

Building NSW Together

Improving the Infrastructure
Delivery and Engineering
Capacity of Local Government

October 2017



New South Wales

IPWEA

INSTITUTE OF PUBLIC WORKS
ENGINEERING AUSTRALASIA

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Who are the LGEA?

The Local Government Engineers Association (LGEA) is a registered industrial organisation representing professional engineers, engineering staff and related technical professionals working in local government in NSW. LGEA is also a division of Professionals Australia which is a nationally registered industrial organisation of more than 25,000 professionals working in a range of industries throughout Australia.

We provide support and advocacy on behalf of our members so that they can focus on providing our community with safe and reliable infrastructure.

Who are IPWEA NSW?

The Institute of Public Works Engineering Australasia (IPWEA) is the professional organisation providing member services and advocacy for those involved in the delivery of public works and engineering services to the community both in Australia and New Zealand.

IPWEA is expanding its traditional Local Government engineering focus to the broader public works and thereby covering all levels of government and private practice. This is due to the fact that engineers are increasingly working as part of multi-disciplinary teams, rather than working within traditional departments. Public works and services for all levels of Government are more often being provided by consultants, contractors, and suppliers as well as local government employees.

Executive summary

There is a consensus among government agencies, infrastructure groups, consultants and industry that Australia's growing infrastructure funding demand urgently needs to be addressed. A growing infrastructure funding gap and inefficient infrastructure investment has caused massive economic loss, and has often resulted in poor value outcomes for taxpayer dollars and community needs not being met.

This paper highlights the importance of an informed public sector to the delivery of infrastructure projects. Improved engineering capability and capacity in the public sector- particularly within local government- can assist the State Government in delivering community infrastructure projects and policy initiatives, while at the same time providing best-value investment in local community assets.

Local government is critical in delivering and maintaining community assets and services. State Government policies already seek to encourage local government to carry out these roles efficiently, and to also generate jobs for local communities. However, the way in which local governments manage their infrastructure investment needs to become more effective if this efficiency is to be realised.

Local government has a long history of delivering and maintaining this infrastructure and the services it supports, but will struggle to continue to do so if the current trend of engineering de-skilling continues. Local governments need support to build their position as informed purchasers, minimise risk of infrastructure failure, increase their engineering capacity, deliver optimal whole of life outcomes for the community and to develop best-practice infrastructure planning, procurement and maintenance management skills.

The strategies and actions outlined in this report will assist in achieving the State Government's policies of creating jobs, delivering more projects, reducing waste, improving capability and reducing risk and liability, while also improving infrastructure delivery.



Summary of recommendations

The recommendations presented seek to assist local government to deliver efficient and effective infrastructure management for their communities:

Strategy 1: Improve pipeline planning of projects.

A lack of a firm and clear project pipeline is likely to result in undue political influence over project selection. It also creates additional uncertainty regarding future works and reduces the scope for effective prioritisation of projects.

In order to address these issues, it is recommended that:

- a) Local governments must produce 5-10 year synchronised Asset Management and Financial Plans;
- b) The State Government actively incorporate local government's plans into its priorities for the State;
- c) State Government enable funding of local government projects to drive jobs growth, especially in regional areas; and
- d) An integrated funding framework for infrastructure management be developed.

Strategy 2: Improve procurement processes to reduce waste.

Infrastructure projects are always exposed to cost blowouts for a variety of reasons, however, sub-optimal capacity – and at times capability – at a local government level, can render councils unable to effectively manage projects.

In order to address these issues, it is recommended that:

- a) A local government infrastructure unit should be established within the Office of Local Government to foster best practice procurement by councils. It should be headed up by a qualified Chief Engineer;
- b) Local government should implement sound project scoping, design, planning, and management principles in order to achieve best value for money on a whole-of-life cost basis;
- c) Local government should be able to use voted State Government funding to achieve best local outcomes; and
- d) Councils and any joint Regional Organisations be required to include an infrastructure unit headed by a qualified Chief engineer.



Strategy 3: Effective management of assets.

Proper infrastructure management is integral in maximising the useful life of assets. However, growing revenue constraints (e.g. rate pegging) have, since the late 1970's NSW local governments to reduce asset maintenance, placing billions of dollars of community infrastructure and community safety at risk.

Capacity and/or capability deficits at a local government level may also lead to the adoption of unduly cautious practices in asset construction and maintenance, causing costs to increase unnecessarily.

In order to address these issues, it is recommended that:

- a) Local government maintain an auditable link between the financials identified in the asset management plan and the 10-year long-term financial plan;
- b) Preventative maintenance programs be prioritised to ensure that lower-cost repairs negate the need for higher-cost asset replacement; and
- c) That local government, IPWEA NSW, and OLG continue to strengthen and improve infrastructure reporting to the community to identify maintenance shortfalls, ongoing risks, and the cost to bring assets to agreed service levels.

Strategy 4: Support on-going innovation and efficiency through engineering leadership.

Resource limitations within local government have compromised the ability of many councils to effectively develop and improve infrastructure construction technologies and methods.

In order to improve the ability of councils to pursue continuous improvement and innovative infrastructure investment, it is recommended that:

- a) The position of Chief Engineer be established at each Local Government Authority and be responsible for formally authorising and approving all capital projects and co-authorising with the Financial Manager or Chief Financial Officer, asset management plans and end-of-year infrastructure reports; and
- b) Engineers be registered to ensure they are appropriately skilled and qualified to protect the community from poor project delivery;
- c) Engineers be supported through funding of continuing professional development (CPD) and reimbursement for accreditation; and
- d) The Office of Local Government encourage local governments to adopt regional procurement, standards, contracts and shared services, and practices as well as more efficient environmental testing.

Strategy 5: Build a sustainable workforce.

To establish and maintain the required level of skill throughout local government, improvements in workforce capacity and capability must occur within each council.

The development of a sector workforce that can adequately and sustainably address the needs of NSW's future generations must be a shared responsibility and in order to achieve this goal, it is recommended that an Engineering Workforce Development Committee be established with an appropriate level of:

- a) State Government provided funding for engineering cadetships in local government, in order to build future engineering and delivery capacity;
- b) Measures be put in place to ensure the engineering pay and conditions within local government comparable to private sector employment. A clear career path for engineers should be established to ensure attraction and retention of skilled technical professionals;
- c) Workforce development plans within councils be in place prior to receiving funds from the Office of Local Government;
- d) Engineers be supported to undertake CPD; and
- e) State Government actively work with local government to incentivise the private sector to increase its workforce development.

1. Introduction

Across Australia, there is a growing recognition of the need for better infrastructure investment, and of the pivotal role that infrastructure plays in the nation's economic fortunes. Infrastructure Australia stresses that "productive, sustainable infrastructure is essential if we are to drive economic growth, increase employment, and enhance the quality of life of all Australians." As a result, demand for public infrastructure assets is rising, with these assets including roads, rail, pipelines and other infrastructure for water security, electricity, airport and port projects.

In order to meet the growing infrastructure needs of Australians, large-scale investment will be required from all levels of government. However, greater investment alone will not be enough to meet our national infrastructure needs if the investment is not properly informed, well targeted, and efficiently directed.

The NSW State Government has affirmed its commitment to more efficient infrastructure investment, and has already committed to a number of policy initiatives to ensure this, including:

- NSW Legislative Assembly Inquiry into the procurement of government infrastructure projects;
- Fixing Country Roads;
- Fixing country truck washes;
- Fixing Country Rail; and
- The appointment of a NSW Roads and Maritime Chief Engineer.

The State Government has also demonstrated a commitment to greater efficiency in local government with the "Fit For The Future" initiative. Local governments in NSW are directly responsible for over \$140 billion¹ of assets, and specifically 90% of the state's road network.

This means that efficiency at the local level is integral to the development of better delivery systems. The State Government's innovative policies for jobs and also rate-capping require local governments to prioritise action and the skilling of its technical ranks, as constrained rates revenue requires further efficiencies and output improvements, and significant waste reductions. Such improvements at local government level will ultimately be the key to delivering the infrastructure that the nation needs for the future.

Since the 1993 Local Government Act was introduced, removing the requirement for councils to employ a Chief Engineer, there has been a steady decrease in suitably qualified, professional engineers holding senior positions in local government. Professional engineers are holding increasingly lower positions in councils, with many now at level 4 and below in the council staff hierarchy under the General Manager. This trend poses a significant risk for councils, as the expertise and advice provided by professional engineers has further to travel to reach the decision making table, and must compete with an ever-growing list of concerns.

2. The role of Local Government

Across Australia, local governments maintain an asset base of some \$353 billion, with road assets being valued at \$165 Billion (ALGA 2014).

This valuation means that local government is responsible for one third of all public infrastructure across Australia. In NSW alone, physical infrastructure assets held by local governments are valued at \$85 billion². Councils spend billions each year maintaining, renewing or replacing existing assets. The State Government is committed to more efficient infrastructure management across NSW, however, it is clear that the strength of local government will be a pivotal factor in determining whether it will be successful.

In NSW under the Local Government Act 1993, councils are charged with the responsibility to manage infrastructure maintenance and delivery in their communities. In order to guide this investment, the Integrated Planning and Reporting (IP&R) framework was established.

This framework requires councils to consider the infrastructure asset needs, and their lifecycle costs, that would be required to deliver on the community's strategic plan. Asset management plans fulfil this element, requiring councils to seek best whole of life value when delivering community services.

Most importantly, services must meet cost and quality standards, while taking into account the needs of the community.

In order to provide best value to communities, councils must be well-informed about what they are purchasing, especially when purchasing infrastructure.

However, a continuing decline in local government engineering resource capacity and capability, a trend that has continued for quite a number of years, is hampering council's' ability to deliver best-value infrastructure and exposing NSW communities to significant risk.

2.1 The importance of Local Government.

Local governments are best positioned to roll out infrastructure and maintenance projects quickly to effectively manage risk, reduce the infrastructure backlog, and generate jobs. While councils face some bureaucracy and regulation, for the most part, they are more agile in their ability to undertake infrastructure projects than governments at State and Federal levels are. Councils are readily able to plan and roll out new projects, and maintain existing community infrastructure and should be empowered to drive workforce development by implementing long-term infrastructure planning.

A long-term pipeline of work for both the public and private sectors will provide some assurance to both groups as to the flow of future projects, and will allow public and private sectors to plan for and fund future infrastructure.

A pipeline of projects will also allow longer-term investment in skills and equipment in both the public and private sectors, as they will have greater surety as to the future need. Many councils already maintain 5-10 year capital works programs and long-term asset management plans, although a large portion of plans are unpublished.

These plans should be used as a basis for measuring local government performance. These plans can also be used to build capacity in the private sector and within councils, and provide the basis for many of the changes that local government requires in the short term.

Councils have a responsibility to invest ratepayer money efficiently and effectively. State Government policies – such as rates capping – have made the effectiveness of this investment even more important, as councils need to introduce increased efficiency measures to ensure maximal value and reduce risk, rather than rely upon rate rises. Local communities cannot afford wasteful or risky investment, as the backlog of infrastructure projects is already alarmingly large.

With rate-capping in place, reducing waste through more efficient investment is becoming more pivotal if local government is to effectively fulfil their purpose. Greater efficiency hinges on local governments building on their history as informed purchasers and effective project managers.

While engineers make up an important part of local government, reduced authority and capacity limitations currently inhibit the necessary oversight of local government infrastructure investment and maintenance. This lack of capacity has been met by greater outsourcing to the private sector, the consequences of which include reduced local expertise, knowledge depletion and in-house skill shortages. These issues need to be addressed if community infrastructure needs are to be met.

Importantly, local government is not yet too far down this path for the solution to be readily achievable, so long as action is expedited.



3. The problem

There are two major issues facing local governments, hindering their ability to deliver the State's infrastructure. The first issue is the lack of adequate in-house engineering capacity to deliver efficient, cost-effective and innovative investment. The second issue is the limitation on funding for infrastructure investment and maintenance.

Both of these issues are preventing local governments from effectively managing community assets in an appropriate manner, paying due regard to whole of life cycle costs. Essentially, local governments are experiencing difficulty in finding the necessary funding for investment, and when they do, they risk a sub-optimal return on the investment.

While the problem is already very serious, population growth is expected to make the issue much more pressing over the coming years. The Australian Infrastructure Audit forecasts that NSW's population is likely to reach 9.1 million by 2031, up from 7.2 million in 2014.

Longer-term forecasts predict the state to reach a population of 11.5 million by 2061, placing enormous strain on ageing infrastructure assets. This report recommends a number of measures aimed at tackling these issues, which will be the key to ensuring that councils are well-positioned to deliver quality infrastructure projects.

3.1 Engineering expertise.

One of the largest single issues preventing effective infrastructure investment across Australia is the lack of adequate engineering capacity within local government. Both infrastructure projects and the management of infrastructure assets are by their nature highly complex, and require the involvement of skilled and experienced engineers from planning through to delivery. Within local government, engineers are integral in prioritising projects, accurately scoping projects, designing projects overseeing private development and construction staff, working with private contractors, and delivering projects on budget, free from cost blowouts while minimising risk.

Engineers are also vital in developing maintenance programs to extend the useful life of community assets, minimise the risk to the community and the cost of asset management.

Current State Government policies have sought to encourage greater efficiency in local government investment and greater consideration of whole-of-life cycle costs. However, at present, resource limitations compromise the ability of local government to deliver on these. Greater autonomy over revenue for the purpose of funding infrastructure in a strengthened framework for infrastructure management and reporting will be required if councils are to deliver the savings and improvements that the State Government seeks and communities require.



“This report confirms what many have been thinking and saying – there is a large local government infrastructure backlog in NSW and some councils face real and significant challenges in terms of maintaining and renewing the infrastructure that is critical to their communities and the NSW economy. Not surprisingly, the audit has also found that many of those councils with substantial backlogs are also struggling financially.”

Is outsourcing the answer?

More recently, private enterprises have been engaged to design and construct a range of infrastructure projects. Unfortunately, many of these projects have been prone to significant cost variations largely due to locally inexperienced engineering consultants and resource-poor councils being unable to adequately scope and/or manage projects.

At present, it is also not uncommon to have infrastructure designs carried out in an overseas-based design office that has not visited the site and are not familiar with local conditions or requirements.

This trend is worsening. While the private sector maintains an important role in the construction of key infrastructure, councils will face an increasing risk of not having the capacity to accurately and effectively procure the infrastructure that the community needs.

While consultants typically have a strong level of theoretical knowledge, they often lack the experience and expertise to efficiently operate in the local government sector. In-house engineers have the practical hands-on knowledge to make things work, routinely managing tight budgets, minimal resources and strict timelines, and they are well versed on the full breadth of works undertaken by local government.

Additionally, consultants are not readily available in regional areas, and they often represent poor value for money compared to in-house staff. A senior in-house technical engineer with on-costs will typically cost \$80 per hour. By comparison similar experienced consultants are often charged at \$300 per hour.

Local Government engineers operate under continued pressure to manage community assets with minimal budget. Consultants typically operate without this pressure resulting in their contributions often not being fit for purpose.

The mindsets are completely different and while there is a role for consultants to enhance a council’s skillsets the over use of consultants can have a significant negative financial impact and reduce the amount of infrastructure able to be delivered.

3.1.1 Expert opinion- it’s not just us.

Governments at all levels have recognised that there is significant financial waste occurring through the delivery of infrastructure projects and there is an opportunity for substantial improvement. There is some agreement and acknowledgment of the reasons behind this waste, as underlined by a number of reports to various levels of government. The causes of waste, to varying degrees, include:

- poor governance;
- poor planning;
- uninformed purchasing;
- poor project management;
- limited asset management competency;
- inadequate technical capacity; and
- insufficient engineering skills.

The common thread running through these issues is that governments at all levels lack the capacity and capability to perform what is arguably its most important function – that is developing and maintaining infrastructure. If the issues are to be resolved, governments need to invest in their workforce in order to attract and retain skilled engineers and technical professionals.

“The available data suggests that economic and social infrastructure is one of Australia’s larger asset classes. However, investment in capital stock has steadily declined over the past 50 years. Whilst the current level of investment is keeping pace with GDP growth, only 35 per cent is incremental investment. The average age of Australia’s capital stocks is increasing and independent assessment suggests that Australia’s core economic infrastructure is in poor condition.”

There is a growing consensus among industry experts, Government agencies and major consulting groups, that a shortage of technical and procurement capability is a major cause of waste and increased risk within the public sector.

The Productivity Commission, Public Infrastructure, 2014

“proper project oversight by the client remains an important role. An informed and competent client has a better capacity for oversighting claims for variations and ensuring compliance with the contract... the inquiry suggested that public sector project management was poor, citing large cost overruns on some key public sector projects.”

Infrastructure Australia, Australian Infrastructure Audit, 2015

“Australia would benefit from a strong and consistent pipeline of well-planned infrastructure projects. This would provide greater certainty for infrastructure constructors and investors, and provide the basis for a well-resourced environment for project procurement and informed decision making.”

National Infrastructure Coordinator, Submission to the Productivity Commission Inquiry into Public Infrastructure, 2013

“Attracting and retaining staff qualified to manage project processes and monitor projects will reduce the cost of projects”.

Australian National Audit Office, Submission to Senate Committee Inquiry into Commonwealth Procurement Procedures, 2014

“One of the keys to successful procurement is the availability of personnel that have procurement management skills and subject matter expertise so that the agency can act as an informed purchaser.”

Deloitte Access Economics, Economic benefits of better procurement practices, 2015

“there are some elements of current government procurement policy and practice that are inefficient, adding unnecessarily to the cost of infrastructure. This includes cases where government clients have unclear project objectives (and) select inappropriate project delivery models”

Australian Centre of Excellence for Local Government, Future-proofing Local Government: national workforce strategy, 2013

“The sector continues to face the following significant and persistent workforce challenges:

1. Skill shortages in some mission-critical occupations
2. Intense competition for both skilled and semi-skilled workers in locations affected by mining
3. Inadequate levels of knowledge management and succession planning associated with the expected widespread retirement of mature workers

Technological changes requiring the local government workforce to upgrade qualifications and skills, including language, literacy and numeracy skills.”

3.2 Funding.

The infrastructure backlog across Australia is enormous. While exact figures vary, the overall backlog runs well into the billions, with the estimated backlog in NSW councils alone sitting at over \$7.4 billion in 2012 and likely to have increased since. Local Government is responsible for a third of the State's infrastructure, and will need to fund a proportionate amount of this backlog. The ageing of infrastructure assets is highlighted in the Public Infrastructure Bulletin, Vol. 1:

“The available data suggests that economic and social infrastructure is one of Australia's larger asset classes. However, investment in capital stock has steadily declined over the past 50 years. Whilst the current level of investment is keeping pace with GDP growth, only 35 per cent is incremental investment. The average age of Australia's capital stocks is increasing and independent assessment suggests that Australia's core economic infrastructure is in poor condition.”

In addition to the rising cost to bring assets to their agreed service levels, there is a yet-to-be quantified cost to address functionality (predominantly related to safety, missing safety barrier for example) and existing capacity deficiencies.

Rate-capping over many years has limited the funds available for councils to invest in renewing infrastructure, let alone to address deficiencies in function and capacity. If steps are taken to reduce council engineering capacity and capability gaps, local government will be able to reinvest savings into new projects and vital asset maintenance programs. However, the massive backlog of infrastructure projects means that savings alone will not be adequate to deliver the infrastructure improvements that communities need.

If the growing infrastructure backlog is to be addressed, efforts need to be made to support the revenue-raising efforts of local government. State governments need to ensure that local governments have access to, where adequately supported by robust long-term infrastructure planning, higher rate revenue and debt funding where needed, while also ensuring that the legislative environment enables local governments to fulfil their responsibilities to local communities.

The State Government must also take some responsibility for ensuring that critical infrastructure projects are delivered by providing additional grant funding when appropriate.

4. The consequences

Issues surrounding local government's ability to effectively manage infrastructure investment have a significant and lasting effect on the community. Limited capacity, capability and funding will result in waste, underinvestment, increased risk of failure and poor infrastructure outcomes. While waste resulting from inefficient infrastructure investment places a major drain on local government, congestion costs and the negative effect on the economy are potentially an even greater cost.

Limiting capacity, capability and funding will also see a reversal in the positive trends achieved by local government in NSW, particularly with respect to the road asset infrastructure class.

4.1 Waste.

Over the years, the 'de-engineering' of local government has escalated, reducing councils' capacity to be an informed infrastructure procurement decision maker. This decline has a major impact on the cost of infrastructure delivery, risk of failure and the productivity of this infrastructure once it is operational.

A report by Deloitte Access Economics has found that the average cost blowout associated with public sector infrastructure projects is between 6.5 per cent and 12.7 per cent. The level of waste increases even further when a large number of infrastructure projects are managed simultaneously, with the blowout reaching 21.2 per cent. Local governments in NSW spend just over \$10 billion annually managing infrastructure and land³, suggesting that wastage in the order of \$650 million to \$1.27 billion per annum may be occurring. Over a decade, the waste figure could reach as much as \$12.7 billion.

This money could have delivered new infrastructure for local communities and eased the backlog of projects, but is instead being lost through poor policy. The scale of this figure highlights the risk to ratepayers of continuing capacity and capability gaps within local government.

The extent of the issue is clearly significant, especially when considered on a national scale, with the same issues present to varying degrees across all states, and at all levels of government.

³ LGNSW, Submission on NSW Budget for 2016/17, February 2016

“Project briefs have not been distributed in a timely manner, in some cases in the third and fourth quarter of the financial year, resulting in a lack of planning for project designs and costing. This in turn has created cost overruns as budgets have been attached to projects which are not yet properly designed in an attempt to complete works prior to the end of financial year. This is caused by a lack of engineering resources required to produce quality project briefs within an acceptable time frame.”

The report by Deloitte stressed the inefficiency of public sector procurement:

“there are some elements of current government procurement policy and practice that are inefficient, adding unnecessarily to the cost of infrastructure.”

A 2008 report by Ernst & Young into local government procurement in Victoria drew similar conclusions, suggesting that reforming public sector procurement has the potential to reap massive savings for the sector that could easily be reinvested in new infrastructure:

“The potential prizes from improved procurement practices are generally well-known in terms of significant financial benefits” and “learnings from other government sectors across Australia have demonstrated that these benefits are achievable.”

In order to stop the waste, and deliver the savings that the nation needs, significant change to procurement processes and public sector skills are required.

4.2 Economic cost.

The cost of inefficient infrastructure management is not limited to the dollar figure wasted during the construction phase. The economic cost of poorly-delivered infrastructure, and the cost associated with vital projects that are delayed or unbuilt is potentially much larger. It is widely agreed that wise infrastructure investment is integral in driving the economic prosperity of the nation. Similarly, poor management of community assets and underinvestment can drag down the economy.

According to the Australian Infrastructure Audit – conducted by Infrastructure Australia in 2015, congestion on Australia’s roads cost the economy \$13.7 billion in 2011. This figure is forecast to swell to \$53.3 billion by 2031 if major changes to that nation’s infrastructure management are not made. In NSW, the 2011 cost of road congestion totalled \$5.6 billion, rising to \$14.8 billion in 2031.

While the State Government is responsible for a portion of this problem, local government is responsible for the management of 90 per cent of NSW’s roads.

This suggests that local government in NSW is a significant contributor to lost economic activity each year, with this figure increasing at an alarming rate.

“A regional water utility is currently building a new water treatment plant and the head contractor had threatened a \$2.6 million delay and variation claim. Due to the water utility’s willingness and enthusiasm to employ professional engineers, the water utility was able to refute the delay claim in its entirety and reduce the variation claim to a \$400,000 payment.”



4.3 Opportunity cost.

Consideration should also be given to the potential cost that would result from a reversal of the positive trend in infrastructure management, particularly with respect to roads. Biennially, the Roads and Transport Directorate, a joint initiative of IPWEA NSW and LGNSW, undertakes a survey to establish the lifecycle-funding gap for roads under the control or ownership of local government in NSW.

The first survey, undertaken in 2006, found that there was an annual shortfall in the lifecycle-funding for roads of \$783 million per annum; by 2014, this gap had reduced by almost half to \$447 million per annum. This saving is made up of real gains – from productivity and efficiency and increased funding from Special Rates Variations – and an improvement in asset management, capability, and knowledge, which are equally vital to savings and increased revenue.

The reduced funding gap highlights the ability of local government to effectively and responsibly respond to the challenge that is maintaining and replacing 90 per cent of the State's road network. However, the gains made over the past decade (and future gains assuming the trend continues) will be jeopardised should the issue of capacity, capability, and funding not be addressed.

4.4 Private sector.

The challenges confronted by local governments are not limited to the public sector. Private sector participants are increasingly facing the difficult task of managing projects for resource-constrained clients. While the private sector is being relied upon to deliver community assets, their public-sector partners may not have the necessary capability or capacity to adequately scope the project, manage issues as they arise, and ensure that community needs are being met. As a result, infrastructure projects can be subject to delays and cost blowouts, as the private sector endeavours to address client-side limitations that could easily have been avoided had the public sector been better supported.

Resource limitations in the public sector can also have a direct impact on costs for the private sector. With projects regularly subject to delays and additional costs, the private sector is frequently required to resolve disputes with the public sector, often at a significant cost. Competitive tender processes also require private firms to duplicate background work to verify the information provided by the public sector.

The lack of a firm pipeline of projects causes difficulties for the private sector in skills investment and workforce development, with the private sector often uncertain which projects will go ahead until the last minute. Collectively, these issues drive substantial costs for the private sector, which could be reduced if local government resources were developed, especially in the areas of project scoping and procurement.

5. The solutions

There is no doubt that the problems facing public sector infrastructure delivery are major. The cost associated with these issues is even larger, and is resulting in a drain on both our community assets and the economy as a whole; however, there are solutions to these challenges.

The first step in solving these issues is the improvement of engineering capability and capacity at all levels of government, one of the keys to which will be the achievement of integrated, long-term, co-operative planning between state and local governments. Little improvement will be possible unless local governments are adequately resourced to operate optimally and deliver improvements.

A high-performing local government sector will enable councils to better address their infrastructure needs, reducing risk and waste and continuing the trend of making efficiencies to asset management, including whole of life funding.

The strategies and actions to deliver this are detailed in this section.

5.1 Strategy 1 – Improve pipeline planning of projects.

It is recommended that:

a) Local Government produce 5-10 year synchronised Asset Management and Financial Management Plans.

Long-term planning is integral to the effective management of infrastructure at a municipal level. Infrastructure projects, by nature, are typically very costly, with long lifespans. As a result, it is important that Local Government plans infrastructure investment and management in advance, prioritising spending and ensuring that the needs of the community are catered for.

Engineering capacity within councils plays a vital role in enabling the development of asset management plans and systems. Engineers have the technical knowledge and experience to understand the life-cycle of public infrastructure and effective maintenance techniques to extend the economic life of community assets.

The current Integrated Planning and Reporting (IP&R) framework should be strengthened, requiring local government to produce service plans linked directly to asset management plans, long-term (5 year and 10 year) capital works plans, long-term financial plans to support the forward strategies of each council; these plans must be signed off by both the responsible financial manager and the Chief Engineer of the council.

Administration should be simplified and decisions should be based on the effective planning of capital works (over a 5-10 year period) and effective asset management plans for agreed levels of service. Most councils already carry out some long-term planning, however, most of these plans are not available for review.

Current models used by local government can, in certain circumstances, lead to poor long-term decision-making, and the unique characteristics of local public infrastructure projects makes it difficult for the private sector to fill the skills gap. Short-term planning has the potential to create cost spikes and delays due to its reactionary approach to project delivery and is at odds with the typically 80-100 years infrastructure planning horizon.

LGEA and IPWEA NSW contend that long-term infrastructure planning enables organisations to better position themselves to develop the necessary procurement and delivery capabilities. Long-term asset and finance planning also allows councils to better engage their communities through good consultation, effective project scoping, and efficient procurement and delivery processes, which will ultimately enable the effective and timely delivery of projects.

b) The State Government incorporate local government's plans into its priorities for the State.

Recognition from both local and the State Government of the interdependencies between local and state significant infrastructure are critical if past dislocation and dysfunction – and the associated waste – is to be avoided in the future.

Integrating long-term plans would firstly recognise these interdependencies and achieve greater levels of alignment, making priorities and key projects clearer to communities. This would also allow a delivery schedule to be developed for infrastructure across NSW, which could include deliverables over timeframes including 2, 5 and 10 years. If the State Government took a more strategic role, this would ensure integration of local governments and state agency planning and delivery.

An integration of planning at local and state levels would also allow governments to explore the possibility of resource-sharing, avoid cost duplication, and provide greater scope for informed State Government investment in major infrastructure projects.

c) State Government must enable funding of local government projects to drive jobs growth, especially in regional areas.

The State Government's policies impact on local communities and reflect the need for a strong partnership with local government. The policies also represent an opportunity for both levels of government to leverage off each other to optimise the expenditure of public funds.

Local government projects that deliver tangible job growth within local communities should be prioritised to build greater capacity within the sector which will have significant positive flow-on effects.

d) Develop an integrated funding framework for infrastructure provision and management.

There is a greater need for infrastructure than there are funds available. However, infrastructure is a long-term investment with significant social, economic and political dividends. At the same time, the autonomy that IP&R provides communities is undercut by an inability to easily fund a community's aspiration. Rate-pegging and the costly and resource consuming process required for a special rate variation (SRV) severely restricts a community's ability to be self-determining when it comes to infrastructure and the services that are reliant upon infrastructure. It is therefore recommended that an integrated funding framework is developed which releases new funds for infrastructure investment that includes:

- Implementing the recommendations of the Independent Local Government Review Panel with regard to strengthening the revenue base for Local Government – particularly those outlined in Box 11 through 13 of the Panel's final report;
- Using surplus funds for productivity enhancing infrastructure;
- Supporting a shift to, where appropriate, intelligent use of 'user pays' principles as a means to fund new infrastructure;
- Delivering more innovative financing models, for example, leveraging best-practice PPPs and value capture, to encourage private sector investment;
- Promoting ways for superannuation funds to more readily invest in local infrastructure; and
- Using long-term borrowing where it is more cost-effective for the community (educating the community that such spending should be capitalised beyond a budget cycle).

Integrated planning between State and Local Governments would provide greater assurance for State Government that any investment in local projects is well-scoped and will provide the desired benefits to the community. It is also recommended that the State Government and local government coordinate their long-term capital expenditure programs.

Local government is historically debt-averse, relying instead on rate increases to fund infrastructure projects. However, the time frame and useful life span of infrastructure is often very long, benefiting multiple generations. As a result, debt financing is often practical, and more equitable in funding infrastructure investment.

State Governments must facilitate this funding particularly in cases, where major long-term projects are proposed. This argument is supported by a 2012 report by Ernst and Young, which notes that Local Government under-utilises borrowing due to "fear of debt", while also stating that Governments need to assist councils in their access to a structured form of debt.

The report also argues for "greater use of responsible debt financing" by councils. The Ernst and Young report goes on to promote further use of debt, arguing that "debt finance enables councils to deliver infrastructure earlier than they otherwise would have been able and to spread the costs amongst future generations who will enjoy the benefit of the investments."

Additionally, the report contends that "debt finance prevents the need to divert funds from internally-generated renewal and maintenance budgets to capital expenditure." Ultimately this means that councils would not need to delay or cancel vital asset management programs whenever major infrastructure projects are required.

This is particularly important as proper asset maintenance is essential in ensuring that asset lives are maximised.

Further, a 2014 Report commissioned by IPWEA/ACELG concludes that “it is simply not possible for many councils to make significant improvement in their financial, asset management and service delivery performance without greater and better use of debt.”

5.2 Strategy 2 – Improve procurement processes to reduce waste.

It is recommended that:

a) A Local Government Infrastructure unit be established within the Office of Local Government to foster best practice procurement by councils. It should be headed up by a qualified Chief Engineer.

Local Government’s position as an informed purchaser has been significantly weakened in recent years. While addressing capacity and capability gaps will drive the improvement of procurement skills, the State Government can provide additional direct assistance in this process.

A Local Government Infrastructure unit within the Office of Local Government should be charged with examining methods used, setting KPIs, sharing best practice and overseeing performance.

- a) This unit should engage “wise heads” from local government to improve consultation between State and Local Government, learn from the past, develop or fund tools including, an infrastructure development manual, a general contract form and a best-practice procurement guide.
- b) This unit should be advised by a Local Government Engineering Advisory Council (LGEAC), comprised of representatives from local government, the profession, and industry.
- c) It is also suggested early contractor involvement prior to tendering could assist to ensure constructability of projects to avoid scope creep and waste, and to assess an effective distribution of risk.

d) The unit would be a central point of access and advocacy to enable the engineering sector to more effectively connect with the State Government on key elements of infrastructure delivery.

b) Local government should implement sound project scoping, design, planning, and management principles in order to achieve best value for money on a whole-of-life cost basis.

A major area of waste in infrastructure delivery occurs in the initial scoping of projects. According to research by Deloitte Access Economics, 37% of public sector projects suffer from unclear project objectives, often resulting in major cost increases.

A clear project scope is critical in ensuring that project goals are met in a cost-effective manner. Local government faces significant pressure to minimise the cost of projects. The cost of many aspects of projects such as materials and contractors cannot easily be reduced. As a result, local government may be tempted to reduce costs involved in effectively scoping, designing and managing projects, and ensuring the quality of projects are met. However, this short-term thinking often results in larger cost blowouts once projects begin, when changes are required, or when infrastructure fails prematurely or requires greater levels of operational expenditure to maintain it.

In order to ensure these things are avoided, local government must implement sound engineering practices, including dedicating allocations to these areas in project budgets.

The Office of Local Government, on advice from the Local Government Engineering Advisory Council, should recommend the appropriate proportional amounts of larger projects that should be dedicated to scope, design and management of projects to ensure that best value over the whole-life-of the project is delivered. This should also include grant funds being allowed to be used in all aspects of the project, which would help to develop engineering capacity.

c) Local Government be encouraged to use State Government funding as seen fit to achieve best local outcomes.

The State Government must shoulder some responsibility in ensuring that local governments have the resources to invest efficiently in infrastructure, particularly in regional or fringe areas where the need for new infrastructure is outpacing revenue growth. Rate-capping has reduced the flexibility of local government to respond to changing investment needs. As a result, where appropriate, the State Government should invest in local government if it is in the best interests of the community.

d) Joint Regional Organisations of councils must include an infrastructure unit headed by a Chief Engineer.

Major infrastructure programs can require significant resources to deliver, particularly with regards to workforce. Limited engineering capacity and/or capability affects all areas of infrastructure investment including scoping, supervision, prioritisation and maintenance. Engineering skills within local government can also be critical in informing the elected council and gaining community approval – giving councils the evidence-base required to borrow for important investments – and supervising contractors to ensure projects are meeting community needs.

Despite the obvious need for greater engineering capacity, some councils – particularly in regional areas – may lack the funds for adequate workforce development. As a result, a collaborative approach between councils can result in a greater capacity to effectively provide the required infrastructure investment.

The establishment of joint regional organisations has the potential to assisting councils meet the infrastructure needs of their communities. It is recommended that each joint regional organisation include an infrastructure unit which is headed by a Chief Engineer.

Under this system, councils would be able to share the cost of critical engineering capacity, enabling them to better deliver key projects. The system also has other benefits, such as the avoidance of boundary-based waste, less duplication of costs, less duplication of contracts, and sharing of knowledge, while also avoiding the political issues that would be involved with the alternative of merging councils.

5.3 Strategy 3 – Effective management of assets.

It is recommended that:

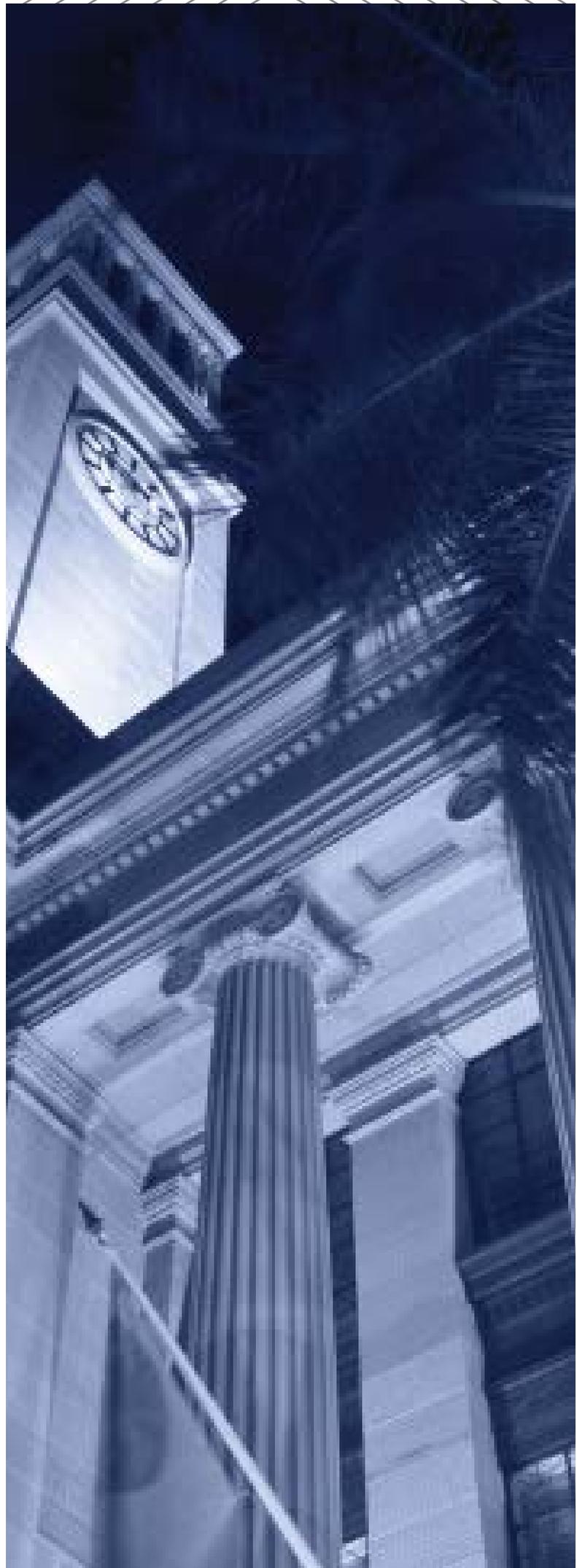
a) Local Government be required to maintain an auditable link between the financials identified in the asset management plan and the 10-year long-term financial plan.

An identifiable link between asset management plans and financial plans will ensure that planned infrastructure investment is financially achievable. It will also provide councils with the impetus to plan additional funding years ahead, to ensure that larger investments are funded.

b) Preventative maintenance programmes be prioritised to ensure lower-cost repairs and negate the need for higher-cost asset replacement.

Asset maintenance programs are vital in minimising the cost of asset management while delivering best value for communities. Thorough asset maintenance can significantly increase the useful life of community infrastructure assets and is often much cheaper than replacing assets when run to failure.

Local Governments require the necessary engineering skills to develop informed service plans and asset maintenance programs, to more efficiently manage their infrastructure.



c) Local Government, IPWEA NSW and OLG continue to strengthen and improve infrastructure reporting to the community to identify maintenance shortfalls, ongoing risks, and the cost to bring assets to agreed service levels.

Much ground has been made in recent years with regard to reporting back to the community on infrastructure. This work has been a joint effort of IPWEA NSW and the NSW Office of Local Government with support from other key stakeholders such as LGNSW and the NSW Auditor's Office amongst other groups.

The reporting of infrastructure outcomes back to the community is critical in 'closing the loop' of IPR. It is not possible to have an informed community without meaningful, reliable and accurate infrastructure reporting.

Local government should be required to report specifically on infrastructure in its annual report. There should be a state of the assets summary, identification and explanation of the cost to bring assets to agreed service levels, maintenance shortfalls and the ongoing risks associated with the management of infrastructure assets and any shortfall arising for the year. This section of the report should relate to the revised Special Schedule 7 (parts (a) and (b)) and should be signed-off by the councils' Chief Engineer and Chief Finance Officer.



5.4 Strategy 4 – Support on-going innovation and efficiency through engineering leadership.

It is recommended that:

a) The position of Chief Engineer be established at each Local Government Authority and be responsible for formally authorising and approving all capital projects and co-authorising, with the Financial Manager or Chief Financial Officer, asset management plans and end of year infrastructure reports.

The management of major infrastructure investment necessitates a high level of engineering skill. In order to effectively manage this function, a Chief Engineer should be established at each council. This position would be responsible for the oversight and management of the council's asset and infrastructure investment and maintenance programs.

The workforce development model at many councils is broken, and a new model needs to be developed to ensure cost-effective delivery of procurement.

Introducing a Chief Engineer would increase the flow of STEM graduates into local government, as the development and maintenance of engineering capacity would receive its required attention at a management level. The improvement of engineering capacity in local government will provide opportunities to promote skill development nationally.

b) Engineers be registered to ensure they are appropriately skilled and qualified to protect the community from poor project delivery.

Enhancing the capability of engineers within local government has the potential to provide significant efficiency improvements in asset management and maintenance. However, it is important that this investment produces quality engineers, with the skill to improve processes and make councils better informed when procuring infrastructure. The introduction of a registration scheme for engineers would mean that technical professionals in local government will be appropriately skilled and qualified, ensuring that the community is protected and that the public interest remains a priority.

A registration regime would also drive the skilling process and the profession can identify training programs that can assist in delivering the appropriate competencies. Registration of engineers is already required in Queensland, and is soon to be announced in Victoria and the ACT. The new West Australian Premier has also committed to investigating models for engineer registration.

c) Engineers must be supported through the funding of continuing professional development (CPD) and reimbursement of engineer accreditation.

The ongoing professional development of public sector engineering staff is integral to the provision of effective, efficient, innovative infrastructure solutions for local communities. Provision of professional development within the public sector should serve as an example to the private sector, encouraging ongoing skill development in the profession. It is also recommended that skilled professionals are recruited for government procurement officer roles (or to provide training).

d) The Office of Local Government encourages local governments to adopt regional procurement, standards, contracts and shared services and practices as well as more efficient environmental testing.

The procurement process for complex infrastructure projects can be inefficient, and requires major improvements. Reforms to infrastructure investment should drive engineering capability and result in better project delivery.

While policies and strategic documents associated with procurement in local government are generally well-established, it is often the practical application of the policies that leads to inefficiency.

It is essential that improvements are made and this can be achieved by the following:

- Workshop with LGEA and IPWEA NSW members to identify the various guides and standards that could assist in adoption of best practice and continuous improvement, such as a best practice guide for tendering and contract management;
- Improve business consultation and engagement. Avoid forcing parties to accept unknown risks;
- Capture the “design dividend” and associated value for money outcomes across the whole project life cycle by ensuring better balance between quality, sustainability, cost and time;
- Utilise local government engineering capacity to provide better background information prior to tender, to minimise the duplication of tender costs between competitors; and
- Ensure the selection and application of the most appropriate procurement methodology. Where possible use standard contractual terms to avoid the need for repeated negotiations of what should constitute core contractual terms, resulting in increased costs and lost time (see AS4122-2010).

5.5 Strategy 5 – Build a sustainable workforce.

It is recommended that:

a) State Government establish an Engineering Workforce Development Committee and, provide an appropriate level of funding for engineering cadetships in local government, to build future engineering and delivery capacity.

The State Government has a role to play in ensuring the effectiveness of local government. Additional funding at state level for programs designed to attract STEM graduates into local government would increase value-for-money in local government infrastructure and support on-time delivery through improved scope, design, and management of projects.

A program particularly needs to exist for the holistic education of cadets. LGEA and IPWEA NSW recommend that an Engineering Workforce Development Committee be created to:

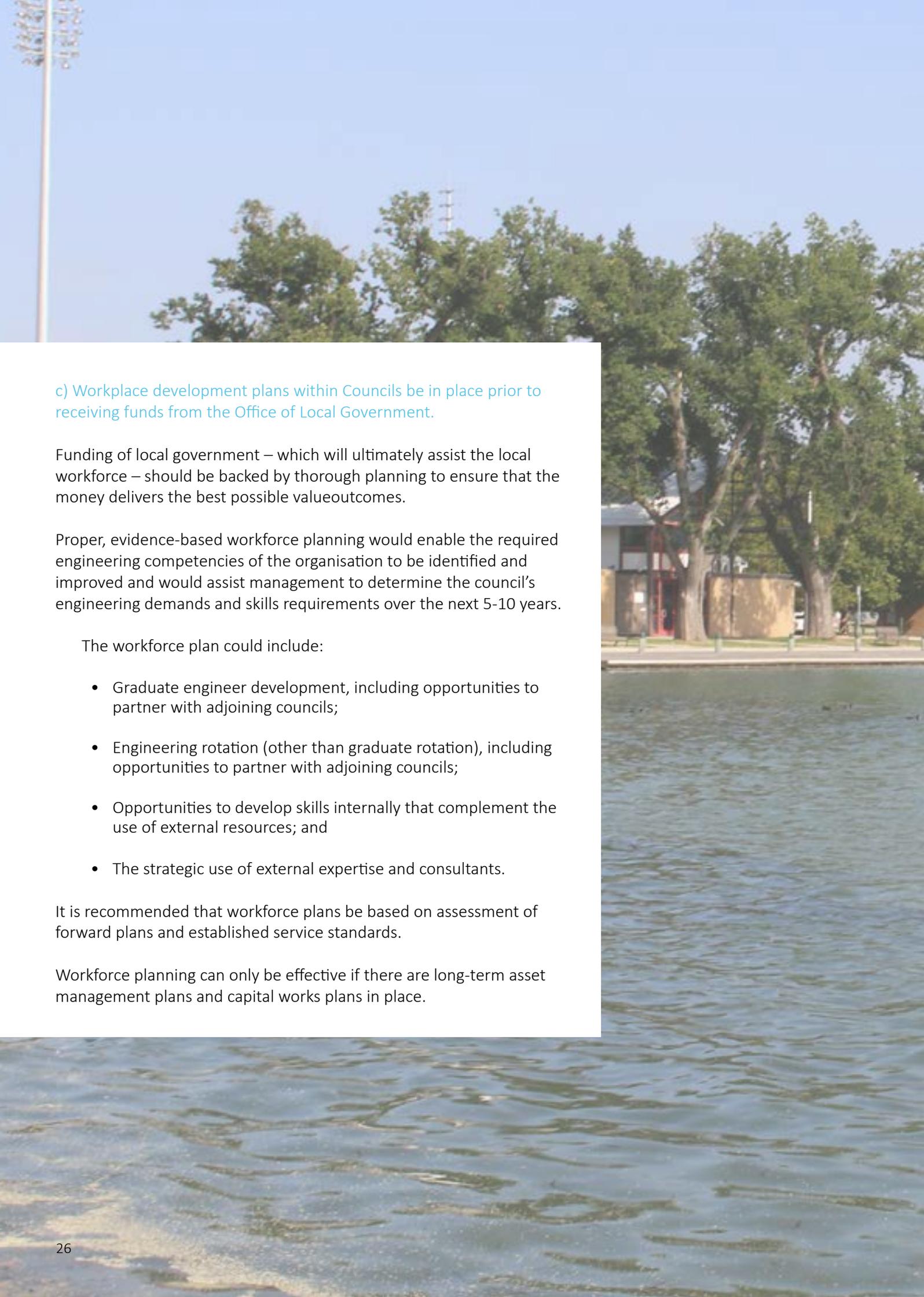
- Provide expert advice and access to the best forms of workforce development practice;
- Ensure responsiveness and flexibility in engineering workforce development;
- Assess engineering supply/demand at economy and industry level;
- Advise the State Government in funding or part-funding cadetships;
- Develop, accredit and market appropriate courses, practices and cadetships; and
- Provide advice to the Office of Local Government to ensure cost efficient, needs based investments in industry led training and development activities.

b) Measures be put in place to ensure that engineering pay and conditions within local government should be comparable to private sector employment. A clear career path for engineers should be established to ensure attraction and retention of skilled technical professionals.

Public infrastructure assets are vital to the quality of life of all Australians. Therefore, it is important that the technical professionals delivering these assets have the highest level of skill and training.

By ensuring competitive pay rates and solid career paths, the public sector would be best positioned to attract quality graduates and experienced professionals.

LGEA and IPWEA NSW encourage local governments to adopt a market competitive remuneration model that rewards skill, continuing professional development and performance.

The background of the page is a photograph of a park. In the foreground, there is a body of water with ripples. In the middle ground, there are several large, leafy green trees. Behind the trees, a building with a red door and a yellow wall is visible. In the far background, a tall, thin tower or antenna is visible against a clear blue sky.

c) Workplace development plans within Councils be in place prior to receiving funds from the Office of Local Government.

Funding of local government – which will ultimately assist the local workforce – should be backed by thorough planning to ensure that the money delivers the best possible value outcomes.

Proper, evidence-based workforce planning would enable the required engineering competencies of the organisation to be identified and improved and would assist management to determine the council's engineering demands and skills requirements over the next 5-10 years.

The workforce plan could include:

- Graduate engineer development, including opportunities to partner with adjoining councils;
- Engineering rotation (other than graduate rotation), including opportunities to partner with adjoining councils;
- Opportunities to develop skills internally that complement the use of external resources; and
- The strategic use of external expertise and consultants.

It is recommended that workforce plans be based on assessment of forward plans and established service standards.

Workforce planning can only be effective if there are long-term asset management plans and capital works plans in place.



d) Engineers be supported to undertake CPD.

Ongoing efficient project delivery requires management by qualified technical staff, with a strong knowledge of modern, best-practice infrastructure. Continued CPD is integral to ensuring that engineering staff within local government possess the skills required to efficiently deliver infrastructure projects, at a cost that will allow infrastructure backlogs to be addressed.

e) State Government work with local government to incentivise the private sector to increase its workforce development.

Although development within local government is a priority, government should also be concerned with the workforce in the private sector who are contracted by local government to deliver projects and services. Many of these firms are not training adequate numbers to ensure a sustainable, skilled workforce. This could ultimately affect government through a lack of competition in tenders and inflated fees for service.

Councils should be encouraging workforce development in the private sector on certain projects, particularly larger projects funded by the State Government. Procurement practices should provide incentives for the private sector to develop the workforce, including engaging cadet and graduate engineers.

There are a range of options which could be considered:

- Making the skills and competencies of the contractor's workforce one of the significant evaluation criteria for tender acceptance could encourage the private sector to demonstrate capacity and a commitment to building competency.
- In larger projects commissioned by councils, a workforce development plan could be required of all tenderers.
- A provisional sum as a percentage of the contracts value could be included in certain projects to be spent on workforce development by the contractor, with the aim of generating transferrable skills. The provisional sum may fund cadetships, apprenticeships and traineeships.

This approach requires careful consideration by the Office of Local Government, in conjunction with the proposed Engineering Workforce Development Committee.

The provisional sum is likely to have practical benefit but would need to be funded by State Government. This would be a practical investment by State Government in training, which will pay off in future projects as those seeking to deliver government work have an adequate, skilled workforce.

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