Contents

DTTAS Follow up Response 25/05/20 [GP]

An Roinn Iompair,
Turasóireachta agus Spóirt
Department of Transport,
Tourism and Sport

Meeting with Representatives of The Green Party

20 May 2020

Follow-up Responses

Overview of Department and Vote

The Department employs approximately 600 staff across 4 main locations and is charged with shaping the safe and sustainable development of transport, tourism, and sport, to support economic growth and social progress. In the delivery of its remit the Department oversees the corporate governance of 23 commercial and non-commercial agencies (see appendix 1).

The Department manages its remit on a sectoral basis addressing Aviation, Transport, Maritime, Tourism and Sport.

The Department's capital investment programme is guided by medium and long term investment strategies, such as, the Transport Strategy for the Greater Dublin Area, the Cork Metropolitan Area Transport Strategy etc.

These medium/long term strategies are complemented by multi-annual capital investment budgets which provide the type of secure funding streams required to properly plan and deliver transformational infrastructure. This evidence based, plan-led investment framework reflects international best practice and importantly allows delivery agencies to plan appropriately their expenditure over a five / ten year horizon. It also helps to ensure a sufficient pipeline of programmes and projects ready to utilise available funding and ensure value for money in delivery.

An important issue from the Department's perspective is to ensure that our agencies have the capacity to deliver upon Government's ambitions. In that regard a steady pipeline of investment proposals ensures efficient use of public money.

The 2020 Gross Exchequer allocation is €2.7bn (almost €1bn greater than 2016). The Current expenditure increase for that period has been modest at 19% while Capital expenditure has increased by 81% (€868m).

While most sectors have benefitted from a Capital allocation increase during that time, the capital funding for the Land Transport sector has grown significantly by €847m to €1.8bn.

For 2020, of the €2.7bn overall Vote allocation:

- €2bn approx. allocated to Capital
- €700m approx. allocated to Current
  For clarity, Public Service Obligation (PSO) payments are recognised as current expenditure.

Of this [€2.7bn], broadly €1bn goes on public and sustainable mobility and slightly more than €1bn goes on roads expenditure:

Within **public and sustainable mobility**:

- €287m is PSO funding and funding of our Agencies
- €320m is maintenance and renewal, mainly on the rail side
- The remaining €400m approx. is essentially directed toward new infrastructure

Within roads

- €644m is national roads of which;
  - €265m is maintenance (current + capital),
  - €129m are PPP availability payments and
  - €250m are major projects (NDP)

- €525m is Regional and Rural Roads of which;
  - €488m is maintenance
  - €37m are capital projects (mainly NDP)

During that five year period the Capital **and** Current of Public Transport relative to that of Roads ranged from 74% to 84%. For 2020 it is 84%. A similar comparison % for Capital only spend ranges from 51% to 67%. For 2020 it is 67%.

Review of Roads and Public Transport Expenditure Relativity

	2016	**2017**	**2018**	**2019**	**2020**
	€m	**€m**	**€m**	**€m**	**€m**
Current					
Roads	105	105	93	103	111
Public Transport	250	262	283	285	287
Capital					
Roads	615	677	815	957	1,088
Public Transport	347	372	417	497	725
% (PT of Roads)	***56%***	***55%***	***51%***	***51%***	***67%***
Total Current + Capital					
Roads	720	782	908	1,060	1,199
Public Transport	597	634	700	782	1,012
% (PT of Roads)	***83%***	***81%***	***77%***	***74%***	***84%***

Significant among the deliverables/output/outcomes as a result of this expenditure are:

- Secured steady state levels of funding for the rail network; hugely important and very welcome;

- The merger of the RPA & the NRA to form TII in 2015 giving a single body to deliver major transport infrastructure;

- Expanded PSO bus fleets by almost 20% since 2016;

- Luas fleet expanded since 2017 with more on the way Increased funding for active travel in recent years with a lot of projects ready to move to construction this year and next;
- Placed first order in almost a decade for new trains, the first of what we hope to be a massive expansion in coming years
- The recent completion of the 2nd tranche of road PPP projects which formed part of Ireland's recovery process following the financial crash. (4 projects: Arklow to Rathnew + Newlands, Gort to Tuam, New Ross and Gorey to Enniscorthy)
- Embedded long-term strategic investment planning for all the major cities;
- As part of the upgrade of roads serving tourist routes TII has in recent years provided 40km of segregated cycle tracks with a further 23km under construction in 2020.

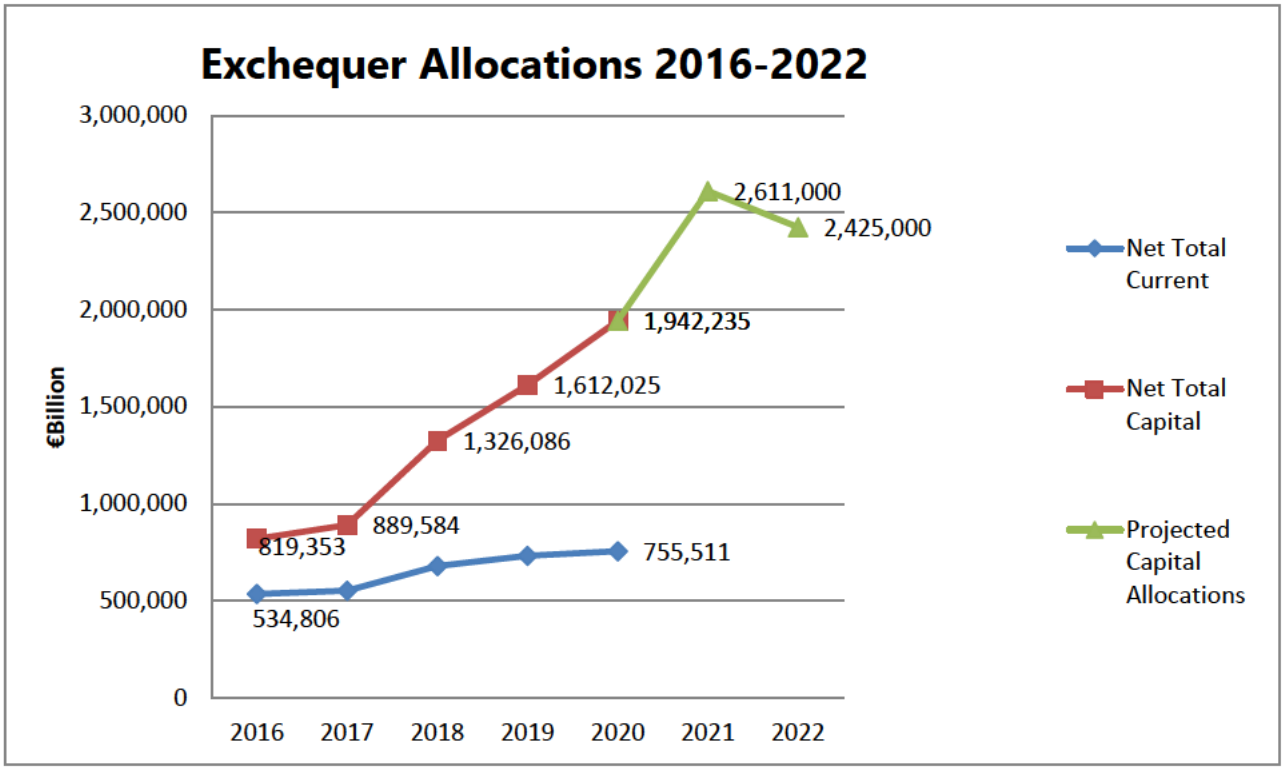
Exchequer Allocation - High Level Overview 2016 to 2020

TOTAL BUDGET 2016 - 2020					
	2016 (€000s)	**2017 (€000s)**	**2018 (€000s)**	**2019 (€000s)**	**2020 (€000s)**
Gross Total (Total Spend Available)	1,737,485	1,810,054	2,029,785	2,368,833	2,729,637
Income (A-in-As)	383,326	367,947	24,777	24,964	31,891
Net Total (Exchequer Supplied)	1,354,159	1,442,107	2,005,308	2,343,869	2,697,746
Capital Carried over from Prior Year	16,100	10,969	10,950	18,366	48,611

CURRENT Spending Estimate 2016-2020					
	2016 (€000s)	**2017 (€000s)**	**2018 (€000s)**	**2019 (€000s)**	**2020 (€000s)**
Civil Aviation	22,474	22,435	23,207	26,188	26,315
Land Transport	391,017	403,629	417,916	441,458	454,886
Maritime	89,010	89,659	89,998	95,115	95,667
Sports and Recreation	53,024	55,990	57,930	63,874	80,161
Tourism	107,009	108,700	113,850	129,173	129,873
Gross Total (Total Spend Available)	**662,534**	**680,413**	**702,901**	**755,808**	**786,902**
Income (A-in-As)	**127,728**	**127,890**	**23,679**	**23,964**	**31,391**
Net Total (Exchequer Supplied)	**534,806**	**552,523**	**679,222**	**731,844**	**755,511**

CAPITAL Spending Estimate 2016 - 2020					
	2016 (€000s)	**2017 (€000s)**	**2018 (€000s)**	**2019 (€000s)**	**2020 (€000s)**
Civil Aviation	3,870	4,820	4,920	10,579	10,700
Land Transport	977,549	1,053,301	1,242,591	1,493,523	1,826,510
Maritime	6,132	6,132	5,968	7,953	7,280
Sports and Recreation	73,564	52,117	53,450	61,488	43,055
Tourism	13,836	13,271	19,955	39,482	55,190

Gross Total (Total Spend Available)	**1,074,951**	**1,129,641**	**1,326,884**	**1,613,025**	**1,942,735**
Income (A-in-As)	**255,598**	**240,057**	**798**	**1,000**	**500**
Net Total (Exchequer Supplied)	**819,353**	**889,584**	**1,326,086**	**1,612,025**	**1,942,235**



Gross Estimates and Out-Turn 2016-2019 by Programme

Appropriation Accounts*	Estimate	Out-Turn
	2016 (€000s)	**2016 (€000s)**
Aviation	26,844	25,783
Land	1,470,266	1,466,928
Maritime	96,442	91,300
Sport and Recreation	132,788	128,771
Tourism	123,345	123,325

Appropriation Accounts*	Estimate	Out-Turn
	2017 (€000s)	**2017 (€000s)**
Aviation	27,255	25,285
Land	1,474,077	1,475,083

Maritime	95,791	87,286
Sport and Recreation	114,429	107,762
Tourism	171,971	123,692

Appropriation Accounts*	**Estimate**	**Out-Turn**
	2018 (€000s)	**2018 (€000s)**
Aviation	29,627	28,142
Land	1,696,482	1,691,046
Maritime	98,766	90,909
Sport and Recreation	121,500	118,558
Tourism	137,860	134,270

Provisional Out-Turn Only	**Estimate**	**Out-Turn**
	2019 (€000s)	**2019 (€000s)**
Aviation	32,898	30,725
Land	1,897,917	1,889,832
Maritime	87,143	78,410
Sport and Recreation	126,190	103,548
Tourism	171,534	169,071
Corporate	44,902	43,341

Note - As presented in the Appropriation Accounts, Estimate is a final estimate after the addition of capital carryover and supplementary. Out-turn is gross out-turn before income is deducted (A-in-As)

1. ***Has the Department (or its Agencies) started to consider re-prioritisation of planned capital investment in light of the pandemic and/or recession? If so can it share its thinking?***

It is important to keep in mind when looking at Vote expenditure overall for 2020 (both Capital and Current) that there are pressures building on the current side and we do not know how a future Government will choose to address these.

There are two aspects to consideration of the impacts of COVID-19 on sustainable mobility –

- Short Term
  Firstly, there is an urgent need to immediately provide additional active travel infrastructure to both facilitate increased numbers of people walking / cycling to work and retail as the economy reopens and also provide other related measures to facilitate social distancing in urban centres. The Department is funding the NTA's work with all of the cities as they develop Covid Mobility Frameworks which will set out plans to provide –

  - Widened footpaths
  - Temporary protected cycle facilities, including new contra-flow routes
  - Revised bus routings and bus priority measures; and
  - Enhanced pedestrian priority zones.

  Dublin City Council will publish its plan this week which is quite comprehensive and the scale of ambition contained within it will be replicated across the other cities also.

  While the immediate focus is on the major cities, the Department has requested the NTA consider how this type of support can be rolled-out to major towns also. The NTA has confirmed it has the legal vires under its establishing legislation to grant-aid similar works in all local authorities and has prepared a Circular to issue to all local authorities offering technical and financial support.

- Medium / Longer Term
  Secondly, whilst it far too early to draw any permanent conclusions about the lasting impact of COVID-19, it raises a number of issues for future consideration particularly in relation to the future of work and the location of work (whilst noting that only 30% of journeys are work related as per National Travel Survey).

  These issues are best dealt with through the review of Sustainable Mobility Policy. The submissions received in response to its public consultation are currently being examined by the Department and thus the development of any new policy framework is still at an early stage and amenable to accommodating emerging issues such as COVID-19.

The impacts of COVID-19 on transport demand are frankly unknown, clearly in the short term there has been a dramatic collapse in passenger demand due to the various public-health measures that have been implemented which resulted in passenger demand falling by approximately 90% across PSO services. As society and business reopens in the coming weeks and months demand can be expected to increase; however, the capacity of the public transport system will become constrained due to social distancing rules which means services are operating at approximately 20% of normal capacity and thus more capacity is actually needed to service what is likely lower demand than previously.

The medium and longer term impacts of transport investment are difficult to know at this juncture. Opportunities to consider possible impacts will arise later this year and into next year as the GDA Transport Strategy commences its statutory review period, the draft Limerick-Shannon Metropolitan Area Transport Strategy commences public consultation and work begins on a Waterford Metropolitan Area Transport Strategy; however, our knowledge of possible impacts as those processes commence may still be constrained by the public health situation and medium and longer term conclusions may still not be possible.

2. Can we get a breakdown of DTTAS current spending in the area of transport in recent years?

	2016 €000s	**2017 €000's**	**2018 €000's**	**2019 €000's**	**2020 €000's**
LAND TRANSPORT - NON PAY / PAY/ PENSION	**391,017**	**403,629**	**417,916**	**441,458**	**454,886**
ADMINISTRATION - PAY	**10,080**	**10,400**	**12,460**	**13,280**	**13,751**
ADMINISTRATION - NON PAY	**1,834**	**1,701**	**2,237**	**2,495**	**2,604**
ROAD IMPROVEMENT / MAINTENANCE	**105,562**	**104,611**	**93,497**	**102,652**	**111,007**
TII NATIONAL ROAD MAINTENANCE	37,783	36,958	31,583	34,000	34,850
GRANTS FOR TII ADMIN & GEN EXPENSES	24,096	23,970	26,356	27,686	30,191
REGIONAL & LOCAL ROADS GRANTS	43,683	43,683	35,558	40,966	45,966
ROAD SAFETY AGENCIES AND EXPENSES	**4,266**	**4,766**	**4,766**	**4,905**	**4,962**
VEHICLE AND DRIVER LICENCING EXPENSES	**13,700**	**13,700**	**15,900**	**18,900**	**18,900**
PUBLIC SERVICE PROVISION PAYMENTS	**250,059**	**260,974**	**281,713**	**283,713**	**284,913**
GREEN SCHOOLS	**0**	**1,605**	**1,605**	**1,605**	**1,650**

PUBLIC TRANSPORT AGENCIES & EXPENSES	**5,438**	**5,794**	**5,660**	**13,830**	**17,021**
MISCELLANEOUS SERVICES	**78**	**78**	**78**	**78**	**78**
	391,017	**403,629**	**417,916**	**441,458**	**454,886**

In addition to Departmental pay, pension and general expenditure the current spending provided for in Transport in recent years has also included;

- Maintenance of National Roads
- TII Administration costs
- Funding for the running of the road safety agencies Medical Bureau of Road Safety and Road Safety Authority
- Maintenance and support of the National Vehicle and Driver File (NVDF) and expenses associated with a range of activities arising from the regulation of motor vehicles and drivers including the collection of motor tax and penalty points
- Public Service Obligation (PSO) payments
- Funding for the Green Schools Travel programme, run by An Taisce through the NTA

Public Transport vs Roads

The earlier Table in this paper details total expenditure (Capital & Current) over the five years to 2020 and shows that spend on Public Transport ranged from 74% to 84%. The Capital only portion for the same period ranged from 51% to 67%.

This Department is largely a capital spending Department. Outputs, outcomes and results have a longer timescale. Capital investment can also be uneven over the medium term as, sometimes, in periods of economic downturn. So while previous years show that more funding was allocated to Roads than Public transport, examination of the NDP maps a rebalancing of that ratio.

In total terms for the years 2020 to 2027 Public Transport will represent 67%, 83%, 84%, 113%, 128%, 141%, 150% and 156% respectively.

	2020	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
PT	725,650	1,083,950	1,032,950	1,424,650	1,513,650	1,579,650	1,709,650	1,615,650
Roads*	1,088,200	1,305,350	1,227,780	1,265,950	1,182,650	1,119,500	1,137,500	1,038,500
%	67%	83%	84%	113%	128%	141%	150%	156%

**Exchequer*

In addition certain elements of the road network were procured by PPP. Included in Capital are the remaining payments, scheduled to expire in 2026 *[clarification: payments will continue beyond 2027 for a number of PPP projects]*. If we compare investment in Public transport to Roads, excluding the PPP payments, the balance is reversed. The ratio, based on indicative NDP allocations (and subject to decisions in annual Estimates process), is;

	2020	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
	€'000	€'000	€'000	€'000	€'000	€'000	€'000	€'000

PT	725,650	1,083,950	1,032,950	1,424,650	1,513,650	1,579,650	1,709,650	1,615,650
Roads* *[less PPP]*	959,200	1,178,350	1,109,780	1,169,950	1,086,650	1,015,500	1,038,500	1,038,500
%	76%	92%	93%	122%	139%	156%	165%	156%

**Exchequer*

This Department is an advocate of the importance of maintaining the infrastructure which has already been invested in and serves key economic, tourist and social purposes. Using prior years as a basis for assumptions we expect maintenance for the years 2020 to 2027 to be in the order of;

	2020	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
	€'000	€'000	€'000	€'000	€'000	€'000	€'000	€'000
RLR (90%)	488000	442980	465480	500220	513450	513000	513000	513000
TII (60%)	265000	372000	335400	346200	287400	244800	258600	258600
Total Maintenance	**753000**	**814980**	**800880**	**846420**	**800850**	**757800**	**771600**	**771600**

And finally when we compare investment in Public Transport with *<u>new</u>* Road investment only both the ratios and trend favour Public Transport investment.

	2020	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
	€'000	€'000	€'000	€'000	€'000	€'000	€'000	€'000
RLR (90%)	488000	442980	465480	500220	513450	513000	513000	513000
TII (60%)	265000	372000	335400	346200	287400	244800	258600	258600
Total Maintenance	**753000**	**814980**	**800880**	**846420**	**800850**	**757800**	**771600**	**771600**
PPP payments	129,000	127,000	118,000	96,000	96,000	104,000	99,000	0
New road Investment	206,200	363,370	308,900	323,530	285,800	257,700	266,900	266,900
PT	725,650	1,083,950	1,032,950	1,424,650	1,513,650	1,579,650	1,709,650	1,615,650
%	352%	298%	334%	440%	530%	613%	641%	605%

NDP Exchequer Phasing 2020 to 2027 ***[Indicative and subject to annual Estimates process]***

	2020	2021	2022	2023	2024	2025	2026	2027
LAND TRANSPORT [total]	**1,825,790**	**2,408,800**	**2,275,660**	**2,709,100**	**2,714,800**	**2,718,000**	**2,866,000**	**2,673,000**
ROAD IMPROVEMENT/MAINTENANCE, [subtotal]	**1,092,640**	**1,270,700**	**1,197,700**	**1,232,300**	**1,149,000**	**1,085,850**	**1,103,850**	**1,004,850**
Grant to TII-Construction National Roads	480,000	620,000	559,000	577,000	479,000	408,000	431,000	431,000
PPP operational Payments	129,000	127,000	118,000	96,000	96,000	104,000	99,000	
Regional and Local Road Grants	479,200	492,200	517,200	555,800	570,500	570,000	570,000	570,000
A5		28,000	0	0				
Medical Bureau of Road Safety	440	500	500	500	500	850	850	850
NVDF National Vehicle computerisation	4,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
SUSTAINABLE MOBILITY INVESTMENT [subtotal]	**733,150**	**1,099,950**	**1,044,380**	**1,439,650**	**1,528,650**	**1,594,650**	**1,724,650**	**1,630,650**
Carbon Reduction	7,500	16,000	11,430	15,000	15,000	15,000	15,000	15,000
PUBLIC SERVICE PROVISION PAYMENTS	18,650	18,650	18,650	18,650	18,650	18,650	18,650	18,650
Smarter Travel and Sustainable Urban Transport Measures	28,500	56,000	37,600	37,000	27,000	28,000	28,000	28,000
Heavy Rail Safety & Development	341,500	397,000	386,000	445,000	534,000	549,000	644,000	725,000
Public Transport Infrastructure	260,400	554,300	535,700	869,000	879,000	929,000	969,000	794,000
Walking and Cycling Programme	76,600	58,000	55,000	55,000	55,000	55,000	50,000	50,000

EU Funding

3. Can the Department outline the potential of EU funds in terms of supporting:

- ***Active travel. There would appear to be an underutilisation of possible funding lines in this area if the Department can comment on this. (See attached graph.)***
- ***Public transport***

Active Travel

In terms of supporting active travel, there are two principal sources of EU funding available to Ireland. Under the European Regional Development Fund, there's around €40million from EU and another €40m Irish co-funding available for Southern Assembly and Northern/Western areas as part of the Designated Urban Centres Grants Scheme. Projects that have and are being supported include the new Mary Elmes bridge in Cork, and active travel projects in both Sligo and Galway.

Separately, there is the INTERREG funding programme that supports cross-border projects on the island of Ireland. This programme is currently supporting around 80km of new greenway infrastructure in border areas and the Multi-Modal Transport Hub in Derry (approx. €40m).

There will be further opportunities to fund greenway projects under the successor programme to INTERREG, called PEACE Plus, which is currently in programme development stage and the Department is working with our counterparts in the North as well as the Special EU Programmes Body on this.

Public Transport

The most significant EU funding programme for transport projects, including public transport projects, is the Connecting Europe Facility (CEF). We currently anticipate a budget of €12.8 billion in co-funding open to all Member States in the next 7 year funding period from 2021.

The current CEF programme, now in its last year, started out in 2014. At this time, capital expenditure in the Department and the State as a whole was very constrained. In addition to that, a lot of the total CEF budget was "front-loaded", meaning the bulk of money available was awarded by the EU in the first year or two of the programme. We were not in a position to fund large-scale public transport projects at that time. The European Commission have noted that the quantity of proposals received from Ireland has been relatively low, though the quality and success rate is very high.

Last year, the Department carried out an internal assessment of Ireland's performance in the current programme and prospects for the next cycle of funding. Ireland's current drawdown of grants under CEF is €107 million (involving overall investments in excess of €400m), and we

expect when the programme ends this year this will increase to €137 million. This equates to 0.92% of the funds that were available to all Member States. We believe we can double this share in the next programme and take home close to 1.9% of the overall budget. This target is heavily based on public transport projects.

What is the Department doing?

The Department currently has three major public transport projects planned for the next 7 years: Metrolink, DART Expansion, and BusConnects. We are confident that one or more of these projects can secure CEF funding. To that end, over the past year Department officials have been working with the European Commission's advisory service, JASPERS, on the businesses cases for these projects. This is to assess which projects or elements thereof will meet CEF criteria specifically and EU policy objectives more generally. Engaging in this work early is important so that we are ready to submit a first-rate application when the time comes.

In order to maximise the potential for securing future CEF funding, the Department is participating in the EU's CEF Transport Committee in defining the criteria for the CEF calls over the next 3 years. We will be seeking to ensure that the criteria align with the type of projects that Ireland has planned.

We have also been keeping all stakeholders abreast of policy developments. We organised a successful information day in Dublin last November, attended by the European Commission, which set out the state of play at EU level and served to simplify the whole application process.

How is funding provided?

CEF grants are awarded on a competitive basis. Applicants pitch projects through 'calls' for project proposals, and successful applications will receive co-funding from the EU. The applications must meet pre-determined project criteria and these criteria can change for each call. Typically, calls are over-subscribed by a factor of 2-3 which means that many applications are not selected.

Co-funding can range from 10% - 50% of the project cost but for any large infrastructure project 20% or 30% is usually the maximum available. Applicants need to demonstrate a sound business case through the submission of a cost-benefit analysis and how the rest of the project will be financed. For Government projects, ultimately the State has to provide the bulk of the funding.

Projects already funder by CEF?

Gas Networks Ireland have two alternative fuels projects relating to CNG infrastructure and vehicle grants throughout the country. Iarnrod Eireann is in receipt of over €10 million in EU support for their City Centre Resignalling Project, which is near completion. Our Tier 1 State ports in Dublin, Cork, and Shannon-Foynes have all received large sums of EU support and are all awaiting the results of the latest call for funding, expected in July. The Irish Aviation

Authority, daa plc., and Ryanair have all been successful participants in the EU's Single European Sky programme, which focuses on advances in air traffic management. A list of all Irish projects can be found here.

Roads

Within roads Exchequer monies are accounted for as follows (note that TII also receive toll income):

- €644m is national roads of which:
  - €265m is maintenance (current + capital),
  - €129m are PPP availability payments and
  - €250m are major projects (NDP)

- €525m is Regional and Local Roads of which
  - €488m is maintenance
  - €37m are capital projects (mainly NDP)

4. Under the €525m set aside for Regional and Local roads in 2020, 93% described is for 'maintenance' - what is the other 7% (€37m) for?

The €37m consists of:

- €30m for strategic improvement schemes; and
- €7m for minor improvement works, training support to local authorities, development of the road pavement asset management system and pilot schemes such as the use of recycled material in roadworks.

As regards the strategic schemes the main focus to 2023 is on completion of the 12 NDP schemes. While there is little scope for additional significant projects in that period, support is being given, where budgets allow, for some appraisal and preliminary design work to go ahead on potential future projects. The NDP upgrade schemes, all of which include provision for footways/cycleways, are focussed on urban regeneration, taking through traffic out of towns and on facilitating improved accessibility, including by walking and cycling, to centres of employment and education.

5. Under the €645m allocation under National roads in 2020 what is the difference between the €35m 'maintenance' allocation and the sub-allocation of €230m for 'Steady state maintenance and committed payments like Tunnel operations' ?

€35m is allocated to maintenance costs, which is paid from Current allocations.

€230m is allocated from Capital allocations for essential asset rehabilitation, including cyclical pavement renewals, bridge rehabilitation and other asset renewal / improvement works (including safety works).

Current monies of €35m includes for:

- Winter maintenance including the purchase of salt (€9m)
- Traffic Route Lighting (€5m)
- Motorway Maintenance programme (€8m)
- Non motorway Maintenance which is allocated directly to local authorities (€13m)

Capital Monies of €230m includes for:

- Road pavement rehabilitation works (€100m)
- Motorway Rehabilitation and Capital Maintenance Works (MMaRC) including renewals, ducting works environmental barrier rehabilitation and responding to collisions and incidents on the network (€36m)
- Safety programmes including remedial works at HD15 & HD17 sites, safety fencing retrofit and traffic calming projects (€22m)
- Bridge programmes including bridge rehabilitation work, Eirspan inspections and design and emergency works (€22m)
- Signing and Lining programmes including network signage, renewal of lining and speed limit updates (€16m)
- Energy Efficiency and Climate measures including the pilot energy efficiency route lighting programme (€6m)
- Tunnel renewals (€5m)
- Other including Safety Barrier works, ITS operations and programme for the Eradication of Invasive Species (€23m)

Explanatory Note re current and capital classification: Determining whether an activity should be paid from Current or Capital allocations depends on the nature and the objective of the investment. Routine maintenance on roads typically covers day-to-day activities such as winter maintenance, payment of route lighting costs, routine repairs to pavements and bridges and responding to collisions and incidents on the network. Typically, essential larger scale cyclical life cycle renewals works, devoted to maintaining the condition and the value of the asset, are always drawn from Capital budgets. This is consistent with international practice.

In any event the type of maintenance works associated with the Current amount of €35m and Capital amount of €230m are set out below (note that the breakdown figures are approximate and are rounded and can change during the year depending on events such as the impact of Covid-19).

6. What was the roads maintenance/steady state capital expenditure for each of the years between 2012 and 2016?

	National Roads		Regional and Local Roads	
Year	**Maintenance (Current)** **€m**	**Steady state/ Capital** **€m**	**Maintenance (Current)** **€m**	**Steady state/ Capital** **€m**
2012	42.2	289.4	96.3	259.0
2013	44.5	155.9	85.0	287.9
2014	39.5	181.4	45.3	299.1
2015	37.7	236.4	44.0	264.7
2016	39.1	212.0	43.7	322.1

7. Can the Department detail the list of 'traffic guarantees' it is involved in and detail the amounts that have been paid out to companies per annum since 2014 to compensate for shortfall in traffic volumes?

The M3 Clonee-Kells and N18 Limerick Tunnel PPP Contracts both provide for Variable Operation Payments (VOPs). The VOP mechanism, also referred to as "Traffic Guarantee payments", is unique to these two PPP Toll Concession Contracts and arises in circumstances where actual traffic volumes do not reach the threshold volumes that are specified in the respective PPP contracts.

The VOP mechanism reflects the specific challenges and risks that faced the private sector in the delivery of the two major infrastructure schemes concerned. In the case of the Limerick Tunnel, the project faced particular significant construction risks relating to (a) the nature and extent of the tunnel works under the River Shannon and (b) significant uncertainty in relation to the extent of a Limerick city centre traffic management strategy that was to be implemented and the consequences of the planned measures in terms of traffic outcomes. This uncertainty caused particular difficulties for forecasting traffic volumes using the tunnel.

In relation to the M3 Clonee-Kells scheme, the major challenge for the private sector was the quantum of debt that had to be raised in order to fund the construction of what was at that time the largest road construction project undertaken in the State.

Clearly, TII wished to avoid these risks being reflected in a higher bid price/debt pricing for the full concession lengths of the projects and consequently implemented the VOP mechanism on the schemes as a means to reduce, in part, the risk profile of the projects. From the perspective of the bidders, who

have significant debt servicing obligations in relation to the debt raised for the schemes, the VOP mechanism ensures that a minimum level of project revenue is guaranteed in any year.

Details of the Variable Operation Payments by year since the schemes opened to traffic in 2010 are provided in the following table.

Variable Operation Payments*

Year	Limerick Tunnel (€'m)	Clonee Kells (€'m)
2010	0.0	00.0
2011	3.63	1.56
2012	7.02*	2.16
2013	2.94*	2.67
2014	5.07	2.47
2015	4.90	2.00
2016	4.58	1.19
2017	4.21	0.39
2018	3.97	00.0
2019	3.90	00.0

Amounts are exclusive of VAT

- **2012 figure includes €2.3m prepayment of 2013 VOP (thus 2013 figure correspondingly decreases by €2.3m).*
- *The figures are presented on a cash-flow basis.*
- *VOPs are anticipated to be made on the Limerick Tunnel for most of the remaining concession period.*
- *While there were no VOPs on M3 Clonee-Kells in 2018 and 2019, owing to Covid 19 restrictions and the impact on traffic, VOPs will resume on the M3 Clonee-Kells.Scheme in 2020.*

Traffic and Insurance Risk Sharing

PPP Toll Road Contracts also include Revenue Sharing provisions under which TII receives payments from the PPP Co where traffic volumes exceed traffic volumes that are specified in the respective PPP Contracts. In addition to revenue share receipts, TII also receives payments from Insurance Risk Sharing arrangements included in PPP Contracts.

Further information in relation to TII's tolling activities, including the M3 and N18 schemes, is provided in TII's Annual Reports and Accounts which are available in the Library section of the TII website.

8. Can the Department estimate the projected pay out of compensation under Variable Operational Payments (VOPs) or traffic guarantees for each of the years between 2020 and 2025 under each agreement?

At the beginning of each year TII prepares estimates of future year VOP liabilities. The forecast table below was prepared in January 2020 (subject to change depending on the outcomes of Covid 19 restrictions and issues arising there from).

VOP (Forecasted payable amount)	2020 € m	2021 € m	2022 € m	2023 € m	2024 € m	2025 € m
M3 Clonee-Kells	-	-	-	-	-	-
Limerick Tunnel	4.2	4.7	5.2	6.0	6.3	6.6

Above relates to forecasts of amounts payable for each contract year (this differs from cashflow payments within the year)

Covid 19 Impact

No Variable Operation payments arose for M3 in either 2018 or 2019. TII had budgeted for VOP payments (cashflow) to Limerick Tunnel of about €4.5m this year (i.e., for H2 2019 paid in 2020 (€1.9m) and H1 2020 (€2.6m forecast)) - VOP Payments are made semi-annually.

Arising from the dramatically reduced traffic volumes experienced since late March, VOP payments for the period Jan – June 2020, which fall due in July 2020, could potentially increase to a payment amount of €10m across both schemes. So from a budgeted cashflow amount of €4.5m, TII's 2020 VOP expenditure (cashflow basis) could now rise to an outturn of about €12m.

Payment for the period July – Dec 2020 will fall due in January 2021 and is not included in the above. January 2021 VOP payments estimated are at €4.4m to €11.4m across various scenarios examined (this compares to a VOP payable amount of €1.9m for H2 2019 for Limerick Tunnel paid in 2020).

9. Has the Department done any planning regarding the scale of EV charging network required to meet objectives in Climate Action Plan and how this might be achieved financially?

There is currently a public recharging network of approximately 800 charge points across the country, of which more than 100 are fast chargers. These chargers serve over 17,000 EVs.

This network of EV chargers was developed by ESB Networks.

A €20 million project (cofunded by the Climate Action Fund and ESB eCars) is supporting the development of a nationwide, state-of-the-art EV charging network, capable of facilitating large-scale EV uptake over the next decade. There are plans to install over one hundred high powered (150kW) chargers at key locations on the national road network. In addition, subject

to planning permission and approval, it is intended to replace one hundred 50kW fast chargers and also to refurbish up to 200 standard (22kW) chargers.

The Public Charge Point Scheme, administered by the SEAI, is available to local authorities to support the installation of public on-street chargers where a demand is identified. The Home Charging Grant, also administered by SEAI, assists EV owners to install chargers at home to facilitate overnight charging.

Updated building regulations, currently being finalised, will include new rules in relation to EV charging points in new buildings. These regulations will promote, over time, more widespread availability of EV charge point installations.

The Department of Communications, Climate Action and the Environment (DCCAE), who lead on the development and funding of EV charging infrastructure, published in September 2018 a Needs Analysis for Fast Chargers to guide developers in selecting appropriate fast charger locations and inform evaluations of applications for support. Under the Climate Action Plan, DCCAE have been tasked with carrying out an updated needs analysis for fast chargers based on a level of 75,000 electric vehicles by 2022, taking into account market developments – including commercial plans for fast charger rollouts following the introduction of fees. We understand that this work is underway.

The first Government assessment of need for EV charging infrastructure was set out in the National Policy Framework on Investment in Alternative Fuels Infrastructure for Transport. We understand that DCCAE are working on an overarching charging infrastructure strategy with a target to be set for the supply of infrastructure to stay ahead of demand. The Strategy will review and update the targets originally set in the National Policy Framework for Alternative fuels Infrastructure taking into account the proposed uptake of electric vehicles set out in the Climate Action Plan.

10. Can the Department detail the annual road expenditure of new roads since 2014 and the current projected spend for 2020 to 2025 with an itemisation of the national road and motorway projects involved?

New road spend from 2014 to 2019

	2014	**2015**	**2016**	**2017**	**2018**	**2019**
	€ m	€ m	€ m	€ m	€ m	€ m
National	88.0	70.7	67.0	146.1	96.5	130.6
Regional & Local	8.1	3.9	2.4	18.1	40.0	50.7

National Roads Detailed New Road Spend 2014 to 2019

Majors Projects Expenditure 2014 - 2019	2014	2015	2016	2017	2018	2019
Ardee By-Pass (N52)	48,127	20,224		7,457	371,964	596,034
Arklow/Gorey By-Pass (bypasses Gorey)			344,380		153,912	
Arklow/Rathnew	20,372,866	5,852,394	4,313,195	163,213	85,631	156,169
Athlone/Ballinasloe	39,986	246,318	156,700	16,280		
Ballaghaderreen By-Pass	17,423,023	302,909	227,929	933,709	16,163	
Ballyshannon/Bundoran By-Pass						4,920
Ballyvourney to Macroom (bypasses Macroom)	6,321,949	4,709,564	3,384,947	7,536,323	5,399,049	10,153,806
Belturbet By-Pass	1,234,096	2,030,902	2,507,041	196,953	150,000	29,060
Blackpool Bypass		870,555				
Boyoughter to Kilkenny	2,480	8,217,998	2,474,461	120,469	241,425	92,735
Carlow By-Pass	6,591,745	259,041				
Carlow to Knocktopher (bypasses Paulstown Gowran & Thomastown)		382,430				
Carrick Bridge to Clonfad	479,952	8,889				
Carrickmacross Bypass	9,339		9,249	4,305		
Cashel/Mitchelstown	70,000		110,768	167,099	34,181	35,210
Castleblaney By-Pass	30,300		1,211			
Castleisland By-Pass	943,455	159,359	3,449	19,595		
Castleisland/Ballycarty			50,000			
Castletown/Nenagh (bypasses Borris in Ossory Moneygall & Toomyvara)	2,149,362					
Charlestown By-Pass	134,670	98,679	637,653	480,996	113,574	97,447

Majors Projects Expenditure 2014 - 2019	2014	2015	2016	2017	2018	2019
Clifden to Oughterard	468,246	387,757	19,233	276,410	539,204	851,759
Clonee to North of Kells Scheme (bypass Dunshaughlin Navan Kells)	325,112	105,711	15,130			
Collooney to Castlebaldwin	456,454	7,297,928	8,540,380	4,786,488	3,369,717	38,296,150
Cork Northern Ring Road				30,295		
Cork SRR Interchanges	1,176,386	1,094,394	265,605	54,706	865,603	1,293,822
Cork to Limerick (Southern Section)	15,334	16,335				
Cullahill to Cashel (bypasses Durrow Cullahill Urlingford Horse & Jockey)		245,294				
Dromod to Roosky	181,848	37,169	53,403	3,634		15,914
Dublin Port Tunnel	739,649	22,063	34,210			
Dungloe to Glenties	1,288,663	2,656,226	1,819,990	9,217,866	5,082,806	2,096,414
Dunkettle Carrigtwohill Old Land		40,000				
Dunkettle Interchange			361,000	102,979	732,247	1,003,068
Edgeworthstown By-Pass	4,455					
Farranfore to Killarney (bypasses Farranfore & Killarney)					18,229	886
Fermoy-Watergrasshill	515					
Foynes Limerick	275,000	171,886	930,233	1,442,355	847,176	869,272
Galway City By-Pass	2,537,274	2,507,241	3,692,181	2,910,973	2,189,380	1,884,984
Galway City Outer By-Pass						
Galway/Ballinasloe (bypasses Ballinasloe Loughrea & Oranmore)	378,014	88,951	881,176	100,232	17,485	
Gorey to Enniscorthy (incls Enniscorthy Bypass)	1,715,981	1,659,909	2,333,873	34,670,908	2,018,463	2,402,750
Gort - Crusheen (bypasses Gort & Crusheen)	414,447	79,450	250,380	51,979		

Majors Projects Expenditure 2014 - 2019	2014	2015	2016	2017	2018	2019
Gort to Tuam (PPP) NRA	3,674,099	3,152,301	5,327,591	44,225,055	1,325,664	1,096,480
Int Maj - Dunkettle Interchange Upgrade	77,253	7,977	165,185	1,704,712	4,951,232	10,034,398
Jn Improvement (Kilpeddar/Delgany)			167,696			
Kilbeggan/Athlone (bypasses Kilbeggan & Moate)	127,186	8,279	22,544	33,929	8,709	5,016
Kilcullen to Carlow (bypasses Castledermot)			190,643			
Kildare Bypass			262,836			
Kildare MIU Capital Balances		182,829	208,813			
Kinnegad-Enfield Bypass	84,487	144,000	1,840			
Knock to Claremorris Bypass		146,650				
Leixlip/M50 Junction	16,441	133,470	40,940	188,338		
Letterkenny to Lifford	37,265					
Limerick to Cork				209,384	369,353	208,549
Limerick Tunnel Scheme	6,022					
Listowel Bypass	193,995	100,000	53,848	408,458	950,856	2,077,106
M1 Northern Motorway (Drogheda Bypass)						214,245
M50 Improvements Phase 2	829,637					
M50 Upgrade Phase 1	207,125	1,040,641		70,671		
M50/N11 Wyattville			3,200	1,414		
Mallow Northern Relief Road				54,204		
Mitchelstown-Fermoy (bypasses Mitchelstown)	2,379					
Mountcharles to Inver	741,288	109,091	511,655	400,607	10,860,122	7,982,149
Moycullen Bypass	3,352,750	3,383,649	2,569,628	1,097,128	262,594	1,185,927
Mullingar By-Pass			10,836		2,001	

Majors Projects Expenditure 2014 - 2019	2014	2015	2016	2017	2018	2019
N13 Letterkenny Roundabout		62,000	50,000	130,305	2,441,168	70,167
N17 Tubbercurry to Collooney					6,532	
N2 Clontibret to the NI Border					85,247	335,727
N2 Slane Bypass (2)				540,152	121,900	268,763
N5 Ballaghaderreen Bypass to Longford	892,159	1,714,253	1,090,479	389,429	726,942	8,942,571
N5 Castlebar to Bohola			42,285			
N5 Longford By-Pass	69,915	300,000				
N5/N26/N58 Turlough to Bohola	652,411	90,089				
N52 Nenagh By-Pass		77,000				
N52 Tullamore By-Pass	4,020					
N59 Bunnakil to Claremount	351,792					
N72/73 Mallow Relief Road						278
Naas Newbridge Bypass Upgrade	491,208	620,000	523,398	9,552,582	17,160,055	16,526,288
Navan Inner Relief Road				149,754		
NDP - M20 Limerick to Cork						1,625,106
NDP - N11/M11 Junction 4 to Junction 14 Improvement Scheme						1,222,398
NDP - N11/N25 Oilgate to Rosslare						697,586
NDP - N17 Knock to Collooney						213,011
NDP - N2 Ardee to South of Castleblaney Bypass					80,234	784,908
NDP - N2 Clontibret to the NI Border						435,317
NDP - N2 Rath Roundabout to Kilmoon Cross						17,730
NDP - N21 Abbeyfeale Relief Road						104,598

Majors Projects Expenditure 2014 - 2019	2014	2015	2016	2017	2018	2019
NDP - N21 Newcastle West Relief Road						105,107
NDP - N25 Carrigtwohill to Midleton						248
NDP - N25 Waterford to Glenmore						396,895
NDP - N3 M50 to Clonee						95,031
NDP - N3 Virginia Bypass						105,823
NDP - N4 Maynooth to Leixlip					10,000	
NDP - N4 Mullingar to Longford						4
NDP - N52 Tullamore to Kilbeggan						5,003
Nenagh/Limerick	115,828	18,860		99,340		
Newlands Cross	388,694		174,943	61,845	32,684	
New Ross Bypass (PPP) NRA	1,778,993	1,787,250	2,654,317	2,411,589	23,826,324	2,519,414
Patrickswell/Limerick	448,557					
Portlaoise to Cullahill/Castletown	423,879					
Rathnew/Ashford By-Pass (NTM'Kennedy)		1,486,017				571,010
Ringaskiddy/Cork	725,078	722,685	450,320	1,382,575	737,000	160,715
Rosslare Europort Access Road			282,000			69,847
Sligo Inner Relief Road	40,502	18,111				
South Eastern Motorway	2,035,438	1,095,138	1,111,687	496,609	486,442	8,613
Tallaght to Hollywood Cross (bypasses Blessington)		23,656				
TEN-T Route Improvement		81,880	41,579	988,337	1,173,658	1,216,080
TEN-T Route Study						181,064
The Downs Grade-Separation	77,323	331,570	3,849	18,092		2,114
Tralee By-Pass	988,700	5,800,000	180,369	444,047	54,522	24,651

Majors Projects Expenditure 2014 - 2019	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Tralee to An Daingean	108,229	88,775	843,229	2,500,000	1,938,536	1,867,924
Waterford to Glenmore					10,787	
Waterford to Knocktopher (bypasses Mullinavat)		238,707				
Watergrasshill By-Pass	3,721					
Westport to Mulranny	2,362,968	2,604,011	1,509,285	941,053	459,373	446,677
Westport to Turlough	839,879	5,603,156	15,071,771	14,289,275	6,245,044	8,913,246
Youghal ByPass	11,951					
Grand Total	**87,989,900**	**70,741,621**	**66,984,543**	**146,084,108**	**96,573,188**	**130,618,184**

Regional and Local Roads

On regional and local roads new road spend between 2014 and 2016 related to the completion of existing road projects with the main project being the Enfield to Edenderry improvement scheme. From 2017 the new Capital Plan (for the period 2016 to 2021) began to kick in and the main expenditure between 2017 and 2019 was on the following projects:

- Upgrade of Nangor and Adamstown Roads serving Grange Castle Business Park - completed
- Portlaoise Southern Distributor Road - completed
- Dingle Relief Road - completed
- Sallins By-Pass
- Sligo Western Distributor Road
- Coonagh to Knockalisheen upgrade
- Athy Southern Distributor Road
- Tralee Northern Relief Road Shannon Crossing/Killaloe By-Pass
- Eastern Garavogue Bridge in Sligo

Projected New Road Spend 2020 to 2025

YEAR	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
	€ m	€ m	€ m	€ m	€ m	€ m
National Roads	270	381	309	387	370	339
Regional & Local Roads	30	50	70	44	20	20
Total	**300**	**431**	**379**	**431**	**390**	**359**

Details of New National Road spend from 2020 to 2025 are shown in Appendix 1.

The information provided in Appendix 1 is based on current information, cost forecasts funding profiles as of May 2020 and are subject to change based on programmes, approval, procurement, timing of delivery, risk materialisation, scope changes and cost inflation. (The implications of Covid-19 are not reflected in these figures as it is too early to predict the full impact).

Public Transport

11. Can the Department detail the levels of investment in the public transport fleet and infrastructure (buses, rail carriages, rail line etc) over recent years, distinguishing between steady state investment and expansion/improvement investment?

Within the sustainable mobility investment programme investment is largely geared toward new investment rather than steady state. In 2020 out of the total investment programme of around €710m, just 45%, or around €320m, is estimated to relate to steady state (principally rail) with the rest new investment.

PSO Bus Fleet Investment

The PSO bus fleet has expanded by approximately 20% between 2016 and end-2019 and the fleet now stands at approximately 1760 vehicles. Annually approximately 25% - 30% of expenditure in the PSO bus programme relates to new buses with the rest of the expenditure related to steady state fleet renewal.

The table below shows fleet investment expenditure for 2018 (actual) and 2019 (forecast).

PSO Bus Programme	**2019**	**2018**
Fleet Investment	91m	97m

The exact numbers required each year for steady state can differ dependent on the age of the fleet in any particular year which can reflect legacy issues with the bus purchase programme whereby investment was not at a steady state and thus investment fluctuated from year to year meaning the steady state number of buses needed to be replaced at a later date varies accordingly. This highlights the importance in ensuring steady state investment in all areas of expenditure.

However, notwithstanding the very important caveat above, the steady state requirement of the Dublin PSO bus fleet is approximately 95 vehicles per annum (127 due for delivery in 2020) and the steady state level for the rest of the PSO bus fleet is approximately 80 vehicles per annum (109 due for delivery in 2020).

Heavy Rail Investment

There are two principal heavy rail investment programmes –

- Steady state: known as the IMMAC programme with funding provided directly by DTTAS to IÉ with a role of the Commission for Rail Regulation as independent monitoring body; and
- New Investment: principally funded through the National Transport Authority's funding programme.

Steady State

The Infrastructure Manager Multi-Annual Contract (IMMAC) provides the funding required to maintain and renew rail infrastructure. It is a requirement of EU and Irish law and is subject to external oversight by the Commission for Rail Regulation. In terms of service outcomes the IMMAC benefits passengers across the rail network through increased service reliability and punctuality, improved journey times and ensuring continued safety of rail services.

The IMMAC is a five year funding arrangement and thus provides the type of funding certainty required to allow for planned improvements and deliver better value for money for the taxpayer as compared to one-off payments which might vary from year to year.

The IMMAC is funded through a direct Exchequer grant paid on a monthly basis and also through access charges which, under law, must be paid by all railway undertakings that use the railway. In Ireland of course the railway undertaking that makes most use of the railway is IÉ and therefore access charges form part of IÉ's operational costs and are covered under the PSO programme. It should be noted that IMMAC funding provided over the period 2014 to 2018 was not at the required steady state levels; however, since 2019 funding is now being provided at steady state levels.

The table below shows the Exchequer funding provided under IMMAC 2014 to 2018 (including temporary extension in 2019) (all actual) and the total Exchequer funding to be provided under IMMAC 2020 to 2024 (forecast), all figures rounded and in €million –

IMMAC	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
€m	140	144	134	159	160	197	199	202	205	208	211

Separate to the above, there is also the maintenance and renewal of the rolling stock which is funded under the PSO programme (current expenditure) and equates to almost €40m per annum.

New Investment

In recent years new investment in the rail network has been funded through the NTA's investment programme and significant developments have included the Phoenix Park Tunnel, the City Centre Resignalling Project and the Pearse Station roof replacement, while more recently approved/commenced projects include the National Train Control Centre, the purchase of 41 additional ICRs for the GDA commuter rail fleet, a new station at Pelletstown and the recommissioning of Kishoge station.

The table below shows new investment in heavy rail for 2019 and 2018 under the NTA's investment programme –

NTA Heavy Rail Investment	**2019**	**2018**
€m	54m	13m

In the coming years, expenditure in this area will ramp up significantly due to the multi-billion euro DART Expansion Programme which will comprise both infrastructure and fleet investment, while in the medium term there are also significant plans to expand Cork suburban rail services through electrification, double-tracking and new stations; however, it should be noted that the plans for Cork are not currently provided for within NDP allocations (estimated cost of Cork rail programme is approx. €275m; however, this is a high-level estimate only and should be treated as such).

<u>Light rail</u>

The investment programme in light rail is largely centred on new investment.

Luas Cross City opened in 2017 and added almost 6km to the network as well as 7 new 55m length trams to the fleet.

The Luas Green Line Capacity Enhancement project was approved by Government in late 2017 and seeks to support the success of Luas Cross City through –

- Expanding the Sandyford Luas Green Line depot
- Extending the original 26 trams of the Luas Green Line to 55m
- Purchasing 8 additional 55m trams

The expansion of the Sandyford depot is now complete, 8 of the 26 tram extensions have arrived and entered service with the 9th extension delayed due to COVID impacts but it has now arrived.

The 8 additional 55m trams are due to start arriving over the summer, although there may be some knock-on impacts due to COVID related factory stoppages in France for a period.

The table below shows new investment in light rail for 2019 and 2018 under the NTA's investment programme –

NTA Light Rail Investment	**2019**	**2018**
€m	35m	83m

TII has recently submitted a Strategic Assessment Report in relation to a proposed extension of the network to Finglas, this is the first step in the Public Spending Code's project lifecycle process.

Investment in the coming years in this area will ramp up significantly as MetroLink progresses as it is the largest single project in the current NDP and, if approved by Government, will represent one of the largest ever public investment projects in the history of the State.

12. Can the Department share the EY report on the Western Rail corridor?

13. What analysis has been done of the potential for opening the Western Rail Corridor as both greenway and railway?

The Financial and Economic Appraisal carried out by EY on Phase II and Phase III of the Western Rail Corridor (WRC) which covers Athenry to Claremorris, was received by the Department late last year and, in line with the requirements of the Public Spending Code, is currently under review by the Department. This review is a technical level review of its compliance with the requirements of the Public Spending Code and is a requirement of all investment proposals before any policy recommendations can be made.

Once this technical level review is complete, the financial and economic appraisal will be subjected to a short independent review in line with commitments made at the time of its commissioning. The Department has agreed with JASPERS that it will review the financial and economic appraisal and their involvement will also allow for consideration of issues relating to potential access for EU funding it were to be considered an eligible project.

As indicated in *Project Ireland 2040*, the matter will then be brought to Government for its decision once this review is complete. The Report will not be publicly available until such time as considered by Government at the very earliest. [redacted]

[redacted]

The EY financial and economic appraisal does not consider alternative use of the railway e.g. developing a Greenway. However the Department last year received an application from Galway County Council for funding for a feasibility study for re-opening the WRC as a greenway. As last year's funding call was for construction of projects and not feasibility studies, the application was not awarded funding. Since then however, in response to the Department launching a funding round for feasibility and design studies under the Carbon Tax Fund late last year, an application was made by Galway County Council for a feasibility study for the Athenry to Milltown section of the WRC. No decisions on applications received under that call have been made yet and will likely await the formation of the new Government.

14. Can the Department detail potential of public transport expansion in Cork, Limerick, Waterford and Galway with estimated costings per project?

Metropolitan Transport Strategies have been developed for Cork (2020) and Galway (2016) in co-operation between the National Transport Authority (NTA) and the relevant local authorities. Work is underway on the *Limerick Shannon Metropolitan Area Transport Strategy* and will start this year on the *Waterford Metropolitan Area Transport Strategy*. Funding for public transport and active travel projects in the cities is guided by these metropolitan transport strategies. In developing the strategies for Limerick and Waterford, the NTA will consider the most appropriate public transport mode (bus, light rail) to meet current and future passenger demand in each of the cities.

Cork Metropolitan Area Transport Strategy (CMATS)[1]

CMATS, which covers the period up to 2040, includes proposals across all modes of transport over the short, medium and longer term with the short-term focus on active travel and improved bus infrastructure and services. The *CMATS* proposals include:

- Improvements to Cork's **bus infrastructure through BusConnects Cork;**
- Enhancements to the **commuter rail service**, including additional stations;

[1] www.nationaltransport.ie/strategic-planning/regional-transport-strategies/cork-metropolitan-area-transport-strategy/

- A **light rail transit corridor** to reflect the more ambitious growth targets of *Project Ireland 2040*;
- A number of bus and rail-**based park and ride sites;**
- **Cycling and walking infrastructure**; and
- Improvements to the **road network.**

The total estimated cost of delivery of ***CMATS*** *is* €3.5 billion and across the different modes the ***indicative, estimated*** total costs are:

- Bus: €545m
- Suburban Rail: €274m
- Active travel (walking and cycling): €230m
- Light Rail: €1bn
- Roads: €1.39bn

The *National Development Plan* includes a commitment of €200m funding for the BusConnects Cork programme and funding is also available from within existing programmes to support active travel related infrastructure. However, clearly there is a need to identify funding for 'big-ticket' items such as the suburban rail and light rail proposals, particularly if those projects were to be brought forward in terms of their planning etc.

In 2020 funding is being provided to establish a BusConnects Cork office within Cork City Council and TII will also commence preliminary design work on possible route options for the proposed light rail. Funding for active travel is available under the NTA's programmes and a number of projects are being funded this year such as the Passage to City Centre Greenway, Glanmire active travel improvements and Skehard Road Phase 3.

Galway Transport Strategy[2]

The *Galway Transport Strategy,* which covers the period up to 2035, identified key transport infrastructure projects and service changes to address the existing transportation issues and provides a framework for their phased implementation, subject to funding. During development of the 20-year *Strategy* in 2016, it was concluded that bus-based public transport represents the most appropriate system for Galway over the period of the strategy. The *Strategy* found that a light rail service would provide capacity far in excess of what is practically required. It determined that a high-quality bus-based public transport service will cater for the forecasted passenger demand and will provide significant flexibility in terms of network options and the ability to integrate with other modes.

[2] www.galwaycity.ie/galway-transport-strategy

The public transport and active travel infrastructural projects in the *Galway Transport Strategy* include:

- An improved **bus network** with a minimum frequency of 15 minutes or better at peak time and improved residential and commercial access in a 10 minute walk (BusConnects);
- Improved **bus priority** measures;
- New **Park and Ride** services; and
- Improved **walking and cycling** routes.

The *National Development Plan* includes a commitment of €200m funding for the BusConnects Galway programme and it is understood that Galway City Council will shortly submit a Part 8 planning application in respect of the core city centre element of the Strategy which will allow for construction to start on key city centre projects and the Department, though the NTA, will engage with the Council in relation to funding requirements that might be required for 2021.

The Department is also supporting an application by IÉ to the Urban Regeneration and Development Fund to fund the redevelopment of Oranmore station through the provision of a second platform and a passing loop. The Department has agreed to fund 25% of the total estimated €12m with the remainder to be funded through the Fund. These improvements will benefit service reliability on the existing Galway – Dublin line and the Galway – Limerick line and will also act as an enable for future service improvements to Galway commuter services and facilitate increased development in both Ornamore and Ardaun in line with the Metropolitan Area Strategic Plan for Galway. Additionally the NTA is also this year funding a feasibility study of Athenry to Galway rail services and infrastructure which will examine the potential for double tracking the line.

Waterford

While development of the *Waterford Metropolitan Area Transport Strategy* will commence this year, it should be noted that the city did benefit from a substantial overhaul of its bus service in December 2018 through the provision of an entirely new fleet of 17 vehicles and a redesign of the city's bus network. Introduction of these improvements resulted in significantly increased passenger numbers in 2019. In 2020 funding will be provided in relation to a number of significant active travel projects such as the extension of the Greenway into the City Centre, the W.I.T. to City Centre Green Route and a new active travel bridge in the city centre connecting with the North Quays.

15. Can the Department provide a list of all the rural bus services it supports with associated subvention?

Please see attached spread sheets of services for which NTA provides subvention.

16. What progress has been made towards integrating the timetabling of different public transport routes including those with different operators in order to facilitate seamless public transport connections?

When designing and timetabling new and enhanced routes and services the NTA looks to maximises the opportunity to connect at rail stations and intercity bus stations to offer onward travel options to prospective passengers. In many cases, providing a relatively frequent service as in towns such as Athlone (Routes A1 and A2), Kilkenny City (Routes KK1 and KK2) and Drogheda (Routes D1 and D2) permit passengers to choose a bus that suits their individual walking speed and personal circumstances and any activities they may need/ wish to do prior to boarding onward modes at the rail/ bus hub served by the network. Where less frequent services are warranted, as in the example of Routes 834 and 183, the timetables are co-ordinated to feed/ meet specific train times at Portlaoise and Wicklow Stations respectively. In all cases where onward opportunities are available at the centre on which the service focuses, the opportunity to timetable connections is availed of, balanced against the need to provide effectively for local demand for transport.

Similarly what progress has been made on integrated ticketing?

The Leap card scheme was launched in 2011, initially in the GDA. Since then it has been rolled out nationally and now is available on most public transport. Leap is available on all services operated by Dublin Bus, Bus Éireann, Go-Ahead Ireland, Luas, DART, Dublin and Cork Commuter trains, and some intercity rail services.

NTA also has worked with private bus operators, and Leap compatible ticketing equipment is available for privately owned bus operators who wish to participate in the Leap Card scheme. There are currently 15 such operators accepting Leap Cards across the country with a further six in the queue to join over the coming months (though these may be delayed due to COVID-19).

Next Generation Ticketing forms part of the BusConnects Dublin programme and will renew the ticketing equipment and introduce new smarter methods of payment for customers, on all forms of transport in Ireland, starting with Bus Connects Dublin city bus services and expanding nationwide thereafter, subject to funding. At the core of Next Generation Ticketing is a transition to an account based ticketing scheme incorporating open payments (mobile and card based) and secure tokens. The capital costs of Next Generation Ticketing's development will be included in the BusConnects Dublin business case; however, its roll-out to other parts of the network will require additional funding in due course.

Another aspect of integrated ticketing is the fares policy which underpins the use of network and that issue is also being examined as part of BusConnects Dublin and will be addressed as part of that programme.

Goals in the integration of public transport services nationwide into a coherent network and what steps and timescales are envisaged?

'Connecting Ireland'

The NTA identified a requirement for a complete review of public transport services in non-urban markets, to inform its approach to rolling out improved public transport across the country (excluding the GDA, Regional Cities and Large Towns) and ultimately enable the NTA to present its vision for a countrywide Connected, Low Carbon Public Transport Network.

The review, (working title is "Connecting Ireland") which is due to be completed in the coming weeks, defines a level of service that will allow people living outside of cities to towns, to carry out the full range of trip purposes at a hierarchy of settlements as defined by the Central Statistics Office (CSO) and consistent with the National Planning Framework. It has systematically assessed whether settlements as defined by the CSO are offered this level of connectivity, and identified settlements that today are not. In the Connecting Ireland project, the NTA has drawn up a list of proposed routes and services to address these gaps in connectivity, and propose, subject to the availability of funding, to implement these enhancements over the next 5 years.

Town Services

In the case of regular commuting for all trip purposes wholly within towns, the NTA has secured provision of a new network of bus services within Kilkenny City which commenced operation in December 2019. Pre-existing but inadequate services have been enhanced in Athlone, Sligo and partly in Drogheda. Patronage in Athlone has tripled since introduction of enhanced town bus services in January 2017. Similar interventions are proposed in towns of equivalent size and diversity such as Carlow Town, Portlaoise, Mullingar, Ennis and Letterkenny.

When designing networks of services to serve commuting needs within a town, the NTA ensures in as far as funded resources permit that equitable coverage of the town footprint is achieved,

major trip attractors are served (e.g. Bus / Rail station, IT, Hospital, PHC, town centre), co-ordination of headway on trunk sections of the network is achieved, and fares and ticketing systems that facilitate interchange at an appropriate node within the network are provided.

17. Can the Department estimate the cost of providing free public transport to all based on 2018 or 2019 use and also a figure for free public transport for students only?

In 2019 the annual cost of running all public transport in the state was almost exactly €1 billion. This was funded from 3 sources, Government (PSO) subsidy of €288m, Free Travel funding from DEASP of €54m and the balance is fares revenue from fare paying passengers of €626m with some other small income streams, totalling approx.€30m.

Free travel for students
Free travel for all third level students would have cost €49.6m in lost revenue in 2019, however there would be a significant increase in demand from students with free travel which would require more capacity on all networks, buses trains and trams and additional subvention.

Active Travel

18. The NTA does not fund bike sharing schemes – can the Department/NTA outline context for this situation?

The Department has substantially increased funding for active travel in recent years as can be seen from the table below –

Active Travel	2018	2019	2020 (f)	2021 (f)
€m	39m	45m	107m	160m

(rounding applied)

The figures above relate to the principal active travel funding programmes only and do not include funding provided to cycling and walking infrastructure under BusConnects, the greenways programme, the roads programme or other external sources such as the Urban Regeneration and Development Fund or the Rural Regeneration and Development Fund.

The funding provided above is almost exclusively CAPITAL funding apart from approximately €1.6m in CURRENT funding which subvents the Green Schools programme.

The Department does fund CAPITAL expenditure associated with the public bikes schemes and that funding is provided to the NTA and has funded the establishment, and expansion, of public bikes schemes in all the cities (Waterford this year) as well as funding the roll-out of increased on-street bike parking places to facilitate the introduction of dockless bikeshare schemes licensed by Dublin City Council.

Subvention of operational costs associated with the public bikes schemes would require CURRENT funding and the availability of CURRENT funding is always much more constrained than that of CAPITAL and is also not subject to the type of multi-year certainty that CAPITAL funding can deliver.

Since the successful introduction of the first public bikes scheme a pragmatic solution to ensure both the physical introduction and expansion of the schemes as well as the successful operation of the schemes has been to subvent the operational costs through a combination of (very low) membership fees, sponsorship and advertising and this approach has worked reasonably well to date.

If subvention were to be provided through CURRENT funding future expansion would always be linked to available CURRENT funding and in light of potential future years' availability of such funding the capacity of the system to further expand would probably be questionable.

Aviation

As an island nation, Ireland is particularly dependent on air connectivity both socially and economically and aviation plays a critical role in our economy.

Over 140,000 jobs are supported by the air transport sector in Ireland and the air transport industry, including airlines and its supply chain, is estimated to support €8.9billion of GDP. Approximately, 6.8% of GDP was supported by air transport and foreign tourists arriving by air in 2018 and spending by foreign tourists supports a further €8.7 billion of the country's GDP {source: IATA/Oxford Economics}

Ireland is a significant player globally for aircraft leasing, an industry which contributes a further €541 million to the Irish economy, supporting nearly 5,000 jobs.

The Department's policy focus to date with regard to airport infrastructure is on ensuring that Ireland has the optimum airport network given the importance of international connectivity for the country.

daa is a fully commercial State Body, funded exclusively through its own resources with no recourse to Exchequer funding. Therefore any construction projects, for example the new runway, are funded by daa. Construction on a second runway at Dublin Airport is underway and is expected to be completed in 2021 at a cost of €320m. No exchequer funding has been provided towards this project.

The new runway is of strategic importance and is essential to Ireland's future economic and international connectivity. Prior to COVID-19, Dublin Airport was operating at capacity during peak times and this project is a vital piece of infrastructure needed to provide additional capacity to enable further growth.

A high-level strategic capacity review of Ireland's State airports undertaken to assist in decision-making for the longer term to 2050 was published in 2018. This was followed by a public consultation on the Review and the completion of other follow up work in 2019. A decision from a new Minister/ Government will be required on the long term policy options at Dublin Airport.

A new Regional Airports Programme (2020 - 2024) is being finalised and will be submitted for the approval of the new Minister. It is envisaged that this new Programme will continue to support regional airports with less than 1m passengers, helping them to make a sustainable contribution to their respective local economies and communities as recognised in the NAP.

19. How much has been spent on the new runway at Dublin Airport?

The projected final cost of the overall runway project is €320m. The amount spent on the project to date is commercially sensitive."

20. How much is the projected final cost of the new runway?

The cost of the project is €320m.

21. Has the Department considered a moratorium on runway construction in light of the widely predicted huge decrease in air travel in the medium term?

In respect of the North Runway, the answer is no. The new runway is of strategic importance and is essential to Ireland's future economic and international connectivity. Prior to COVID-19, Dublin Airport was operating at capacity during peak times and this project is a vital piece of infrastructure needed to provide additional capacity to enable further growth. The programme of construction and the overall budget remained largely on target prior to the outbreak of Covid 19. Construction work on the North Runway is expected to resume as restrictions are lifted.

Within a wider context, in respect of airports other than Dublin Airport, a moratorium may be considered. For example, the Department is currently preparing a Regional Airports Programme for the period 2020 to 2024. While runway construction was not eligible for funding under previous programmes, the Government agreed (in principle) in June 2019 to contribute €5m in Exchequer resources to the extension of a runway at Waterford Airport. This project, which was originally due for completion in summer 2020, has encountered delays. Construction is now due for commencement in 2021 with a view to being ready for operations in 2022.

As part of the process to develop a new Programme, consideration is being given to the impact of the Covid-19 crisis on aviation, the competing demands for support across the airport sector and the availability of Exchequer resources going forward. Any consideration of a moratorium on runway construction at regional airports would be examined as part of this process and would require the approval of a new Minister.

The next Government will also be asked to consider the future long term capacity needs at Ireland's State Airports including the timeframe for development for new terminal capacity at Dublin Airport. A further new runway is not considered necessary until approximately 2050. Given the long time horizon for planning, approval and construction of new runways, it would be considered prudent to consider and plan for an additional runway capacity around 2030.

22. Can the Department clarify the funding mechanisms for the new runway?

The North Runway is being funded from daa's own resources, a combination of cash/debt. No exchequer funding is being provide to this project. The daa is a fully commercial State Body, funded exclusively through its own resources with no recourse to Exchequer funding.

23. If an EIB loan to DAA is involved, has the State underwritten that loan and what is the risk of that loan not being repaid considering the changed environment for aviation?

The State does not underwrite any borrowings daa enters into. As per legislation, daa is a fully commercial State body, funded through its own resources and is responsible for servicing its debts.

24. Have any analyses or predictions been conducted by the Department on potential drops in aviation traffic in the years ahead?

As part of the Capacity Review published in 2018, the base forecast for future passenger growth to 2050 anticipated average annual growth of passengers at Dublin Airport of 2% per annum.

Under an upside scenario Dublin reaches 61 million passengers by 2050 while a downside scenario foresees Dublin's passenger numbers growth averages 1.7% per year, reaching 49 million by 2050.

This sensitivity analysis took account of potential global risks such as Brexit and increased US protectionism as well as positive growth scenarios. The 2050 downside scenario forecast in the report for Cork Airport is 3.7 million passengers while for Shannon Airport it is 3 million passengers.

Since the publication of this report, the outlook for aviation, particularly in the short term is expected to be dramatically affected by the effects of COVID-19. The Department continues to monitor developments in the air transport market at the national, EU and global level, in consultation with airports, airlines, national regulators and all relevant EU bodies.

European Aviation is currently experiencing its most challenging crisis, more severe that 9/11 or the global financial crash. Activity levels this week are approx. 80% down on corresponding period in 2019. *{Source: Eurocontrol}*

Irish airlines are fully exposed to the dramatic downturn in activity. Ryanair and Aer Lingus were both relatively strong heading into the crisis. However it is clear that a prolonged impact on travel will put even the most resilient balance sheets in a position of needing additional liquidity. The major concern is the level of uncertainty about the return to normal. Right now there is:

- No clarity or date for when aviation can expect to try to restart in a significant way. This is an important detail, as airlines will need a minimum of one months' notice in order to upload services to their websites and sales agents to allow consumers to purchase tickets.

- No clarity about the services/procedures/protocols that may be required at airports and by airlines to operate safely in this new environment.

Climate Change

25. Has the Department conducted or received any analysis in the following areas as regards potential impacts on emissions of certain specified issues (below)

General Overview

The Department is strongly committed to evidence-based policy making, particularly relevant in the context of rapidly evolving science, technology and international policy development in the climate sphere and where significant behavioral change is the outcome pursued. Our Climate Change Unit, when it was established just four years ago, identified that a key requirement of its role was to better understand transport emissions and effective strategies to reduce them.

Considerable analytical work and modelling is being undertaken across the system. The Climate team engages with colleagues across Departments and Agencies providing a transport input to this work. Furthermore, the Unit works with the EPA and SEAI to co-fund specific transport climate research.

Within the Department, analytical support to climate policy development has been augmented. The Strategic Research and Analysis Unit has been strengthened and has climate focused members that work closely with our Climate Change Unit.

In the case of many of the questions raised here, Government will need more detailed analysis to inform decision-making on these policies; in some cases, certain analysis has already been done, and several more strands of relevant technical and policy work are underway.

Importantly, cross-sectoral analysis to assess the overall effect on society, on the environmental targets, and on the economy of all the measures across the various sectors – agriculture, transport, energy, built environment, etc. – will be needed to inform Government decisions on the best overall blend of measures, having regard to their combined effect, their sequencing, and any associated re-distribution mechanisms required.

In relation to the various issues raised, set out below is the data we have and our understanding of the research the Department has knowledge of.

a) Reduced upper speed limits

b) Improved enforcement of speed limits

In relation to a) and b) the Department previously gave an estimate of a cumulative 1.7 Mt CO2 over the ten years 2020 to 2030 from a 10km/hr reduction of the maximum motorway speed limit. What saving would result from a 20km/hr reduction? How does this compare with the analysis by EEA[1]? It seems that this figure didn't include any changes to enforcement which EEA indicate would have the greater impact. What savings would result from full compliance with (existing and lower) speed limits, and what are the practicalities of enforcement through automatic number plate recognition? Has the Department had access to any analysis of speed reductions being implemented in the Netherlands to reduce emissions?

The Department has, during preparation of the 2017 National Mitigation Plan, modelled the impact of reducing maximum speed limits on motorways from 120km/h to 110km/h for cars/vans and from 90km/h to 80km/h for heavy duty vehicles compared to current speed limits. It was estimated that a potential total emissions saving of ***c.*1,700 kT CO_2 between 2020 and 2030** could be achieved. An annual average saving of 170kT CO_2 would represent approximately 1.4% of annual transport emissions.

These calculations assume: that 20% of car and van kilometres travelled are on motorways and 30% of HGV kilometres travelled are on motorways; compliance with speed limits; and that the new speed limit will not otherwise alter motorway driving behaviour or impact on the total motorway kilometres travelled.

Significantly, these relatively modest emissions reductions were judged to have a high economic cost (over €570 per tonne of carbon abated).

Furthermore, the consultants engaged by the Department of Communications, Climate Action and the Environment to conduct the Marginal Abatement Cost Curve analysis to inform the preparation of the Climate Action Plan also considered the potential abatement potential of speed limit reduction and concluded that the cost benefit ratio was too high to include in their recommendations for Plan measures.

[1] https://www.eea.europa.eu/themes/transport/speed-limits-fuel-consumption-and

The Netherlands and Austria have both recently introduced schemes to lower speed limits for environmental reasons. However, both these cases were driven by air quality concerns, rather than to lower carbon emissions. The Netherlands needed to lower speed limits as they were in breach of EU nitrogen compounds (NOx and Ammonia) limits. The Government chose to lower speed limits as an alternative to reducing nitrogen emissions from other sources (agriculture or construction). Speed limits are set to 100km/h, except on certain sections between 7pm and 6 am. Further details available here.

Austria applies a system of air quality based speed limits to certain sections of the motorway network. When air quality indicators rise above certain thresholds, the speed limit is lowered from 130km/h to 100km/h. Electric Vehicles, as they do not have tailpipe emissions, are exempted from the lower speed limits. Further details can be found here.

Research by the EEA found that, in ideal circumstances, lowering the speed limit from 120km/h to 110km/h could lower related carbon emissions by 12-18%, assuming smooth driving and total compliance. A more realistic scenario estimated carbon savings of 2-3%. This report did not consider the potential for air quality improvements if average speeds were lowered. The analysis carried out by the Department for the National Mitigation Plan estimated a reduction of c. 8% in vehicle emissions on the motorway if similar was done in Ireland. All of this suggests that lowering average speed on the motorways, either through more effective enforcement or lowering the speed limit would lower Ireland's carbon emissions.

Speed limit reduction has primarily been deployed as an air quality improvement tool, largely on congested roads in built-up areas with associated air pollutant accumulation. The combined GHG and air quality benefits arising from deployment on such congested roads in built up areas coupled with likely lower costs arising from reduced journey times could change the cost benefit balance of the measure on such roads. This could point to a more targeted and differentiated operation. It is expected that a proposed deployment of variable speed limits on the M50 would have a positive impact on NOx emissions from vehicles using it, and an associated GHG emissions reduction also.

The rationale and basis for the application of speed limit reductions on inter-urban motorways designed to improve connectivity needs careful consideration. Lower vehicle numbers and fewer localised air quality concerns in these circumstances would limit the GHG and air quality benefits to be set against the erosion of the economic benefit derived from motorway investment to improve connectivity, longer travel times (contrary to Project Ireland 2040 objective to enhance and upgrade accessibility between our large urban centres), and the possibility of motorway traffic diverting onto secondary networks.

This is an area where policy making, and in particular differentiated policy making in response to specific policy needs arising in different areas, would benefit from more detailed research and analysis. The Department proposes to further this work in the coming months.

c) Increased tax differential to discourage SUVs

The Department engages regularly, in a wide variety of groups/fora and bilaterally, with the Department of Finance regarding the deployment of taxation to further sectoral policy aims. Final decision making with regard to tax rates and policy rests with the Department of Finance.

d) Congestion charging/ road pricing

e) Parking space levy and/or benefit in kind on parking

In relation to d), the previous response was that studies had been carried out and that they would be forwarded from TII. We would be grateful to receive these, but also to know what if any analysis of associated emission reduction potential has been carried out by or for TII, DTTAS or DCCAE.

A range of TII Reports were forwarded previously and for convenience are attached again with this correspondence.

Congestion delays (with consequent emissions and quality of life concerns) require us to give detailed consideration to how to ensure fewer and cleaner vehicles enter Irish cities.

Progress is being made in

- Encouraging a shift from car trips to public transport and active travel;
- Promoting zero-emission vehicles; and
- Transitioning the urban bus fleet towards lower emitting alternatives.

In this regard, significant investment of €8.6 billion has been earmarked under the *National Development Plan* to increase the capacity and attractiveness of sustainable mobility. This notwithstanding, transport is a derived demand. As our population is projected to grow and as Ireland begins its economic recovery, it is expected that our transport networks will be required to host significant numbers of additional journeys. Over time, this rising travel demand coupled with a scarcity of space to expand road supply will exacerbate the issues that we see in our cities

today and will likely require that *demand management measures* be considered, including the potential role of urban congestion charging and parking policies, among others.

The Department has commissioned consultants (Systra Limited) to consider such measures available and suitable to address the impacts of growing vehicle traffic levels in Dublin, Cork Limerick, Galway and Waterford.

The study will consider a range of factors in each of the cities, including congestion levels and air quality issues, and will make recommendations on how we might better manage travel demand in each of the cities. It is examining international best practice and building a profile of each city, including vehicle surveys. Intensive stakeholder consultation is currently taking place, including regional workshops with the local authorities concerned. The culmination of this work will be a final report recommending measures that should be most effective for each city, outlining the impacts of introducing these measures, and identifying implementation roadmaps. It is expected that the findings of the study should be published in September.

This work will involve modelling carbon emission and air pollutant impacts of key measures under consideration in each of the cities which we expect to add considerably to our evidence base in this area.

f) reform of expense rates for motor vehicles to discourage high-emission vehicles and encourage cycling, public transport and low emissions vehicles

The Department engages regularly, in a wide variety of groups/fora and bilaterally, with the Department of Public Expenditure and Reform on areas where sectoral policy aims intersect with matters within their remit. The final decision making regarding public sector expense rates rests with that Department.

g) re-allocation of road space to active modes and public transport

In relation to g) has any analysis similar to the Propensity to Cycle Tool (www.pct.bike) been carried out for Ireland, and has any analysis of the emissions impact of Bus Connects been carried out?

In modelling used to inform its strategic transport planning, the National Transport Authority (NTA) uses similar tools to the Propensity to Cycle tool to identify both actual trips and potential trips, while a specific bicycle model was developed by the NTA as part of the GDA Cycle Network Plan. A difference is that these tools do not have a public interface like the Propensity to Cycle Tool.

The Department has recently carried out, and shared with the parties to Government formation talks, some initial static analysis of the extent of emissions reduction arising from large scale switching from passenger car journeys to walking and cycling journeys. E.g. reducing car travel by 700 million kilometres per year (about 2%), and shifting drivers to about 100 million cycling journeys (about a 300% increase in cycling) instead; or over 200 million additional walking journeys; or a combination of the two could yield emissions reductions of c120 kTs CO_2, 1% of annual transport GHG emissions. Generating a shift to active travel of this size would require significant behavioral change by existing motorists.

In the short term and in response to COVID-19, the Department is supporting the NTA as it works with the local authorities to reallocate road space within the major cities to pedestrians and cyclists in order to provide greater active travel capacity and facilitate social distancing within urban areas.

h) increased online commerce

i) increased working from home

In relation to i) the Department previously referred to a study considering that 20% of the population of the Greater Dublin Area might work from home one day a week; what scenarios does the Department now think are likely to develop during and subsequent to the pandemic and what emissions impacts might they have?

The recent Irish study referred to (O'Keeffe et al., 2016) estimated **carbon reductions of almost 60kT CO_2** if 20% of the population of the Greater Dublin Area telecommuted one day a week for a year; representing approximately **0.5% of transport emissions in 2018.** Internationally, numerous studies report emission reduction impacts through the implementation of teleworking policies; the degree of benefits delivered varies significantly based on the number of days per week working from home, land use patterns, commute distances, socio-demographic characteristics, public transport availability and internet infrastructure.

It is too early to draw any permanent conclusions about the lasting impact of COVID-19; however, it raises a number of issues for future consideration particularly in relation to the future of work and the location of work (nonetheless noting that only 30% of journeys are work related as per National Travel Survey).

In this regard, the Department is currently reviewing its Sustainable Mobility Policy, which provides an important opportunity to more fundamentally consider the potential scope of and role for

homeworking in delivering more sustainable mobility. The submissions received in response to its public consultation are currently being examined by the Department and thus the development of any new policy framework is still at an early stage and amenable to accommodating emerging issues such as COVID-19.

In addition, at the investment strategy level, the review of Transport Strategy for the GDA is due to commence later this year while the Limerick-Shannon and Waterford Strategies are scheduled to commence public consultation this year and evolving circumstances post-COVID will undoubtedly inform their development.

In terms of analysis and research, the longer-term impacts and likelihood of permanent behavioural change are difficult to predict. The Department has engaged with UCC, in the context of other ongoing analytical work, to consider the emissions impact of a range of decreases in vehicle kilometers driven by a fall in commuting. This work will unfold over the coming months.

In the shorter-term the National Transport Authority has been working with local authorities over the last number of weeks to develop COVID Mobility Plans to support the gradual reopening of society. These mobility strategies are being developed on the basis of scenarios of increased working from home. We expect the Dublin COVID Mobility Plan to be published shortly with plans for the other cities thereafter.

j) transition of public transport and public service fleets to electric vehicles

The *Climate Action Plan* requires every public body to have a climate mandate. A key element of this mandate is using public procurement to deliver positive change. Adopting green public procurement policies demonstrates strong Government leadership in normalising and supporting the uptake of low-emission vehicles amongst the private fleets and sends a clear market signal to the automotive industry.

To support deployment of EVs in public sector fleets the *LEV Taskforce* recommended the introduction of a new public procurement framework for EVs, which was echoed in Action 149 of the *Climate Action Plan*. The Office of Government Procurement is currently developing a direct drawdown mechanism to allow public sector bodies to purchase an EV with a reduced administrative burden.

Ireland is currently in the process of transposing the revised EU *Clean Vehicles Directive*, which legislates for public procurement at European level, into Irish law. The *Directive* will oblige public sector bodies to meet minimum targets for the share of 'clean' (low-emission and zero-emission)

vehicles in vehicle purchase, lease, rental and hire-purchase contracts, as well as vehicles used to carry out certain types of service contract, from August 2021.

The *Directive* additionally obliges Ireland to ensure that our public transport (bus) procurement strategy includes low-emission alternatives and a minimum level of zero-emission (full battery electric or hydrogen) buses. Between 2021 and 2025, *c*. 34% of urban buses purchased must be low-emission and a further 11% zero-emission; rising to 33% low-emission and a further 33% zero-emission from 2026.

Key analysis conducted in this area is the Low Emissions Bus Trial. To better inform bus purchasing decisions, a comprehensive series of bus trials in Dublin and in Cork was carried out evaluating the emissions and operational performance of a range of low-emission fuels and technologies (electric, diesel-hybrid, compressed natural gas/biogas and retrofitted diesel models) against a Euro VI diesel baseline. The findings of the Low-Emissions Bus Trial (available on our website) demonstrated that full electric buses performed well across a range of metrics, assuming sufficient supporting infrastructure and market availability of double-deck models. Diesel-electric hybrid buses, with sustainable biofuels such as HVO used in place of fossil diesel, and gas buses where biogas or biomethane is used in place of compressed natural gas, also emerged as potentially suitable alternative for fleet transition.

By the end of 2020, the first one hundred low-emission buses will have entered the urban bus fleet; the NTA expects to take delivery of these vehicles late this year. In anticipation of the emissions reduction criteria for urban buses under the *Clean Vehicles Directive*, these buses will be 'clean' plug-in electric-hybrids which can partly operate in zero-emission electric mode.

k) support for electric bicycles

In relation to k), what predictions does the Department have of future uptake of electric bicycles without additional support? Have they any assessment of the impact of an extension of the Bike to Work scheme to cover electric bicycles up to a value of €2000 or €3000?

In its recent review of Active Travel policy (published as part of the broader Sustainable Mobility Policy review) the Department noted the potential role of eBikes in expanding the reach of cycling beyond the traditional approx. 7km trip length and research in other Member States has also noted that eBikes can provide an attractive cycling option for some people with reduced mobility. A number of submissions received during the public consultation have also raised the issue of eBikes and their potential and the issue of eBikes will be considered in the context of the ongoing policy review.

eBikes are currently eligible for the successful Cycle to Work scheme which provides a significant financial contribution toward the cost of their purchase. There has been no recent analysis conducted on the potential impact of any increased financial threshold for the Cycle to Work scheme and the scheme itself is a matter for the Department of Finance.

26. What would the emissions impact of achieving the Smarter Travel (2011) targets be? What would that entail in terms of additional investment?

The Smarter Travel Policy 2011 specifically noted that targets may have to be adjusted in the light of economic realities, improving knowledge and changing trends. The targets were framed around the commute to work or school and not in relation to total personal travel trips. However, the following may be helpful.

Smarter Travel set a target that –

- *Work-related commuting by car will be reduced from a current modal share of 65% to 45%, which will mean that between 500,000 and 600,000 commuters will be encouraged to take means of transport other than car driver* (in 2011, 144,000 commuted to work on public transport; 170,000 walked; and 40,000 cycled – total 354,000; - Smarter Travel proposed a 155% increase in sustainable mobility on the work commute over 9 years)

Smarter Travel estimated that by 2020, meeting this target required
– public transport to meet the needs of an additional 230,000 commuters

an additional 210,000 people walking and cycling to work/education each day

Achieving 45% car commuting mode share in the GDA

Our most rigorous modelling of the scale of intervention required to achieve mode shift of substance occurs in the NTA modelling assessment for the Greater Dublin Area (GDA) Strategy. In modelling the impacts of the strategy implementation, the mode share for commuter travel by car in the GDA in the AM peak period is forecast to reduce from 63% in the base year to 45% with the implementation of the GDA Strategy (the Do-Strategy scenario).

There is growth of about 160,000 public transport trips in the daily AM peak period between the base year and the Do Strategy Scenario. Public transport and actives modes share is forecast to increase from 40% to 49%.

The estimated investment cost for delivery of Strategy in 2015 prices and ex VAT was €10.3 billion. This estimate is likely to be surpassed as firmed up project delivery costs for the key large-scale projects are arrived at in business cases due to be submitted in 2020 and 2021 prices.

This highlights the significant financial challenge in encouraging modal shift in Ireland. The *Strategy* predicts that this significant level of investment will result in the share of public transport journeys increasing from 18% to 23% (albeit from a larger total as the number of actual commutes will increase by 40% by 2035).

While the *Strategy* establishes a similar headline figure to *Smarter Travel* in reducing car usage as a means of commuting to work from 65% to 45% and increasing sustainable modes share of commuting to 55%, *Smarter Travel* was seeking to achieve these targets at a national, rather than GDA level, and by 2020 rather than 2035.

Achieving 45% car commuting mode share outside the GDA

The challenge of achieving a similar mode share (45%) for car commuting outside of Dublin is enormous. The investment costs of securing a sustainable mobility mode share for the remaining 60% of the population where private car mode share for all trips is over 80% as opposed to the GDA base level of 63% would be substantial.

Emissions reductions

Quantifying the emissions effects of achieving such mode shares is difficult. The modelling of the GDA Strategy produced the following emissions assessment. The outputs relate to the morning peak only so they just give an indication of the potential change under the various scenarios.

Emissions (kg)	Base	Do Strategy	Difference	% Difference
Demand	289,554.00	392,737.00	103,183.00	35.6%
Vehicle Kms	5,215,824.71	6,836,869.00	1,621,044.29	31.1%
CO2	1,016,683.12	1,320,473.20	303,790.09	29.9%

AM - Model Outputs Summary (2012 and 2035)

Emissions (kg)	Do Minimum	Do Strategy	Difference	% Difference
Demand	398,916.00	392,737.00	-6,179.00	-8.5%
Vehicle Kms	7,068,398.00	6,836,869.00	-231,529.00	-1.5%
CO2	1,349,978.70	1,320,473.20	- 29,505.50	-2.2%

AM - Model Outputs Summary (2035)

Because there is significant growth in CO_2 caused by the increase in travel demand and Vehicle Kms over the period of the strategy, i.e. Base Year 2015 to Strategy Year 2035, the difference between the base case and the Do Strategy table is not useful for estimating the emissions impact of the strategy measures.

As can be seen from the second table, however, additional public transport and active travel journeys to be facilitated by implementation of the GDA Strategy (Do Minimum vs Do Strategy) is estimated to yield emissions reductions in the morning peak of 2% or 29kTs per annum.
The assessment does not include any significant adjustment to the fleet mix as this was not under the influence of the Strategy and the primary purpose of the assessment is to determine the impact of the Strategy measures. Of course, a transitioning of the various vehicles to zero and low emissions technology will yield considerably more emissions reduction but that impact is not captured here.

Additional material that may assist in understanding potential scale of emissions reduction

Added to this, the following further information may be useful, prepared by the Department in response to a previous query regarding how transport emissions reductions of 7% per annum might be achieved.

To illustrate options for reducing harmful emissions from Ireland's transport sector, the Department identified **policy pathways with corresponding measures** (see the attached Table).

The **Table** looks at each measure in turn and identifies:

(i) how much change is needed **to achieve a 1% reduction** in annual transport emissions;

(ii) the approximate **scale of cost** involved; and

(iii) the **main issues** that would need to be considered further, including practical issues such as market availability, impact on citizens, technical constraints and delivery timeframes.

Many combinations of measures in the Table are possible. For broad estimation purposes, it can be assumed that the measures are generally scalable. This is supplied only to give a broad sense of the scale of change involved with each potential measure, and the approximate costs involved; the analysis is not precise, just indicative. Information relates to each measure individually; the combined impact within packages of measures may vary. Also, impacts (including costs) are expected to vary over time, often in correspondence with changes in technological development and market forces (e.g. scarcity, price).

Measure	**Scale of change required to achieve a 1% fall in transport emissions yearly i.e. (120 kT CO_{2eq})**	**Rough cost estimate**	**Basis of calculation/comparator data**	**Comments/issues to consider further**
More rail journeys	Move private motorists onto rail so that there is a **100% increase in rail passenger kilometres** nationally.	**- Possibly €3 billion capital** investment in the rail network and trains; **- €130 million each year** in additional operational costs subvention (PSO); - some additional annual maintenance investment to keep the new assets safe and operating at "steady state"; and - some incentives to effect the requisite shift by motorists to rail on the scale required.	<u>Capital Comparator</u> The DART Expansion Programme is one of the three public transport mega-investments already being provided under the existing NDP; it involves an investment allocation of over €2 billion, it will take the term of the NDP to be delivered, and it will achieve a doubling of capacity on the rail system around the Greater Dublin Area (the part of the network that currently accounts for about 70% of rail journeys nationally). <u>PSO subvention</u> At present Irish Rail receives about €130 million per year from the taxpayer/Exchequer to help meet the cost of operating its existing services and carry its existing passenger load. <u>Technical assumptions</u> The emissions saving is associated with a transfer from car to rail based on average driven kms, average vehicle emissions and average occupancy rates.	This initiative would require considerable **expansion in new capacity** on the national rail system which is **already highly constrained** at peak times. Although demand would likely be largely at peak times, the shift to rail would likely help make good use of some excess capacity that exists off-peak times. Overwhelming international experience clearly shows that sizeable expansion of rail capacity: - takes **several years** to achieve; - needs **robust cost and benefit estimation**; and - **very strong delivery management**. Generating a shift to rail travel of this size would require **significant behavioural change by existing motorists.** Some **incentives**, disincentives or prompts would likely be needed to support this – these may

Measure	Scale of change required to achieve a 1% fall in transport emissions yearly i.e. (120 kT CO_{2eq})	Rough cost estimate	Basis of calculation/comparator data	Comments/issues to consider further
				well have a cost, whether for the Exchequer or for the citizen.
More bus journeys	Move private motorists onto buses so that there is **a 300% increase in bus passenger kilometres nationally.**	**- Very tentatively €3-5 billion capital** depending on extent of road infrastructure works nationally; - **€300-500 million each year** in additional operational costs subvention (PSO); and - some incentives to effect the requisite shift by motorists to bus on the scale required.	<u>Capital Comparator</u> The BusConnects Programme is one of the three public transport mega-investments already being provided under the existing NDP; it involves an investment allocation of over €2 billion, it will take the term of the NDP to be delivered, and it will increase bus kilometres by 20% around the Greater Dublin Area and similar scale increases in other cities. <u>PSO subvention</u> At present the bus sector receives about €150 million per year from the taxpayer/Exchequer to help meet the cost of operating its existing services and carrying its existing passenger load. <u>Technical assumptions</u>: The emissions saving is associated with a transfer from car to bus based on average driven kms, average vehicle emissions and average occupancy rates.	This initiative would require considerable **expansion in new capacity and services** on the bus system nationally. The shift to bus travel could help make good use of excess capacity that exists at off-peak times but demand is likely to be concentrated at peak time, where there it is already often at/near capacity. Sizeable expansions of bus fleets: - **take time to achieve**; - require robust **cost and benefit estimation**; - generally need **network/service redesigns**; and - **very strong delivery management**. Generating a shift to bus travel of this size would require **significant behavioural change by existing motorists.** Some measures would likely be needed to **support** this transition – these may well have a cost, whether for the Exchequer or for the citizen.

Measure	**Scale of change required to achieve a 1% fall in transport emissions yearly i.e. (120 kT CO_{2eq})**	**Rough cost estimate**	**Basis of calculation/comparator data**	**Comments/issues to consider further**
More active travel (walking and cycling) journeys	Reduce car travel by **700 million kilometres per year** (about 2%), and shift drivers to: - **about 100 million cycling journeys (about a 300% increase in cycling)** instead; or - alternatively over **200 million additional walking journeys**; or - a **combination** of the two.	- Depends on extent of any additional **capital investment** programme adopted to support increased active travel; and, - some **incentives** to affect the requisite shift by motorists to active travel on the scale required.	To achieve the emissions saving, the car journey must be fully replaced by a cycling/walking journey. Technical assumptions: The emissions saving is associated with a transfer from car to cycling/walking based on average driven kms, average vehicle emissions and average occupancy rates. The average cycling trip in Ireland is *c.* 6.6km; analysis assumed half this distance for walking trips (*c.* 30 minute walk).	Generating a shift to active travel of this size would require **significant behavioural change by existing motorists**. Some **incentives** or disincentives or prompts would likely be needed to support this – these may well have a cost, whether for the Exchequer or for the citizen. National experience clearly shows the importance of **high quality** infrastructure to **attract current non-cyclists.** Similar expectations for **current non-walkers.** Quality design and statutory planning will affect **delivery timeframes** on any infrastructure initiatives.

National Road Spend 22/05/20 [GP]

PDF Attached

BE Stage Carriage 22/05/20 [GP]

Spreadsheet attached

RTP Finance List 22/05/20 [GP]

Spreadsheet attached

Follow Up Responses 13/03/20 [GP]

Costings / Briefing for Political Parties in Talks on Government Formation

Follow-up Questions from the Green Party

Follow up to question 6 - Speed limits Can we give workings for our calculations of the impact of speed limits? Are they consistent with other calculations e.g. https://www.eea.europa.eu/themes/transport/speed-limits-fuel-consumption-and ; https://www.ce.nl/publicatie/why_slower_is_better/948

Is there any information on the reductions being made in the Netherlands (for NOx emissions reduction but also with a CO2 impact)? https://etsc.eu/lower-motorway-speed-limits-coming-in-luxembourg-and-the-netherlands/

Response from Department of Transport, Tourism and Sport

DTTAS has modelled the impact of reducing maximum speed limits on motorways from 120km/h to 110km/h for cars/vans and from 90km/h to 80km/h for heavy duty vehicles compared to current speed limits. It was estimated that a potential total emissions saving of ***c.*1,700 kT CO_2 between 2020 and 2030** could be achieved.

DTTAS's calculations assume:

a. an increase in efficiency in petrol cars of 8.63gCO_2/km and in diesel cars of 11.62gCO_2/km when the speed limit is lowered from 120km/h to 110km/h;

b. an increase in efficiency of 43.85 gCO_2/km for diesel fuelled light goods vehicles (LGV) (vans);

c. an increase in efficiency of 36.06 gCO_2/km for diesel fuelled heavy duty vehicles (HDVs);

d. that 20% of LGV and private car kilometres travelled are on motorways and 30% of HDV kilometres travelled are on motorways;

e. compliance with speed limits;

f. the new speed limit will not otherwise alter motorway driving behaviour or impact on the total motorway kilometres travelled.

Calculations of emission savings can be found in the Excel spreadsheet accompanying this document.

The *CE Delft Report* referenced in the question makes a number of assumptions **beyond the scope of DTTAS assumptions** as well as **a much larger reduction in speed limits** than those assumed in the DTTAS scenario (e.g. speed limits uniformly reduced to 80km/hr).

The estimated direct emissions savings in the *CE Delft Report* **are broadly in line with** DTTAS estimates, despite differing modelled scenarios and different national inputs (i.e. the Netherlands compared to Ireland).

There are some possibly negative effects of reducing speed limits, namely: an erosion of the economic benefit derived from previous substantial motorway investment, longer travel times (contrary to Project Ireland 2040 objective to enhance and upgrade accessibility between urban centres of population), and the possibility of motorway traffic diverting onto secondary networks.

GHG emissions

To put the emission mitigation potential of reducing motorway speed limits into context, an annual average saving of 170kT CO_2 would represent approximately 1.4% of annual transport emissions.

Air pollutants

DTTAS estimates also consider the air quality implications of lowering the speed limit, although, it should be noted that emissions from motorway traffic tend not cause as much air pollution harm as emissions from traffic in towns and cities.

The Department has no information on the specific Dutch trial mentioned in the Question.

Air quality and associated public health issues associated with the operation of fossil-fuelled vehicles are a matter of concern. Older diesel vehicles in particular are significant emitters of air pollutants such as Nitrogen Dioxide (NO_2) and Particulate Matter (PM), which have a negative impact on human health. The **effect of transport-related emissions is not uniform** and, in the case of some pollutants, can impact over relatively curtailed areas; as outlined in the EPA report on NO_2 levels in Dublin (2019), in cities and towns, emissions levels 'can vary dramatically over a short distance (a few metres), with the highest concentrations [of NO_2] within 10 metres of the road side'. Levels significantly decrease the further people move away from heavily trafficked roads.

Similarly, the performance of individual vehicles and vehicle fuel-types, together with geographical and meteorological conditions, can play a larger role in determining local ambient air pollution levels. In general, **higher concentrations of traffic-related air pollutants occur along corridors with high traffic densities** (such as major urban arteries), **as well as in built-up areas** (such as city streets), where prevailing winds are disrupted and where harmful pollutants cannot disperse.

In order to address the issue of high traffic-related air pollution levels in Irish cities, the Department of Transport, Tourism and Sport, together with the Department of Communications, Climate Action and the Environment have established the multi-stakeholder UTRAP (Urban Traffic-related Air Pollution) working group.

The work of the group aims to develop the national policy framework within which elevated levels of pollutants in Dublin and other cities can be addressed, most importantly locally, and will make recommendations to Government later this year.

It may also be of interest to note that Transport Infrastructure Ireland (TII) is currently undertaking a project on the M50 to install technology on the corridor to improve the reliability and safety of the motorway. One of the key control parameters is the ability to set variable speeds in response to real time conditions. While the intention of this project isn't to cut emissions or NOx, it is certainly expected that this would be a by-product of the project.

Speed Limit Mitigation Calculations 13/03/20 [GP]

Spreadsheet attached

Response re Electric and Hybrid Buses 13/03/20 [SF]

Costings / Briefing for Political Parties in Talks on Government Formation

Sinn Féin Question

32. To ask the cost of requiring that all new urban buses should be 100% electric or low emission hybrid.

Response from Department of Transport, Tourism and Sport

The bus and coach fleet is estimated to be responsible for just over 3% of all land transport CO_2 emissions; therefore, while transitioning to zero-emission vehicles plays an important leadership role it has limited mitigation potential. Replacing the diesel powered public bus fleet with zero emission alternatives would reduce transport emissions by an estimated 86 kT, **a 0.7% reduction in transport emissions** (@12 MTs p.a.)**.**

The transition process is underway. Since July 2019 no diesel-only urban buses have been purchased. *BusConnects* will not only redesign the network of bus routes to provide a more efficient network but also transition the fleet to low-emission vehicle technologies.

There are nearly 1,400 public urban buses in operation between the Dublin Bus, Bus Éireann and Go Ahead fleets. The majority of these buses are double deck models but there are also a limited number (*c.* less than 200) single deck models. The cost to **immediately** transition 1,200 double deck buses to full electric or electric hybrid is outlined in the table below.

Table 1: *Cost of immediate transition of 1200 urban buses to full or hybrid electric alternatives (See notes below)*

Technology	Estimated Individual Vehicle Price*	No. of Buses Required to Maintain Carrying Capacity	Total Cost	Comments
100% Electricity – Single Deck	€500,000	1,800	**€900m**	It is assumed that 1.5 EV single-deck buses would be purchased to replace every existing diesel double deck bus, in order to maintain current passenger carrying capacity levels.
100% Electricity – Double Deck	€700,000	1,200	**€840m**	It is difficult to obtain a market cost of a double deck electric bus due to the infancy/unavailability of the technology – €700,000 represents a best estimate based on recent purchases in the UK. This price may not be wholly reliable.
Diesel-electric hybrid	€450,000	1,200	**€540m**	This is the approximate cost of the hybrid buses currently being purchased by the NTA for the urban bus fleet. *Note – hybrids deliver lower emissions reduction outcomes than full electric*

* By contrast diesel Euro VI double deck buses cost *c.* €330,000

A further 200 single-deck 100% electric buses would cost an additional €100m if the transition is immediate.

An alternative method is phasing the introduction of low emission buses by replacing older buses as they approach their end of operational life. The approximate costs of replacing the urban bus fleet at a steady rate (10% replacement rate per annum) would be **€90m, €84m and €54m** for **single deck electric, double deck electricity and diesel hybrids** respectively. The cost and carrying capacities assumptions defined in Table 1 are employed in these cost estimations; importantly, it is also assumed that vehicle costs remain static over the decade.

Please note

- The alternatively fuelled **vehicle costs are indicative** as it is difficult to obtain true costs due to the infancy of the market. Costs are expected to change as markets develop.

- **Market availability** of zero emission fleets (with appropriate capacity and with right hand drive configuration) is currently limited, though developing – an immediate transition of the entire urban bus fleet may not be feasible regardless of cost
- Corresponding **recharging infrastructure** is critical in operating electric and hybrid vehicles. Significant infrastructure at significant cost will be needed to support electrically powered buses.
- The **electricity** used to power the buses **should be renewable** in order to maximise national emission savings.
- Currently, only the bus fleets are suitable for low emission replacement; low-emitting technology does not yet exist in the coach sector, although this will change over time.
- In general, **poorer value for money** is obtained if vehicles are **replaced early** before their full economic life has expired – unless of course they are sold on, but that would unlikely be appropriate in a climate context.
- The above calculations assume that capacity levels on public transport will remain static – in reality, capacity levels are likely to require an increase in the coming years.

DTTAS Responses 05/03/20 [FF] [GP]

D/TTAS

Q: What are the 5 year projections for road and public transport projects under the NDP, project by project?

Public Transport

There are three major new public transport projects in the NDP –

- BusConnects
- DART Expansion
- MetroLink

In line with the Public Spending Code business cases for each of these projects must be prepared and submitted for Government approval in advance of major decisions. The first of these "Decision Gates" will be reached this year with the submission of a Preliminary Business Case and submission of those business cases will inform future funding requirements.

The NDP provides indicative allocations for each of these three projects as per below –

Projects	2020 €m*	2021 €m	2022 €m	2023 €m	2024 €m
BusConnects (incl. ticketing / technology / integration)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
DART Expansion	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
MetroLink	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Total	318	647	625	1015	1050

rounding applied to all figures, actual project profiles subject to change dependent on project progress and funding requirements determined as part of business case development

However, the ***actual funding requirements over the next 5 years*** will be determined in line with Government approval of business cases as submitted under the Public Spending Code.

Apart from the three projects listed above the NDP also provides the following allocations for other projects and programmes –

Projects	2020 €m*	2021 €m	2022 €m	2023 €m	2024 €m
Accessibility	7	10	10	10	10
Active Travel *(incl. sustainable urban transport programme)*	105	156**	140**	140***	140***
Heavy Rail *(incl. maintenance & renewal)*	240	244	246	260	236
Light Rail	25	22	76	118	119
Total	377	432	472	528	505

rounding applied to all figures, actual project profiles subject to change dependent on project progress and funding requirements
****active travel figures in 2021 and 2022 are projected and based on overall project progress but provide indication of requirements***
***** technical assumption: active travel figures remain at 2022 level as later year profiles have not yet been decided.***

Roads

National Roads Capital Projects

TABLE 1.
Major projects currently at construction.

Scheme Name	**Total estimated costs of project**	**Pre 20**	**2020**	**2021**	**2022**	**2023**	**2024**	**Total projected expenditure over the next 5 years.**
N4 Collooney to Castlebaldwin Sligo (Govt approved in 2019).	€149m	69.7m	40m	25m	10m	4m	0.3m	€79.3m
N5 Westport to Turlough (Govt approved in 2019).	€241m	57m	40m	60m	65m	10m	6m	€181m (3m post 2024)
N22 Macroom – Ballyvourney (Govt approved 2019).	€280m	48.6m	40m	55m	50m	50m	30m	€225m (6.4 m post 2024)
N56 Letterilly to Kilraine	€20m	.7m	9m	10m	.3m			€19.3m
N56 Dungloe to Cloghbolie	27m	1m	12m	14m				€26m
N56 Drumbeigh to Inver	15.6m	6.6m	8m	1m				€9m
Close out of completed projects	€20m		€20m					€20m
TOTALS	**€752.6m**	**€183.6**	**€169**	**€165**	**€125.3**	**€64**	**€36.3**	**€559.6m**

NOTE: Profiles provided on this sheet are estimates only and will change depending on construction progress and issues that arise during construction.

TABLE 2.

Projects Approved by Government at end 2018/2019 for statutory approval

Scheme Name	Total estimated of project.	Pre20	2020	2021	2022	2023	2024	Total projected expenditure over next 5 years	Comment
N6 Galway City Ring Road	€1bn	15.7	2m	2m	10m	90m	90m	€194m	Assumes planning achieved in 2021
N21/N69 Foynes to Limerick (including Adare Bypass)	€447m	4.2	2m	11m	28m	85m	75m	€201m	Assumes planning achieved in 2021
TOTALS	**€1.447bn**	**19.9**	**4**	**13**	**38**	**175**	**165**	**€395m**	

NOTE Profiles are estimates only and will change depending on timing of planning approval and confirmation, procurement process for contractors and approval to award tenders and tender cost estimate.

TABLE 3.

Projects to be approved for construction by Government and Dttas in 2020

Scheme name	Total estimated Costs of the Project	Pre20	2020	2021	2022	2023	2024	Total projected expenditure over next 5 years.	Assumes
N5 Ballaghaderreen to Scramogue	150-250m	13.75	10m	44m	60m	50m	9m	€173m	Construction start late 2020
M8/N40/N25 Dunkettle Interchange	100-250m	23m	30m	46m	43m	32m	8m	€159m	Construction start 2020
N52 Ardee Bypass	20-50m	7.5	1.75m	12m	11m	2m		€26.75m	Construction start 2021
N59 Moycullen Bypass	50-100m	14.5	1m	20m	15m	2m	2m	€40m	Costruction start early 2021
N69 Listowel Bypass	50-100m	4.7	6.5m	20m	15m	2m	1m	€44.5m	Constrution start late '20
Enhancing Motorway Operation Services - M50 Traffic Flow Optimisation	50-100m	25.3	30m	8m	2m			€40m	Various contracts underway
TOTALS	**Range €420m to €850m**	**88.75**	**79.25**	**150**	**146**	**88**	**20**	**€483.25m**	

Note : Profiles are estimates only and will vary depending on procurement, timing of approval to award, progress and issues on site.

TABLE 4.

Projects to be approved by Government 2021/2022

APPROVAL TO GO TO CONSTRUCTION

Scheme name	Estimated Costs of project.	Pre 2020	2020	2021	2022	2023	2024	Total projected expenditure over next 5 years.	Comments
N28 Cork to Ringaskiddy	€200-€300m	2.68	4m	12m	17m	50m	65m	€148m	Subject to conclusion of judicial review process and contract award 2022.
TOTAL								€148m	

NOTE: Profile estimate only and subject to conclusion of the Judicial review, procurement and construction delivery and issues on site.

TABLE 5.

Projects to be approved by Government 2021/2022

APPROVAL TO PROCEED TO STATUTORY PROCESSES (i.e ABP).

Scheme Name	Total Estimated Costs of the Project	2020	2021	2022	2023	2024	Total projected expenditure over next 5 years	Comments
M20 Limerick to Cork	€1.4bn	3m	10m	10m	5m	120m	€148m	based on successful statutory approval in 2023
N2 Slane Bypass	€50-€100m	2m	2m	5m	25m	25m	€59m	Based on successful statutory approval in 2022
N72/73 Mallow Relief Road	€50m - €100m	0.4m	0.4m	0.4m	0.5m	1m	€2.7m	Planning stage only
N13 Ballybofey Stranorlar Bypass N13/14/56 Letterkenny Bypass and Dual Carriageway to Manorcunningham N14 Manorcunningham to Lifford	€500-€600m	2m	3m	5m	20m	20m	€50m	Based on planning approval in 2022. Schemes may be split for delivery
TOTALS	**Range €2.bn - €2.2bn**	**€7.4**	**€15.4**	**€20.4**	**€50.5**	**€166**	**€259.7m**	

NOTE: Profiles are indicative only and may vary depending on timing of the planning approval process, scheme confirmation, procurement process, approval to award.

TABLE 6

National Roads Programme 2018 – 2027 under the National Development Plan (NDP)

Projects at pre-Appraisal/Early Planning Stage

To note: - there are no estimated costs or completion timeframes with these projects because they are at the very early stages of development and therefore, it is not possible to give any specific committed completion dates and costs at this point in time. The estimated costs, outlined below, over 5 years relate to very early appraisals of the 'pipeline' projects.

Scheme Name	2020	2021	2022	2023	2024	Total projected expenditure over the next 5 years.
**N2 Clontibret to the Border	1m	1m	2m			€4m
**N2 Ardee to south of Castleblaney	1.5m	1m	2m			€4.5
N2 Rath Roundabout to Kilmoon Cross	0.35m	0.5m	0.5m	0.5m	1m	€2.85
N3 Virginia Bypass	0.6m	0.6m	0.6m	0.6m	1m	€3.4
*N3 Clonee to M50	0.75m	1m	2m			€3.75
N4 Carrick on Shannon to Dromod	0.2m	1m	1m	1m	2m	€5.2
*M4 Maynooth to Leixlip	1m	1m	2m			€4m
**N4 Mullingar to Longford	1m	1.5m	1.5m	1m		€5m
*N11 Jn 4 M50 to Kilmacanogue	1.5m	2m	4m			€7.5
N11/N25 Oilgate to Rosslare	1m	1.5m	3m			€5.5
N17 Knock to Collooney	1.5m	1.5m	1.5m	1.5m		€6m
N21 Abbeyfeale Bypass	0.5m	0.5m	1m			€2m
N21 Newcastle West Bypass	0.5m	0.5m	1m			€2m
**N22 Farranfore to Killarney	0.5m	1m	1m	2m		€4.5
N24 Waterford to Cahir	0.75m	1m	1m	2m		€4.75
N24 Cahir to Limerick Junction	0.75m	1m	1m	1m	2m	€5.75
N25 Waterford to Glenmore	0.75m	1m	1m	2m		€4.75
N25 Carrigtwohill to Middleton	0.5m	1m	1m			€2.5
M50 Dublin Port South Access Road	0.5m	0.5m	1m	4m		€6m
N52 Tullamore to Kilbeggan	0.5m	0.5m	1m	2m		€4m
TOTALS	€15.65m	19.6m	29.1m	17.6m	6m	**€87.95M**

NOTE: Profiles are provided to make a provision to allow planning and appraisal to proceed to the point of business case and request for approval to proceed to statutory approval. The extent of required surveys and environmental work is unknown. Funding may move between projects depending on speed of delivery and appraisal outcomes. These projects are managed as a pipeline programme.

*Projects may include on radials into the M50 and will consider bus prioritisation including dedicated bus lanes.

**Sections of the Network with higher than average accident figures.

Roads - "Steady State" Maintenance

"Steady State" on National Roads

The Capital Improvements amount of **€480m** in 2020 is to fund:

- TII's committed programmes (e.g payments to operate Tunnels and the Port Tunnel Operations Centre);
- 'Steady State' requirements (i.e. Pavements and maintaining the network);
- to deliver on the objectives of the National Development Plan (NDP) (i.e. Building new roads).

For this year, of the €480m, TII intend to allocate **€252.6m** to deliver on the objectives of the NDP (i.e. building new roads) and the balance of **€227.4m** is for TII's committed programmes and Steady State requirements.
Steady State investment is the amount required to allow the physical assets relating to the transport network to continue to operate as they currently exist. This includes maintenance, and like for like renewals.

Steady State Programmes – National Roads /Motorway / Safety / Bridges / Signing and Lining

TII's Steady State programmes concentrate on a number of key maintenance programmes as follows;

- Pavement Programme: This programme enables pavement renewal on the National Roads Network of over 5000km. This funding is necessary to keep the network in an adequate condition and to meet necessary performance standards.
- Motorway Maintenance and Renewal Contract (MMaRC). This programme specifically deals with the motorway network, which is maintained under a contract with Maintenance and renewal contractors.
- Safety Programme: This programme is aimed at addressing safety issues on the network, identified out of accident statistics and route inspections.
- Bridges Programme: This programme covers inspections of bridges on the network and necessary repairs.
- Signing and Lining: This programme upgrades and maintains the signs and lines that are critical to the safety and operation of the National Roads Network.
- Other Steady State Programmes include the retrofitting of safety barriers on the network and the eradication of invasive species.

In summary, a minimum level of funding, in the order of **€200m,** is required to keep the network operating in a safe and efficient manner that is fit for purpose.

"Steady State" on Regional and Local Roads (RLR)

The total Steady State investment requirement for regional and local roads is the estimated average annual cost of maintaining and renewing the physical assets relating to the network.

Each year that investment in Steady State-related expenditure does not meet the required amount, the shortfall increases the cumulative deficit. As this cumulative deficit increases, it becomes more difficult and expensive to counteract and maintain the network at the standard required to ensure Steady State conditions.

In the case of regional and local roads it is estimated that funding in the order of €630 million per annum is required to hold the network in its existing condition and avoid further deterioration.

The Department's working assumption is that local authorities contribute €100 million of this requirement from their own resources resulting in an Exchequer funding requirement of €530 million per annum. The Exchequer contribution is less than the amount required to reach "steady state" at present -the estimated shortfall in 2020 is of the order of €60 million.

The Department of Transport, Tourism and Sport's grant support for local authorities is, therefore, concentrated on maintenance and renewal works as follows;

- Road Pavement Resealing: The purpose of resealing the road pavement surface is to protect the structural integrity of the road so that road pavements last for longer.
- Road Pavement: This programme enables pavement renewal on the regional and local network of just under 94,000 km. This funding is necessary to keep the network in an adequate condition and to meet necessary performance standards. Without the necessary level of investment the network will deteriorate.
- Safety Schemes: Expenditure under this category is aimed at addressing safety issues on the network identified from accident statistics and where potential safety hazards arise.
- Bridges Programme: Bridge repair and renewal is consistently required to maintain an old bridge stock made up of approximately 80% masonry arch structures.
- Drainage: Adequate and well maintained road drainage is essential to protect the structural integrity of roads. The increasing severity of weather events is underlining the importance of expenditure on drainage to make the network more resilient.
- Steady State expenditure also covers winter maintenance and general maintenance including pothole repair, maintenance of verges/embankments, guard-rails/safety fences, signs and traffic signals, road markings.

Q: What can the Department of Transport provide by way of options to achieve the 7% emissions reduction target?

This note briefly presents the current policy context for transport sector emissions reduction and then describes the policy options approach that is set out in the accompanying table of potential measures.

Policy and International Context

About 20% of Ireland's overall emissions come from transport, with half of these from private car use. Transport sector carbon emissions are 12 megatonnes (mt) each year. Without intervention, they are projected to rise to 15mt annually by 2030. Present Government policy is that they are to be reduced over that time period by 7-8mt (i.e. cut in half). Despite the National Development Plan (published 2018), investing in **unprecedented expansion of the more sustainable modes of travel** (public transport and active travel) over this decade – see separate briefing for details – with consequent emissions benefits, the country's **growing population and strong economy** continue to **push transport demand upwards**. So, **further steps are needed** to help achieve the emissions target.

To this end, the analysis informing the *Climate Action Plan* (published 2019) identified a **shift to electric vehicles (EVs)** as the primary source of additional transport emission savings. It targets almost 1 million electric vehicles (mainly private cars) on the road by 2030. Critically, the *Plan* expects the bulk of the shift to EVs (and the resulting emissions reduction) to **occur close to 2030**, when prices have fallen, technologies developed, and behavior patterns changed more.

This is largely consistent with the mitigation ambitions for transport and the associated line of reasoning **across the EU**. While, greenhouse gas (GHG) emissions from the sector have been increasing since 2014, both the Member States and present EU policy (see the EU Commission's *2050 Low-Carbon Economy Roadmap*) expect that significant **emissions reduction in the transport sector will occur only from the second part of this decade onwards**. Until then, the bulk of emissions reduction in the transport sector is planned to come from biofuel mix obligations and from improvements in engine efficiencies. No EU Member State has yet achieved an annual reduction of the level now suggested. By contrast, the European Environment Agency (EEA) expect that transport emissions will remain stable over 2015-2030. The fact that emission savings tend to cost considerably more in the transport sector than in other sectors, may help explain the relative **lack of progress thus far in decarbonising transport globally**, and why many countries have been expecting their transport sector to be later than other sectors in making its necessary contribution to national mitigation efforts. As a consequence, though, transport makes up an ever-increasing share of overall emissions.

The awaited **EU *Green Deal*** – envisaging carbon neutrality for the energy sectors (including transport) by 2050 – is **expected to give practical support and momentum** for accelerating climate action, particularly the movement towards low/zero emitting vehicles.

Options for Transport Emissions Reduction Strategies

To illustrate options for reducing harmful emissions from Ireland's transport sector, the Department has identified **five policy pathways with corresponding measures**, and has set these out in the attached Table. Possibilities for a **7% annual reduction package each year** can be modelled by making **a "pick and mix" selection** from among the identified measures.

The **measures vary in terms of their practical potential for yielding emissions savings** of the scale sought over the **short term** especially. Experience internationally suggests that quick results are particularly challenging for measures that require significant behavioural change by citizens; to be successful these often require a well-considered development stage and a lead-time with a planned communication strategy. Similarly, for measures that involve sizable infrastructure changes; good transport infrastructure takes time to develop and build, and international best practice shows that detailed planning, robust cost/benefit analysis, adequate lead-times, and strong delivery management are critical to success.

While the Table provides a useful overview of ideas and their approximate impacts, the Government will need more detailed analysis to inform decision-making on these policies; to support this, much analysis has already been done, and several more strands of relevant technical and policy work are underway. Importantly, further **cross-sectoral analysis** to assess the **overall effect on society, on the environmental targets, and on the economy** of all the measures across the various sectors – agriculture, transport, energy, built environment, etc. – will be needed to **inform Government decisions on the best overall blend of measures,** having regard to their combined effect, their sequencing, and any associated re-distribution mechanisms required.

Technical Notes:

The **attached Table** looks at each measure in turn and identifies:

(i) how much change is needed **to achieve a 1% reduction** in annual transport emissions;
(ii) the approximate **scale of cost** involved; and
(iii) the **main issues** that would need to be considered further, including practical issues such as market availability, impact on citizens, technical constraints and delivery timeframes.

Many combinations of measures in the Table are possible. For broad estimation purposes, it can be assumed that the measures are generally scalable and can be multiplied up from 1%; of course, this is subject to a limit in each case – for example, because the bus and coach fleet accounts for only 3% of the transport sector's emissions, the potential emissions benefit from moving to a zero-emissions fleet would be limited to a maximum of a 3% reduction in overall transport emissions.

The Table is supplied to give a **broad sense of the scale of change involved with each potential measure, and the approximate costs involved**; the analysis is not precise, just indicative. Information relates to each measure individually; the combined impact within packages of measures may vary. Also, impacts (including costs) are expected to vary over time, often in correspondence with changes in technological development and market forces (e.g. scarcity, price).

Table 1: Policy Pathways and corresponding Measures that individually could achieve approximately a 1% reduction in Ireland's transport sector emissions.

Measure	**Scale of change required to achieve a 1% fall in transport emissions yearly**	**Rough cost estimate**	**Basis of calculation/comparator data**	**Comments/issues to consider further**
Policy Pathway 1: Shift journeys to more sustainable modes				
More rail journeys	Move private motorists onto rail so that there is a **100% increase in rail passenger kilometres** nationally.	**- Possibly €3 billion capital** investment in the rail network and trains; **- €130 million each year** in additional operational costs subvention (PSO); - some additional annual maintenance investment to keep the new assets safe and operating at "steady state"; and - some incentives to effect the requisite shift by motorists to rail on the scale required.	<u>Capital Comparator</u> The DART Expansion Programme is one of the three public transport mega-investments already being provided under the existing NDP; it involves an investment allocation of over €2 billion, it will take the term of the NDP to be delivered, and it will achieve a doubling of capacity on the rail system around the Greater Dublin Area (the part of the network that currently accounts for about 70% of rail journeys nationally). <u>PSO subvention</u> At present Irish Rail receives about €130 million per year from the taxpayer/Exchequer to help meet the cost of operating its existing services and carrying its existing passenger load. <u>Technical assumptions</u> The emissions saving is associated with a transfer from car to rail based on	This initiative would require considerable **expansion in new capacity** on the national rail system which is **already highly constrained** at peak times. Although demand would likely be largely at peak times, the shift to rail would likely help make good use of some excess capacity that exists off-peak times. Overwhelming international experience clearly shows that sizeable expansion of rail capacity: - takes **several years** to achieve; - needs **robust cost and benefit estimation**; and **- very strong delivery management**. Generating a shift to rail travel of this size would require **significant behavioural change by existing motorists.** Some **incentives**, disincentives or prompts would likely be needed to support this – these may

Measure	**Scale of change required to achieve a 1% fall in transport emissions yearly**	**Rough cost estimate**	**Basis of calculation/comparator data**	**Comments/issues to consider further**
			average driven kms, average vehicle emissions and average occupancy rates.	well have a cost, whether for the Exchequer or for the citizen.
More bus journeys	Move private motorists onto buses so that there is **a 300% increase in bus passenger kilometres nationally.**	**- Very tentatively €3-5 billion capital** depending on extent of road infrastructure works nationally; - **€300-500 million each year** in additional operational costs subvention (PSO); and - some incentives to effect the requisite shift by motorists to bus on the scale required.	<u>Capital Comparator</u> The BusConnects Programme is one of the three public transport mega-investments already being provided under the existing NDP; it involves an investment allocation of over €2 billion, it will take the term of the NDP to be delivered, and it will increase bus kilometres by 20% around the Greater Dublin Area and similar scale increases in other cities. <u>PSO subvention</u> At present the bus sector receives about €150 million per year from the taxpayer/Exchequer to help meet the cost of operating its existing services and carrying its existing passenger load. <u>Technical assumptions</u>: The emissions saving is associated with a transfer from car to bus based on average driven kms, average vehicle emissions and average occupancy rates.	This initiative would require considerable **expansion in new capacity and services** on the bus system nationally. The shift to bus travel could help make good use of excess capacity that exists at off-peak times but demand is likely to be concentrated at peak time, where there it is already often at/near capacity. Sizeable expansions of bus fleets: - **take time to achieve**; - require robust **cost and benefit estimation**; - generally need **network/service redesigns**; and - **very strong delivery management**. Generating a shift to bus travel of this size would require **significant behavioural change by existing motorists.** Some measures would likely be needed to **support** this transition – these may well have a

Measure	**Scale of change required to achieve a 1% fall in transport emissions yearly**	**Rough cost estimate**	**Basis of calculation/comparator data**	**Comments/issues to consider further**
				cost, whether for the Exchequer or for the citizen.
More active travel (walking and cycling) journeys	Reduce car travel by **700 million kilometres per year** (about 2%), and shift drivers to: - **about 100 million cycling journeys (about a 300% increase in cycling)** instead; or - alternatively over **200 million additional walking journeys**; or - a **combination** of the two.	- Depends on extent of any additional **capital investment** programme adopted to support increased active travel; and, - some **incentives** to affect the requisite shift by motorists to active travel on the scale required.	To achieve the emissions saving, the car journey must be fully replaced by a cycling/walking journey. Technical assumptions: The emissions saving is associated with a transfer from car to cycling/walking based on average driven kms, average vehicle emissions and average occupancy rates. The average cycling trip in Ireland is *c.* 6.6km; analysis assumed half this distance for walking trips (*c.* 30 minute walk).	Generating a shift to active travel of this size would require **significant behavioural change by existing motorists**. Some **incentives** or disincentives or prompts would likely be needed to support this – these may well have a cost, whether for the Exchequer or for the citizen. National experience clearly shows the importance of **high quality** infrastructure to **attract current non-cyclists.** Similar expectations for **current non-walkers.** Quality design and statutory planning will affect **delivery timeframes** on any infrastructure initiatives.
Policy Pathway 2: Reduce greenhouse gas emissions from traditional fuels				

Measure	**Scale of change required to achieve a 1% fall in transport emissions yearly**	**Rough cost estimate**	**Basis of calculation/comparator data**	**Comments/issues to consider further**
Biofuel blend in diesel and petrol	Add an extra **45 million litres of biofuel** to the existing conventional fuel market.	**€13.5m**	Quotes from industry stakeholders suggest that currently biofuel is 30 cent per litre more expensive than diesel, meaning that an additional 45 million litres would cost businesses and citizens *c.* €13.5m annually. Technical assumptions: There are blend thresholds which should not be breached as the altered fuel mix can negatively impact on vehicle operation and void manufacturer warranties. Blend thresholds are generally considered to be around 10% biofuel in petrol and 20-30% biofuel in diesel. Currently there is *c.* 5% and in petrol and 7% in diesel.	An increased blend of biofuel into conventional fuel could be achieved through amending the existing **Biofuel Obligation Scheme** which compels fuel suppliers to ensure that the fuel they place on the Irish market adheres to the prerequisite blend rates. This measure is relatively **straightforward** to implement and can be done **quickly**. Other than the price increase, **no behavioural change** is required of businesses or citizens. There are cost implications especially for the **freight/business sector** where the use of diesel is firmly embedded and suitable alternatively-fuelled vehicles are not readily available or are very costly. There is no carbon tax on biofuels; increasing the proportion of biofuel use and decreasing fossil fuel use will result in a **revenue loss to the Exchequer.**
Policy Pathway 3: Replace fleets with lower emitting vehicles				

Measure	**Scale of change required to achieve a 1% fall in transport emissions yearly**	**Rough cost estimate**	**Basis of calculation/comparator data**	**Comments/issues to consider further**
Bus fleet	Using zero emission vehicles for city and town public bus services would save **86 kilotonnes of carbon** (0.7% reduction in transport emissions).	**- Around €1bn capital investment** in buses depending on the low/zero emission technology chosen; and - additional costs to install recharging or refuelling infrastructure.	Low-emitting buses vary in cost. Electric hybrid double deck buses (currently some operating in Dublin) cost *c.* €450,000; a hydrogen equivalent costs *c.* €800,000; an electric double deck costs *c.* €700,000 and a single deck electric bus costs €500,000 (but has a lower carrying capacity than a double deck variant). By contrast diesel Euro VI double deck buses were costing *c.* €330,000; under the NDP Ireland is now no longer buying diesel-only public buses for urban fleets. The alternatively fuelled vehicle costs are indicative as it is difficult to obtain true costs due to the infancy of the market. Costs are expected to change as markets develop. <u>Technical assumption:</u> Only bus fleets are replaced. Low-emitting technology does not yet exist in the coach sector; this will change over time.	In general, **poorer value for money** is obtained if vehicles are **replaced early** before their full economic life has expired – unless of course they are sold on, but that would unlikely be appropriate in a climate context. The **electricity or hydrogen** used to power the buses **should be renewable** and sustainable in order to maximise national emission savings. Corresponding **recharging or refuelling infrastructure** is critical in operating zero emission vehicles. Significant infrastructure at significant cost will be needed to support either hydrogen or electrically powered buses. **Market availability** of zero emission fleets (with appropriate capacity and with right hand drive configuration) is currently limited, though developing.
Car fleet	Replace **over 57,000 older**	**- €630m at current subsidy levels;**	Current subsidy levels are €11,000 per vehicle; to accelerate a greater take-up of electric vehicles an increased	The recent ***EU Green Deal*** may positively impact on electric vehicle manufacturing rates as the EU pursues

Measure	Scale of change required to achieve a 1% fall in transport emissions yearly	Rough cost estimate	Basis of calculation/comparator data	Comments/issues to consider further
	vehicles with an electric vehicle.	- if subsidies were increased to encourage greater take-up costs could increase to **€1.15 billion; and** - additional costs to accelerate installation of expanded recharging infrastructure.	subsidisation of €20,000 was also considered. Technical assumption: This analysis is based on fully electric vehicles displacing fossil fuelled 7-8 year old cars.	a faster transition to zero-emission vehicles; currently due to international demand, Ireland is competing to secure its share of electric vehicles. Subsidisation **costs** can fall to either the **Exchequer or** to existing /new fossil fuel **car users**. **Regulation** to prevent the purchase of conventionally fuelled vehicles could be considered. In general, **poorer value for money** is obtained if vehicles are **replaced early** before their full economic life has expired – the average Irish car is now 8.55 years old, many cars are retained in the fleet for over a decade. Accelerated investment in **recharging infrastructure** to keep in line with demand is required.

Measure	**Scale of change required to achieve a 1% fall in transport emissions yearly**	**Rough cost estimate**	**Basis of calculation/comparator data**	**Comments/issues to consider further**
Policy Pathway 4: Reduce fuel usage				
Eco-driving	Support for training drivers to encourage adoption of eco-efficient driving habits This initiative would **not yield enough savings to reduce annual emissions by 1%.**	**About €10m annually**	Previous analysis (see National Mitigation Plan, 2017) shows that the maximum potential saving from this measure is **only equivalent to 0.25%** of the emissions of the transport sector in Ireland.	Some firms already train their drivers in fuel-efficiency; Dublin Bus for instance already trains its drivers in eco-efficient driving habits.
Policy Pathway 5: Reduce travel demand				
Reduce travel demand	Considerable behavioural change would be needed to reduce travel demand to affect a 1% reduction in transport emissions.	Cost would depend on the chosen behavioural change programme.	It is likely that a considerable prompt would be needed to effect a 1% reduction in travel demand, given that this would be going against the long-term upward trend in demand which is consistent with international norms. Relevant overseas experience would be useful to inform development of any	**Spatial planning** and the delivery of transport infrastructure and services are highly interdependent. Transport policies aimed at reducing travel demand and travel distances can only be delivered into the future if there are effective spatial policies in place. As regards existing travel patterns, **considerable behavioural change**

Measure	Scale of change required to achieve a 1% fall in transport emissions yearly	Rough cost estimate	Basis of calculation/comparator data	Comments/issues to consider further
			initiatives in this area that could reduce demand on the scale required.	would be needed to reduce travel demand on this scale, as in all developed economies and societies, this has an **ever upward trend**. **Internationally**, travel demand is highly linked to economic growth trends. **Technological developments** can assist in reducing the need to travel, although some emerging evidence suggests that the trend is now toward technology causing modulation of travel demand patterns, rather than reducing them. In the **business/freight sector** the quickest way to avoid travel is to **streamline operations** and ensure that vehicle loads and journey routes are optimised. Internationally, **rail freight** can represent a viable alternative to road freight; although in Ireland the limited number of high-volume bulk movements, our compact size and the relatively low density of activity all negatively affect its economic viability. Nonetheless, possibilities are

Measure	Scale of change required to achieve a 1% fall in transport emissions yearly	Rough cost estimate	Basis of calculation/comparator data	Comments/issues to consider further
				being explored including combining rail freight with **last mile options**.

DTTAS Responses 05/03/20 [GP SF]

Q: What would the cost of a fast reliable train to Derry via Navan and Letterkenny?

DTTAS is not aware of any official feasibility study in relation to the development of a rail line from Dublin to Derry via Navan and Letterkenny.

Therefore any estimates given are highly speculative and must be treated with ***extreme caution***. In addition the costs below are purely related to construction costs only and do not include the annual costs that would arise each and every year in relation to maintenance and renewal of the line and the operation of actual services on the line, both of which would require extensive Exchequer support.

Based on an indicative range of €25m to €30m per kilometre and a distance of approximately 500 kilometres it is estimated that a Dublin to Derry rail link via Navan and Letterkenny could cost between €12 billion to €15 billion approximately.

The final costs may include items beyond simple laying of track (such as CPO of land).

Q: What would be some options for managing a frequent flier system in terms of aviation emissions (i.e. a levy on frequent flyers)? Would there be issues regarding data sharing (i.e. with Revenue)?

Ireland is fully committed to a range of measures with a view to achieving more sustainable air travel. It is recognised that climate change, as a global issue, requires a global response and we therefore support the International Civil Aviation Organisation's (ICAO) 'Basket of Measures' that aims to minimise the adverse effects of aviation on the global climate. This Basket of Measures includes

aircraft technology improvements, operational improvements, sustainable aviation fuels and market-based measures, such as the CORSIA emission offsetting scheme.

Ireland is also supportive of an EU level approach to incentivise the production and use of Sustainable Aviation Fuels. We look forward to reviewing a proposal in this regard from the European Commission which is planned for later this year. MOVE TO TOP

A levy based on frequent flyers would by its nature be complex and challenging to administer. In analysing the proposal for a frequent flyer levy, significant addtional work would be required on the following:

Operational Issues

- A mechanism would be required to capture the number of flights being taken by an individual.

- The mechanism would need to be robust in terms of tracking an individual's movements out of the State.

- It may require airlines to establish a database of frequent flyers and transfer such personal information to Revenue or whoever administers the scheme;

- Consideration would have to be given as to number of flights versus distance e.g. two trips per year to a distant destination as against regular cross channel travel.

- Potential to introduce a tiered system with different sets of criteria for different travel purposes e.g. holidays, business, visiting friends / relatives, others including stags, funerals, weddings, etc.

Data protection

- In order to identify travel arrangements a unique identifier, such as a passport number or public services card, would be required. Potential data protection issues would need to be addressed in any implementation arrangements;

- In the case of airline passenger records a legally binding agreement to allow for the sharing and processing of data from a number of Irish, EU and Third Country airlines (including UK and US airlines) would also be needed on a new central registry.

- The levy would have to apply to flights taken by 'frequent flyers' across all airlines operating from Ireland (not just Irish airlines) so as to avoid competitive distortion.

Price Transparency / EU Regulations

• A frequent flyer levy would present a 'price transparency' issue. Under EU Air Service regulations, all passengers must have full transparency of the total price they will be charged at the time of booking (the total price is typically comprised of basic air fare, bag charges, priority boarding fees etc). However, at the time of booking, airlines may not have visibility of the number of flights previously taken by each passenger so they may not be in a position to include the frequent flyer levy in the overall price. This added complexity means that all airlines would have to link into a central air travel database.

It is noted that a proposal to apply a frequent flyer levy is currently the subject of debate in the UK on foot of a recent survey which found that only 1% of English residents are responsible for nearly a fifth of all flights abroad. However, we have no research to conclude that data on travel patterns in the UK would be applicable to Ireland. There are number of significant factors which would differentiate the Irish air transport market from the UK. Ireland has a much smaller and more open economy that depends heavily in international connectivity. Some further assessment of market trends and an analysis of qualitative and quantitative data would be required as evidence to support the introduction of a frequent flyer levy in Ireland.

M50 Demand Management Report 05/03/20 [GP]

PDF Attached

NRA Multi Point Tolling Plan 05/03/20 [GP]

Attached

NRA Prelim Implementation Plan for Greater Dublin Area and Jack Lynch Tunnel Tolling 05/03/20 [GP]

Attached

NRA Report on Network Tolling Options 05/03/20 [GP]

Attached

DTTAS Responses GP 04/03/20 [GP]

DTTAS Response to request for briefing received from the Green Party

Transport

2. **Description/summary of transport infrastructure assessments which have been carried out by the NTA or using the NTA's model, in particular whether this has included GHG emissions evaluation.**

4. **Extent of analysis carried out to date for PLUTO**

5. **How Public Spending Code operates. How can it be used to require that all projects are consistent with a 7% trajectory, i.e. 50% reduction in emissions by 2030?**

6. **Potential for emissions reductions by speed limit changes.**

8. **Information on any analysis carried out of options for road pricing in Ireland**

9. **Cost of free public transport for all; for under 18s? Cost of urban public transport pass for €365 per person?**

10. **Is there an economic analysis of the value of public transport in Ireland, in terms of contribution to overall productivity and/ or the delivery of public goods?**

11. **Information on measures to promote working from home or flexible working conditions to reduce commuting.**

2. Description/summary of transport infrastructure assessments which have been carried out by the NTA or using the NTA's model, in particular whether this has included GHG emissions evaluation.

The Public Spending Code requires the development of a rigorous project business case to demonstrate that projects receiving Exchequer funding deliver maximum value for money. An important element of a business case is the development of economic analysis that reflects the full costs and benefits of the project, including non-financial costs and benefits. Among the benefits and costs that must be considered is the project impact on Ireland's emissions of GHGs and other pollutants. The forecast emissions from the "do nothing" scenario are compared to the forecast emissions from scenarios in which investment is made. The shadow prices of carbon and other pollutants are then applied. The shadow price of carbon increases annually to reflect the increasing cost required to

mitigate carbon emissions. DTTaS agencies maintain a number of transport models that can be used to support the development of these business cases.

Table 1: Shadow Price of Carbon (2014 Prices)

	Non-ETS Carbon Price (2014€/tCO2)
2020	€32
2025	€66
2030	€100
2035	€128
2040	€163
2050	€265

Table 2: Cost of non-GHG pollutants

	Damage costs (€/tonne)
PM 2.5 (Rural)	€16,512
PM 2.5 (Suburban)	€47,240
PM 2.5 (Urban)	€194,660
NOx	€5,688
NMVOCs	€1,398
SOx	€6,959

Transport Infrastructure Ireland maintains the National Transport Model, comprising the National Traffic Model, the National Rail Model and the National Bus Model. These can contribute to the appraisal and testing of national and major regional schemes. The National Transport Authority maintains the Regional Model Structure, which divides Ireland in to five regional models.

TII and NTA models are used in the appraisal of specific projects and in the development of high-level transport strategies as appropriate. For example, the NTA's Eastern model heavily contributed to the development of the Greater Dublin Area Transport Strategy and included an estimate of the GHG emissions impact of the strategy. The model forecasts that additional public transport and active travel journeys to be facilitated by implementation of the strategy and investment of over €10bn (2015 prices) is estimated to yield emissions reductions in the morning peak of only 29kTs per annum (just over 2%). However, this does not capture the impact of transitioning various vehicles to zero and low emissions technology which will yield considerably more emissions reduction, as this is not captured by the model.

4. Extent of analysis carried out to date for PLUTO

Work is at an advanced stage on Planning Land Use and Transport: Outlook 2040 (PLUTO), a project to refresh the Strategic Investment Framework for Land Transport, which is the Department's framework for future transport investment. It aims to ensure transport investment is aligned with and supports Government spatial and development objectives as set out in Project Ireland 2040.

PLUTO is not designed to identify specific projects or programmes for investment but instead establishes a principles-based framework through which future investment is considered and prioritised. PLUTO will seek to prioritise investment in the most sustainable and cost-effective modes, facilitate a transition to a low carbon transport sector, and support positive outcomes for society and the economy.

The background and supporting analysis can be divided into three broad categories:

- **Background and context**, which considered factors with the potential to shape how and where transport takes place in the coming decades including future funding levels, climate change, Brexit and technology;
- **Current network analysis**, which estimated the annual cost of maintaining the existing land transport network, considered the impact of adaptation and benchmarked the quality of Irish transport infrastructure internationally; and,
- **Future network analysis**, which considered where pressures and bottlenecks are likely to emerge on the land transport network (in the cities, on the interurban network, surrounding ports and airports, and in rural areas) assuming National Development Plan investment to 2027 and National Planning Framework spatial targets to 2040 are delivered.

5. How Public Spending Code operates. How can it be used to require that all projects are consistent with a 7% trajectory, i.e. 50% reduction in emissions by 2030?

The Public Spending Code sets out the roles, responsibilities and requirements for the planning and management of public investment in Ireland.

The requirements of the Public Spending Code include project appraisal, which forms a primary element of the Business Cases for spending proposals. Sponsoring Agencies—transport agencies, public transport providers or local authorities—are required to appraise, in detail, the rationale for, and costs and impacts of proposed investments. Different elements of this appraisal are conducted at different stages of a project's development, but include setting out and assessing:

- Project need and objectives;
- Strategic alignment with policy;
- Identification of the potential options which can satisfy the stated objectives;
- A detailed assessment of costs and benefits; and
- Plans including for risk management, procurement planning, governance and project management.

The Appraisal guidance within the Public Spending Code sets out values for the 'Shadow Cost of Carbon', which is used to monetise the value of removing greenhouse gases from the environment. This shadow cost increases annually (from €20 in 2019 to for example €100 in 2030, and €265 in 2050) to reflect the increasing urgency of decarbonisation over time. This ensures that the emissions impact of a proposed public investment is valued within an appraisal, and is factored into decision-making. DTTaS's own guidance on appraisal, the 'Common Appraisal Framework for Transport Projects and Programmes', provides further guidance to enable estimating the potential emissions that might result from a proposed investment.

The approval decisions around funding and proceeding to subsequent project stages rest with the approving authority. Depending on the scheme and its size, the approving authority may be the Department, one of its Agencies, or Government. Appraisals and business cases must be reviewed and approved at specific 'decision gates' by the approving authority before a project can proceed.

The 'Shadow Cost of Carbon', in itself, is not designed to ensure consistency with specific targets or trajectories. However, the Public Spending Code's requirement to assess 'strategic fit with policy' is designed to ensure that an investment's consistency with

Government policy is explicitly considered and proposals which are not consistent can, if decided by the approving authority, be altered or abandoned.

6. ***Potential for emissions reductions by speed limit changes.***

- Energy use increases at higher speeds; studies suggest that moving from 100km/h to 120km/h increases fuel consumption by up to 20%.
- High speeds are associated with greater CO_2 emissions per driven kilometre; therefore, reducing speed limits, particularly on the motorway network, may significantly reduce transport emissions, as well as potentially improving road safety.
- DTTAS has modelled the impact of reducing maximum speed limits on motorways from 120km/h to 110km/h for cars/vans and from 90km/h to 80km/h for heavy goods vehicles compared to current speed limits. It was estimated that a potential total emissions saving of ***c.*1,700 kT CO_2 between 2020 and 2030 could be achieved**; to put that into context, an annual average saving of 170kT CO_2 would represent approximately 1.4% of annual transport emissions.
- There are some possibly negative effects of reducing speed limits namely; an erosion of the considerable economic benefit derived from substantial motorway investment, longer travel times and reduced fuel tax revenue.
- It is also possible that a proportion of the motorway traffic would divert on to secondary networks as a result of a reduced speed limit. Reviews to the design speed for existing infrastructure and speed enforcement procedures would be required.
- It should be noted that under the *National Planning Framework* Ireland committed to improving average journey times for connectivity reasons (National Strategic Outcome 2: Enhanced Regional Accessibility). The *Framework* targets an average inter-urban speed of 90kph; a reduced motorway speed limit may be in conflict with to this aim.

8. Information on any analysis carried out of options for road pricing in Ireland

TII advise that they have carried out studies over a number of years – but no policy decision was made to implement revenue raising measures on the network other than the current roads that have tolls.

We have asked TII to send on details of previous studies and will forward these separately.

9. Cost of free public transport for all; for under 18s? Cost of urban public transport pass for €365 per person?

Free public transport for all:

- The rough cost of this initiative would be €625 million per annum (excluding the cost of the significant additional demand that would arise), in addition to the almost €300 million already provided for under Budget 2020.
- The annual cost of running all public transport in the State was almost €1 billion in 2019.
- This is funded annually from 3 sources: Government (PSO) subsidy of €300 million, Free Travel funding from DEASP of €54 million and the revenue from fare paying passengers of €625 million.
- This does not account for the increase in passenger numbers that is likely to occur should such an initiative be introduced. The additional peak fleet requirement is likely to be substantial in addition to the need to recruit additional staff, drivers in particular.
- Currently, the priority for current expenditure is expanded services and for capital expenditure is expanded capacity. The planned expansion of services under initiatives including Bus Connects will result in a corresponding requirement for additional PSO funding.

Free public transport for under-18s:

- The rough cost of this initiative would be €50 million.
- Of the €625 million collected in fares, €35 million relates to child fares from ages 5-18 inclusive.
- The Department of Education and Skills advised in Q3 2019 that receipts from school transport charges in 2018 amounted to some €16 million or about 8% of the total cost of the scheme provided by Bus Éireann on behalf of that Department.
- If free travel was to be provided this would be the additional cost on the scheme for existing levels of usage.
- It is likely that there would be a significant increase in demand from students with free travel which would require more capacity on all networks, buses trains and trams and additional subvention.

Cost of urban public transport pass for €365 per person?

- We have no figure at present for the total cost to the exchequer for such an initiative across the urban public transport network.
- However, on the assumption of a pilot scheme in Galway city set at a €365 annual fee, it is likely that additional cost would be incurred due to increased usage.

- Further, there would be significant revenue loss from existing customers who currently pay more than €365 per year for their public transport.
- The additional peak fleet for a Galway pilot is estimated at 25% to 50%, assuming 25% to 50% additional passengers overall.
- Revenue losses could be off-set to some extent by passenger growth. However, as current revenue in Galway is €7 million and this provides approx. 80% of Bus Éireann's operating costs, the net cost of this proposal could be a requirement for a further €4 million in PSO subvention.
- Dublin Bus Revenue is €240 million per annum and DART revenue is €50 million per annum.
- Extrapolating from the Galway example, a rough guide to the cost of this initiative would be €160 million for Dublin Bus and €35 million for DART.
- These costings relate only to urban travel.

10. Is there an economic analysis of the value of public transport in Ireland, in terms of contribution to overall productivity and/ or the delivery of public goods?

For the land transport sector generally, 2018 CSO figures indicate that the annual gross value added to the economy was just under €2.5bn. It should be noted that this figure includes freight transport, private transport and pipeline transport, so is likely to be much higher than the gross value added for public transport only. This data is not disaggregated for public transport only.

11. Information on measures to promote working from home or flexible working conditions to reduce commuting [DBEI have lead on policy in this area]

- A recent Irish study (O'Keefe et al., 2016) estimated **carbon reductions of almost 60kT CO_2** if 20% of the population of the Greater Dublin Area telecommuted one day a week for a year; representing approximately **0.5% of transport emissions in 2018.**
- Telecommuting has been purported as an effective means of reducing commuter related trips, spreading the demand on public transport services, and lessening transport emissions. Advances in information and communication technology in recent years has meant that telecommuting is becoming an increasingly viable option.

- Internationally, numerous studies report emission reduction impacts through the implementation of teleworking policies; the degree of benefits delivered varies significantly based on the number of days per week working from home, land use patterns, commute distances, socio-demographic characteristics, public transport availability and internet infrastructure.
- Some studies that claim significant emission savings employ scenarios where employees telework full-time or spend only one day in the office (despite the European Working Conditions Survey indicating that part-time telework is a more common practice than full-time telework) as well as marked energy savings through businesses downsizing their premises and rail operators reducing services due to an increased absentee workforce.
- Moreover, some authors disagree with the use of telecommuting as a tool to reduce the need to travel arguing that the potential benefits can be offset by rebound effects, such as telecommunications generating dispersal patterns of land use leading to longer non-commute trips where individuals choose to live in rural or suburban areas thus creating new trips.

DTTAS Responses GP 04/03/20 [GP]

1. Breakdown of current and programmed expenditure to enable analysis of 10% for cycling, 10% for walking, and the remainder to be split 2:1 in favour of public transport over roads

Overview of Budgets

To assist with this analysis, it is useful to provide an overview of overall allocations for public transport and roads

- In Budget 2020 provides approximately **€1.2 billion** for **Roads** and approximately **€1billion** for **sustainable mobility, and**
- Over a 5 year period

These details are set out below.

Context and Interdependencies

It is helpful to note some interdependencies; roads and sustainable mobility have overlaps in their implementation:

- All road users, including public transport, cyclists and pedestrians are considered in design development and implementation;
- TII design standards require a cycleway to be provided on single carriageway roads. Local Authorities not complying with this standard must apply for a departure from standard and provide a justification for why his facility is not being provided. As a result under TII's minors programme lengths of cycleway are currently being provided and promoted where traffic volumes are low.

- Three projects on the radial routes into the M50 in pre-appraisal will all be developed in consultation with the NTA and will consider provision of bus lanes as an option in the delivery of the scheme objectives;

- TII initiated a pilot programme in 2011 which aimed at providing improvements to sections of the network carrying low traffic volumes around the coast and included the provision of dedicated cycleway. These projects are listed in the NDP as follows; N59 Westport to Mullraney, N59 Clifden to Oughterarad, N86 Tralee to An Diangean and the N56 Dungloe to the Glenties.

(a) Overview of allocations from Budget 2020

Budget 2020 provides approximately **€1billion for sustainable mobility**, which is made up of:

- €300m in subvention to run public transport services on bus and rail
- €700m* in infrastructure investment, comprised of -
  - €330m for heavy rail, divided across:
    - €200m for the maintenance and renewal of the national rail network
    - €90m for DART Expansion
    - €40m for other heavy rail projects (e.g. National Train Control Centre, City Centre Resignalling, purchase of 41 additional commuter carriages etc.)
  - €200m for BusConnects, supporting:
    - €105m for renewal and expansion of PSO bus fleets (incl. purchase of 100 hybrid buses for urban fleets)
    - €60m for infrastructure improvements (incl. continued planning and design of core bus corridors including associated walking and cycling infrastructure)
    - €30m for ticketing / technology related programmes (not all BusConnects dedicated)
  - €105m for active travel** infrastructure related programmes, supporting:
    - Infrastructure improvements in all major cities
    - Expansion of Cycle Right training programme in schools
    - INTERREG related projects along the border
  - €50m for light rail, supporting:
    - Continued planning and design of MetroLink

- ❖ Continued contractual payments in relation to extension of Green Line tram fleet
- ❖ Continued contractual payments re purchase of 8 additional trams for Green Line

Budget 2020 provides approximately €1.2 billion for **Roads**, which is made up of –

- ➢ €525m for Regional and Local Roads
  - 93% is for maintenance of roads countrywide;
  - The 2020 maintenance allocation is €60m below the level needed to keep the network operating at a "steady state":
- ➢ €645m for National Roads
  - €130m for contractual payments under PPPs for existing roads
  - €35m maintenance
  - €480m for road improvements
    - ❖ €250m for NDP road building investment (see later in this note for project details)
    - ❖ €230m Steady State maintenance and committed payments like Tunnel operations.
    - ❖ At least €200m is needed annually for the "Steady State" maintenance requirement on the national road network

Notes:
Figures are rounded.
** Under the Capital Plan, the allocation for Sustainable Mobility is profiled to increase by €300 million in 2021.*
*** Further funding is also provided across other Goverrnment programmes to support initiatives in this area.*

(b) Sustainable Mobility – 5 year capital details

The National Development Plan commits to three mega-projects in the Public Transport area –

- BusConnects
- DART Expansion
- MetroLink

In line with the Public Spending Code, business cases for each of these projects are being prepared and must be submitted for Government approval in advance of major decisions. The first "Decision Gate" for Government on the proposed investments will be

reached this year with the expected submission of a Preliminary Business Case, and those business cases will inform future funding requirements.

The ***actual funding requirements over the next 5 years*** will be determined in line with Government approval of the business cases as submitted under the Public Spending Code. In advance of that, the NDP provides indicative allocations for each of the three mega-projects as below –

Indicative Funding Requirements for Major Public Transport Projects over 5-year period

Major Projects	2020 €m	2021 €m	2022 €m	2023 €m	2024 €m
BusConnects (incl. associated walking and cycling infrastructure, and bus ticketing, technology and systems integration)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
DART Expansion	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
MetroLink	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Total	320	645	625	1015	1050

Notes:
Rounding applied to all figures.
Actual profiles are subject to change dependent on project progress and funding requirements determined as part of business case development and Government decisions.

The NDP also provides funding to support a range of other projects and programmes in the sustainable mobility areas of public transport (i.e. bus and rail) and active travel (i.e. walking and cycling), as shown in the following table:

Planned Funding for Other Sustainable Transport Projects/Programmes over 5-year period

Projects	2020 €m	2021 €m	2022 €m	2023 €m	2024 €m

Accessibility	5	10	10	10	10
Active Travel *(incl. sustainable urban transport programme)*	105	155*	140*	140**	140**
Heavy Rail *(incl. about €1 billion over the 5 years for maintenance & renewal so that the network remains safe and operating at a "steady state")*	240	245	245	260	235
Light Rail	25	20	75	120	120
Total	375	430	470	530	505

Notes:
Rounding applied to all figures.
Actual profiles are subject to change dependent on project progress and funding requirements determined as part of business case development and Government decisions.
* Active travel figures for 2021 and 2022 are indicative. They are projected, based on estimated overall project progress
** Pending development and approval of the active travel investment programme for the period post-2022, there is a technical assumption (only) that the allocations for 2023 and 2024 will remain at 2022 levels.

(c) Roads – 5 year capital details

Roads Investment
National Roads Capital Projects

The briefing below comprises an explanation of the Steady State expenditure on roads, and a number of tables detailing individual projects for road building investment.

Tables 1 to 5 below relate to projects at planning, design and construction stage.

Table 6 relates to projects at pre-appraisal/early planning stage of progress.

On tables 1 – 5, it is important to note:

- Table 1 indicates that the bulk of the expenditure will be in the first couple of years and considerable expenditure has already been invested prior to 2020 and contracts have been entered into.

- Tables 2 – 5 relate to projects to be approved; to either proceed to planning approval or to construction. While some costs have been 'sunk' on the projects listed, they are not significant relative to the total estimate costs of the projects because they are at the very early stages of development and require Government and/or DTTAS approval.

- With regard to the large scale projects, to be approved by Government, - such as 'Galway ring road' and 'N20 Limerick to Cork' projects, TII estimate the bulk of the expenditure will be towards the end of 5 year period.

- Finally, of the projects to get Government approval to proceed to planning and construction there is a total budget of approx. (at the minimum range) **€3.959bn** or (at the maximum range) **€4.689bn** –*estimate* – to be spent over the next 5 years.

Roads Investment
National Roads Capital Projects

TABLE 1.
Major projects currently at construction.

Scheme Name	**Total estimated costs of project**	**Pre 20**	**2020**	**2021**	**2022**	**2023**	**2024**	**Total projected expenditure over the next 5 years.**
N4 Collooney to Castlebaldwin Sligo (Govt approved in 2019).	€149m	69.7m	40m	25m	10m	4m	0.3m	€79.3m
N5 Westport to Turlough (Govt approved in 2019).	€241m	57m	40m	60m	65m	10m	6m	€181m (3m post 2024)
N22 Macroom – Ballyvourney (Govt approved 2019).	€280m	48.6m	40m	55m	50m	50m	30m	€225m (6.4 m post 2024)
N56 Letterilly to Kilraine	€20m	.7m	9m	10m	.3m			€19.3m
N56 Dungloe to Cloghbolie	27m	1m	12m	14m				€26m
N56 Drumbeigh to Inver	15.6m	6.6m	8m	1m				€9m
Close out of completed projects	€20m		€20m					€20m
TOTALS	**€752.6m**	**€183.6**	**€169**	**€165**	**€125.3**	**€64**	**€36.3**	**€559.6m**

NOTE: Profiles provided on this sheet are estimates only and will change depending on construction progress and issues that arise during construction.

TABLE 2.

Projects Approved by Government at end 2018/2019 for statutory approval

Scheme Name	Total estimated of project.	Pre20	2020	2021	2022	2023	2024	Total projected expenditure over next 5 years	Comment
N6 Galway City Ring Road	€1bn	15.7	2m	2m	10m	90m	90m	€194m	Assumes planning achieved in 2021
N21/N69 Foynes to Limerick (including Adare Bypass)	€447m	4.2	2m	11m	28m	85m	75m	€201m	Assumes planning achieved in 2021
TOTALS	**€1.447bn**	**19.9**	**4**	**13**	**38**	**175**	**165**	**€395m**	

NOTE Profiles are estimates only and will change depending on timing of planning approval and confirmation, procurement process for contractors and approval to award tenders and tender cost estimate.

TABLE 3.

Projects to be approved for construction by Government and Dttas in 2020

Scheme name	Total estimated Costs of the Project	Pre20	2020	2021	2022	2023	2024	Total projected expenditure over next 5 years.	Assumes
N5 Ballaghaderreen to Scramogue	150-250m	13.75	10m	44m	60m	50m	9m	€173m	Construction start late 2020
M8/N40/N25 Dunkettle Interchange	100-250m	23m	30m	46m	43m	32m	8m	€159m	Construction start 2020
N52 Ardee Bypass	20-50m	7.5	1.75m	12m	11m	2m		€26.75m	Construction start 2021
N59 Moycullen Bypass	50-100m	14.5	1m	20m	15m	2m	2m	€40m	Costruction start early 2021
N69 Listowel Bypass	50-100m	4.7	6.5m	20m	15m	2m	1m	€44.5m	Constrution start late '20
Enhancing Motorway Operation Services - M50 Traffic Flow Optimisation	50-100m	25.3	30m	8m	2m			€40m	Various contracts underway
TOTALS	**Range €420m to €850m**	**88.75**	**79.25**	**150**	**146**	**88**	**20**	**€483.25m**	

Note : Profiles are estimates only and will vary depending on procurement, timing of approval to award, progress and issues on site.

TABLE 4.

Projects to be approved by Government 2021/2022

APPROVAL TO GO TO CONSTRUCTION

Scheme name	Estimated Costs of project.	Pre 2020	2020	2021	2022	2023	2024	Total projected expenditure over next 5 years.	Comments
N28 Cork to Ringaskiddy	€200-€300m	2.68	4m	12m	17m	50m	65m	€148m	Subject to conclusion of judicial review process and contract award 2022.
TOTAL								€148m	

NOTE: Profile estimate only and subject to conclusion of the Judicial review, procurement and construction delivery and issues on site.

TABLE 5.

Projects to be approved by Government 2021/2022

APPROVAL TO PROCEED TO STATUTORY PROCESSES (i.e ABP).

Scheme Name	Total Estimated Costs of the Project	2020	2021	2022	2023	2024	Total projected expenditure over next 5 years	Comments
M20 Limerick to Cork	€1.4bn	3m	10m	10m	5m	120m	€148m	based on successful statutory approval in 2023
N2 Slane Bypass	€50-€100m	2m	2m	5m	25m	25m	€59m	Based on successful statutory approval in 2022
N72/73 Mallow Relief Road	€50m - €100m	0.4m	0.4m	0.4m	0.5m	1m	€2.7m	Planning stage only
N13 Ballybofey Stranorlar Bypass N13/14/56 Letterkenny Bypass and Dual Carriageway to Manorcunningham N14 Manorcunningham to Lifford	€500-€600m	2m	3m	5m	20m	20m	€50m	Based on planning approval in 2022. Schemes may be split for delivery
TOTALS	**Range €2.bn - €2.2bn**	**€7.4**	**€15.4**	**€20.4**	**€50.5**	**€166**	**€259.7m**	

NOTE: Profiles are indicative only and may vary depending on timing of the planning approval process, scheme confirmation, procurement process, approval to award.

TABLE 6

National Roads Programme 2018 – 2027 under the National Development Plan (NDP)

Projects at pre-Appraisal/Early Planning Stage

To note: - there are no estimated costs or completion timeframes with these projects because they are at the very early stages of development and therefore, it is not possible to give any specific committed completion dates and costs at this point in time. The estimated costs, outlined below, over 5 years relate to very early appraisals of the 'pipeline' projects.

Scheme Name	2020	2021	2022	2023	2024	Total projected expenditure over the next 5 years.
**N2 Clontibret to the Border	1m	1m	2m			€4m
**N2 Ardee to south of Castleblaney	1.5m	1m	2m			€4.5
N2 Rath Roundabout to Kilmoon Cross	0.35m	0.5m	0.5m	0.5m	1m	€2.85
N3 Virginia Bypass	0.6m	0.6m	0.6m	0.6m	1m	€3.4
*N3 Clonee to M50	0.75m	1m	2m			€3.75
N4 Carrick on Shannon to Dromod	0.2m	1m	1m	1m	2m	€5.2
*M4 Maynooth to Leixlip	1m	1m	2m			€4m
**N4 Mullingar to Longford	1m	1.5m	1.5m	1m		€5m
*N11 Jn 4 M50 to Kilmacanogue	1.5m	2m	4m			€7.5
N11/N25 Oilgate to Rosslare	1m	1.5m	3m			€5.5
N17 Knock to Collooney	1.5m	1.5m	1.5m	1.5m		€6m
N21 Abbeyfeale Bypass	0.5m	0.5m	1m			€2m
N21 Newcastle West Bypass	0.5m	0.5m	1m			€2m
**N22 Farranfore to Killarney	0.5m	1m	1m	2m		€4.5
N24 Waterford to Cahir	0.75m	1m	1m	2m		€4.75
N24 Cahir to Limerick Junction	0.75m	1m	1m	1m	2m	€5.75
N25 Waterford to Glenmore	0.75m	1m	1m	2m		€4.75

N25 Carrigtwohill to Middleton	0.5m	1m	1m			€2.5
M50 Dublin Port South Access Road	0.5m	0.5m	1m	4m		€6m
N52 Tullamore to Kilbeggan	0.5m	0.5m	1m	2m		€4m
TOTALS	€15.65m	19.6m	29.1m	17.6m	6m	**€87.95M**

NOTE: Profiles are provided to make a provision to allow planning and appraisal to proceed to the point of business case and request for approval to proceed to statutory approval. The extent of required surveys and environmental work is unknown. Funding may move between projects depending on speed of delivery and appraisal outcomes. These projects are managed as a pipeline programme.

*Projects may include on radials into the M50 and will consider bus prioritisation including dedicated bus lanes.

**Sections of the Network with higher than average accident figures.

Roads - "Steady State" Maintenance

"Steady State" on National Roads

The Capital Improvements amount of **€480m** in 2020 is to fund:

- TII's committed programmes (e.g payments to operate Tunnels and the Port Tunnel Operations Centre);
- 'Steady State' requirements (i.e. Pavements and maintaining the network);
- to deliver on the objectives of the National Development Plan (NDP) (i.e. Building new roads).

For this year, of the €480m, TII intend to allocate **€252.6m** to deliver on the objectives of the NDP (i.e. building new roads) and the balance of **€227.4m** is for TII's committed programmes and Steady State requirements.

Steady State investment is the amount required to allow the physical assets relating to the transport network to continue to operate as they currently exist. This includes maintenance, and like for like renewals.

Steady State Programmes – National Roads /Motorway / Safety / Bridges / Signing and Lining

TII's Steady State programmes concentrate on a number of key maintenance programmes as follows;

- Pavement Programme: This programme enables pavement renewal on the National Roads Network of over 5000km. This funding is necessary to keep the network in an adequate condition and to meet necessary performance standards.
- Motorway Maintenance and Renewal Contract (MMaRC). This programme specifically deals with the motorway network, which is maintained under a contract with Maintenance and renewal contractors.
- Safety Programme: This programme is aimed at addressing safety issues on the network, identified out of accident statistics and route inspections.
- Bridges Programme: This programme covers inspections of bridges on the network and necessary repairs.
- Signing and Lining: This programme upgrades and maintains the signs and lines that are critical to the safety and operation of the National Roads Network.
- Other Steady State Programmes include the retrofitting of safety barriers on the network and the eradication of invasive species.

In summary, a minimum level of funding, in the order of **€200m,** is required to keep the network operating in a safe and efficient manner that is fit for purpose.

"Steady State" on Regional and Local Roads (RLR)

The total Steady State investment requirement for regional and local roads is the estimated average annual cost of maintaining and renewing the physical assets relating to the network.

Each year that investment in Steady State-related expenditure does not meet the required amount, the shortfall increases the cumulative deficit. As this cumulative deficit increases, it becomes more difficult and expensive to counteract and maintain the network at the standard required to ensure Steady State conditions.

In the case of regional and local roads it is estimated that funding in the order of €630 million per annum is required to hold the network in its existing condition and avoid further deterioration.

The Department's working assumption is that local authorities contribute €100 million of this requirement from their own resources resulting in an Exchequer funding requirement of €530 million per annum. The Exchequer contribution is less than the amount required to reach "steady state" at present -the estimated shortfall in 2020 is of the order of €60 million.

The Department of Transport, Tourism and Sport's grant support for local authorities is, therefore, concentrated on maintenance and renewal works as follows;

- Road Pavement Resealing: The purpose of resealing the road pavement surface is to protect the structural integrity of the road so that road pavements last for longer.
    - Road Pavement: This programme enables pavement renewal on the regional and local network of just under 94,000 km. This funding is necessary to keep the network in an adequate condition and to meet necessary performance standards. Without the necessary level of investment the network will deteriorate.
- Safety Schemes: Expenditure under this category is aimed at addressing safety issues on the network identified from accident statistics and where potential safety hazards arise.
- Bridges Programme: Bridge repair and renewal is consistently required to maintain an old bridge stock made up of approximately 80% masonry arch structures.
    - Drainage: Adequate and well maintained road drainage is essential to protect the structural integrity of roads. The increasing severity of weather events is underlining the importance of expenditure on drainage to make the network more resilient.

- Steady State expenditure also covers winter maintenance and general maintenance including pothole repair, maintenance of verges/embankments, guard-rails/safety fences, signs and traffic signals, road markings.