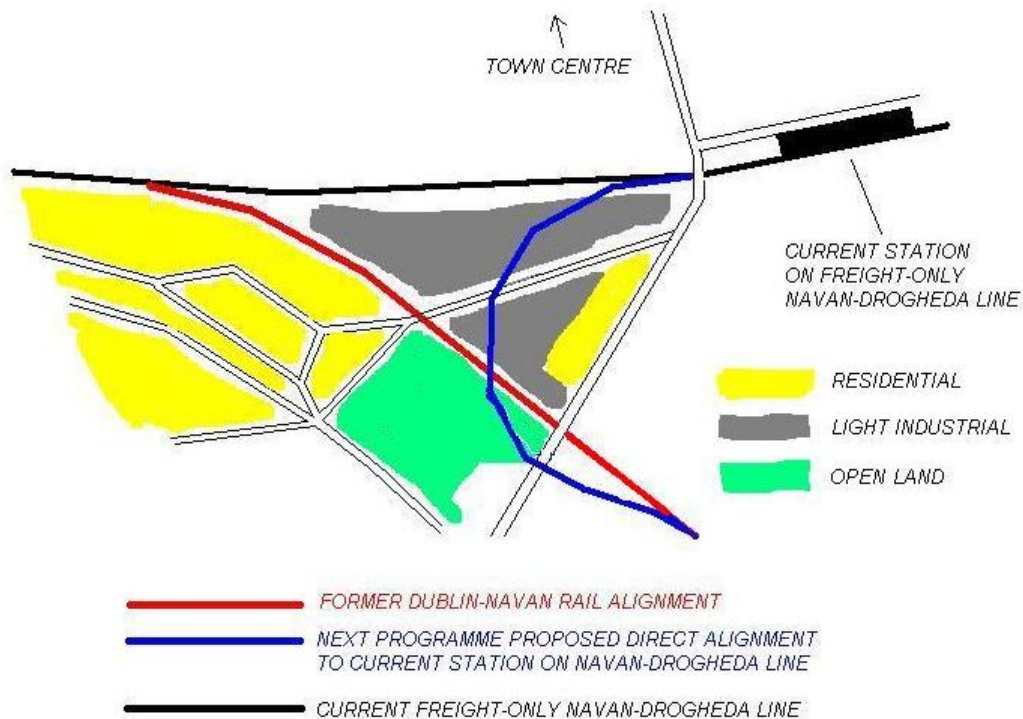


Fig 1: Detail of Navan junction re-alignment to permit re-use of current ex-GNR(I) station in the town centre



Fig 2: Aerial photo of Tara Mines site showing course of former Navan – Kells line
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MultiWay Schematic

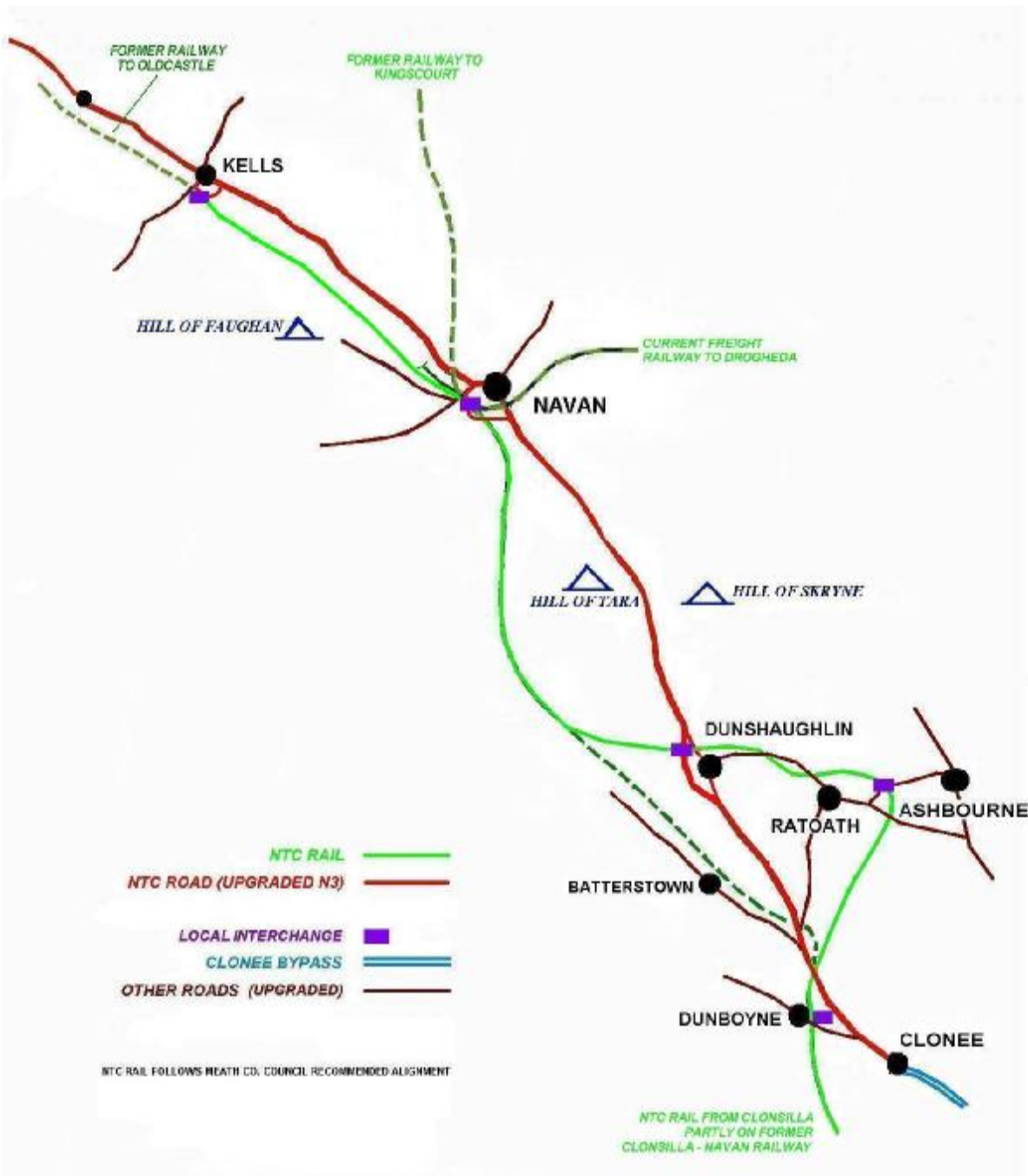


Fig 3: MultiWay Schematic shows bypasses of Dunshaughlin, Navan and Kells, upgraded intermediate road sections to “2 plus 1” format, re-opened Clonsilla-Navan-Kells rail line including Ashbourne Deviation and major local interchanges (not all rail stations shown)

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Local Minibus Network

Incorporated into the MultiWay framework is provision of local minibuses, facilitated by smartcard ticketing and fixed-frequency timetabling. Typically, such routes would serve local housing estates, delivering people to the NTC railhead or local NTC coach stop. These provide the essential “door-to-door” component of public transport that has otherwise been missing. It must be noted that whilst current practice is to provide “park & ride” as a way of delivering people to public transport services, this still involves harmful use of the private car, and can even exacerbate local congestion at peak periods.

Again, minibus provision must incorporate aspects of the NTC philosophy in terms of attractiveness, comfort and user-friendliness. Of particular importance is “turn up and go” fixed-frequency timetabling, where the user only has to know that services start at say, 7am, run until 11pm, and run every 10 minutes. Equally, the design of minibus / bus / coach stops must be creatively re-thought “from the ground up”, if sufficient numbers of people are to switch from the car. Waiting in the cold and rain is an obvious major deterrent, given Ireland’s temperate climate.

Engineering for Sustainability

A key flaw in promotion of rail, coach, bus and minibus modes is lack of consideration of the impact of these forms of transport on the environment.

The MultiWay programme allows for this by “building in” reduced- or zero-emissions technologies into the specifications of new vehicles obtained under the scheme.

This can be done at procurement stage, and allows the dynamics of bulk procurement to “leverage” inclusion of – at least initially – hybrid propulsion systems. These are currently gaining acceptance in the car market²², and typically employ a diesel engine used while the car is cruising, simultaneously connected to a generator. When the car is forced to move slowly (e.g. in heavy traffic), an electric motor takes over, thus eliminating the harmful CO₂ and PM₁₀ pollutants emitted at higher levels during this phase of driving.

Of particular interest is the hybrid bio-diesel / electric engine. These go one step further in that emissions from biodiesel are a further reduction of those of normal diesel, and that crucially, this fuel can be obtained from renewable rapeseed plants.

In the case of the MultiWay, incorporation of biodiesel / electric systems into the new coach and minibus vehicles would have a dramatic impact, drastically cutting emissions further, yet also providing significant opportunities for the Meath farming community in terms of rapeseed / biodiesel production. Another dramatic effect would be a drastic reduction in oil dependency and fuel costs.

Again, the nature of bulk procurement can be used to drive these advances. Manufacturers are much more flexible in terms of modifying their vehicles if orders are very large (e.g. 50 minibuses).

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NTC3 – CLONSILLA - NAVAN - KELLS *Outline Capital Investment Breakdown*

Item	€(Millions)
Bypasses of Dunshaughlin, Navan & Kells ^a	140
N3 Clonee – Kells upgrade to “2 plus 1” format	216
Rail Re-construction (Clonsilla to Navan) ^b <u>excluding</u> Ashbourne Deviation	72
New rail construction (Ashbourne Deviation) ^c	197
New rail construction (Navan – Kells)	25
Other rail land acquisition (total) ^d	15
Kells Railcar Depot (subsidiary of Drogheda)	10
Stations, Halts & Freight Facilities (all)	33
Railcars ^e	28
Rail Signalling (total)	34
Coach Upgrade & Minibus Provision ^f	<u>65</u>
Total^g	835

Notes

- a Note that Navan Bypass may not be required as the existing Inner Bypass may be sufficient under the reduced traffic loadings brought about by the NTC3
- b Source: *Strategic Rail Review*; note the SRR figures are over double those quoted by rail sources; this “headroom” is used to cover civil works as well as track construction
- c Source: SRR; includes land acquisition
- d Covers total land acquisition; assumes legislation or other instrument to control land values; in line with NRA land acquisition figures; headroom allowed
- e Does not represent full railcar complement; assumes use of small number of sets from current Iarnród Éireann fleet order for some services
- f Includes headroom to allow for use of hybrid propulsion systems
- g Does not include provision for smartcard system at this time due to lack of information with which to make estimate

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Capital Investment Costs & Benefits

It's obviously not possible within the scope of this outline document to provide a highly detailed breakdown of the NTC3 / Meath MultiWay costings.

However, some useful conclusions can be drawn. For example, the foregoing information clearly shows that even allowing for inaccuracy, the MultiWay would cost, excluding the road elements, approx. €480 million. If against all advice the proposed M3 were to proceed, assuming an out-turn cost of €800 million, then adding the public transport improvements later would bring total investment required to **€1,280 million**. Even this amount would not represent the true total cost, since as mentioned at the head of this document, motorway- and dual-carriageway building are now known to generate significant disbenefits in respect of climate change, air pollution, congestion, associated car-based development and farmland consumption.

In contrast, proceeding with the MultiWay – including the road improvements – entails a minimum expenditure of **€835 million**. Even allowing for the fact that smartcard provision could not be costed for this report, the quantified capital spend for the MultiWay comes to approx. **65%** of the motorway + public transport investment, or almost two thirds.

Looking at the benefits, again the information is incomplete, but it can be deduced²³ for example that the rail element of the MultiWay will generate indirect benefits of **€43 million** per annum. Using this measure, the total capital expenditure for provision of rail in the MultiWay would be repaid in 10 years in the case of the Clonsilla – Navan section, and within 7 years in the case of the Navan – Kells line.

It is also possible to deduce a reasonable farebox figure using the public transport patronage figure of 4 million approx. given earlier, and a €10 per journey average yield²⁴. In this scenario, annual farebox revenue across all modes comes to approx. **€40 million**.

Adding the rail benefits and the cross-modal farebox revenue yields an annual **€83 million** gross, yet this figure is highly conservative as it omits indirect benefit figures from provision of the upgraded coach services and minibus network along the MultiWay corridor.

However it is possible to do a rough calculation based upon the proportion of journeys projected to be undertaken by coach as opposed to rail – in the case of the MultiWay, 69%. Using this figure, the indirect benefit of the coach mode can be calculated as **€31 million** approx. (69% of the €45 million calculated for rail).

Thus the total benefits, plus farebox, can be estimated at **€114 million per annum**.

Finally, offsetting this against the total MultiWay investment figure of €835 million yields a **7 year** investment recoupment timeframe – a very competitive result.

These costings do leave out project management and other overheads. However it is important to stress that baseline data on the existing N3 already exists, along with the Iarnród Éireann study into the Clonsilla – Pace re-opening. This, coupled with tight project management, and above all use of in-house expertise²⁵, aids control of these parameters.

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Opportunities for Business

Moving away from a motorway-only approach to solving Meath's transport problems opens up significant new opportunities for local enterprise. Just some of these are listed as follows;

- **Agri-business opportunities in the growth of rapeseed, manufacture of seedcake and production and distribution of biofuel / biodiesel**
- **Opportunities for engineering companies in the development and / or maintenance of hybrid engine technologies intended for use in NTC public transport vehicles**
- **Development of sustainable trading opportunities in existing urban and village settlements in the region of the MultiWay**
- **Development of tourism- and heritage-related opportunities**
- **Research, development and manufacture, or the import and distribution, of non-polluting small cars, made feasible by the shift in the MultiWay region to public transport, creating in turn a market for environmentally-friendly "short-hop" vehicles**
- **Ditto for new types of local delivery van, collecting and delivering goods to local railhead**
- **Significant benefits to business generally through incorporating MultiWay rail into their supply chains²⁶**

Implementation

NTCs require not a new body, but rather structured co-ordination between existing bodies, as well as local communities, to ensure implementation.

Productive community involvement from the outset could be achieved through the holding of Workshops in various locations along the route of the NTC. This approach has worked very successfully in other projects²⁷ and could be a worthwhile step forward from the current, sometimes adversarial, "public consultation" approach.

The rail development component of NTCs generally is intended to be carried out by Iarnród Éireann under the subsidiary NEXT programme (InterCity Network Extensions Programme)²⁸. NEXT uses a common design and procurement approach, with all work carried out in-house, and funded by the exchequer under the broader NTC umbrella.

In the case of the NTC3 / Meath Multiway, the NEXT programme covers the section from Clonsilla to Ashbourne and Navan²⁹. The extension to Kells would be carried out by IÉ as an "add-on" scheme under the MultiWay scheme, using the same approach as for Clonsilla – Ashbourne – Navan.

Implementation of upgraded coach services would be carried out by Bus Éireann, with suitable private-sector involvement if appropriate.

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In the minibus area, use and extension of the existing Rural Transport Initiative is recommended as a method for delivering this aspect of the MultiWay scheme. Similarly, in urban areas, use of the TURAS model would be beneficial, in that it offers a template for co-ordinated, innovative and people-centred local transport.³⁰

Finally, the cycle / pedestrian ideas in the NTC scheme can be brought to fruition by relevant interest groups working in partnership with the local authority.

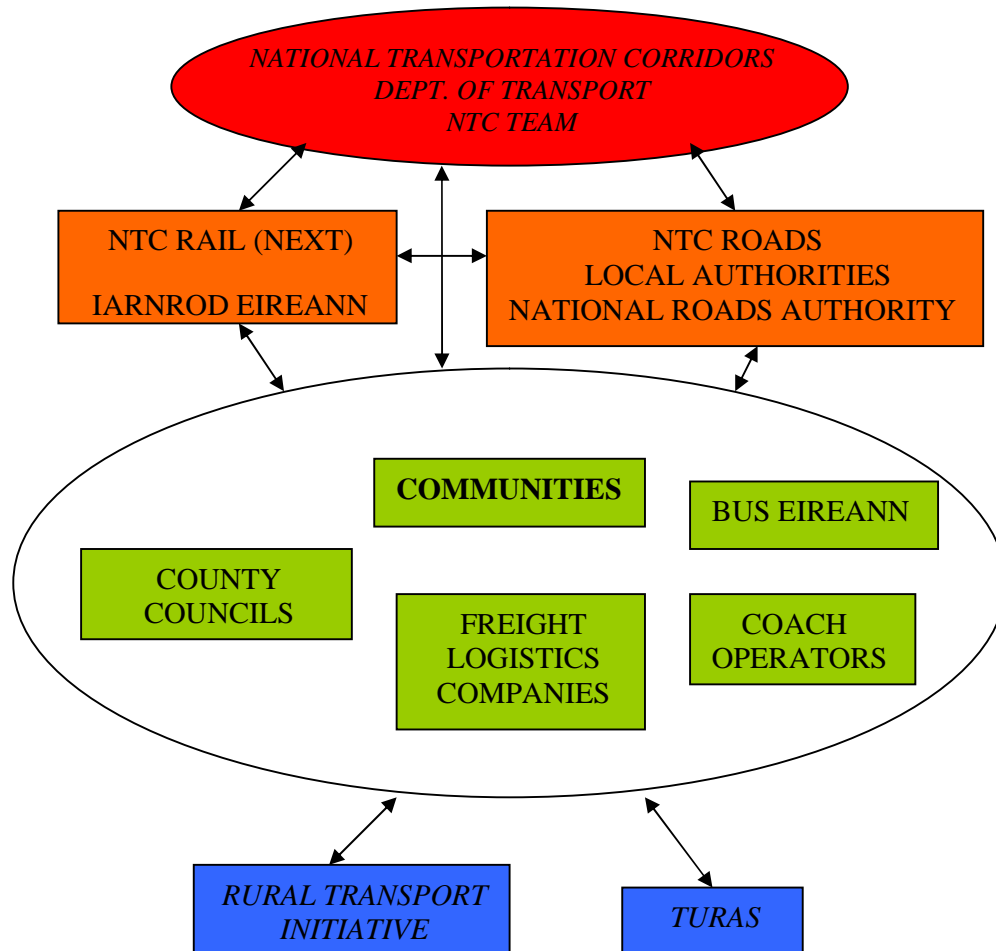


Fig 4: NTC3 / Meath MultiWay Implementation Model (Simplified)

Implementation of the MultiWay can begin quickly by taking the following steps;

1. Opening up the hard shoulder on the existing N3 to buses and coaches
2. Introducing smartcards and procuring new coaches
3. Commencing the re-opening of the Dublin – Navan - Kells line using the study carried out by Iarnród Éireann as far as Pace, north of Dunboyne
4. Re-configuring the Pace rail / road interchange to suit a widened “2 plus 1” N3, instead of the proposed M3
5. Expand IÉ staff resources to accelerate design of the MultiWay rail corridor
6. Commence the N3 bypasses and road-widening works

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Conclusion

The NTC3 / Meath MultiWay is a specific application of the National Transportation Corridors framework. It contains a number of interlocking programmes to achieve bi-modal road and rail development in the Dublin – Navan – Kells corridor. The need for a separate, costly and ultimately inefficient and damaging motorway alignment is eliminated by allocating a significant portion - up to two-thirds - of traffic to corresponding rail and coach routes, generating significant cost savings and minimising environmental and social impacts.

It creates a local feeder minibus network, introduces smartcards and facilitates responsible planning. It offers significant new opportunities to business, cuts oil consumption and embeds public participation. It ensures an equitable distribution of transport infrastructure funding across the different modes, freeing up resources and also improving conditions for motorists and other road users, thus creating a “win-win-win” situation for all parties and providing a higher ultimate return on the investment.

The economic, social and environmental benefits of such a concept have been described.

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Local Interchanges Illustration by G. Colgan

V2 (Minor Correction to V1) 3/6/2005

V3 (MultiWay) 12/9/2005

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The MultiWay at a glance

- ü The threat posed by climate change is creating a powerful new economic context for balanced road-rail development, augmenting existing factors such as reduction in traffic congestion, air pollution and balanced regional growth
- ü NTCs embed the concept of “bi-modal” road and rail development within a defined Corridor (National Transportation Corridor)
- ü New modal switch technologies such as Smartcard integrated ticketing and MiniModal cargo handling, with local minibus and van connections to stations, permit “door-to-door” passenger and freight movements, radically boosting ridership and re-introducing large-scale freight to the railways
- ü The NTC3 / MultiWay can use an efficient, environmentally-friendly and safe road design such as “Two Plus One” in tandem with parallel rail development, providing all the advantages of a motorway without the heavy financial and environmental costs
- ü The parallel rail route absorbs some of the road passenger and freight traffic, facilitating the reduced road design and freeing up space on main routes
- ü NTCs provide much greater value to society and the economy through their balanced approach, as opposed to traditional large-scale motorway-only development. They cost less to build, and they cut oil consumption and emissions by reducing car use
- ü Local Interchanges, at key sites along the NTC, provide physical integration between road, rail, bus, cycle and pedestrian modes, for both passenger journeys and freight flows
- ü The total investment, estimated at €835 million (excluding smartcards), would generate estimated benefits of approx €114 million per annum, yielding a recoupment period of 7 years
- ü Developing the rail project as Clonsilla - Navan - Kells, including the Ashbourne Deviation, and laying double track as far as Navan will ensure strong end points with high capacity and excellent connections
- ü An “all-purpose” railway design, carrying several types of passenger and freight traffics, will maximise direct receipts
- ü The MultiWay project as a whole would have far greater scope than simply meeting the requirements of commuters. Importantly it would also facilitate policies to reduce commuting, as well as the growth of Meath as an autonomous region, with strong local connections and access to other points on the national rail network for both passengers and freight

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References

- ¹ Railfreight has suffered from inappropriate “bums on seats” accounting methods, omitting its substantial indirect benefits, and making it appear unprofitable;
- ² UK SACTRA (Standing Advisory Committee on Trunk Road Assessment) Report 1994;
- ³ Climate change cost \$40 billion in 2004; this figure is expected rise to \$150 billion by 2010 (Source: *The Irish Times*); in 2004 Ireland’s output of greenhouse gases was double the Kyoto target; (Source *Irish Times* 5/8/2004); approx. €1 million has been allocated in 2005 to deal with Kyoto emissions penalties;
- ⁴ A recently-published EU report shows how business is losing €80 million per annum due to employee sickleave caused by poor air quality; this is also identified as the cause of over 200,000 premature deaths across the EU; the EPA has also identified rapidly increasing road traffic as the primary threat to the quality of air in Ireland (Source: *The Irish Times* 21/2/2005);
- ⁵ Based on Author’s attendance at N6 Oral Hearing, December 2004;
- ⁶ Source : *The Sunday Business Post* 27/2/2005;
- ⁷ Booz Allen Hamilton *Strategic Rail Review* 2003, page 146;
- ⁸ Source: *The Sunday Business Post* 11/1/2004;
- ⁹ Several projects evaluated and dismissed in the SRR, such as Derry – Letterkenny, Clonsilla – Navan and The Western Rail Corridor were re-visited in the NEXT programme (available from the author) and were found to be viable using different input parameters;
- ¹⁰ cf. InterCity Network Extensions Programme (NEXT);
- ¹¹ Based on 5-year public transport spend of €2.3 billion v 10-year roads spend of €16 billion;
- ¹² Projected out-turn costs, including delays and legal costs;
- ¹³ See note 8;
- ¹⁴ “Optimism bias” is used in cost-benefit analysis to protect against over-optimistic data;
- ¹⁵ Author’s research on this route shows 90% is a realistic figure based on current loadings;
- ¹⁶ Based on Navan Chamber of Commerce figures;
- ¹⁷ Cavan, Bundoran, Ballyshannon & Donegal covered under NEXT;
- ¹⁸ Oyster Card; www.oystercard.com; usual disclaimer;
- ¹⁹ Author’s research;
- ²⁰ Double-decking of the Clonsilla – Navan – Kells rail element of the NTC3 should be examined in the light of future capacity requirements. It may be prudent to design from the outset to accommodate double-deck rolling stock, albeit the out-turn cost would be higher;
- ²¹ NEXT includes Mullingar – Athlone and Mullingar – Cavan;
- ²² E.g. Toyota Prius, etc;
- ²³ Using a formula extrapolated from BAH data referenced in note 7;
- ²⁴ Based on “door-to-door” journey including minibus pick-up, etc., and average trip length;
- ²⁵ e.g. IÉ have consistently shown that use of in-house staff, etc. keeps project costs down;
- ²⁶ Detailed in the general NTC paper;
- ²⁷ Spencer Dock Phase 2 planning workshop; 2003;
- ²⁸ Ibid.;
- ²⁹ NEXT Section 9 : Clonsilla – Navan; available from the author;
- ³⁰ TURAS – Transportation, Urban Re-organisation And Sustainability – is a programme currently under development for Galway city; it makes strong use of low-energy transport such as minibuses and applies new convenience principles to urban transport such as fixed-frequency timetables, colour-coded routes and penetration of housing estates. Much of TURAS thinking is based on the work currently being done in London by TfL.

APPENDIX I

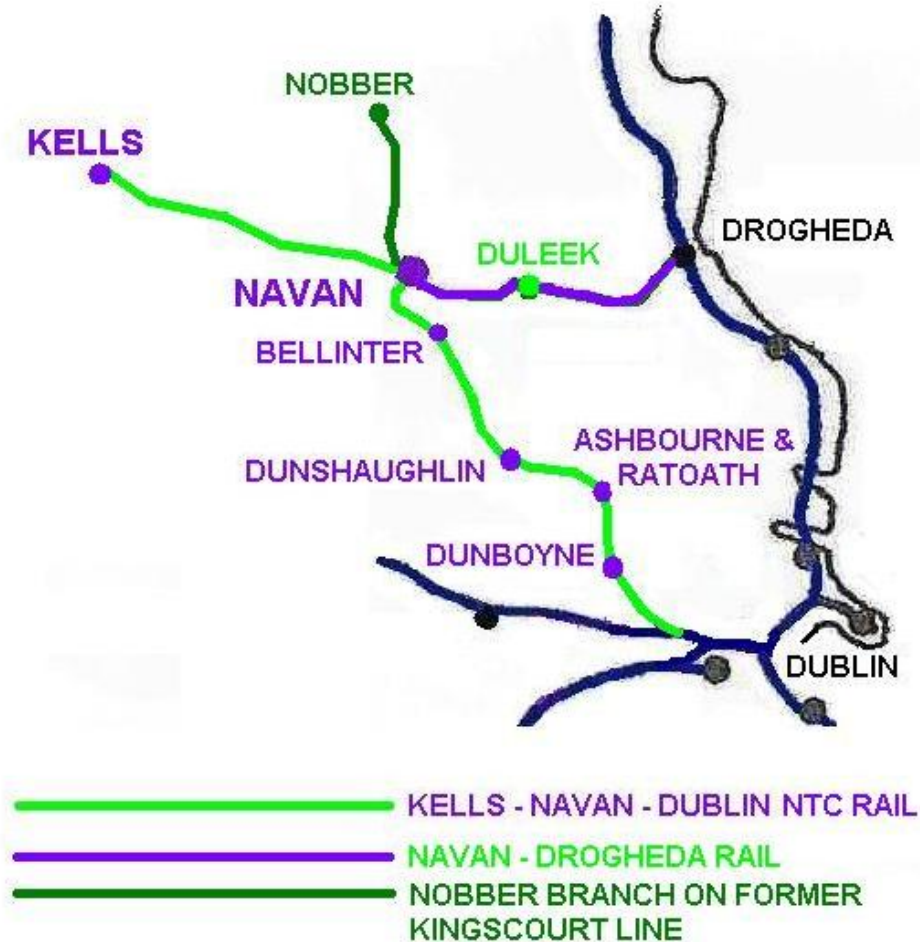


Fig 5: General Meath rail map* showing how additional services could be run to connect with the Clonsilla – Navan – Kells line, creating a high-quality local and regional network.

Specifically, scope exists to re-open the current Navan –Drogheda freight-only line to passengers, whilst also re-opening the abandoned Kingscourt line to serve Nobber, and the former Athboy branch to serve Trim (not shown).

Eventually, services could run along a north –south axis from Navan to Dublin, and an east-west axis from Drogheda to Kells, with a shuttle service from Navan to Nobber and from Kilmessan to Trim.

* Not all stations shown

APPENDIX II



Fig 6: Double-deck high-quality coach



Fig 7: Typical high-quality minibuses

APPENDIX III

Clonsilla – Navan – Kells Line – List of Stations and Halts

Miles (from Dublin Broadstone*)	Station	Passing Loop	Park & Ride (potential sites)
7	CLONSILLA	DT	ü
8	Hansfield	DT	-
10 ½	DUNBOYNE	DT	ü
(12 ¼)	PACE	DT	ü**
(17)	ASHBOURNE & RATOATH	DT	ü
(22 ¾)	DUNSHAUGHLIN	DT	ü
(29 ½)	Kilmessan	DT	ü
(32)	Bellinter	DT	-
(36)	NAVAN	DT	ü
(45 ½)	KELLS	Terminus	ü

Notes:

* Initial mileages are measured from the former Dublin Broadstone terminus, now closed

** This park and ride site already proposed in the IÉ Clonsilla – Pace re-opening study

DT Double track; no passing loops necessary in section Clonsilla to Navan

(Bracketed mileages)

The Ashbourne Deviation stations are on a new alignment to the original, and hence their mileages are different. When the Deviation regains the original route, i.e. before Kilmessan, the mileages continue as new. It is envisaged that IÉ would re-mileage the entire route north of Pace to Kells if the MultiWay or similar project proceeds

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APPENDIX IV

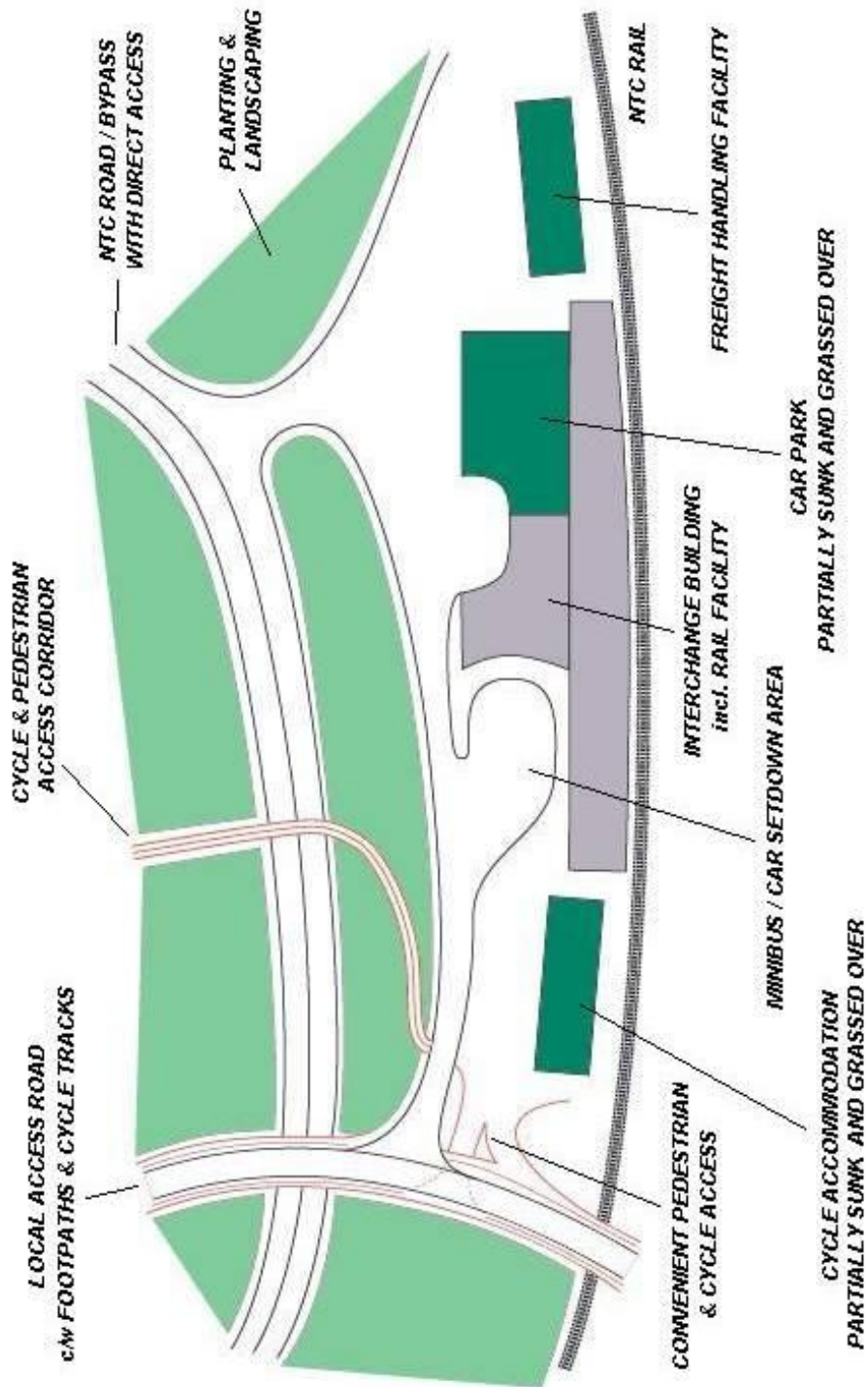


Fig 8: Local Interchange (Concept Layout)

Of importance is very high-quality design, respecting local architecture and character, embodying sustainable design principles and making a minimum impact on the surroundings