



Australian Government

**Department of Infrastructure, Transport,
Regional Development and Communications**

INFRASTRUCTURE GROUP / INFRASTRUCTURE INVESTMENT DIVISION / INVESTMENT ADVISORY AND
BUSINESS IMPROVEMENT BRANCH

Inquiry into procurement practices for government-funded infrastructure

Submission to the House of Representatives
Standing Committee on Infrastructure,
Transport and Cities

July 2021

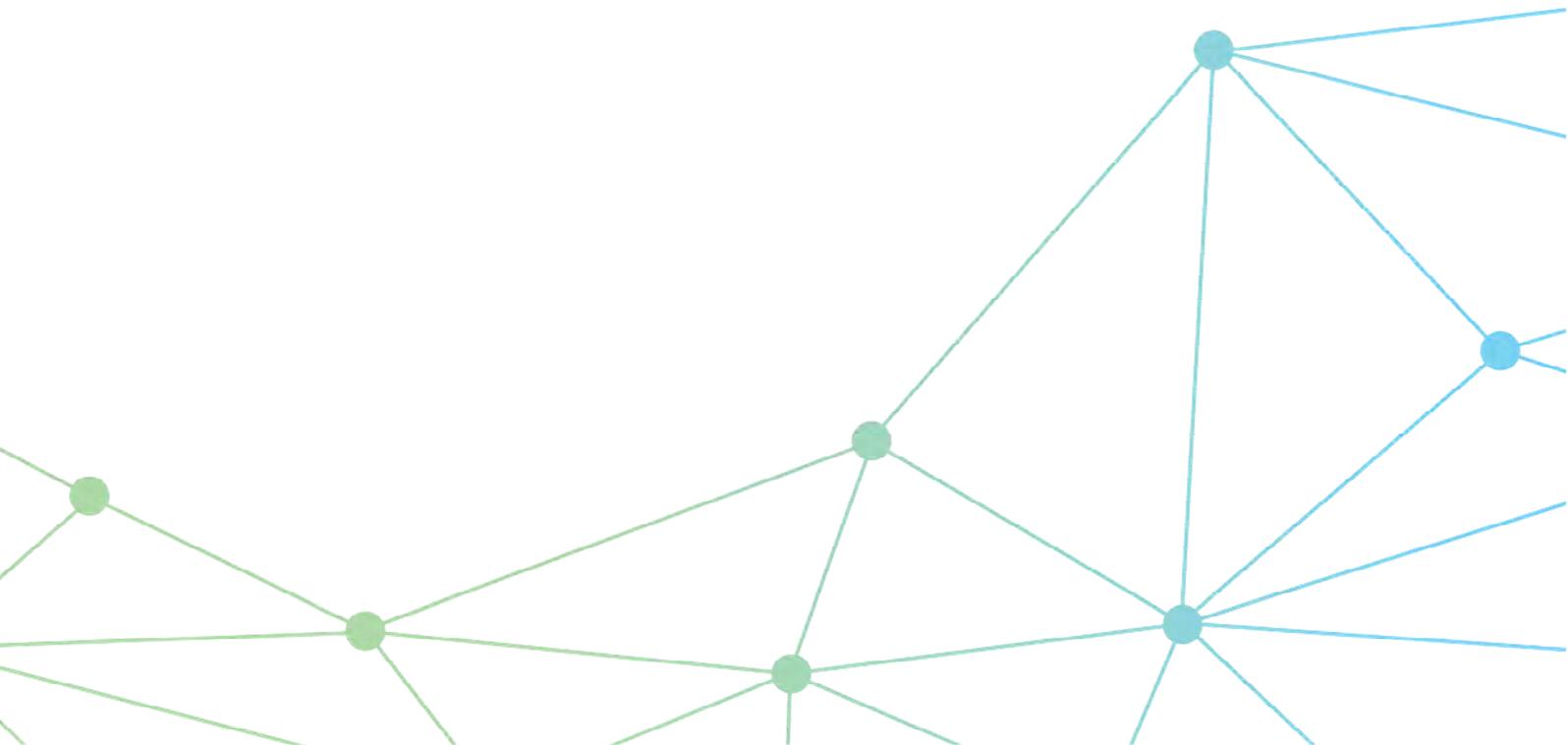


Table of Contents

Executive summary	3
Commonwealth investment in infrastructure	5
COVID-19 response and the importance of infrastructure in recovery	5
Global infrastructure investment	6
Market size	7
Market structure and participation	10
Infrastructure Investment Program funding by tier	10
Foreign-owned companies	10
Market capacity and capability	12
Workforce	12
Skills	12
Productivity and Innovation	14
Uptake of technology	14
Digitisation	14
Price Deflators	16
Rail Escalation Rates	16
Road Escalation Rates	17
Market Engagement and Procurement	18
Risk identification and allocation	18
Procurement policy	18
Australian Government role	19
Industry participation	19
Procurement practices across jurisdictions	19
Work underway to improve the efficient delivery of infrastructure investment	21
Appendix A: Key statistics construction industry division	22
Contribution to gross domestic product	22
Market size	26
Business counts	28
Employment	29
Investment	32
Skills mix	34
Innovation	35
Productivity	36

Executive summary

The Department of Infrastructure, Transport, Regional Development and Communications (the Department) is making a submission to the House of Representatives Standing Committee on Infrastructure Transport and Cities inquiry into and report on procurement practices for government-funded infrastructure. In making this submission, the Department wishes to ensure the challenges and opportunities for government-funded infrastructure in the Australian context are given consideration.

The Australian Government invests in transport infrastructure which assists national, regional economic and social development by providing funding aimed at improving the performance and safety of transport infrastructure and networks. Transport Infrastructure also plays an important role in ensuring healthy lives and promoting wellbeing for people across Australia including through better connecting people, enriching communities and empowering regions.

Resilient and efficient transport infrastructure is vital in order to deliver inclusive and sustainable development and to foster innovation – all of which are part of Australia’s contribution to the United Nation’s Sustainable Development Goals. Infrastructure is a key enabler of the broader economy, directly supporting economic activity, sustaining employment, and has a multiplier effect on our national economy. Infrastructure investment is also playing an important role in the global economic response to the COVID-19 pandemic, with governments around the world spending on infrastructure, driving material, resource and workforce pressures across the infrastructure sector.

A sustainable and competitive transport infrastructure sector is vital in order to drive high-quality outcomes for people across Australia. This requires all Australian governments to work closely with each other and industry to set a policy and regulatory environment to enable the sector to thrive, and deliver high quality work on time and within budget.

To this end, the Australian Government is investing \$110 billion over 10 years from 2021-22 in the infrastructure pipeline, of which a significant component is through the Infrastructure Investment Program. This significant investment is a crucial part of the Australian Government’s strategy to deliver nation-building infrastructure projects, meeting our national freight challenge and to get Australians home sooner and safer.

This longer-term commitment is providing the certainty of a rolling program of investments that allows industry to retain skills and plan resources, and for state and territory governments to consider the optimum sequencing of major projects to ensure capacity is improved in the land transport sector. In response to COVID-19, the Australian Government invested \$1.5 billion (\$1 billion in funding for shovel ready projects and \$500 million for Targeted Road Safety Works) in smaller scale projects, as well as projects that could commence in the short term to provide an immediate injection into the economy and get money flowing into jobs and businesses as soon as possible.

In addition, the Government is also investing \$2.5 billion in the Local Roads and Community Infrastructure Program, and \$3 billion in the Road Safety Program. These investment are small scale and geographically spread to maximise stimulatory impacts across Australia. Infrastructure projects support and secure jobs, drive growth and help rebuild Australia’s economy from the COVID-19 pandemic. Our investments support safe transport connections needed for all Australians to keep moving.

Through the Infrastructure Investment Program the Australian Government is working with every state and territory to build critical infrastructure to ensure the ongoing delivery of existing pipelines, and to identify additional opportunities to protect and support local jobs and firms.

The Infrastructure and Transport National Cabinet Reform Committee has been tasked with expediting major infrastructure projects through approval processes, and optimising job opportunities from the national infrastructure pipeline.

The Department, along with state and territory governments, has undertaken a range of reforms to its processes to facilitate more efficient major infrastructure projects through the approval process, to optimise job opportunities from the national infrastructure pipeline and provide support to the sector.

All jurisdictions have made progress to streamline and optimise the infrastructure pipeline and job opportunities within their jurisdictions.

This submission provides:

- an outline of the infrastructure, and heavy industry and civil engineering construction market in Australia and an assessment of the market structure and participation, including the nature of funding awarded through the Infrastructure Investment Program
- an outline of the market factors which are currently influencing the current and likely future state of the sector
- the range of ways the Commonwealth, along with state and territory governments are working to improve and capitalise on the benefits of increased economic stimulus investment in infrastructure
- a series of opportunities to improve the future state of the land transport sector in Australia and deliver greater participation, higher competition and drive better infrastructure outcomes.

Commonwealth investment in infrastructure

The Australian Government is committed to delivering its \$110 billion 10-year land transport infrastructure pipeline. This long-term commitment to build transport infrastructure Australians need to meet the challenges of the fast-growing population, while improving safety and productivity, will support jobs and the economy to help stem the economic impacts of the COVID-19 pandemic.

COVID-19 response and the importance of infrastructure in recovery

The Australian Government has announced a range of stimulatory programs to help recovery from the impact of COVID-19. In June 2020, the Australian Government announced a \$1.5 billion stimulus package designed to commence projects faster which due to their nature (shovel ready and smaller scale) are less likely to have complex design phases compared to other projects. For safety projects, relatively small, low-cost interventions can make a significant difference to regional road safety and enhance networks. This investment included \$1 billion in funding for shovel ready projects and \$500 million for Targeted Road Safety Works as part of the Australian Government's economic stimulus package in response to the global COVID-19 pandemic. There was funding provided for shovel ready and safety projects across the country in each state and territory.

This investment forms part of the 10-year infrastructure pipeline, and complemented the Government's initial commitment of \$500 million for the Local Roads and Community Infrastructure Program in May 2020. Through the 2019-20 and 2020-21 Federal Budgets the Local Roads and Community Infrastructure Program received additional funding, bringing the total commitment to \$2.5 billion over three phases.

The initial phases provided funds to all Australian councils to deliver priority local road and community infrastructure projects – further supporting jobs and the resilience of local economies to help communities. The additional funding provided under Phase 3 of the Local Roads and Community Infrastructure Program as well as a longer delivery window, will allow for local governments to pursue larger, more complex projects that may be a higher priority and have a bigger impact on the community.

Further, the \$3 billion Road Safety Program, which is providing the fast roll out of lifesaving road safety treatments on rural and regional roads and greater protection for vulnerable road users in urban areas, is estimated to support around 13,500 jobs with the majority in regional areas where the work is occurring.

Australian Government funded road and rail projects currently underway are expected to support up to 100,000 direct and indirect jobs over the life of the projects. As a package of works under the Infrastructure Investment Program these projects are crucial for helping to secure jobs and support the national economy to bounce back after COVID-19 by ensuring the safe transport connections needed for all of Australia to keep moving.

The sector has experienced additional delays and costs associated with COVID-19 pandemic hygiene and safety restrictions which had an early impact on productivity, and raised concerns about supply chain risks due to Australia's reliance on countries affected by restrictions¹.

COVID-19 has impacted the construction industry, with contractors adversely affected by supply chain disruptions for construction equipment, building materials and skilled labour. Supply chain disruptions for imported component parts, building materials and construction equipment have stemmed from delays in production and shipments from China, the United States and Europe. These disruptions have delayed the progress of some construction projects, but largely at this stage we are not seeing a major slowdown in delivery of the Australian Government's \$110 billion transport infrastructure pipeline because of COVID-19.

¹ Infrastructure Australia, [Infrastructure beyond COVID-19: A national study on the impacts of the pandemic on Australia](#).

Global infrastructure investment

There is a relationship between the quantity and quality of transport infrastructure and economic development, with efficient transport systems providing economic and social opportunities and resulting in positive multiplier impacts for communities².

Globally infrastructure is front and centre of international recovery efforts, which places pressure on material resources, skills and capacity. In Australia, productivity in infrastructure has lagged within other sectors, with research highlighting that further opportunities exist for the sector to make substantial productivity gains through digitisation, automation and improved use of analytics. Additionally, some in the sector argue that reforms to procurement models and related risk sharing arrangements could also yield productivity improvements over time.

Given the scale of investment in the land transport infrastructure pipeline, it is vital to ensure delivery is efficient. More collaborative and flexible contracting and risk-sharing practices can enhance capacity, present opportunities for contractors, ensure more efficient use of investment inputs and mitigate risk.

Investing in Australian skills and training, while cultivating a more diverse, collaborative and prepared workforce is vital in order to prepare the sector for the changing nature of infrastructure into the future.

² The Geography of Transport Systems, <https://transportgeography.org/contents/chapter3/transportation-and-economic-development/>

Market size

The construction sector was forecast to be worth around \$395.1 billion in revenue in 2020-21. It is estimated to further grow by around 1.8 percent per year until 2025-26. Around 19 percent of the \$395.1 billion is expected to be in heavy and civil engineering construction.³ Public infrastructure only makes up a portion of the entire construction sector.

In 2019-20 the total construction market as a share of GDP was around 7.1 percent, and this was estimated to be around 6.9 percent in March 2021. The 2021-22 Australian Budget forecasts real GDP to grow by 1.25 percent in 2020-21, by 4.25 percent in 2021-22 and 2.5 percent in 2022-23.⁴

The transport infrastructure sector is subset of the broader construction sector with the engineering construction component of this expenditure totalling under \$19.5 billion for the 2020-21 financial year (the Australian road, rail and bridge construction forecast table below refers). Transport infrastructure construction for the public sector grew by 2.4 percent from 2019 to 2020 (in real terms).

Australian road, rail and bridge construction forecast (figures)

Financial Year	Public road, rail and bridge Expenditure
2020-21	\$19,473,751,416
2021-22	\$23,650,029,938
2022-23	\$23,523,291,975
2023-24	\$18,271,475,733
2024-25	\$12,464,723,333

Source: BIS Oxford Economics. Expenditure values only include the engineering construction component of rail, road and bridge projects, not the total project value or contract value.

Total public infrastructure construction expenditure, including on transport, communications, energy and water, was \$33.6 billion in 2020 (source: ABS Engineering Construction Activity).

Government economic stimulus in response to the COVID-19 pandemic has increased infrastructure investment across the world, creating growing demand for equipment, labour, material and plant – not just in transport infrastructure, but across construction. Projections expect the construction industry to return to pre COVID-19 levels by 2022-23, driven by strong public investment⁵.

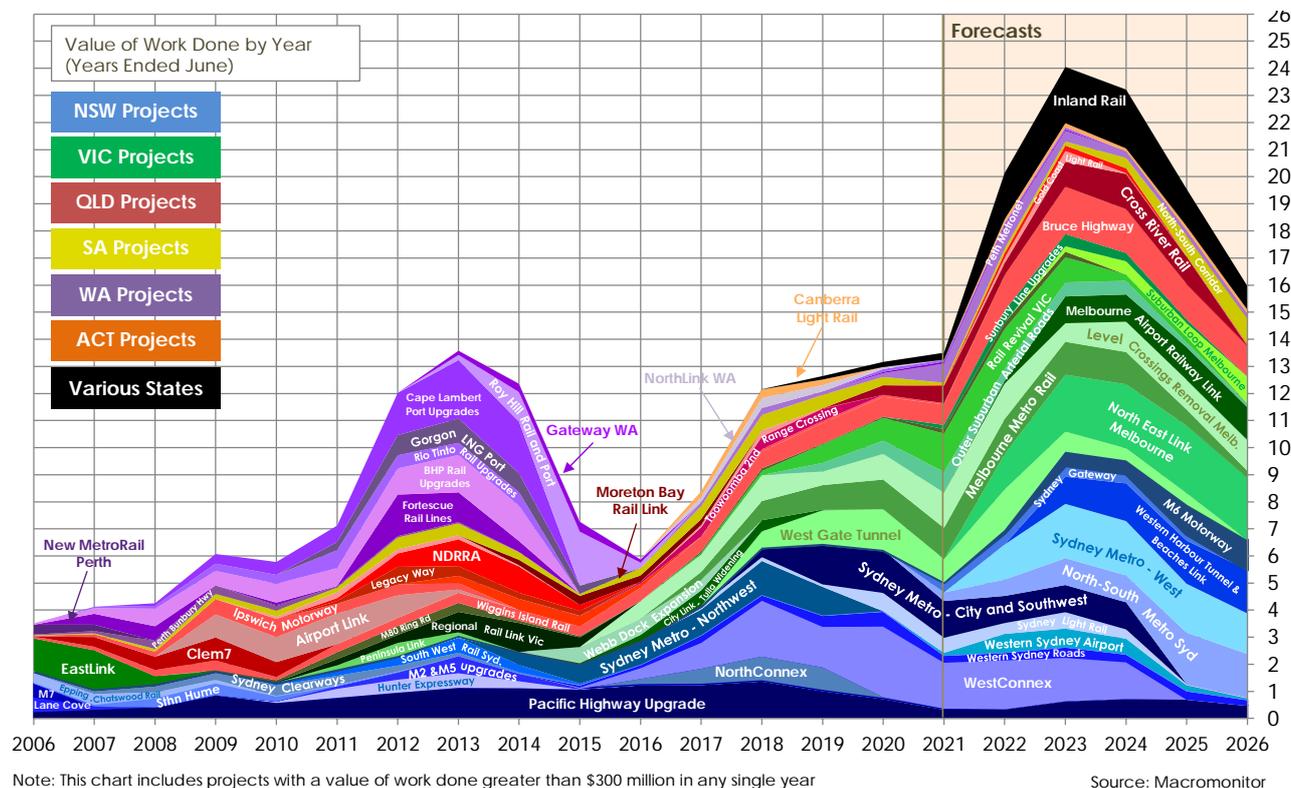
This coupled with the existing pipeline will be forecast to result in transport infrastructure spending peaking in 2023-24. The major transport infrastructure projects chart (page 8) also indicates a similar trajectory for spending. It is important to ensure that industry and governments work together to optimise capacity and capability to deliver on this demand.

³ IBISWorld, Construction in Australia, April 2021

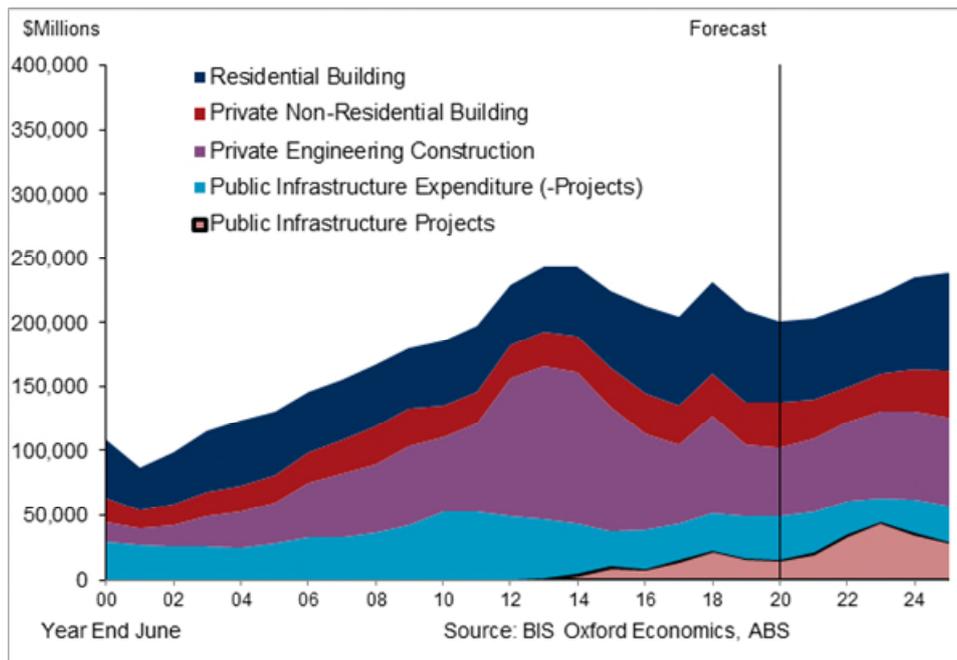
⁴ Australian Treasury 2021, *Budget 2021-22 - Budget Paper No. 1 2021-22*, Canberra, 2021

⁵ Australian Construction Industry Forum - Australian Construction Market Report, November 2020

Major transport infrastructure projects – Australia

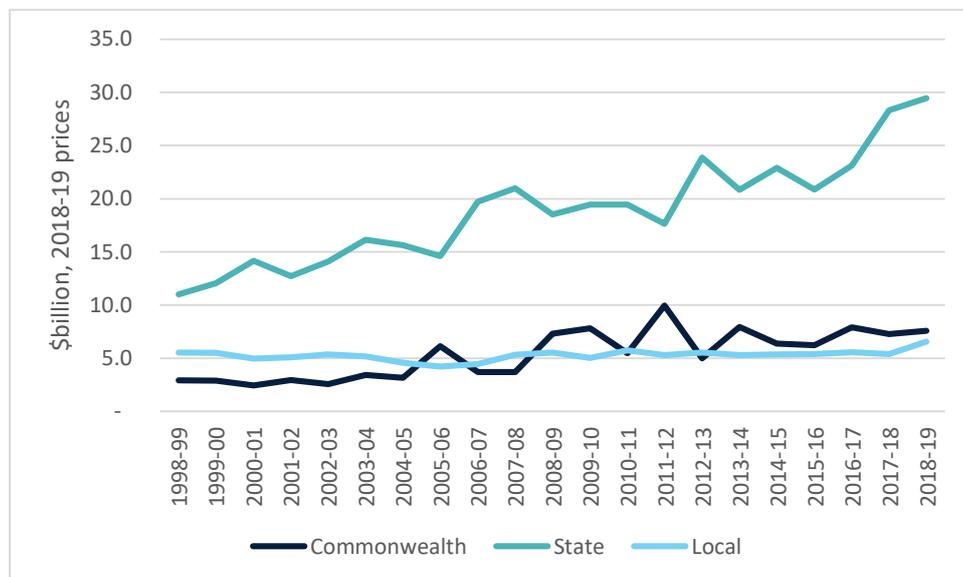


Construction spend and forecast



Note: Public Infrastructure Projects represents all public infrastructure projects over \$50 million. The combined Public Infrastructure Expenditure and Public Infrastructure Projects includes all public infrastructure. The Public Infrastructure Expenditure - Projects consists of small capital works or maintenance.

Road and rail-related expenditure by level of government up to 2018-19, as published in the BITRE *Australian Infrastructure Statistics Yearbook 2020*



Market structure and participation

The operation of a heavy construction market in Australia relies on the participation of varying sized companies, generally with differing capability and capacity. The Australian Engineering Construction Masterplan by Bis Oxford Economics provides a sample of 203 (2019) and 227 (2021) infrastructure projects.

The following definitions were used to analyse the data:

- companies with contracts over \$500 million as tier one, and capable of delivering megaprojects over \$1 billion without partnering
- companies with contracts between \$100 million to \$500 million as tier two, and
- companies with contracts under \$100 million as tier three.

Analysis shows the overall number of contracts awarded to tier one contractors reduced from 25 percent to 23 percent since 2019. The number of contracts awarded to tier two decreased from 37 to 26 percent and tier three remained the same at 17 percent.

Mega projects (over \$1 billion) have been awarded to tier one single contractors, and joint ventures and tier two and three contractors have increased the number of awarded contracts over the past two years, as well as the value of these contracts.

Value of contracts, number of contracts and percentage of contracts across tiers from 2019 to 2021

Year	Value %		# of contracts		% of contracts	
	2019	2021	2019	2021	2019	2021
Tier 1	32%	32%	50	53	25%	23%
Tier 2	19%	24%	75	60	37%	26%
Tier 3	4%	9%	35	39	17%	17%
Multi-Tier	45%	35%	43	75	21%	33%

Ernst & Young Market Analysis report 2019 and 2021 – from a sample of 227 infrastructure projects.

Infrastructure Investment Program funding by tier

Contracts awarded for projects which are part of the Infrastructure Investment Program accounted for 138 of the 227 contracts (61 percent) analysed above, with a total contract value of \$47.3 billion (57 percent of the \$82.3 billion for all contracts in the dataset) based on the above table.

Tier three contractors were awarded the highest number of contracts for projects that are part of the Infrastructure Investment Program (51 contracts or 39 percent). Tier one contractors were awarded a higher percentage of the total value of project under the Infrastructure Investment Program (73 percent). Tier one contractors are better able to absorb the financial implications and risks associated with projects of this scale.

A sample breakdown of Infrastructure Investment Program projects showed that 100 of 131 projects were below \$500 million (76 percent of the total number of contracts), with greater participation of tier two and tier three companies directly or through joint ventures than tier one contractors.

The Australian Government’s infrastructure investment pipeline includes a number of sub-programs such as the \$2.2 billion Local and State Government Road Safety Package announced in 2019-20 which includes the Roads to Recovery, Blackspots and Heavy Vehicle Safety and Productivity Programs.

The pipeline also includes recent stimulatory programs such as \$2.5 billion in the Local Roads and Community Infrastructure Program and \$3 billion in the Road Safety Program which are not included in the analysis above. These stimulus projects are highly suitable, particularly given their scale and geographic spread, and the works have typically been undertaken by awarded to lower-tiered companies.

Foreign-owned companies

Foreign-owned companies have been awarded 61 percent of the total number of contracts, and 74 percent of the total contract value across all tiers and forms of contract.

Breakdown of Infrastructure Investment Program projects by contract value thresholds

Project Size for Infrastructure Investment Program Contracts	Projects	% of total number	Total Contract Value (\$ Millions)	% of total value	Average Contract Value (\$ Millions)
<\$100m	51	39%	2,218	5%	43
\$100m <\$500m	49	37%	10,562	22%	216
>\$500m	31	24%	34,590	73%	1,116
Total	131	100%	47,369	100%	362

Breakdown of projects within Infrastructure Investment Program <\$100 Million

<i>Distribution for Infrastructure Investment Program projects less than \$100m</i>					
Tier	Projects	% of total number	Total Contract Value (\$ Millions)	% of total value	Average Contract Value (\$ Millions)
1	3	6%	154	7%	51
2	11	22%	532	24%	48
3	23	45%	858	39%	37
1/2	4	8%	227	10%	57
1/2/3	0	0%	0	0%	0
1/3	1	2%	46	2%	46
2/3	9	18%	401	18%	45
Total	51	100%	2,218	100%	

Breakdown of Projects within Infrastructure Investment Program \$100 million > \$500 Million

<i>Distribution for Infrastructure Investment Program projects greater than \$100m and less than \$500m</i>					
Tier	Projects	% of total number	Total Contract Value (\$ Millions)	% of total value	Average Contract Value (\$ Millions)
1	8	16%	2,014	19%	252
2	14	27%	2,761	26%	197
3	2	4%	257	2%	128
1/2	19	37%	3,873	37%	204
1/2/3	0	0%	0	0%	0
1/3	0	0%	0	0%	0
2/3	6	12%	1,657	16%	276
Total	49	100%	10,562	100%	

Breakdown of Projects within Infrastructure Investment Program > \$500 Million

<i>Distribution for Infrastructure Investment Program projects equal to or greater than \$500m</i>					
Tier	Projects	% of total number	Total Contract Value (\$ Millions)	% of total value	Average Contract Value (\$ Millions)
1	7	23%	7,282	21%	1,040
2	9	29%	10,530	30%	1,170
3	4	13%	5,460	16%	1,365
1/2	8	26%	8,953	26%	1,119
1/2/3	0	0%	0	0%	0
1/3	0	0%	0	0%	0
2/3	3	10%	2,365	7%	788
Total	31	100%	34,590	100%	

Note: The market scan reviewed 227 projects awarded and outsourced in Australia between 2021 and 2025.

Market capacity and capability

Workforce

The construction sector accounted for 8.8 percent of the employment market (1.16 million people) in May 2021. The National Skills Commission identified that employment in the construction industry will grow by 6.8 percent between November 2020 and November 2025⁶.

While employment in heavy and civil engineering construction is expected to experience the highest percentage growth in the construction industry (8.8 percent) only 12.3 percent of the total growth in construction employment is expected to be in heavy and civil engineering construction due to the workforce being much smaller compared to building construction and construction services.

The construction workforce is ageing and lacks diversity in particular female employment (13 percent in construction, 14 percent in heavy and civil construction)—one of the lowest female employment of any industry within Australia⁷. Around 40 percent of people employed in the heavy and civil engineering construction sub-industries work 49 hours or more per week⁸; less than 2 percent of construction trade roles are occupied by women⁹ and suicide rates in the construction industry are substantially higher than the non-construction industry¹⁰.

Skills

To help inform future investment the National Skills Commission has developed the Skills Priority List that provides a current labour market rating and a future demand rating for occupations nationally¹¹. Current labour market ratings are also available for occupations at a state or territory level.

The Skills Priority List provides the backbone piece of labour market analysis on occupations that will inform a range of Australian Government policy initiatives, including targeting of skilled migration, apprenticeship incentives and training funding.

Latest data from the Commission shows surveyors, urban and regional planners, civil, geotechnical and transport engineers are in national shortage with strong future demand; while construction project managers, project builders, engineering managers and engineering draftspersons and technicians are in national shortage with moderate future demand.

The Australia Government is investing \$6.4 billion in 2021–22 to build the skills that Australia's economy needs, including more apprenticeships, building on the Government's successive reforms and investments in skills, and providing a further investment in free or low-fee training places.

Effort and investment is geared towards improving training and upskilling the current workforce in collaboration with industry networks across all jurisdictions. Jurisdictions are also teaming up with industry to deliver certification and support vocational education through internships and work placements.

⁶ National Skills Commission 2021, [Industry Projections – five years to November 2025](#)

⁷ Ernst & Young, Market Analysis 2021

⁸ Department of Infrastructure, Transport, Cities and Regional Development, [National profile of Heavy and civil engineering construction workers in 2016](#) (2019)

⁹ Charles Sturt University, [The female tradie shortage: why real change requires a major cultural shift](#)

¹⁰ Mates in Construction and Deakin University, [Suicide in the Construction Industry](#)

¹¹ National Skills Commission, [Skills Priority List June 2021](#)

Victoria offers free TAFE across a range of industries, including for heavy and civil construction

The Free TAFE for Priority Courses initiative in Victoria is offered to various industries to build the skills needed for the future Victorian economy. There are free courses and apprenticeship pathways for various careers across the heavy and civil construction industry. The initiative started in 2019, with over 39,000 enrolled by the end of 2019. The 2020-21 budget included funding for an additional 60,000 places to give Victorians access to training across a range of priority industries as the state recovers from COVID-19.

NSW response to planning for infrastructure

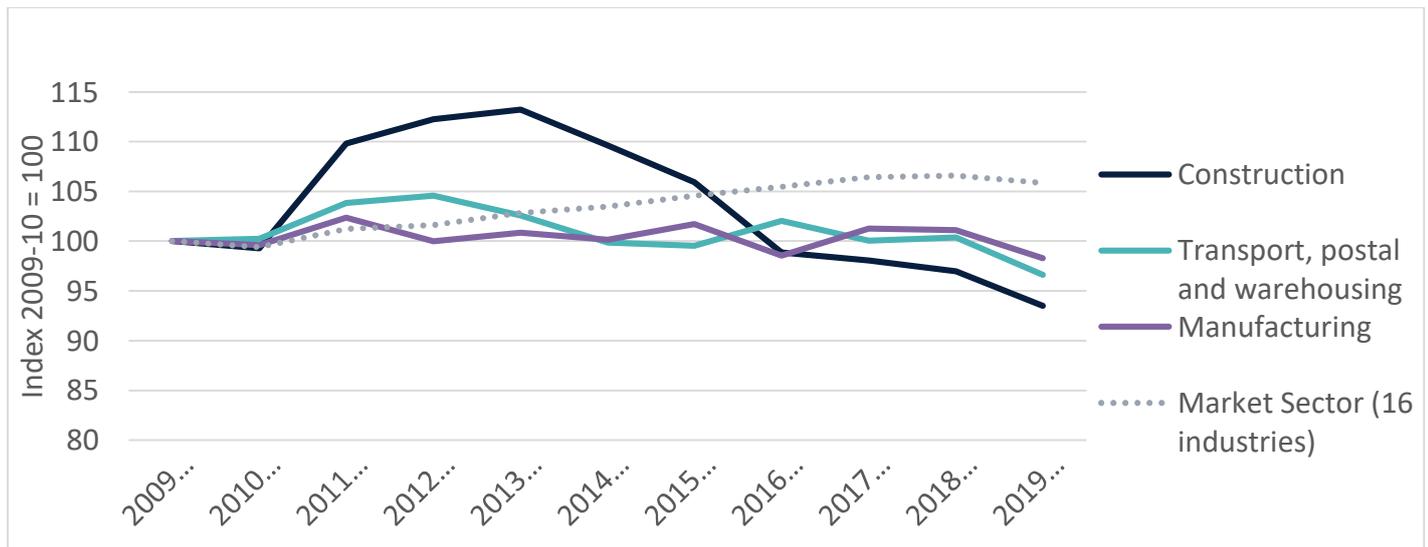
TAFE NSW has developed a 20 Year Infrastructure Strategy (20YIS) in response a recommendation on skills and training in the NSW State Infrastructure Strategy 2018-2038: Building Momentum, with active investments to increase uptake of VET qualifications for the infrastructure sector.

Productivity and Innovation

Uptake of technology

Prior to the COVID-19 pandemic, the construction sector has experienced stagnant productivity, low uptake of new technologies and digitisation with a high share of on-site manual labor. Recent years have provided further disruption with stringent sustainability requirements, rising costs, labor scarcity, new material and production approaches, providing an environment for innovation. COVID-19 has increased disruptions and is likely to continue to disrupt productivity, accelerating the requirement for digitisation and innovation¹².

Multifactor productivity (MFP) trends, 2009-10 to 2019-20



Digitisation

There is work underway and future opportunities around digitisation. Within the transport infrastructure investment space these include:

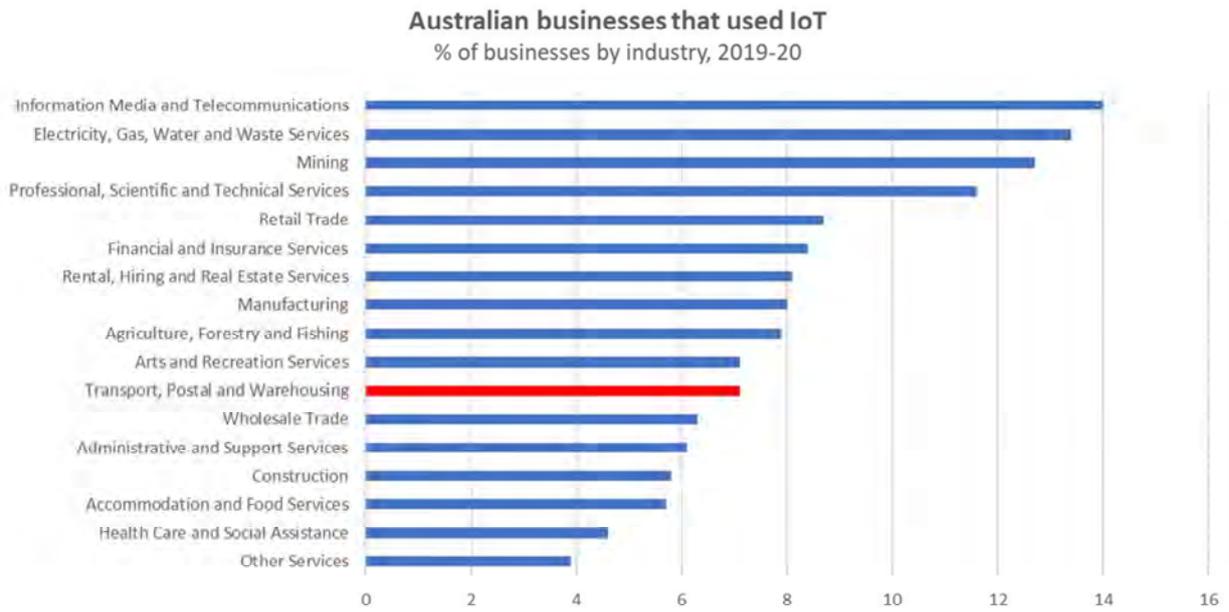
- delivering digital tender processes
- investing in information technology, research and development and emerging technologies
- developing platforms or databases with shared standards, suppliers and components
- digitising of standards and specifications, and enabling machine readable information
- developing building information modelling that can be shared between government and contractors
- building in smart technology up-front to assets
- modernising and standardising components that can be fabricated off-site.

NSW Digital Twin

The Digital Twin interactive platform captures and displays real-time 3D and 4D spatial data in order to model the urban environment creating a digital real-world model of our cities and communities. Digital Twin is creating a digital real-world model of our cities and communities that will facilitate better planning, design and modelling for NSW's future needs. Phase one - Digital Twin included digital visualisations of the local government areas that comprise the Western Sydney City Deal and Greater Parramatta to the Olympic Peninsula. This project has demonstrated the ability to upgrade NSW's Spatial Data to 3D/4D and included the integration of live transport feeds as well as infrastructure building models.

¹² McKinsey and Company, How construction can emerge stronger after coronavirus, May 2020

Market factors – percentage uptake of technology across sectors



Source: ABS Characteristics of Australian Business (June 2021) X axis = % of businesses that utilize technology by sector

Price Deflators

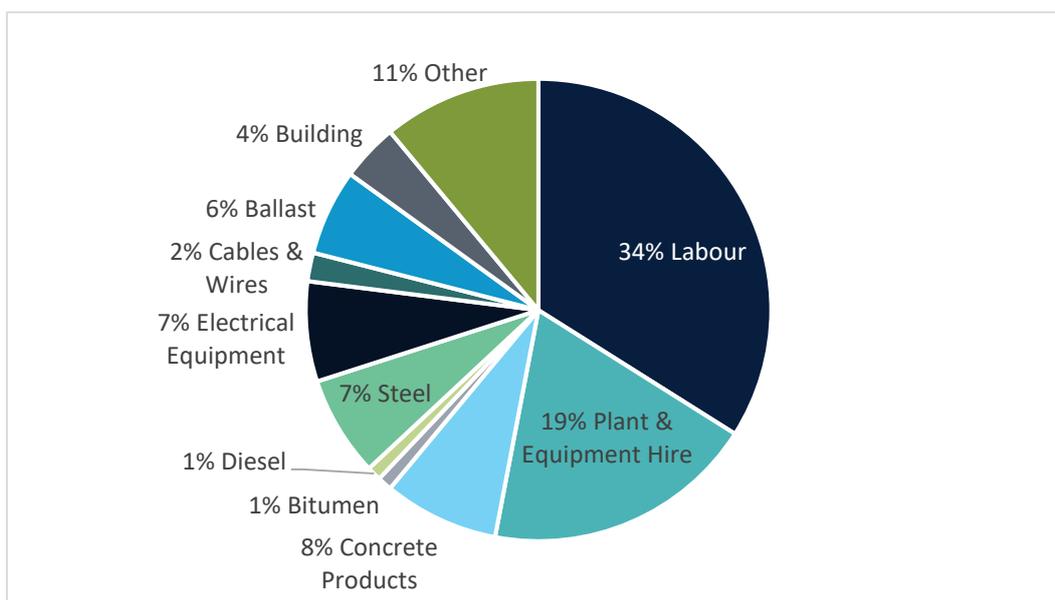
The cost drivers for typical road and rail projects are provided as a breakdown in the following section.

Rail Escalation Rates

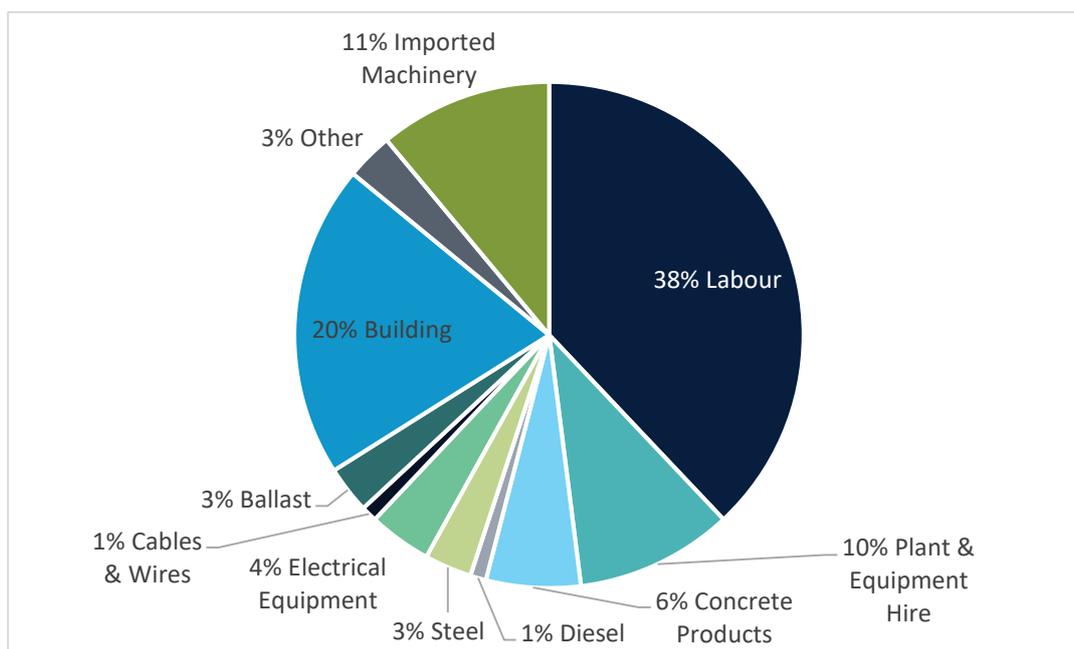
The Rail Construction Outturn Cost Index is calculated using the cost drivers of construction components. Typically, an aboveground rail project’s construction input weightings are driven by 34 percent labor, 19 percent plant and equipment hire, and 8 percent concrete products. For a typical belowground rail project, 38 percent of costs are driven by labor, 20 percent by building, and 11 percent by imported machinery.

The input weightings of these major cost drivers and other construction inputs are featured below.

Aboveground Rail Cost Input Weightings



Belowground Rail Cost Input Weighting



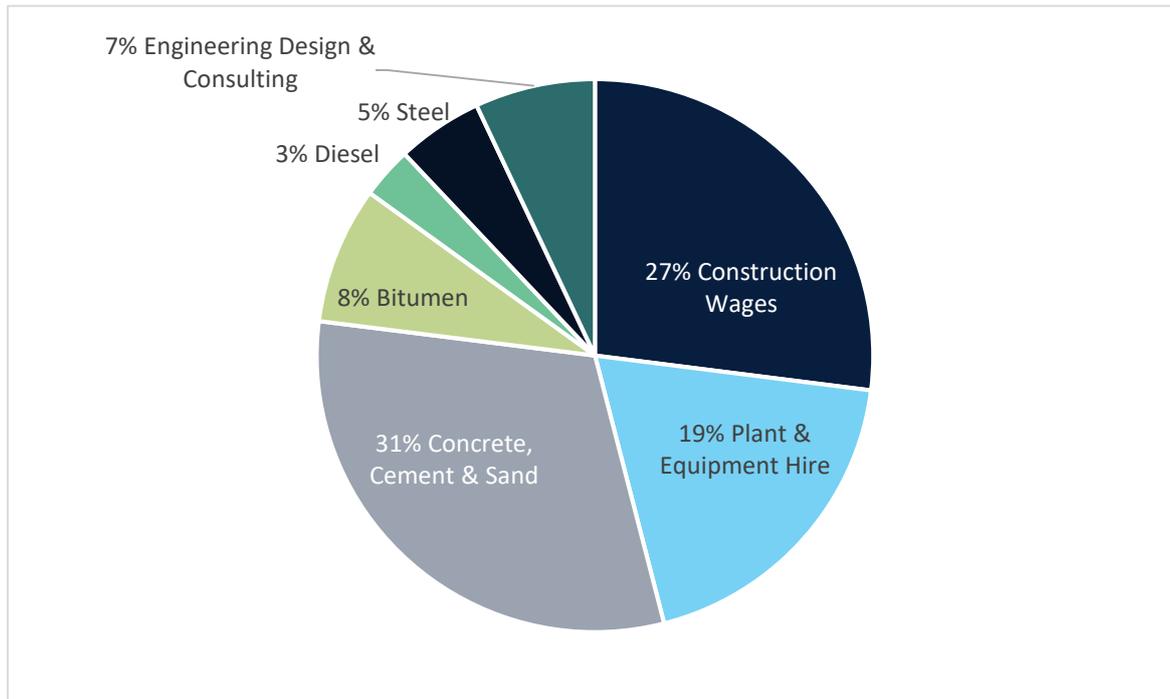
Road Escalation Rates

The Road Construction Outturn Cost Index is calculated using the cost drivers of construction components. For a typical road project, 27 percent of costs are driven by labor, 31 percent by concrete and cement products, and 19 percent by plant and equipment hire.

There may be opportunities in each of these areas for productivity increasing reforms, some of which can be influenced by procurement and risk sharing policy, but most of which is regulated through state or other sector regulators.

The input weightings of these major cost drivers and other construction inputs are featured below.

Road Cost Input Weightings



Market Engagement and Procurement

Risk identification and allocation

Risk allocation is a key issue for industry and proponents, and need to be considered to ensure risks are allocated to the appropriate party to optimise procurement outcomes.

Identifying and addressing risk and determining the extent it should be allocated is an important factor when considering construction projects. Large and complex projects involve a significant level of risk with potentially significant consequences and these risks should be managed effectively including identifying, pricing and allocating risk.

In determining the appropriate project delivery approach, it is important to consider which method will best balance the control of project cost and risk against achieving project outcomes. A key implication of risk allocation is ensuring that all project risk management and outcomes are appropriately allocated to participants who are best placed to manage and price the risk and tolerate the risk outcome. Following the decision to invest in an infrastructure project, consideration should be made on the different methods available to deliver the project including reflecting the scale of the project and subsequent risk.

While it is desirable for government to adopt a standardised risk approach to minimise transaction costs, risks should ultimately be considered on a case-by-case basis, taking into account the unique characteristics of each project and the current state of markets. It is important for proponents to manage their risk, especially when government is investing to ensure that taxpayer funds are being used in an ethical, effective, efficient and economical manner, minimising risk while maximising project outcomes.

In order to minimise the impact of this on contractors, upfront planning can be prioritised and procurement design and models need to be adapted to best suit the project or projects' needs. Procurement method should also reflect the complexity and scale of a projects, as well as its subsequent risk. Risks should be articulated in a way the proponent can understand and price.

The procurement method needs to be carefully considered to optimise outcome methods including early contractor involvement, bundling, unbundling, alliance contracting and joint ventures. Early engagement with contractors can assist with better design and procurement models, driving a more efficient and cost effective process. Regardless of the method selected, sufficient upfront planning and preparatory work will assist with improving relationships between proponent and contractor, balance risk allocation, manage and appropriately price risk.

Procurement policy

The Commonwealth procurement framework is non-discriminatory and encourages competition. The Commonwealth Procurement Rules (CPRs) are the core of the Commonwealth Procurement Framework. The CPRs outline the policy requirements for relevant Commonwealth entities and articulate Australia's international trade obligations. Achieving value for money is the core rule of the CPRs. Price is not the sole factor when assessing value for money - it requires consideration of relevant financial and non-financial costs and benefits.

Competition is a key element of the Commonwealth Procurement Framework and the CPRs require non-discrimination and the use of competitive procurement processes to ensure that all suppliers compete on a level playing field when selling to the Australian Government. Potential suppliers must be treated equitably based on their commercial, legal, technical and financial abilities. For example, the CPRs require the procurement of construction services by relevant entities valued at, or above \$7.5 million to be undertaken via a competitive open tender process.

The Commonwealth Procurement Framework makes allowances to ensure small to medium enterprises (Australian and New Zealand firms with fewer than 200 employees) are not discriminated against and that Indigenous businesses and employment are considered.

Some states have explicitly applied small to medium enterprise exemptions or 'buy local' in their procurement policies, and promoted the engagement of local and regional business and employees.

Australian Government role

The *National Land Transport Act 2014* assists national and regional economic and social development. Funding for approved projects is provided to jurisdictions through the National Partnership Agreement on Land Transport Infrastructure Projects (the Agreement), which is aimed at improving the performance of land transport infrastructure. All states and territories are parties to the Agreement.

The Agreement outlines the different roles and responsibilities for delivery of approved infrastructure projects. It outlines that jurisdictions are responsible for delivering infrastructure projects, including ensuring procurement practices deliver value for money for public funds and support the longer term capacity and diversity of the construction market.

The current Agreement will expire in 2024. Leading toward this date, an independent review will assess the degree to which agreed objectives and outcomes of the Agreement have been achieved and to inform future approaches.

The independent review is a requirement under the Agreement. The approach to the review will be worked through with Treasury in the lead up to the Agreement expiry to ensure that it aligns with the streamlining agenda for Federation Funding Agreements Framework as established by the Council on Federal Financial Relations on 28 August 2020.

Industry participation

Australian Industry Participation aims to ensure that all Australian businesses have a full, fair and reasonable opportunity to bid to supply goods and services to major projects.

The Department of Industry, Science, Energy and Resources and the Australian Industry Participation Authority is responsible for Australian Industry Participation policy and ensuring funding recipients meet necessary requirements.

Australian Industry Participation plans are required by the *Australian Jobs Act 2013* for major projects with estimated capital expenditure of \$500 million or more and are a productive facility, and for projects that receive Commonwealth funding of \$20 million or more.

Key elements of Australian Industry Participation plans are listing key goods and services that will be procured by the project; activities that show how opportunities will be communicated to industry, and the cascading Australian Industry Participation requirements through the supply chain (in particular to head contractors and/or procurement entities).

Under the National Partnership Agreement on Land Transport Infrastructure Projects, jurisdictions must develop and implement a Local Industry Participation Plan or an Australian Industry Participation plan for all infrastructure projects in receipt of Commonwealth payments over \$20 million.

To reduce duplication of industry participation requirements, if a jurisdiction has a compliant local industry participation policy in place, they may rely on those instead of developing additional plans.

Most jurisdictions leverage their local industry participation policies to meet National Partnership Agreement requirements. New South Wales is the main jurisdiction to develop and implement Australian Industry Participation plans.

Infrastructure Australia will recommend an Infrastructure Skills Plan as a priority for 2021.

Procurement practices across jurisdictions

The states and territories are undertaking a variety of procurement practices. There has been a trend recently from methods involving earlier engagement with industry and greater investment of preparatory work in the scoping and planning phases of projects. The examples detailed below outline some of the recent procurement models being adopted.

The work underway by states has included consideration of packaging of works – either bundled to enable faster procurement processes, or unbundled into smaller packages or projects to allow smaller contractors to participate and take on more manageable risks. There have also been efforts to encourage collaborative contracting to increase participation of tier two and three contractors, reduce inefficient pricing, improve risk allocation and reduce adversarial outcomes and engage earlier with the sector on projects to ensure contractors can collaborate with government to solve problems. States have established digital tender and procurement processes, panels and prequalification registers, and some are reimbursing bid costs to improve tendering certainty and reduce the impost of tendering on contractors. Alliance contracting has also been adopted, which enables a good-faith contract between government and suppliers to achieve higher performance and more flexibility in risk management.

Some examples of this work are outlined below.

Northern Territory

The Territory is using an online tendering system, a prequalification process and developing processes that improve Aboriginal business enterprise, employment and training.

Western Australia

This year the state replaced its procurement act, with accompanying new procurement rules that encourage collaboration, efficient risk allocation, earlier industry engagement and reduced documentation requirements. Work is also underway to harmonise and improve practices and capability within government.

New South Wales

The state has adapted a partner-based approach to risk allocation which has helped to remove some of the disproportionate level of risk felt by contractors. Bid processes have been streamlined, and the state has established a ten-point commitment to the construction sector in the NSW Government Action Plan, which outlines improved procurement processes and requirements.

Packaging procurement - Sydney Metro Northwest, New South Wales

The project is the first fully automated metro rail system in Australia, with a two-stage procurement process consisting of an expression of interest, then interactive request for tender. There were three packages of work, one of which was awarded in the form of joint venture, two as design and construct contracts. This approach allowed for improved economies of scale, risk allocation and increased participation.

Alliance contracting – Level Crossing Removal Project, Victoria

The Level Crossing Removal Project was to remove 75 level crossings across the metropolitan Melbourne road and rail network. Traditional contracting was not appropriate given the scale of the project, so the Victorian Government adapted a form of alliance contracting.

It allowed the project to break ‘mega projects’ into smaller, more manageable packages on a fully-allocated and staged basis across five alliances.

The approach incentivised shared information and standardisation improving efficiency in design and delivery and even implemented a set ‘menu’ of materials and products. This approach improved the reliability and timeliness of project delivery, improved metrics on innovation, safety, community engagement and sustainability and reduced tendering cost and work duplication.

Work underway to improve the efficient delivery of infrastructure investment

Work is currently underway through National Cabinet to streamline and optimise job opportunities from the national infrastructure pipeline. This includes streamlining planning, approval and procurement processes.

The Department is leading this work in close collaboration with all jurisdictions, with positive progress already made.

In addition, there is a range of work already completed to help foster the more efficient delivery and help maximise the intended economic stimulus, focused on factors influencing market participation. Work progressed to improve infrastructure investment includes:

- raising the threshold for business cases to be assessed by Infrastructure Australia from \$100 million to \$250 million in Australian Government funding, as of 1 January 2021. This has enabled Infrastructure Australia to focus on larger more complex projects.
- Infrastructure Australia improving the historical average time taken to complete business case evaluations throughout 2020 by 25 percent, and
- reviewing Departmental processes and guidance to streamline administrative processes.

Infrastructure Australia is leading new research on market capacity and the ability of the sector to deliver the infrastructure pipeline.

Further digital adaptations across the project management process will continue to improve the delivery of infrastructure projects, as well as the collection of data and reporting, analysis and ‘lessons learnt’ for future improvements.

All jurisdictions have made progress to streamline and optimise the infrastructure pipeline and job opportunities within their jurisdictions, including:

- improving planning systems
- reviewing and simplifying procurement processes and practices
- improving project approvals and delivery
- engaging and supporting industry, and
- investing in training and skills.

Australian Government infrastructure investment programs such as the Shovel Ready Projects, Targeted Road Safety and Local Roads and Community Infrastructure programs are providing additional opportunities for participation of lower tier contractors. These projects provide an immediate boost to the economy and support local jobs.

Local Roads and Community Infrastructure Program

Local councils have nominated more than 5,900 projects over the first two phases of the Local Roads and Community Infrastructure Program, with more than 2,500 projects complete or under construction. The program is delivering on projects including local roads, bike paths, community halls, playgrounds, parks and sports facilities, as well as improved accessibility to public facilities.

The Program will support an estimated 9,000 jobs over the life of the projects.

Appendix A: Key statistics construction industry division

The construction industry division (as defined in the Australian and New Zealand Standard Industrial Classification), consists of three 'sub-divisions':

- building construction: captures units mainly engaged in the construction of residential buildings (e.g. houses, apartments and residential renovations) and non-residential building construction (e.g. commercial buildings, offices and hospitals).
- heavy and civil engineering construction: captures units mainly engaged in the construction or general repair of larger infrastructure projects such as roads, bridges, dams, irrigation systems and power plants.
- construction Services: captures units primarily engaged in services related to land development, concreting, bricklaying, roofing, steel erection, plumbing, electrical, heating and cooling, and fire and security alarm systems.

While construction activity is captured as its own industry through Australia's System of National Accounts, there are instances of construction related activity that are classified in other industries, and are therefore not counted in the Construction industry division. For example Construction material mining (classified under Mining), Construction machinery manufacturing (classified under Manufacturing) and Construction machinery wholesaling (classified under Wholesale Trade).

Contribution to gross domestic product

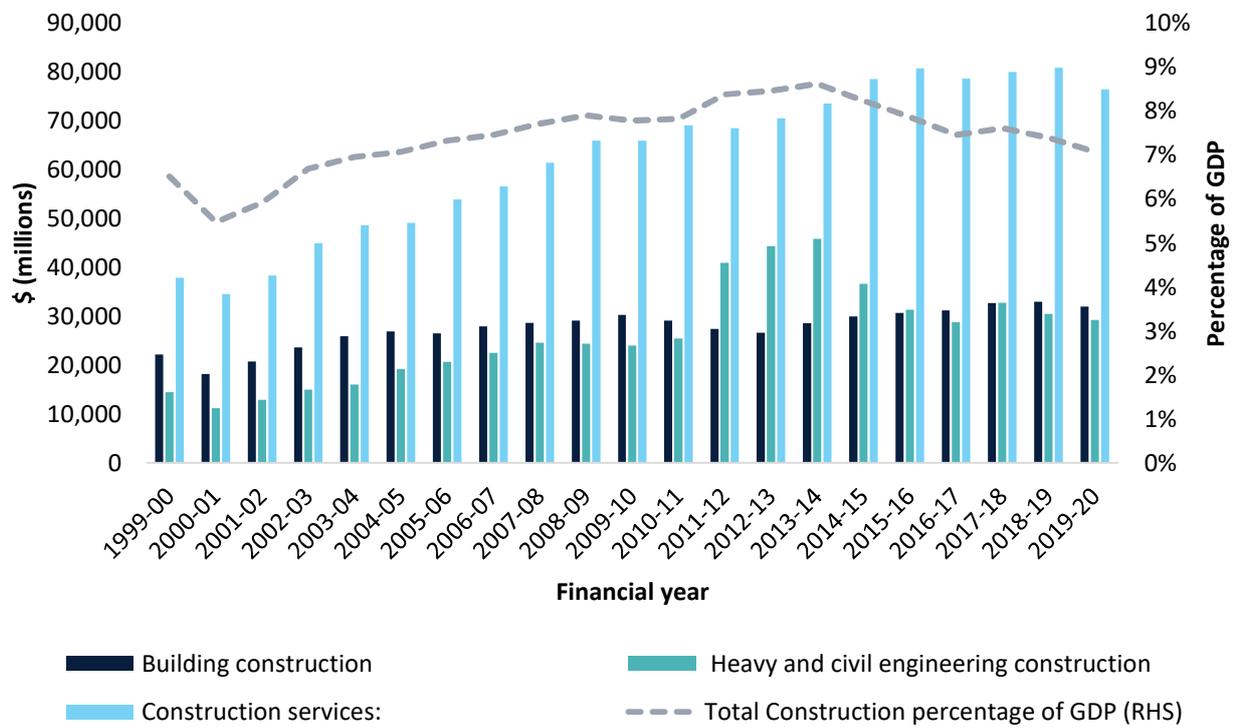
Construction gross value added (GVA) has increased by \$63.2 million (in real terms) or 85.0 percent since 1999-2000. This growth has mainly been driven by construction services which grew by \$38.4 million or 101.4 percent over the same period. As a share of Australia's gross domestic product (GDP), construction has experienced a slight increase, growing from 6.5 percent of GDP in 1999-2000 to 7.1 percent in 2019-20 (Table 1 and Figure 1). It peaked at 8.6 percent of GDP in 2013-14 due to large temporary increases in heavy and civil engineering construction GVA.

Table 1: Gross Value added in Construction – Chain Volume Measures (\$millions), 1999-2000 to 2019-20¹³

Financial Year	Building construction	Heavy and civil engineering construction	Construction services	Total Construction	GDP	Total Construction - percentage of GDP
1999-00	22,188	14,542	37,924	74,436	1,143,119	6.5%
2000-01	18,221	11,209	34,554	63,792	1,165,191	5.5%
2001-02	20,770	12,877	38,362	71,737	1,211,815	5.9%
2002-03	23,675	15,025	44,966	83,471	1,247,999	6.7%
2003-04	25,945	16,087	48,587	90,341	1,298,611	7.0%
2004-05	26,909	19,224	49,144	94,777	1,340,222	7.1%
2005-06	26,546	20,737	53,898	100,890	1,377,675	7.3%
2006-07	27,968	22,536	56,586	106,642	1,430,636	7.5%
2007-08	28,691	24,636	61,411	114,318	1,482,968	7.7%
2008-09	29,166	24,409	65,950	119,404	1,511,693	7.9%
2009-10	30,288	24,032	65,925	120,098	1,542,946	7.8%
2010-11	29,118	25,462	69,053	123,645	1,580,945	7.8%
2011-12	27,450	40,964	68,461	137,636	1,642,889	8.4%
2012-13	26,657	44,395	70,508	142,519	1,685,356	8.5%
2013-14	28,604	45,877	73,494	148,907	1,728,048	8.6%
2014-15	29,975	36,648	78,504	145,349	1,765,938	8.2%
2015-16	30,716	31,390	80,700	142,738	1,814,866	7.9%
2016-17	31,230	28,785	78,608	138,453	1,856,619	7.5%
2017-18	32,746	32,778	79,993	145,414	1,911,376	7.6%
2018-19	33,023	30,521	80,825	144,369	1,952,680	7.4%
2019-20	32,005	29,273	76,395	137,673	1,947,118	7.1%

¹³ <https://www.abs.gov.au/statistics/economy/national-accounts/australian-system-national-accounts/latest-release>

Figure 1: Gross Value added in construction – chain volume measures (\$millions), 1999-2000 to 2019-20¹⁴



¹⁴ <https://www.abs.gov.au/statistics/economy/national-accounts/australian-system-national-accounts/latest-release>

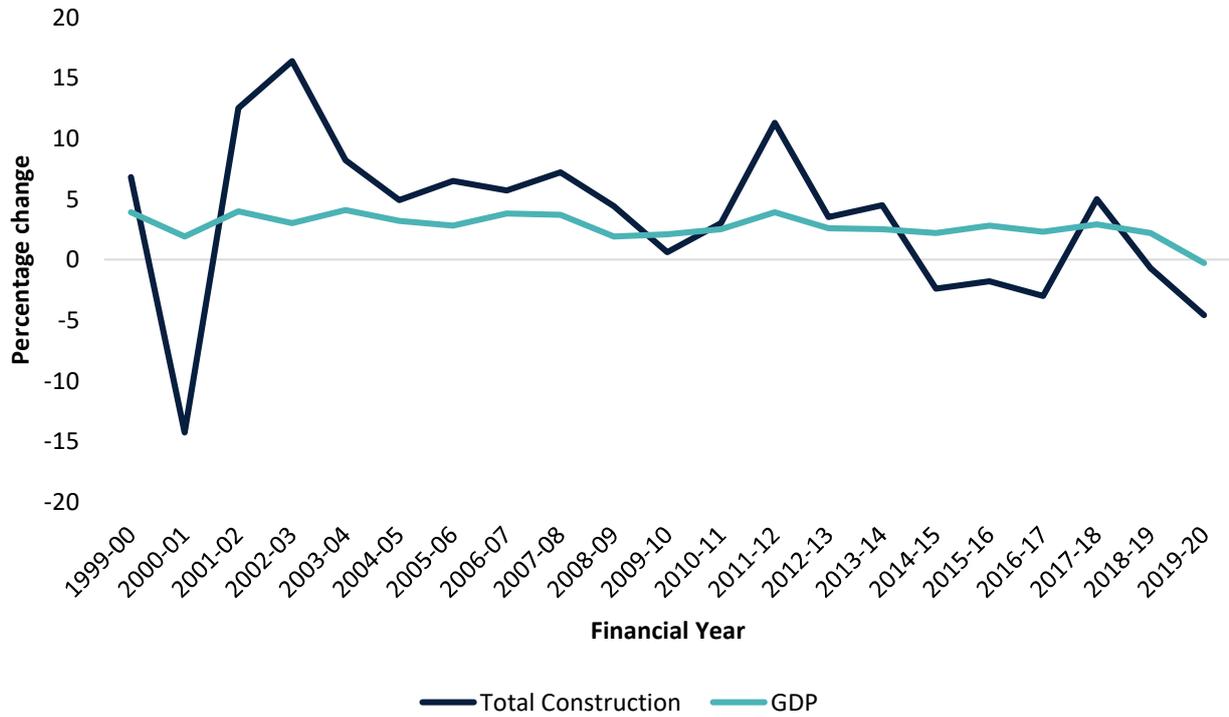
While experiencing overall growth since 1999-2000, GVA movement in the construction industry division has been extremely volatile. Heavy and civil engineering construction has experienced the largest swings, growing 60.9 percent in 2011-12, but then dropping by 20.1 percent three years later. Over the past 10 years, heavy and civil engineering construction has experienced five years of negative growth (table 2 and figure 2).

Table 2: Gross value added in construction – chain volume measures (annual percentage change), 1999-2000 to 2019-20¹⁵

Financial Year	Building construction	Heavy and civil engineering construction	Construction services:	Total Construction	GDP
1999-00	16.1	11.6	-0.2	6.8	3.9
2000-01	-17.9	-22.9	-8.9	-14.3	1.9
2001-02	14.0	14.9	11.0	12.5	4.0
2002-03	14.0	16.7	17.2	16.4	3.0
2003-04	9.6	7.1	8.1	8.2	4.1
2004-05	3.7	19.5	1.1	4.9	3.2
2005-06	-1.3	7.9	9.7	6.5	2.8
2006-07	5.4	8.7	5.0	5.7	3.8
2007-08	2.6	9.3	8.5	7.2	3.7
2008-09	1.7	-0.9	7.4	4.4	1.9
2009-10	3.8	-1.5	0.0	0.6	2.1
2010-11	-3.9	6.0	4.7	3.0	2.5
2011-12	-5.7	60.9	-0.9	11.3	3.9
2012-13	-2.9	8.4	3.0	3.5	2.6
2013-14	7.3	3.3	4.2	4.5	2.5
2014-15	4.8	-20.1	6.8	-2.4	2.2
2015-16	2.5	-14.3	2.8	-1.8	2.8
2016-17	1.7	-8.3	-2.6	-3.0	2.3
2017-18	4.9	13.9	1.8	5.0	2.9
2018-19	0.8	-6.9	1.0	-0.7	2.2
2019-20	-3.1	-4.1	-5.5	-4.6	-0.3

¹⁵ <https://www.abs.gov.au/statistics/economy/national-accounts/australian-system-national-accounts/latest-release>

Figure 2: Gross value added in construction – chain volume measures (annual percentage change), 1999-2000 to 2019-20¹⁶



¹⁶ <https://www.abs.gov.au/statistics/economy/national-accounts/australian-system-national-accounts/latest-release>

Market size

Sales and service income within the construction industry has grown by 49.7 percent or \$140.0 million (in nominal terms not taking into account inflation) in the last 10 years (2009-10 to 2019-20), this is compared to an increase of 46.4 percent across all industries in the same period. However, sales and service income in heavy and civil engineering construction has experienced a 26.0 percent decline since its peak in 2013-14 (Table 3), with five years of negative growth in the last six years (table 4 and figure 3).

Table 3: Sales and service income in construction (\$millions), 2009-10 to 2019-20¹⁷

Financial year	Building construction	Heavy and civil engineering construction	Construction services	Total construction	Total selected industries*
2009-10	109,353	52,840	119,376	281,569	2,436,026
2010-11	106,606	57,508	133,983	298,098	2,615,204
2011-12	110,856	64,256	138,823	313,936	2,749,101
2012-13	114,706	76,102	140,756	331,563	2,812,974
2013-14	123,791	86,248	145,454	355,493	2,885,816
2014-15	134,309	83,182	155,808	373,299	2,946,507
2015-16	146,904	68,158	159,307	374,370	2,980,481
2016-17	159,540	59,941	160,893	380,373	3,085,733
2017-18	175,281	68,605	180,255	424,141	3,279,682
2018-19	180,771	66,622	188,367	435,760	3,528,170
2019-20	177,145	63,784	180,587	421,515	3,566,277

*Excludes Financial and Insurance Services

Table 4: Sales and service income in construction (annual percentage change), 2009-10 to 2019-20¹⁸

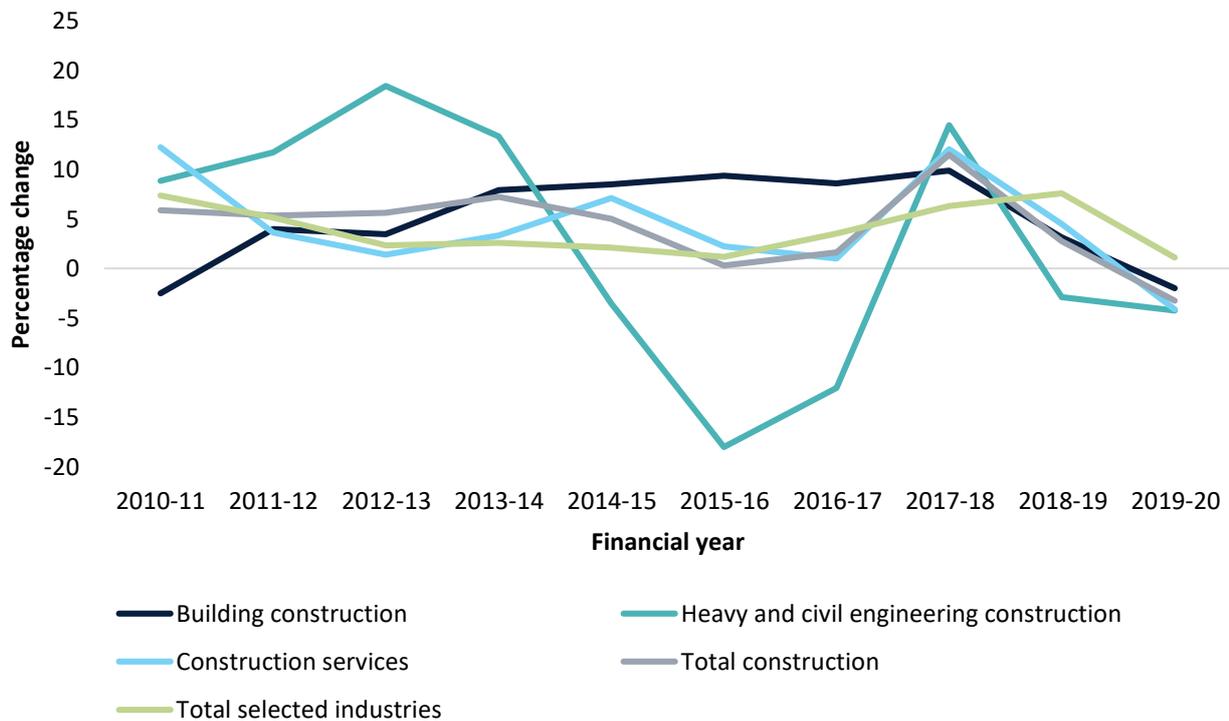
Financial year	Building construction	Heavy and civil engineering construction	Construction services	Total construction	Total selected industries*
2010-11	-2.5	8.8	12.2	5.9	7.4
2011-12	4.0	11.7	3.6	5.3	5.1
2012-13	3.5	18.4	1.4	5.6	2.3
2013-14	7.9	13.3	3.3	7.2	2.6
2014-15	8.5	-3.6	7.1	5.0	2.1
2015-16	9.4	-18.1	2.2	0.3	1.2
2016-17	8.6	-12.1	1.0	1.6	3.5
2017-18	9.9	14.5	12.0	11.5	6.3
2018-19	3.1	-2.9	4.5	2.7	7.6
2019-20	-2.0	-4.3	-4.1	-3.3	1.1

Note: Excludes financial and insurance services

¹⁷ <https://www.abs.gov.au/statistics/industry/industry-overview/australian-industry/latest-release>

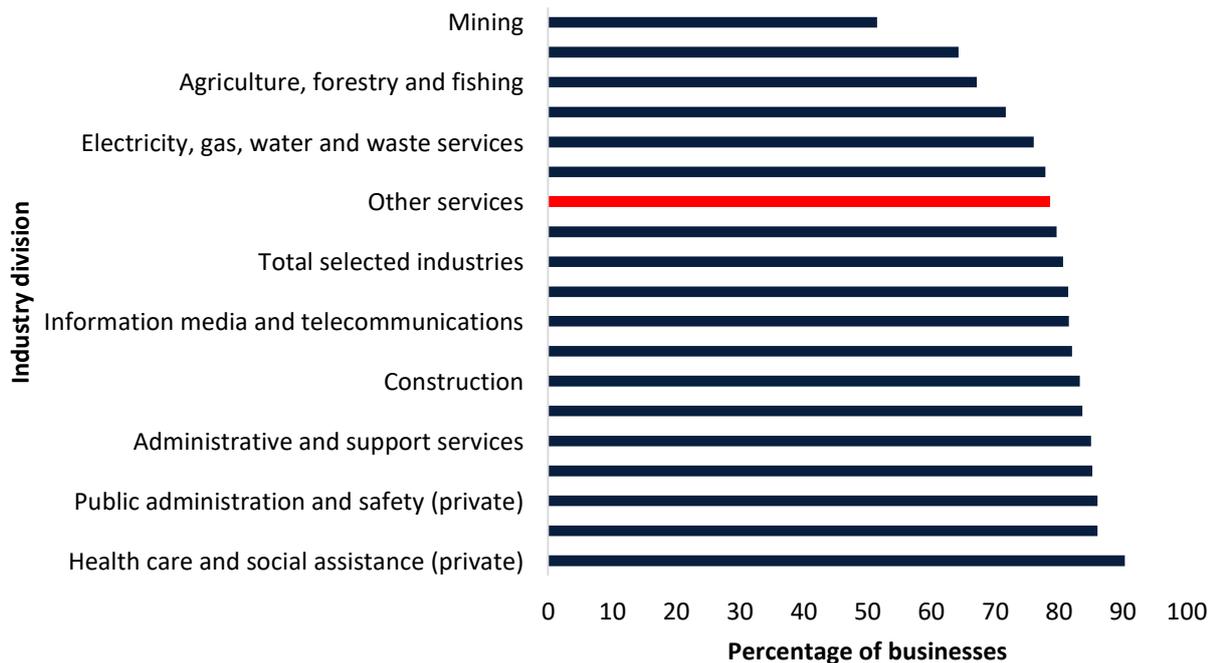
¹⁸ <https://www.abs.gov.au/statistics/industry/industry-overview/australian-industry/latest-release>

Figure 3: Sales and service income in construction (annual percentage change), 2009-10 to 2019-20¹⁹



The majority of businesses in construction remain profitable, with 83.4 percent of construction businesses either breaking even or making a profit in 2019-20 (Figure 4).

Figure 4: Percentage of businesses that made a profit or broke even, 2019-20²⁰



¹⁹ <https://www.abs.gov.au/statistics/industry/industry-overview/australian-industry/latest-release>

²⁰ <https://www.abs.gov.au/statistics/industry/industry-overview/australian-industry/latest-release>

Business counts

The majority of businesses (60.3 percent) in the construction industry are non-employing businesses (sole traders and partnerships), with New South Wales accounting for the highest number of businesses across all three subdivisions (Table 5).

Table 5: Construction businesses operating at the end of the 2019-20 financial year²¹

	Non Employing	1-19 Employees	20-199 Employees	200+ Employees	Total
Building Construction					
New South Wales	17,421	11,511	291	21	29,255
Victoria	20,056	8,069	237	13	28,375
Queensland	10,603	5,860	230	12	16,694
South Australia	3,588	1,227	61	3	4,877
Western Australia	5,233	2,104	99	3	7,442
Tasmania	1,000	654	17	3	1,682
Northern Territory	321	221	32	0	566
Australian Capital Territory	1,221	578	17	0	1,814
Other Territories/Currently Unknown	9	3	0	0	6
Heavy and Civil Engineering Construction					
New South Wales	1,396	1,592	157	19	3,161
Victoria	1,169	1,152	116	15	2,447
Queensland	1,188	975	120	12	2,290
South Australia	269	220	24	0	513
Western Australia	644	486	86	15	1,225
Tasmania	88	67	10	0	172
Northern Territory	69	67	7	3	138
Australian Capital Territory	44	39	9	0	92
Other Territories/Currently Unknown	7	0	0	0	9
Construction Services					
New South Wales	53,533	44,190	1,234	27	98,967
Victoria	49,170	30,151	949	14	80,290
Queensland	34,131	22,989	934	9	58,073
South Australia	12,295	5,620	226	6	18,154
Western Australia	19,786	9,874	467	20	30,130
Tasmania	2,805	1,731	54	0	4,592
Northern Territory	1,229	895	57	0	2,143
Australian Capital Territory	2,072	1,730	60	0	3,837
Other Territories/Currently Unknown	37	9	0	0	40
Total Construction					
New South Wales	72,350	57,293	1,682	67	131,383
Victoria	70,395	39,372	1,302	42	111,112
Queensland	45,922	29,824	1,284	33	77,057
South Australia	16,152	7,067	311	9	23,544
Western Australia	25,663	12,464	652	38	38,797
Tasmania	3,893	2,452	81	3	6,446
Northern Territory	1,619	1,183	96	3	2,847
Australian Capital Territory	3,337	2,347	86	0	5,743
Other Territories/Currently Unknown	53	12	0	0	55

²¹ <https://www.abs.gov.au/statistics/economy/business-indicators/counts-australian-businesses-including-entries-and-exits/latest-release>

Employment

Employment in construction over the last decade has grown at levels slightly below the rate for all industries, growing 12.6 percent since May 2011 (compared to 17.8 percent for all industries). However, employment in Heavy and civil engineering construction has grown 93.0 percent in the same period. As a percentage of total employment, the Construction industry division peaked at 9.7 percent in May 2020, however has slowly declined since (Table 6 and Figure 5).

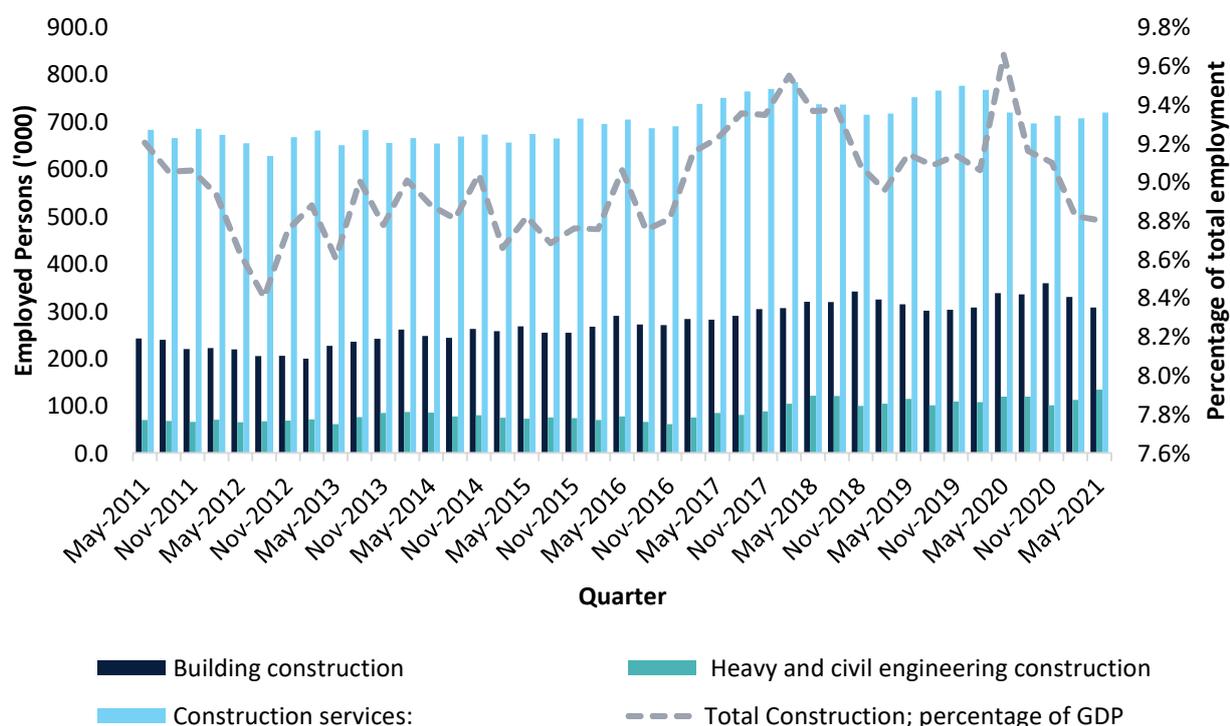
Table 6: Employed persons in construction (main job) '000, May 2011 to May 2021²²

Financial Year	Building construction	Heavy and civil engineering construction	Construction services:	Total Construction	All Industries	Total Construction percentage of total employment
May-2011	242.0	69.3	683.0	1030.4	11196.2	9.2%
Aug-2011	239.3	67.6	665.3	1007.3	11127.2	9.1%
Nov-2011	219.6	65.8	684.9	1018.3	11239.4	9.1%
Feb-2012	221.6	70.5	672.4	1004.3	11237.7	8.9%
May-2012	219.1	64.6	654.7	983.2	11393.2	8.6%
Aug-2012	204.5	66.9	627.5	946.5	11264.1	8.4%
Nov-2012	205.6	68.1	667.8	996.0	11378.3	8.8%
Feb-2013	199.3	71.0	681.6	1014.5	11425.3	8.9%
May-2013	226.6	60.7	650.3	988.9	11491.7	8.6%
Aug-2013	235.0	76.0	682.1	1023.4	11361.4	9.0%
Nov-2013	241.3	84.6	655.5	1004.6	11445.9	8.8%
Feb-2014	260.8	86.3	665.6	1032.9	11464.6	9.0%
May-2014	247.2	84.9	654.0	1025.8	11553.3	8.9%
Aug-2014	243.3	77.0	669.0	1019.6	11572.8	8.8%
Nov-2014	261.8	79.4	672.9	1047.0	11581.7	9.0%
Feb-2015	257.3	74.3	655.9	1015.1	11724.1	8.7%
May-2015	267.3	72.4	674.0	1039.2	11781.4	8.8%
Aug-2015	254.3	74.9	665.0	1016.1	11702.6	8.7%
Nov-2015	254.2	73.7	706.5	1045.7	11935.3	8.8%
Feb-2016	266.6	69.6	695.1	1048.6	11975.9	8.8%
May-2016	289.8	76.8	704.5	1087.4	11999.9	9.1%
Aug-2016	271.9	65.7	686.3	1042.0	11904.7	8.8%
Nov-2016	270.5	61.0	690.1	1062.0	12054.0	8.8%
Feb-2017	283.4	75.0	737.5	1108.1	12103.3	9.2%
May-2017	281.7	84.1	750.4	1130.9	12256.6	9.2%
Aug-2017	289.6	80.6	763.8	1145.7	12245.3	9.4%
Nov-2017	304.0	88.0	769.8	1164.1	12453.6	9.3%
Feb-2018	306.2	104.1	783.6	1196.5	12528.2	9.6%
May-2018	319.4	120.9	737.2	1177.7	12572.7	9.4%
Aug-2018	319.0	120.5	736.4	1176.2	12547.5	9.4%
Nov-2018	341.1	99.3	715.0	1157.4	12741.6	9.1%
Feb-2019	324.1	104.3	717.5	1146.7	12802.2	9.0%
May-2019	314.4	114.4	752.1	1181.5	12921.1	9.1%
Aug-2019	300.8	100.6	766.4	1168.4	12858.3	9.1%
Nov-2019	302.6	108.7	776.1	1187.4	12994.9	9.1%
Feb-2020	307.5	107.5	767.4	1182.9	13052.9	9.1%

²² <https://www.abs.gov.au/statistics/labour/employment-and-unemployment/labour-force-australia/latest-release>

Financial Year	Building construction	Heavy and civil engineering construction	Construction services:	Total Construction	All Industries	Total Construction percentage of total employment
May-2020	338.0	118.7	719.4	1177.4	12190.8	9.7%
Aug-2020	335.2	119.0	696.8	1151.1	12563.7	9.2%
Nov-2020	358.6	101.0	712.7	1172.7	12884.5	9.1%
Feb-2021	330.0	112.4	707.4	1149.8	13031.2	8.8%
May-2021	307.1	133.8	719.4	1160.7	13187.4	8.8%

Figure 5: Employed persons in construction (main job) '000, May 2011 to May 2021²³



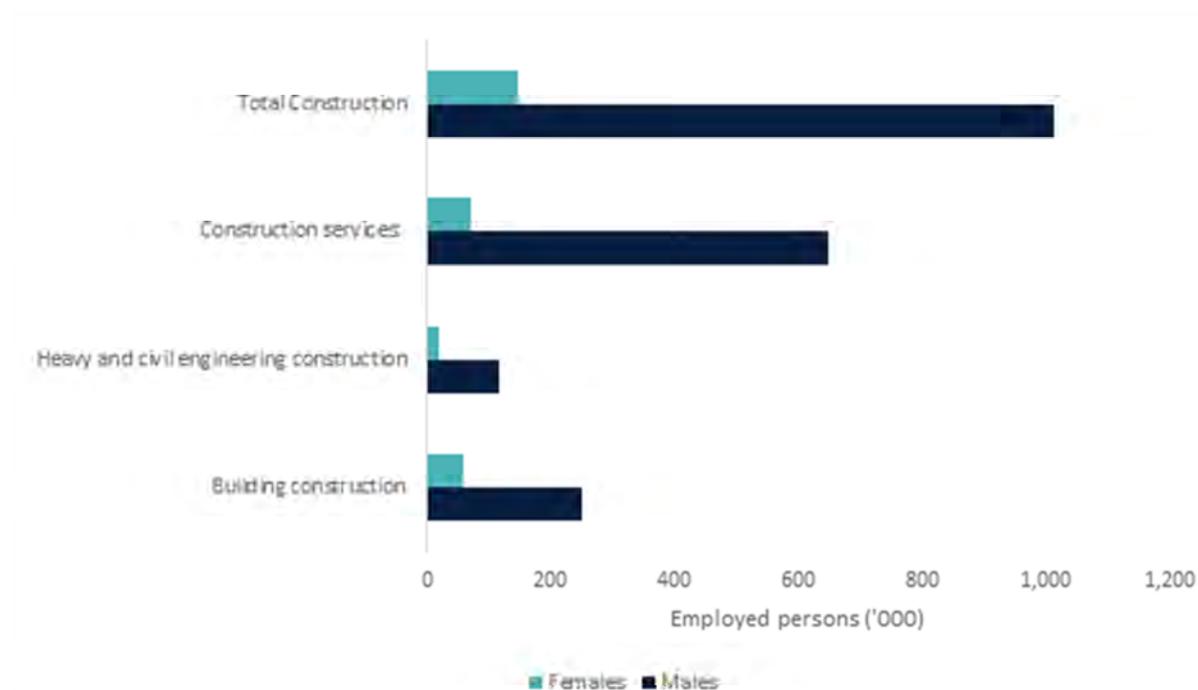
²³ <https://www.abs.gov.au/statistics/labour/employment-and-unemployment/labour-force-australia/latest-release>

The Construction industry division generally employs more males than females within its part time and fulltime workforce. The exception to this is in part time employment in Heavy and civil engineering construction, which had more females employed than males in May 2021 (Table 7 and Figure 6), though this is not consistent across the time series.

Table 7: Employed males and females in construction (main job) '000, May 2021²⁴

	Building construction	Heavy and civil engineering construction	Construction services:	Total Construction
Males				
Full-Time	223.5	107.3	560.0	890.8
Part-Time	25.6	7.8	87.9	121.7
Females				
Full-Time	38.4	10.2	29.9	78.4
Part-Time	19.6	8.5	41.6	69.8

Figure 6: Employed males and females in construction (main job) '000, May 2021²⁵



²⁴ <https://www.abs.gov.au/statistics/labour/employment-and-unemployment/labour-force-australia/latest-release>

²⁵ <https://www.abs.gov.au/statistics/labour/employment-and-unemployment/labour-force-australia/latest-release>

Investment

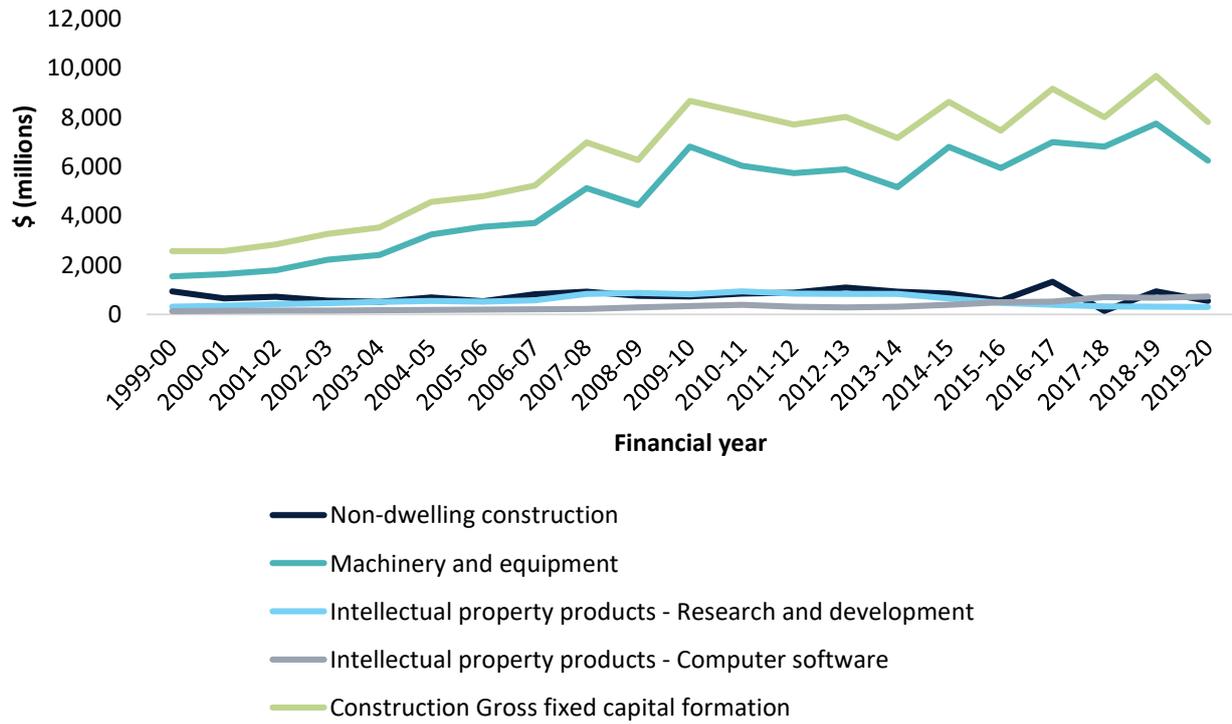
Gross fixed capital formation (GFCF) within the construction industry division has grown 204.2 percent since 1999-2000, compared to 80.6 percent for all industries. This growth has mainly be driven by GFCF in Machinery and equipment (up 302.7 percent) and Computer software (up 447.0 percent) (See Table 8 and Figure 7).

Table 8: Gross fixed capital formation by asset type in construction, chain volume measures, 1990-00 to 2019-20²⁶

	Non-dwelling construction	Machinery and equipment	Intellectual property products - Research and development	Intellectual property products - Computer software	Construction Gross fixed capital formation	ALL INDUSTRIES ; Gross fixed capital formation: Current prices ;
1999-00	933	1,549	313	132	2,567	244,213
2000-01	656	1,636	351	144	2,578	224,814
2001-02	713	1,793	417	163	2,849	245,328
2002-03	562	2,224	457	162	3,277	276,159
2003-04	514	2,421	515	177	3,528	300,283
2004-05	694	3,250	555	185	4,569	318,584
2005-06	542	3,558	521	197	4,801	344,942
2006-07	821	3,719	581	219	5,228	360,532
2007-08	932	5,126	836	222	6,980	392,122
2008-09	763	4,438	875	287	6,261	398,098
2009-10	726	6,807	828	337	8,672	405,057
2010-11	848	6,040	940	401	8,183	419,638
2011-12	884	5,730	849	312	7,704	468,329
2012-13	1,089	5,890	841	297	8,020	481,870
2013-14	921	5,169	834	312	7,167	472,767
2014-15	850	6,799	651	390	8,627	455,313
2015-16	558	5,945	478	493	7,456	438,726
2016-17	1,318	6,990	401	530	9,154	438,555
2017-18	147	6,814	325	701	8,006	460,435
2018-19	935	7,741	317	683	9,675	453,700
2019-20	544	6,238	304	722	7,808	441,016

²⁶ <https://www.abs.gov.au/statistics/economy/business-indicators/private-new-capital-expenditure-and-expected-expenditure-australia/latest-release>

Figure 7: Gross fixed capital formation by asset type in construction, chain volume measures, 1990-00 to 2019-20²⁷



²⁷ <https://www.abs.gov.au/statistics/economy/business-indicators/private-new-capital-expenditure-and-expected-expenditure-australia/latest-release>

Skills mix

Construction is one of Australia’s largest employing industries, with employment opportunities available at all skill and experience levels across the country (Figure 8). The most common entry into this industry is through the completion of an apprenticeship or traineeship (50 percent of workers possess a certificate III or higher VET qualification).

Figure 8: Employment snapshot in Construction, 2020²⁸

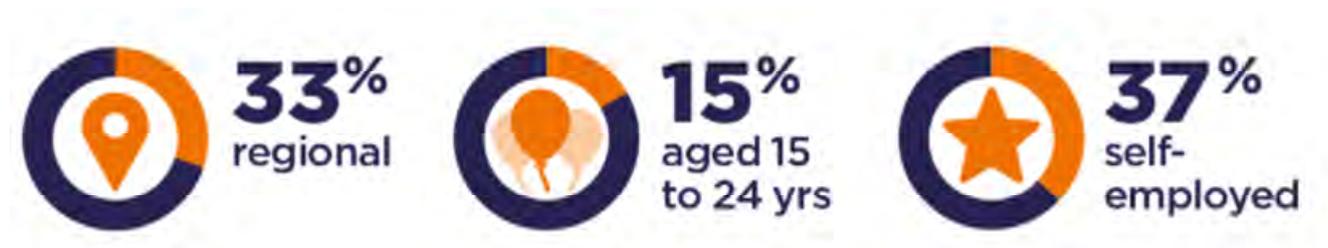


Table 9: Skills Priority List

The following occupations were identified in the Skills Priority List (June 2021) across the country as occupations of national shortage with strong future demand:

- Surveyor
- Urban and Regional Planner
- Civil Engineer
- Geotechnical Engineer
- Quantity Surveyor
- Structural Engineer
- Transport Engineer
- Electrical Engineer
- Mechanical Engineer

The following occupations were identified in the Skills Priority List (June 2021) across the country as occupations of national shortage with moderate future demand:

- Construction Project Manager
- Project Builder
- Engineering Manager
- Civil Engineering Draftsperson
- Civil Engineering Technician

²⁸ <https://www.nationalskillscommission.gov.au/construction>

Innovation

The proportion of innovative active business (businesses that had undertaken any innovative activity during the reference period including introduction of any type of innovation; and/or the development or introduction either still in progress or abandoned) within the Construction industry division was only 37.4 percent in 2019-20. This was the lowest proportion of all industry divisions (Table 9).

This was mainly driven by small and non-employing businesses within construction, where only 33.4 percent are considered as an innovation active business (Table 10).

Table 10: Businesses with any innovative activity (innovation-active businesses) by industry division, 2019-20²⁹

Industry	Innovation active businesses (%)
Professional, Scientific and Technical Services	61.6
Information Media and Telecommunications	61.3
Wholesale Trade	60.6
Retail Trade	59.2
Manufacturing	56.3
Accommodation and Food Services	54.8
Financial and Insurance Services	53.8
Rental, Hiring and Real Estate Services	53.8
Arts and Recreation Services	53.0
Other Services	51.4
Health Care and Social Assistance	49.9
Electricity, Gas, Water and Waste Services	48.8
Administrative and Support Services	46.3
Transport, Postal and Warehousing	42.4
Mining	41.0
Agriculture, Forestry and Fishing	38.0
Construction	37.4

Table 11: Businesses with any innovative activity (innovation-active businesses) in construction, 2019-20³⁰

Employment size	Innovation active businesses (%)
Total	37.4
0-4 persons	33.4
5-19 persons	43.6
20-199 persons	74.6
200 or more persons	56.9

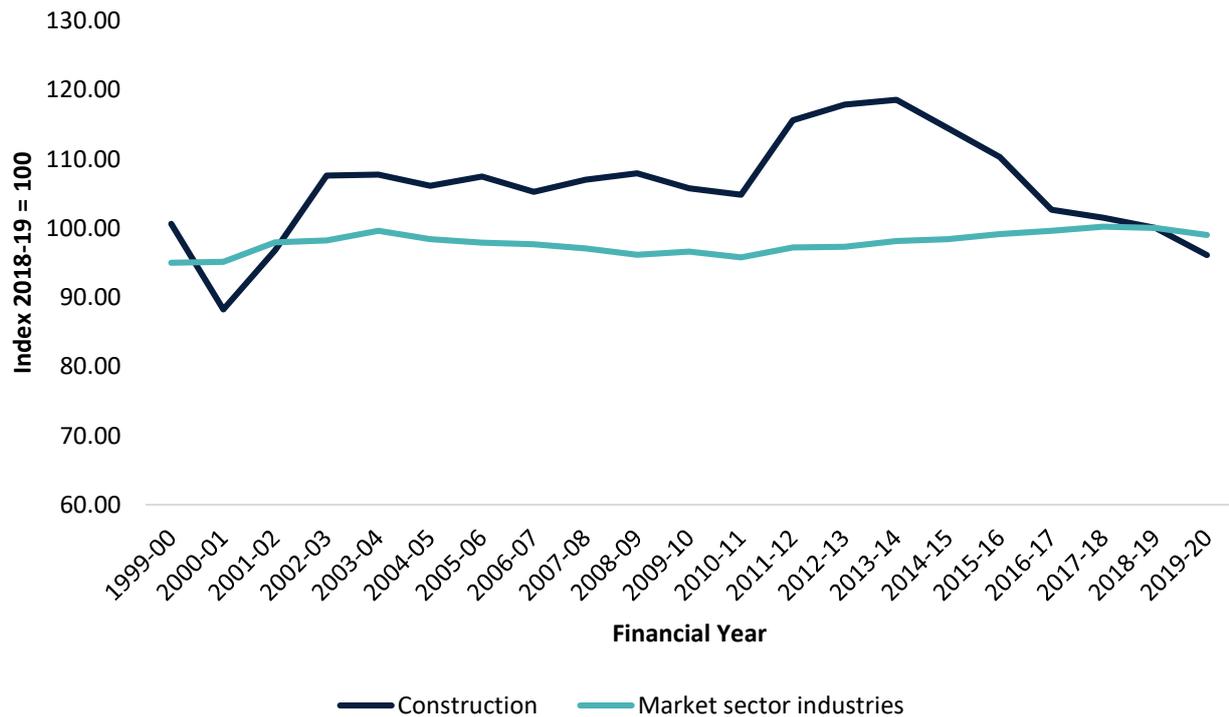
²⁹ <https://www.abs.gov.au/statistics/industry/technology-and-innovation/characteristics-australian-business/latest-release>

³⁰ <https://www.abs.gov.au/statistics/industry/technology-and-innovation/characteristics-australian-business/latest-release>

Productivity

Multifactor productivity within the construction industry division has remained relatively flat since 1999-2000, excluding a jump from 2010-11 to 2013-14. This is generally in line with all other market sector industry divisions which have remained flat over the time period (Figure 9).

Figure 10: Multifactor productivity index - Quality adjusted hours worked basis, 1999-2000 to 2019-20³¹



³¹ <https://www.abs.gov.au/statistics/industry/industry-overview/estimates-industry-multifactor-productivity/latest-release>