

Engineers Ireland

Submission to ‘Mid-Term Review of the Capital Plan’

For the attention of Capital Expenditure Unit, Department of Public Expenditure and Reform

28th April 2017

Highlights

- Engineers Ireland welcomes the decision to increase capital investment to 2021 and beyond
- Infrastructure investment is vital to enabling sustainability, wellbeing and long-term growth
- A single infrastructure unit is necessary for sustainable planning and investment integration
- Capital investment decisions should be directed by the National Planning Framework
- Investment in transport infrastructure (including maintenance) is urgently required

1. Introduction: Need for increased investment in infrastructure

Engineers Ireland welcomes the opportunity to comment on the Mid-Term Review of ‘Building on Recovery: Infrastructure and Capital Investment 2016-2021’ (henceforth referred to as the ‘Capital Plan’).

Infrastructure investment is vital to enabling the sustainability, wellbeing and long-term growth and we strongly support increased capital investment as part of a long-term approach to sustain and enhance the recent economic recovery. It is of paramount importance that the country has the necessary capital infrastructure to meet economic demand in the coming years, as well as a skilled labour force ready to create and fill the jobs of the future. Moreover, the country faces particular demographic challenges – population is expected to increase by more than 750,000 over the next 20 years – and challenging climate action obligations.

The European Commission’s Country Report Ireland 2016 notes: “Infrastructure needs have returned to the forefront as attention shifts to ensuring durable and balanced growth in the future. Seven years of sharply reduced government investment have taken a toll on the quality and adequacy of infrastructure and on support for intangible investments. This includes weaknesses in housing, water, public transport and climate change mitigation capacity.”

The TASC report ‘The Need to be Ambitious: Greater Investment Ensures Prosperity’ clearly sets out that investing sensibly in infrastructure gives a positive return on expenditure. The provision of infrastructure in the energy, transport, water/wastewater and communications areas are already subject to economic benefit/cost analysis, and this must continue to be the case for all planned or proposed infrastructure projects. However, with existing levels of investment at 2 per cent of GDP, it

is clear that current and planned infrastructural spending is far too low and the TASC report estimates, based on international comparisons, that investment must be in the order of 4 per cent of GDP to meet our infrastructural needs and adequately support future growth and prosperity.

Infrastructural development will be an essential contributory factor to Ireland's future growth and prosperity. High-quality infrastructure is a critically important element of a modern society and economy. Engineers Ireland firmly believes that our public investment programme must increase significantly if we are to meet increased demands for a modern European public infrastructure that can support the forthcoming National Planning Framework (Ireland 2040).

The 2016 Global Competitiveness Review (GCR) report examining Ireland's relative competitiveness has ranked "Inadequate supply of infrastructure" as the most problematic factor for doing business. The GCR suggests that "Well developed physical and digital infrastructures affect productivity directly by connecting economic agents, reducing transaction costs, easing the effects of distance and time, facilitating the flow of information, and facilitating integration of markets into global value chains". Ireland's infrastructure ranking has declined each year since 2012 in these rankings.

Any barriers to the free movement of people or goods impact on the quality of life of citizens, their health and well-being, and the economy. Maintaining this capability of free movement necessitates forecasting for future events. Investment in infrastructure improves accessibility and promotes economic growth often through attracting increased tourism and creating employment.

Given the inadequate level of investment in infrastructure in recent years, coupled with the high economic growth rates over the past few years, it is inevitable that current congestion and future lack of capacity will hamper growth and employment in the coming years without swift, targeted action. Existing bottlenecks across the full spectrum of public infrastructure can be dealt with quickly if resources are made available, as these bottlenecks are already recognised and defined in strategic plans produced by Government, semi-state and local authority bodies.

There must be a clear understanding that we should be providing civil (transport, energy, water/waste water, communications, waste) and social (education, social housing, health, leisure) infrastructure in advance where possible to facilitate growth and orderly land use planning. It is much more difficult and costly to have to retrofit infrastructure solutions into a congested and expensive urban environment.

2. Need for a single infrastructure unit

Planning and delivery of our infrastructure is spread across Government departments, each competing for finite funding with little central oversight. Engineers Ireland believes that an independent assessment of our long-term infrastructure needs is required, together with the establishment of a single infrastructure unit, charged with sustainably planning and integrating investment in key critical areas like transport, education, health, energy and the digital economy.

There are many examples internationally of how such an entity could be structured to best support the determination and implementation of policy on infrastructure – decoupled from the electoral cycle. This entity would also be responsible for co-ordinating a long-term, cross-sectoral approach to

building political and public consensus and understanding on national infrastructure performance, under a range of possible futures.

A culture change in how we approach long-term planning and infrastructure is undoubtedly required. We can learn from other jurisdictions, such as the UK, which has established the National Infrastructure Commission (NIC). The Commission was set up on an interim basis in 2015 and looks at the UK's future needs for nationally significant infrastructure, taking a long term approach to the major investment decisions facing the country. It was established permanently as an Executive agency of HM Treasury in January 2017.

The aim of the NIC is to enable long term strategic decision making to build effective and efficient infrastructure for the United Kingdom. A new report, 'Strategic Infrastructure Planning: International Best Practice', produced by the OECD for NIC and published in March 2017, sets out and elaborates on the following key points:

1. Systemic risks can be reduced where projects form part of a broad and long-term strategic plan;
2. Strategic infrastructure planning nevertheless carries its own risks;
3. When it works well, strategic planning can set out a stable set of priorities for future investment with durable cross-party support;
4. A successful infrastructure planning process balances a stable framework with maintaining flexibility;
5. The planning process requires clear objectives, a degree of independence and an open, collaborative approach;
6. The planning methodology needs to address risks and uncertainties, take into account binding policy constraints and include considerations of pricing the use of infrastructure;
7. A top-down approach to infrastructure planning to complement traditional project by-project assessment is essential to a strategic assessment of long-term economic infrastructure needs across sectors;
8. Infrastructure planning across sectors can help identify the most important systemic risks early;
9. Using analytical methods such as a scenario-based approach to analysis can be helpful in future-proofing infrastructure plans;
10. It is important to consider how demand for scarce infrastructure can be managed;
11. A top-down approach could foster the development of an analytical framework for investment decisions reflecting both demand and supply side considerations.

Engineers Ireland supports a top-down approach to infrastructure planning to complement and enhance the sectoral and project-level approaches currently undertaken in Ireland. This would greatly assist both in the development of integrated plans aligned with existing and forthcoming Government plans, including the National Planning Framework.

3. Considerations for the Mid-Term Review of the Capital Plan (2016-2021)

Q3.1 Please rank, in order of importance, the following criteria that could be used to assess capital projects/programmes as part of the Mid-Term Review: Indicate the "highest importance", 1, "lowest importance", 5 and no two proposals should have the same ranking.

- 4 Economics benefits e.g. jobs or productivity
- 5 Positive impact on equality and social inclusion
- 3 Consistency with the achievement of Climate and Energy Goals
- 1 Alignment with the new National Planning Framework
- 2 Addressing current bottlenecks

While it is understandable that the Department of Public Expenditure and Reform is seeking to develop criteria through which to prioritise projects/programmes for investment, the ranking of such criteria is very challenging due to significant overlaps and mutual benefits. For example, there is the potential for major economic benefits arising from the achievement of climate and energy goals etc. It is our belief that an integrated and long-term approach is required and, for that reason, we have ranked 'alignment with the new National Planning Framework' in first place and have not ranked the remaining criteria.

Q3.2 Are there any other criteria which should be used when considering what projects/programmes public capital expenditure should be allocated to in the Mid-Term Review?

Yes, the Mid-Term Review should also consider the connection between capital infrastructure and health and wellbeing. Beyond the clear benefits of investment in hospitals and other medical facilities, other forms of infrastructure can significantly benefit the health and wellbeing of the population, sometimes indirectly. For example, investment in attractive and sustainable transport infrastructure can reduce car dependency with major benefits for physical activity, air quality, congestion, and mental health. Furthermore, as an island nation, security of energy supply is paramount to ensure the health and wellbeing of our citizens and, to this end, the North-South Interconnector should be progressed.

Q3.3 What one sector do you think will be most in need of increased capital expenditure in order to directly address the potential impacts of Brexit based on current evidence and research?

and Q3.4 Are there any potential specific effects of Brexit which you believe should be taken into consideration as part of the mid-term review of the Capital Plan?

Engineers Ireland is concerned about the effect of Brexit on cross-border connectivity, particularly in the case of a 'hard Brexit'. We remain strongly supportive of an all-island approach to connectivity and growth and would like to see significantly improved connectivity between Galway, Sligo, and Derry and between Dublin, Dundalk and Belfast. Such connectivity would enhance the attractiveness of all of these centres, providing focal points for growth throughout and between the regions. Increased investment in, for example, cross-border land transport (e.g. A5 Aughnacloy to Derry; high speed, high frequency rail between Dublin and Belfast) would encourage population and employment growth, generating a critical mass of employment and housing to attract further industry and services

as well as supporting an enhanced range of local services and attractions – not only in the border area, but also in regional centres.

Engineers Ireland is also concerned about the impact of Brexit on the energy sector. Currently, all of our interconnectors (which help to provide a safe, secure, reliable and affordable energy supply) are with Britain. For example, wind farms may be told to power down as it will not be possible to export the power to Britain. It is therefore highly important that Brexit negotiations consider the level of interconnection between our two energy markets. Moreover, future capital investment should consider other interconnection and trading facilities. For example, the Celtic Interconnector between Ireland and France and a liquefied natural gas import plant (Shannon LNG) are both planned and would help to mitigate the effects on Brexit.

Q3.5 Are there any other issues which you believe should be taken into consideration as part of the mid-term review of the Capital Plan?

We would also like to highlight the importance of capital investment in higher education. Engineers Ireland supports the Government's commitment to investing in strategic education and training, which will boost competitiveness, create jobs and improve equality of opportunity. Engineers Ireland accredits engineering programmes at NFQ level 6, 7, 8 and 9 and our experience gained during on-site visits at over 20 HEIs is that the reduction in funding to that sector has had significant detrimental impact. We note with great concern that core funding per student has decreased substantially in recent years and there has been a considerable lack of investment in facilities. Laboratory equipment and facilities have become almost obsolete and not being able to expose students to experiments using world-class equipment hampers the ability of our higher education institutions to be considered attractive to students and globally competitive. The Capital Plan currently makes provision for €110 million for higher education facilities. We believe that this should be increased and that particular attention be paid to Science, Technology, Engineering, and Maths (STEM) courses, increased graduate numbers of which are urgently required in the recovering economy.

4. Prioritisation of Capital Expenditure and Selection of Projects/Programmes

Q4.1 Please rank the sectors below in terms of prioritisation for additional capital expenditure over the remaining period of the Capital Plan out to 2021. Indicate the "highest priority", 1, "lowest priority", 11 and no two proposals should have the same ranking.

- 1 Public Transport
- 2 Road Transport
- Housing
- Education
- Health
- 3 Energy
- 5 Broadband
- 4 Water
- Enterprise
- Agriculture
- Other (specify)

As outlined in the response to Q3.1, it is very challenging to rank sectors for expenditure prioritisation as there are significant overlaps, for example between transport and housing and energy. Engineers Ireland broadly agrees with the priority areas for increased capital investment from Programme for Partnership Government are transport, broadband, health, education, and flood defences. We also note additional funds allocated to the housing sector through the 'Rebuilding Ireland' strategy.

Each year, Engineers Ireland prepares 'The State of Ireland', an independent review of the performance, capability and condition of Ireland's key infrastructure networks. 'The State of Ireland 2017' will focus on transport and communications infrastructure, which we believe to be of pressing importance in the coming years. This focus informed our response to the ranking question above. (Last year's report, 'The State of Ireland 2016' focused on energy infrastructure.)

The decrease in transport investment by the State since 2008 has been significant. Capital investment in transport peaked at €3.5 billion in 2008, but has now fallen to €1 billion. Overall, there is a dire need to increase capital investment in transport infrastructure to ensure sustainable economic growth and quality of life. While the Capital Plan would see investment rise to €2 billion per annum by 2021, this is not sufficient to deliver necessary projects and achieve steady state maintenance.

In particular, large-scale public transport in the Greater Dublin Area is needed to reduce car dependency and to accommodate forecasted increases in travel demand (650,000 additional daily trips to and from work by 2041). The Capital Plan currently makes provision for Metro North (construction to commence in 2021) and for the first phase DART Expansion Programme. Engineers Ireland would like to see these projects expedited and expanded to include, for example, the DART Underground Project.

The low-density nature of Dublin means that a high-quality bus system will be the correct public transport solution for many route corridors. To resolve congestion issues, Dublin needs to invest in its bus system over the next few years to transform it into a highly efficient and reliable system. In this context, it is important to note that investment in road transport can facilitate improved public transport services. Furthermore, high quality road networks are particularly important for rural and remote rural areas.

With the transport system more or less at gridlock in peak times in other urban areas such as Cork, Galway, and Limerick, public and active transport projects need to be accelerated to maintain our competitiveness to attract inward investment from multi-nationals that create jobs. This should include the exploration of Bus Rapid Transit, light rail, cycle networks, and sustainable land-use planning which reduces car dependency and congestion. In rural areas, a coordinated approach is required to provide services and develop infrastructure across local authority boundaries.

We also consider investment in transport infrastructure maintenance to be of the utmost importance. The Strategic Framework for Investment in Land Transport estimated the cost of maintaining the existing road and rail networks to be €1.6 billion. At €4.4 billion for 2016-2021, the Capital Plan, as it stands, does not sufficiently provide for maintenance. See response to Q5.1 for more information on maintenance.

While we have chosen to focus on transport investment in this submission, there are many other areas which require urgent investment, including in energy, water and broadband. Further information for these sectors can be found in our annual ‘State of Ireland’ reports. In the energy sector, key recommendations include interconnection, deep retrofitting of public and domestic buildings, and renewable sources of energy. Regarding water and wastewater, investment should be directed towards reducing leakage, eliminating boil notices, and eliminating untreated discharges. Finally, 4G mobile networks and the National Broadband Plan should be delivered and homes should be sufficiently wired to realise the fullest potential of the broadband service entering the building.

Q4.2 What one project/programme not currently included in the Capital Plan out to 2021, would be your top priority for inclusion? Please provide:

a. Description of the capital proposal

b. Objective of the capital proposal – Text should include a statement of the proposal’s rationale (why it is required) and what it is intended to achieve (what will be the result or outcome of its implementation).

c. Any key research and/or data sources supporting the rationale

The M20 Cork to Limerick is not currently included in the Capital Plan, despite overwhelming support from businesses in the region. The 80 km motorway forms part of the Atlantic Corridor and would bypass Mallow, Buttevant and Charleville; it is expected to cost €850 million. It would dramatically reduce journey times and congestion, and improve road safety and competitiveness. A forthcoming report, commissioned by Cork and Limerick Chambers, and prepared by Indecon Economic Consultants and RedC Research, will be presented to Government in the coming weeks. Should the M20 be progressed, particular attention should be paid to minimising environmental impact, including urban sprawl.

Q4.3 What one demand management practice do you think has the greatest potential to achieve more efficient use of Ireland’s existing infrastructure?

- Road pricing
- Smart ticketing
- Smart metering
- Real time traffic management
- Smart grid management
- User charges

1 Other (please specify)

‘Big data’ and its role in intelligent transport systems to add information and communications technologies to transport infrastructure and vehicles, could lead to major improvements in safety, network management and integration over the next 10 years. ITS can be used to optimise the service provided by public transport – something that is essential if people are to be encouraged out of their cars and onto buses and trains.

Q4.4 Is there any project/programme which you think would be particularly suitable to be delivered by a Public Private Partnership? If yes, please provide:

a) Description of the capital proposal

b) Why it is particularly suitable to be provided by a Public Private Partnership?

According to TASC: “The main advantage of PPPs is that the State gets infrastructure for which it could not afford to borrow during lean times and especially during the seven year crisis after the crash. The key question is whether there is really value for money [...] It is essential that the Government now undertakes a major study of existing PPPs to assess their true long term cost.”

Engineers Ireland notes that several transport projects are currently being progressed through Public Private Partnerships, including: N17/18 Gort to Tuam, M11 Gorey to Enniscorthy, and N25 New Ross Bypass. Following a thorough review of the cost-effectiveness of these and other PPPs, it may be suitable to progress further transport projects through PPP.

5. Long-term Capital Investment Framework (10 years)

Q5.1 What factors, in order of priority, do you believe should be taken into consideration when formulating Ireland’s 10 year Capital Plan? Indicate the "highest priority", 1, "lowest priority", 7 and no two proposals should have the same ranking.

- Economic Growth
- Demographics
- Spatial considerations
- 3 Climate and Environment
- Behavioural Changes
- 2 Technology
- 1 Maintenance

While each of the factors listed above are important (and connected), we have chosen to focus our response on ‘maintenance’ as we believe that this sector has received a worrying lack of attention in recent years. As outlined in our response to Q4.1, the cost of maintaining the existing road and rail networks is estimated to be €1.6 billion, representing a significant proportion of the €2 billion capital allocation for transport in 2021. Therefore, the capital envelope for transport must be increased to allow for the achievement of steady state maintenance along with the delivery of key projects. The potential for economic benefits arising from maintenance should also be considered and include: increased asset life, decreased replacement costs, and improved health and safety.

It is imperative that maintenance and rehabilitation regimes are put in place to continue improving the quality of national, regional, and local roads. In particular, there should be a targeted increase in the maintenance and reconstruction of local roads which will facilitate housing development and add to employment, complementing the Local Infrastructure Housing Activation Fund. There is a requirement to implement road management systems to help identify and manage deficiencies in the road surfaces, roadworks, excavations and bridges, as well as road markings and signs, in both urban and rural areas. Road and pavement management systems currently being implemented on national and regional/locals roads provide a foundation for allocation of funding on a needs basis.

There has been significant ongoing under-investment in the infrastructure maintenance and renewal programme of the heavy rail network thereby requiring an over-reliance on reactive maintenance rather than a planned programme of essential renewals, impacting on journey times because of temporary speed restrictions for safety reasons and service reliability. Moreover, the rail network should be upgraded as part of offering an attractive alternative to single-occupancy driving; this should include electrification, signalling and level crossing removal.

Engineers Ireland believes that climate change is one of the greatest global challenges for this and future generations. The latest EPA greenhouse gas (GHG) emissions figures, which show a 3.7% increase from 2014 to 2015, make for alarming reading as do projections which suggest that Ireland's emissions in 2020 will only be approximately 6% below 2005 levels, far behind the 20% reduction target. Long-term capital investment must consider mitigating the effects of climate change and should be linked to the forthcoming National Mitigation Plan and National Planning Framework.

Q5.2 Are there any other issues that you believe are of importance for infrastructure planning over the long-term and should be taken into consideration when formulating Ireland's 10 year Capital Plan?

As outlined in Section 2, Engineers Ireland strongly believes in the need for a single infrastructure unit to be charged with sustainably planning and integrating investment in key critical areas like transport, education, health, energy and the digital economy. Currently, planning and delivery of our infrastructure is spread across Government departments, each competing for finite funding with little central oversight. We believe that an independent assessment of our long-term infrastructure needs is required.

There are many examples internationally of how such an entity could be structured to best support the determination and implementation of policy on infrastructure – decoupled from the electoral cycle. This entity would also be responsible for co-ordinating a long-term, cross-sectoral approach to building political and public consensus and understanding on national infrastructure performance, under a range of possible futures. More information on the recently-established UK National Infrastructure Commission is provided in Section 2.

Q5.3 Technological change will have a significant impact on the future supply and demand of infrastructure in Ireland e.g. creating the need to build new infrastructure or reducing the demand for certain infrastructure. What do you think will be the most significant impact of technology on Irish infrastructure over the next 10 years?

'Big data' and its role in intelligent transport systems to add information and communications technologies to transport infrastructure and vehicles, could lead to major improvements in safety, network management and integration over the next 10 years. ITS can be used to optimise the service provided by public transport – something that is essential if people are to be encouraged out of their cars and onto buses and trains.

Q5.4 What implications will this have for capital allocations?

Increasingly, transport agencies may need to change the public's perception of new assets such as driverless trains or buses. Quantifiable evidence of the success of reducing pressure on road space and giving public transport the priority in congested traffic could make it a more attractive option.

Q5.5 Taking into account the inherent uncertainty of predicting demand for infrastructure the further into the future you look, what one project not currently included in the Capital Plan would you recommend for inclusion in a 10 year Capital Plan over the period out to 2028?

Please provide:

a) Description of the capital proposal

b) Objective of the capital proposal – Text should include a statement of the proposal's rationale (why it is required) and what it is intended to achieve (what will be the result or outcome of its implementation).

c) Any key research and/or data sources supporting the rationale

As mentioned in our response to Q4.2, investment in large-scale public transport is needed in the Greater Dublin Area. While the Capital Plan currently makes provision for Metro North (target completion 20206) and for the first phase DART Expansion Programme (including the DART Underground Project), we would like to see these projects expanded and completed in a 10 year Capital Plan to 2028.

These projects would go a long way to reducing the carbon intensity of Irish transport, thereby helping to achieve our commitments under the Paris COP21 Agreement, the Climate Action and Low Carbon Development Act, and the Smarter Travel policy. Moreover, the projects would accommodate forecasted increases in travel demand, reduce congestion, and improve competitiveness and health and wellbeing.

A wealth of further information on the projects (including costing, demand forecasting and economic impact) is available in the NTA Greater Dublin Area Strategy (2016-2035), Metro North Business Case (2010), Fingal North Dublin Transport Study (2015), and DART Expansion Programme Business Case (2015).

ENDS

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Background to Engineers Ireland

With over 23,000 members from every discipline of engineering, Engineers Ireland is the voice of the engineering profession in Ireland. Engineers Ireland was established in 1835 making us one of the oldest and largest professional bodies in the country. Members come from every discipline of engineering, and range from engineering students to fellows of the profession.

Our responsibility is to

- Promote knowledge of engineering
- Establish and maintain standards of professional engineering and engineering education
- Provide opportunities for Continuing Professional Development (CPD)
- Maintain standards of professional ethics and conduct
- Ensure that professional titles are granted to qualified candidates
- Act as the authoritative voice of the engineering profession in Ireland

Our Vision Statement

Engineers Ireland: a community of creative professionals delivering solutions for society.

Our Mission Statement

Engineers Ireland is an organisation that enables the engineering community to progress their professional development, make an impact on society and encourage and educate the future generations of engineers.