Feedback on the draft National Infrastructure Plan

This feedback is from the **Institution of Chemical Engineers (NZ)**.

Our (IChemE) responses are in blue. **Bold** indicates a selection from a multi-choice list.

Tell us what you think

Thank you for taking the time to provide feedback on the draft National Infrastructure Plan. This survey is designed to summarise the key findings and recommendations in the Plan - **you don't have to have read the Plan to take this survey** and tell us what you think. Your feedback will help inform the final Plan that will be submitted to Government later this year.

New Zealand's infrastructure — our roads, pipes, schools, power lines, hospitals, and much more — affects all of us, every day. The Plan tells us what we need to do to fix what's not working, and how we can plan better for the future.

The Plan includes four changes we think are needed to make sure that we'll have and are looking after the infrastructure we need today and in the future.

The four areas we need to change are:

- **Establish affordable and sustainable funding.** We spend a lot on infrastructure, but it's challenging to keep up with rising costs and to balance with other demands for taxpayers' money. This means we need to be clear about how we pay for building and looking after our infrastructure.
- **Clear the way for infrastructure.** Complex rules, changing policies and poor coordination make it unpredictable, slow and expensive to get things built. It also makes it hard to grow the skilled workforce to build and maintain what we need over the long-term.
- **Start with maintenance.** Too often we prioritise new projects while the infrastructure we already have runs down. In the long term, this leads to higher costs and can make services unreliable.

- **Right-size new investment.** We often launch major infrastructure projects before they're ready, without proper planning or being clear on how we'll pay for them. This can lead to delays, projects costing more than expected, and communities not getting all of the services they need.

The draft National Infrastructure Plan makes 19 recommendations to address these areas. These span the entire infrastructure system to help New Zealand build and maintain the right infrastructure, at the right time, for the right needs and the best value.

We'd like your feedback on these four areas of change and our proposed recommendations. You can answer as many or as few questions as you want to.

If you choose to answer all of the questions, the survey should take about 10 - 15 minutes. If you just answer the main questions, it should take about 5 minutes.

The New Zealand Infrastructure Commission/Te Waihanga collects personal information from individuals when it is necessary for a lawful purpose connected with a function or activity of the Commission as a New Zealand Crown entity. This may include information collected when individuals submit information on our website. This includes information submitted when you contact us, including through online engagements surveys and/or consultations. We may use external research agencies for research and analysis, and any information processing and data use will comply with the Privacy Act 2020 and our Privacy Policy. During the analysis of this research, AI software MaxQDA is used to categorise and identity trends, key themes and find patterns in the large data sets. After using this, we review, edit, and take full responsibility for publishing the content.

1. **Establish affordable and sustainable funding**
   Finding smarter ways to pay so we can keep the essentials affordable for everyone.

New Zealand already spends a lot on infrastructure - more than most countries like us - but we're not always getting good value for what we spend. At the same time, both the Government and households are facing tighter budgets. Ageing infrastructure still needs to be looked after, and new infrastructure is needed for a changing population and growing economy, while managing the effects of climate change and other natural hazards. We need a smarter way to decide who pays, when, and how much, while making sure essential services remain affordable for everyone.

To what extent do you agree that 'establishing affordable and sustainable funding' is a priority for New Zealand?

Strongly agree **Agree** Neutral Disagree Strongly disagr

1.1 Keep useful information up to date

Establish affordable and sustainable funding: Recommendation 1 of 5

The challenge

Decision makers don't always have access to the information they need to make sure infrastructure investment is matched to New Zealanders' long-term needs in an affordable way.

We're making the following recommendation

Regularly update 'forward guidance' - long-term information about what New Zealanders need and where, which projects can best meet those needs in the most affordable way, and what infrastructure is in progress in the national 'pipeline' - so that decision makers have what they need to make well informed decisions.

To what extent do you agree that this recommendation will address this challenge?

Strongly agree **Agree** Neutral Disagree Strongly disag

Is there anything missing in our approach? Or would you like to comment on your answer, above?

Up to date information is particularly important for management of existing assets and to inform planning required for maintenance and upgrades, particularly where population growth or demand for infrastructure is likely to increase. Maintenance projects may be perceived as the less exciting projects, so without information on current status, it becomes tempting to favour a major greenfield project over maintaining existing assets. Large expenditure on unscheduled reactive maintenance should be discouraged. Acknowledgement of NZ's aging infrastructure, and the suitable investment required to upgrade and maintain this, needs to be factored into decision making.

1.2 Invest based on real needs and independent advice

Establish affordable and sustainable funding: Recommendation 2 of 5

The challenge

New Zealand often makes decisions about infrastructure based more on how much money we have available to spend each year, rather than on our long-term national needs. Our current approach means central government agencies' investment planning is divorced from what's affordable in the long run.

We're making the following recommendation

Use independent advice from the Infrastructure Commission to guide long-term budgeting, so that decisions about how much we can spend in the future are based on evidence of what New Zealand needs, to ensure we can invest the right amount in the right places, at the right time.

To what extent do you agree that this recommendation will address this challenge?

Strongly agree **Agree** Neutral Disagree Strongly disag

Is there anything missing in our approach? Or would you like to comment on your answer, above?

Governments can be tempted to invest in the short term and major infrastructure projects started by the previous government can be stopped when a new government comes into power. This is incredibly wasteful. Just having independent advice does not stop this. You need to go further and recommend cross-party accords on long-term infrastructure needs.

When planning long-term infrastructure, consider potential commercial sector activities, as these can affect workforce availability. For instance, major commercial projects or airport upgrades—even if not classified as infrastructure—can significantly increase construction demand over several years.

1.3 Reward good planning

Establish affordable and sustainable funding: Recommendation 3 of 5

The challenge

Funding for government agencies often changes from year to year, which makes it challenging to deliver infrastructure projects that take a long time to plan and build. The result can be a stop-start approach.

We're making the following recommendation

Allow government agencies that plan and perform well to get funding that covers multiple years, so they can better deliver infrastructure projects with less disruption.

To what extent do you agree that this recommendation will address this challenge?

Strongly agree Agree Neutral Disagree Strongly disag

Is there anything missing in our approach? Or would you like to comment on your answer, above?

We would support this, as inconsistent funding is a big issue.

1.4 Smarter ways to pay

Establish affordable and sustainable funding: Recommendation 4 of 5

The challenge

We usually try to collect the cost of network infrastructure, like transport, water, electricity, and telecommunications from the people who use or benefit from it through things like fuel taxes, rates and bills. But at the moment, this doesn't always work for roads, rail and water networks.

This means that money we collect through our general taxes is needed to top up the cost of things like roads and water pipes, when it could be used for social infrastructure like hospitals, schools, parks, and defence and justice facilities.

We're making the following recommendation

Take a more consistent approach to the way New Zealanders pay for network infrastructure (like roads and water) by making sure charges to users and those who benefit cover the costs. This means we'll have more money from general taxation for social infrastructure (like hospitals and schools).

To what extent do you agree that this recommendation will address this challenge?

Strongly agree **Agree** Neutral Disagree Strongly disagr

Is there anything missing in our approach? Or would you like to comment on your answer, above?

Public–private partnerships (PPPs) can be a good way for costs to be attributed to those that use the infrastructure, but independent risk and performance reviews are essential. Self-assessment by these entities is often challenging due to conflicting contractual interests. To ensure success, only proven and well-tested collaborative models should be adopted. Building trust between New Zealand's industry and government is critical for these frameworks to work effectively.

Adopting PPPs is, however, not a panacea. Often small communities or some demographic groups do not have the resources to pay for such infrastructures. Such systems must be designed carefully to protect low-income households, rural communities, and businesses that might be disproportionately affected by increased user charges. There should be a universal public good payment from general taxes to cover the most vulnerable in the community. Without such safeguards, affordability and equity could be compromised.

A key challenge in New Zealand's infrastructure landscape lies in the limited economies of scale across certain sectors, particularly wastewater and water treatment. Currently, infrastructure delivery is fragmented across numerous small regional councils, resulting in inconsistent service quality, suboptimal value for money, and infrastructure that often falls short of national standards. Consolidating or coordinating regional efforts could lead to more efficient procurement processes, better quality outcomes, and improved maintenance of critical infrastructure assets.

1.5 Fix the transport funding gap

Establish affordable and sustainable funding: Recommendation 5 of 5

The challenge

Currently, the money that drivers pay through charges like fuel taxes doesn't actually cover the full cost of building and looking after our roads. The same is true for the rail network. The extra cost falls back on all taxpayers, leaving less money for other public goods and services.

We're making the following recommendation

Require that charges for using our roads and rail (e.g. fuel taxes, road user charges, congestion pricing) cover the cost of building and looking after them, making the land transport system self-sustaining.

To what extent do you agree that this recommendation will address this challenge?

Strongly agree Agree Neutral Disagree Strongly disagr

Is there anything missing in our approach? Or would you like to comment on your answer, above?

No response

2. **Clear the way for infrastructure**
   So we can have clearer rules, better coordination, more stability, and a workforce with the right skills to get the job done.

Even when the money is there, it can take a long time and cost too much to deliver the infrastructure we need. Multiple layers of regulation, shifting policies, and poorly coordinated planning between councils, government agencies, and private providers make it harder to make best use of the infrastructure we already have, and harder to get projects built on time and at reasonable cost. We need clearer rules, better coordination, more stability, and a longer view of workforce needs, so we can train and retain people with the right skills to get the job done. We also need to ensure public transparency and accountability, which are crucial for maintaining public confidence in infrastructure providers.

To what extent do you agree that 'clearing the way for infrastructure' is a priority for New Zealand?

Strongly agree Agree Neutral Disagree Strongly disag

2.1 Use existing infrastructure better

Clear the way for infrastructure: Recommendation 1 of 7

The challenge

Planning rules often make it hard to make the most of infrastructure we already have, for example limiting the number of homes that can be built near train stations, schools, or water networks.

We're making the following recommendation

Make sure planning rules support more people to use the infrastructure we already have and that we plan to build.

To what extent do you agree that this recommendation will address this challenge?

Strongly agree **Agree** Neutral Disagree Strongly disag

Is there anything missing in our approach? Or would you like to comment on your answer, above?

No response

2.2 Policy Stability

Clear the way for infrastructure: Recommendation 2 of 7

The challenge

When infrastructure rules keep changing it becomes harder and riskier for investors to plan ahead, which drives up costs and slows down delivery. This is especially true for electricity, which needs to keep investing to keep prices affordable and supply reliable while transitioning to net-zero carbon emissions.

We're making the following recommendation

Set clear and stable policies so infrastructure investors can plan ahead with confidence — especially in key sectors like electricity.

To what extent do you agree that this recommendation will address this challenge?

Strongly agree Agree Neutral Disagree Strongly disagr

Is there anything missing in our approach? Or would you like to comment on your answer, above?

Streamlining and Improving efficiency through minimising impact from change in government, ensuring continuity between parties involved in infrastructure delivery and infrastructure planning and ensuring legislation changes take into account potential impacts on infrastructure delivery.

The challenge is setting a multiple year plan when both goals and delivery methods potentially shift every 3 to 6 years. There is a strong need to remove these perturbations. It is not clear how the plan intends to fix the impact that changing governments have on these policies. New Zealand is sometimes referred to as the "fastest law maker in the West" and this is a result of constitutional issues and the Infrastructure Commission has nowhere near the power to suggest such changes.

Although there is broad agreement on the intended objectives, effective delivery is hindered by differing national, local, and commercial constraints. Whilst highlighted in the report, unless these conflicts are resolved delivery of the plan will be extremely difficult.

Three main groups are involved in the delivery of national infrastructure. The way these groups interact at their interfaces is essential to project success. Managing these interfaces within project design and delivery can be complex and time-consuming. Inadequate management may result in delays or disruptions. It is advisable to allocate significant attention during the planning phase to defining how these interfaces will be

handled. These points of interaction are where national, local, and commercial interests may differ and conflict. Addressing potential tensions early in the planning process is recommended.

In most infrastructure projects there can be multiple parties involved even under the overall umbrella of the government. It is important that the developed plans coalesce the input of multiple agencies to ensure that a contiguous plan is developed. Agencies such as Waka Kotahi, LTNZ, MOT, MfE, EECA (etc.) should be encouraged to streamline their input to long term planned infrastructure projects. Management of the multi stakeholders to these projects should be well controlled and disciplined.

It is inevitable that all legislative bodies throughout the life of the plan will be enacting laws that potentially impact on plan delivery. Acknowledgement of the plan strategy and objectives needs to be an integral part of the legislative process when considering any national local or business driven decisions.

Ensuring quality of delivery of infrastructure projects is weighted higher and lowest cost should not be the main priority

It is suggested that an environment that encourages quality competition rather than one that prioritizes lowest cost bid models needs to be encouraged. The margins that the construction industry works to are low and often result in aggressive contract management to protect these margins. This does not necessarily lead to good project outcomes. Defining and better scoping the planned infrastructure will lead to better cost estimations and facilitate easier development of the collaborative work models recommended in the report. A more collaborative approach should relieve price stressors and take the focus away solely from lowest cost-based delivery thereby improving quality outcomes. Full transparency with some independent oversight will be required for collaborative models of delivery to become successful.

Renewable Energy

The plan rightfully acknowledges the required focus on the delivery of renewables.

The draft plan encourages the delivery of an improved electrical distribution and generation footprint for New Zealand. It is vital that this capacity is made available to all potential users both for now and in the future. For users now, this means stable policy is essential for current forms of energy, especially the natural gas network. While a lot of emphasis is placed on electrification, the maintenance of the gas infrastructure should not be neglected throughout the transition in the medium term to a low-carbon future.

Currently potentially lower initial cost solutions to decarbonisation are being utilised where if a secure supply of electricity were available now, alternative longer term more sustainable choices, not based upon the combustion of fuels would potentially have been made.

The future planning of electrical generation and distribution according to projections in the paper is currently expected to consume in excess of 20% of the annually projected 5+% of GDP allocated to infrastructure upgrades. The planning delivery and maintenance of assets for in this sector is therefore critical. As noted, there is currently uncertainty surrounding the Tiwai Point Aluminium smelter medium to long term future. The outcome of which significantly impacts the development of the national long term electricity supply plan. If the user pays philosophy advocated in the draft plan were used and more market rates were applied to the Tiwai supply this would potentially lead to its closure. However, whilst acknowledging the exceptional circumstances that cover the Tiwai supply it is not certain as to how long or if the Tiwai demand will remain. If Tiwai does not remain on the grid the required long-term generating plan and distribution upgrades significantly change. It is a priority that these uncertainties be addressed to allow an effective electrical supply and distribution plan to be developed.

The draft plan highlights the similarities of Methanex when considering gas supplies. With gas supplies dwindling and costs increasing is it appropriate to continue subsidising Methanex to the detriment of peak generation as argued in the plan.

Resolving the long term electrical and gas demands of the two major users noted and reconciling the effect of their continued consumption on the plan for future electricity is critical. If not resolved the uncertainty will adversely impact the ability to effectively plan. Strongly support the building of distributed storage capacitance to smooth peaks and add the needed resilience and improve the continuity of supply referenced in the report.

Review more favourably generating projects which address storage capacitance as part of the proposal.

The long-term electrical generation and distribution plans need to have fully integrated industry user future needs accommodated when the plan is developed. Whilst societal needs are reasonably able to be predicted, based upon population and consumption profiles some potential large-scale industrial disruptions may occur. The rapid growth of energy intensive data and processing centres will likely occur as AI and industrial processes change. (IEA Report that global data centre use could double within the next five years). There are warnings of excessive spiking in demand for data centres according to Hitachi Energy CEO. The infrastructure development plans need to be robust and flexible enough to accommodate significant demand profile changes, both in real time and for the long term.

Considerations for Water and Wastewater Infrastructure

Currently there is a misalignment with building consents being issued that do not sufficiently connect to greater strategic wastewater infrastructure planning.

Plants are being built and upgraded only to find that housing and industrial growth speed is much faster than they can keep up with as there is insufficient forward planning.

Local government has been known to put the onus on housing developers to sort water treatment options for new developments which can result in smaller less efficient water treatment plants that require special servicing, rather than having a bigger picture view for new housing developments and how this is tied into a larger treatment plant and supply strategy. This is also costly and can result in multiple investments that are not the most efficient approach.

2.3 Enable good projects

Clear the way for infrastructure: Recommendation 3 of 7

The challenge

Infrastructure projects can take years to get consent. Constant changes to rules and unclear approval processes create delays, add cost, and make it harder to invest with confidence.

We're making the following recommendation

Make sure the resource management and planning rules enable important infrastructure projects — while still protecting the environment and managing interactions with surrounding communities.

To what extent do you agree that this recommendation will address this challenge?

Strongly agree **Agree** Neutral Disagree Strongly disag

Is there anything missing in our approach? Or would you like to comment on your answer, above?

No response

2.4 One map for growth

Clear the way for infrastructure: Recommendation 4 of 7

The challenge

New homes, roads, and services are sometimes built in areas where there aren't enough water pipes, schools or other infrastructure to support them — or where it's very expensive to build. This leads to costly gaps, delays, and extra pressure on the infrastructure that's already there.

We're making the following recommendation

Use long-term regional growth plans — known as spatial plans — to align where new homes, roads, and other infrastructure will go. These plans bring together land use, infrastructure, and funding decisions in one place, so that growth happens where infrastructure is already planned, affordable, and easier to deliver.

To what extent do you agree that this recommendation will address this challenge?

Strongly agree | Agree | Neutral | Disagree | Strongly disagr

Is there anything missing in our approach? Or would you like to comment on your answer, above?

No response

2.5 Grow the infrastructure workforce

Clear the way for infrastructure: Recommendation 5 of 7

The challenge

New Zealand doesn't have enough skilled workers to plan, build and maintain our infrastructure, and we don't always train based on New Zealand's long-term needs. We can't always rely on overseas expertise to meet our needs. Without better planning, we risk not having the right workforce to meet future demand.

We're making the following recommendation

Plan how we train and grow the infrastructure workforce based on a longer-term view of New Zealand's infrastructure needs, beyond current projects, to ensure we have the right skills, in the right places, at the right time.

To what extent do you agree that this recommendation will address this challenge?

Strongly agree Agree Neutral Disagree Strongly disagr

Is there anything missing in our approach? Or would you like to comment on your answer, above?

There is anecdotal evidence that New Zealand has a brain-drain issue in STEM fields due to low wages and lack of opportunity. This is touched on a bit in the Plan, but it would be good to emphasise the role that other economic and science policies have on this, especially as the current government has stated that improving NZ's science output is a priority of theirs.

As delivery timelines lengthen and AI innovation accelerates, ongoing workforce upskilling is essential to meet evolving demands and leverage new opportunities. Universities, polytechnics, and vocational providers must ensure training remains relevant across all levels to maintain a skilled and adaptable workforce. A stable pipeline of projects, particularly in construction and manufacturing, is critical for sustaining expertise, as workforce shortages or surpluses in one sector impact the entire economy. Subcontractors, heavily relied upon in New Zealand's construction sector, can provide specialized expertise and faster delivery, but this model often leads to coordination, productivity, and quality issues during industry fluctuations. Major infrastructure projects create surges in demand for skilled subcontractors, driving costs up and risking lower quality if less-qualified contractors are engaged, with knock-on effects for adjacent industries like manufacturing.

Tertiary and vocational education play a vital role in training and retraining the workforce as priorities shift, but any reduction in support due to an aging population must be

balanced with the need to grow and maintain infrastructure capabilities. While New Zealand trains a sufficient number of professional engineers, inconsistent early career opportunities drive many graduates overseas, whereas a steady flow of projects would encourage them to remain and build sustainable careers locally. With an aging workforce, it is increasingly important to retain and develop these professionals, while also addressing skill gaps not fully covered in current planning, such as:

- Chemical engineers who are required for water, natural gas, chemicals, energy, all pipelines, and they have a wholistic view on sustainability and safety (particularly process safety).
- Engineers and scientists with a strong digital component to modern project planning and execution, these tools can provide good information management.
- Quantity surveyors and cost managers to execute projects well.

Women remain significantly underrepresented, making up only 11% of the infrastructure workforce compared to 47% of the overall New Zealand workforce, and targeted initiatives are needed to attract and retain more women in these roles. At the same time, a lack of energy security is driving closures of industrial sites, discouraging students from pursuing careers in high-demand areas like chemical engineering. To strengthen New Zealand's infrastructure workforce, it is essential to combine consistent project pipelines, inclusive strategies to tap into underutilized talent pools, and coordinated training programs that adapt to industry needs while fostering long-term career development.

All the suggestions above to address the infrastructure workforce growth will need to be underpinned with a stable spending on this area. If government spending was signalled well in advance, then education providers could plan better to meet demand in communication and collaboration with the industry.

2.6 Build public sector capability

Clear the way for infrastructure: Recommendation 6 of 7

The challenge

Government is responsible for many of New Zealand's biggest infrastructure projects — but it often lacks enough skilled and experienced leaders to deliver them well. This reflects the challenges of planning and delivering complex projects when there are many stakeholders inside and outside of government.

We're making the following recommendation

Support the people leading government infrastructure projects by setting clear job expectations and creating better training and career pathways.

To what extent do you agree that this recommendation will address this challenge?

Strongly agree **Agree** Neutral Disagree Strongly disagr

Is there anything missing in our approach? Or would you like to comment on your answer, above?

The commission emphasizes the importance of building long-term capability for managing and delivering the plan. Employing skilled in-house planners and project managers within the public sector is seen as essential. Sustained delivery relies on a deep understanding of the plan's history and objectives. However, frequent organisational restructuring and the reliance on short-term project delivery contracts hinder the development of essential in-house skills and the institutional knowledge required for long-term projects.

There is a clear need to improve project direction and management skills. The commission recommends the introduction of new courses and qualifications in project delivery. This position is strongly supported by the plan.

Instead of creating separate courses, it is suggested that project delivery content should be strengthened within existing engineering programs, particularly in Electrical, Civil, and Chemical engineering. Enhancing current curricula with modules on project direction, cost management, and quality management may prove more cost-effective than developing entirely new courses. Risk assessment and effective risk management at every stage of the plan and its execution are also highlighted as critical. The Chemical Engineering profession, for instance, already provides substantial training in risk management and capital expenditure control. These are skills that could be more

effectively applied to infrastructure projects. On that note, the government is currently employing too few engineers to enable the government to think and address technical issues. There should be a drive to employ more engineers in government.

2.7 Make performance visible

Clear the way for infrastructure: Recommendation 7 of 7

The challenge

It’s difficult for most of us to see how well government agencies, councils, companies and others who are responsible for infrastructure are performing. There's a range of ways to get this transparency, but they aren't always applied consistently which makes it hard for the public to demand accountability.

We’re making the following recommendation

Require infrastructure providers to publish clear and transparent information about their performance, to ensure that the interests of the people who use and pay for infrastructure are protected.

To what extent do you agree that this recommendation will address this challenge?

Strongly agree Agree Neutral Disagree Strongly disagr

Is there anything missing in our approach? Or would you like to comment on your answer, above?

No response

3. **Start with maintenance**
   Look after the infrastructure we already have, so that it can keep looking after us.

New Zealand has fallen behind on maintaining some of the infrastructure we already have. Many schools, hospitals, roads, rail lines, and government buildings are in poor condition, and we don't always know how much we are spending or how big a problem we have. When maintenance is deferred, repairs become more expensive, services fail, and health and safety risks grow. We need to put maintenance at the front of the queue.

To what extent do you agree that 'starting with maintenance' is a priority for New Zealand?

Strongly agree | **Agree** | Neutral | Disagree | Strongly disag

3.1 Know what we own

Start with maintenance: Recommendation 1 of 3

The challenge

Many government agencies don't fully know the condition of their infrastructure. This means that in many cases, they don't know what needs repairing and when, and when they need to improve infrastructure to meet new demands. Often, they'll only know something needs repairing or improving when it goes wrong. This is more expensive and means disruption for New Zealanders.

We're making the following recommendation

Require all central government agencies to develop and maintain full, accurate registers of their infrastructure and produce long-term plans for how they'll look after it and improve it.

To what extent do you agree that this recommendation will address this challenge?

Strongly agree Agree Neutral Disagree Strongly disagr

Is there anything missing in our approach? Or would you like to comment on your answer, above?

No response

3.2 Up-to-date decision making

Start with maintenance: Recommendation 2 of 3

The challenge

Even if central government agencies do have a long-term plan for how they'll look after their infrastructure, it's not always clear how well they're tracking. This keeps decision-makers and the public in the dark and means we can't plan ahead.

We're making the following recommendation

Require agencies to report how well they are delivering on their long-term infrastructure plans, including how their infrastructure is performing, so that decisions can be made based on up-to-date information.

To what extent do you agree that this recommendation will address this challenge?

Strongly agree **Agree** Neutral Disagree Strongly disag

Is there anything missing in our approach? Or would you like to comment on your answer, above?

Given future uncertainties, long-term plans should be regularly reviewed by an independent team, with consensus reached on any necessary adjustments to end goals and or delivery methods. A commitment to adopting this consensus agreement needs to be a cornerstone of the plan management.

Projects should go through a staged process, including concept, options analysis and feasibility. Funding should be proportionated to maintenance, capital and major capital projects. Project staging and funding allocation needs to be visible across all public sectors, with a method for comparing projects regularly, in order to prioritise spending. It is expected that while there will be a large number of projects in the early stages of planning, only a selected few will progress into the later stages of detailed design, consenting and construction.

3.3 Independent maintenance audits

Start with maintenance: Recommendation 3 of 3

The challenge

Government agencies currently self-assess whether their maintenance is good enough. We know that this way of doing things isn't working because information is inconsistent and not always accurate.

We're making the following recommendation

Have experts independently check whether government agencies' long-term infrastructure plans are sound and being followed.

To what extent do you agree that this recommendation will address this challenge?

Strongly agree **Agree** Neutral Disagree Strongly disag

Is there anything missing in our approach? Or would you like to comment on your answer, above?

Some of the recommendations fall into the classic trap of "We want to spend less but we also want to do all these things that will cost money". There is value in having independent audits, but recognition must be given that this will result in an increase the financial strain on projects.

4. **Right-size new investment**
   So that projects proceed when they are well-planned and affordable.

Many big infrastructure projects get announced before they're fully ready. When they don't have full business cases, clear funding, or proper risk management, this can lead to delays, cost blowouts, or projects being cancelled halfway through. We need stronger processes so decision makers can ensure that only well-planned, affordable projects proceed, and we can review and learn, with transparency built-in so the public can see what's going on.

To what extent do you agree that 'right-sizing new investment' is a priority for New Zealand?

Strongly agree **Agree** Neutral Disagree Strongly disag

4.1 Make big decisions more transparent

Right-size new investment: Recommendation 1 of 4

The challenge

Key project decisions can happen with limited public information. This can make it hard for people to be confident that we are choosing the right projects, that will get us what we need, well into the future.

We're making the following recommendation

Make the information that government uses to decide on infrastructure projects public - like business cases, budget requests, and expert advice - so people can see how decisions are made.

To what extent do you agree that this recommendation will address this challenge?

Strongly agree Agree Neutral Disagree Strongly disag

Is there anything missing in our approach? Or would you like to comment on your answer, above?

Considering the industrial sector requirements with respect to energy security

Within the energy sector, project decisions and prioritisation need to take into account the interconnectedness of electricity, natural gas and liquid fuel supply and networks. Decisions should also be made with large industrial sites in mind, in terms of their continuity of energy supply and ability to operate. Security of energy supply, particularly the vulnerability of the increasing focus on the electrification of our energy supply (with the goal of decarbonizing in the energy transition), should be taken into account with investment decisions.

Transparency

New Zealand has a legacy of public industry projects presenting significant chemical risks (like the dross from Tiwai smelter at Mataura or the under-engineered bunds at Marsden Point refinery). So environmental assessments on prospective infrastructure projects aren't just an administrative or te tiriti exercise, they're tangible controls and we have real world examples of how the inability to assess chemical contamination impacts public health, property, and the environment. Chemical engineers and process safety could play a big role here. It would be nice to see this issue elevated in the Infrastructure Plan.

The document highlights the need for transparency throughout all stages of plan delivery, from financing and execution to asset maintenance and lessons learned.

Transparency is essential for the plan's success, especially since some proposals require faster delivery than current planning systems permit. Gaining public acceptance depends on ensuring transparency at every stage. There will need to be a culture shift required of all parties to the agreement to ensure transparency occurs.

To learn from past mistakes, focus on improvement rather than assigning blame. Commercial penalties can hinder effective learning from previous experiences.

The plan identifies plan policy stability as important for infrastructure delivery. Stability is also necessary for industry and the community it serves for the plan to function well. In the absence of such a (shared) stable plan, uncertainty will affect growth and the desired achievement of higher performance economy for Aotearoa New Zealand.

Industry and productive sectors together with the community should be central to the design of the plan and be involved in its communication and delivery. To be successful, the plan must equally address both societal and industry needs without bias.

It is agreed that independently assessed and published risk identification for projects will build trust with the community.

Developing trust will be critical, especially as the RMA changes will need careful consideration when developing the plan. It has taken many years to understand and work with the RMA as it does now. Extreme care will be needed to ensure that reducing roadblocks and expediting plan assessments and delivery does not seem to disenfranchise the wider community and adequately address environmental concerns.

4.2 Test before we invest

Right-size new investment: Recommendation 2 of 4

The challenge

We don't currently require an independent assessment of projects to make sure they are important, provide value for money, and are ready for investment, unlike many other countries. When we try to build things that aren't properly thought out, things can go wrong fast. Delays, cost blowouts and cancelled projects are not how we should be spending our limited infrastructure dollars.

We're making the following recommendation

All central government-funded infrastructure projects have an independent assessment to make sure they're ready before money is spent.

To what extent do you agree that this recommendation will address this challenge?

Strongly agree **Agree** Neutral Disagree Strongly disagr

Is there anything missing in our approach? Or would you like to comment on your answer, above?

A more informed, task-specific approach to risk assessment, safety protections and environmental impacts is needed. Current systems are too restrictive and increase project costs. While there has been some recent progress, broader education in risk analysis is necessary for both delivery groups and oversight bodies. See the education section.

There is a tradeoff between speeding up projects whilst not compromising on community and environmental impact.

Ensure that all projects, local and central, go through appropriate project stage gating. This ensures that sufficient front-end engineering and cost estimation is carried out, and projects cannot proceed unless they meet budgets and other appropriate requirements e.g. environmental, sustainability, performance measures, return on investment etc.

4.3 Managing risks

Right-size new investment: Recommendation 3 of 4

The challenge

Not only is infrastructure costly, it's also complex. This makes it easy for things to go wrong. Projects face challenges when all the risks aren't properly considered and managed.

We're making the following recommendation

Stronger upfront risk management and assurance processes are required for all projects – making sure risks are visible and well-managed from start to finish.

To what extent do you agree that this recommendation will address this challenge?

Strongly agree **Agree** Neutral Disagree Strongly disag

Is there anything missing in our approach? Or would you like to comment on your answer, above?

It is agreed that independently assessed and published risk identification for projects will build trust with the community.

Build resilience and risk mitigating strategies into systems planning for all infrastructure. In this context electricity generation and distribution is considered vitally important. Consider dispersed generation and capacitance with multiple generating units and flexible grid assets. Such an approach makes it less vulnerable to natural and climate change impacts. As an example, multi small solar projects rather than single huge farms. When reviewing plans, add capacitance into the analysis - if solar and wind include storage and not just generation.

Private industry and engineering consultants would be well-placed to advise on their own internal risk management processes for major projects. Assessing risk helps to prioritise which projects to fund but also manage the delivery of projects responsibly.

4.4 Learn from the past

Right-size new investment: Recommendation 4 of 4

The challenge

We need to learn from what went well, and what didn't, on past projects to ensure the next project goes better. However, information about past infrastructure projects isn't easy to find or understand. Making key project information public helps to ensure that future decisions are based on evidence and real outcomes, not guesswork or short-term thinking.

We're making the following recommendation

Track and publish what projects actually cost, when they're delivered, and what benefits they provide so that we can improve future infrastructure projects.

To what extent do you agree that this recommendation will address this challenge?

Strongly agree **Agree** Neutral Disagree Strongly disag

Is there anything missing in our approach? Or would you like to comment on your answer, above?

No response

Challenges and priorities in different sectors or regions
We want to know your view of what else is important, now and in the future.

What do you think are the most important infrastructure issues, opportunities, or priorities?
Please tell us in your response if your feedback relates to a particular place, sector, or type of infrastructure.

Stability

The challenge is setting a multiple year plan when both goals and delivery methods potentially shift every 3 to 6 years. There is a strong need to remove these perturbations. Given future uncertainties, long-term plans should be regularly reviewed by an independent team, with consensus reached on any necessary adjustments to end goals and or delivery methods.

Engineering Competence

While New Zealand trains a sufficient number of professional engineers, inconsistent early career opportunities drive many graduates overseas, whereas a steady flow of projects would encourage them to remain and build sustainable careers locally. More engineering competence is needed for decision making and solving technically complex problems.

Energy

Within the energy sector, project decisions and prioritization need to take into account the interconnectedness of electricity, natural gas and liquid fuel supply and networks. Security of energy supply, particularly the vulnerability of the increasing focus on the electrification of our energy supply (with the goal of decarbonizing in the energy transition), should be taken into account with investment decisions.

Water

Within the water sector, current drivers can result in smaller less efficient water treatment plants that require special servicing, rather than having a bigger picture view for new developments and how this is tied into a larger treatment plant and supply strategy.

Environment

There is a need to consider the environment as a key part of infrastructure. The environment can be viewed as external negative to be mitigated, but it is integral to the system.

Is there anything else you would like to comment on and include as part of your feedback?

Nothing to add

If you would like to upload a file to support your feedback, please do so here

Nothing to add

About you

Are you submitting this feedback as an individual or representing an organisation?

~~Individual~~

Representing an organization

Thank you

Thank you for taking the time to submit feedback on the draft National Infrastructure Plan. Your feedback will help us develop the final version which will be delivered to government later this year.

Once you've finished providing feedback select 'Done' below.

If you would like to keep up to date with this work, please sign up using your email address here:

[redacted]

Would you also like to receive our monthly newsletter? From time-to-time we may also send relevant infrastructure related news.

~~Yes~~

No

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