SCOTTISH FUTURES TRUST

Long-term infrastructure for Scotland: supporting a sustainable and thriving future

Executive Summary

January 2026

Foreword

Infrastructure is the backbone of our economy, society, and environment. Economic infrastructure connects people and businesses; social infrastructure underpins essential public services; housing forms the very fabric of communities; and natural infrastructure protects our ecosystems and supports wellbeing.

Scotland's infrastructure is a complex set of interconnected systems which need to work seamlessly together to improve quality of life and underpin our national ambitions.

Infrastructure systems share a central characteristic – they comprise assets that are expensive, take a long time to plan and deliver, and last for decades. Each decision that is made in every infrastructure system can therefore have a generational impact. It is vital that those who influence and make the larger national decisions around investment priorities, as well as those who are charged with the stewardship of individual assets, do so with the long-term in mind. That is not easy, as uncertainty increases the further you look into the future, and generational thinking is not well suited to short-term political and profit and loss cycles.

This 30-Year infrastructure Needs Assessment – the first of its kind for Scotland – is intended to counter those short-term pressures. It offers a set of tools for strategic infrastructure planning and investment decision making over the decades ahead and comprises of the following four sections:

Drivers of Change – highlighting the five major trends of economic priorities, climate change, global security, public service reform and demographics, that will drive infrastructure development over the next 30 years. Planning and decision making at all levels and across all infrastructure sectors can be improved by taking these trends into account and recognising that they can each be influenced by the individual decisions we take – using infrastructure investment to maximise outcomes for people, places and planet.

Scotland's Infrastructure – drawing together a baseline understanding of Scotland's main infrastructure sectors in one place – to be built on and act as a reference source to improve cross sectoral understanding. With sector stakeholders, we have begun to consider the impact of the identified drivers on each sector, to draw out key challenges and opportunities, and paint a high-level picture of that sector over the coming 30 years.

Cross Cutting Themes – outlining the six themes of nature positive, prioritising place, data and technology, asset and climate resilience, demand dynamics and energy transition, which will support improved system thinking across infrastructure sectors. We see them considered to varying degrees within infrastructure sectors and believe they can be addressed more powerfully together. They provide a common language and an agenda for focus and collaboration.

Enabling Success – highlighting a series of insights from the Scottish Futures Trust (SFT), as a centre of infrastructure expertise, pointing to areas of focus and development around the infrastructure lifecycle from strategy and investment, through delivery to the increasingly important and sometimes overlooked management and maintenance of what we already have. All this can be underpinned through strong governance and partnerships as well as increased engagement with the public, to bring them on the journey of long term change.

This Needs Assessment builds on the work of the Infrastructure Commission for Scotland. We intend it to be a staging point for further development and discussion, providing strategic insights to inform policy, improve practice, and guide investment. With support and further engagement from stakeholders we can go further. The drivers and cross-cutting themes could be developed into a transparent investment prioritisation framework, enhancing current approaches and building on the work of the Institution of Civil Engineers' Enabling Better Infrastructure global best practice guidance. We believe that such an approach could gain widespread political, business and societal buy-in to a sustained and stable investment programme integrated across infrastructure sectors and directed to improving the long-term outcomes for Scotland. Across all of our work, we will continue to focus on improving the infrastructure for Scotland, updating this Needs Assessment to inform Scotland's Infrastructure Strategy.

I would like to express my gratitude to the talented team at the Scottish Futures Trust and the many stakeholders who contributed to shaping this Needs Assessment. Your contributions have been critical in shaping what remains SFT's independent work. We will be seeking to engage further and welcome feedback on how this Assessment can provide a starting point to guide collective efforts in delivering sustainable infrastructure that supports a thriving Scotland – now and for generations to come.

Peter Reekie
Chief Executive, Scottish Futures Trust

01 Executive Summary

Executive summary

Infrastructure plays a critical role in Scotland's daily life and long-term ambitions, underpinning essential public services, economic growth, societal wellbeing, and environmental resilience. This Needs Assessment, developed by the Scottish Futures Trust, provides a strategic framework to guide infrastructure investment over the next 30 years, addressing emerging challenges and opportunities.

Through the following sections we outline our approach to preparing this Needs Assessment and summarise our findings, concluding with a narrative on how to build upon good practice to deliver infrastructure effectively. Our analysis covers an assessment of the major national and international drivers that will influence infrastructure over the next 30 years, a review of the breadth of our infrastructure sectors, and system themes that can direct a joined-up model of infrastructure planning and investment.

Long-term infrastructure for Scotland

The goal of this Needs Assessment is to improve outcomes for Scotland with a 30-year view of key drivers, themes and approaches that can inform infrastructure decision making with a horizon that matches the generational lives and impact of the assets themselves.

It adopts Scotland's broad definition of infrastructure, encompassing economic, social, and natural assets, and reflects our infrastructure policy priorities.

Through futures thinking including scenario modelling, sectoral reviews and system thinking, this assessment highlights key drivers of change and interdependencies across Scotland's infrastructure systems. It provides strategic insights to align infrastructure investment with Scotland's policy priorities, to deliver long-term societal, economic, and environmental benefits.

This Needs Assessment aligns with Scotland's revised infrastructure investment framework to inform Scottish Government's draft 10-year Infrastructure Strategy (2026/27–2036/37). It highlights the importance of good practice implementation, including strategic prioritisation and collaboration across sectors, integrating long-term insights into investment decisions.

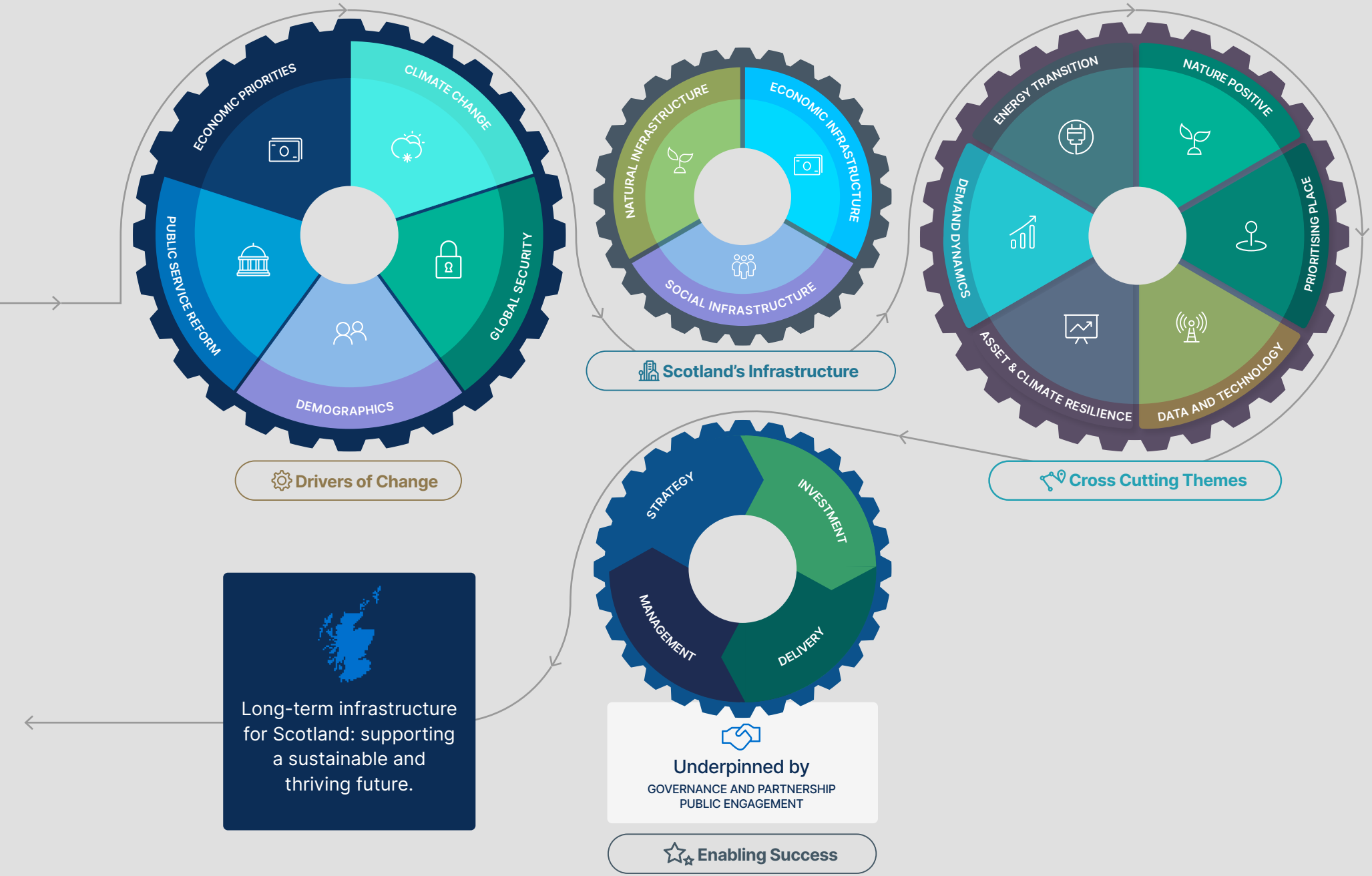
It provides guidance for policymakers, investors, and stakeholders, encouraging a systemic approach to infrastructure planning that supports Scotland's ambitions for an inclusive, net zero carbon economy. It is a non-statutory research-based guide produced independently by Scottish Futures Trust and we intend that future iterations will build on improved data, engagement, and strategic alignment to support robust decision-making.

Figure 1 sets out the structure of the document and in this section we summarise:

- The key drivers of change - major trends that will impact infrastructure decisions over the next 30 years and which can be developed to guide prioritisation.
- Our analysis of Scotland's main infrastructure sectors including their opportunities, challenges and potential development path over the next generation.
- Cross-cutting themes which will tie infrastructures together and form an agenda for improved collaboration.
- Insights from Scottish Futures Trust on key areas of focus around the infrastructure lifecycle, to enable success.

We draw these together into high-level messages for policy makers and asset owners at the end of this section.

Figure 1: Assessing long-term need



Key drivers of change

Five major trends will shape Scotland's infrastructure needs over the next 30 years. Every infrastructure strategy, asset management plan and investment decision should both be shaped by these drivers, and bring an opportunity to influence them:

Demographics

Scotland's population is **projected to grow by 6.2% by 2047** from 2022 figures, driven by migration, alongside an ageing population and declining numbers of children. Spatial distribution changes, such as urbanisation and growth in the east of the country alongside depopulation in some western areas, will impact infrastructure needs, particularly housing, health and care, utilities, and transport. Infrastructure decisions can impact these shifts to ensure balanced regional development, to safeguard our communities, and to deliver effective public services, recognising the costs to communities and public services of unmanaged population changes.

Climate change

The climate is changing. Adapting to those changes and mitigating the effects through transition to net zero emissions is set to be the infrastructure challenge of our generation. Decisions must balance risks such as flooding, elevated temperatures, and water scarcity, with delivering emission reductions, harnessing nature-based solutions, energy efficiency, and behaviour change in the most economically efficient and societally acceptable ways possible. A system approach is needed, addressing areas which are behind ambitions, and continuing the progress made.

Global security

Scotland's infrastructure must adapt to rising geopolitical uncertainty and natural risks, addressing resilience in areas like energy, telecoms, food, and water. Balancing global connectedness and cyber security across infrastructure systems is likely to become an increasing challenge. Continued collaboration between UK and Scottish Government is critical to align national security and resilience priorities with economic, social and environmental goals.

Economic priorities

Infrastructure is vital for driving inclusive growth and supporting emerging sectors such as renewable energy, hydrogen, and carbon capture, while continuing to address the needs of existing valuable sectors such as digital technology, food and drink, life sciences, creative industries and tourism. Investments in enabling infrastructure, such as transport, telecoms, and housing, will catalyse private sector activity and spatial development. Infrastructure investments must also continue to be a key tool to support vulnerable communities and their engagement in the economy. Aligning planning and decision making with the right national regional and local economic geographies will be key.

Public service reform

Public services are being reformed for efficiency, to join-up, prevention and fiscal sustainability. **Infrastructure decisions can deliver shared assets in support of integrated services, enable technology-driven delivery models, and promote place-based investments to support community wellbeing.**

A strong foundation

In delivering this Needs Assessment we have worked with stakeholders to review the existing asset base, as well as the challenges and opportunities across Scotland's main infrastructure sectors, to demonstrate how the identified drivers will impact specific sectors. Our sectors are diverse, each playing a critical role in delivering the country's long-term ambitions. By addressing sector-specific challenges and opportunities, Scotland can ensure the value of both existing and new infrastructure is realised:

Transport

Scotland's transport system is key to connectivity, economic growth, and sustainability. It is unlikely that Scotland's underlying transport infrastructure will be significantly expanded in the next 30 years. Instead, the focus will be on upgrading, maintaining and decarbonising Scotland's transport systems, with greater use of technology to improve service accessibility. In support of climate change mitigation and resilience, opportunities exist in behaviour change to reduce car dependency and promote alternative modes, alongside enhancing public transport, integrating sustainable freight systems, and leveraging technology to improve efficiency and resilience. In addressing the complexity of need, there should be consideration of innovative approaches to finance and delivery such as road pricing or congestion charges.

Energy

Scotland leads the UK in renewable energy, with 70% of electricity generated from renewables in 2023. In the next 30 years, the energy system is likely to be unrecognisable, both at home, in industry and in services such as transport, as we continue to address climate challenges while responding to new energy technologies. Opportunities in offshore wind, hydrogen, and carbon capture, utilisation, and storage offer significant potential to drive economic growth and support net-zero goals. To achieve this ambition, challenges to address include grid capacity, energy pricing barriers, workforce skills,and decarbonising heat. Implementation must also address fuel poverty and ensure a Just Transition for communities.

Waste

Scotland's waste sector in the next 30 years is likely to continue its current trajectory, making strides in reducing landfill use and adopting circular economy principles. Through new technologies, by addressing public opposition to new solutions and by establishing a clearer waste market, new circular economy infrastructure is likely to be more prevalent. New and cleaner technologies including digital innovations, advanced recycling systems, and energy from waste technologies are likely to support net-zero ambitions and foster a sustainable, resource-efficient economy.

Telecommunications and digital

Scotland's telecoms sector underpins public services and economic growth, with advancements in broadband and 5G improving connectivity. Over the next 30 years this is likely to be an area of increased reliance in our economy and society, including the delivery of public services and in-home smart infrastructure. Expanding 5G, enabling green data centres, and integrating digital technologies into public services offer significant opportunities to address inequalities and support innovation and resilience. However, rural areas still face challenges in digital inclusion, and cyber threats remain a concern, requiring sustained action.

Water (incl. flood management)

The water sector is vital for public health, economic activity, and environmental resilience. Over the next 30 years the focus for water provision is likely to be maintenance and renewal of the significant asset, alongside investment to support climate adaptation and mitigation, including flood management. Evolving areas with a possible draw on water such as hydrogen and data centres add a level of uncertainty to projections. Opportunities include leveraging data and technology for efficiency, adopting nature-based solutions for climate adaptation, and expanding hydropower capacity. The sector challenges to address include the ageing infrastructure, climate risks, and increasing residential and commercial demand. Long-term strategies must balance sustainability, affordability, and resilience.

Housing

Scotland faces a housing crisis, with demand for affordable homes exceeding supply and challenges in retrofitting for net-zero goals. Over the next 30 years we are likely to have a different approach to housing supply, with housing distribution responding to the changing demographics, while the ageing population and their accessibility needs to remain in their homes will need to be factored into provision. Housing will continue to evolve to support climate priorities. While the current issues are complex and systemic, innovative delivery and construction techniques, reusing vacant properties, and community-led developments offer solutions to address affordability, supply, and sustainability. Collaboration is essential to meet Scotland's changing demographic and environmental needs.

Health and social care

Rising demand, ageing infrastructure, and financial pressures affect Scotland's health sector. Over the next 30 years, our health services are likely to be very different, with physical infrastructure provision focusing on areas where home or technical solutions are not appropriate. The ageing demographic will impact on the type of services in demand and therefore how infrastructure needs to respond. Affordability barriers will likely require more innovation, and consideration of public-private partnerships may be necessary. Immediate opportunities to challenges include digital health innovations, preventative care focussing on place-based primary care and integrated health and social care services. Addressing health inequalities and supporting workforce development will be essential to sustain high-quality care and adapt to demographic challenges.

Emergency services

Scotland's emergency services face challenges including ageing infrastructure, rising demand, and climate-related risks like wildfires and flooding. Over the next 30 years the traditional infrastructure needs of this sector are likely to continue to change and reduce, through more community models of co-location, integrating with other public services. Digital and technological alternatives will be developed, supporting this reduced use of traditional infrastructure, supporting real-time resource management and service efficiency. Opportunities, including co-locating services, using technology for data-driven delivery, and adopting prevention-focused models can help address current challenges, improving efficiency and outcomes, while addressing evolving public safety needs.

Education

Over the next 30 years demographic changes will impact this sector, changing the spread of demand and related infrastructure. Infrastructure is likely to be reduced, although varied across early learning to Higher Education. There will be greater online learning, where developmental, social or other reasons for in-person education is not essential. **Asset flexibility to respond to changing life stages of learning and in-year cycles will be more integrated.** Modern climate-resilient infrastructure is critical to supporting learners of all ages and addressing socio-economic attainment gaps. Immediate opportunities include leveraging digital technology, embedding sustainability into the curriculum, and aligning education with labour market demands. Strategic investment will ensure the sector remains inclusive, equitable, and future-ready.

Defence

Over the next 30 years, the current trajectory of a changing world is likely to see increased spending on defence infrastructure, with that infrastructure technologically advanced. While Ministry of Defence (MoD) locations in Scotland may not increase, they are likely to be of even greater importance to UK territorial integrity. **Opportunities already lie in naval shipbuilding, advanced technologies, and international collaboration, while challenges include ageing assets, skills shortages, and climate-related risks.** Investment in resilient, modern infrastructure is vital to maintaining Scotland's leadership in defence innovation. Anticipated investment by the MoD should be harnessed for the benefit of communities and defence sector in Scotland, while there should be greater collaboration and integration with civil authorities to address emerging risks.

Justice

The justice sector faces challenges such as prison overcrowding, case backlogs, and ageing facilities. Over the next 30 years this sector is likely to see changes in how aspects of the service are delivered, using automation and remote communication, reducing the need for some administrative infrastructure functions. **New approaches to offending behaviour, and by addressing reasons for crime, may reduce overcrowding, minimising the need for significant additional assets.** Further opportunities include modernising assets and leveraging digital technology, while a focus on integration with other public services will improve efficiency and outcomes.

Natural infrastructure

Scotland's natural capital is vital for biodiversity, climate resilience, and economic activity. Over the next 30 years the role of natural capital is likely to be increasingly recognised and integrated into our practises: for economic growth; in addressing climate mitigation and adaptation; in support of wellbeing, also supporting prevention measures; and essentially, a greater focus on biodiversity preservation and promotion, to sustain these impacts. Current challenges include climate impacts and biodiversity loss, but opportunities lie in nature-based solutions, peatland restoration, and emerging natural capital markets, while data and technology provide opportunities for more effective monitoring of assets. Collaboration across sectors will ensure Scotland's natural assets are protected and enhanced for future generations.

Culture and recreation

Scotland's culture and recreation sector contributes to economic growth, wellbeing, and national identity but faces funding constraints and climate risks. Over the next 30 years the sector is likely to grow in some areas, linking to tourism growth opportunities, while others such as community culture and recreation are likely to be sustained at current levels, but more integrated to wider policy ambitions such as early intervention to support prevention measures, and providing greater digital interaction opportunities. Expanding opportunities for public-private partnerships, philanthropic support and community fundraising should be considered. While investment in sustainable tourism, digital technologies, and recreational infrastructure such as walking and cycling networks will ensure the sector continues to thrive.

Some sectors are likely to be unchanged in the next decades, with a greater focus on maintenance and climate resilience; whereas others are on a pathway where infrastructure is more likely to increase in type or evolve in form; while finally a few sectors are transforming with infrastructure likely to be vastly changed in 30 years time, both in type of assets within sectors such as energy, or for some public services physical assets may no longer be the main focus to facilitate service delivery, with a greater balance of technological alternatives.

Given this, it would be valuable to build out a cross-sectoral picture of Scotland's infrastructure, with a co-ordinated data structure, at least covering asset location, and for public sector detailing infrastructure value and condition/ maintenance need, would be valuable. This could head towards a national infrastructure digital twin. For some assets, there are opportunities to consider alternative infrastructure funding models, to innovate and support ambitions.

Cross-cutting themes

We believe to manage and develop infrastructure that works for the people of Scotland, we need to focus on greater integration and system thinking. A focus on interdependencies and synergies is essential to understand how our infrastructure interacts and can be best developed for multiple impacts, creating greater value.

We have identified six cross-cutting themes from our analysis, which can provide a common language and agenda for cross-sector collaboration.

Energy transition

The transformation of Scotland's energy infrastructure is pivotal, requiring significant investment and coordination across sectors.

Key considerations include:

- **Investing for the transition:** Private investment will be necessary to meet the scale of change required. Governments, regulators, and industry must address funding challenges, behavioural change, and planning complexities to deliver on statutory climate commitments by 2045. A clear route map is needed to provide market certainty.
- **A defined path:** Developing a clear, prioritised energy transition action plan aligning with UK strategies, such as the 10-Year Infrastructure Strategy. Collaborating with the National Energy System Operator (NESO) and the Office of Gas and Electricity Markets (OFGEM) to prioritise public investment, unlock private sector funding and address barriers such as energy pricing, and focus on grid innovation, renewable energy, and storage market development.
- **Supporting Scottish impacts:** Ensuring the energy transition benefits Scottish communities through supply chain development, community wealth-building principles, and alignment with the Just Transition Commission's conditionalities guidance. Energy transition must be built in to plans for all assets across all infrastructure sectors, with heat decarbonisation presenting a particular challenge. There will be new infrastructure assets classes and networks to be built out, including charge points and heat networks. Place-based planning along with integration of energy transition into asset lifecycles and maintenance plans will help minimise the overall cost and improve societal acceptance. Lessons should be learned from the oil and gas sector to maximise societal benefits while balancing upstream and downstream impacts.

Nature positive

Scotland's natural capital is a fundamental asset, supporting economic output, biodiversity, and climate resilience.

Key considerations include:

- **Nature-based climate Solutions (NbS):** Prioritise cost-effective, nature-based solutions to address challenges such as flooding, landslides, and reforestation, building on biodiversity and adaptation policy. NbS can deliver multiple benefits, including carbon mitigation, biodiversity promotion, and climate adaptation, while creating economic opportunities and jobs. This should include both macro-level infrastructure but also micro-level NbS, such as green roofs and permeable surfaces.
- **Greenspace and wellbeing:** Nature positivity should be built into decision-making, maintaining and enhancing biodiversity in development activity, and promoting biodiversity across the public sector estate and linear infrastructure peripheries. Scottish Government should prioritise investment in diverse green infrastructure to improve urban settings, support wellbeing, and for climate resilience.
- **Balanced ecosystem management:** Decisions on natural assets must consider long-term trade-offs across climate mitigation and adaptation, wellbeing, biodiversity, and economic use. Transparent decision-making and a robust understanding of ecosystem interactions are essential to guide investment and address competing demands, such as water usage for agriculture, industry, and hydrogen production.
- **Data and market frameworks:** Build on NatureScot's work on a natural capital baseline to create a comprehensive Scottish picture. Develop the Natural Capital Market Framework to expand opportunities for trading in carbon, biodiversity, and other resources while ensuring environmental protection.

Prioritising place

Infrastructure investment must reflect the unique needs of Scotland's diverse communities and regions.

Key considerations include:

- **National vs. local decision making:** Balance national, regional, and local priorities to ensure strategic investment while addressing nuanced local needs. Regional governance structures, such as Regional Economic Partnerships, should be leveraged to facilitate development and remove unnecessary competition.
- **Place typologies:** Build on the National Planning Framework 4 to align place archetypes with infrastructure investment, having consideration of models such as Scotland's Population Health framework, to create comprehensive typologies.
- **Neighbourhoods:** Create spaces and locations which support targeted and collaborative prevention through local approaches to inclusive growth and community wealth building.
- **Flexible assets:** Design public assets to adapt to changing and diverse community needs, enabling shared use and efficient service delivery.

Asset and climate resilience

Existing assets must be managed effectively while adapting to climate and service challenges.

Key considerations include:

- **Asset longevity and flexibility:** Where new delivery models are being developed, there is a need to address interim investment to maintain existing assets effectively, while progressing the transition.
- **Investment hierarchy:** Continue to implement the Scottish Government's Infrastructure Investment Hierarchy to balance maintenance, enhancement, and new investment priorities.
- **Climate resilience:** Focus on nature-based solutions as a first step in climate adaptation, complemented by new technology and regulation.
- **External resilience:** Strengthen infrastructure against global risks, having conducted a review of vulnerabilities.

Data and technology

Data and technology are critical enablers of efficient infrastructure and public service delivery.

Key considerations include:

- **Data insights:** Leverage data as a key asset by adopting national data standards and open-source principles where feasible. Enable better decision-making and innovation through improved data sharing and management. This should include re-visiting the value of the Scottish Government Digital Strategy for Planning.
- **Smart infrastructure:** Expand the use of Internet of Things devices, digital twins, and smart grids, to optimise asset performance, improve resilience, and support decarbonisation.
- **Technology innovation:** Foster innovation in sectors such as the circular economy, and in support of the energy transition, by creating conditions that stimulate technological development. Address challenges such as cyber security and digital trust to ensure equitable access and safety.
- **Addressing the balance:** address inclusion, cyber security and data privacy challenges. Strengthen leadership and co-ordination to accelerate investment to realise benefits of data and technology.

Demand dynamics

Scotland faces increasing demand pressures across public services and natural resources.

Key considerations include:

- **Behaviour change:** Promote prevention and behaviour change to reduce demand on public services, improve outcomes, and address climate challenges. Each sector should consider how it can harness behaviour change models to support appropriate demand management.
- **National conversation:** Engage communities in a national dialogue on demand challenges across infrastructure services, including energy, transport, and the evolving model of public services, exploring trade-offs and priorities for our future infrastructure.

Enabling success

To achieve Scotland's infrastructure ambitions over the next 30 years, a cohesive approach is required, moving from understanding need to clear and effective implementation. This section outlines the critical enablers for success across the infrastructure lifecycle, focusing on strategy, investment, delivery and management, underlined by partnership and governance, and public engagement.

Strategy

A long-term infrastructure strategy is essential, supported by evidence-based, needs-driven asset strategies.

Key considerations include:

- **Needs-based asset strategies:** Develop comprehensive asset strategies across the public sector, embedding the Scottish Government's Investment Hierarchy. These strategies should balance short-term no-regrets decisions, with long-term planning aligned to future service needs and geographic priorities. A place-based approach should bring together public bodies to identify cross-sector efficiencies and opportunities for asset sharing to support improved public service delivery.
- **Strategic prioritisation:** Strategic prioritisation provides the mechanism through which Scotland ensures that investment in infrastructure both meets current needs and anticipates future demand. A system-wide approach to prioritisation should assess synergies, resilience, value for money and deliverability, ensuring resources are directed to projects that deliver the greatest long-term economic, social, and environmental value. The drivers and cross-cutting themes we have identified can be further developed to form a prioritisation framework.
- **Key infrastructure systems:** Priority areas include energy transition, nature-based and climate resilience, digital and data infrastructure, low-carbon transport systems, water resilience, and place-based community infrastructure. Early prioritisation of enabling projects, such as grid modernisation, will unlock future opportunities.

Investment

The scale of infrastructure change requires substantial public and private investment.

Key considerations include:

- **Private investment principles:** Create an environment that attracts private investment by providing policy clarity, stable market conditions, and transparency.
- **Mobile capital and confidence**: Focus on attracting patient, long-term investment aligned with Scotland's 30-year need, creating informed clients, transparency and market confidence. Consider new innovative funding instruments and models, however ensure any new consumer charges are coherent across portfolios and consider affordability, particularly for vulnerable groups.
- **Policy and regulation:** Effective dialogue, policy alignment and shared frameworks for infrastructure planning and regulation should be considered, to strengthen delivery, promote cross-border investment, and create market confidence. Regulation to unlock enabling infrastructure is a particular opportunity area.

Delivery

Innovative, outcome-focused delivery models are essential to translate strategies into real-world infrastructure.

Key considerations include:

- **Construction pipeline and procurement:** Use procurement to align infrastructure investment with economic, social, and environmental priorities; and to provide clear signals to the construction industry on ambitions. Encourage innovation, digital adoption, and modern methods of construction while ensuring fairness and accountability.
- **Construction and delivery quality:** Continue to drive quality in design and delivery in the construction sector, creating innovation and value for money. Feedback loops through robust evaluation should be embedded in all construction projects, to support continued improvement.
- **Capacity building:** Invest in skills, systems, and institutions to address workforce shortages and prepare for emerging technologies. Build delivery capability, particularly within the public sector to ensure readiness for future challenges.

Governance and partnership

Strong governance will ensure alignment of policy, investment, and delivery across sectors.

Key considerations include:

- **Structural alignment:** Foster collaboration across national, regional, and local levels by aligning governance structures and priorities, to promote coherent, place-based decision-making. Strengthen public-private-community partnerships to enhance coordination and resource sharing.

Management

With 80% of our current infrastructure systems likely still to be in use in 2050, managing those assets effectively is an essential component of making the best use of assets across their lifecycle.

Key considerations include:

- **Making the best use of assets:** asset management needs to consider viability, sustainability and relationship to long-term asset strategies. Ageing assets with required maintenance in the public sector require tactical management, to balance short and longer-term priorities.
- **Tools and practice:** New management tools such as digital twins and smart technology should be used to support effective asset management, including predictive maintenance programmes. Skill development and consistent practise can support efficiencies.

Public engagement

Public understanding and acceptance are critical to successful infrastructure reform.

Key considerations include:

- **Meaningful engagement:** Integrate sustained public engagement into long-term planning, to build shared ownership and resilience. This will be vital for challenging transitions, such as climate adaptation or public service delivery changes.
- **Behaviour change:** Support preventative behaviours through systemic structures and clear communication, ensuring communities are engaged and informed, while having the opportunity to guide on priorities.

Stakeholder messages

Through our analysis in this report, we have highlighted messages and areas for infrastructure stakeholders to consider.

While these may be of general interest to anyone involved in the infrastructure sector, each of us will have a varying role in reflecting and acting on those messages. To help with that assessment, we summarise some key messages for Scottish Government, Ministers, private sector, other public sector and lastly ourselves, the Scottish Futures Trust.

Scottish Government

Strategic leadership

Integrate the Needs Assessment into its overall approach to infrastructure planning, investment and delivery:

- Establish and maintain a forward-looking function, linked to the Future Trends for Scotland analysis, the long-term drivers and cross cutting themes we have identified, and build them into future policy development, prioritisation and investment decision making.
- This should include balancing short-term no-regret investments for ageing assets with long-term planning and explicitly consider the investment hierarchy. Investment simply in “replacement” is unlikely to be optimal.
- To improve consistency and quality of evidence, commit to addressing key data gaps in assessing infrastructure need, including data standards across infrastructure sectors and establish comprehensive sectoral asset strategies. All infra sectors should refer to a single verified version of the truth for their future needs planning and explicitly consider investment decisions that respond to the long-term drivers.
- Maximise the potential for reinforcing greater collaboration and inclusion of cross-sectoral and system priorities, alongside implementing key enablers to unlock investment.

Collaboration and co-ordination

Commit to ongoing engagement with SFT and other partners to refine the Needs Assessment analysis, supporting the development of a 5-yearly review.

Public engagement and behaviour change

Foster public understanding and acceptance of infrastructure reforms through sustained engagement, co-design, and behaviour change initiatives.

Ministers

Strategic leadership

Recognise the inherent tensions between political cycles and infrastructure life-cycles by directing a long-term approach to infrastructure investment, committing to building on the output of this Needs Assessment to establish an evidence-based model of decision-making.

Investment and prioritisation

Consider the opportunity for the identified drivers to be built into a prioritisation methodology, that would align with their strategic priorities, and gain broad stakeholder support to give long-term pipeline stability.

Cross-border collaboration

Continue to work with the UK Government to secure critical investment and address shared priorities, such as energy grid upgrades, energy pricing challenges, cybersecurity, digital connectivity and resilience to external threats and events.

Other public sector

Improved evidence base

Contribute to the refinement and improvement of data, data standards and evidence base in support of the ongoing refinement of Scotland's long-term infrastructure needs.

Investment and prioritisation

Consider the drivers and cross-cutting themes we have identified and where they can be usefully integrated into long-term investment decision-making to support resilient infrastructure.

Integrated service delivery

Explore across the infrastructure system the potential for greater integration of decision-making with partners, to deliver co-located, efficient public services and infrastructure networks, improving outcomes for communities.

Private sector

Investment alignment

Engage with blended public / private funding and financing approaches, to co-deliver infrastructure projects and programmes, building markets and serving all of our communities.

Skills and competence

Invest in competence building and support workforce reskilling initiatives for a Just Transition.

Innovation leadership

Drive technological advancements in smart infrastructure, low-carbon solutions, and data-driven tools to enhance efficiency and sustainability.

Collaboration and partnership

Engage with the public sector to discuss alignment of investment priorities with local, regional and national priorities.

Scottish Futures Trust

Strategic leadership

We will engage with stakeholders across the infrastructure sector to seek feedback on this work, and if there is a broad level of support, commit to leading on a refreshed Needs Assessment through a 5-yearly process, improving the evidence base and refining and reviewing key messages.

Collaboration and co-ordination

We will explore with key Scottish Government stakeholders and agencies how the drivers and cross-cutting themes can influence their long-term decision-making, refining and reviewing to develop a framework for strategic alignment, that could be used as a prioritisation tool.

Implementation expertise

We will work with stakeholders on delivering priorities identified in the Needs Assessment, focusing on enablers such as procurement strategies, capacity building, innovative delivery models and funding mechanisms.

Private investment

We will support the government and its agencies in creating market certainty and clarity to attract private capital, particularly in areas such as energy transition, digital infrastructure, and nature-based solutions.

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