Review of the Capital Plan 2016 - 2021

Building on Recovery

Progress Report & Update on Public Investment Priorities

August 2017

Foreword

Public capital investment is critical to:-

- enhancing the economy's future growth potential;
- underpinning social progress;
- responding to demographic changes;
- meeting the essential requirement for balanced regional growth;
- supporting the societal transformation required to achieve climate action objectives; and
- strengthening the economy's resilience to major risks such as Brexit.

Very significant progress has already been made in delivering priority public capital investments under the Capital Plan across all sectors of our economy. The substantial increases in resources for public investment planned in the period to 2021, underpinned by our continued strong economic and fiscal performance, will enable accelerated progress.

This review of the Capital Plan prepared by the Department of Public Expenditure and Reform highlights the economy's need for securing and maintaining a higher level of public capital investment into the future, consistent with mitigating overheating risks.

This need for increased public capital investment is increasingly important in light of the challenges presented by Brexit for Ireland's economy and society. Investment in high quality public infrastructure will help mitigate the negative effects of Brexit by improving our international competitiveness in trade and encouraging greater foreign investment into Ireland.

The Government have already responded to this investment requirement through the increased allocation of resources announced in the recent Summer Economic Statement 2017 which will see public capital investment spending increase by over 70% over the next four years to almost €7.8 billion by 2021. This will be followed by a 10 year National Investment Plan.

This increase in expenditure was based on a careful consideration of the macro-economic context and the capacity of the economy to accommodate such increases in expenditure without the risk of overheating the economy. A sharp and unexpected increase in capital expenditure would exacerbate such inflationary risks and adversely impact Ireland's competitiveness. The approach adopted by this Government will result in a measured and sustainable increase in capital investment over the coming years that will continue to emphasise value for money and improve the efficiency of public investment. In line with this approach we must also ensure the appropriate maintenance of our existing infrastructure stock before we turn our attention to new infrastructure projects. This will maintain the quality of our existing infrastructure and reduce replacement costs in the long-term.

Identification of the priorities to which these resources will be allocated in Budget 2018 must be guided by an informed debate underpinned by robust evidence including in particular in relation to the efficiency of investment.

The review draws together a wide evidence base including the detailed submissions from Government Departments and the results of an extensive sectoral analysis of our existing infrastructure and the demands on it.

It also presents the results of a national conversation on public capital infrastructure, involving an extensive public consultation, as well as the discussions at the National Economic Dialogue in June.

The review summarises empirical research on the major contribution that efficient public capital investment can make to strengthening the economy's long-term growth potential on a sustainable basis and enhancing its resilience to shocks.

It is intended to provide the foundation for further discussion and analysis in advance of final decision-making by Government on the allocation of increased public capital resources in Estimates 2018.

The review will also provide a significant input into the development of a new long-term 10 year National Investment Plan and National Planning Framework which will be closely aligned to ensure that future public capital investment decisions are firmly anchored in driving and promoting a sustainable pattern of growth and development on a spatial basis. The National Investment Plan will also play a central role, alongside the ongoing development of the National Climate Mitigation and Adaption Plans in achieving a low carbon and climate resilient economy.

I am inviting and would welcome all responses to the analysis presented in this review and to the key themes and priorities which it highlights. Our future prosperity and the opportunities it creates for all our citizens will be strongly influenced by the choices we make in terms of public investment.

I am committed to ensuring that those choices are strongly guided and informed by a continued national debate on economic and social priorities firmly grounded in cogent evidence and analysis.

Paschal Donohoe T.D.
Minister for Finance and Public Expenditure and Reform

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Overview and Executive Summary

Background and Context

The context for public capital investment has changed dramatically in the relatively short period since the Capital Plan - Building on Recovery was published in 2015. The significant progress made in restoring the public finances and the transformation in economic performance has enabled Government to supplement the €20.9 billion already committed to public investment between 2018 and 2021 by a further €6 billion.

Taking account of the significant resources of €2.2 billion which has been provided to support the delivery of the Action Plan for Housing over the period, €4.1 billion in additional capital expenditure is to be allocated on the basis of this review in Estimates 2018.

In overall terms, the planned total increase in public capital investment between 2018 and 2021 is almost 40% greater than what was initially envisaged under the Capital Plan in 2015.

In addition to reporting on the substantial progress achieved under the Capital Plan to date and the priorities identified by Departments for increased public capital spending to 2021, the core objective of this review is to assess and report on:-

- the quality and capacity of Ireland's public infrastructure in light of key drivers of future demand such as demographics; and
- priority public capital investment requirements, reflecting in particular where infrastructural congestion and bottlenecks may be jeopardising the sustainability of Ireland's growth performance.

The review also seeks to assess how enhancing public capital infrastructure can strengthen the economy's resilience to risks related to:-

- Brexit;
- climate change; and
- the potential for overheating as the economy approaches full capacity.

The findings will assist in identifying priorities for the allocation of the substantial additional capital funding now available.

It is important that public investment increases at a planned and measured rate, avoiding sharp or unexpected increases, so as not to outstrip the pace of the supply response feasible from the construction sector. It is also essential that public capital investment is:-

- efficient, focused on infrastructural priorities which are properly appraised;
- yields a high economic and social rate of return; and
- makes best use of construction sector resources given the level of private investment demand.

There needs to be a sharp strategic focus on strengthening the capacity, capability and degree of competition of the domestic construction sector in Ireland, as well as on encouraging and promoting market entry from overseas. Confirming and highlighting the planned scale of Ireland's public capital investment plans can play a pivotal role in this regard.

The Rationale for Increased Public Investment

There is compelling evidence internationally confirming that efficient public capital investment is central to economic growth – described as the "wheels if not the engine" of long-term economic growth strategy. Public investment raises the economy's productivity and supply capacity allowing the economy to grow faster on a sustainable basis and alleviating inflationary risks. Recent OECD research identifies Ireland as one of the countries that would benefit the most from increased public capital investment provided that the projects funded are sound and generate an appropriate rate of return.

Against the backdrop of the risks and opportunities created by the UK's exit from the EU, improvement in public capital infrastructure in areas such as transport, housing and education can enhance Ireland's competitiveness in trade and foreign direct investment.

Addressing the challenges posed by climate change requires a whole-of-government approach, ranging from policy positions and regulation, to taxation and expenditure measures. National transition objectives will need to fundamentally shape investment choices and spatial settlement. Targeted increases in capital expenditure, which support the delivery of Ireland's National Mitigation Plan and upcoming National Adaptation Framework (NAF) can, play a part in addressing such challenges.

Encouraging balanced regional development in line with the objectives of the National Planning Framework is another important rationale for public capital investment. As well as increasing the connectivity and competitiveness of different regions, public investment can increase the ability of regions to attract private investment and employment through the provision of high quality infrastructure.

Public investment is also central in underpinning the delivery of key public services. It promotes the achievement of key socio-economic objectives by connecting citizens to productive opportunities and serving as a catalyst for inclusive growth by supporting the greater integration of individuals and households into social and economic life.

In the period from the mid-1990s Ireland's public investment performance compared favourably to international peers, averaging 3.4% of GDP for the period 1995-2007. However, peak public investment levels at 6.0% of GNP in 2008 were unsustainable, financed by temporary windfall tax receipts from the boom, and the real value of the spending was eroded by very high construction price inflation. Over the 6-year period from 2011 to 2016, public Gross Fixed Capital Formation (GFCF) averaged 2.7% of GNI* or 2.4% of GNP, compared to EU15 average over the same period of 2.8%.

Caution is, however, required in relation to these comparisons and in particular in setting a benchmark level of public investment in terms of GNP (or GDP) on account of the distortion to and inflation of these aggregates, reflecting the global activities of the FDI sector in Ireland.

There is a persuasive case for increasing public investment in Ireland to boost the economy's supply capacity. This conclusion is underpinned by robust research on the benefits of investment in public infrastructure. It is, however, critical that public investment plans are consistent with economic and fiscal sustainability, as this is fundamental to durable economic and social progress in the years ahead.

Efficiency of Public Capital Investment and Steady State Funding

Simply increasing capital expenditure is not the policy objective of the Government. The Government's policy objective should be framed in terms of achieving specific sectoral outcomes, whether through the provision of infrastructure or other means, in a manner which achieves value for money.

Furthermore, if the policy outcome is to be achieved through the provision of additional infrastructure, increasing capital expenditure will not, in and of itself, increase the quality or quantity of infrastructure supplied. In order to increase the output of infrastructure it is essential that public investment is efficient and provided on a least-cost basis. Indeed, international benchmarks of public capital investment performance can be misleading in the absence of the consideration of the efficiency of public investment.

The IMF's Public Investment Management Assessment of Ireland suggests that there is an opportunity to achieve greater value for money from our public capital investment.

In order to deliver such improvements it is crucial that there is a concerted focus on getting project selection right so that that specific objectives or outcomes are achieved.

It is vital that individual projects are selected on transparent criteria and well-established methodologies. The Public Spending Code and establishment of the Irish Government's Economic and Evaluation Service continues to make strides towards achieving this objective.

Further improvements to Ireland's public capital investment framework, as suggested by the IMF, will be implemented in order to support the Capital Plan and further improve the outcomes achieved from our public investment.

It is also important that the focus is not solely on expenditure on new infrastructure, and that issues such as steady state funding for our existing infrastructure stock (e.g. local and regional roads, public transport, schools, Institutes of Technology, hospitals, etc.) and demand management are incorporated into capital plans, given their potential for higher returns by ensuring that public infrastructure continues to be able to support the provision of the public service it is intended for, rather than simply investing in new projects.

Failing to maintain the quality and performance of existing infrastructure increases the likelihood that more significant investment will be required in the future when core infrastructure needs to be replaced prematurely due to the lifespan being significantly reduced.

Submissions Received

Detailed submissions were received for the review from all Departments providing a report on progress to date under the Capital Plan, together with proposals to utilise the additional available capital funding.

A public consultation process was also held in April to ascertain the views of key stakeholders and the general public on what our national infrastructure priorities should be. This consultation also sought views on infrastructure investment priorities beyond the period of the current Capital Plan, which will help formulate the longer-term National Investment Plan for the next ten years to be published by end-2017.

The provisional outturn for capital expenditure in 2016 was €4.11 billion, a 10.1% increase on the 2015 expenditure outturn of €3.73 billion. This trend has continued in 2017, with a gross capital expenditure allocation of €4.54 billion, an increase of 10.6% or €435 million on the 2016 outturn. Figures available to end-July 2017 indicate that gross capital expenditure has increased by €298 million or 19.6% over the same period in 2016.

Details of the Voted Exchequer projects covered by this expenditure are set out in Chapter 3, together with an update on investments by the commercial State sector totalling c€1.6 billion in core national infrastructure, including water and energy networks, and a progress report on other infrastructure projects being delivered with non-Exchequer funding, including PPPs.

Submissions received from Departments included proposals totalling in excess of €11 billion, or over 2.5 times the €4.1 billion available for allocation in the period to 2021. Sharper prioritisation of these proposals would be expected to achieve a significantly greater alignment of proposals with available resources. This can be achieved by, for example:-

- assessing proposals against broader sectoral infrastructure priorities;
- through robust project appraisal process; and
- phasing lower priority projects over a longer period.

The potential challenges posed by Brexit was a theme which emerged from many of the Departmental submissions. A critical issue is the need to continue the ongoing process of identifying with greater precision the specific risks created across the economy arising from Brexit and specific actions which can be taken to attenuate these risks.

Measures supporting progress on climate action objectives were also widely reflected in the submissions received from Departments. The necessity for a strategic approach to investment to achieve more balanced regional development was also highlighted. This is to

be secured through a close alignment of the new 10 year National Investment Plan with the new National Planning Framework (NPF) being finalised by the Department of Housing, Planning and Local Government.

A total of 95 submissions were received through the public consultation including 18 from county/city councils and assembly-type bodies; 8 from chambers of commerce; 4 from political parties; and 23 from organisations and research bodies across various industry sectors. As well as identifying a range of priority areas for additional investment, including as a response to Brexit, a number of common themes emerged from the public consultation process including:-

- a call for a more ambitious level of capital investment;
- for the use of alternative funding and financing options;
- the proposed establishment of an expert advisory body on long-term infrastructural planning; and
- support for greater integration of future capital investment policy with the NPF.

In terms of priority areas for additional investment, the key areas identified in the public consultation were transport, communications/connectivity, housing, education, energy, health, water & wastewater, flood defences and agriculture.

These themes were also reflected in the report received from the Oireachtas Committee on Budgetary Oversight.

Infrastructure Capacity and Demand Analysis

An assessment of the quality and capacity of existing public infrastructure and the main drivers of future demand for public investment is a core element of the review. This is crucial in providing evidence to inform decision-making in Estimates 2018 on the allocation of the substantial additional resources available for public investment.

In contributing to this evidence base, the Irish Government Economic and Evaluation Service (IGEES) in DPER completed a detailed report which examined in detail the available data and information from key sectors to assist in informing the priority requirements for increased investment across key sectors of the economy.

The analysis, summarised in this review and published alongside it, examined the primary areas of Ireland's infrastructure (transport, health, education, housing, water, etc.) in terms of:-

- historic investment;
- existing infrastructure; and
- the key sectoral drivers of demand and relevant demand trends in terms of activity and use.

The IGEES analysis finds that there has been significant public capital investment in Ireland's infrastructure over the last twenty years, which will be increased in a structured and sustainable manner over the remaining years of the Capital Plan. By 2021, Ireland's public investment, measured in terms of Gross Fixed Capital Formation, is currently projected to have increased to 9.3% of total General Government expenditure, above the long-term average and well above the EU 15 average, highlighting the extent to which public investment is being prioritised within public spending overall.

Housing

Pressure is evident across the housing market with significant increases in both residential property purchase prices and average rents in recent years following large decreases after 2007. Higher levels of growth have been seen in urban areas and are demonstrated by rental prices being above previous peak levels in Dublin.

The research carried out indicates that there are a significant number of households that have been deemed as eligible for social housing support but are not currently in receipt of such support, while additional permanent stock has been limited. Further investment in housing has therefore been prioritised over the period of the capital plan.

Under Rebuilding Ireland, the Action Plan for Housing and Homelessness, further investment in housing has been prioritised over the period of the Capital Plan, which will see an additional €2.2 billion committed to support the Action Plan, bringing total Government funding for the initiative to €5.35 billion (of which €4.5 billion is capital) with the target of delivering 47,000 units across a range of delivery mechanisms over the coming years.

The Action Plan is currently in the process of being reviewed by the Department of Housing, Planning and Local Government in consultation with DPER and the Department of Finance.

Furthermore, housing output delivered by the private sector is expected to accelerate over the coming years. While a strong supply response to reach what is currently estimated to be the equilibrium demand for housing is fundamental to the resolution of the housing crisis, developments in the sector require careful oversight and monitoring to pre-empt the risk of the emergence of a construction led housing boom.

Health

The delivery of a high-quality healthcare system is dependent on many complex and inter-dependent factors. While physical infrastructure is very important in its own right, capital expenditure constitutes less than one thirtieth of overall health spending.

In the health sector, Ireland's total expenditure (current and capital) on healthcare is amongst the highest in Europe, with investment in health infrastructure comparing favourably with other OECD countries. The health sector's share of the capital budget has steadily increased over the past twenty years. Health's total budget has steadily increased since 2014. The health

allocation of €14.1 billion included in Budget 2017 means that spending this year will exceed its 2009 peak, both in total and per capita.

Notwithstanding the increasing trend in demand for health services, the shift in policy away from treatment in acute hospitals in favour of a focus on primary care, and the trend observed across other EU countries with much older populations - where acute hospital capacity is reducing in favour of investment in primary care - highlights the importance of further analysis and evidence, such as would be expected to emerge from, for example, the Health Service Capacity Review in Ireland 2017 to guide and inform future capital investment policy for the sector.

It should also be noted that an additional c€300 million will be provided for the National Children's Hospital from the additional capital funding available, on foot of the Government decision of April 2017.

Transport

Transport demand is closely linked to economic growth and the performance of the economy. Previous high levels of investment saw major improvements such as the transformation of Ireland's motorway network as well as the construction of the Luas Red and Green lines. In terms of current demand levels, overall road usage is now above its previous peak in 2008 and issues with regard to congestion and level of service are evident in urban regions. While Ireland has more motorway standard road per head of population than Germany, France and the UK, in overall terms the quality of the road network by comparison with 2012 is scoring lower by measures used to assess road surface quality. This points to the importance of investing in the maintenance of the existing road network.

The evidence confirms that issues are emerging which if not addressed will serve as a constraint on continued economic growth. In particular, transport demand around urban centres is posing a constraint, to the extent that significant elements of the road infrastructure are providing low levels of service due to congestion, while there are a small number of areas where the level of service experienced is either unstable or at breakdown.

Outside of the roads area, public transport use has grown in recent years but remains below 2008 peak levels. However, there is a clear requirement for additional investment in public transport:-

- to assist in catering for overall demand growth in urban centres;
- support the objectives of the new National Planning Framework; and
- contribute to climate action goals.

Maritime demand, as measured by the total tonnage of goods handled at ports, indicates that demand is still below the 2007 peak. Aviation demand and activity is above its previous peak with record passenger numbers being driven by activity at Dublin Airport. Investment in key maritime and aviation infrastructure is not funded directly by the Exchequer. However, there are key projects being progressed by the relevant bodies such as the second parallel runway at Dublin Airport.

Education

In education, demographic change is the most important driver of demand in the sector. The peak level of demand is approaching with projections estimating a peak in primary numbers in 2018 and a peak in post-primary in 2025. In light of the significant funding for the schools building programme provided under the existing Capital Plan, analysis of the requirement for additional capacity in the period to 2021 needs to be based on demand pressures reflecting demographic developments and factors such as the current condition of existing infrastructure and the expected regional composition of demand. While student numbers are projected to fall in future years, specific locations may still exhibit growth. Consideration is also required of the impact of construction price inflation and upward pressure on site costs.

The number of students at third level is expected to continue to increase, exerting further pressure on capacity, and requiring additional investment. However, investment levels at third level are impacted by a number of considerations including the relevant sources of sectoral funding and the overall policy framework for third level education.

Future demand for further education and training (FET) is difficult to predict due to the varied drivers of demand in this sector. More data is needed to assess future demand, and by extension, future investment needs.

Water Infrastructure

Substantial investment is currently planned for Ireland's water infrastructure for the period out to 2021 seeking to strike a balance between the demand for water infrastructure investment and constraints such as affordability, planning requirements and supply chain issues. Investment is based on a risk-based approach addressing critical issues such as drinking water quality, compliance with the EU Urban Waste Water Treatment Directive and reduction in leakage levels. The regulatory process determining the actual level of capital investment provides an opportunity to reassess the planned investment levels in the future.

Broadband, Energy and Flood Defences

The following findings are evident from the analysis of these sectors:-

- In general, energy infrastructure in Ireland is in a good position to continue meeting overall demand in the medium term. While overall demand is expected to be catered for, the composition of generation and consumption is an important consideration in the context of climate related targets and further investment is planned with a particular focus on wind generation.
- While Ireland has made progress in terms of improving its broadband infrastructure, differences persist in terms of the availability of broadband in urban and rural areas of the country. The National Broadband Plan aims to address this and the existing Capital Plan sets out the level of initial Exchequer funding for the state intervention element of the plan.

- Exchequer capital investment in flood risk management has increased significantly over the past twenty years and the allocation contained within the existing Capital Plan is largely sufficient to meet the demands of the sector.

Other Sectors

Other sectors, not accounting for a significant share of overall public capital investment such as Justice, Defence, Sports, Arts and the OPW were not subject to the infrastructure capacity and demand analysis. Demographic projections are such that these sectors are likely to be subject to demand pressures over the remaining years of the Capital Plan. It is clear from the submissions received that public infrastructure in these areas also requires increased investment to achieve a balanced prioritisation of increased public capital investment across all sectors of government activity.

Climate Action and Spatial Development

The methodology adopted for the infrastructure demand and capacity analysis is not easily applied to assessing investment needs to meet climate change goals. Promoting environmental sustainability is, of course, integral to achieving and maintaining sustainable economic growth. It is essential, therefore, that resources continue to be allocated and aligned to support sustainable growth, as required under the Government's current policy framework.

Spatial development and the role that infrastructure has in supporting and influencing it is a critical consideration that must be factored into future decision-making on public investment. These challenges highlight the need for a coherent approach to investment planning between frameworks such as this review, the National Planning Framework and the Climate Mitigation and Adaptation Plans.

As discussed in the National Mitigation Plan, because the impacts of climate change are expected to be pervasive in Ireland's environment, society, economy and natural resources, it is essential that Government's expenditure choices are informed by an assessment of the full range of such impacts at the appraisal stage. This means being able to capture the broadest possible range of potential costs as well as the range of benefits that might also accrue. As part of the review of the Public Spending Code a review of guidance is being undertaken on public expenditure appraisal and evaluation to ensure their suitability to capturing key costs and benefits of climate measures.

Increased Public Investment, Economic and Fiscal Sustainability

There is now a total envelope of additional Exchequer gross voted capital resources amounting to €4.1 billion to be allocated for public investment over the remaining four years of the Capital Plan 2018-2021. This will be followed by a 10 year National Investment Plan.

As part of this review, the substantial increase in resources now available for capital investment in the period to 2021 will allow for a continued acceleration in public investment in the economy consistent with the public infrastructure and capital expenditure needs identified in this review.

These resources must be deployed in a manner consistent with the achievement of key fiscal objectives and in compliance with the requirements of the EU Fiscal Rules. It is also essential that the increased spending is aligned with the capacity of the economy and the construction sector to ensure that:-

- the increased capital resources are used efficiently;
- they deliver real improvements in public capital infrastructure; and
- the impact of the increased capital spending is not eroded by construction price inflation or contributes to overheating risks for the economy.

A key consideration in light of the substantial growth planned in public capital investment set out above is the extent to which the proposed increase meets the economy's needs consistent with the fundamental requirements of overall economic and fiscal sustainability.

The share of public capital investment in GNP is forecasted to increase by over 0.5% of GNP from 2.25% in 2017 to 2.75% in 2019, remaining at that GNP share for 2020 and 2021. Using GNI*, which adjusts for the distortion of Ireland's recorded statistical GNP, public investment is projected to meet the internationally recommended 3% baseline level from 2019 onwards. This confirms that the increase in public investment now planned bridges the perceived shortfall in public capital investment relative to the size of the economy indicated by international comparisons.

The scope for such a significant increase in public investment is attributable to the very substantial progress achieved in restoring Ireland's public finances. Increasing public capital investment above the already increased level set out in the SES 2017, would jeopardise the achievement of the Medium-Term Budgetary Objective (MTO) a key fiscal target in 2018 and the increased fiscal leeway that it provides in future years, as well as maintenance of a responsible and balanced fiscal policy stance.

In line with this analysis, legacy infrastructure deficits will be addressed over the coming years through sustainable, efficient and well planned public investment. A key element of achieving such investment will be based on the development of Ireland's capital investment framework. This will include the delivery of the 10 year National Investment Plan which will be integrated with the new National Planning Framework. Developing a long-term approach to capital investment, such as this, should allow for improved project planning by Departments and agencies. It will also provide clarity, confidence, stability and certainty for the construction sector, thereby allowing the sector to plan for providing the capacity and capability required over the coming years.

Key Next Steps

The Government will, drawing on the evidence-base in this review, make final decisions on the allocation of the additional funding available for public investment over the period 2018-2021 in the context of Estimates 2018.

Following the allocation of the funding for increased capital investment in the Estimates 2018, the Government will publish a new 10 year National Investment Plan for the period 2018-2027.

It is a particular priority of the forthcoming National Investment Plan to secure a close alignment with the key objectives of the *NPF - Ireland 2040* plan to be published by the Department of Housing, Planning & Local Government before end-year, setting out the Government's vision for the future development of the country and the core infrastructural investment plan to deliver it.

The 10 year National Investment Plan will also include proposals for structural reform of public investment in terms of the planning, selection and delivery of capital projects. This will be informed by the Public Investment Management Assessment (PIMA) undertaken by the IMF in July 2017 which emphasises the need for rigorous project appraisal.

It is planned that a consultative forum will take place in the autumn, building on the discussions on public investment at the National Economic Dialogue in June, to provide an opportunity for key stakeholders to discuss and comment on the analysis of the review of the Capital Plan.

It will be a particular priority to reinforce existing initiatives to meet the skills and capacity needs of the construction sector and support its strategic development in line with the medium- and long-term requirements of the Irish economy.

The exploration of EIB-supported options, within the fiscal rules and not requiring increased funding resources from the Exchequer, to increase public investment in infrastructure and secure higher levels of capital expenditure in priority areas is ongoing. The outcome of the current review of the proposed future role of PPPs will be included as part of the National Investment Plan.

1. Background

1.1 Introduction

The Capital Plan *Building on Recovery: Infrastructure and Capital Investment 2016-2021* was published in September 2015. The framework set out the Government's commitment to an investment plan of some €42 billion of which, €27 billion was from direct Exchequer investment with additional investment of €15 billion from the wider State Owned Enterprise (SOE) sector, non-commercial State bodies and PPPs.

The Capital Plan was intended - against the backdrop of continuing constraints in the overall fiscal environment to:-

- enable economic growth through targeted investment in key public infrastructure;
- improve the delivery of services to communities; and
- maximise the benefits of support by providing Exchequer investment throughout the country.

The Capital Plan included planned investments by State Owned Enterprises of almost €12 billion in essential national infrastructure for energy, telecommunications, water, forestry, biomass and on the ports and airports. Planned investment by non-commercial State bodies of €2.5 billion was also included, in areas such as enterprise development and housing.

A third phase of the Government's Public Private Partnership (PPP) programme worth €500 million was also announced in the plan. The investment will form a pipeline of PPP projects in priority areas of health, education and justice.

A mid-term review was provided for in the Capital Plan, to report on progress and provide an opportunity to review and update capital investment plans, taking account of changes in the medium-term fiscal and economic outlook, and to reassess investment priorities in that context.

1.2 Context for the Review

The context for public capital investment has changed dramatically in the relatively short period since the Capital Plan was published in 2015. The review of the Capital Plan therefore provides an opportunity to undertake an evidence-based assessment of infrastructural priorities against the backdrop of a changed economic and fiscal environment to:-

- enhance the economy's growth potential;
- address significant bottlenecks; and
- build the resilience of the economy.

1.2.1 Commitment to Increased Public Capital Investment

The scale and profile of the Exchequer component of the Capital Plan was developed with reference to the Government's medium term economic growth forecasts in 2015. As Ireland's growth levels and economic recovery have improved over the intervening period, and in keeping with the commitment in the Programme for a Partnership Government to increased public capital investment, the Government has confirmed its commitment both in the Summer Economic Statement 2016 and the Summer Economic Statement 2017 to increase capital expenditure over the remaining period of the Plan on the basis of the review of the Capital Plan.

This is in keeping with the European Commission's 2017 Country Specific Recommendations for Ireland to prioritise public investment and the OECD's recommendation in the December 2016 Economic Outlook that if more fiscal room becomes available the Capital Plan should be scaled up.

1.2.3 Improving Public Finances

Substantial progress has been made in restoring Ireland's public finances as reflected in Ireland's movement from the corrective to the preventive arm of the Stability and Growth Pact from the beginning of 2016. While the public debt ratio remains high, it is continuing to decline given low interest rates, strong growth and the level of primary surpluses achieved. Ireland is set to achieve a balanced budget in 2018 and notwithstanding the significant measurement difficulties that arise, it seems very likely that the Structural Budget Balance (i.e. adjusted for the effects of the economic cycle) is also at or approaching broad balance.

1.2.4 Strong Economic Performance

Economic growth has been consistently strong over recent years and the consensus is that, everything else being equal, broadly balanced and sustainable economic growth in line with Ireland's growth potential is set to continue into the medium-term. Employment levels are now approaching those achieved in advance of the fiscal and banking crisis. The unemployment rate has declined very substantially.

Key public capital infrastructure has been in place to support economic recovery. For example, allowing for the uncertainty associated with international comparisons, relevant statistics indicate that previous rounds of public capital investment has equipped Ireland with a reasonable infrastructure base, e.g. provision of motorway standard road has increased markedly in recent years, from 247 km in 2005 to nearly 900 km in 2014. Per head of population, Ireland now has more motorway standard road than France, Germany or the UK.

The challenge for the future is to ensure that available resources are targeted to the right projects with proven returns to address existing and emerging bottlenecks and congestion, and to support future social and economic development. The European Commission (EC) have drawn particular attention in Ireland's Country Specific Recommendations on the existence of infrastructure needs that should be addressed to promote durable and inclusive growth.

1.2.5 Increased Congestion Risks

A number of significant risks have been identified to the sustainability of Ireland's economic and fiscal performance. The public services provided by public infrastructure assets are a key rationale for public investment. Where congestion in the use of those assets is significant the effectiveness of additional capital spending will depend crucially on the extent to which investment spending alleviates bottlenecks in existing infrastructure networks.

A core objective of this review is to examine the scale and extent of the risk to the sustainability of Ireland's growth performance owing to infrastructural congestion and bottlenecks in key sectors of the economy. There was a very substantial reduction in planned public capital investment estimated to amount to c€5 billion over the period 2009-2013. The review therefore seeks to assess how the reduced level of public capital spending has impacted on the quality and capacity of Ireland's public infrastructure.

1.2.6 Emerging Capacity Risks

The potential for overheating as the economy approaches capacity has also been identified as a significant sustainability risk, particularly in light of the need to meet significant demand for housing over the coming years. While there is no consistent pattern of overheating evident across the economy as a whole, there are particular indicators which give grounds for concern.

On the one hand, the demand effects of increased public capital investment has the potential to accentuate inflationary pressures in particular as manifested in construction price inflation. On the other, increased levels of public capital infrastructure will strengthen supply capacity, help alleviate congestion and bottlenecks and can help underpin the realisation of potential growth. In addition, certainty regarding planned public capital investment also has the potential of promoting a supply response in terms of market entry that would boost the capacity of the construction sector.

The risk of overheating, as well as the actions that can be taken to mitigate this risk, is discussed in more detail later in this review.

1.2.7 Other Key Elements of Context for Public Capital Investment

The broader context for public capital spending will also be strongly influenced by four further developments discussed in greater detail below:-

- Brexit;
- the National Planning Framework;
- Demographics; and
- Climate Action

1.3 Brexit

The review of the Capital Plan has taken place at a time Ireland faces one of the most significant changes in its economic and political environment on account of the UK's decision to exit the EU.

While it is likely to remain unclear for some time, what the impact of Brexit will be for the Irish economy, it clearly poses very significant and serious challenges to Ireland's economy and trade, as well as across a range of sectors and throughout the regional and rural economy.

The quality of Ireland's public capital stock can play a central role in helping to mitigate the adverse effects of Brexit supporting Ireland's international competitiveness in trade, in foreign investment and in supporting domestic firms' investment decisions. In this regard, failure of critical infrastructure was identified as the second largest risk of concern for doing business in Ireland within the next 10 years by respondents to the World Economic Forum's Executive Opinion Survey 2016.

In addition bolstering public infrastructure in areas such as transport, housing, education and health can increase Ireland's competitiveness, growth potential and its attractiveness to increased flows of foreign direct investment.

In preparing their submissions for the review to the Department of Public Expenditure and Reform, all Departments were asked to:-

- consider relevant developments affecting their sectors since the publication of the Capital Plan;
- to assess their sectoral capital investment plans in the light of such developments; and
- propose any consequent reprioritisation of resources as a result.

Brexit was specifically referenced as one of the critical development for consideration in this context, to be reflected in the Departmental submissions.

1.4 New National Planning Framework

Achieving sustainable economic growth and development across Ireland's regions over the medium to long term is essential for the overall social and economic fabric of the country. Alignment of investment and planning is the key to strategically influence future development patterns and achieve major public interest and policy goals, such as:-

- creating places of outstanding quality and vibrancy that people and investment are drawn towards and that in turn generate employment, economic output and innovation;
- using this dynamic to enable the growth of city and town centres, but also of established suburban areas and smaller towns, that have underlying growth potential, but are under pressure from competing suburban and greenfield development;
- delivering the homes, places of work, services and amenities that a modern economy and society needs;

- ensuring that growth can be distributed regionally and focused to realise new potential; and
- ensuring the right development takes place in the right locations and at the right time, addressing issues such as traffic congestion and shifting our mobility and energy systems to greener sources that will help us meet our binding climate change commitments.

In undertaking the review of the Capital Plan, the Department of Public Expenditure and Reform liaised closely with the Department of Housing, Planning and Local Government in order to ensure close alignment with the new National Planning Framework being prepared by that Department and due to be published later this year.

1.5 Demographics

In assessing future public capital investment needs for Ireland, it is important to take into account current and future demographic pressures. Ireland has a young and growing population by European standards. In 2015, Ireland had the highest birth rate in the EU and this has been true for the preceding five years. Moreover, for the first time since 2009, net migration also became positive in 2016. Combined with productivity growth, Ireland's positive demographic profiles points towards the maintenance of a general trend of economic growth in the long-term alongside a more favourable dependency ratio than in advanced economies more generally. While the numbers of Irish people aged over 65 is expected to increase, in the decades ahead Ireland will remain one of the youngest countries in the EU.

A growing population brings with it a need to invest in additional infrastructure in areas such as housing and education that are impacted by demographic developments. Indeed, undertaking such investment at this time, if feasible, would be prudent in advance of accelerated population ageing which will create pressure for increased current spending constraining the scope for capital expenditure.

1.6 Climate Action

The challenge to reduce greenhouse gas emissions, in line with our EU and international commitments, is a key Government priority, as reflected in the National Policy Position on Climate Action and Low Carbon Development, published in April 2014, and in the Climate Action and Low Carbon Development Act 2015. The National Policy Position provides a high-level policy direction for the adoption and implementation by Government of plans to enable the State to move to a low carbon economy by 2050. Statutory authority for the plans is set out in the Climate Action and Low Carbon Development Act 2015. The first National Mitigation Plan, as provided for under the 2015 Act has recently been published while the first National Adaptation Framework (NAF) is in preparation.[1]

The review of the Capital Plan explicitly included contribution to climate goals as a key consideration in the identification of investment priorities in Departmental submissions. As part of the review of the Public Spending Code a review of guidance is being undertaken on

[1] A draft framework document for public consultation is expected to be published shortly. A final NAF must be submitted to government by 10 December this year in accordance with the provisions of the Climate Act 2015.

public expenditure appraisal and evaluation to ensure their suitability to capturing key costs and benefits of climate measures. Key issues concerning climate action also arise in relation to the commitment to align longer term capital plans with the spatial principles underlying the forthcoming National Planning Framework, which is discussed in the next section.

1.7 Beyond the Review of the Capital Plan: Longer Term Capital Planning

Following up on this review of the Capital Plan and building on the announcements to be made in relation to additional capital investment over the remaining period of the existing Capital Plan, the Government will publish a new 10 year National Investment Plan before the end of the year. This plan will assess and report on the framework required to underpin a longer term 10 year analysis of Ireland's infrastructure planning needs into the future, taking full account of the high-level framework for future development and investment in Ireland contained in the new National Planning Framework - *Ireland 2040 Plan* to be published by the Department of Housing, Planning & Local Government. The National Investment Plan will also play a central role, alongside the ongoing development of the National Climate Mitigation and Adaption Plans, in achieving a low carbon and climate resilient economy.

Chapter 2 sets out an assessment of the macroeconomic and fiscal context for public investment.

2. Macro-economic and Fiscal Context

2.1 Medium-Term Economic Outlook

2.1.1 Economic Growth

In statistical terms, the economic recovery is broadly based and the economy is growing at a steady pace. The recent National Income and Expenditure accounts produced by the Central Statistics Office (CSO) suggest that real GDP grew by 5.1% in 2016. The 2016 outturn was approximately 1 percentage point higher than projections late last year. GNP growth in 2016 was 9.6% as compared to the growth of 7.5% projected at the end of 2016.

However, significant caution should be applied in looking at both GDP and GNP growth figures as these have been substantially impacted by the re-domiciling of foreign owned/controlled assets in recent years.

As a robustness check on the underlying growth in the economy, other indicators such as employment growth (+3.3% in 2016), personal consumption (+3% in 2016) and tax revenue developments (+5% in 2016), all point to an economy that continues to perform solidly. The unemployment rate is projected to continue on a downward trajectory, with recent unemployment estimates showing a more rapid pace of decline than expected.

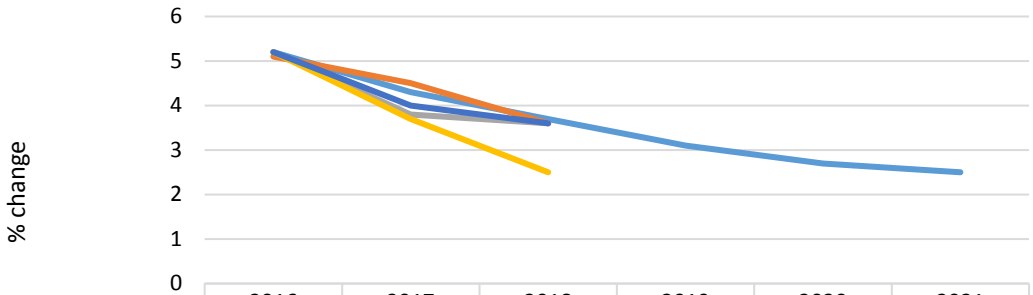
As illustrated in Figure 2.1, projections from forecasting bodies for Ireland's GDP growth in 2017 range between 3.7% - 4.5%, following growth of 5.1% last year[2]. The Department of Finance's forecast is for growth of 4.3% in 2017

The Department of Finance forecasts continued growth of 3.7% in 2018. Projections from the EC and the Central Bank of Ireland for 2018 are broadly in a similar range to the Department of Finance, with all three estimating real GDP growth in the region of 3.6% to 3.7% though the OECD forecasts a significantly lower growth rate of 2.5%.

International economic prospects are expected to improve over the next couple of years, but in a modest fashion according to the OECD. The IMF expects "stronger activity, expectations of more robust global demand, reduced deflationary pressures, and optimistic financial markets" to underpin the improvement in the global growth forecasts[3].

[2] CSO; National Income and Expenditure Accounts; July 2017
http://www.cso.ie/en/releasesandpublications/er/nie/niear2016/
[3] IMF; World Economic Outlook; April 2017
http://www.imf.org/en/Publications/WEO/Issues/2017/04/04/world-economic-outlook-april-2017

Figure 2.1: Real GDP Growth Forecasts



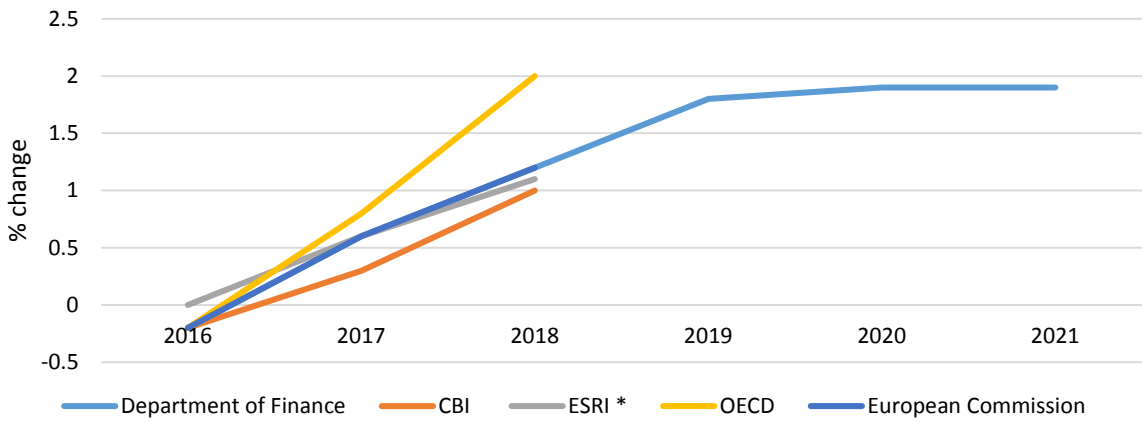
	2016	2017	2018	2019	2020	2021
Department of Finance	5.2	4.3	3.7	3.1	2.7	2.5
CBI	5.1	4.5	3.6			
ESRI	5.2	3.8	3.6			
OECD	5.2	3.7	2.5			
European Commission	5.2	4	3.6			

Sources: Department of Finance Stability Programme Update 2017; CBI Quarterly Bulletin No.3 2017; ESRI Quarterly Economic Commentary Summer 2017; OECD Economic Outlook Volume 2017 Issue 1; and European Commission Spring Forecasts 2017.

2.1.2 Inflation Projections

In terms of price inflation, some of the factors that have been holding back inflation, such as oil prices, are expected to subside. However, there is not expected to be a significant growth in inflation either in Ireland or the rest of the euro area. As illustrated in Figure 2.2 the OECD expect inflation levels to increase closer to the ECB target of 2% by 2018, however Irish institutions and the EC are forecasting significantly lower amounts out to 2018. The Department of Finance, who forecast over a longer duration, expect inflation levels to get closer to 2% by 2019.

Figure 2.2: HICP Growth Forecasts



Sources: Department of Finance Stability Programme Update 2017, CBI Quarterly Bulletin No.3 2017, ESRI Quarterly Economic Commentary Summer 2017, OECD Economic Outlook Volume 2017 Issue 1, European Commission Spring Forecasts 2017.

* ESRI forecast on CPI basis

2.1.3 Risks

International institutions point to areas of concern such as slow productivity growth and weak wage growth which would likely constrain GDP growth. In looking at the impacts on Irish trade from external developments, the OECD[4] predict that high labour costs and high external uncertainty, particularly around the Brexit negotiations, will act as a restraint on firm expansion. The uncertainty of the euro-sterling bilateral rate could also prove problematic for some firms.

The major source of uncertainty for Ireland relates to the trajectory for the UK economy. While data on economic performance from the UK has been relatively solid since the result of the referendum, it is possible that the expected negative impact of Brexit will impact over time once the terms of the UK's exit become clearer. It is also likely that planned investment spending may be postponed given the uncertainty created by the Brexit negotiations. The OECD previously highlighted that the 'downside risk to the outlook is that the Irish economy might be affected by Brexit more negatively than projected, although some firms could relocate to Ireland'[5].

2.2 Rationale for Increasing Public Investment

2.2.1 Impact of Public Investment on Growth

There is a strong consensus and an extensive evidence base that efficient public capital investment is central to economic growth strategy – described as the "wheels if not the engine" (World Bank, 1994)[6].

Economic theory and empirical research have shown that public investment can promote output growth, both in the short-run by increasing aggregate demand and in the long run by raising productivity and capacity. The OECD and IMF find that the productive capacity of the economy and its growth potential can be raised by changing the composition of expenditure in favour of capital spending.

Fournier (2016)[7] estimates that an increase by 1 percentage point in the share of public investment to primary expenditure (compensated by a reduction in other spending categories) can increase long-term GDP by almost 5%. Gemmell et al., (2015)[8] find that a permanent 1 percentage point increase in the transport and communication share in total spending is associated, on average, with a long run level of GDP per capita that is 2.2% higher. Similarly, Abdul, Furceri and Topalova (2015)[9] estimate that in advanced countries with high

[4] OECD; *Economic Outlook, Volume 2017 Issue 1*; Paris, 2017
[5] OECD; *Economic Outlook, Volume 2016 Issue 2*; Paris, 2016
[6] World Bank (1994), Annual Report, World Bank.
[7] Fournier, J. (2016), "The Positive Effect of Public Investment on Potential Growth", OECD Economics Department Working Papers, No. 1347, OECD Publishing, Paris. http://dx.doi.org/10.1787/15e400d4-en
[8] Gemmell, N., R. Kneller and I. Sanz (2014), "Does the Composition of Government Expenditure Matter for Long-run GDP Levels?", Working Paper, No. 10/2014, Victoria University.
[9] Abiad, Abdul, Davide Furceri, and Petia Topalova. 2015, "The Macroeconomic Effects of Public Investment: Evidence from Advanced Economies," IMF working paper, WP/15/95, International Monetary Fund, Washington, DC. https://www.imf.org/external/pubs/ft/wp/2015/wp1595.pdf

efficiency of public investment, a 1 percentage point of GDP increase in government investment raises the level of output by 0.8 percent in the same year and by 2.6 percent four years after the increase.

Empirical research also highlights the positive externalities or spillovers from public capital investment particularly in core infrastructure in increasing private sector productivity and crowding-in private investment.

2.2.2 Optimising Positive Supply Effects of Public Investment

The 2016 OECD Economic Outlook[10] stressed that productivity enhancing public capital investment can have a long-term positive supply effect, in addition to its short-term demand effect particularly if it catalyses private investment and boosts the economy's potential output. The OECD analysis paid particular attention to the optimal public spending mix which can produce sustainable and equitable growth finding that increased public investment would yield the highest gains and that Ireland would be one of the countries that could benefit the most from these effects. In specific terms the OECD projected that the Capital Plan should enhance growth in Ireland by raising public investment as a ratio of GDP by 0.5 percentage point and reversing past declines in public investment.

Several areas of public investment were found to be growth enhancing with stronger effects produced by capital spending on education, health, housing, transport and R&D. Public investment should therefore be focused on areas which generate positive externalities to society and crowd-in the private sector (Aschauer (1989)[11], Abiad et al. (2015)[12]). Areas such as education, health and R&D are in particular identified as being subject to 'market failure' in investment levels owing to the presence of positive externalities.

On the relationship between public investment and fiscal sustainability, Mourougane, et al. (2016)[13] estimate that on average governments in OECD countries could finance a 0.5 percentage point of GDP increase in investment for three to four years without raising the debt-to-GDP ratio in the medium term by increasing output levels more than nominal debt. On account of the interest rate-growth differential, the level and efficiency of public investment, the OECD project that Ireland could finance a 0.5 percentage point of GDP increase in capital expenditure for six years (the highest among OECD countries) without adversely affecting fiscal sustainably. This conclusion relies on the assumption that capital projects are appraised to have positive returns and raise the overall productive capacity of the economy.

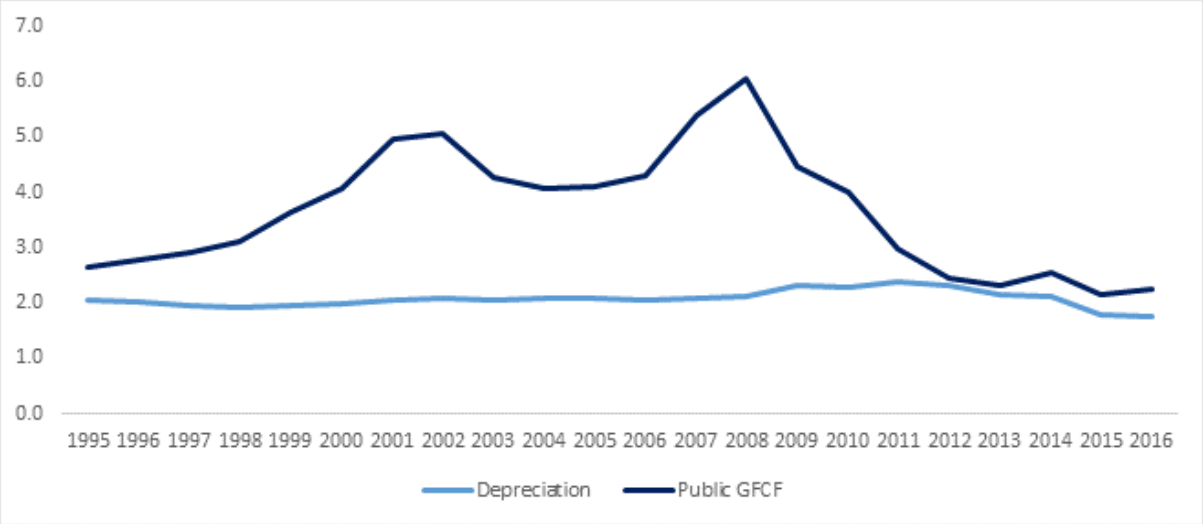
[10] OECD Economic Outlook, Volume 2016 Issue 2.
[11] Aschauer, D. A. (1989), "Does Public Capital Crowd out Private Capital?", Journal of Monetary Economics, Vol. 24, No. 2, pp. 171-188.
[12] Abiad, A., D. Furceri, and P. Topalova, "The Macroeconomic Effects of Public Investment: Evidence from Advanced Economies", IMF Working Paper No. 15/95.
13 Mourougane, A., et al. (2016), "Can an Increase in Public Investment Sustainably Lift Economic Growth?", OECD Economics Department Working Papers, No. 1351, OECD Publishing, Paris.
DOI: http://dx.doi.org/10.1787/a25a7723-en

2.2.3 Public Capital Investment and the Existing Stock of Public Capital

Economic research also makes clear that the effect of new public capital spending and the growth potential of public investment depends on the quality and quantity of the public capital stock in place. In general the lower the capital stock and the worse its quality, the higher the marginal productivity of capital, the higher will be the impact of additions and therefore the higher the economic benefit. Countries should aim, therefore, at reaching their optimal level of the public capital stock, that is, that level which would allow it to maximise its effects on economic growth. Fournier (2016) estimates that except for Japan, OECD countries can expect increasing benefits from public investment as the public capital stock is still not high enough. The paper estimates that the optimal level of public capital stock would be between 75% and 110% of GDP in OECD countries. This estimate is higher than previous findings which indicated a range for the public capital stock between 60% and 85% of GDP.

New investment does not necessarily increase the public capital stock as depreciation can offset it. Figure 2.3 shows how depreciation (consumption of fixed capital) and public Gross Fixed Capital Formation (GFCF)[14] have evolved from 1995 to 2016 in Ireland. Over this period, depreciation averaged 2.1% of GNP, but public GFCF outpaced it averaging 3.6% of GNP. As a result, this has meant that the public capital stock has been increasing overtime. However, since 2008 the positive gap between GFCF and depreciation has almost closed. It is also important to note that that measures of the public capital stock (which are model-based using the Perpetual Inventory Model and drawn from long-term times series of GFCF and several assumptions on asset lives and depreciation functions) are difficult to estimate and subject to a high-degree of uncertainty.

Figure 2.3: Depreciation and Public GFCF (% of GNP)



Source: Eurostat, CSO and DPER calculations.

[14] The Eurostat's measurement of Gross Fixed Capital Formation (GFCF) of general government consists of annual government investments, deducting disposals, in fixed assets. Fixed assets are tangible or intangible assets produced as outputs from production processes that are used repeatedly, or continuously, for more than one year. This is defined by and in accordance with the European System of Accounts (ESA 2010, page 73).

2.3 Efficiency of Public Capital Investment

2.3.1 Focusing on Outcomes rather than Expenditure

Simply increasing capital expenditure is not the policy objective of the Government. The Government's policy objective should be framed in terms of achieving specific sectoral outcomes, whether through the provision of infrastructure or other means, in a manner which achieves value for money.

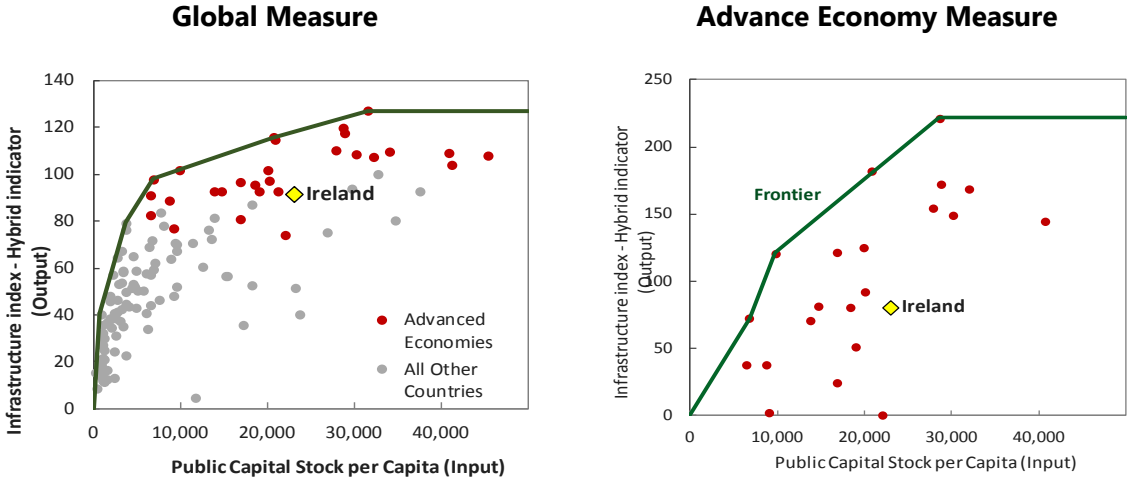
Furthermore, if the policy outcome is to be achieved through the provision of additional infrastructure, increasing capital expenditure will not, in and of itself, increase the quality or quantity of infrastructure supplied. In order to increase the output of infrastructure it is essential that public investment is efficient and delivered at least cost.

The economic benefit of public investment depends on its efficiency. The growth dividend from public capital investment can be significant but is eroded by inefficient capital spending. Not all public investment translates into productive capital. Only efficient public investment increases the economic and social infrastructure of a country and thus raises long-term output.

2.3.2 Previous Inefficient Investment

Ireland's record of achieving value for money from public capital investment is mixed. In noting the trend of significant capital expenditure increases leading up to the period to 2008 which represented an unprecedented level of public capital expenditure, Scott and Bedogni (2017) point to research calling into question the efficiency of this investment and whether value for money was achieved. They note that "the magnitude of public capital spend in the period preceding the downturn, particularly given the overheating and price inflation in the construction sector, has led to concerns that the link between analysis and policy-making during this period, particularly in relation to capital expenditure, could have been improved to ensure more appropriate investment priorities [Morgenroth (2014); Ruane (2012)]."

Figure 2.4 Efficiency Gap



The IMF's forthcoming Public Investment Management Assessment of Ireland produced the graphs in Figure 2.4 which seek to give a broad estimate of the efficiency of Ireland's infrastructure investment based on the results of the World Economic Forum's infrastructure perception survey. Where a country sits relative to the frontier gives a sense of the efficiency of the country in converting infrastructure spending into infrastructure outcomes. As the graphs illustrates there is evidence of a shortfall between Ireland and the efficiency frontier. While this is not intended to provide a precise estimate of investment efficiency, it does suggest that there is an opportunity to achieve greater value for money from our public capital investment over the coming years.

2.3.3 Improving Efficiency of Investment

In order to deliver such improvements it is crucial that there is a concerted focus on getting project selection right so that that the specific objective or outcome is achieved.

It is vital that individual projects are selected on transparent criteria and well-established methodologies. In Ireland, a number of expenditure reforms have been introduced in recent years to ensure a more efficient allocation of resources. These include an updated Public Spending Code and the establishment of the Irish Government Economic and Evaluation Service (IGEES).

IMF (2015)[15] research has highlighted the key role of strong institutions and effective public governance in helping to secure efficient public capital investment. For example, reliable ex-ante assessments of the projects' rates of return are crucial to ensure high returns materialise.

Implementation of the final recommendations of the IMF's Public Investment Management Assessment (PIMA) for Ireland carried out in July 2017 would be expected to play a vital role in identifying how institutions and public governance systems in Ireland, responsible for and related to planning, allocating and delivering public capital infrastructure might be strengthened. At a broad level, these recommendations include:-

- Improving the link between the planning and budgetary decision-making process;
- Focusing on value for money in relation to PPPs and tightening restrictions on PPP selection;
- Increasing the share of the budget directed toward maintenance;
- Reinforcing the appraisal and selection of major investment projects;
- Enhancing DPER's role as the gatekeeper and coordinator of the allocation and selection process;
- Strengthening the ex post assessment of major projects to improve the design of future projects; and
- Improving asset management and the allocation of maintenance funding by developing a central asset register of infrastructure assets.

[15] IMF, "Making Public Investment More Efficient," June 2015. http://www.imf.org/external/np/pp/eng/2015/061115.pdf

2.4 Maintenance and Steady State Funding Needs

It is also important that the focus is not solely on expenditure on new infrastructure, and that issues such as steady state funding for our existing infrastructure stock (e.g. local and regional roads, public transport, schools, Institutes of Technology, hospitals, etc.) and demand management are incorporated into capital plans, given their potential for higher returns than simply investing in new projects. Insufficient investment in maintenance can also give rise to serious challenges or even the failure of critical infrastructure. This is clearly seen in the historic underinvestment in Ireland's water infrastructure which has led to a comparatively high level of leakage from the network compared to neighbouring countries.

International research studies have also highlighted the importance of maintenance expenditure. Ageing infrastructure and insufficient maintenance and investment can undermine the quality and level of services provided by the existing capital stock. Despite the expected high rates of return, maintenance spending is often neglected in favour of building new infrastructure.

Inadequate expenditure on maintenance reduces the productivity of the public capital stock and as a result the productive capacity of the economy. On the basis of data for 48 U.S. states over the period 1978-2000, Kalyvitis and Vella (2014)[16] find that the cross-state spillover effects of maintenance expenditure on productivity are positive and even higher than the spillover effects of capital expenditure.

Failing to maintain the quality and performance of existing infrastructure increases the likelihood that more significant investment will be required in the future when core infrastructure needs to be replaced prematurely due to the lifespan being significantly reduced. Ensuring that appropriate levels of expenditure on maintenance can provide significant value for money in the medium to long-term. This highlights the need for a focus, particularly during project appraisals, on whole-of- life costs of infrastructure rather than just the cost of building it in the first place. A planned, evidence based programme of steady state investment addressing depreciation needs to be at the core of infrastructure spending. This also points to the case for greater integration and coherence of infrastructure planning and importance of the alignment of the NIP to the NPF.

2.5 Trend in Public Investment

Over the period 1995-2016, Ireland's public GFCF as a share of GNP averaged 3.6%. This compares to the EU15 average over the same period of 3.0% of GDP[17]. Over the same period, Ireland's public GFCF as a share of total Government expenditure averaged 8.5% while the EU15 average was 6.4% for the same period.

There have been two distinct phases to the trend in public capital investment in Ireland since the mid-1990s. During the lead-up to and during the Celtic Tiger era there was a sustained

[16] Albonico, Alice & Kalyvitis, Sarantis & Pappa, Evi, 2014. "Capital maintenance and depreciation over the business cycle," Journal of Economic Dynamics and Control, Elsevier, vol. 39(C), pages 273-286.
[17] The EU15 average is used as a comparator as the EU15 comprises a set of advanced economies in Western Europe that are broadly at the same stage of economic and social development.

increase in capital expenditure which grew rapidly from 2.5% of GNP in 1995 to what proved ultimately to be the unsustainable level of 6% of GNP in 2008 in light of the temporary nature of the tax revenue from which the capital investment was to be funded. It is now evident that public investment in physical infrastructure over the period 2000-2006 was accelerated at too rapid a pace with significant inflationary consequences for construction as well as project management difficulties[18].

With the onset of the economic and fiscal crisis, capital spending was subject to severe retrenchment from its peak level in 2008, falling in each of the next five years from 2009 to 2013. Capital consolidation measures taken during that period amounted to approximately €5 billion, making up more than a quarter of all expenditure adjustments. Subsequently, capital expenditure has increased every year since 2013 in nominal terms but by 2015 had declined to 2.1% of GNP, the lowest level since the 1990s.

Ireland was not an isolated case in terms of significant reductions in this area. Cuts to public investment were common in countries that undertook significant consolidation programs such as Spain, Portugal and Greece (Bloch, D. et al., 2016).

In terms of the sectoral allocation of public investment, Ireland has allocated more capital to economic affairs, environment protection and in particular housing than the EU 15 average over the same period[19]. Economic affairs (36%) and housing (20%) comprised over 50% of public GFCF over the period 1995-2015. Education was the next most significant recipient of public GFCF at 9.5%.

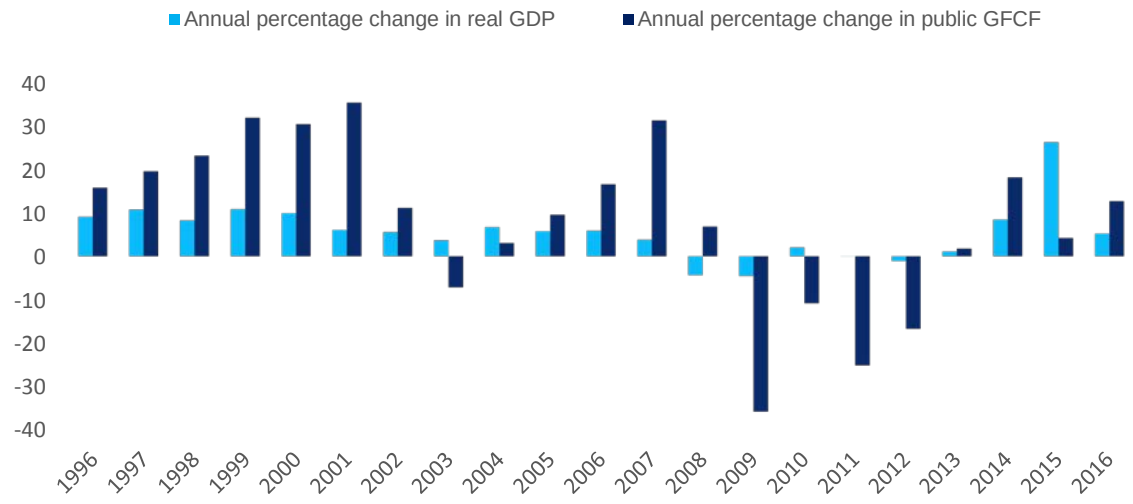
As shown in Figure 2.5, public investment has not only been highly volatile but it has also been very pro-cyclical, tracking growth in the economy[20]. For example, annual percentage changes in real GDP have been historically associated with annual changes in public GFCF in the same direction. Changes in public GFCF were also proportionally larger than changes in output.

[18] See page *x* of Executive Summary, ESRI (2006), Edited by Edgar Morgenroth and John FitzGerald, Ex-Ante Evaluation of the Investment Priorities for the National Development Plan 2007-2013

[19] The Classification of the Functions of Government (COFOG) classifies government expenditure into ten main categories (divisions known as the 'COFOG I level' breakdown). These divisions are further broken down into 'groups' (COFOG II level). For example, the groups for 'economic affairs' are: 'transport', 'communication', 'agriculture, forestry, fishing and hunting', 'fuel and energy', 'mining, manufacturing and construction', 'other industries', 'R&D economic affairs', 'economic affairs n.e.c.', 'general economic, commercial and labour affairs'

[20] For more detail on the conduct of Irish fiscal policy before and during the recent crisis see Bénétrix, A. S. and Lane, P. R. (2012), The Cyclical Conduct of Irish Fiscal Policy. The World Economy, 35: 1277–1290. doi:10.1111/j.1467-9701.2012.01483.xx

Figure 2.5: Annual Percentage Changes in Public Investment and Real GDP



Source: Eurostat, CSO and DPER calculations

The strong pro-cyclicality evident in public capital investment illustrated above highlights the essential requirement to ensure that increased public capital investment takes place in a manner that supports economic sustainability and minimises the risk of overheating. This is discussed further in Chapter 7.

2.6 Fiscal Framework for Public Capital Investment

2.6.1 EU Fiscal Rules

The totality of investment in capital expenditure as detailed in this review must be accommodated within the budgetary framework of the Stability and Growth Pact (SGP), which aims to safeguard public finances, achieve balanced budgets and sustainable levels of public debt over time.

At the end of 2015, Ireland exited the Corrective Arm of the SGP and fiscal policy then became subject to the provisions contained in the Preventive Arm from 2016 onwards. The core element of the Preventive Arm is the Medium-Term Budgetary Objective (MTO), which is a fiscal target based on the structural rather than the actual or headline government budget balance. This structural target is measured using the difference between government income and expenditure after one-off and cyclical elements of the public finances are accounted for.

In addition to the Structural Budget Balance (SBB) requirement, the Expenditure Benchmark comprises the second pillar of the Preventive Arm. This is designed to assist Member States to reach or maintain their MTO by putting a limit on expenditure growth year-on-year. Ireland is now required to limit expenditure growth in line with the medium term potential growth rate of the economy. However, as Ireland is not at its MTO target and there is a need to improve the structural deficit, a convergence margin is subtracted from the medium-term growth rate to assist in reaching to the MTO.

As part of the operation of the Expenditure Benchmark, Ireland sets multi-annual limits on General Government expenditure. In turn, this determines the multi-annual Departmental expenditure ceilings for both current and capital expenditure across all Exchequer expenditure Vote Groups, with future increases in public expenditure linked to potential economic growth. Under the Expenditure Benchmark it is also possible to increase aggregate expenditure beyond the medium-term growth rate by introducing additional discretionary revenue measures (i.e. introduction of new taxes/charges).

A detailed analysis of the EU Fiscal Rules including the particular difficulties in measuring the Structural Budget Balance for Ireland is set out in the Irish Government Economic and Evaluation Service Staff Paper EU Fiscal Rules and International Expenditure Rules (February 2017)[21].

2.6.2 Treatment of Capital within the Preventive Arm of the SGP

The EU Fiscal Rules do include a number of flexibilities to support increased public capital investment.

Capital Smoothing

In the first instance the Expenditure Benchmark does not factor in the full increase of spending in public GFCF (new building such as schools, hospitals, social housing, etc.) rather it averages the increase over 4 years (time t-3 to time t).

Investment Clause

Under the SGP, EU Member States subject to the preventive arm of the Pact can deviate temporarily from their MTO or adjustment path to accommodate increased levels of public capital investment. This is allowed provided that:-

- GDP growth is negative or GDP remains well below its potential;
- the deviation does not lead to an excess over the 3% deficit reference value and an appropriate safety margin in terms of the threshold for an excessive deficit is preserved;
- investment levels are effectively increased as a result; and
- the deviation is compensated within the timeframe of the Member State's Stability or Convergence Programme.

Over the remaining period of the Capital Plan, it is not projected that GDP growth in Ireland will either be negative or significantly below its potential level in which case Ireland would not be eligible to utilise the Investment Clause.

Structural Reform Clause

In addition to the Investment Clause there is scope to deviate from the adjustment path to the MTO by utilising the Structural Reform Clause under the SGP.

[21] http://igees.gov.ie/eu-fiscal-rules-and-international-expenditure-rules/

This allows a Member State to deviate by up to 0.5% of GDP provided that such reforms:-

- are major;
- have verifiable direct long-term positive budgetary effects, including by raising potential sustainable growth; and
- are fully implemented.

Under the SGP the European Commission will discount the costs of such reforms. The use of this clause is subject to an appropriate safety margin currently set as a Structural Budget Balance (SBB) no greater than -1%.

The Government's policy objective is to achieve Ireland's MTO of a SBB of -0.5% in 2018 and further improvements in the headline General Government Balance (GBB) and SBB in the years ahead in order to strengthen the resilience of Ireland's public finances against external shocks such as Brexit. While the Structural Reform Clause does provide flexibilities under the SGP in relation to capital investment it does also entail significant conditionality. Furthermore, the use of any such flexibilities must be incorporated into broader considerations relating to the achievement of fiscal targets, the appropriate level of capital investment, and the capacity of the economy to absorb increased levels of capital expenditure without leading to increased inflation and overheating of the economy. These broader considerations are dealt with in further detail in Chapter 7 of this report.

2.7 Public capital Investment and Socio-economic Objectives

Public capital investment plays a major role in supporting the delivery of key public services and promoting the achievement of key socio-economic objectives by connecting citizens to productive opportunities and serving as a catalyst for inclusive growth by supporting the greater integration of individuals and households into social and economic life.

For example, greater public investment in areas such as education and health can also have a positive impact on inequality.

- Households on low incomes are financially constrained and tend to consume less healthcare and have worse outcomes in terms of life expectancy. Equitable access to healthcare can increase productivity and earning potential, and thus decreasing income inequality.
- Better access to education allows individuals to invest in human capital, increases productivity, promote social mobility, and this benefits the overall economy.

Making good quality schools and hospitals more accessible to households on low incomes can, therefore, help to reduce inequality.

2.8 Public Capital Investment and Regional Development

The research literature also draws attention to the need to understand the contribution of public capital investment to the concentration of economic activity. There is broad consensus

that public infrastructure investment is an important aspect of a competitive location policy potentially impacting on an economy's or region's cost structure and competitiveness.

Research also highlights the scope for public capital investment to influence the regional dispersion of economic activity and influence the rate at which regions accumulate various productive factors, particularly infrastructure. If these factors affect productivity and the location of mobile private production factors, there will be room for supply-side policies to influence the regional dispersion of income (de la Fuente and Vives, 1995)[22].

2.9 Conclusion

This chapter highlights that there is a strong case for increasing capital spending in Ireland.

There is persuasive evidence, including empirical research studies from authoritative international organisations such as the IMF and OECD, which shows that increased public investment increases long-run economic growth by increasing productivity and potential output. The OECD identifies Ireland as one of the countries that would benefit the most from increased public capital investment provided that the projects funded are sound and generate an appropriate rate of return.

As set out in the preceding section, following the onset of the economic and fiscal crisis there was a major retrenchment in public capital investment. Under the Capital Plan to date there has been a recovery in public capital spending although Ireland is, currently, lagging behind both its long-term average level of public capital investment and current investment levels in other comparator EU Member States. The Government's proposals to address this shortfall are detailed in Chapter 7 of this review.

Notwithstanding the expected longer-term positive supply effects of increased public capital spending, the short-term demand effects of increased public capital investment need to be monitored closely and managed carefully to minimise overheating risks. At present, based on a range of indicators of potential imbalances it seems that the economy is not currently at risk of overheating, however the construction sector is foreseen as a potential source of overheating risk in future years. Moreover, there is uncertainty over the exact cyclical position of the economy. The overheating risk is also discussed further in Chapter 7.

Increased public capital investment can strengthen the resilience of the economy to weather the potential impact of Brexit and other changes in the global trade and investment environment on which Ireland's prosperity as a small open economy depends. Strengthening Ireland's infrastructure can play a key role in improving Ireland's competitiveness and boosting its attractiveness to foreign direct investment. The European Commission has consistently argued in its Country Specific Recommendations for Ireland that higher public investment could deal with some of the barriers to potential growth in the future.

[22] De la Fuente, A. and X. Vives (1995), 'Infrastructure and Education as Instruments of Regional Policy: Evidence from Spain', Economic Policy, 80. 13-51.

3. Progress on Delivery of the Capital Plan

This chapter sets out the progress achieved so far under the Capital Plan, through Exchequer funding, State Owned Enterprises, Public Private Partnerships and other non-Exchequer State investments.

3.1 Exchequer Capital Expenditure

Public capital investment relates to virtually every aspect of Government activity including for in particular:-

- Developing safe, efficient and sustainable transport;
- Providing the physical environment for equitable delivery of excellence in education;
- Encouraging and sustaining enterprise development;
- Investing in healthcare;
- Responding to housing need;
- Mitigating climate change and addressing climate resilience;
- Supporting public security, equality and justice; and
- Promoting a rich and healthy national life, through culture, heritage and sport.

The publication of "Building on Recovery" in September 2015 marked a watershed in Exchequer investment. The provisional outturn for capital expenditure in 2016 was €4.11 billion, a 10.1% increase on the 2015 expenditure outturn of €3.73 billion. This trend has continued in 2017, with a gross capital expenditure allocation of €4.54 billion, an increase of 10.6% or €435 million on the 2016 outturn. Figures available to end-July 2017 indicate that gross capital expenditure has increased by €298 million or 19.6% over the same period in 2016.

A breakdown of this expenditure in 2016 and projected expenditure for 2017 is set out in Table 3.1 on the following page, while details of the progress achieved to date in delivering the Capital Plan, since its publication in September 2015, are summarised in the remainder of the chapter for each of these key areas of national life.

A list of ongoing as well as planned infrastructure projects are set out in detail in the Major Capital Projects Tracker (available on the DPER website).

Table 3.1: Ministerial Gross Capital Expenditure 2016-2017[23]

	2016 Provisional Outturn *€, 000*	2017 Revised Estimates *€, 000*
Agriculture, Food & the Marine	158,567	238,000
Arts, Heritage, Regional, Rural and Gaeltacht Affairs	115,198	118,785
Children & Youth Affairs	23,328	25,620
Communications, Climate Action & Environment	97,304	170,964
Defence	100,746	74,000
Education & Skills	693,195	693,350
Finance	22,234	25,274
Foreign Affairs & Trade	6,590	11,000
Health	417,642	454,250
Housing, Planning and Local Government	467,021	704,500
Jobs, Enterprise & Innovation	547,356	555,000
Justice & Equality	145,249	180,148
Public Expenditure & Reform	140,967	150,943
Social Protection	13,592	10,000
Transport, Tourism & Sport	1,157,612	1,129,641
Total Gross Capital Expenditure	**4,106,601**	**4,541,475**

3.1.1 Transport

3.1.1.1 Overview

Exchequer-funded investment in the transport sector is largely framed by the Strategic Investment Framework for Land Transport. The plan commits to a €9.6 billion capital envelope for transport over seven years including:-

1. €3.6 billion in Public Transport;
2. €6 billion for investment in the national roads; and
3. €28 million investment for safety and security enhancements at regional airports.

3.1.1.2 Public Transport

As the economic recovery continues, the most significant requirements in the land transport programme relate to public transport provision – both current and capital. These relate to maintenance of the existing asset base and measures to enhance the public transport offering, both urban and rural. The capital allocation in 2016 was €347 million and the final

[23] Ceilings in Table 3.1 do not reflect the recent transfer of functions for the Departments of Culture, Heritage & the Gaeltacht, Rural & Community Development and Housing, Planning & Local Government. Further references to the Department of Arts, Heritage, Regional, Rural & Gaeltacht Affairs should be considered accordingly.

outturn was €355 million, due to the provision of an additional €8 million funding as part of a Supplementary Estimate to support flood repairs on rail lines.

The Phoenix Park Tunnel Link opened in November 2016. The total capital cost of the project was €13.5 million. The NTA and Transport Infrastructure Ireland (TII) started preparatory work on the planning and design of new Metro North. The Luas Cross City project remains on target for completion and commencement of passenger operations in Q4 2017.

3.1.1.3 Roads Programme

In 2016, over €700 million was invested in national, regional and local roads, with an additional €88 million allocated to support flood repairs and climate resilience of infrastructure. The 2017 allocation provides a total of €680 million, which includes a carryover of €3 million from 2016. The main focus of investment to date has been on maintenance and renewal of the existing network which is essential to protect the country's road assets.

While the construction programme can only fully ramp up from 2019, three projects (Naas Bypass widening, Sallins Bypass and road upgrades in the vicinity of Grangecastle Business Park) are at tender stage and are expected to start this year. Advance preparatory work is also underway on other major schemes to ensure that the projects are "shovel ready".

3.1.1.4 Aviation

There has been good progress to date in relation to the Regional Airports Programme with no significant issues arising in relation to existing commitments.

Table 3.2 Selection of Transport Projects included in Capital Plan to 2021

Roads	Public Transport
N5 Westport to Turlough	Metro North
N22 Ballyvourney to Macroom	First phase of Dart Expansion Programme
N8/N25 Dunkettle Interchange	New and replacement buses
N4 Collooney to Castlebaldwin	Further upgrading of Quality Bus Corridors
M7 Naas to Newbridge Bypass Widening	Completion of the Luas Cross City project
N56 Dungloe to Glenties	Completion of the Dublin City Centre Re-signalling programme
Sallins Bypass and Moycullen Bypass	The reopening of the Phoenix Park tunnel
N56 Mountcharles to Inver Road	The construction of a new Central Traffic Control centre for commuter and intercity rail.
N17/18 Gort to Tuam (PPP)	Ongoing maintenance to ensure the safety and efficiency of the rail network.
M11 Gorey to Enniscorthy (PPP)	**Sustainable Transport**
N25 New Ross By-Pass (PPP)	€100 million for smarter travel and carbon reduction measures (incl. Greenways)

3.1.2 Education and Skills

3.1.2.1 Overview

The plan provides €3.8 billion in direct Exchequer funding for investment in primary, secondary and third level education facilities. This investment is to enable delivery of 19,000 additional primary school places, 43,000 additional post-primary school places, replacement and refurbishment of existing accommodation, upgrade school ICT, as well as additional third level facilities and Higher Education Research Activities.

3.1.2.2 Primary and Post-Primary Schools

In 2016, a total of €529.8 million was spent on schools' infrastructure. Outputs from this investment include 50 large-scale projects that were completed; 32 in the primary school sector and 18 in the post-primary school sector. A total of 8,568 permanent school places, of which 7,392 were additional permanent places, were provided in 20 new primary schools and 2,158 additional permanent places were provided in 12 existing primary schools.

In the post-primary school sector, 10 new schools and 8 large scale extension or refurbishment projects were completed in 2016. These projects delivered a total of 9,310 permanent school places, of which 5,740 were additional permanent places.

In addition to this, a number of extension, replacement and refurbishment projects were completed, and 20 sites acquired to facilitate provision of 18 primary schools and 3 post-primary schools. Construction commenced on a further PPP schools bundle which will deliver 5 schools. Over €8 million has been provided through the ICT Infrastructure Grant Scheme 2016-2017, as part of the Digital Strategy for Schools and distributed across some 450 community, comprehensive and voluntary secondary schools.

3.1.2.3 Higher Education

The original capital allocation of €21.5 million for 2016 was fully disbursed, together with a further €10 million arising from savings in other subheads. The projects progressed included:-

- €10 million allocated across the country's 14 Institutes of Technology for essential improvement works and to renew outdated equipment, including upgrade of IT facilities.
- Support for the new Glucksman Library at University of Limerick, expected to be completed in the second half of 2017.
- €3.1 million allocated to Dublin City University towards redevelopment of the F Block on the St Patrick's campus, expected to be complete by the end of 2017.
- €4.6 million drawn down by Waterford Institute of Technology towards the completion of Carriganore Sports complex, due to be completed in 2017.
- Support for University College Dublin Confucius Institute building, with construction expected to be completed in 2017.
- Dublin Institute of Technology – progression of Grangegorman project.
- €2 million was paid to HEANet in 2016 in respect of the upgrade of systems and networks.

3.1.2.4 Research

A total of €40.6 million in research funding provided under the Capital Plan in 2016 was disbursed across three main areas as follows:-

- Irish Research Council (€34.15 million), to support and enhance human capital development, in particular at postgraduate and early stage postdoctoral researcher levels, and to encourage independent exploratory research.
- HEAnet (€5.45 million), to provide internet connectivity and associated ICT services to higher education and research organisations throughout Ireland.
- The Irish Centre for High End Computing (ICHEC) (€1 million), which provides high-performance computing services, support, education and training for researchers in higher education institutions and Irish enterprise.

3.1.3 Enterprise Supports

3.1.3.1 Overview

The Capital Plan allocates almost €4.3 billion to supporting new and expanding businesses across all of the key sectors of the economy. The Department of Jobs, Enterprise and Innovation receive €3 billion. Of this, in excess of €1.1 billion will be allocated to support business and jobs primarily through Enterprise Ireland, IDA Ireland and the Local Enterprise Offices. Over €1.25 billion is to be invested in the Agriculture sector.

3.1.3.2 Enterprise Ireland

In 2016 Enterprise Ireland supported companies delivered 25 (net) new jobs every day. EI client companies created 19,244 new jobs resulting in a net increase of 9,117 jobs. Almost two-thirds of these new jobs were outside Dublin, and all regions recorded increases in employment.

Enterprise Ireland's investment of €117 million in RD&I programmes, delivered activities including 101 High Potential Start Ups approved for support, with plans to create over 1,000 new jobs by 2019.

3.1.3.3 IDA Ireland

In 2016 the IDA supported client companies created 35 new (net) jobs every day. IDA Ireland client companies now directly account for almost 200,000 jobs (c10%) of total employment in Ireland. The 2016 results show the highest level of employment in IDA Ireland client companies in its 68 year history.

In the first six months of 2017, IDA supported clients have announced a further 11,000 new jobs.

In line with Programme for Government commitments, every regional location in Ireland benefitted from net job increases in 2016, with 52% of all jobs created by the Agency's clients last year based outside of Dublin.

3.1.3.4 Local Enterprise Offices (LEOs)

LEOs supported clients showed a continuing strong performance last year creating 7,883 gross new jobs across all regions of the country. This resulted in a net gain of an extra 3,679 new jobs, meaning that the LEOs added an extra 10 jobs per day across the regions.

3.1.3.5 Science Foundation Ireland

Science Foundation Ireland spent an Exchequer allocation of €162 million in 2016, supporting a range of activities including over 1,200 research collaborations with industry (Multinational corporations and Small-Medium Enterprises) building capacity across a range of enterprises.

3.1.4 Healthcare

3.1.4.1 Overview

The Capital Plan includes just over €3 billion for investment in health infrastructure, with the Department of Health identifying five main priority areas:-

i. Children and Maternity;
ii. Mental Health;
iii. Cancer Care;
iv. Social, Community and Primary Care; and
v. System wide investment in Information Communication Technology.

3.1.4.2 Major Project Developments Include:-

- The new Emergency Department at Limerick University Hospital has been completed and opened on 29 May 2017. The new facility is three times the size of the previous accommodation and has 50 single treatment rooms. It is designed to improve patient flow and patient privacy. It provides:-

    - isolation facilities;
    - separate paediatric accommodation;
    - separate areas for the treatment of major and minor injuries; and
    - improved diagnostics.

- In May 2017 the Taoiseach, Minister for Health and members of the Youth Advisory Council, cast the foundation stone for the new children's hospital.
- Primary care centres were delivered at nine locations in 2016. Up to 14 centres (including the 6 PPP locations) will be delivered in 2017.
- Construction of a new 120 bed ward block at the National Rehabilitation Hospital is expected to commence 2017.
- Construction the new radiation oncology facility at Cork University Hospital is underway. Assuming that there are no construction related issues encountered it is currently projected that the new facility could be fully operational by late 2019.

- The Mercer Institute for Successful Ageing (MISA) at St James's Hospital has been completed. Atlantic philanthropy provided significant funding (c€16 million) for the construction and equipping of this project.
- Construction of a new ward block at Our Lady of Lourdes Hospital should be completed by Q32017.

Table 3.3: Selection of Health Projects included in Capital Plan to 2021

Hospitals	Social Care
Children and Maternity	
The new National Children's Hospital (at St. James's)	Primary Care Construction Programme (26 centres by mid-2018)
The new National Maternity Hospital (at St. Vincent's)	National Rehabilitation Hospital Redevelopment
Mental Health	Mercer Institute for Successful Aging
The new National Forensic Mental Health Hospital (at Portrane)	
Cancer Care	**Equipment and ICT**
University College Hospital Galway Radiation Oncology Unit	ICT equipment (€412 million)
Cork University Hospital Radiation Oncology Unit	Equipment replacement programme (€190 million)

3.1.5 Housing

3.1.5.1 Overview

The Capital Plan provides almost €3 billion in Exchequer funding in support of the Social Housing Strategy. This has been augmented by a further €2.2 billion in support of the Rebuilding Ireland Plan, which aims to deliver 47,000 social housing units over the period 2016 to 2021.

3.1.5.2 Key Achievements

In 2016 alone, €935 million was expended on housing programmes with over 5,700 homes built, acquired or refurbished and over 12,000 Housing Assistance Payment tenancies established. Specifically, capital investment in 2016 delivered the following:-

- 665 new units were constructed and 1,960 units were acquired for social housing purposes;
- 2,308 vacant social housing units were refurbished and brought back to productive use under the National Voids Programme;
- Over 11,300 units were upgraded under the social housing retrofitting and energy efficiency programme;

- A range of large scale regeneration projects in Dublin, Cork, Limerick, Tralee, Sligo and Dundalk continued to be supported in 2016, including through the delivery of 81 new regeneration units;
- Over 8,000 capital grants were made to assist people to remain in their own homes for longer;
- 158 households with unsustainable mortgages were supported through the local authority and private Mortgage to Rent schemes;
- 56 additional Traveller specific units were delivered; and
- 400 dwellings were remediated under the Pyrite Remediation Scheme.

3.1.6 Responding to Climate Change

3.1.6.1 Overview

The Government's National Policy Position on Climate Action and Low Carbon Development establishes the fundamental national objective of achieving transition to a competitive, low carbon, climate-resilient and environmentally sustainable economy by 2050. In addition to the specific funding allocations outlined below, investment projects across many other areas of the Capital Plan will have a beneficial climate change impact.

3.1.6.2 Detailed Actions

- The Capital Plan has allocated €444 million for investment in energy efficiency and renewable energy programmes from 2016 to 2021.
- A new Affordable Energy Strategy published.
- Support is also being provided for a new Renewable Heat Incentive and for commercial and industrial energy efficiency programmes.
- Funding is being made available for the Electric Vehicle subsidy, Better Energy Homes scheme and the energy retrofitting of social housing units.
- €430 million has been provided under the Plan for flood mitigation initiatives (particularly Cork).

3.1.7 Justice and Policing

The Capital Plan includes investments in Garda ICT, Garda stations and fleet, the Forensic Science Laboratory and in courts and prisons. Progress is already being made, including:-

- Work on three divisional headquarters in Dublin (Kevin Street), Galway City and Wexford Town is expected to be completed in 2017;
- Investment over the last two years has delivered 874 additional Garda vehicles across a broad range of duties to support delivery of policing services;
- €87 million has been invested in Garda ICT over the past two years;
- In 2016, nearly €21 million was invested in enhancements to prison facilities; and
- New or refurbished courthouse accommodation is being provided through PPP at Cork, Limerick, Waterford, Wexford, Mullingar, Letterkenny and Drogheda. All 7 projects are to be delivered during 2017.

3.1.8 Culture, Heritage and Sport

3.1.8.1 'Ireland 2016'

The Government's national commemorative programme initiative, was delivered successfully. The Government approved and provided funding for nine flagship capital projects to serve as permanent reminders of the 1916 Easter Rising including:-

- The GPO Interpretative and Exhibition Centre;
- The restoration of Richmond Barracks;
- Development of a cultural centre at Teach an Phiarsaigh in Ros Muc;
- A Tenement Museum at No. 14 Henrietta Street scheduled to open in July 2017;
- The refurbishment and upgrading of Kilmainham Gaol and Courthouse;
- The restoration of the Kevin Barry Rooms at the National Concert Hall;
- The provision of a new Military Archives space at Cathal Brugha Barracks; and
- The Athenaeum, Enniscorthy.

3.1.8.2 Sports Grants

A capital envelope of over €285 million is available for sports facilities over seven years, targeted at both local and national level, which will deliver substantial benefits. In 2016:-

- €4.3 million was paid out under the Local Authority Swimming Pool Programme mainly in respect of energy efficiency grants to different pool projects around the country.
- Under the Sports Capital programme €39.6 million was paid out to 735 different sports infrastructure projects in 2016. This includes €13 million towards the redevelopment of Páirc Uí Chaoimh which is now completed (the total Government support for this project is €30 million to be paid out between 2016 and 2018).
- The total capital expenditure by Sport Ireland for National Sports Campus development in 2016 was €29.3 million. This included over €23 million to complete the National Indoor Arena which officially opened in January 2017.

3.2 Capital Expenditure by State Owned Enterprises

3.2.1 Overview

Over the period of the Capital Plan (six-year framework from 2016 to 2021), the wider State Owned Enterprise sector was projected to invest in the order of €14.5 billion. Approximately €12 billion of this investment is accounted for by the commercial State sector, primarily in core national infrastructure for energy, water and transport including:-

- State owned entities in the 'NewERA' sectors of energy, water, broadband and forestry - i.e. ESB, EirGrid, Bord na Móna, Coillte and Ervia (comprising Gas Networks Ireland and Irish Water);

- State owned entities operating in the transport sector - i.e. the CIE group of companies, daa, IAA, Shannon Group and the larger State Port Companies (Dublin, Cork and Shannon Foynes); and
- State owned entities operating in the communications, broadcasting and postal sectors, including RTÉ and An Post.

The remaining €2.5 billion non-Exchequer investment relates to non-commercial State bodies in areas such as enterprise development and housing.

3.2.2 Commercial State Sector - Progress to Date

During the first year of the capital plan, the commercial State sector companies have invested around €1.6 billion in core national infrastructure. This includes investment of €0.5 billion by the national water utility, Irish Water, in water infrastructure.

Table 3.4: Investment by the Commercial State Sector

	Projected Investment 2016-2021 EUR billion	**Level of Investment in 2016** EUR billion
Energy	5.8	0.8
Water	4.2	0.5
Other	2.0	0.3
Total	**12.0**	**1.6**

Energy

Around half of the investment to date (c€0.8 billion) has been on national energy infrastructure, including investment in:-

- the national electricity and gas networks: this includes maintenance of the existing networks along with network construction and reinforcement when needed, with such investment being subject to regulation by the Commission for Energy Regulation ("CER");
- power generation assets: investment in both conventional and renewable power generation assets noting that there is currently an emphasis on the need to deliver increased levels of renewable energy capacity in the context of Ireland's renewable energy targets; and
- the electricity market system: investment by the operator of the all-island Single Electricity Market ("SEM") in the design and development of new market systems to facilitate the wider integration of electricity markets across Europe in 2019. The SEM is jointly regulated by CER and the Northern Ireland Authority for Utility Regulation.

The Capital Plan identified some key energy sector projects expected to be progressed over the period of the plan. The current status of each is as follows:-

- North-South Interconnector: All statutory consents are now in place for the part of the overall interconnector located in Ireland. The part of the interconnector project located in Northern Ireland is the subject of a separate statutory process in Northern Ireland with the outcome of the Public Inquiry, held in February 2017, awaited.
- Grid Link (now known as the Regional Solution project): EirGrid announced in October 2015 that it is proceeding with a related set of independent regional projects rather than the previously proposed 400kV overhead line.
- Grid West: based on changes to the expected generation in the area, EirGrid is currently considering alternatives to meet the need for regional reinforcement.
- Smart Metering: the CER confirmed in early 2017 that there will be a delay in the roll-out of smart electricity meters under the National Smart Metering Project, the roll-out having been originally expected to start in 2018. This programme is overseen by the CER and key stakeholders include the ESB and Gas Networks Ireland.

Water

In 2016, Irish Water invested c€0.5 billion in infrastructure projects which focused on improving drinking water quality, reducing leakage, and improving the treatment of wastewater. Key investments during 2016:-

- Improving drinking water quality: a total of 37 public water treatment plants were removed from the Environmental Protections Agency's Remedial Action List in 2016 and Irish Water reduced the number of people on long-term boil water notices by 16,000 during the year. However, in demonstrating the precarious nature of many of the public water supplies in the country, they also reported that almost 98,000 people had a Boil Water Notice imposed during 2016 but subsequently lifted by year end following investment by Irish Water.
- Reducing leakage: over 77.3 million litres of water have been saved by the First Fix programme and since January 2014 over 890km of new or rehabilitated water pipes are also in place.
- Wastewater treatment: delivery of 66 new or upgraded wastewater treatment plants since 2014 noting in particular the completion during 2016 of the Shanbally Wastewater Treatment Plant in Cork Lower Harbour which has reduced the volume of untreated raw sewage being discharged into the harbour by 50%.
- Eastern and midlands water supply: following a series of public engagements which concluded in march 2017, a defined pipeline line route (173km) and location of supporting infrastructure, i.e. water treatment plant, pumping stations and terminal point reservoir have been defined. Submission of planning permission including Environment Impact Assessment to An Bord Pleanála is scheduled for Q1/Q2 2018.
- Greater Dublin Drainage: wastewater treatment plant, route selection including environmental studies have been completed. Public Consultation on location of regional bio solids storage facility is ongoing. Submission of planning permission is scheduled for Q2 2018.

Other

Much of the balance of spend in 2016 by the commercial State sector (c€0.3 billion) relates to investment in transport infrastructure - airports, ports and public transport.

3.2.3 Non Commercial State Bodies

In the non-Commercial State sector, in addition to their Exchequer funding provisions via the DJEI Vote, Enterprise Ireland and IDA Ireland invested in the region of €80 million combined of own-resource funds in capital supported projects and property related activities during in 2016. A similar level of enterprise agency own resource income is envisaged to be delivered via both Agencies in 2017.

In the area of Local Authority and Social Housing, surplus Local Property Tax (LPT) receipts were used by local authorities to fund investment in the sector of almost €78 million in 2016 while further funding of some €46 million, including Housing Finance Agency loans, was provided by local authorities for private house purchase loans and also for private house improvements, such as adaptation grants for older people and people with a disability. To date in 2017, LPT capital self-funding spend on housing services is almost €74 million, while a further €9.3 million has also been spent on private house purchase loans and private house improvements.

3.3 Public Private Partnerships (PPPs)

3.3.1 Overview

Under the PPP programme, the Government is delivering essential infrastructure across the Education, Health, Justice, Transport and Social Housing sectors, creating jobs and offering a major boost to the economy. The PPP model of delivery, which utilises private sector funding and spreads the cost of major infrastructure projects over 20 to 30 years, has allowed the Government to proceed with important infrastructural projects simultaneously, in parallel with the projects being delivered directly with Exchequer funding, at a time when public spending was constrained within the parameters of the European fiscal rules.

3.3.2 PPP Programme Phase 1

Since the Capital Plan was published in September 2015, 5 new PPP projects have reached financial close – the M11 Gorey to Enniscorthy motorway PPP; the Courts PPP Bundle; the N25 New Ross Bypass PPP; the Primary Care Centres PPP Bundle; and Schools Bundle 5, all of which are now in construction. In addition, new PPP schools opened for operation in 2016 under Schools Bundle 4 and the Dublin Waste to Energy Concession Project is now operational, while construction continues and works are now well advanced on the N17/N18 Gort to Tuam PPP.

That only leaves the Grangegorman/DIT PPP as the sole remaining PPP under Phase 1 of the Government's PPP programme announced in July 2012 which is yet to reach construction phase, but which is now expected to reach that stage in Q4 2017. In addition, work is also

progressing on plans for a 700 bed student accommodation project on the Grangegorman campus, which is being pursued as a fully commercial concession project.

3.3.2 PPP Programme Phase 2

Significant progress has also been made on Phase 2 of the Government's PPP Programme (social housing), announced in Budget 2015 and intended to deliver 1,500 social housing units. This PPP will be delivered in 3 bundles of 500 units, each with a capital value of c€100 million, which will be spread across a number of different local authority areas. Sites have been agreed and announced for the first two bundles: Bundle 1 consists of 6 sites in South Dublin, Kildare, Wicklow, Louth and two sites in Dublin City, while Bundle 2 consists of 8 sites located in Roscommon, Waterford, Galway, Clare, Kildare and 3 sites in Cork. Progress has also been made in agreeing the governance arrangements for the projects and on establishing the scope of the PPP contract. The procurement process for bundle 1 commenced in April 2017, with the procurement process for bundle 2 expected to commence in the second half of the year.

3.3.3 PPP Programme Phase 3

Progress has also been made on Phase 3 of the PPP Programme, approved by Government in 2015 and announced in the Capital Plan. The Department of Education is currently assessing proposals from HE institutions for inclusion in the Higher Education PPP programme, which is expected to focus on the IOT sector and likely to comprise 2 or 3 project bundles with an aggregate value of c€200 million.

The Department of Health has decided upon a community nursing home project bundle as its Phase 3 PPP project. The Department is currently working with the HSE to identify suitable sites for the project bundle.

Finally, the Department of Justice is progressing a proposal for the procurement of a new Children's / Family Law Courts complex, at Hammond Lane, by PPP as its Phase 3 project.

3.4 Other Non-Exchequer Funded investment

3.4.1 Overview

The Capital Plan also referenced a number of other non-Exchequer funding mechanisms that have the potential to provide additional sources of competitive loan financing to facilitate investment in capital projects. Progress has also been made in supporting new projects under these mechanisms, as set out below.

3.4.2 Ireland Strategic Investment Fund (ISIF)

Since the publication of Building on Recovery, ISIF has completed a range of investments supporting infrastructure and capital investment and has an active pipeline of further relevant investments in various stages of structuring and negotiation. ISIF has also refreshed its

strategy and now includes capital investment under the "Enabling Ireland" element of its strategy. Enabling Ireland seeks to future proof the foundations of the Irish economy.

The ISIF mandate is to "invest on a commercial basis to support economic activity and employment in Ireland". This double bottom line mandate, to generate both commercial return and economic impact, without compromising one for the other, influences the range of capital projects in which ISIF invests.

ISIF is required to invest in infrastructure and not simply spend on infrastructure – its capital must therefore be repaid, having generated a return commensurate with the risk profile of the underlying project. To meet this requirement, all projects must have an investable business case supported by a source of revenue sufficient to generate a commercial return.

ISIF capital must be additional to, and not crowd out, other sources of capital. As a result of much improved economic conditions and recovered appetite for Ireland across the capital markets, ISIF is not particularly active in areas of the market where investment capital is plentiful, e.g. availability based PPPs, regulated utility financing, tariff-supported energy projects, etc.

ISIF continues to seek out and complete investments where ISIF's capital can be truly additional. This additionality can accrue from ISIF investing at an earlier stage than the broader market, or for longer tenors, or in projects that require bespoke investment structures and solutions.

ISIF Investments to Date

Examples of relevant investments completed by ISIF since the publication of Building on Recovery are set out in Table 3.5:

Table 3.5: Investment by ISIF

Sector	Investee	ISIF €m	Description
Education	DCU	€54m	Long term debt solution unlocking EIB funding and supporting €230m campus development
Transport	daa Plc*	€35m	Strategic domestic partner for daa's long term bond issuance, supporting construction of new runway
Transport	Shannon Group*	€14m	Long term debt solution financing runway resurfacing – for crucial regional and national infrastructure asset
Data Connectivity	Aqua Comms*	$25m	Co-investment in company that has developed fibre optic cable linking USA, Ireland (Killala, Mayo) and UK
Energy	NTR Wind Fund	€35m	Co-investment in fund that is playing a key role in developing assets to help meet Ireland's 2020 targets
Energy	Greencoat Renewables	€76m	Cornerstone investor in a source of new long-term capital into the renewable energy sector
Healthcare	Valley Healthcare#	€21m	Invests in, develops, owns and operates Primary Care Centres under long term HSE leases

** : Investments under the Connectivity Fund, comprising proceeds of sale of Aer Lingus shares*

 # : Investment completed by Irish Infrastructure Fund, in which ISIF is a significant investor

Total investments completed to date by ISIF and its predecessor fund (NPRF) now total €376 million in infrastructure, €155 million in energy and a €450 million facility to support Irish Water. In addition, whilst residential and commercial property are not classified as infrastructure from an investment perspective, it is apparent that a robust and predictable supply of real estate is crucial in the context of underpinning economic activity and supporting domestic and foreign direct investment on a national and regional basis. ISIF has supported a range of investments totalling over €500 million which are aimed at increasing the supply of residential and commercial real estate across the country.

ISIF's Pipeline and Potential Future Investments

ISIF has an active pipeline of investments at various stages of development – some investments are fully approved and in the final stages of documentation, some are currently in detailed negotiation and structuring whilst others are at early stage discussions. Whilst

detail on pipeline investments remains subject to commercial confidentiality, headline information is as follows:-

Enabling Infrastructure for Residential Development: Provision of early stage financing for the development of roads, parks, drainage, etc. ISIF is working with private developers and Local Authorities to unlock large and strategic tracts of land for residential development.

Connectivity Based Investment: Investment in regional and national transport infrastructure as well as potential further investment in international fibre optic connectivity and data centres.

National Broadband Plan: ISIF has confirmed its availability to work with bidders for the NBP and to seek to provide investment, as required, in addition to that available from the capital markets.

Healthcare Investments: Potential investments in Nursing Home and Primary Care infrastructure to meet long term demographic trends.

Education: ISIF is working with Third Level Institutions and private developers across a range of potential investments in student accommodation. ISIF is also seeking to structure investments to support new educational infrastructure for third level institutions.

Decarbonisation / Climate Change: Investments in projects and assets – across power, heat and transport – which will help enable Ireland's transition to a low carbon economy. A range of investments where ISIF capital can supplement available capital and/or support development of new forms of investment.

Urban Regeneration: ISIF is exploring the potential for co-investing on a commercial basis in office development projects on sites currently in public ownership. The sites being considered in the initial phases are urban town centre sites in regional locations that are commercial in nature but where financing options are currently constrained.

Brexit: ISIF is assessing a range of Brexit scenarios and is developing an investment strategy such that commercial investments can be made which will enhance the robustness of key industries and sectors.

The above pipeline of investments will convert into a range of important investments in the infrastructure of the state over the next number of months and years. As the State assesses and realigns its capital investment priorities, ISIF's flexibility and ability to invest across sectors and asset classes means ISIF, in turn, can realign its focus as required. This will ensure ISIF can play a positive and productive role, whilst remaining consistent with its double bottom line mandate, in helping to deliver investment in critical infrastructure. Such investment will help underpin and future proof the foundations of Ireland's economy.

3.4.3 National Asset Management Agency (NAMA)

In order to meet its primary commercial objective to redeem all of its senior debt (€30.2 billion), NAMA manages assets intensively and invests in them so as to optimise their income-producing potential and disposal value. From inception to year end 2016, a total of €1.3 billion has been advanced by NAMA in capital expenditure for new and existing projects in the State. All of NAMA's funding is provided on a commercial basis and is sourced from within the Agency's own resources.

Residential Funding

As outlined in the Capital Plan, NAMA planned to fund the delivery of 4,500 new homes in the three years to end-2016. To end March 2017, NAMA has funded the construction of 4,840 new residential units in Ireland on residential development land securing its loan portfolio. An additional 2,064 units were currently under construction by NAMA-funded developers and receivers. Funding had been approved for an additional 1,114 units which have planning granted, but are not yet under construction. In addition, planning permission has been granted for an additional 7,475 units and applications have been lodged or will be lodged within 12 months for more than 10,000 units. NAMA continues to work with its debtors and receivers to identify, where commercially feasible, opportunities to bring forward new residential development and may be in a position facilitate the construction of up to 20,000 new residential units over the course of its life.

Dublin Docklands Strategic Development Zone

NAMA has also made a major contribution in driving the development of commercial and residential accommodation in the Dublin Docklands Strategic Development Zone (SDZ), where a number of assets secure NAMA loans. This contribution is evident not only in terms of project funding, if required, but also in bringing coherence, direction and drive to the delivery process.

NAMA originally had an interest in 15 of the 20 development sites in the Docklands SDZ, which represented 75% of the 22 hectares of developable land in the designated area. At year-end 2016, 82% of NAMA's original interests in the original Docklands SDZ were under construction, had received planning permission or had been sold with the benefit of planning permission. Construction had also commenced on 1.8m sq. ft. of office accommodation and 230 residential units which are due for delivery in 2018/2019.

National Asset Residential Property Services Limited (NARPS)

NAMA has also established National Asset Residential Property Services Limited (NARPS), to purchase suitable properties from NAMA debtors for onward leasing to local authorities or approved housing bodies on the basis of long-term, commercial arrangements. NAMA has invested or committed over €107 million to remediate and complete properties for housing and invested over €200 million to purchase houses and apartments through NARPS for social housing purposes. NARPS is both consistent with NAMA's commercial remit and also reduces the upfront capital required by local authorities to secure social housing units.

4. Departmental Submissions: Main Themes and Proposals

4.1 Introduction

As part of the Mid Term Review of the Capital Plan, the Department of Public Expenditure and Reform wrote to all Government Departments in January 2017 inviting submissions. These submissions were to include, inter alia, proposals for reprioritisation within existing allocations to reflect developments or changes in priorities since the Plan was published in 2015 and any new proposals to utilise the additional capital funding now available for allocation over the period 2018-2021.

As submissions were received from Departments, the Department of Public Expenditure and Reform commenced a process of engagement on a bilateral basis with Departments to discuss the proposals and priorities in their submissions.

Submissions outlining requests for additional funding were received from fourteen Departments. A number of common themes emerged from these submissions, as detailed below.

4.2 Additional Public Capital Investment Proposals

It is evident from the Departments' submissions that there is significant demand for additional investment across many sectors. Proposals for increased public investment received from Departments amounted to approximately €11 billion greatly exceeding the €4.1 billion available for allocation and highlighting the necessity for sustaining a substantial level of public capital investment under the 10 year National Investment Plan.

4.3 Brexit Risks

Addressing the potential challenges posed by Brexit was a theme which emerged from many of the Departmental submissions.

For example, the Department of Jobs, Enterprise and Innovation highlighted the need to protect the jobs and companies exporting to the UK in the wake of Brexit. According to the Department, the development of regional enterprise capability is a crucial part of the medium term response to Brexit.

Furthermore, the Department of Agriculture, Food and the Marine has identified the emerging challenges and opportunities arising in the agri-food sector as a consequence of Brexit. In a Brexit context, a number of initiatives to support the agri-food sector are under consideration including consideration of schemes for the food sector to be undertaken jointly with Department of Jobs, Enterprise and Innovation and its agencies.

In framing its priority areas for additional capital investment, the Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs has assessed the likely impacts of Brexit. A study conducted by the Department of Finance (*UK EU Exit – An Exposure Analysis of Sectors*

of the Irish Economy) highlighted that the Border region has the highest share of employment in the Food and Beverage Sector and found that the most exposed sectors account for a relatively high share of employment in such regions. Based on these findings, the Department is of the view that there is a manifest need for investment in the affected regions.

4.4 Climate Action

Departments were requested to outline in their submissions any impacts - positive and negative - of their proposals in the context of meeting Ireland's existing and forthcoming Climate and Energy goals. This request was widely reflected in the submissions subsequently received from Departments.

The Department of Communications, Climate Action and Environment stated in its submission that the Capital Review should ensure appropriate funding is in place to enable necessary investment for climate mitigation and adaptation, involving the energy, transport and agricultural sectors.

According to the Department Transport, Tourism and Sport, Government investment must support the transport sector's mitigation contribution through financing additional public transport capacity, the use of alternative fuels within the public transport sector and leadership and demonstration projects to improve visibility and uptake of alternative technologies.

Several Departments highlighted the significant costs and delivery complications associated with meeting energy efficiency standards set by the Government and the EU, particularly in relation to Nearly Zero Energy Buildings.

4.5 Regional Investment

It is crucial that future regional investment is based on the new National Planning Framework which is currently being prepared by the Department of Housing, Planning and Local Government.

Many Departments refer specifically to the proposals identified for investment with a regional focus. For example, the Department of Transport, Tourism and Sport stated in their submission that a significant ramping up of transport investment in regional cities is required, along with sustained investment in regional airports and the completion of six major projects on regional roads.

The Department of Jobs, Enterprise and Innovation identified funding requirements for regional development in the areas of entrepreneurship, clustering, innovation hubs and other enterprise infrastructure to drive and deliver new job creation projects.

The Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs outlined regional investment proposals in relation to rural development schemes as well as the LEADER programme which provides capital funding to support projects aimed at economic development and job creation, social inclusion and environmental protection in rural areas.

Finally, the Department of Communications Climate Action and the Environment reemphasised its priority to implement the National Broadband Plan.

4.6 Departmental Breakdown

A brief overview of each Department's[24] submission is summarised below.

Copies of the Departmental submissions are published on the Department of Public Expenditure and Reform's website.

4.6.1 Agriculture, Food and the Marine

The Department of Agriculture, Food and the Marine identified funding requirements necessary to deliver on the commitments set out in the Capital Plan. To ensure that all programmes are fully implemented, additional funding is required for various capital programmes and schemes already in operation, including: the Forestry Programme; Targeted Agriculture Modernisation Scheme (TAMS); European Maritime & Fisheries Fund (EMFF) Operational Programme, the remediation of Haulbowline Island and the development of the Fisheries Harbour Centre. The Department also requires additional expenditure for existing programmes, including: Non Commercial State Agencies; the Horse & Greyhound Racing Fund; smaller schemes and special projects; Department's Laboratories; office premises and IT infrastructure, as well as for new programmes. Additional funding requirements for new proposals are mostly connected to the emerging challenges arising from Brexit in the agri-food sector, the development of DAFM's facilities and a replacement research vessel for the Celtic Voyager.

4.6.2 Arts, Heritage, Regional, Rural and Gaeltacht Affairs[25]

The Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs submission highlighted that investment in the Gaeltacht, Irish language and the islands should be a key priority as it is critically interlinked with the priorities of investing in our culture and creativity and of supporting communities in rural Ireland. The Department has therefore identified three key areas for capital investment, including: the delivery of the Government's priorities for Rural Ireland as set out in *the Action Plan for Rural Development*, the delivery of the objectives of the *Creative Ireland Programme* and the implementation of the *20-year strategy for the Irish language 2010-2030*.

[24] Submissions reflect departmental structures prior to the recent transfer of functions, details of which can be found at http://www.merrionstreet.ie/en/News-Room/News/Nomination_of_Members_of_the_Government.html

[25] A subsequent submission was received from the new Department of Culture, Heritage & the Gaeltacht. The submission highlighted the Department's lead role in the whole of Government *Creative Ireland* initiative as the legacy project of the very successful Ireland 2016 programme.

4.6.3 Communications, Climate Action and Environment

The priorities of the Department of Communications, Climate Action and Environment remain the implementation of the National Broadband Plan (NBP) and the delivery of key energy projects. Additional funding requirements have been identified by the Department to meet increased demands for energy efficiency in public, commercial and residential sectors, as well as renewable heat incentives. With the strong interest in the pilot measures being introduced to inform policy post 2020, increased capital funding is required to assist in the overall effort to reduce CO2 emissions from the built environment, as well as funding for additional human resources to ensure maximum return.

4.6.4 Defence

Drawing on the priority commitments as outlined in the White Paper and in the Programme for Government, the Department of Defence has identified additional capital funding requirements for military equipment projects over the 2018-2021 period. These projects include: the replacement of LÉ Eithne with a Multi Role Vessel (MRV), replacement of the two existing Coastal Patrol Vessels, LÉ Ciara and LÉ Orla. Replacement of the CASA Maritime Patrol Vessel, mid-life refit of Naval Vessels and development of new Institute for Peace Support and leadership training. Not all projects will be completed within the 2018 – 2021 timeframe and some commitments will be carried forward into future years. In addition, ongoing capital funding is required to maintain routine capital acquisitions across a number of other key operational areas such as Military Transport, Communications and Information Technology, Ordnance, Engineering, etc.

4.6.5 Foreign Affairs and Trade

The Department of Foreign Affairs and Trade have identified capital requirements in three main areas. The Irish Passport Service require additional funding for the Passport Reform Programme which is divided into three phases and will be delivered over the period 2016 to 2019. As the Department is also actively pursuing central Government ICT solutions, there is an ongoing requirement to invest in equipment and systems to deliver capacity and efficiencies. In relation to the Department's global property portfolio, the construction, refurbishment and acquisition of properties is carried out as necessary to ensure that Irish Missions have the accommodation and promotional / representational capacity necessary to fulfil their responsibilities for hosting events that highlight Ireland as an opportunity for investment and promote trade, economic and cultural opportunities.

4.6.6 Education and Skills

Given the challenges of rapidly changing demographics and skills availability, the Department of Education and Skills considers it essential to advance capital spend across four broad areas: primary and post primary; higher education; further education and research. Additional requirements in the primary and post-primary schools sector are driven largely by demographics and the continuing demand for new schools places. While the majority of the Department's request relates to large scale projects and additional accommodation, funding is also sought for an expanded summer works scheme and for an annual minor works grant.

Priorities in the higher education sector are driven by the need to ensure the availability of talent as a driver of Ireland's competitiveness. Furthermore, with demographic changes rapidly feeding through to higher education, the Department has identified the development of a meaningful infrastructure programme as a top priority. In the delivery of an integrated system of education and training and addressing skills deficits in the economy, the Department proposes that a dedicated capital budget for further education be established. In the area of research, the Department has identified priorities that recognise the importance of supporting the full continuum of research – from frontier research to the creation and development of research-informed products, processes and services.

4.6.7 Housing, Planning, Community and Local Government

The Department of Housing, Planning, Community and Local Government is seeking additional funding across 8 programmes: Planning; Housing; Community; Local Government; Water; Met Éireann and the upgrade of the Custom House. To support the Government's Action Plan on Housing and Homelessness, €2.2 billion of additional capital expenditure has already been pre-committed to the area of housing since the Capital Plan was published in 2015. Further to this, the Department's submission has prioritised Urban Renewal which will target disadvantaged urban communities, other social regeneration initiatives already underway, as well as the Town and Village Renewal Scheme operated by the Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs. In addition, another top priority as identified by the Department is to allocate additional funding to the Local Infrastructure Housing Activation Fund to enable the accelerated delivery of housing on key development sites and to improve the economic viability of new housing projects in Dublin and in urban areas of high demand for housing. Other projects prioritised include: Pyrite Resolution; Capital Libraries Investment Programme; Communities Facility Scheme; Modernisation of the Electoral Register Process: Rural Water Programme and Lead Remediation Programme and a range of Met Éireann targeted programmes.

4.6.8 Jobs, Enterprise and Innovation

The Department of Jobs, Enterprise and Innovation's submission emphasised that the need for the economic recovery to be felt across all regions of the country is paramount. In the Programme for Government, an additional commitment for regional jobs was provided to enterprise agencies to enhance regional development. The Department has identified additional funding requirements to deliver on this commitment. According to the Department the Enterprise Agencies also need to be sufficiently resourced so that they can respond to the significant threats that Brexit poses to many Irish companies dependant on the UK market. The Department has requested increased annualised funding for Regional Development, Brexit and new Global Challenges and Innovation 2020. Delivering on the Government's stated objective to transform the enterprise capacity across the regions, the Department has identified funding requirements for new regional initiatives in the areas of entrepreneurship, clustering, innovation hubs and other enterprise infrastructure to drive and deliver new job creation projects. The Department has also prioritised the need to prepare and respond to the challenges posed by Brexit, particularly in relation to indigenous enterprises and enhancing their competitiveness and new Global Challenges. The Department's submission

states that investment in innovation is also required in order to protect and sustain Ireland's future economic and societal development.

4.6.9 Justice and Equality

The Department of Justice and Equality has identified on a prioritised basis, capital expenditure that is either new or seeking to be re-profiled for spending on a different timeframe, within its eight votes. The majority of the additional resources sought relate to An Garda Síochána, particularly for Garda accommodation/building projects. The requirements for the smaller votes mainly relate to ICT or office accommodation. The Department has also proposed some re-profiling, mainly for the Prison and Garda HQ stations.

4.6.10 Office of Public Works

The Office of Public Works has identified reprioritisation of resources within the existing capital allocation as well as identifying future investment proposals that will enhance and improve utilisation of State owned capital infrastructure. The proposals for capital investment take account of the key strategic objectives of the OPW and support Government priorities, including commitments in *A Programme for a Partnership Government* and in the *Programme for Rural Development.* In particular, the submission identifies certain re-prioritisation of allocations within Flood Risk Management and a coherent framework of capital investment over the period 2018 to 2022, mainly on the Estate Management Programme required to undertake work related to Government priorities and to ensure capacity to address growing building fabric deterioration and health and safety issues. Additional capital investment proposals are identified for Flood Risk Management (mainly related to Home Relocation measures) and for Estate Management, including investment in our Built Heritage.

4.6.11 Public Expenditure and Reform

The purpose of the capital expenditure undertaken by the Department of Public Expenditure and Reform is to deliver greater effectiveness and efficiency across the Civil and Public Service and includes the National Shared Services Office (NSSO) and the Office of Government Procurement (OGP). The Department has identified investment requirements for a new Government Data Centre, for the Government Cloud Platform and for a Common Applications Platform Infrastructure (ePQs, etc.). Similar approaches arise in relation to the NSSO and OGP Votes, which include a proposal for a major investment to establish a Financial Management Shared Service in order to enable the delivery of economies of scale and improved management information across the Civil Service in the medium term.

4.6.12 Social Protection

According to the Department of Social Protection's submission, over the past number of years the Department's role, and the demand for the services it provides, has changed significantly. Critical components in this change process have been the roll out of the Intreo office network and a major programme of development of its IT capabilities. Supporting this development, the Department is seeking additional capital funding over the remaining period of the capital plan for refurbishing and/or replacing existing local office accommodation to meet the

requirements of the Intreo service and other related support activities, and a capital programme for the continued upgrading and modernisation of IT infrastructure.

4.6.13 Transport, Tourism and Sport

The Department of Transport, Tourism and Sport has identified an overall package of measures over the remainder of the Capital Plan, which focuses on areas that are supported by direct Exchequer investment. In particular, the Department has identified various investments in roads related programmes, to address safety measures and the acceleration of a number of roads projects that were identified in the existing Capital Plan. The Department is of the view that investments in roads will alleviate congestion and facilitate enterprise development, as well as complementing measures in the public transport sector. The Department has identified additional investment requirements in order to ramp up transport investment in regional cities and to allow for the continuing transformation in public transport aimed at addressing congestion pressures in the Greater Dublin Area (GDA) and elsewhere, as well as addressing rising carbon emissions. The Department has also asked for additional funding for a new Greenways programme, enhanced investment in tourism (in light of Brexit challenges ahead) and sustained investment at regional airports to enhance security and safety levels.

The Department has proposed increased investment in sport, including: an annualised Sports Capital programme; completion of key elements of the National Sports Campus; support preparations for the Rugby World Cup 2023 bid and the introduction of a new large scale sports projects fund to address regional needs for top class sports facilities.

4.6.14 Health

The Department of Health's submission highlighted the need to complete legal contractual commitments and its current work programme in relation to: the New Children's Hospital; the National Forensic Mental Health Services Hospital at Portrane; the National Plan for Radiation Oncology at Cork University Hospital and University Hospital Galway; the Primary Care Centre Programme; the relocation of the National Maternity Hospital; and, the long stay residential accommodation programme for Older People and Persons with a Disability. The Department has identified cost pressures from increased tender prices as well as from the requirement of all publically owned and occupied buildings to be nearly-zero energy (NZEB) by end 2018. The Department has also identified a deficit in the clinical equipping area as well as an opportunity from increased investment in healthcare ICT/eHealth. The Department's submission goes on to state that there are a number of projects which are currently funded to design stage only, that they have commitments which were made in the Programme for Partnership Government, that a significant proportion of health building stock is generally unsuitable as a contemporary care setting, and that there are existing and new health strategies for which there is no scope within the current capital envelope to commence.

5. Public Consultation

5.1 Public Consultation – Background

On 31 March, a public consultation was launched by the Department of Public Expenditure and Reform (DPER). The deadline for submissions was 30 April 2017.

The objective of the public consultation was to ascertain the views and opinions of stakeholders from across industry, local government, academia, civil society and the wider public on what our national infrastructure priorities should be in the context of the Mid-Term Review of the Capital Plan. A list of submissions is presented here.

A public consultation guidance document was published on the DPER website, along with an online questionnaire to be completed by participants. The document set out the context of the Mid-Term Review of the Capital Plan, as well as identifying key factors for consideration when making submissions.

5.2 Submissions

A total of 95 submissions were received via post and/or email (a list of respondents to the consultation, excluding individual responses, can be found here). Of these 95 submissions received:-

- 18 submissions were made by county and city councils and assembly type bodies;
- 8 submissions were made by chambers of commerce;
- 4 submissions were made by political parties;
- 23 submissions were made by organisations and research bodies across various industry sectors; and
- the remaining 42 submissions were received from members of the wider public.[26]

5.3 Questionnaires

Separately, a total of 71 respondents accessed the online questionnaire and 3 hard copies of the questionnaire were submitted.[27] Of these 71, 41 respondents completed the online questionnaire, 12 of which were answered by individuals on behalf of a named organisation/research body, while the remaining 29 were answered by members of the public. Of the 12 online questionnaires submitted on behalf of an organisation, 5 organisations had also made a written submission via post and/or email.[28]

[26] As respondents were also given the option to submit a questionnaire, many organisations opted to include a questionnaire to accompany their submission.

[27] 1 of the respondents who posted a hard copy of the questionnaire also completed the online questionnaire.

[28] A further 11 respondents partially completed the online questionnaire, 8 of which solely identified their considerations for the Mid-Term Review of the Capital Plan. The remaining 3 respondents went on to answer the questions that followed, in which they prioritised the additional capital expenditure and detailed specific project/programme for inclusion.

5.4 Summary of Contributions

Responses received through email and/or post and through the online questionnaire during the public consultation process have been analysed by DPER (a summary of the answers submitted by respondents to the questionnaire is available here). Respondents placed particular emphasis on identifying the long-term infrastructural needs and priority areas for action.[29] In identifying the priority areas, the public consultation process collectively highlighted a number of significant cross-sectorial issues:

5.4.1 Increased Level of Investment Required

There was a strong view among a number of respondents that the review of the Capital Plan represents an ambitious programme of work within a constrained budget. Some respondents considered the present level of funding set aside to be inadequate to address the infrastructural needs, arguing that public investment is falling short of the levels necessary to meet the economic and demographic pressures currently facing the country. Some respondents also reflected on the deficiency in capital investment compared to other countries and stressed the need for long-term investment planning. Some respondents also commented on the need for a higher % of GDP spend on capital projects. The view was expressed by 12 respondents that an increased level of capital investment in high quality infrastructure is required: to address infrastructural bottlenecks, to enable economic and domestic growth and to boost our competitiveness.

5.4.2 Alternative Funding and Financing Options

A number of respondents proposed exploring and seeking alternative sources of funding to provide for this proposed higher level of investment in infrastructure. Among the alternative funding measures cited were:

Flexibility on Fiscal rules

7 respondents called for a review and exploration of the flexibility of the EU fiscal rules, particularly in the context of a hard Brexit.

Use of the Rainy Day Fund

2 respondents proposed that the Rainy Day Fund be scrapped and that such funds be used for investment in capital infrastructure.

Use of Public Private Partnerships

Some respondents proposed that there should be an increase in the level of PPPs for delivery of large scale infrastructure projects. 5 respondents suggested that PPPs should be used as a

[29] The questionnaire was divided into three sections: Considerations for the Mid-Term Review of the Capital Plan (2016-2021), Prioritisation of Capital Expenditure and selection of projects/programmes and Long-term Capital Investment Framework (10 years), which consisted of a structured set of questions that collected both qualitative (including participant comments) and quantitative data (including category ranking metrics).

key delivery mechanism for infrastructure funding. Such respondents advised that the government should commit to maintain an attractive project pipeline by adding more PPP projects. Removing the cap of 10% of capital expenditure on PPP projects was also raised as an issue to be considered by government, with respondents asserting that it limits Ireland's potential in addressing the current infrastructural deficits. However, 1 respondent asked for assurance that PPPs are affordable over the long-term.

Private Funding Options

9 respondents encouraged the government to investigate any funding opportunities available to enable appropriate allocations from the exchequer, including: EIB funding; ISIF funding; Junker Plan; Europe Facility and EFSI funds. In particular, 8 respondents were in agreement that the government needs to deepen engagement with the EIB.

Sale of State Assets

5 respondents proposed that the proceeds of any future sale or disposal of State Assets should not be ring-fenced for debt repayment but instead used to increase the level of public investment available to fund future infrastructural projects.

Many of the respondents on this issue considered that if additional finance is not made available, there will be increased costs to the economy in the short, medium and long-term. 1 respondent asserted that in the context of Brexit, the government should be open to joint investments with the new Northern Ireland Executive.

5.4.3 Establishment of an National Infrastructure Commission

There was support from 7 respondents for the concept of an independent infrastructure commission, with core responsibility for analysing and overseeing the future infrastructural needs for the economy and society, and to ensure that they are consistent and planned.

5.4.4 The Implications of Brexit

One of the main issues raised by respondents included the specific effects of Brexit and the subsequent factors that need to be considered. 12 respondents expressed concern about North-South relations, post-Brexit negotiations in their submissions. Similarly, in the questionnaires, respondents were of the view that a restricted border will prove damaging to the economic and social fabric of the Northwest and border region. Therefore, respondents were particularly fearful that the return to border and customs controls will affect the free movement of people and goods and might adversely impact the way Irish businesses trade with the UK.

In their submissions, many respondents cited suggestions for tackling this issue. More specifically the questionnaire asked respondents to stipulate the sector they felt is most in need of increased capital expenditure as a result. To tackle this issue, in their submissions respondents called for the strengthening of air and sea ports and for improvements to road infrastructure in the border region to mitigate any potential loses to productivity, whilst also increasing road quality in a broader sense. Although the sectors highlighted in the questionnaire were broadly the same as those referenced in the submissions, some additional

sectors were suggested by respondents. In particular, respondents to the questionnaire proposed that enhanced connectivity between Ireland and the rest of the EU is required. These respondents also pointed to the impact Brexit will have on Irish tourism and suggested improvements to road and rail connections, as well as the development of more direct links to Continental Europe. Respondents are also worried about the effect of tariffs and customs on Irish Food and Agri businesses and commented that agriculture needs to be protected and assisted to cope with the inevitable fallout from Brexit.

5.4.5 Alignment of the Review of the Capital Plan with the National Planning Framework (NPF) and Balanced Regional Development

There was strong support from respondents that the review of the Capital Plan should be closely aligned to the National Planning Framework (NPF) in its investment priorities, as well as its timeline. 7 respondents commented that the Mid-Term Review of the Capital Plan should clearly define strategic infrastructure that underpins the objectives of the NPF. Furthermore, with these objectives in mind, some respondents believed that capital investment needs to be planned and delivered over a longer timeframe.

It is also interesting to note that a theme which emerged from the Department of Housing Planning and Local Government's consultation for *Ireland 2040 – Our Plan: The National Planning Framework* was that the Ireland 2040 Plan should inform strategic national infrastructure investment to better influence patterns of development and contribute to wider national objectives in areas such as transport, water resource management, waste management, climate action, communications and energy network roll-out and social infrastructure development in areas such as health, education and community facilities.

Many respondents indicated that the projects/programmes prioritised should reflect on the need to future proof the country and industries and rebalance the current social infrastructural deficit throughout Ireland. Respondents also commented on the requirement for proper decentralisation and creating a counterbalance to Dublin.

5.5 Sectoral Issues

The consultation document asked respondents to identify priority areas of action for consideration. Some responses focused solely on addressing sector specific requirements relevant to the respondents, whilst other responses reflected the needs of the wider society as a whole. In summarising the key themes and comments emerging from the public consultation process, the following range of interdependencies between sectors were identified as important.

Transport

85 submissions highlighted transport infrastructure (including: public transport, roads, rail, ports/harbours, airports, bridges, canals/waterways and greenways/cycleways) as a priority area. In the online questionnaire, 19 respondents prioritised 'road transport' and 14 respondents prioritised 'public transport' as the sectors most in need of additional capital expenditure. In addition, the 3 respondents who submitted a hard copy of the questionnaire ranked transport as the highest priority. In general, road projects were deemed to be the

highest priority, with many respondents identifying particular road projects for inclusion. The most commonly referenced road projects were the M20 Limerick to Cork Motorway and the N2/A5 dual carriageway from Dublin to Derry. Other major projects such as the Metro North and DART Underground/extension were also specifically referenced in a number of submissions.

Communications/Connectivity

In the online questionnaire, 3 respondents ranked 'broadband' as the sector of the highest importance for additional capital expenditure. Additionally, 25 respondents stressed the importance of investing in the sector in their submissions. The majority of respondents considered broadband to be a national priority and called for rapid roll out of high speed broadband in all areas of the country. In particular, responses highlighted the significant imbalances experienced in digital services and focused on the level of access and capabilities of broadband in rural areas. Some respondents were of the view that the full funding under the current Capital Plan to 2021 should be front-loaded and made available to complete the provision of high quality broadband provision. Many respondents also referenced the 'blackspots' and inadequacies of phone coverage.

Housing

In the online questionnaire, 5 respondents prioritised 'housing' as the sector that requires additional capital expenditure. Furthermore, 24 respondents asked that the Mid-Term Review of the Capital Plan address the critical shortage and increasing demand for appropriate and accessible housing in their submissions. In recognising the increased pressures in both rental and purchase markets, respondents suggested that provisions must be put in place to increase accessible housing supply for all. In particular, many responses referenced the need for adequate social housing provision and 2 respondents specifically referenced the requirement for the provision of adequate Traveller Accommodation. Many respondents called for improved housing provision and availability in areas of good physical and digital connectivity. Some respondents also recommended accelerating growth in larger regional cities in terms of accommodating housing requirement.

Education

Only 1 respondent ranked 'education' as the sector of the highest importance for additional capital expenditure in the online questionnaire. However, in the submissions, 24 respondents stressed the need for investment in appropriate skills and education infrastructure. Of these 24 respondents, 1 respondent asserted that any investment must include consideration and inclusion of people with disabilities. The majority of responses highlighted the significance of investing in higher education and called for more urgent funding in order to maintain and enhance standards. Some respondents pointed to the demographic demands currently being placed on primary level education with a respondent noting that investment is required to alleviate the demographic pressures as these young people move into secondary and third level education. Other respondents commented on the need to ensure that there is a continued alignment between future skills requirement and provision of educational and training offerings to ensure upskilling across all skill levels. Many respondents also referenced specific regional projects which require investment.

Energy

In the online questionnaire, 2 respondents ranked 'energy' as the sector of the highest importance for additional capital expenditure. However, 22 respondents asked for increased capital investment in the energy sector in the submissions. As highlighted by respondents, support is vital: to ensure access to affordable, reliable, sustainable and modern energy for all; to ensure adequate capacity to support enterprise locations; to facilitate renewable industries; to develop energy infrastructure and to meet energy efficiency commitments. Many respondents pointed to the importance of protecting Ireland's energy security by investing in improving and expanding Ireland's grid infrastructure, as well as in alternative sources of sustainable energy.

Health

Of the 47 respondents who prioritised a sector in the online questionnaire, only 1 respondent prioritised 'health' as the sector most in need of additional capital expenditure. However, 15 respondents called for investment in the Health Sector. There was general support among respondents for the need for good access to primary, secondary and tertiary health services. Respondents commented on the need for investment to facilitate the development of appropriate healthcare facilities, including facilities to support innovation in the healthcare sector and to cater for the expected growth in population. A range of respondents referenced specific projects for inclusion, including the New Children's Hospital, the National Maternity Hospital, aged care facilities, primary care centres and regional hospitals. In particular, respondents asked for additional capacity in emergency departments and pointed to the requirement for primary care centres. On acute bed spaces, a respondent commented that the provision of acute bed spaces based on demographic need should be projected, planned and provided for.

Water and Wastewater

18 respondents commented on the requirement for large-scale investment in water infrastructure. Respondents asked for significant upgrading of water infrastructure and continued investment in maintenance and modernisation works in the water network to secure water quality and address wastewater issues. In general, the main issues as identified by respondents included: reducing leakage and eliminating disruptions to water supply (boil notices and untreated discharges).

Many respondents stressed that many towns and villages do not have adequate water supply and wastewater treatment services. On wastewater, a respondent pointed out that expenditure on wastewater treatment must be at the necessary level to meet the obligations of the Urban Wastewater Treatment Directive and the Water Framework Directive.

Flood Defences

7 respondents asked for increased investment in measures to address flooding. Drawing on the impact of recent floods in parts of the country, respondents considered that such infrastructure is strained and in particular, asked for adequate support and insurance given to affected households. Many responses pointed towards the implementation of a flood relief plan and the building of flood defences. On localised flooding, a respondent suggested that small schemes to tackle local flooding issues must be supported as when combined, such floods have a significant effect on a large cohort of the population.

Agriculture

6 respondents commented on the need for investment to fund the future and existing agricultural industry and the rural landscape that supports it. Of these 6 respondents, 3 respondents directly referenced the potential challenges faced by the onset of Brexit on the Agri-food sector and suggested that measures need to be considered to mitigate against any associated negative consequences. Of particular concern is the potential impact of Brexit on food exports to the UK.

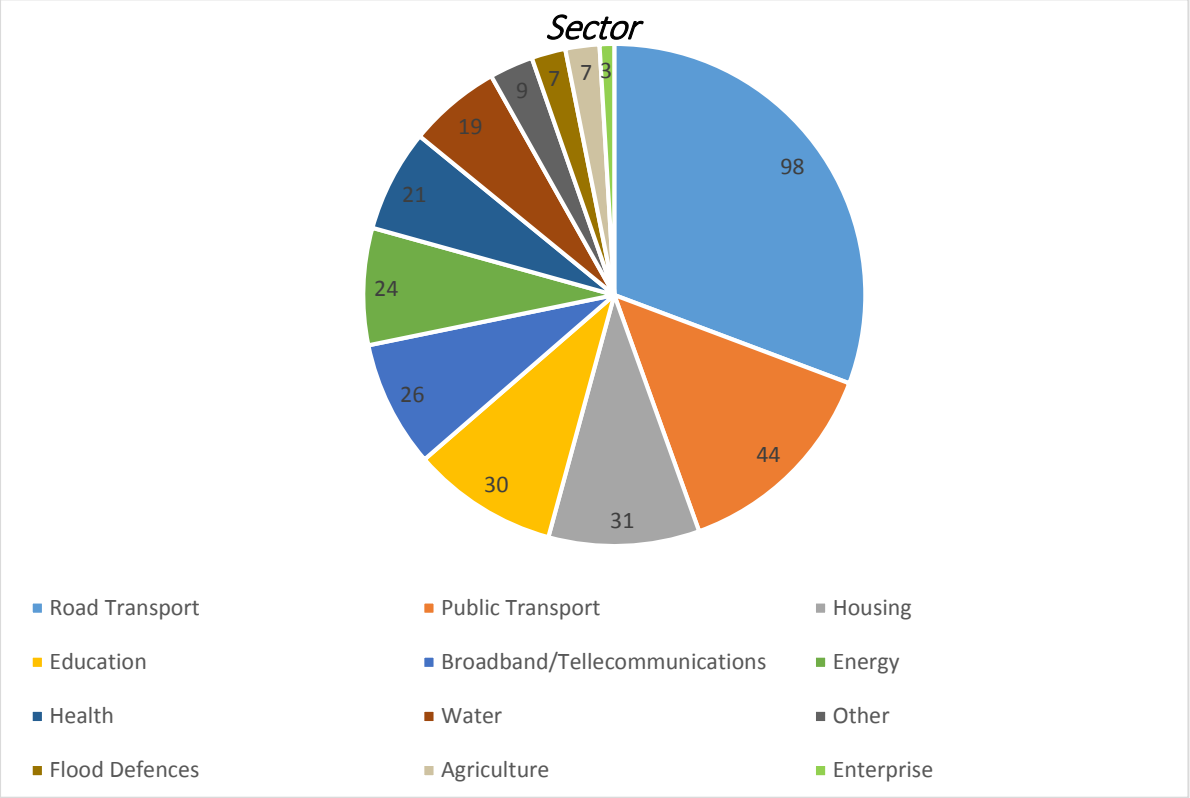
Prioritisation of Capital Expenditure

In answering the questionnaire, respondents were asked to rank a specified list of sectors in terms of their prioritisation. As expected, some submissions referenced sector specific themes in which their priority area for action was identifiable. However, in many submissions respondents suggested a list of considerations/recommendations in which their top priority area was not obvious.

In consolidating the information to best represent the main priority areas as identified by respondents to the Public Consultation, the data represented in the below graph accounts for the following:-

- the sector ranked as their highest priority in Q4.1 in the questionnaire
- any sector identified as a priority area in the submissions

Figure 5.1: Priority Sectors Identified in Public Consultation



Source: these figures include priority areas mentioned in both written and online submissions.

5.6 Committee on Budgetary Oversight Report on the Review of the Capital Plan

The Committee on Budgetary Oversight also submitted a report on 26 July 2017 to assist in the debate on the need for enhanced levels of capital investment. The report can be found on the Oireachtas website (www.oireachtas.ie).

The key messages contained in the report are:-

a. The need to ensure that all investments generate a strong long term return to the State.
b. The need to get an evaluation of the opportunity cost of not investing.
c. The need for a more transparent system to evaluate the merits of each investment.
d. The need to look at how investments are financed and the appropriateness of using private capital through PPPs.
e. The need to evaluate the importance of capital investment in delivering balanced regional development.
f. The need to review the overall governance requirements so as to plan for the medium to long- term which should be an essential part of the way capital investment is carried out.
g. The need to review the application of EU fiscal rules, which do not differentiate between current and capital expenditure.

The report recommends a benchmark level of public investment of at least 3% of GDP, discussing the risks if that level of investment is not achieved in terms of the deterioration of the existing capital stock. It highlights the need for an annual progress report on capital projects.

It discusses the requirement for increased investment in high-density housing and public transport to help achieve balanced regional development and dealing with the potential threat of Brexit by upgrading connectivity to support trade.

The Committee's report also advocates a longer-term approach to capital planning, taking into account demographic changes and the requirement for strict project appraisal. It recommends examination of the case for an Infrastructure Commission to provide independent expert advice and guidance on the economy's infrastructure needs.

The report also discusses mechanisms to fund investment off-balance sheet and to increase the use of PPPs to fund additional investment, as well as the case for changing the fiscal rules to increase public investment levels.

It recommends increased investment in human capital and a focus on apprenticeships to strengthen the economy's skills base to deliver projects and undertake investment.

6. Infrastructure Capacity and Demand Analysis

6.1 Introduction and Context

Infrastructure provides the fundamental basis for a modern functioning society and economy. It contributes to the economy's resilience against economic shocks. It supports sustainable economic growth by lowering costs, improving efficiency, increasing productivity and enhancing competitiveness. The provision of social infrastructure such as housing, schools, hospitals, etc. provides the social basis from which our society functions.

The submissions received from Departments, and from the public consultation process confirm that the level of demand for additional investment significantly exceeds the additional funding currently available for allocation. In these circumstances, it is necessary to make choices as to:-

- how the finite additional resources should be allocated among competing needs;
- which sectors and/or projects should be regarded as priorities in underpinning growth potential and supporting social cohesion; and
- the basis on which these decisions should be made.

In this context, the evidence base for the review of the Capital Plan has been compiled based on the aforementioned detailed Departmental submissions and public consultation and has been supplemented by analysis, completed by members of the Irish Government Economic and Evaluation Service (IGEES) within the Department of Public Expenditure and Reform. The Infrastructure Capacity and Demand Analysis draws on available data and information to provide a detailed overview of the extent and quality of public infrastructure in key sectors (including transport, health, education, water, energy, broadband, housing and flood defences) and the primary drivers of projected future demand in order to support and contribute to the decision-making process on prioritisation.

This chapter of the review summarises the analysis and findings arising from the IGEES capacity and demand analysis and draws conclusions based on this research. The IGEES report is available here.

6.2 Key Drivers of Infrastructure Demand

As set out in Table 6.1 a number of key drivers of infrastructure demand can be identified for additional and better quality public infrastructure. These factors have the potential to impact adversely on:-

- potential economic growth through congestion diseconomies;
- the availability of key public services relying on the availability of public capital infrastructure;
- the realisation of a balanced and sustainable pattern of economic development; and
- the achievement of climate change goals.

Table 6.1: Selected Drivers of Infrastructure Demand

Drivers of Demand	
Demographics	**Spatial Pattern of Development**
Economic Growth	**Climate Change**
Technology	**Socio-Cultural Factors**
Geopolitical Developments (e.g. Brexit)	**Maintenance**

6.2.1 Economic Growth

Empirical research has shown that as an economy grows there is generally an increased demand for infrastructure[30]. For example, increases in industrial output tend to require increases in inputs such as energy consumption, broadband, transport of goods and people, and increases in water and waste water in the agri-food and beverages sector.

This increase in demand can be met through an increase in the supply of the required infrastructure or potentially by increasing the efficiency by which the existing infrastructure is utilised through demand management policies. Investment in infrastructure also has the potential to increase the short and long-term economic growth of an economy[31].

The IGEES report details the latest economic projections and shows that Ireland's growth over the coming period is expected to average 3.6% in GDP terms (4% in GNP terms) over the period 2016-2021, declining to 2.5% by 2021 (GNP of 2.1%), based on the Department of Finance's medium term macro-economic projections in the 2017 Draft Stability Programme Update. Beyond that, average growth of GDP of 3.2% (GNP of 3.3%) over the period 2020-2025 is projected by the ESRI in the December 2016 publication, Ireland's Economic Outlook: Perspectives and Policy Challenges. [32]

6.2.2 Demographics

As discussed in previous chapters of this review, demographic developments also have a direct impact on the demand for infrastructure. Increases in population can result in an increased demand for housing, education, health, transport services, etc.[33] Age is likely to have an impact on infrastructure demand, for example older people are less likely to use transport and energy services at peak times. In order to ensure close alignment with the new National Planning Framework, this research as part of the review of the Capital Plan has detailed the same population projections as prepared by the ESRI for the National Planning

[30] U.K. National Infrastructure Commission Report, Economic Growth and Demand for Infrastructure Services.
[31] Fournier, J. (2016), "The Positive Effect of Public Investment on Potential Growth", OECD Economics Department Working Papers, No. 1347, OECD Publishing, Paris. http://dx.doi.org/10.1787/15e400d4-en
[32] Longer term forecasts are not produced by the Department of Finance or the ESRI, however the Directorate-General for Economic and Financial Affairs of the European Commission's 2015 Ageing Report projects average annual growth of GDP of 1.7% for Ireland over the period 2013-2060.
[33] U.K. National Infrastructure Commission Report, The Impact of Population Change and Demography on Future Infrastructure Demand

Framework. In addition to these projections, sector specific analysis of projected demographics are included where relevant e.g. the education sector.

6.2.3 Spatial Pattern of Development

Given its physical nature, demand for infrastructure has an inherently spatial dimension to it. Infrastructure can be provided in areas where demand already exists or is predicted to increase. Alternatively infrastructure can also be provided in strategic areas in order to encourage development. In this context, and in relation to demand and the provision of infrastructure, it is important to note that the higher the density of the population in an area the easier it is to spread the fixed costs of an infrastructure project. This is an important factor in whether the delivery of a piece of infrastructure is viable or not.

As referenced earlier, a core theme which emerged from the Department of Housing Planning and Local Government's consultation for *Ireland 2040 – Our Plan: The National Planning Framework* was that the Ireland 2040 Plan should inform strategic national infrastructure investment to better influence patterns of development and contribute to wider national objectives in areas such as transport, water resource management, waste management, climate action, communications and energy network roll-out and social infrastructure development in areas such as health, education and community facilities.

6.2.4 Climate and Environment

Infrastructure must be designed with climate change in mind, and be flexible enough to be easily adapted to assist mitigation of[34] and/or adaption to[35] climate change impacts[36]. It may also be necessary to constrain the supply of certain infrastructure investments which could contribute to climate change, e.g. investing in certain unsustainable forms of transport.

Ireland's first statutory National Mitigation Plan published in July 2017 provides a whole-of-Government approach to tackling greenhouse gas emissions, particularly in the key sectors - Electricity Generation, the Built Environment, Transport and Agriculture. The Government explicitly recognised that its first statutory National Mitigation Plan (NMP) does not provide a complete roadmap to achieve the 2050 objective, but begins the process of development of medium to long term mitigation choices.

Similarly, Ireland's National Adaptation Framework will set out Ireland's statutory strategy for the application of adaptation measures in different Government sectors, including the local authority sector to reduce the vulnerability of the State to the negative effects of climate change but also to avail of any positive effects that may occur.

Implementing these plans and meeting Ireland's greenhouse gas and renewable energy targets will require a whole of Government approach including capital and current

[34] Infrastructure which will help reduce harmful emissions.
[35] Dealing with the mostly negative consequences of climate change e.g. flooding, rises in sea level etc.
[36] U.K. National Infrastructure Commission report (2017), the impact of the environment and climate change on future infrastructure supply and demand.

expenditure, taxation policies, regulation, etc. Ireland's infrastructure investment will be both driven and constrained by these challenges[37].

6.2.5 Other Drivers of Demand

Further detail on the drivers of demand are included in the analysis that has been carried out by the IGEES in respect of each of the sectors considered. There are numerous other drivers of demand for infrastructure. For example, changes in technology can create additional demand for high speed communication infrastructure and increased energy use[38].

Brexit may have a varied impact on demand for infrastructure over the remaining period of the Capital Plan. It may reduce demand if it results in a reduction in economic growth. At the same time Brexit may increase demand for specific infrastructure that is required for international trade such as ports and airports, reflecting the need for Irish exporters to diversify their markets.

Additional attention has been paid to sector specific drivers of demand within each area that was analysed.

6.3 More Efficient use of Existing Public Infrastructure

It is important to consider how best to optimise the utilisation of the existing public capital infrastructure given:-

- the quality and extent of the existing public capital stock;
- the significant costs of providing additional public capital infrastructure; and
- the alternative uses of scarce public funds.

More efficient management of the demand for the services provided by public capital infrastructure management has a crucial role to play through measures which attempt to match the capacity of the current infrastructure to the demand that exists for such infrastructure[39].

This can help ensure that demand is met without the need for the potentially costly investment in additional infrastructure, thereby freeing up funding and capacity for alternative higher priority infrastructure projects to be delivered instead. Demand management may be used to increase, decrease, smooth or maintain demand. It may also be used to change the level of demand over a time period, rather than change the overall level

[37] Note: As well as providing the statutory basis for the development of NMPs and NAFs, the Climate Action and Low Carbon Development Act 2015 (section 9 (12)) requires that: "A Minister of the Government shall, in the performance of his or her functions, have regard to a national mitigation plan approved by the Government under this section".

[38] U.K. National Infrastructure Commission Report (2017), The impact of technological change on future infrastructure supply and demand.

[39] New Zealand National Infrastructure Unit (2014), Demand Management – A Discussion Document.
See also Chapter 11 – Accompanying Measures, ESRI (2006), Edited by Edgar Morgenroth and John FitzGerald, Ex-Ante Evaluation of the Investment Priorities for the National Development Plan 2007-2013.

of demand, for example, smoothing out peaks in demand for transport infrastructure or electricity over the course of a day. It may be used for a variety of reasons, such as:-

a. increasing demand for a service deemed beneficial to society (e.g. childhood education or preventative healthcare);
b. increasing demand for a service deemed beneficial to the economy (e.g. faster connectivity);
c. managing demand at the most efficient level for value for money of an asset (e.g. capacity on public transport);
d. smoothing demand over time to avoid peaks and troughs (e.g. energy usage);
e. redirecting demand to a substitute (e.g. teleconferencing instead of travel);
f. decreasing demand where continuing rises will outstrip supply (e.g. road pricing); and
g. decreasing demand in the short term (e.g. water restrictions during a drought).

Creating a best fit between the demand and supply of infrastructure can result in a fairer distribution which is based on meeting need rather than historical norms of access to such infrastructure. The savings made from such an approach can also help address alternative infrastructure needs which cannot be met through demand management and which require the provision of additional well planned infrastructure.

6.4 Overview of Sectoral Analysis

6.4.1 Transport

As set out in Table 6.2, transport demand is closely linked to economic growth and the performance of the economy. As the economy expands the number of commuters and the level of trade generally increases.

Table 6.2: Selected Drivers of Transport Demand

Driver	Example
Domestic Economic Conditions	Higher employment levels increases the number of people commuting each day.
International Economic Conditions	Economic conditions in trading partner countries will affect the level of demand for freight and tourism transport at ports and airports.
Demographics	The level of population growth and the age composition of the population will influence overall transport demand.
Spatial Development	The regional distribution of employment and demographics will impact travel patterns and demand.
Socio-Cultural Changes	Changes in socio-cultural patterns can affect issues such as travel mode choice (e.g. public/sustainable transport v car)
Infrastructure	The supply of infrastructure and services can interact with demand. New transport infrastructure can play a role in inducing demand.
Technological Change	Technological change such as e-shopping and e-working can impact the level of transport demand.
Transport Costs/Energy Prices	The cost of travel affects transport demand in terms of fuel and other costs by impacting affordability.

Analysis of the transport sector clearly indicates that current investment levels are lower than those seen in 2008. Previous high levels of investment saw major improvements including the transformation of the national road network and investment in infrastructure such as the Luas. The Capital Plan outlines just over €10 billion of investment in the sector over a seven year time period.

In terms of current demand levels, it is evident that:-

- Overall road usage is above its previous peak in 2008 and issues with regard to congestion and level of service are evident in urban regions.
- Public transport use has grown in recent years but remains below 2008 peak levels.
- Maritime demand, as measured by the total tonnage of goods handled at ports, indicates that demand is still below the 2007 peak.
- Aviation demand and activity is above its previous peak with record passenger numbers being driven by activity at Dublin Airport.

There is a compelling case for increased investment in the transport sector where issues are emerging which if not addressed may serve as a constraint on continued economic growth.

While Ireland has more motorway standard road per head of population than Germany, France and the UK, in overall terms the quality of the road network by comparison with 2012 is scoring lower by measures used to assess road surface quality.

In particular, transport demand around urban centres is posing a constraint, to the extent that significant elements of the road infrastructure are providing low levels of service due to congestion, while there are a small number of areas where the level of service experienced is either unstable or at breakdown. Increasing demand in urban centres highlights the need for investment in additional capacity where significant bottlenecks exist.

There is also a clear requirement for additional investment in public transport to assist in catering for overall demand growth in urban centres, support the objectives of the new National Planning Framework and contribute to climate action goals.

Investment in key maritime and aviation infrastructure is largely not funded directly by the Exchequer. However, there are key projects being progressed by the relevant bodies such as the second parallel runway at Dublin Airport.

6.4.2 Health

The main drivers of demand for health infrastructure are set out in Table 6.3

Table 6.3 Selected Drivers of Health Infrastrucure Demand

Driver of Demand	Example
Primary Drivers	
Structure of the Health System	The Government health policy of shifting to a primary care orientated health system will influence the demand for the relevant health infrastructure.
Demographics	The level of population growth and the age composition of the population will influence overall health demand. Older age cohorts generally require greater levels of care.
Chronic Illnesses	Trends in illnesses and diseases have an impact on the demand for health infrastructure. In particular, the incidence of chronic disease and multiple morbidities and consequences of ageing population will impact on demand.
Secondary Drivers	
Maintenance	**Developments in Medical Technology**
Changing Expectations	**Socio-Cultural Factors**

The delivery of a high quality health system is dependent on many complex and inter-related factors. While the physical infrastructure in the health sector is clearly very important in its own terms, capital investment represents less than one-twentieth of overall Exchequer funding of the health system as a whole.

As is well known, Ireland's total health expenditure is amongst the highest in Europe. Over the past twenty years Ireland has invested significant levels of capital expenditure in health infrastructure. This is evident when comparing Ireland's capital expenditure levels to other OECD countries. The health sector's share of the capital budget has steadily increased over the past twenty years. Health's total budget has steadily increased since 2014. The health allocation of €14.1 billion included in Budget 2017 means that spending this year will exceed its 2009 peak, both in total and per capita. This investment has also coincided with the development of a health strategy which aims to ensure that a greater number of people are treated through primary care rather than in acute hospitals.

Further to this, the existing Capital Plan includes a wide range of major infrastructure projects to be built over the coming years in the health sector such as the new National Children's Hospital, the new National Maternity Hospital, the new Forensic Mental Health Hospital and the Primary Care Centre construction programme.

While increasing demand for health services seem likely over the remaining period of the Capital Plan based on demographics and Ireland's ageing population, a simple projection of past trends will not give a useful picture of future need as the configuration of health services is changing.

In terms of the specific issue of bed capacity in the acute sector, according to Eurostat data, in 2015 Ireland had 260 available hospitals beds per 100,000 inhabitants. Denmark, Sweden and the U.K. have similar levels of beds compared to Ireland and also generally score high on different health outcomes compared to other EU countries.

There has also been a clear international trend of decreasing hospital bed numbers in recent years. According to Eurostat data, between 2000 and 2015 every single country in the European Union (apart from Austria) has reduced its hospital bed numbers. This trend has been particularly clear in recent years. Other countries, with much older populations, are currently reducing their acute hospital capacity in favour of primary care.

There is little doubt that increasing demand for health services will be an important determinant of public capital spending over the remaining period of the Capital Plan. Meeting these needs does not necessarily require solely investing in primary care instead of the acute sector, rather, building capacity in the primary care system should allow for greater targeting of investment in hospitals in order to meet more specialised needs.

Notwithstanding the increasing trend in demand for health services, the shift in policy away from treatment in acute hospitals in favour of a focus on primary care, and the trend observed across other EU countries with much older populations - where acute hospital capacity is reducing in favour of investment in primary care - highlights the importance of further analysis and evidence, such as would be expected to emerge from, for example, the Health Service Capacity Review in Ireland 2017[40] to guide and inform future capital investment policy for the sector.

6.4.3 Education

The State invests significant resources in education infrastructure with €700 million allocated in this area in 2017. While this is lower than the peak of €830 million in 2008, it is 71% higher than the level of resources invested in 2012. The Capital Plan has allocated €3.8 billion to the education sector over the period 2016 to 2021. Key drivers of demand are summarised in Table 6.4.

[40] The review will examine, in light of the development of international thinking to better capture the dynamic nature of health systems, capacity requirements within the acute hospital system but also those areas that directly impact on demand for hospital services i.e. capacity and services provided in primary care and availability of non-acute beds and services in the community, for example residential care, home care etc.

Table 6.4: Selected Drivers of Education Demand

Driver	Example
Primary Drivers	
Demographics	Population growth, the age composition of the population, migration patterns and the geographical dispersion of the population (urban and rural) are primary drivers of demand. In this regard, Regional development and the National Planning Framework is also an important consideration.
Secondary Drivers	
Participation Rates	Changes in participation rates will influence demand especially at third level.
Existing Stock and Prefab Replacements	The age of the existing stock of infrastructure will drive demand for investment as will the replacement of prefabs.
Technological Developments	Technology is one of the key drivers of change in the economy. Developments in ICT can drive demand for better broadband connectivity and improved infrastructure within education institutions, including wireless networking, digital learning tools, and equipment.
Special Needs Provision	Providing for students with special needs will impact on the demand for infrastructure.
The Pupil Teacher Ratio (PTR)	Changes in the PTR will impact on class sizes and by extension demand for space.
Skills Needs and Further Education	Policy choices on the mix of employment and training supports and the state of the labour market will influence demand in this area.

Demographic change is the most important driver of demand in the education sector. Based on evidence of future demand pressures the following high level conclusions are of note:-

- At primary level, student numbers are projected to peak in 2018, thereafter declining each year by around 2% on average, although some specific growth areas may continue to experience increasing demand. The existing Capital Plan targets the delivery of 19,000 additional primary school places in response to this demand pressure.
- At post-primary level, the peak in student numbers will be in 2025. The existing Capital Plan states that it will deliver 43,000 additional post-primary places required for demographic growth to 2022. Additional resources may be required to account for any increase in demand thereafter.
- The demand for access to third level education is expected to increase and will exert further pressure on capacity. Investment levels required at third level are impacted by a number of considerations including responsiveness to skills needs in the economy,

the relevant sources of overall funding and the overall policy framework for third level education.

- The degree to which developments in the FET sector will impact on the demand for infrastructure in the years ahead is unclear. While the sector is catering for a significant number of people, it is difficult to predict how these numbers will trend over time due to a number of factors and there is also a lack of comprehensive data on current capacity.

Given data constraints, an analysis of the current condition of education infrastructure and consideration of the extent to which investment in renewal may be necessary is not included. Furthermore, consideration of the nature and composition of demand is also excluded. This is particularly pertinent in the area of regional demand projections at primary and post-primary level which will have implications for location specific capacity issues.

6.4.4 Housing

Pressure is evident across the housing market with significant increases in both residential property purchase prices and average rents in recent years following large decreases after 2007. Higher levels of growth have been seen in urban areas and are demonstrated by rental prices being above previous peak levels in Dublin. The level of housing output, both public and private, has been constrained in recent years following a period of rapid expansion before 2008 and as such actual supply levels have been below the level of demand.

In terms of the demand and supply of social housing, it is illustrated from the research carried out that there is a significant number of households that have been deemed as eligible for social housing support but are not currently in receipt of such support (91,600[41]) while additional permanent stock (delivered through construction or acquisition) has been limited in line with constraints on capital expenditure. However, housing supports delivered through current expenditure (e.g. HAP, Leasing) have played a role in providing necessary assistance.

Under Rebuilding Ireland, the Action Plan for Housing and Homelessness, further investment in housing has been prioritised over the period of the Capital Plan, which will see an additional €2.2 billion committed to support the Action Plan, bringing total Government funding for the initiative to €5.35 billion (of which €4.5 billion is capital) with the target of delivering 47,000 units across a range of delivery mechanisms over the coming years. Of this 47,000, it is anticipated that 26,000 will be constructed; 11,000 will be acquired from the market; and around 10,000 will be secured under long-term lease arrangements. The Plan also targets reaching overall supply levels of 25,000 by 2020.

The Action Plan is currently in the process of being reviewed by the Department of Housing, Planning and Local Government in consultation with DPER and the Department of Finance.

Table 6.5 sets out a number of drivers of housing demand. This highlights the interrelationship between demand drivers and the complexity of the housing market.

[41] Note: includes recipients of Rent Supplement (e.g. 33,819 in private rented accommodation with Rent Supplement)

Table 6.5: Selected Drivers of Housing Demand

Drivers of Demand	
Demographics	**Household Formation**
Economic Growth	**Tenure Choice**
Income	**Socio-Cultural Factors**
Wealth	**Government Policy/Intervention**
Access to Credit	**Spatial Development**

The demand for housing units is forecast to increase in the short term due to demographics and household formation rates from 23,000 units to 30,000 by 2024. ESRI research details the potential for the level of housing activity to increase significantly in future years but also highlights that the availability of sufficient finance will be a challenge to delivering necessary supply levels. In addition to total structural demand there are a number of other considerations such as pent-up demand, regional composition, and cyclical issues.

In summary, pressure within the housing market is evident with increases in property prices and average rent levels in recent years. The State's role in providing social housing has faced significant constraints while demand remains high. However, the commitments made under the Action Plan for Housing and Homelessness, which is currently in the process of being reviewed, mean that €5.35 billion is planned for investment in the delivery of 47,000 units across a range of mechanisms in the coming years. Furthermore, housing output delivered by the private sector is also expected to pick up over the next couple of years.

While a strong supply response to reach what is currently estimated to be the equilibrium demand for housing is fundamental to the resolution of the housing crisis, developments in the sector require careful oversight and monitoring to pre-empt the risk of the emergence of a construction led housing boom.

6.4.5 Water

There has been a historic underinvestment in Ireland's water infrastructure. This has resulted in a system which is not fully capable of providing the required level of high quality drinking water or adequately treating the waste water which our society produces. However, Irish Water's Capital Investment Plan 2017-2021 aims to address many of the pressing capacity and quality issues through the investment of approximately €3.8 billion out to 2021. As required by law, the first two years of this plan have been approved by the Commission for Energy Regulation. The key factors driving water demand are set out in Table 6.6.

Table 6.6: Selected Drivers of Water Demand

Drivers of Demand	
Population	**EU Directives**
Economic Growth	**Consumer Behaviour**
Pricing	**Spatial Development**

While Irish Water acknowledged that it would not meet all the demands for increased investment that currently exist, Irish Water has also stated that it would not be possible to deliver all of the investments required to address these demands in the next four years. This is due to a number of constraints such as planning requirements and other supply chain capacity issues. Irish Water estimates that a minimum of €13 billion will be required over the next 20 years in order to meet its objectives. That is €650 million a year on average, a level which the current investment plan out to 2021 surpasses.

Substantial investment is currently planned for Ireland's water infrastructure for the period out to 2021. The planned investment as outlined by Irish Water seeks to strike a balance between the demand for water infrastructure investment and the constraints that currently exist in terms of affordability, planning requirements and supply chain issues. Delivery on the key performance metrics which have been set by Irish Water should be closely monitored over the coming period. The actual level of capital investment will be determined through the regulatory process. The next revenue control period, for which Irish Water must submit plans for approval to the CER, commences in 2019. This will provide a suitable opportunity to reassess the planned investment levels in Ireland's water infrastructure set out in Irish Water's Capital Investment Plan on the basis of the risk-based approach adopted in that Plan to addressing critical issues such as drinking water quality, compliance with the EU Urban Waste Water Treatment Directive and reduction in leakage levels.

6.4.6 Energy

In general the energy infrastructure in Ireland is in a good position to continue meeting overall demand well into the medium term. At a high level, it is expected that capacity in both gas and electricity networks will be broadly sufficient to meet anticipated future flow requirements for the next ten years. Furthermore, it should be noted that investment in this sector is largely non-Exchequer based. The key elements of demand for energy are discussed in Table 6.7.

Table 6.7: Selected Drivers of Energy Demand

Drivers of Demand	Examples
Consumption Trends	The extent to which both residential and commercial activity requires energy is an obvious driver of demand. For example, the level of energy consumption per household or per business will reflect trends in individual consumption patterns. Changes in consumption levels and the efficiency of device usage will have an impact on the level of necessary supply.
Economic Cycle	Trends in other areas such as wider economic growth, incomes and price dynamics will also be a factor in influencing demand. For instance, higher levels of economic growth or a decrease in energy prices may facilitate higher levels of energy consumption.
Demographics and Spatial Development	Similarly to other sectors the level of demand is also influenced by trends in the size and composition of the population and also the spatial distribution of activity.
Composition of Demand	The composition of demand is an important factor in this sector. For example, demand for generation via renewable sources versus non-renewable sources can play a role.
Technological Change and New Industry Demands	Changes in technological developments and in demands from industry can also have a significant impact on demand. For example, construction of data centres (e.g. Apple in Athenry Co. Galway) necessitate access to significant power loads.

While overall demand is expected to be catered for, the composition of generation and usage is an important consideration in the energy sector. In particular commitments in the areas of climate change, energy efficiency and renewable energy present a significant challenge to the sector, and means that continued investment will be necessary for the coming period. The existing Capital Plan has committed €444 million to 2021 in the area of Energy Efficiency and Renewable Energy and significant additional investment will be carried out by State companies with the total level of renewable generation capacity (primarily wind) anticipated to expand over the coming years. Another important area within the sector is that of energy security given Ireland's high energy import dependency. Ireland's energy system also has close linkages to the UK and as such the process of the UK leaving the EU will be an important consideration in future policy and planning, although precise impacts are unclear at this point.

6.4.7 Broadband

Access to high speed internet is considered to be essential in the 21st Century with broadband availability being seen as key enabling infrastructure. The trend of access becoming more important is likely to continue for the foreseeable future. While Ireland has made some progress in terms of improving its broadband infrastructure, differences persist in terms of the availability of broadband in urban and rural areas of the country, an issue which the National Broadband Plan aims to address through State intervention and commercial investment. The current Capital Plan sets out the level of initial Exchequer funding for the state intervention element of the National Broadband Plan to support the Government's

commitment of delivering high speed broadband to all parts of Ireland. Full detail on investment requirements will not be available until after the current tendering process is complete. Table 6.8 seeks to identify the key drivers of demand for high speed internet access.

Table 6.8 Selected Drivers of Broadband Demand

Drivers of Demand	Examples
Consumption Trends	Changes in consumption patterns and types will also affect the demand for broadband access. For instance, higher individual or commercial consumption or a change in the type of data consumed (e.g. larger file types) will increase the overall level of demand.
Cultural Changes and Technological Use	Technological development and cultural change are important factors in determining overall demand for broadband access. The extent to which access to high speed internet becomes more important to a variety of both residential and commercial services is clearly an important factor in determining overall demand.
Demographics and Spatial Development	The level of demographic growth and the spatial distribution of both settlements, employment and business are important factors in determining the composition of demand. This is a particular factor in terms of the split between urban and rural demand and the delivery of relevant infrastructure to support this.

6.4.8 Flood Defences

Exchequer capital investment in flood risk management has increased significantly over the past twenty years. The OPW has completed construction on 39 major flood defence schemes in this time. The drivers of demand for flood defences, namely climate change and EU Directives, are likely to increase the need for flood defence infrastructure over the coming years. In order to meet this demand, and following an extensive process, the OPW is producing a set of comprehensive Flood Risk Management Plans in line with EU Directives. In its submission as part of the Review of the Capital Plan the OPW has stated that the €430 million allocated to flood defence schemes over the lifetime of the existing Capital Plan is largely sufficient to meet the demands of this sector. Table 6.9 summaries some of the main aspects of the demand for improved flood defences.

Table 6.9 Selected Drivers of Flood Defence Demand

Drivers of Demand	Examples
Climate and Environment	Climate change could potentially have a very significant effect on the demand for flood defences in the longer term e.g. sea level rises, increased number of heavy rainfall days and wetter winters.
EU Directives	The EU Directive on the assessment and management of flood risks [2007/60/EC] , often referred to as the 'Floods' Directive, came into force late in 2007. The OPW is producing Flood Risk Management Plans (FRMPs), in line with National Flood Policy and the requirements of the EU 'Floods' Directive.
Development and Property Price Increases	Increasing risk over the past decades has also been driven in part by development (including some in flood prone areas) and increases in property and asset values.

6.5 Climate Action and Spatial Development

Promoting environmental sustainability is, of course, integral to achieving and maintaining sustainable economic growth. The methodology adopted for the infrastructure demand and capacity analysis summarised in the preceding sections for key sectors does is not easily directly applied to assessing investment needs to meet climate change goals. Environmental concerns such as the developments in climate change and the need to meet EU emissions targets requiring intervention in the areas of energy efficiency and renewable energy, as well as the need for investments in flood prevention, are key drivers of public investment requirements.

The funding of energy efficiency and renewable energy programmes will play a key role in seeking to meet climate change and energy targets as well as reducing expenditure on imported fossil fuels, underpinning domestic energy sector employment and reducing emissions from our annual energy usage. As well as Exchequer investment, the commercial State sector as part of the Capital Plan also undertakes investment in renewables, including biomass and forestry, in order to support the delivery of Government's objectives in these areas. It is essential, therefore, that resources continue to be allocated and aligned to support sustainable growth, as required under the Government's current policy framework.

The preceding analysis has detailed current levels of infrastructure provision and demand. Spatial development and the role that infrastructure has in supporting and influencing it is another important consideration which has not been assessed in detail here. These challenges highlight the need for a coherent approach to investment planning between frameworks such as this review of the Capital Plan, the National Planning Framework, the forthcoming National Investment Plan and the Climate Mitigation and Adaptation Plans.

6.6 Other Sectors

There are a number of additional sectors of public infrastructure which may be subject to demand pressures over the coming years of the Capital Plan, such as Justice, Defence, Sports, Arts, the OPW's stock of Government buildings and existing infrastructure requiring improvement. Reflecting the significantly lower level of public capital investment that arises in these sectors, they were not included as part of the Infrastructure Capacity and Demand Analysis summarised above.

Public capital investment needs in these sectors have, however, been examined in detail as part of the review of the Capital Plan drawing, for example, on the relevant Departmental submissions and also through engagement with relevant Departments where required.

It is very important to note that this analysis has highlighted the importance of seeking to ensure a balanced prioritisation of increased public capital investment across all sectors of government activity. While increased investment in core physical public infrastructure in key sectors is critical to the sustainability of the economy's long-term growth performance, targeted investment in such sectors as Justice, Defence, Sports and Culture also has an essential role to play in meeting key public service needs and objectives as well as enhancing quality of life measures not (or not fully) recognised in national income statistics.

Finally, capital expenditure classified as non-Gross Fixed Capital Formation such as grants were not examined as part of the Infrastructure Capacity and Demand Analysis but are included in the assessment process of the Spending Review. Details of the 2017 Spending Review can be found here.

6.7 Conclusion

There has been significant public capital investment in Ireland's infrastructure over the last twenty years. From its low point following a period of significant retrenchment there has been a significant recovery in public capital investment under the Capital Plan.

Even with such increases, however, the level of demand for additional capital projects will nearly always exceed the ability to supply all the desired infrastructure at the same time. Supply side constraints can include the capacity of the construction industry to deliver the infrastructure, the capacity of the planning system, environmental and regulatory requirements, as well as fiscal constraints. It is therefore necessary to prioritise public capital investment. The infrastructure capacity and demand analysis, detailed Departmental submissions and public consultation contribute to the evidence base required to inform such prioritisation.

Based on the detailed IGEES analysis undertaken and the wider evidence base assembled it is possible to draw a number of high level sectoral conclusions.

There is a compelling case for increased investment in the transport sector where issues are emerging which if not addressed may serve as a constraint on continued economic growth. In particular, demand around urban centres is increasing, as evidenced by lower levels of

service on the road network. Linked to this is the clear requirement for additional investment, in public transport, to assist in catering for overall demand growth in urban centres, support the objectives of the new National Planning Framework and contribute to climate action goals.

The health sector's share of the capital budget has steadily increased over the past twenty years, with total health spending in 2017 exceeding its 2009 peak, both in total and per capita. Further research, such as the ongoing Health Service Capacity Review in Ireland 2017, should aim to bring greater clarity on the composition of the existing infrastructure stock, in light of the key policy objective of meeting 90-95% of care needs in primary care settings.

In light of the significant funding for the schools building programme provided under the existing Capital Plan, analysis of the requirement for additional capacity in the period to 2021 needs to be based on demand pressures reflecting demographic developments and factors such as the current condition of existing infrastructure and the expected regional composition of demand. While student numbers are projected to fall in future years, specific locations may still exhibit growth. Consideration is also required of the impact of construction price inflation and upward pressure on site costs. There is strong evidence of significant pressure on infrastructure at third level, where the number of students is set to continue to increase, exerting further pressure on capacity in that sector.

The research detailed in the IGEES paper points out that there is a significant number of households that have been deemed as eligible for social housing support but are not currently in receipt of such support, while additional permanent stock has been limited. Further investment in housing has therefore been prioritised over the remainder of the Capital Plan which will see €5.35 billion (of which €4.5 billion is capital) invested in the delivery of 47,000 units across a range of delivery mechanisms in the coming years. Furthermore, housing output delivered by the private sector is expected to continue to accelerate in the years ahead.

Substantial investment is currently planned for Ireland's water infrastructure for the period out to 2021 seeking to strike a balance between the demand for water infrastructure investment and the constraints such as affordability, planning requirements and supply chain issues. Investment is based on a risk-based approach addressing critical issues such as drinking water quality, compliance with the EU Urban Waste Water Treatment Directive and reduction in leakage levels. The regulatory process determining the actual level of capital investment provides an opportunity to reassess the planned investment levels.

In terms of broadband, energy and flood defences, the following findings are evident from the analysis of these sectors:-

- In general, energy infrastructure in Ireland is in a good position to continue meeting overall demand in the medium term. While overall demand is expected to be catered for, the composition of generation and consumption is an important consideration in the context of climate related targets and further investment is planned with a particular focus on wind generation.

- While Ireland has made progress in terms of improving its broadband infrastructure, differences persist in terms of the availability of broadband in urban and rural areas of the country. The National Broadband Plan aims to address this and the existing Capital Plan sets out the level of initial Exchequer funding for the state intervention element of the plan.
- Exchequer capital investment in flood risk management has increased significantly over the past twenty years and the allocation contained within the existing Capital Plan is sufficient to meet the demands of the sector.

Promoting environmental sustainability is, of course, integral to achieving and maintaining sustainable economic growth. The funding of energy efficiency and renewable energy programmes will play a key role in seeking to meet climate change and energy targets as well as reducing expenditure on imported fossil fuels, underpinning domestic energy sector employment and reducing emissions from our annual energy usage.

Spatial development and the role that infrastructure has in supporting and influencing it highlights the need for a coherent approach to investment planning between public capital investment and the National Planning Framework.

The assessment of investment needs in other sectors (e.g. Justice, Defence and the Arts) highlights the importance of seeking to ensure a balanced prioritisation of increased public capital investment across all sectors of government activity.

7. Resourcing of Increased Public Investment

7.1 Introduction

This chapter sets out, on the basis of the recent Summer Economic Statement and Mid-Year Expenditure Report, the revised envelope of public capital resources available for increased investment over the next four years. It highlights the very substantial increase in public capital spending now planned.

It also examines key issues relating to the sustainability of public capital investment plans from both a fiscal and a broader macroeconomic perspective and discusses how capacity risks can be mitigated. It explores how the substantial increase in public investment now planned compares to the benchmark of the EU15 average level. The analysis confirms that, measured properly, the increases in capital spending now proposed are set to achieve the benchmark that is often recommended as an appropriate target level for Ireland.

The chapter also sets out the current position in terms of the role of PPPs and external funding providers in enabling increased public capital investment under the Capital Plan.

7.2 Additional Capital Resources 2018-2021

An additional €5.14 billion in Exchequer capital investment was originally allocated in the 2016 Summer Economic Statement (SES) in June 2016 for increased public capital investment over the period of the Capital Plan. Taking account of the €2.2 billion already committed to support the Government's Action Plan on Housing and Homelessness, and other commitments made in Estimates 2017 with implications for 2018 and 2019, this uncommitted additional capital funding was reduced to €2.6 billion.

In order to respond to the infrastructural pressures identified in preparing this review and to support the enhancement of Ireland's growth potential through an increased public investment, the Government decided to further increase the additional capital resources being made available for investment over the period to 2021, by €0.5 billion in each of 2019, 2020 and 2021. This will increase cumulative capital expenditure by €1.5 billion over the period and will be achieved by re-allocating half of the amount originally proposed for the Rainy Day Fund.

Consequently there is a now a total envelope of additional Exchequer capital resources amounting to €4.1 billion to be allocated for public investment over the remaining four years of the Capital Plan 2018-2021. This is illustrated in Table 7.1 drawn from the Mid-Year Expenditure Report 2017.

Table 7.1 Gross Voted Capital Investment 2018 – 2021

€ billion	2018	2019	2020	2021	Cumulative Change 2018 – 2021*
Ceilings Based on Public Capital Plan	4.8	5.1	5.3	5.7	20.9
Action Plan for Housing	0.3	0.4	0.5	0.5	1.8
Increase in gross voted capital announced but not yet allocated	0.2	0.5	0.9	1.1	2.6
Total Gross Voted Capital Expenditure	**5.3**	**6.1**	**6.7**	**7.3**	**25.3**
year-on-year change, (€ billions)	*0.8*	*0.8*	*0.6*	*0.6*	
year-on-year change, %	*16.6%*	*14.6%*	*10.0%*	*9.1%*	
Proposed reallocation of resources from rainy day fund	***0***	***0.5***	***0.5***	***0.5***	***1.5***
Gross voted capital expenditure incl. additional from RDF	**5.3**	**6.6**	**7.2**	**7.8**	**26.8**
year-on-year change, (€ billions)	*0.8*	*1.3*	*0.6*	*0.6*	
year-on-year change, %	*16.6%*	*24.1%*	*9.2%*	*8.5%*	
change vs position set out in SPU 2017, %	*-*	*8.2%*	*7.5%*	*6.9%*	
change Vs 2014 Baseline of €3.6bn, (€ billions)	*1.7*	*3.0*	*3.6*	*4.2*	
change Vs 2014 Baseline of €3.6bn, %	*47.2%*	*82.7%*	*99.5%*	*116.4%*	

*Rounding effects totals

Advised by the analysis carried out in the context of this review of the Capital Plan, decisions will be made by Government in Estimates 2018 next October on how the additional €4.1 billion should be allocated in order to best address the key infrastructure and capital expenditure priorities. The substantial increase in resources now available for capital investment in the period to 2021 will allow for a continued acceleration in public investment in the economy consistent with the public infrastructure and capital expenditure needs identified in this review.

As discussed further below, these resources must be deployed in a manner consistent with the achievement of key fiscal objectives and in compliance with the requirements of the EU Fiscal Rules. It is also essential that the increased spending is aligned with the capacity of the economy and the construction sector to ensure that:-

- the increased capital resources are used efficiently;
- they deliver real improvements in public capital infrastructure; and
- the impact of the increased capital spending is not eroded by construction price inflation or contributes to overheating risks for the economy.

7.3 Medium-Term Public Investment Target

A key consideration in light of the substantial growth planned in public capital investment set out above is the extent to which the proposed increase meets the economy's needs consistent with the fundamental requirements of overall economic and fiscal sustainability. In examining this issue a long-established approach is to seek to identify from a 'top-down' (or macro-economic perspective) an appropriate target level of public capital investment. This conventionally corresponds to a long-term average level of public investment relative to national output or national income - compared to the historic national trend or similar EU countries that are broadly at the same stage of economic and social development.

Table 7.2 below sets out the revised amount of public capital investment planned for the remaining years of the Capital Plan compared to the baseline level of public investment initially envisaged under the plan.

The long-term average of public Gross Fixed Capital Formation (GFCF) in Ireland can be regarded as a good proxy for the equilibrium level of public investment as it removes the effects of cyclical developments which have contributed to a very significant volatility of public capital spending. Over the period 1995–2015 the share of public GFCF in GDP in Ireland was in the region of 3% equating to the average for the EU15 over the same period. This indicates that a value of 3% of an appropriate measure of national income might be considered an appropriate target for the long-term level of public capital spending for Ireland.

Table 7.2 Public GFCF v Capital Plan Baseline 2017-2021

€ billion	2017	2018	2019	2020	2021	Cumulative Change 2017 – 2021
Baseline Public GFCF: Capital Plan	4.2	4.5	5.1	5.4	5.8	25.0
Revised Public GFCF: Post SES 2017	5.3	6.0	7.2	7.5	7.9	33.9
Δ Public GFCF: Revised - Baseline	1.1	1.5	2.1	2.1	2.1	8.9
Revised Public GFCF						
% GNP	2.2%	2.4%	2.8%	2.8%	2.8%	
% General Government Expenditure	6.9%	7.7%	8.9%	9.0%	9.3%	

As set out in Table 7.2:-

- public investment measured by public Gross Domestic Capital Formation (GDCF) is now set to increase to €7.9 billion by 2021, this represents an increase of over two fifths as compared to its level in 2016;
- the cumulative level of public investment over the five year period 2017-2021 is estimated to amount to €33.9 billion;
- the share of public capital investment in GNP is forecast to increase by over 0.5% of GNP from 2.2% in 2017 to 2.8% in 2019, remaining at that GNP share for 2020 and 2021; and
- over the period, public investment as a share of General Government Expenditure is expected to rise from 6.6% in 2016 to 9.3% by 2021, well in excess of its long-term average highlighting the extent to which public investment will be prioritised.

In overall terms, the planned total increase in public capital investment between 2018 and 2021 is almost 40% greater than what was initially envisaged under the Capital Plan in 2015. In terms of Exchequer capital spending, compared to the planned starting point for the Capital Plan in 2016, it is now expected that in terms of Exchequer Capital, over €2 will be spent in 2021 for every €1 allocated in the first year of the Plan.

Moreover, while forecasts are not currently available for the proposed GNI* which is regarded as a more accurate and realistic indicator for the size of the Irish economy for use in international comparisons, the indications are that public investment as a share of GNI* would meet the relevant target 3% threshold from 2019 onwards.

This confirms that the increase in public investment now planned relative to the size of the economy will bridge the perceived shortfall in public capital investment arising from the use of statistical GDP figures from the National Accounts[42].

7.4 Macro-economic Sustainability of Increased Public Investment

In light the scale of the planned increase in public investment in the period to 2021 careful consideration is also required of the balance between increasing public capital spending, to boost potential output / alleviate bottlenecks and congestion, and managing capacity and overheating risks.

In this regard, the economic sustainability of increased public investment requires examination of the capacity and current cyclical position of the economy and the extent to which the current and expected future level of economic output stands relative to the economy's capacity (or potential output). Overheating and sustainability risks arise where output exceeds its potential level.

[42] As discussed in the report of the Economic Statistics Review Group, GDP figures are seriously distorted by the activities of the foreign-owned sector in Ireland and do not accurately reflect public investment as a share of underlying national income which it is planned will be allocated to strengthening Ireland's public capital infrastructure over the remaining years of the Capital Plan.

The EU Commonly Agreed Methodology (CAM) is used by the Department of Finance and the European Commission to estimate the cyclical position of the economy, a key input into forecasts of Ireland's Structural Budget Balance. The key element of the CAM is the estimation of what is termed the output gap (i.e. extent to which the actual level of GDP exceeds or falls short of potential GDP).

Where the output gap is positive (i.e. actual GDP exceeds potential GDP) the economy is estimated to be operating above its capacity giving rise to inflationary pressures or 'overheating' particularly in the labour market as labour shortages and high vacancy levels giving rise to accelerating wage pressures. Where the output gap is estimated to be negative, the economy is operating below its full-capacity level and is subject to economic slack. This would take the form, for example of unemployment exceeding its estimated full employment level. There is a broad consensus that the EU CAM does not accurately measure the cyclical position of the Irish economy and, therefore, official output gap estimates are not a reliable guide to overheating risks.

The Irish Fiscal Advisory Council (IFAC) in its most recent Fiscal Assessment Report conclude on the basis of an examination of a range of economic indicators of potential imbalances in the economy and various alternative measures of the output gap that it is unlikely that there is substantial overheating in the Irish economy at present. IFAC's assessment is that the true output gap is in fact likely to be closed or slightly negative this year (i.e. the economy is operating below capacity). In particular IFAC highlighted that the labour market does not appear to be currently showing signs of overheating.

However, looking forward, relatively strong economic growth is forecast for the coming years. In addition, IFAC draw attention to the potential for the emergence of unsustainable construction led growth and an overheating economy in circumstances that there is a sharp supply response to possible pent-up demand in the housing market. A strong and unexpected increase in public capital investment gives rise to a similar risk. With unemployment falling rapidly, unexpectedly strong growth in construction-related employment could lead to a significant tightening of the labour market, wage inflation and competitiveness losses.

Therefore, in considering the case for additional public investment, a central issue is the extent to which the demand effects of increased capital spending is consistent with the maintenance of macro-economic stability and can be accommodated without contributing to an increased risk of overheating for the economy. While, as discussed above there is much uncertainty over the exact cyclical position of the economy, it is likely to be close to its potential level of output (a large negative output gap which arose in the wake of Ireland's economic crisis having broadly closed over recent years). This conclusion is borne out by the absence of any signs of significant imbalances or generalised overheating in the economy.

It is essential that increases in public investment underpin the sustainability of economic growth rather than contributing to economic instability and exacerbating any risks of unbalanced and inflationary growth. This highlights the importance of adopting a prudent and measured approach to increased public capital spending as reflected in the 2017 SES in circumstances that there is a high degree of uncertainty regarding the cyclical position of the economy and the likelihood of overheating risks being realised.

7.5 Responding to Capacity and Overheating Risks

In assessing overheating risks countervailing factors also need to be considered. Efficient public capital investment alleviates congestion and bottlenecks, in themselves a source of overheating risk and boosts the economy's supply capacity and potential growth.

In addition, there are a number of steps that can be taken to mitigate any risk that the public capital investment necessary over the coming years, to support enhancing Ireland's supply potential, gives rise to overheating pressures.

- The increase in public capital spending should be consistent with overall fiscal objectives.
- The growth in public capital spending should be at a planned and moderate rate which does not outstrip the pace of the supply response feasible from the broad construction sector.
- There should be no sharp unexpected increase in public capital spending in the short term for which the sector is not equipped to respond.
- It is essential that public capital investment is efficient and is focused on infrastructural priorities which are rigorously appraised to yield a high rate of return and make best use of scarce construction sector resources.
- Increased public capital spending needs to be aligned with sustainable growth in public expenditure overall by ensuring the continuation of moderate and prudent growth in current spending.
- There needs to be a renewed strategic focus on supporting the strengthening of the capacity, capability and degree of competition of the domestic construction sector in Ireland as well as on encouraging and promoting market entry from abroad by confirming and highlighting the planned scale of Ireland's public capital investment plans.

7.6 Fiscal Sustainability of Increased Capital Spending

Consideration is also required of the extent to which significant higher levels of public capital investment are consistent with fiscal sustainability and the achievement of key fiscal targets.

The scope for the substantial increase in public investment planned is attributable to the marked progress achieved in restoring Ireland's public finances. As detailed in the SES 2017 this level of increased public capital spending is consistent with, in the first instance, the achievement of Ireland's Medium-Term Budgetary Objective (MTO) of -0.5% in 2018 and securing government budget surplus on both a headline and structural basis (i.e. adjusted for the impact of the economic cycle) from 2020 onwards. By 2021 the General Government Debt ratio is projected to be closely approaching 60%.

Securing a balanced government budget in structural terms and progress in continuing to reduce public debt represents a major step in strengthening the resilience of the public finances and attenuating the risk that a downturn in the economy will give rise to a need for a substantial retrenchment in government spending on account of the emergence of an excessive deficit. As long as Ireland remains within the preventive arm of the Stability and

Growth Pact (SGP) and the Government Budget Balance does not exceed the 3% threshold there is scope for a counter-cyclical approach to expenditure policy - subject to compliance with the Expenditure Benchmark rule - in circumstances where there is a slowdown in economic activity which impacts adversely on government revenues.

Increasing public capital investment above the already increased level set out in the SES 2017 would jeopardise the achievement of the MTO in 2018 and the increased fiscal leeway that it provides in future years, as well as maintenance of a responsible and balanced fiscal policy stance. On the basis of the fiscal projections contained in the SES, funding of increased capital spending would require either increased Government borrowing increasing the public debt or a reduction in the resources to be allocated to the proposed Rainy Day Fund (RDF)[43] from 2019. It may also have implications for compliance with the EU Fiscal Rules.

7.7 Other Options for Increased Public Capital Investment

In order to further respond to the infrastructural pressures identified in submissions, and to ensure that our strong economic performance is reflected in an appropriate level of capital investment over the coming period, it is appropriate to consider whether there are options for further increasing the level of resources that could be made available for public capital investment, while continuing to comply with the fiscal rules.

In this context, two further options for increasing public capital investment should be noted which potentially could be accommodated within existing fiscal parameters.

7.7.1 Make Greater Use of European Investment Bank (EIB) Financing

Over the last decade the EIB has provided more than €6.8 billion for long-term investment across Ireland, including education, energy, transport, social housing healthcare, agriculture and water projects, as well as investment by small business and corporate research and development.

The Ireland-EIB Financing Group was established by the Minister for Finance and the President of the EIB in December 2016, alongside the opening of the EIB's first permanent presence in Ireland, to strengthen cooperation between the European Investment Bank and Irish Government Departments and stakeholders.

Discussions are ongoing between the Government and the EIB. These take place in three sub-groups under the auspices of the Ireland-EIB Financing Group, established last year to explore possible ways for Ireland to access additional EIB funding for projects that are economically necessary.

Continuing this close cooperation between the Irish authorities and the EIB, and seeking to identify opportunities for new and innovative financing solutions and products, offers the

[43] The RDF is being established as a counter-cycle revenue buffer to mitigate the risk that a downturn in Ireland's economic performance impacting negatively on government revenues leads to a deterioration in Ireland's fiscal aggregates that would otherwise require a pro-cyclical reduction in government spending.

potential to produce significant results, in terms of lower financing costs and also access to the EIB's technical expertise in project design and delivery, to the benefit of Irish infrastructure projects and also in support of enterprise in the SME and agriculture sectors.

7.7.2 Consider Use of PPPs to Deliver Additional Infrastructural Projects

A second option to facilitate the delivery of additional infrastructure could be to make further use of PPPs to deliver additional projects. It is very important that additional recourse to this option achieves value-for-money for the Exchequer and does not accentuate fiscal and other risks by pre-empting an excessive share of public capital resources over the extended (i.e. 30 year) time horizon the State makes unitary payments in respect of the PPP project.

The further utilisation of this option is currently being considered as part of the ongoing review of PPPs that is being conducted by the Department of Public Expenditure and Reform in parallel with the review of the Capital Plan, to help inform the new 10 year long-term capital plan to be produced alongside the National Planning Framework later in 2017. This review will also provide the opportunity to assess the potential role of user charges in supporting the delivery of public capital infrastructure through PPPs.

7.8 Addressing Legacy Deficits in Investment

Any identified infrastructure deficits will be addressed over the coming years through sustainable, efficient and well planned public investment.

The previous sections of this chapter have outlined the sensible and sustainable manner in which public capital investment will be increased in Ireland over the coming years. By 2019 Ireland is likely to surpass the 3% threshold which is generally accepted as the appropriate level of capital expenditure for a developed economy. Capital expenditure as a proportion of total government expenditure will also be above the European Union average. As previously explained, capital expenditure levels in excess of those which have already been agreed could increase the risk of inflationary pressures and over-heating of the economy. In the past, when such expenditure levels have been exceeded there have also been question marks over the efficiency of the investment and the value for money achieved.

While public capital investment was constrained following the crisis in 2008, over the past twenty years Ireland has had above average levels of investment in comparison to the EU 15. This investment has resulted in significant improvements in Ireland's capital infrastructure stock, for example Ireland now has more kilometres of motorway per head of population than Germany, France or the U.K.

However there are still infrastructure gaps as identified in the Infrastructure Capacity and Demand Analysis. Addressing these gaps requires efficient, targeted and well planned investment. A key element of achieving such investment will be based on the development of Ireland's capital investment framework. As outlined in the following chapter, this will include the delivery of the 10 year National Investment Plan which will be integrated with the new National Planning Framework.

Developing a long-term approach to capital investment, such as this, should allow for improved project planning by Departments and agencies. It will also provide clarity, confidence, stability and certainty for the construction sector, thereby allowing the sector to plan for providing the capacity and capability required over the coming years. This approach will help ensure that public investment demand is met in a structured, planned and cost-effective way, thereby avoiding the 'boom and bust' approach of the past where capital spending was highly pro-cyclical (i.e. 'on' during economic expansions / 'off' during economic contractions) and discouraging the adoption of a long-term planning approach for the sector.

8. Key Next Steps

This chapter summaries some key actions and next steps following the completion of the review of the Capital Plan.

8.1 Allocation of increased resources for public investment in Estimates 2018

Informed by the findings of, and the response to, this review of the Capital Plan, the Government will make final decisions in the context of the Estimates 2018 on the allocation of the additional funding available for public investment over the period 2018-2021, for announcement in Estimates 2018.

8.2 Publication of Long-Term 10 year National Investment Plan

Following the allocation of the funding for increased capital investment in the Estimates 2018, the Government will publish a new 10 year National Investment Plan for the period 2018-2027. The key objectives emerging for the 10 year National Investment Plan are as follows:-

- put in place a long-term strategic framework for public investment;
- secure greater stability of public investment, minimising pro-cyclicality;
- enhance the economy's supply and growth potential;
- strengthen the economy's resilience in terms of key risks, in particular Brexit;
- strongly underpin the spatial strategy agreed in the forthcoming National Planning Framework (NPF);
- support the achievement of critical climate change goals including the recently published National Climate Mitigation Plan, and address climate resilience;
- ensure the macroeconomic and fiscal sustainability of capital investment plans; and
- provide greater certainty for the construction industry, so it can build the capacity and capability to successfully deliver priority public infrastructure on a value-for-money basis.

8.3 Integration with National Planning Framework and Climate Action

It is a particular priority to ensure the very close alignment of long-term capital planning with the key objectives of the NPF - *Ireland 2040 Plan* to be published by the Department of Housing, Planning & Local Government before end-year. The objectives of the NPF are fundamental to the achievement of long-term economic, social and environmental sustainability. A more balanced distribution of population and employment growth is considered essential to safeguarding the economy's growth potential and pre-empting the risk that economic growth would be seriously constrained by congestion costs. Close alignment of the 10 year National Investment Plan with the NPF is, therefore, proposed to provide a durable strategic anchor focus to future public investment decisions, consistent with achieving a low carbon and climate resilient economy by 2050. The national transition objective relating to the achievement of a transformed low carbon and climate resilient

society will need to fundamentally shape investment choices and spatial settlement over the coming decades.

8.4 Climate Action

Public capital investment is key to supporting the radical societal transformation required to achieve a low carbon and climate resilient economy by 2050. Government recognises that it will be important to retain capacity to adjust spending priorities to address the annual mitigation targets that Ireland will have over the period 2021-2030, which will require a significant change in the governance of investment over the period to 2030 with greater application of appraisal of the results achieved by alternative measures. To that end, the Department of Public Expenditure and Reform review of the Public Spending Code to be completed in 2018 will need to ensure its suitability for capturing key costs and benefits of climate measures, including assessment of the appraisal timeframe, the shadow price of carbon and discount rate employed.

In addition, as part of the review of the Public Spending Code a review of guidance is being undertaken on public expenditure appraisal and evaluation to ensure their suitability to capturing key costs and benefits of climate measures.

8.5 Reforms of Public Investment Process

The 10 year National Investment Plan will also include proposals for structural reform of public investment in terms of the planning, selection and delivery of capital projects. This will be informed by the Public Investment Management Assessment (PIMA) undertaken by the IMF in July 2017.

The findings of the PIMA are expected to play an important role in identifying how institutions and public governance systems in Ireland responsible for and related to planning, allocating and delivering public capital infrastructure might be further strengthened. The PIMA report highlights the importance of moving to a model of project selection based on robust assessment of the returns generated by projects. The final recommendations of the PIMA are expected to be a valuable input to the development of Ireland's long term capital infrastructure planning into the future.

8.6 Stakeholder Engagement

It is planned that a consultative forum will take place in the autumn, building on the discussions on public investment at the National Economic Dialogue in June to provide an opportunity for key stakeholders to discuss and comment on the Review Report and its findings and recommendations.

8.7 Supporting the Capacity of the Construction Sector

The construction sector has a pivotal role to play in the delivery of public investment plans on a value-for-money basis. The scale of increase in public capital spending, against the backdrop of continuing strong private sector investment, will accentuate capacity pressures for that

sector. There needs to be a renewed strategic focus on supporting the strengthening of the capacity, capability and degree of competition of the domestic construction sector in Ireland as well as on encouraging and promoting market entry from abroad by confirming and highlighting the planned scale of Ireland's public capital investment plans. Following from this review, it will be a particularly priority to reinforce existing initiatives to meet the skills and capacity needs of the sector and support its strategic development in line with the medium- and long-term requirements of the Irish economy.

8.8 Examination of PPP and EIB Options to Increase Public Investment

The exploration of these options discussed in Chapter 7 to secure increased investment in public infrastructure and a higher level of capital expenditure in priority areas is ongoing to ascertain the extent to which they could be accommodated within existing fiscal parameters and would not require the provision of increased funding resources from General Government or impact on the achievement of current fiscal targets.

Annex 1

Table i: Fiscal Allocations for Capital Expenditure 2018-2021

€ billion*	2018	2019	2020	2021	Cumulative
Total *Summer Economic Statement* (net) Fiscal Space	1.3	3.2	3.4	3.4	**11.3**
Planned allocation for Expenditure Measures	0.8	1.5	1.6	1.5	**5.4**
Of which:					
Current	0.6	0.9	1.0	1.0	**3.6**
Capital	0.2	0.6	0.6	0.5	**1.9**

***Rounding effects.**
Source: Summer Economic Statement 2017; D/PER calculations.

Table ii: Capital Expenditure Split of the Fiscal Allocations for 2018-2021

€ billion*	2018	2019	2020	2021	Cumulative
Capital Fiscal Space - *Summer Economic Statement*	0.2	0.6	0.6	0.5	**1.9**
Of which:					
GFCF – Fiscal Space	0.2	0.4	0.4	0.3	**1.3**
Non-GFCF – Fiscal Space	0	0.2	0.2	0.2	**0.6**
Using 'smoothing' treatment for GFCF	0.8	1.5	1.5	1.5	**5.3**
GFCF – Cumulative Additional	0	0.2	0.4	0.6	**1.1**
Non-GFCF – Cumulative Additional					
Less:					
GFCF already allocated (Budget 2017 and Rebuilding Ireland Plan)	0.6	0.7	0.5	0.5	**2.5**
Total Remaining Capital to be Allocated	0.2	1.0	1.4	1.6	**4.1**

***Rounding effects.**
Source: Summer Economic Statement 2017; D/PER calculations.

Table iii: Additional Capital Allocated since Announcement of SES 2016

€ billion*	2018	2019	2020	2021	Cumulative
Rebuilding Ireland	0.5	0.6	0.5	0.5	**2.1**
Budget 2017 – Non-housing	0.1	0.1	0	0	**0.2**
GFCF already allocated (Budget 2017 and Rebuilding Ireland Plan)	0.6	0.7	0.5	0.5	**2.3**

***Rounding effects.**

Table iv: Reconciliation of Capital Plan Ceilings with Updated Capital Ceilings in SES 2017

€ billion*	2016	2017	2018	2019	2020	2021	2016-21
Capital Plan Ceilings	3.8	4.0	4.2	4.6	5.0	5.4	27.0
SES 2016 – Additional Capital	0	0.3	0.7	1.2	1.4	1.6	5.1
2016 Technical Adjustments**	0.4	0.3	0.3	0.3	0.3	0.3	2.0
SES 2017 – Additional Capital	0	0	0	0.5	0.5	0.5	1.5
SES 2017 – Capital Ceilings	**4.2**	**4.5**	**5.3**	**6.6**	**7.2**	**7.8**	**35.6**

*** Rounding effects.**

**** Includes the reclassification of PPP unitary payments from current to capital, capital carryover and Budget 2017.**

Annex 2

Definitions of Public Capital Investment

There are a number of different definitions of public capital investment used throughout this report. Before examining these definitions, it is important to note the distinction between public capital investment carried out by the General Government sector and private capital investment carried out by private companies or member of the public. In some sectors of the Irish economy the majority of capital investment is carried out by the Government, e.g. transport infrastructure, while in other sectors the majority of investment is carried out by the private sector, e.g. housing.

Public Gross Fixed Capital Formation (GFCF)

This is the measurement which is generally used for making international comparisons of public capital investment. This is a broad measure of public capital investment in the sense that it includes central and local government expenditure.

Where the term public GFCF is used in this report it refers to GFCF in the General Government sector.

According to the European System of Accounts (ESA) 2010, "gross fixed capital formation (P.51) consists of resident producers' acquisitions, less disposals, of fixed assets during a given period plus certain additions to the value of non-produced assets realised by the productive activity of producer or institutional units. Fixed assets are produced assets used in production for more than one year".

The General Government sector in Ireland includes central Government, local Government and other agencies and bodies. It should be noted that that there are public bodies which are not included in the General Government sector e.g. the ESB and Dublin Airport Authority. The CSO publishes an official Register of Public Sector Bodies.

Public GFCF does not include items of Exchequer expenditure such as capital grants to bodies outside of the General Government sector.

Gross Voted Capital Expenditure

This is a measurement which relates directly to the budgetary decisions made by the Government.

This is the figure for gross capital expenditure by Departments and agencies, which is voted by the Dáil on an annual basis. This is Exchequer expenditure, i.e. it comes from the Exchequer Account, into which all Government receipts are paid and from which all Government expenditure is funded, unless provided otherwise by law. Unlike GFCF this measurement does include items of expenditure such as capital grants.

This measurement differs from Net Voted Capital Expenditure in that it does not include appropriations in aid, i.e. Departmental receipts which, with the agreement of the Dáil, need not be paid directly into the Exchequer, but which may be retained to defray the expenses of the Vote to which they refer.

Non Voted Capital Expenditure

This measurement mostly covers Semi-State Companies but also includes a number of other agencies and bodies, e.g. the E.S.B. and Coilte Teo. Non-Voted Capital Expenditure is summarised in Appendix 9 of the Revised Estimates for Public Services 2017.

This is capital expenditure which, by reference to specific statutes, may be incurred from the Central Fund without annual reference to the Dáil in the Estimates for the Supply Services.