

Tertiary Education Report: Supporting the building and construction workforce

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Security level:	In Confidence	Report no:	B/18/00045
		Minister's office No:	

ACTION SOUGHT		
	Action sought	Deadline
Hon Chris Hipkins Minister of Education Copy to: Hon Jenny Salesa Minister for Building and Construction	Note the contents of this briefing ahead of the Ministerial Group on the Construction Workforce meeting; Indicate any aspects of this briefing where you would like further information and/or supporting data; and Proactively release this briefing in full, following your meeting and any associated public announcements.	12 February 2018
Enclosure: No	Round Robin: No	

CONTACT FOR TELEPHONE DISCUSSION (IF REQUIRED)				
Name	Position	Telephone		1st contact
Section 9(2)(a)	Section 9(2)(a)	S9(2)(a)	S9(2)(a)	✓
Mike Blanchard	Deputy Chief Executive, Operations	S9(2)(a)	S9(2)(a)	

THE FOLLOWING DEPARTMENTS/AGENCIES HAVE SEEN THIS REPORT

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- Minister's Office to Complete:**
 Approved
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 Needs change
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Comments:

Recommendations

Hon Chris Hipkins, Minister of Education;

It is recommended that you:

1. **note** the contents of this briefing ahead of the Ministerial Group on the Construction Workforce meeting;
2. **indicate** any aspects of this briefing where you would like further information and/or supporting data; and
3. **proactively release** this briefing in full, following the Ministerial Group meeting and any associated public announcements.



Mike Blanchard

Deputy Chief Executive, Operations

9 February 2018

Hon Chris Hipkins

Minister of Education

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This information gives an overview of how tertiary education and training contributes to the construction workforce

1. This briefing provides background information on tertiary education provision and initiatives that support the construction industries.
2. The government supports the construction industries through tertiary education funding for apprenticeships, vocational training, and professional education. It also provides careers advice and information for prospective learners and workers.
3. Overall tertiary education and training for construction-related careers is growing. There is more capacity (in terms of funding) for both industry training and provider-based provision. Increasing demand is dependent on firstly more employers being involved in work-based training and secondly more learners choosing construction-related career paths.

Demand for skilled workers is expected to continue to grow

4. The Ministry of Business, Innovation and Employment's most recent *Future Demand for Construction Workers* report (published July 2017) highlights that demand for construction-related occupations is projected to increase by 11 percent between 2016 and 2022 to a total of 571,300.
5. Across New Zealand, occupations expected to experience the largest growth to 2022 include plumbers (15 percent), electricians (14 percent), and civil engineering professionals (12 percent). The overall increase in construction-related occupations is approximately 56,000 between 2016 and 2022.
6. Auckland has the largest construction workforce requirements in New Zealand, requiring just over 190,000 construction-related employees by 2022. To meet this, a further 28,000 construction-related occupations were needed in the Auckland region between 2016 and 2022.

Investment in building and construction-related provision has been steadily increasing

The Industry Training Fund is increasing to support growth in apprenticeships

7. The Industry Training Fund is increasing, and is adequate to support growth under current settings. Budget 2016 provided \$14.4 million to support 5,500 more apprentices by 2020. In 2017 the Industry Training Fund increased by a further \$7.0 million over four years. Most construction-related on-job training is through apprenticeships, which have a high priority for funding.
8. We use the flexible funding mechanisms of the Multi Category Appropriation to align funding to demand. In 2017 and 2018 we over-allocated funding to industry training organisations (ITOs) to support anticipated growth. However in 2017 most ITOs did not use their additional funding.
9. The flexible funding mechanism also allows ITOs with good performance in apprenticeship training to access additional funding up to 102 percent of allocated funding.
10. Our key mechanism for increasing apprenticeships is through Investment Plans. We have worked with ITOs to set stretch targets for increasing both the number of employers engaged in training and apprenticeship enrolments.

Key ITOs are responding to growing demand in the construction industry

11. BCITO is the ITO for the construction, flooring, masonry, glass and glazing, joinery, interior systems, and painting and decorating industries. The Skills Organisation is the ITO for electrical, and plumbing, gasfitting and drainlaying industries among a range of other industries not related to construction.
12. Both BCITO and The Skills Organisation have experienced considerable growth in recent years. They are now the two top funded ITOs. In 2018 The Skills Organisation was allocated \$35 million and BCITO was allocated \$32 million. Other ITOs support training for the construction supply chain and logistics, such as Competenz for forestry, wood processing, engineering and manufacturing, MITO for heavy vehicle transport, and Connexis for road construction, civil trades, and electricity supply.
13. BCITO's level 4 carpentry apprenticeship accounted for 13 percent of all industry training funded delivery in 2016 (almost \$23 million). BCITO has the largest group of apprentices across all ITOs.
14. Funding and learner numbers (rounded to the nearest 100) for BCITO and The Skills Organisation (electrical, and plumbing, gasfitting and drainlaying only) are summarised in table 1 below.¹ Specific data by programme types is set out in table 3 in the Appendix. The observed growth was fuelled initially by the Canterbury rebuild and now the construction boom in Auckland and other centres.

Table 1: BCITO and The Skills Organisation - funding and learner numbers 2014-17

Organisation	2014	2015	2016	2017*
BCITO – funded delivery	\$23.9m	\$27.8m	\$28.9m	\$31.4m
BCITO – total apprentices/trainees	12,500	12,800	13,700	14,800
The Skills Organisation – funded delivery [#]	\$11.3m	\$14.2m	\$17.1m	\$20.1m
The Skills Organisation – total apprentices/trainees [#]	6,100	6,300	7,200	7,800

*2017 data is as at 1 February 2018. 2017 delivery is not finalised until 1 April 2018.

[#]Electrical, and plumbing, gasfitting and drainlaying only

Provider-based provision for construction-related careers is also increasing

15. Provider-based provision is through a range of organisations, regions and qualifications. There has been consistent growth in total funded delivery since 2014, although 2017 data is yet to be finalised. As with industry training, the flexible funding mechanism allows good performing providers to access additional funding for provision up to 102 percent of allocated funding.
16. Construction-related provider-based provision covers a broad range of fields of study, including civil engineering, architecture, surveying, building science, urban design, and planning. Notable growth in recent years includes building services engineering, building construction management, and structural engineering.
17. Pre-trades programmes (ie, pre-apprenticeship training) are also offered by providers. Our analysis shows almost a third of pre-trades graduates enrol in an apprenticeship (either with an ITO or a provider) while another third go to further study.

¹ Learner counts may differ from MoE data as TEC count is based on funded learners.

18. A high-level view of provider-based funding and learner numbers (rounded to the nearest 100) is summarised in table 2 below. Specific data by detailed fields of study for each fund is set out in table 5 in the Appendix.

Table 2: Provider-based provision in fields of study related to building and construction - funding and learners 2014-17

Fund	2014	2015	2016	2017**
Student Achievement Component – funded delivery	\$115.3m	\$117.0m	\$127.5m	\$125.5m
Student Achievement Component – total students	22,900	23,300	24,300	22,600
Youth Guarantee – funded delivery	\$9.3m	\$10.1m	\$10.0m	\$7.0m
Youth Guarantee – total students	1,400	1,800	1,800	1,100

**2017 data is as at the August 2017 SDR and is therefore incomplete.

A range of programmes support a growing pipeline of construction workers

Secondary-Tertiary Programmes (Trades Academies)

19. Trades Academies aim to get young New Zealanders engaged in education and equip them with relevant work-related skills by linking with the wider industry training system.
20. In 2016, of the 6,900 participants, 1,100 continued in the programme, 2,000 exited without completing, and 3,800 completed the programme. Sixty-eight percent of those who either exited or completed went on to further study or employment. The transition rate to study or employment for those who completed was 85 percent.
21. Due to the limitations of the Integrated Data Infrastructure we are unable to match learners to occupation destinations. Therefore, it is not possible to indicate that a particular learner went through a certain pathway and ended up in a particular occupation.
22. In 2017, 20 percent of over 7,000 Trades Academies participants were enrolled in the Construction and Infrastructure vocational pathway.²
23. In 2018, 24 Secondary-Tertiary Programmes and Trades Academies have asked for funding for 8,300 places, reflecting consistent growth in this programme.
24. More information on Trades Academies numbers and outcomes for 2016 is shown in table 4 in the Appendix.

Other initiatives that support transitions from secondary education to tertiary education or employment

25. We fund a range of other programmes that also promote vocational work-based learning for current or recent secondary school students. These include Gateway, pre-trades training, '3 + 2' programmes, and the DualPathways pilot within Youth Guarantee. These programmes often include construction-related fields of study.

² As at December 2017; data is yet to be finalised.

Engineering education-to-employment (e2e) initiative

26. The Engineering e2e initiative began in 2014 to help address New Zealand's critical shortage of engineers. The initiative's goal is to achieve 500+ engineering graduates per annum (at diploma, degree, and post-graduate level). While the 500+ goal was achieved in 2017 there are additional targets for numbers of diploma and bachelors level graduates.
27. Several workstreams support Engineering e2e outcomes, including: strengthening secondary-tertiary pathways; facilitating more sector-wide collaborations; and creating a system integrator to take a high-level view of the diverse and fragmented education-to-employment system.

Māori and Pasifika Trades Training (MPTT)

28. MPTT began in 2014 and offers pre-employment trades training for Māori and Pasifika learners aged 16-40 years. The aim is to transition learners into New Zealand Apprenticeships, Managed Apprenticeships, or other sustainable employment.
29. MPTT is delivered through consortia involving community groups, employers, and tertiary education organisations. Community and employer input is intended to increase learner completion and transition through to sustainable employment
30. There are currently 16 funded consortia (and over 20 tertiary education organisations participating) that support around 3,000 learners annually.

Support for different training models

31. Both we and the New Zealand Qualifications Authority are supporting BCITO to explore different training models. BCITO is developing smaller programmes to engage more employers and their employees in industry training. Where there are economies of scale, businesses specialise in certain aspects of construction. The aim is to recognise these specific skills when broader training is not an option.
32. ITOs have also responded to industry through new ways of working. Examples include the skills and jobs hubs at Auckland Airport and the Wynyard Quarter, supported by the Sector Workforce Engagement Programme, and support for regional economic development plans.
33. The challenge for ITOs is to make these flexible and innovative approaches part of business as usual. ITOs will need to adapt their business models to make these approaches self-sustaining in the longer-term.

Initiatives to increase awareness and uptake in construction-related industries

34. The Industry Training Federation, in collaboration with ITOs, runs the annual *Got a Trade? Got it Made!* campaign. This campaign promotes training and career opportunities in trades and services. The goal is enhancing the profile of work-based learning to make it the 'plan A' choice for young people, including priority learner groups.
35. Career choices in trades-related occupations are affected by the perceptions of learners, their whanau, and other influencers. While only around 30 percent of school leavers enrol in universities, other pathways suffer from perceptions of lower or second choice status.
36. Our careers team partners with industry leaders to promote a range of industry career opportunities. We expect this work to be enhanced through our careers system strategy work, relationships with tertiary education organisations, access to data to support learner choice, and new careers products and services.

Increasing the number of employers taking on apprentices

37. BCITO reports only around 10-20 percent of employers take on apprentices. Increasing apprenticeship enrolments will only be achieved by engaging more employers in work-based training.
38. This aligns with recent advice from the Ministry of Education that suggests incentivising employers is more effective than attracting potential apprentices.³ Generally, people are available to take up apprenticeships when the opportunity arises.
39. At present, many employers seem to prefer an older apprentice (around half are aged over 25 years) or someone who already holds a tertiary qualification (true for over 40 percent of new apprentices in 2016 at all qualification levels). This suggests employers see more capable recruits as lower risk.
40. Employer reticence to employ apprentices may relate to the possible loss of a qualified apprentice for increased earnings.⁴ It may also reflect the extensive sub-contracting and boom and bust industry cycle that means many employers lack long-term certainty to take on an apprentice.⁵

Apprenticeship Reboot scheme

41. The Apprenticeship Reboot scheme, which operated from March 2013 to December 2014, was intended to enhance the profile of apprenticeships, attract new apprentices, and incentivise an employer to take on new apprentices.⁶ We paid a total of \$70 million to 20,000 eligible apprentices and their respective employers.
42. Apprenticeship enrolments did increase over this period. However Reboot was likely to have only convinced employers who were already willing to train to take on an apprentice, as the subsidy covered only a fraction of the costs faced by employers. There is also evidence that Reboot simply 'front-loaded' apprenticeship signups, since the percentage change in number of new learners declined in the year immediately after the subsidy ended.⁷

Supporting the Ministerial Group on the Construction Workforce

43. As noted above, tertiary education organisations are generally responding to the growing demand for workers with construction skills. The greatest potential to further strengthen the construction workforce is likely to be on the demand side – that is, through changes in the practices and organisation of employers.

³ Briefing on apprentices in the building and construction sector, METIS 1094017, 30 November 2017.

⁴ Newshub <http://www.newshub.co.nz/home/new-zealand/2017/11/employers-call-on-new-government-to-help-with-apprentice-training.html>

⁵ Stuff <https://www.stuff.co.nz/business/97831869/construction-companies-avoid-training-apprentices>

⁶ Reboot entailed a \$1,000 subsidy for tools and associated expenses for each apprentice (or \$2,000 for those in priority trades) and an equal payment to their employers.

⁷ Ministry of Education's Briefing on apprentices in the building and construction sector, METIS 1094017, 30 November 2017.

44. However, alongside the Ministry of Education, we see opportunities to integrate work on levers to grow the supply of skilled construction workers into current policy and funding work programmes. This will continue the progress on manifesto commitments and other priorities you have indicated to us. With this in mind, we have proposed the following actions as part of the building and construction skills strategy that the Ministry of Business, Innovation and Employment is drafting for the Minister for Building and Construction:

- The Ministry of Education will improve access to workplace-integrated learning and flexible delivery by reviewing rules that limit funding for shorter programmes of learning, and for industry training at higher levels.
- Education agencies will work with other agencies, such as the Ministry for Women, Te Puni Kokiri, and Ministry for Pacific Peoples, to grow current initiatives that increase the take up of training in construction-related fields, by non-traditional groups of learners.
- As the Ministry of Education develops the blueprint for Centres of Vocational Excellence, it will include a focus on building and construction-related vocations.
- We will use our careers function to promote and encourage entry into construction-related occupations. We will also seek applications through the Joint Venture and Amalgamation Projects fund for initiatives that encourage more employers to engage in training.

45. It is difficult to estimate the likely impact of these initiatives at this stage but, in principle, they all have potential to make a difference to construction skills supply. You (as Minister), and we (as the funding agency) have flexibility to reallocate funds within current appropriations to areas of increasing demand. S9(2)(f)(iv)

S9(2)(f)(iv)

46. We will work with the Ministry of Education to monitor the impacts of these initiatives on construction skills supply, by aggregating evidence from our and the Ministry of Education's usual activities.

Appendix – Supporting data

Table 3: Top 5 funded BCITO programmes, plus electrical, and plumbing, gasfitting and drainlaying

Programmes	Learner numbers				Funding			
	2014	2015	2016	2017	2014	2015	2016	2017
Carpentry	8,763	9,037	9,929	11,089	\$17,924,440	\$21,448,637	\$22,956,729	\$26,016,075
Painting & Decorating	1,103	984	850	710	\$2,252,559	\$2,052,045	\$1,690,183	\$1,438,658
Flooring	559	538	490	475	\$1,108,389	\$1,221,433	\$1,048,717	\$1,029,683
Joinery	342	314	320	343	\$475,160	\$488,127	\$501,683	\$700,924
Concrete	256	308	345	340	\$321,571	\$410,947	\$495,118	\$491,942
Electrical engineering	4,003	4,119	4,656	4,945	\$7,543,332	\$9,408,475	\$11,078,743	\$12,728,670
Plumbing, Gasfitting & Drainlaying	2,116	2,150	2,549	2,884	\$3,795,252	\$4,758,724	\$6,042,901	\$7,342,470
Grand Total	17,123	17,434	19,120	20,760	\$33,420,703	\$39,788,389	\$43,814,075	\$49,748,423

Table 4: Trade Academies - Proportion of students progressing to further education or employment in 2016

	Continuing in programme	Exited without completing	Completed programme
Number of learners	1,100	2,000	3,800
Attained NCEA level 2 (%)	40%	53%	81%
To employment of further study (%)	n/a	75%	85%

Table 5: Provider-based provision in construction-related fields of study 2014-17 (Student Achievement Component and Youth Guarantee funding)

Course NZSCED Detail Field	Student count				Funded delivery (GST excl)			
	2014	2015	2016	2017	2014	2015	2016	2017
030901 - Construction Engineering	1,064	1,130	1,094	1,164	\$2,397,143	\$2,687,195	\$2,539,992	\$2,891,510
030903 - Structural Engineering	1,655	1,669	1,829	1,985	\$4,572,249	\$4,629,951	\$4,981,678	\$5,483,907
030905 - Building Services Engineering	63	106	357	313	\$138,085	\$218,617	\$565,680	\$567,445
031101 - Surveying	965	876	915	892	\$3,285,446	\$3,171,204	\$3,417,027	\$3,296,747
031301 - Electrical Engineering	4,295	4,419	4,404	3,899	\$13,707,925	\$14,003,007	\$14,245,569	\$13,919,283
031315 - Refrigeration, Heating and Air Conditioning	99	114	90	61	\$487,570	\$642,974	\$557,154	\$466,343
031399 - Electrical and Electronic Engineering and Technology nec		1,039	1,957	1,822		\$2,220,706	\$8,128,366	\$8,109,288
040101 - Architecture	3,062	3,072	3,189	3,239	\$21,251,690	\$21,167,498	\$22,283,627	\$22,628,018
040103 - Urban Design and Regional Planning	1,033	1,088	937	765	\$4,511,579	\$4,577,233	\$4,164,786	\$4,229,426
040105 - Landscape Architecture	480	440	489	456	\$3,043,209	\$2,757,995	\$3,030,995	\$2,905,395
040107 - Interior and Environmental Design	1,305	1,351	1,305	1,073	\$3,581,182	\$3,615,746	\$3,447,492	\$2,607,850
040199 - Architecture and Urban Environment nec	1,033	1,000	1,111	946	\$4,177,422	\$4,021,790	\$4,132,053	\$2,853,902
040301 - Building Science and Technology	1,494	1,681	1,597	1,583	\$4,373,364	\$4,799,340	\$4,299,930	\$3,628,616
040303 - Building Construction Management	2,176	2,295	2,609	2,879	\$4,389,133	\$4,822,701	\$6,218,121	\$6,936,394
040305 - Building Surveying (Inspection)	251	168	141	323	\$1,152,024	\$572,148	\$649,583	\$951,470
040307 - Building Construction Economics (incl Quantity Surveying)	858	895	993	1,292	\$2,073,393	\$2,134,087	\$2,368,006	\$3,123,123
040309 - Bricklaying and Stonemasonry	146	131	152	124	\$392,169	\$320,132	\$385,514	\$292,578
040311 - Carpentry and Joinery	4,520	4,269	4,446	3,674	\$24,465,614	\$23,536,511	\$25,191,970	\$19,901,269
040313 - Ceiling, Wall and Floor Fixing	593	568	623	549	\$916,099	\$967,467	\$1,052,604	\$678,528
040315 - Roof Fixing	323	210	300	181	\$288,332	\$197,523	\$287,514	\$218,915
040317 - Plastering	61	48	57	60	\$132,550	\$128,484	\$209,938	\$219,873
040319 - Furnishing Installation	43	64	68	92	\$54,944	\$53,764	\$59,689	\$82,629
040321 - Floor Coverings		16	18	38		\$5,861	\$6,498	\$25,071
040323 - Glazing		16	18	38		\$4,400	\$4,880	\$12,018
040325 - Painting, Decorating, Sign Writing and Other Finishes	789	791	808	474	\$3,088,671	\$3,239,690	\$3,325,322	\$2,091,007
040327 - Plumbing, Gasfitting and Draining	1,090	1,052	1,070	894	\$4,163,565	\$4,937,916	\$4,784,464	\$5,137,671
040329 - Scaffolding and Rigging	2,128	1,729	1,679	1,230	\$5,450,077	\$4,431,591	\$3,521,812	\$4,808,262
040399 - Building nec	1,749	1,781	1,641	2,087	\$3,162,634	\$3,121,535	\$3,639,512	\$7,473,868
Student Achievement Component Total	22,856	23,336	24,342	22,599	\$115,256,070	\$116,987,064	\$127,499,776	\$125,540,405
030901 - Construction Engineering	82	107	90	53	\$46,559	\$66,972	\$48,685	\$37,789
030905 - Building Services Engineering	55	53	38	13	\$42,226	\$34,540	\$29,060	\$4,556
031301 - Electrical Engineering	201	214	163	89	\$1,101,211	\$1,167,785	\$936,432	\$718,626
031315 - Refrigeration, Heating and Air Conditioning	s	25	10	s	\$113,991	\$83,419	\$7,871	\$202,491
031399 - Electrical and Electronic Engineering and Technology nec		22	109	17		\$43,140	\$349,585	\$37,534
040101 - Architecture	32	39	38	37	\$15,837	\$20,450	\$18,407	\$15,945
040105 - Landscape Architecture	24	33	36	24	\$10,094	\$9,279	\$12,760	\$11,266
040301 - Building Science and Technology	32	72	53	50	\$3,160	\$160,060	\$75,524	\$69,541
040303 - Building Construction Management	53	63	56	46	\$133,555	\$134,696	\$90,294	\$76,641
040307 - Building Construction Economics (incl Quantity Surveying)				s				\$2,382
040309 - Bricklaying and Stonemasonry	s	11			\$28,600	\$32,899		
040311 - Carpentry and Joinery	662	839	857	524	\$3,552,062	\$3,693,389	\$3,861,026	\$2,525,180
040313 - Ceiling, Wall and Floor Fixing	37	30	51	58	\$190,879	\$160,337	\$244,082	\$179,100
040315 - Roof Fixing	72	66	59	23	\$109,292	\$90,941	\$69,113	\$39,348
040323 - Glazing	24	34	36	24	\$6,042	\$6,261	\$7,689	\$6,764
040325 - Painting, Decorating, Sign Writing and Other Finishes	82	117	166	61	\$118,325	\$199,492	\$276,899	\$86,243
040327 - Plumbing, Gasfitting and Draining	223	305	258	118	\$896,850	\$1,006,260	\$735,446	\$566,242
040329 - Scaffolding and Rigging	32	52	44	61	\$9,474	\$15,403	\$13,192	\$167,560
040399 - Building nec	573	785	786	567	\$2,927,946	\$3,179,407	\$3,202,271	\$2,222,674
Youth Guarantee Total	1,442	1,787	1,764	1,081	\$9,306,104	\$10,104,729	\$9,978,337	\$6,969,882
Grand Total	24,213	24,991	25,981	23,631	\$124,562,173	\$127,091,793	\$137,478,113	\$132,510,287

s. Numbers are suppressed to maintain confidentiality or so that the confidential data cannot be calculated by subtraction.