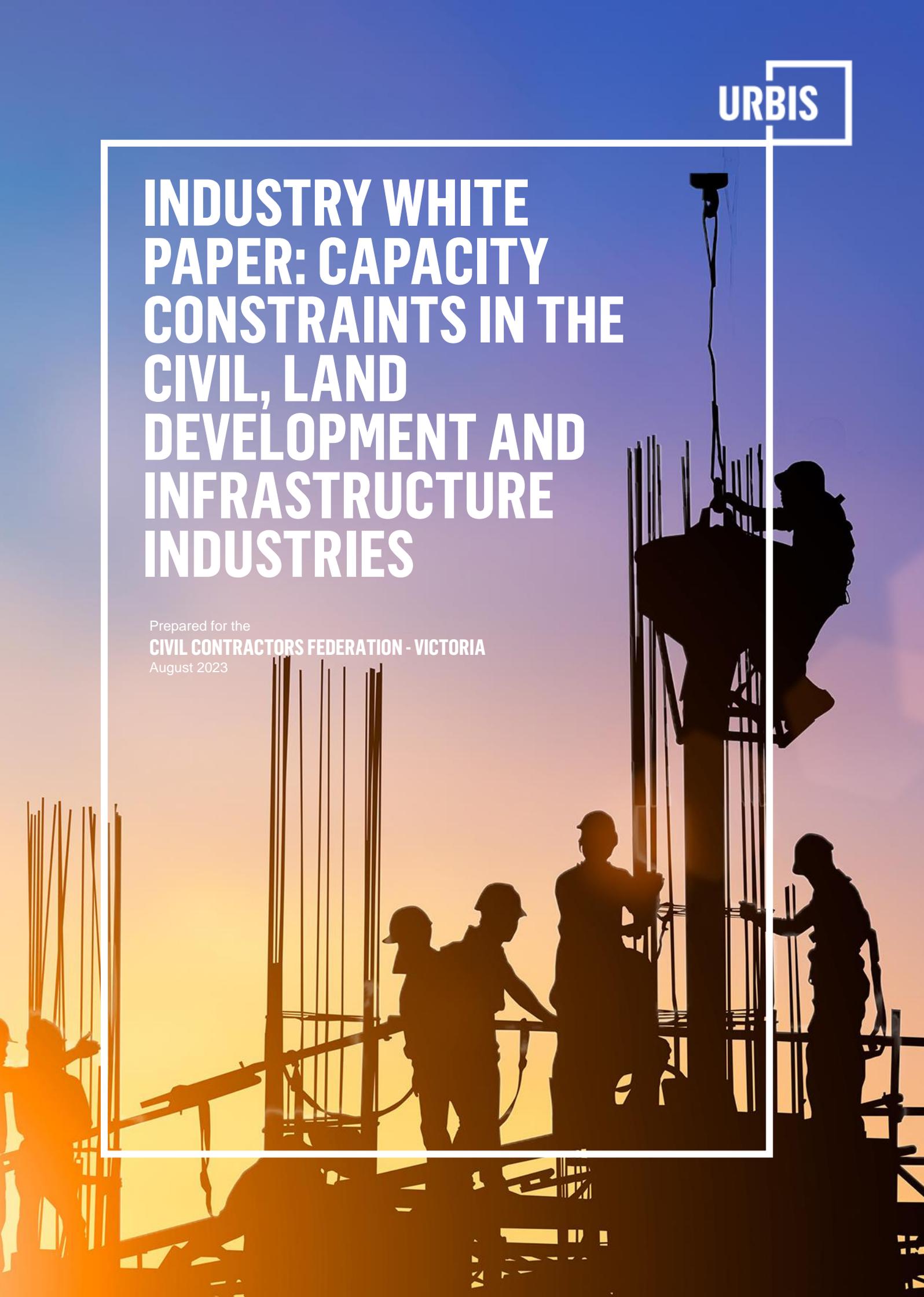


# INDUSTRY WHITE PAPER: CAPACITY CONSTRAINTS IN THE CIVIL, LAND DEVELOPMENT AND INFRASTRUCTURE INDUSTRIES

Prepared for the  
**CIVIL CONTRACTORS FEDERATION - VICTORIA**  
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**Urbis acknowledges the important contribution that Aboriginal and Torres Strait Islander people make in creating a strong and vibrant Australian society.**

**We acknowledge, in each of our offices, the Traditional Owners on whose land we stand.**

## About this report

This independent report, prepared by Urbis, has been commissioned by a partnership led by the Civil Contractors Federation – Victoria.

A series of industry leaders and stakeholders have contributed to this report, including those from the Urban Development Institute of Australia (UDIA) and the Association of Land Development Engineers (ALDE).



Other associations involved in contributing to this report were:

- Victorian Water Bodies
- Housing Industry Association (HIA)
- Cement, Concrete & Aggregates Australia (CCAA)

This report provides a synthesis of the broad range of stakeholders' views, insights and data alongside an independent investigation undertaken by Urbis staff.

All information supplied to Urbis in order to conduct this research has been treated in the strictest confidence. It shall only be used in this context and shall not be made available to third parties without client authorisation. Confidential information has been stored securely and data provided by respondents, as well as their identity, has been treated in the strictest confidence and all assurance given to respondents have been and shall be fulfilled.

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# 1. EXECUTIVE SUMMARY

The Victorian civil contracting, land development and infrastructure industries continue to face both structural and market-based challenges. Recent events have laid bare how these challenges can expose industry, community and government to financial instability and project delivery issues. Capacity within the sector requires more sustainable, long-term solutions, with industry and government both benefiting from creating a new norm in Victoria.

Key drivers arising from pressures on the industry include:



Over 25% of Australia's 200 largest construction companies operating at a loss over the last two years and 1,709 construction businesses entered administration in April 2023.



Worsening home and asset affordability combined with construction productivity losses, due to a lack of supply and increased costs. Business conditions are worsened by borrowing constraints on buyers and builders.



The HIA Trade Availability Index (Australia-wide) reflecting some of the most acute shortages on record and is still negative at -0.62 in the June 2023 quarter.



Renewed risk of Victoria's quarry materials supply being depleted in the next 5 years.



Prices across all aspects of the built form have risen. Once fixed price contracts come off, there will be between a 30-40% increase in building costs borne by developers and the community.



Long-term taxation and fiscal implications for government, with Victoria's civil, land development and infrastructure industries contributing at least \$21.6 billion in tax revenue in the last financial year, or over 50% of the state's tax revenue.



A loss of skills and knowledge, as talent leaves the construction industry with no legacy plan.

Two core issues have been identified that are impacting industry sustainability:



**Governance, procurement and policy settings are in misalignment with long-term needs**



**Chronic labour and materials shortages leading to construction productivity losses alongside significant cost escalation.**



This industry discussion paper highlights four problem themes and suggests initial solution ideas that may alleviate these pressures. These are:

**Contractual arrangements** – Pressures in fulfilling contracts and making financially feasible contracts.

SOLUTIONS:	
 Changes to presale requirements. Short-term	 Gap insurance, contingent on quantity surveillance. Short-term
 Changes to the insurance landscape to ensure that builds can continue. Medium-term	 Reshaping the construction procurement process to better manage the supply of materials and labour Long-term

**Governance** – System inefficiencies and governance is impeding the creation of value. This can be alleviated by:

SOLUTIONS:	
 Improving government transparency regarding infrastructure projects. Short-term	 The expansion and promotion of public/private partnership models. Medium-term
 A revamped value-for-money re-evaluation process. Medium-term	 Taking a system-wide lens to development, policy, and procurement, rather than a project-specific lens Long-term

**Labour supply shortages** – Issues are arising within the industry due to increased demand for labour amongst a chronic undersupply. Easing barriers to entry, and maintaining sector knowledge must be supported through:

SOLUTIONS:	
 Improving pathways into the industry for those with existing and relevant skillsets. Short-term	 Improve pathways to migration for unskilled migrants and refugees. Medium-term
 Providing comprehensive and robust apprenticeship programs with a clear skills pipeline, including direct industry oversight and engagement. Long-term	 Creating a mentorship and knowledge-sharing industry community with both public and private industry players. Long-term

**Materials and equipment supply shortages** – Issues arising because of local and international material supply shortages, and procurement barriers. Potential solutions include:

SOLUTIONS:	
 Better management of unnecessary premiums paid on materials via better-prioritised allocation. Short-term	 Expedite the approval of new domestic resource sites and expansions (such as quarries and sawmills). Medium-term
 Take a whole-of-industry approach to resources and capacity within the industry. Long-term	 Undertake a detailed system-wide review of policy, which considers indirect costs and solutions to capacity bottlenecks. Long-term



## 2. PROBLEM DEFINITION

Victoria's civil, land development and infrastructure industries play a pivotal role in the development of the State's cities and communities, delivering the core infrastructure and works needed to enable housing, retail, office, and community spaces to come to market. The current industry environment is reactionary, with industry members unable to effectively plan out their operations in the face of rising costs, impediments to supplies, and a system of governance that is not fit for purpose. At its core, the prevailing concern throughout the industry is that existing policies, structures, and behaviours that are common in Victoria are not sustainable.

In a situation where no attempts are made to alleviate the issues underpinning these practices, there are significant potential impacts to the broader Victorian economy. In our mixed-market economy, there is a symbiotic relationship between private and public sectors, such that the government and Victorian residents are impacted by losses and slowdowns in the sector. Some examples of this are the reliance on private operators to deliver enabling works for development, co-contributions to infrastructure from developers, and the large tax revenue gained from private development. Therefore, prioritising the sustainability and vitality of the industry should be a priority for the State Government.

This paper has been co-created by Urbis and the industry to outline and substantiate the key issues currently experienced within the industry. This section presents the four primary areas of concern, for which policies have been suggested in section 3.

### 2.1. CONTRACTUAL ARRANGEMENTS

Businesses in the industry are currently under pressure in both fulfilling their contractual agreements, and making contractual agreements that are worthwhile for current and future operations. Business-as-usual contractual processes that are currently impacting the industry, include, but are not limited to:

- Sub-contractors requiring upfront payment given instability in the construction sector, impacting the profitability and liquidity of contractors and builders (Roundtable discussion). This has been heightened due to poor cashflow and the increasing number of business failures in the sector. Payment terms in other industries and in government procurement are usually written to ensure positive, or at least neutral cashflow. This is not extended to private developments and has resulted in increasingly demands for upfront payment.
- Increased costs are resulting in fewer bulk purchases, changing the nature of the contracts between contractors and suppliers, increasing prices on small builds, and increasing risk of material supply.
- The presence of alliance and incentivised design and construct contracts which, as a preferred contracting style by the government, are an inadvertent threat to the industry's smaller players.

#### 2.1.1. Change in payment structures and cash flows

Sub-contractors take on elevated levels of risk in the supply chain, given that their payment relies on the primary contractor. It was widely reported by industry bodies that, given heightened instability within the industry, sub-contractors are increasingly requesting upfront payments. A knock-on effect of this has been liquidity crunches on contractors, as businesses cannot adequately smooth cash flow under these contracts. While this is a risk contingency made by sub-contractors, up-front payment impacts how contractors can finance their projects and has been reported to be causing project delays or viability concerns. Infrastructure Australia's *2021 Study of Infrastructure Risk* found that contractors are experiencing a "profitless boom" due to increased competition and the increased scale of projects (Infrastructure Australia, 2021). With contractors and other market participants taking on increased risk, the risk for sub-contractors also increases.

This contracting landscape has culminated in a series of business closures and exists, particularly amongst smaller operators. In the financial year to April 2023 alone the construction industry has experienced 1,709 businesses entering administration (ASIC, May 2023), representing 28% of all business administrations in Australia (Data based on the first time a company enters external administration or has a controller appointed). This is a subset of larger numbers of businesses, particularly smaller operations, which are choosing to wind down operations partly due to these practices (Industry Roundtable, 2023)

It has also been reported that the rapid changes to expected cash flows have impacted forward-planning measures, where it is no longer feasible, and hence no longer common, for private purchasers to buy in bulk (Roundtable). Bulk orders are a common cost-management tool, without which materials supply for future projects is more precarious. This counters historic industry norms surrounding builder-supplier relationships, and challenges future project certainty (Roundtable).

## 2.1.2. A pipeline of loss-making builds

The time lag between the signing of contracts and construction has had a significant impact on businesses within the industry. Escalating costs of supplies has increased the prices paid on materials far beyond those estimated within many feasibility assessments and means that total build costs far outstrip estimated quotes in fixed-price contracts (HIA, 2023). This is happening to the extent that time delays are now reported to be the most impactful delivery risk.



**Escalating costs of supplies has increased the prices paid on materials far beyond those estimated within many feasibility assessments and means that total build costs far outstrip estimated quotes in fixed-price contracts (HIA, 2023).**

Companies at all levels are forced to absorb these costs that existing contracts had not accounted for. With unpredictably high inflation, the situation demonstrated the limitations of industry to mitigate such losses. While cost increases are no longer out of control, legacy builds are an imminent threat, particularly to smaller or more highly leveraged operators. In the year to March 2022, it was found that over 25% of the largest 200 construction companies in Australia recorded an operating loss, up from around 15% in the year to March 2021 (RBA, 2022). The RBA notes that these companies are responding to losses on contracts by raising the prices of new contracts, shortening the ‘cooling off’ period and renegotiating existing contracts where possible (RBA, 2022). This vulnerability has shown that there is a latent threat of high escalation to the diverse and important work that civil contractors, infrastructure, and land development businesses do. These changes to the interactions between industry stakeholders reflects ADCO chief executive Neil Harding’s comment to the Australian Financial Review that “builders [are] no longer prepared to take on risks [that were previously absorbed] as they are now too unpredictable to manage” (2023).

The diversity and necessity of services provided by the industry enables further home-building, civil infrastructure provision, and land excavation. With the industry highly subject to the state of the markets and not supported with the necessary contracts to manage inflationary pressures effectively, there are knock-on impacts for broader development across the state. Further to this, customers are beginning to see price shock as **cost increases to builds of between 30-40% are being reflected in new contracts**, which, compounded by borrowing constraints, is worsening affordability across the board (industry stakeholders). Contractors, land developers and private infrastructure are reducing the much-needed pipeline of civil works coming onto the market as a result.

## 2.1.3. Alternate contracting options

A major issue surrounding the competitiveness of private projects vying for the same resources as the government is that contracting arrangements with the government tend to have a different risk-sharing model, which better protects contractors from cost escalation. These collaborative arrangements with the government have an ongoing agreement to pay above the initial quote if required and are not fixed in price as a result. Costs are borne by both industry and government. The most common of these are Alliance and Incentivised Design contracts, which have risk-sharing provisions as costs increase.

This financial flexibility is necessary to ensure the delivery of significant infrastructure projects. However, in a mixed-market system where civil contractors, land developers and private infrastructure developers face a highly competitive environment with a consumer base that is highly price-sensitive, these alternate arrangements can be distortionary. When government-contracted jobs demand the same resources as private actors, the former has greater power to outbid due to economies of scale. The issue is not that these contracts exist, but rather that they can increase demand above commercially sustainable levels and impact projects where fixed-price contracts are the accepted norm.

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**Improving the contracting environment can significantly improve industry resilience.**

## 2.2. GOVERNANCE

The perceived absence of good and appropriate governance within government procurement and the broader policy context has been highlighted as a key pain point by industry members. Issues include a lack of fiscal discipline, inconsistent value management in government projects, and the shortcomings of the State regulatory system in alleviating bottlenecks.

### Discipline in Government Projects

While State Government infrastructure projects provide significant benefits to Victoria, a lack of fiscal discipline can result in net-negative outcomes to the industry and within the wider community.

Government projects consistently exceed their budgets. For example, the 2023-24 State Budget reported the West Gate project to cost over \$10 billion (Department of Treasury and Finance, 2023), despite an initial revised cost of \$6.7 billion (City of Melbourne, 2017). Whether due to changing project scopes, delays, or poor governance, a common cost escalation is an increased demand for labour and materials. This has a negative flow-on impact across the private sector's access to materials, plant, and labour, and hence their costs. Due to economies of scale, government projects' draw on resources has been reported to have significant flow-on impacts to cost escalation and resource availability, particularly amongst bulk materials such as concrete and steel (Industry Roundtable, WT Partnerships, 2023). Therefore, the impact on the wider construction industry is hard felt.

When government projects are bounded by strict budgeting, the government has greater capacity to outbid the private sector. Major cost overruns are attributable to shortcuts in planning and optimism bias in project costs, schedules, and benefit forecasts at all project stages (Infrastructure Australia, 2021). This results in a distortion of the market as a crowding out effect occurs, and the private sector is priced out. Evidence from the Grattan Institute shows that there is an average cost overrun on transport projects of over 30% (Terrill, Emslie & Moran, 2021). This is well beyond the industry standard 20% contingency that is built into most private developments, demonstrating the additional stress of cost imposts on private developers who often are unable to recuperate unanticipated cost escalation. In FY22, inadequate cash flow or high cash use was the most significant reason for business failures within Victoria, accounting for 16% of "causes of company failure" (ASIC, 2023). Trading losses was the second-most significant, supporting the idea that business expenses are driving industry stresses (ibid.). Lastly, in relation to civil construction, it was reported across all stakeholders, including water utilities, that time delays are now the most significant threat to the viability of projects, as cost escalation deteriorates contingencies at a faster rate than previously experienced (stakeholder engagement).

Infrastructure projects are not frequently reassessed due to significant materials and labour cost increases, meaning that value for money to the community diminishes in these circumstances (Terrill, Emslie & Fox, 2021; Moran, 2020). Increased costs mean that the net benefit provided to the community is lessened. There is a distinct lack of data relating to the final cost to benefit outcomes of projects, which means government does not learn to better manage costs on future infrastructure developments, nor is it clear when costs escalate too high (Terrill, Emslie & Moran, 2020). There may be circumstances in which waiting for cost normalisation, or reassessing the competitiveness of contracts, may be a more fiscally responsible approach to project management while also alleviating broader cost pressures (ibid.). Failure to consolidate and apply learnings to incoming and ongoing projects has resulted in social and economic losses to both the community and industry. Industry reported this as a 'deliver at all costs' mentality with public infrastructure projects, which is not a sustainable or responsible approach to delivery.

Acknowledging potential concerns with the pipeline of infrastructure, the Australian Government is currently undergoing a 90-day Strategic Review of the Infrastructure Investment Program. This has seen an immediate stop to work across various industry groups and has been reported to be further impacting cost escalation concerns and profitability of companies (Industry Roundtable, 2023). Broadly, the industry identified that the ability for business activity to be severely impacted by retrospective funding decisions and the state of the political climate is an ongoing risk to long-term sustainability.

## State Regulatory System

Issues surrounding the State regulatory system have also contributed to a broad industry slowdown. Business operators note that the following have direct industry impacts:

- slow approvals processes
- lack of responsiveness towards rezoning for residential or other uses
- councils' risk aversion towards innovation and recycled materials in the face of materials shortages. These issues influence how the industry can operate, with regulations and bureaucracy controlling what businesses can do.
- Overregulation in relation to mandatory materials and public works requirements by councils that are unnecessary from a longevity and quality perspective.
- Lack of coordination across key regulatory inputs, such as planning, heritage and environmental considerations.

Industry members have long raised their concerns that the slow and varied processes of building within Victoria, from approval through to completion, causes pressure on delivery industry roundtable. This has been confirmed across various investigations into housing delivery and broader community development delays (Productivity Commission, 2021; Kendall & Tulip, 2018; Victorian Competition and Efficiency Commission, 2005). Further to the speed and consistency of approvals, it was reported that minimum requirements for public spaces, such as footpaths and water systems, are causing unnecessary increases in resource use above what is required for the functional outcomes being sought. This has led to both unnecessary expenses, and a lack of ability to innovate in how meaningful amenities are provided across the industry (see below case study).

### Case study – Over-specification of materials

“This was in the context of sewer reticulation construction and the ramifications of shifting from the rear of the property to within the road reserve.

Previously sewer would be located at the rear of properties and one pipeline could service double (back-to-back) properties and be backfilled with the extracted material. Now, most sewer is constructed under footpaths in the road reserve resulting in only one property being serviced and the backfill material is a crushed rock. The Quarry resources are so finite occasioned by sheer demand, no extensions to quarries, and no new permits issued by the government. The example above not only introduces significant additional cost but unnecessarily accelerates the decline in quarry reserves.”

- *Industry stakeholder*

Conflicting objectives of various policy overlays leads to complexity and uncertainty on sites that often delay development. Industry leaders are concerned that this is further driving the shortage of shovel-ready land, which is already a primary constraint on home building and greenfield development (HIA, 2023). Civil contracting, land development and infrastructure industries are vital to enabling further development, including new communities, infill development and the development of public spaces. An example of a successful model for overcoming governance and policy complexity was identified as the ‘priority development area’ approach adopted by Economic Development Queensland, which can shift decision-making from local area to state-level actors.

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**If unresolved, governance and policy constraints will continue to unnecessarily limit the operations of the civil contracting, land development and private infrastructure industry in an unsustainable way.**

## 2.3. PRODUCTIVITY

On both an absolute and hours-worked basis, the construction industry has been on a declining multi-factor productivity trajectory over the past 8 years (ABS, 2022). Industry representatives reported detailed examples of reasons behind this decline, including the lack of reliability from the broader supply chain, and the inability to retain talent long-term due to aggressive labour poaching practices from sites. One commonly cited example is paying for the relevant staff to be on-site for concrete delivery, only for delivery to come later into the afternoon and/or for the total amount delivered to be less than what was required due to supply chain constraints. Another cited example related to key material delivery is an inability to receive curb mix, as pour times are higher and drivers self-select to deliver alternate concrete materials. This typifies a supply chain and labour force that has faced strain for some time, both from the labour and materials front, and hence sees key failures across multiple areas.

### Case study – Deadweight costs and productivity destruction

“The sheer demand for product would normally result in rationing of resources and transport. On a recent job, contractors were forced to bid on products to buy priority and even then the quantum of the product was seldom delivered within the desired time expectation. This is representative of what some if not most Civil Contractors would have experienced over the preceding period.”

- *Industry stakeholder*

### 2.3.1. Supply Shortages – Labour

Australia-wide, the supply of labour across blue-collar and white-collar professions required in the civil contracting, land development and infrastructure industries are facing heavy shortages since the onset of COVID-19. HIA reported that the Trade Availability index has experienced a strong decline since mid-2020, approaching -1.0 in June 2022, and remains in its most acute negative period through to the June quarter (HIA, 2023). While there has been some relief moving into 2023, the industry is still facing pressure nationwide with current policies unable to fully mitigate shortfalls. Infrastructure Australia predicts that Victoria’s supply of labour to work on public infrastructure alone will experience a shortfall until the end of 2024, with 1 person for every 2 jobs (Infrastructure Australia, 2022).

Figure 1: HIA Trade Availability Index



Source: HIA (2023).

As of October 2022, nationwide public infrastructure projects are facing an estimated shortage of 214,000 skilled workers (Infrastructure Australia, 2022). Among supply reasons, this has been attributed to the drop of VET inflows and other key tertiary qualifications during the COVID-19 pandemic (Infrastructure Australia, 2022). While VET take-up rates have been reconciled since, the loss of apprentices and students in this time has led to a shortfall in the current workforce. Data collected by the National Centre for Vocational Education Research indicates that the net increase of apprentices and trainees in the Victorian construction industry, when considering commencements and withdrawals/cancellations, has been around 17,600 between Q2 FY18 and Q1 FY23 (NCVER, 2023). This comprises the various roles that are crucial to ensuring a sustainable and dynamic industry, including mechanical engineering, carpentry, earthmoving plant operation and concreting.

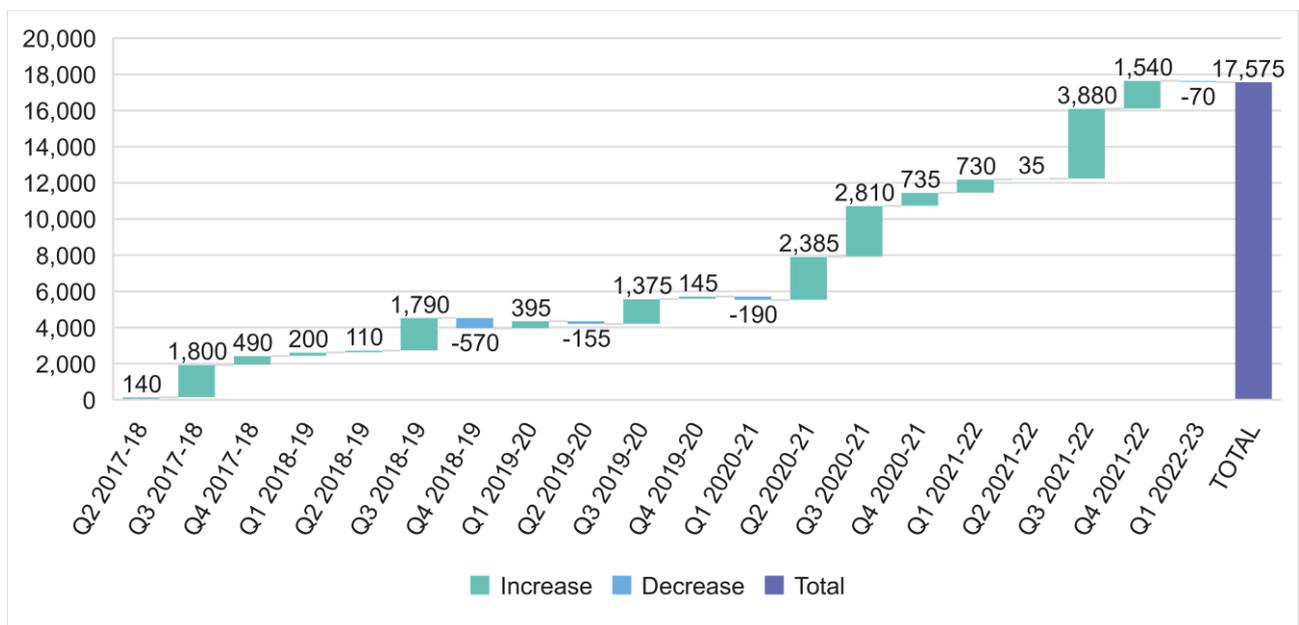
While the state has a strong number of construction apprenticeships and traineeships commencing (around 60,400), 43,000 apprenticeships have been cancelled or withdrawn during this time (NCVER, 2023). This strong proportion of cancellations and withdrawals indicates disruption to construction labour supply and workflow will continue. Research and data into skills relevant to the contracting and development space shows shortages are acute, particularly amongst concreters and truck drivers. Analysis of the latent capacity of those with qualifications relevant to concreting by Urbis has found that nationally, there are not enough people with the relevant skills to delivery key infrastructure. This is without considering the needs of residential and non-government work expected to be delivered by contractors (Urbis, 2023).



**Nationally, there are not enough people with the relevant skills to deliver key infrastructure. This is without considering the needs of residential and non-government work expected to be delivered by contractors (Urbis, 2023).**

A strong demonstration of this is the nationwide shortage of truck drivers, which has been ongoing since at least 2020. Key drivers of this shortfall were recruitment challenges against an ageing workforce, falling training standards, and perception of the industry (Labourforce, 2020). The attraction of high value trades such as in electrical and construction have also disincentivised entry into the trucking industry (Labourforce, 2020). With civil contractors, land developers and private infrastructure businesses reliant on various disciplines, skills, and inputs to succeed, all components must be adequately supported.

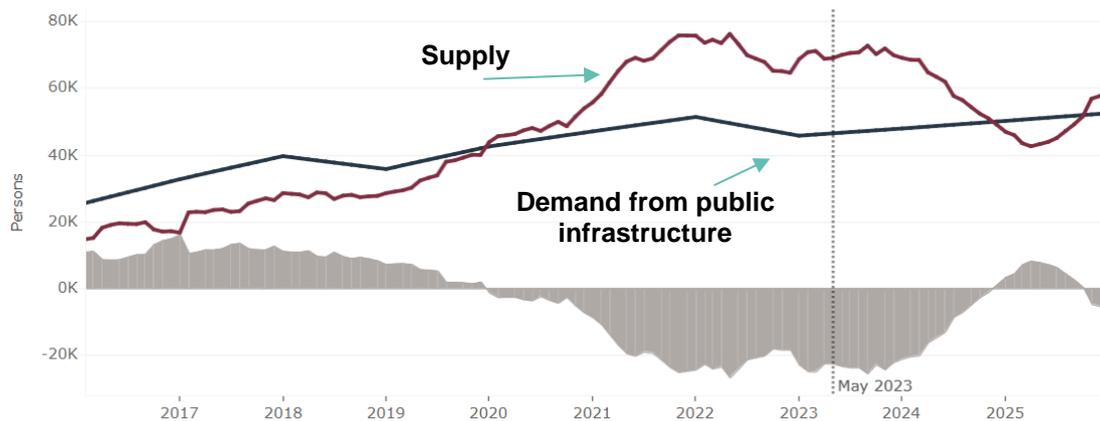
**Figure 2: Commencements and withdrawals in construction apprenticeships and traineeships**



Source: National Centre for Vocational Education Research

In an environment where construction activity in Victoria is 17% above its decade average (Commonwealth Bank, 2023), government is better placed than the private sector in securing labour for their projects. As with any other resource deficit, the low supply of labour has resulted in an increase in wages. Businesses have been reported to be finding it difficult to absorb or pass on these costs, as customers borrowing capacity is limited. HIA reports that the price of skilled trade labour increased by 7.5% per annum during the pandemic, although this rate of increase has since seen some moderation (HIA, 2023). This increase is in line with those reported by other industry stakeholders. The labour force required to deliver key works across Victoria is not sufficient, as demonstrated in the figure below.

**Figure 3: Public Infrastructure Labour Supply and Demand (Victoria)**



Source: Infrastructure Australia

Australia, and especially Victoria, has suffered from labour market losses that resulted from the closure of international borders through the COVID-19 pandemic. Australia is 'missing' almost half a million people in net overseas migration between 2019-2020 and 2021-22 due to international border closures (Infrastructure Australia, 2022). This loss of skilled workers has meant a mismatch between labour demand and supply across key trades. The ability of industry to train and retain the required level of skilled workers through either temporary or permanent migration is more limited than in other sectors. This has produced three sector capacity barriers:

- Heightened levels of 'poaching' talent to larger projects (Infrastructure Australia, 2021)
- Skills shortages pushing further down the supply chain, including fundamental roles such as truck drivers (Infrastructure Australia, 2022)
- Erosion of knowledge and capability (see case study below).

A key issue with labour shortages in the civil, land development and infrastructure industries is that the private sector is more price-sensitive than government, especially when credit is tight amongst households and small-medium businesses. Added to this, businesses must make back their money over shorter periods of time, making them more risk averse. As a result, businesses are struggling to retain talent, even after providing mentorship and traineeships (roundtable), and struggling to compete on labour. This further impacts long-term productivity in the industry.

### Case study – Erosion of knowledge and capability

"We have successfully extracted knowledgeable professionals out of various [government] departments. These professionals have been replaced with an army of external consultants who have very different outcome expectations. Arguably, some of these knowledgeable professionals would have entered the workforce in places like VicRoads, Melbourne Water, etc. as Cadets where they would have been trained & been enshrined in the culture of the Department as custodians to lead & protect. This was a thing of yesterday."

- Industry stakeholder

It was further reported that high turnover in both public and private sectors is causing a shallowness in the knowledge base. This is materially impacting the ability for mutual negotiations and agreements to be made with the government based on unique circumstances of developments (Industry Stakeholders). Furthermore, young engineers are not aware of relevant specifications, further causing delays in delivery. Symptoms of these capacity issues were reported to be a doubling and, in some cases, tripling of the 60-day planning approval period (Industry stakeholder data, 2023).

**While Victoria remains uncompetitive from a price and skills perspective, there is an increasingly material risk that skilled workers will move interstate for large private and public building pipelines – particularly in NSW and Queensland.**

### 2.3.2. Supply Shortages – Materials and equipment

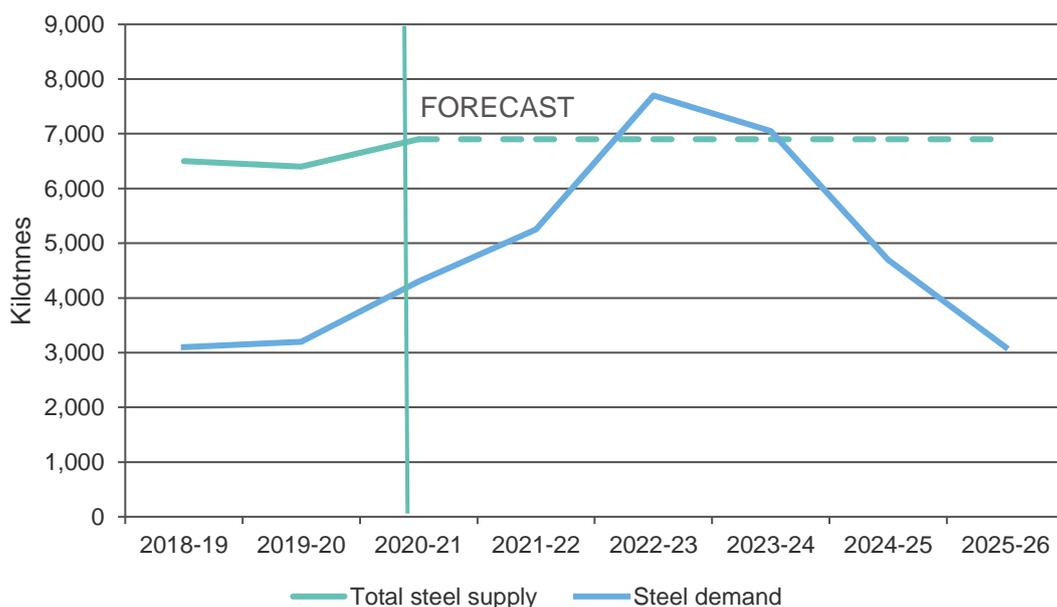
The shortage of materials supplies and equipment in Australia, and Victoria, is a result of various local and international factors.

Materials imported from overseas are often critical to construction projects and any surge in prices directly impacts the cost per build. For example, it has been reported that contractors have experienced cost increases in steel of 80-90% between the time of bid submission and contract award (Infrastructure Australia, 2021). Global disruptions to steel supply were key contributors to these escalations. From Q1 2020 to Q1 2023, steel prices in Victoria rose by 43%, and timber rose by 40%, primarily due to global supply pressures (ABS Producer Price Index, 2023). While prices have alleviated recently, materials required later in a build, including terracotta tiles and insulation, are now facing demand-side market pressures (HIA,2023). When cost increases like this occur, cash flow decreases for businesses.

#### Data highlight – Steel in Australia

Domestic steel production is unlikely to fulfill demand from 2022-2023 to 2023-2024, given the sharp rise in demand expected from the expansion of housing developments and the existing pipeline of infrastructure projects.

**Figure 5: Australian steel forecast supply and demand**



Source: Urbis, adapted from Infrastructure Australia

Further to this, soaring prices combined with volatile market conditions have made bulk purchases of materials, a common tool to lock in prices, more difficult to achieve (Industry Roundtable). Thus, smaller businesses are less able to pre-plan and secure supplies.

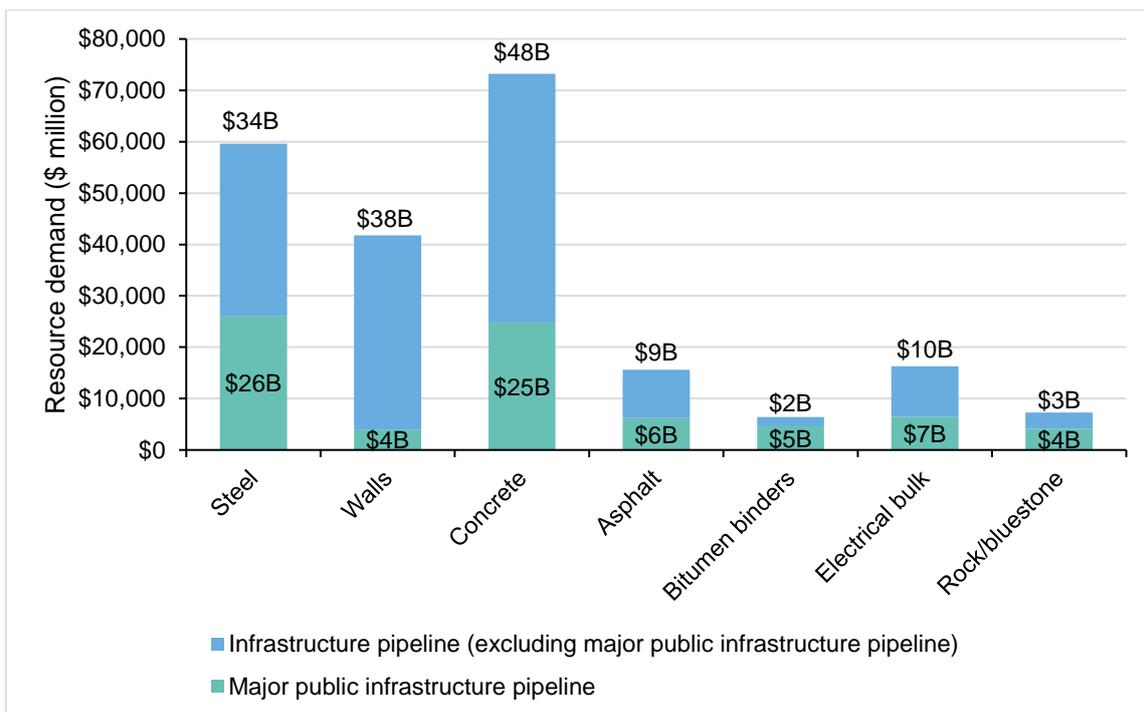
Quarries are also reaching their end-of-life capacities, with existing supply not able to be sustained long-term to meet current market demand. The Infrastructure Australia Market Capacity Report 2022 (2023) reports there is concern in Victoria that the current quarry capacity will be depleted within the next 5 years. Given that there is a risk that “extension consents for metropolitan Melbourne quarries may not be renewed in the next five years” (Infrastructure Australia, 2022), the supply of sand, gravel, and other key materials are in doubt for industry members. It has been estimated that the demand for hard rock and sand resources will grow at an average of 3% annually between 2021 and 2030, far surpassing previous demand (CCAA, 2022).

This means significant consideration must be given to approvals of new quarries. It was reported as early as 2018 that Treasurer Tim Pallas was concerned about “securing Victoria’s extractive resources now to ensure they are available for current and future generations,” (Victoria Extractive Resources Strategy, 2018). While it takes at least 10 years to approve, build, and begin the operation of a new quarry (Infrastructure Australia Market Capacity Report, 2022), the most recent Government Extractive Resources Pulse Check has found that the existing and pipeline supply of hard rock and sand reserves is limited.

### Resource Demands

The below chart, published by Infrastructure Australia, outlines the spread of resources demanded in major infrastructure projects and the remainder of the infrastructure pipeline between FY22 and FY26. While major projects are often thought to draw the most resources, the remainder of the industry requires proportionally more materials in key areas such as roofing and rock/bluestone but is facing more barriers.

**Figure 4: Materials demanded by public and private development**



Source: Urbis, adapted from Infrastructure Australia (2022)

There is an exceedingly large demand for concrete and steel in both major public infrastructure and other civil construction work. However, the need for walls and asphalt remains high. This talks as well to the large pool of skilled workers that are required to complete housing developments, and the key role that private contractors play in coordinating these inputs.

While these supply issues are most evident in the Greater Melbourne region, there is a growing risk that supplies to the regions will soon be overrun (Industry Roundtable, 2023).



**Reallocating resources from the State’s regions is a ‘band-aid’ solution that should not be replicated without proactive strategic planning. Further to this, distances travelled to redirect materials from the regions are higher, making buildings more carbon intensive than they otherwise would have to be.**

### Equipment

The increased demand for resources has also extended into the trading of equipment, such as excavators and trucks. While data could not be sourced from Victoria, industry consultation has confirmed that price rises such as the following from Queensland firm M&K Plant Hire are representative of the situation.

**Table 1 – Equipment Cost Increases, March to July 2022**

Equipment	March 2022 Price (Hourly Rate)	July 2022 Price (Hourly Rate)	Total Increase (%)
Mini Bobcat	\$121.00	\$123.00	1.7%
8-10 Tonne Excavator Only	\$140.80	\$144.00	2.3%
Large Drott	\$200.20	\$205.00	2.4%
0.8-1.5 Tonne Excavator with Mini Posi	\$134.20	\$140.00	4.3%

This shows increases between 1.7% and 4.3% over a 3-month period, which is unprecedented historically. An example of truck costs increasing from \$1,500 to \$3,500 over the course of a year was provided as indicative of the broad cost increases to equipment and delivery of materials in the sector.



**Trucks are being sourced from regional areas, which is now placing pressure on rural areas for resources and machinery to undertake their own development needs (Industry Roundtable, 2023).**

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**Materials and equipment shortages pose a serious threat to the viability and sustainability of the industry in meeting expected short- and long-term market demand.**

## 2.4. TAXATION AND GOVERNMENT FISCAL IMPLICATIONS OF INDUSTRY SLOW-DOWN

Victoria's civil, land development and infrastructure industries contribute at least A\$21.6 billion to the Victorian economy (Government of Victoria, 2022). Contraction of these industries will result in wider taxation and government fiscal implications. The government receives significant tax revenue throughout the various stages of a build, from stamp duty to payroll tax. The Property Council of Australia reported that in 2021, 59% of Victoria's tax revenue was derived from the property sector (PCA Victoria, 2021).

Added to this, changes to the Workcover and payroll tax recently announced in the 2023-24 Victorian state budget have further impacted the bottom line of industry players already struggling to meet the wage expectations and cost of materials for new builds.

### Case study – Workcover and payroll tax

Industry members reported frequent experiences in Victoria of staff cuts and revenue loss as a result of Workcover and payroll tax increases. Frequently, Workcover bills were seen to go from \$600,000 to \$1 million as of FY24.

These cost imposts come at the same time as a legacy pipeline of loss-making developments is being built by the company, hence there was no capacity for other non-construction related costs to be introduced to the business. This story has reportedly been repeated across all industry players – from the largest developers to the smallest, and from high-density urban developers to regional family-owned builders.

Industry representatives have reported financial stress across the industry has led to the laying off of administrative staff or a reduction in the total labour force. In some extreme cases, the totality of cost increases has seen this as a 'final straw' with smaller business operators electing to wind down operations as opposed to operating at a loss.

Urbis' valuations team has prepared the following table, outlining the tax loss per \$10 million of construction across key asset types.

**Table 2 - Tax revenues on a theoretical \$10 million investment asset by type**

Asset type	Annual Charges (%)	Stamp Duty (%)	Total Tax (First year)	Annual ongoing Tax
Greenfield Residential Development	0.240%	5.402%	\$ 564,242.87	\$ 24,009.46
Infill Residential Development	0.139%	6.042%	\$ 18,099.67	\$ 13,942.37
High Density Residential Development	0.177%	5.205%	\$ 538,264.61	\$ 17,718.57
Mixed Use Development (Res 80%-Com 20%)	0.181%	5.264%	\$ 544,553.06	\$ 18,116.24
Commercial Development	0.169%	6.300%	\$ 46,899.19	\$ 16,899.19

Asset type	Annual Charges (%)	Stamp Duty (%)	Total Tax (First year)	Annual ongoing Tax
Greenfield Industrial Development	0.364%	6.300%	\$ 666,397.76	\$ 36,397.76

Source: Urbis Valuations, 2023

This exercise shows the level to which thriving private construction and property development gives back to the government through their current value capture mechanisms. Civil contracting, land development and infrastructure players provide the necessary early works and enabling infrastructure to allow for the efficient delivery of all types of projects across Victoria. Hence, the sustainability of the industry can be viewed as critical to the Government’s ability to continue to provide services and fund their own infrastructure projects. This relies on consumer confidence in the construction and property industry which, at present, is dwindling, as highlighted in the continued falls in project commencements both across Australia, and in Victoria (ABS, 2023). Insolvencies in the construction sector have recently faced elevated levels of media attention, worsening consumer confidence in the industry. The collapse of Porter Davis alone resulted in 1,700 unfinished builds, causing distress for owners, and influencing the risk profile of potential buyers (Australian Financial Review, 2023).



**The sustainability of the industry can be viewed as critical to the Government’s ability to continue to provide services and fund their own infrastructure projects.**

As with the remainder of Australia’s states, Victoria is experiencing a housing affordability crisis, partially led by inadequate housing supply levels. The civil, land development and infrastructure industries all generate vital works that facilitate housing supply, whether this is by building the dwellings, excavating land, providing materials, or delivering enabling infrastructure. Therefore, further contractions in these industries will only result in more time lags and resource availability issues in the face of an existing housing supply deficit (ABS, 2023). Recent data has focused on the current lack of housing, and future housing supply currently in the market. Further slowdowns are exacerbating this supply issue, placing more pressure on house, and rent prices. KPMG analysis reports that around 10,500 dwellings were approved but not commenced in Victoria by March 2023, double that of the previous year (KPMG, 2023). The combination of supply-chain issues, growing insolvencies, and the need to pass on costs to customers has contributed to elongated property procurement and delivery timelines. Supply-led price pressure has wider implications on the State’s future budgets, with increased support needed for constituents. Failing to adequately address the pressures felt by the diverse businesses within Victoria’s construction industry will only worsen the issue.

Overall, there are significant issues across the civil contracting, land development and infrastructure sectors that affect both private and public works. Key to overcoming these issues is a broad-brushed approach to workforce development, regulatory and financial processes, and resource availability. Without a sustainable industry, there remains a latent threat of housing and other key economic assets not being delivered. The Victorian government seeks to lose significant taxation revenue, while constituents will face real economic loss due to a shortfall of housing and commercial assets. There must be coordination between early works, enabling infrastructure and housing delivery to ensure value is maximised from a usage and amenity perspective.

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**Policy solutions are required to forge sustainable coordination of government and private sectors to develop the Victorian built form without crowding out of resources or unnecessarily increasing cost pressures for industry and consumers.**

## 3. GOAL OF POLICY SOLUTIONS

Policy approaches have been suggested that may begin to meet the needs of industry stakeholders in moving towards a more sustainable paradigm in Victoria. There are distinct stages over which this will be achieved. Policy approaches will address short-term pain points, medium-term structural changes, and long-term sustainability separately.

### 3.1. GOALS OF THE SUGGESTED SOLUTIONS

#### 3.1.1. Overcoming short-term pain points

In the short term, alleviation of pressures that have been prompted through global events including the COVID-19 aftermath and the war in Ukraine are the most pressing. Such events have led to labour shortages and material supply shortages. Further to this, there has been a lack of confidence in investing in new developments, as costs to consumers and developers alike continue to increase. To ensure the future pipeline of development in the Victorian economy, the following issues need to be addressed in the short term:

- Addressing immediate issues in the labour market
- Ensuring a more optimal allocation of materials given their scarcity
- Providing support to businesses before they reach insolvency and improving confidence in the sector.

Alleviating pressure derived from market-based forces in the short-term will allow for more effective structural changes to be made in the medium-long term.

#### 3.1.2. Developing a pipeline of materials and labour to support growth over the medium-term

In the medium term, the stability of the supply of resources, both labour and materials, is key. The civil, land development and infrastructure industries' entire supply chain is labour and materials-intensive, meaning that there is a need to consider systems that build capacity across the entire development pipeline. Therefore, the key medium-term outcome for the industry is to create effective systems that will help to maintain stability for businesses. This would include labour market incentives and industry-wide reforms to supply chain management processes.

#### 3.1.3. Creating a sustainable whole-of-industry approach to construction in Victoria in the long-term

In the long-term, the policy solutions aim to create a self-sustaining industry that can absorb shocks and continue to provide meaningful infrastructure to communities, which includes residential housing. Such solutions include regulatory changes, both in terms of what is allowable to build, and how the industry is governed, partnerships between businesses and in collaboration with the public sector, and investment into innovation.

### 3.2. SUGGESTED POLICY SOLUTIONS

The proposed policies put forward in this document reflect the key drivers of unsustainability and high stress across the broad range of industry stakeholders, both currently and over the next 10 years. They have been prioritised based on their feasibility in a Victorian context and expected impact on the sustainable future of the industry.

### 3.2.1. Suggested Policy Solutions: Contractual arrangements

Businesses are currently faced with issues surrounding meeting their contractual obligations, which primarily see civil contractors and developers shouldering cost escalation risk for private developments. Making contracts that have improved risk-sharing processes to favour continuation of business operations is key to ensure a diverse and robust industry going forward that accommodates both small enterprise and large multinationals to compete.

Policy	Intended Impact	Rationale	Key stakeholders
<b>Short Term</b>			
<b>Changes to pre-sale requirements</b>	<i>Shortening the lag time between contracts and project commencement.</i>	When experiencing volatility in prices and the supply of materials and labour, the time lag between contract signing with owners and construction can have an impact on costs. As contracts with owners are fixed, the cost is primarily borne by the contractor.	<ul style="list-style-type: none"> <li>– Suppliers</li> <li>– Developers</li> <li>– Builders/contractors</li> <li>– Local Government</li> </ul>
<b>Medium Term</b>			
<b>Gap insurance, contingent on quantity surveyance</b>	<i>Shifting the share of market risk to ease pressure on contractors and suppliers. Create codes for gap insurance that require QS reports to be generated for them to be valid.</i>	<p>Recent sharp cost escalations are borne by the contractor. There is consensus amongst industry players that for the industry to be more sustainable, there needs to be a fairer apportionment of risk. Providing a mechanism that helps to ease pressure on the industry, while protecting the needs and security of owners and customers, would hopefully create better outcomes.</p> <p>Provisioning insurance that is contingent on independent quantity surveyors' third-party sign-off ensures that the contractor is not taking advantage of the situation and price gouging. It is suggested that some level of cost-sharing related to the requirement of a QS is shared between the government insurer and the customer.</p>	<ul style="list-style-type: none"> <li>– Developers</li> <li>– Builders/Contractors</li> <li>– State Government</li> <li>– Homeowners' Associations</li> </ul>
<b>Changes to the insurance landscape to ensure that builds can continue</b>	<i>Improve confidence and reliability of project delivery</i>	The current state of builders' insurance is not effective in providing security to purchasers and owners. Providing government-backed arrangements that ensure an alternative builder will be able to complete the build will assure owners and provide additional stability and confidence within the industry.	<ul style="list-style-type: none"> <li>– Builders/contractors</li> <li>– State Government</li> </ul>

Policy	Intended Impact	Rationale	Key stakeholders
<b>Long Term</b>			
<b>Reshaping the construction procurement process to better manage the supply of materials and labour</b>	<i>Locking in contracts at earlier stages and engaging in a more collaborative process with contractors.</i>	<p>Early engagement and structuring of contract terms can help drive efficiency and optimise outcomes, as well as improve security for contractors. With the necessary teams engaged early in the project timeline, better information sharing between will allow for effective problem solving around supply of materials and labour. Some developers have already moved to such a process across Australia; however, it is something that should be more popularly championed across all industry stakeholders with a long-term view.</p>	<ul style="list-style-type: none"> <li>- Suppliers</li> <li>- Developers</li> <li>- Builders/contractors</li> <li>- State Government</li> <li>- Federal Government</li> <li>- Infrastructure operators and developers</li> <li>- Utilities</li> </ul>

### 3.2.2. Prioritised Policy Solutions: Governance

There are multiple governance issues surrounding the civil, land development and infrastructure industries, including discipline on government projects, and the state of the planning system. By resolving these, a systems-thinking approach to development can be embedded and ensure similar capacity and delivery crunches are better managed to minimise social and economic costs.

Policy	Intended Impact	Rationale	Key stakeholders
<b>Short Term</b>			
Improving government transparency regarding infrastructure projects	<i>Improved information surrounding why decisions are made regarding major infrastructure projects, and anticipated flow-on impacts.</i>	<p>The Office of the Victorian Information Commissioner noted that, “Open and transparent government enables us to gain insight into what government is doing, why it is doing it and how. This empowers us to scrutinise government decisions and hold government to account, which is crucial to building trust. An informed public is also more engaged in the democratic process and can make meaningful contributions to public policy,” (2022).</p> <p>Ongoing information regarding Value for Money, timing and trade-offs will cause various levels of government to think more deeply about the intended outcomes of their decisions. Additionally, the transparency provided to the public will assist in building trust and confidence at a whole-of-industry level.</p>	<ul style="list-style-type: none"> <li>– Local Government</li> <li>– State Government</li> <li>– Federal Government</li> <li>– Infrastructure operators and developers</li> </ul>
<b>Medium Term</b>			
The expansion and promotion of public/private partnership models	<i>Government working directly with industry on a more equal footing.</i>	Forming partnerships between the public and private sector allows for a more optimal use of skills and provides platforms for industry and government to work together to solve pressing problems. This should relate both to resource sharing across individual projects and the creation of delivery partnerships.	<ul style="list-style-type: none"> <li>– Builders/contractors</li> <li>– Developers</li> <li>– State Government</li> </ul>
A revamped value-for-money re-evaluation process	<i>Embed re-evaluation of value for money assessments for infrastructure projects at each gateway</i>	Cost escalation has been a uniform issue in Victoria, and across other states. This has been driven on the supply side for both materials and labour, given that the increased costs are partially attributed to offering higher prices and wages. Re-evaluation of projects at key stages of the development timeline will help to evolve diligence processes within	<ul style="list-style-type: none"> <li>– State Government</li> </ul>

Policy	Intended Impact	Rationale	Key stakeholders
	<i>review stage to ensure value.</i>	project management, maintaining good budgeting as a cornerstone of project delivery and value creation to the wider community.	
<b>Long Term</b>			
Taking a system-wide lens to development, policy, and procurement, rather than a project-specific lens	<i>Take a whole-of-industry approach to resources and capacity across the industry to discuss indirect costs and solutions to capacity concerns.</i>	<p>A systems-thinking approach to development that considers the greater network of the industry, rather than just the individual development context is core to avoiding future capacity crunches. To enact this successfully, government and industry should be actively and collaboratively involved in decision-making and action-taking processes. This can be achieved through a standing, representative body.</p> <p>Vital to the body's success will be the inclusion of a complete cross-section of the civil, land development and infrastructure industries, and government stakeholders. This means having the relevant mechanisms to ensure large multinationals are heard alongside representatives from small construction businesses. Similarly, road, water, rail, and town development stakeholders should be represented to allow all facets of development needs to be captured.</p>	<ul style="list-style-type: none"> <li>- Builders/contractors</li> <li>- Developers</li> <li>- State Government</li> </ul>

### 3.2.3. Prioritised Policy Solutions: Labour supply

Issues surrounding an inability to retain or attract the necessary labour for projects of diverse sizes and scopes is both a short-term concern and systematic risk. This is partially a consequence of competition both within and outside private industry and will not be resolved through current business-as-usual approaches.

Policy	Intended Impact	Rationale	Key stakeholders
<b>Short Term</b>			
Improving pathways into the industry for those with existing and relevant skillsets	<i>Improved processes and capacity to support skilled labour to transfer into the industry.</i>	Victoria continues to face a labour shortage in many of its industries. The continued operation of the civil, land development and infrastructure industries is crucial to sustaining positive social outcomes. Targeting international migration through various schemes and incentivising employment for current skilled workers in various construction-related jobs can partially fuel the demand for labour.	<ul style="list-style-type: none"> <li>– Builders/contractors</li> <li>– Federal Government</li> <li>– State Government</li> </ul>
<b>Medium Term</b>			
Improve pathways to migration for unskilled migrants and refugees	<i>Improved processes and capacity to support unskilled labour to transfer into the industry.</i>	Over the medium term, programs aimed at supporting the transfer of unskilled labour into the industry, both through international and domestic channels should be developed. This can include incentives for employers of fee reductions for key industries such as civil contracting, land development and infrastructure to support pathways from available labour pools.	<ul style="list-style-type: none"> <li>– Builders/contractors</li> <li>– Federal Government</li> <li>– State Government</li> </ul>
<b>Long Term</b>			
Providing comprehensive and robust apprenticeship and other tertiary programs and providing oversight over their operation. Ensuring that all relevant skills are nurtured in early career stages and promoting equal standards and	<i>Government working directly with industry on a more equal footing.</i>	Nationally, Australia has experienced a decrease in apprenticeship completions. Added to this, retention, and skills development in key supply chain positions such as cementers and truck drivers, and built form tertiary qualifications such as surveyors, auditors and engineers has been unable to meet demand. Ensuring that apprentices and trainees feel inspired and compelled to complete their training and remain in their chosen professions is central to ensuring the continuation and sustainability of construction and its associated trades.	<ul style="list-style-type: none"> <li>– Builders/contractors</li> <li>– Developers</li> <li>– State Government</li> </ul>

Policy	Intended Impact	Rationale	Key stakeholders
experiences amongst different supervisors.			
Creation of an industry mentorship program to ensure knowledge retention	<i>Improved retention and growth of industry capacity for both private and public actors</i>	The importance of industry experience and knowledge in the approval, regulation, construction, and project management of developments cannot be understated. Recent exits of senior staff and businesses will have an ongoing impact on the deliverability and productivity of the sector. Having a programmatic approach to mentorship in the industry that spans both private and public sectors will allow for the continual sharing and improvement of the knowledge base.	<ul style="list-style-type: none"> <li>– State Government</li> <li>– Local Government</li> <li>– Industry Peak Bodies</li> <li>– Builders/contractors</li> <li>– Developers</li> </ul>

### 3.2.4. Prioritised Policy Solutions: Materials and equipment supply

Structural issues exist relating to the attainment of materials in both the short- and long-term. This has arisen from global risk factors, inflation, and scarcity, and must be resolved using a long-term supply and demand management lens.

Policy	Intended Impact	Rationale	Key stakeholders
<b>Short Term</b>			
Better manage government premiums paid on materials to better prioritise allocation across the built environment.	<i>Better prioritisation of delivery of core infrastructure across all construction types</i>	Both government and private industry provide core social outcomes in the delivery of infrastructure, housing, and other civil construction outputs. A whole-of-state lens should be used when considering the prices and premiums paid by the government for infrastructure delivery, with a particular eye on crowding out key resources such as concrete or sand.	<ul style="list-style-type: none"> <li>– Suppliers</li> <li>– Developers</li> <li>– Builders/contractors</li> <li>– State Government</li> </ul>
<b>Medium Term</b>			
Expedite the approval of new domestic resources sites and expansions	<i>Implement immediate actions to ameliorate current supply concerns</i>	For both cost and supply reasons, it is crucial that there supply is uninterrupted for critical domestic resources.	<ul style="list-style-type: none"> <li>– Suppliers</li> <li>– Local Government</li> <li>– State Government</li> <li>– Federal Government</li> </ul>
<b>Long Term</b>			
Take a whole-of-industry approach to resources and capacity within the industry that considers indirect costs and solutions to capacity concerns.	<i>Create discussion and consensus around indirect costs of competing projects, and form solutions to capacity concerns.</i>	Resource constraints across the industry will remain dynamic given the issue of scarcity and a finite supply of resources. Bringing together the whole industry to effectively plan against these constraints provides a platform for all types and sizes of businesses to be heard, while also building effective channels for delivering and receiving materials and equipment.	<ul style="list-style-type: none"> <li>– Suppliers</li> <li>– Developers</li> <li>– Builders/contractors</li> <li>– Local Government</li> <li>– State Government</li> <li>– Federal Government</li> <li>– Homeowners' associations</li> <li>– Infrastructure operators and developers</li> <li>– Utilities</li> </ul>

Policy	Intended Impact	Rationale	Key stakeholders
Undertake a detailed review into the regulatory system.	<i>A broad-brush review of the processes and minimum standards required for approval and removing bottlenecks.</i>	<p>Bottlenecks in the regulatory system, including overspecification of materials, the approval of new quarries, and the coordination of key regulatory inputs which are vital to construction, have a major impact on the sustainability of the industry. Further to this, a block on innovation in spaces such as recyclable materials is hampering productivity improvements in the sector.</p> <p>A broad review of the system could see the government play a more active role in allowing and encouraging new methods of resource use and improving the consistent application of policies and outcomes.</p>	<ul style="list-style-type: none"> <li>– Developers</li> <li>– Local Government</li> <li>– State Government</li> <li>– Infrastructure operators and developers</li> <li>– Utilities</li> </ul>

## APPENDIX A – LONG LIST OF KEY ISSUES AND POTENTIAL SOLUTIONS

Key issue	Key issue – defined	Solution	Reference/notes
Supply shortage (labour)	Lack of skilled labour	Apprenticeship support programme to address skill shortages in the medium-term	Apprenticeship Support Programme (NZ) developed as part of the COVID-19 response in 2020 to increase the number of apprentices in construction and other sectors to address skill shortages in the medium term ( <a href="#">source</a> )
Supply shortage (labour)	Lack of skilled labour	Federal immigration pathway for skilled refugees	Economic Mobility Pathways Pilot (Canada) pairs skilled refugees with Canadian employers who need to overcome labour shortages in key occupations ( <a href="#">source</a> )
Supply shortage (labour)	Lack of skilled labour	Technical labour migration programme	Technical Intern Training Programme (Japan) allows foreigners to work in certain low-skill occupations by way of placement by an intermediary agency ( <a href="#">source</a> )
Supply shortage (labour)	Lack of skilled labour	Skilled labour migration programme	Construction and Infrastructure Skill Shortage List (NZ) was established to facilitate short-term visas for workers in construction-related occupations ( <a href="#">source</a> )
Governance (contracts & procurement) Supply shortage (labour)	Government cannibalisation of the labour market	Regulation of labour wages for government infrastructure jobs	

Key issue	Key issue – defined	Solution	Reference/notes
Supply shortage (materials)	Lack of materials, underutilisation of domestic resources, lack of sustainable innovation	Strategy and action plan	The Wood Plan (France) aims to make the wood industry more competitive and sustainable in the construction market ( <a href="#">source</a> )
Supply shortage (materials)  Governance (standards)	Lack of materials, underutilisation of domestic resources, lack of sustainable innovation	Strategy and action plan	Wood Construction Programme (Finland) aims to promote and develop internationally competitive wood knowledge and industrial entrepreneurship in Finland ( <a href="#">source</a> )
Supply shortage (materials)	Lack of materials, difficulty procuring materials	Cooperation between ‘big buyers’	‘Big Buyers Working Together’ (EU) launched to promote and facilitate collaboration between big public buyers and commodity-specific experts to maximise their market power through strategic and sustainable public procurement ( <a href="#">source</a> )
Supply shortage (labour)  Governance (standards)	Lack of skilled labour	Adopt lean principles in construction ( <a href="#">source</a> )	<ul style="list-style-type: none"> <li>• Reduce time taken by each activity</li> <li>• Balance time taken by different steps (prevent bottlenecks)</li> <li>• Identify and optimise the critical path to reduce risks of over-run</li> </ul>
Supply shortage (materials)  Governance (standards)	Lack of materials, lack of sustainable innovation (recycled materials)	Recyclable aggregate PPP R&D project	RECYBETON (France) was a PPP R&D project which aimed to preserve natural aggregate resources and achieve the complete recycling of concrete ( <a href="#">source</a> )

<b>Key issue</b>	<b>Key issue – defined</b>	<b>Solution</b>	<b>Reference/notes</b>
Governance (contracts & procurement)	Difficulty securing construction performance bonds	Construction performance bond reform	Construction performance bonds required on all public works contracts were reduced and capped at 12.5%, compared to a previously prohibitive 25% of the contract sum (Ireland) ( <a href="#">source</a> )
Governance (contracts & procurement)	Built form reference group	Take a whole-of-industry approach to resources and capacity across the civil, land development and infrastructure industries to discuss indirect costs and solutions to capacity concerns.	
Governance (contracts & procurement)	Impact of exceptional inflation	Back payment of a proportion of inflation-related costs (on materials and energy) on contracts	Inflation Cooperation Framework (Ireland) was developed to safeguard parties engaged in public projects already under construction and to mitigate the significant losses being sustained by contractors, with the State bearing 70% of additional costs arising due to inflation (remaining 0% borne by contractor) ( <a href="#">source</a> )
Governance (contracts & procurement)	Lack of governance in overseeing projects	Establish a high-power group to monitor and de-bottleneck projects	Project Monitoring Group (India) was formed to track frozen public, private, and PPP projects and remove bottlenecks. It undertakes fast-tracking of approvals, sectoral policy issues, and removal of bottlenecks in expeditious commissioning ( <a href="#">source</a> )

Key issue	Key issue – defined	Solution	Reference/notes
Governance (contracts & procurement)	Lack of governance in overseeing projects	Carve out programmes of significant importance as SPVs with world-class governance	Set up new, independent entities to own large, high-impact programmes that capture national attention, and prioritise the governance and management of these entities by instituting autonomous, lean, and accountable boards
Governance (contracts & procurement)	Competitive neutrality	Eliminate competitive advantages in government projects	<ul style="list-style-type: none"> <li>• Land tax exemption</li> <li>• Local government rates exemption</li> <li>• Stamp duties exemption</li> <li>• Payroll tax</li> <li>• Corporate overheads</li> <li>• No requirement to cover the cost of capital</li> </ul> <a href="#">(source)</a>
Governance (contracts & procurement)  Supply shortage (materials)	Difficulty procuring materials; procurement inefficiency	Adopt a total-cost-of-ownership approach	Specifically for BOT projects, TCO approach would improve on-time project delivery at lower costs by fundamentally changing procurement decisions (e.g., buy more expensive equipment because its lifecycle cost is lower)
Supply shortage (materials)  Governance (contracts & procurement)	Lack of materials, underutilisation of domestic resources	Increase supplier competition and by improving conditions of entry in the building regulatory system	Address the highly concentrated nature of some markets in the supply chain by introducing new compliance pathways for a broader range of key building supplies, and investigate the use of rebates and loyalty schemes by firms (NZ) <a href="#">(source)</a>

Key issue	Key issue – defined	Solution	Reference/notes
Supply shortage (materials)	Lack of materials due to hoarding	Supply management regulation	Manage the flow of supplies such that large quantities in storage can be reallocated for immediate use, with a commitment or guarantee that it is replenished when it is needed (NZ) ( <a href="#">source</a> )
Supply shortage (materials)  Governance (standards)	Lack of materials, prohibitive regulatory standards, lack of innovation	Reform minimum building standard requirements	Review accreditation processes and consent and design requirements that make it unduly difficult and costly for new products or building techniques to become established (NZ) ( <a href="#">source</a> )
Supply shortage (materials)  Governance (standards)	Lack of materials; difficulty procuring materials	Expand or open new domestic raw materials sites	Expedite the approval of new domestic resources sites and expansions (such as quarries and sawmills)
Governance (contracts & procurement)	Increasing use of bespoke contract forms	Develop and mandate the use of a standard suite of contracts covering different procurement models from Design and Construct to more collaborative models, instead of leaving contract development to individual agencies under a decentralised procurement system	As recommended by the Australian Constructors Association ( <a href="#">source</a> )
Governance (contracts & procurement)	Poor cashflow is the main reason for the elevated level of business failures in the industry	Improve the security of payment by mandating the requirement for a positive cashflow on all federally funded infrastructure projects.	

<b>Key issue</b>	<b>Key issue – defined</b>	<b>Solution</b>	<b>Reference/notes</b>
Governance (contracts & procurement)	Value-for-money re-evaluation process	Embed re-evaluation of value for money assessments for infrastructure projects at each gateway review stage to ensure value.	
Governance (contracts & procurement)	Precinct-wide development rather than short-term thinking	Take a whole-of-industry approach to staging of development, ensuring value for money is maximised across the system.	
Governance (contracts & procurement)	Improve the information deficit	Provide clear PDS-style advice to customers to ensure they are clear on the risks associated with projects and contracts that are being signed	
Governance (contracts & procurement)	Gap insurance contingent on a QS	Create codes for gap insurance that require QS reports to be generated for them to be valid.	

## APPENDIX B – SOLUTIONS ALIGNED TO KEY ISSUES, CONSOLIDATED

	Contractual Agreements	Governance	Labour Supply	Materials Supply
Cooperation between 'big buyers'	YES			YES
Creation of systems that both private and public sectors will adhere to – transparency of gov purchases, cannot pay x% above market price etc.				YES
Investment and support for recyclable materials and processes				YES
Review into the planning system e.g., quarries approvals, innovation (incl. recyclable materials)	YES	YES		YES
Migration for technical/skilled labour			YES	
Apprenticeship support			YES	
Mentoring and skill-building program for both private and public sector knowledge retention and growth			YES	
Private/public partnerships		YES	YES	
Regulation of industry employment		YES	YES	
Wage capping in government jobs		YES	YES	
Removing the competitive advantage in government projects – through regulation?		YES	YES	YES
Government transparency towards their projects – governance and accountability		YES		
Construction procurement reform		YES		
Changes to pre-sale requirements	YES			

	<b>Contractual Agreements</b>	<b>Governance</b>	<b>Labour Supply</b>	<b>Materials Supply</b>
Allowance of price variations on builds (government could temporarily absorb x% of cost dependent on the magnitude of the change)	YES	YES		
Establish a body to monitor and de-bottleneck projects		YES		
Adopt a total-cost-of-ownership approach		YES		YES
Rationale around precinct development – why are infrastructure projects being built?		YES		
Master planning reform – resource mapping, collaboration, etc. – construction procurement		YES		
Precinct-wide development rather than short-term thinking		YES		
Addressing the information deficit in the wider community		YES		
Gap insurance contingent on a QS	YES			
Change to home builders' insurance to include remuneration that ensures the build will continue	YES			

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