

# INFRASTRUCTURE SITE SUPERVISION SKILLS

**CONSULTATION REPORT** 

JULY 2024

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From March to May 2024, Waihanga Ara Rau conducted nationwide industry consultation meetings to discover the skills required for infrastructure site supervision.

This report records the discussions with industry representatives who attended the meetings.

# 1. CONSULTATION SUMMARY

The Industry Technical Advisory Group (TAG) confirmed the following themes from the meetings and made recommendations for each.

Key Themes (What we found out)	Recommendations (How to address theme)
The qualification should focus on the critical skills of site supervisors.	Review the qualification graduate profile outcomes (GPOs) to better reflect the critical skills site supervisors require.
Skills in people management, leadership, driving productivity, and financial awareness relevant to the site supervisor role are critical for success in the role.	Communicate our findings to Ringa Hora, the Services Workforce Development Council for the Manu Arataki Leadership Project. We will work with Ringa Hora to make sure the "building blocks" (skill standards and micro-credentials) for people management, leadership, and financial skills meet the needs of industry.
The delivery of flexible learning at the right time, in smaller packages, for people wanting new skills in addition to or before entering a site supervision role.	
Several industry training modules are not aligned to the New Zealand Qualifications and Credentials Framework (NZQCF).	Review the GPOs to reflect capabilities valued by industry, which will enable internal training to align with the qualification outcomes.
Company and manager support mechanisms are critical for the training and success of site supervisors.	Communicate our findings to companies and organisations that support pathways in site supervision.
A pathway for advanced supervision should exist, which would include more knowledge of project and contract management and business acumen.	Explore pathways for advanced supervision alongside project and contract management skills.

# PROJECT NEXT STEPS

The Technical Advisory Group (TAG) will meet in July to follow up on the report's recommendations and review the qualification and unit standards before consulting with the wider infrastructure industry.

The Qualification Developer will:

- Facilitate TAG meetings to prepare draft documents for comprehensive industry consultation via the Waihanga Ara Rau website during August 2024.
- Communicate feedback received during the consultation so the TAG can consider it and make necessary changes to the draft qualification or standards.
- ▶ Submit the reviewed qualification and unit standards to NZQA in September.
- ► Record insights relevant to an advanced supervision pathway.

# 2. PURPOSE OF THE REPORT

The New Zealand Certificate in Infrastructure Works (Single Site Supervision) (Level 4) is a qualification valued by the infrastructure industry.

While the qualification is generally fit for purpose, there have been suggestions for enhancements, and graduate numbers could be increased. Industry feedback suggests that more supervision skills are needed for the many civil projects that will roll out around New Zealand.

This report confirms the skills required for site supervision. It collates industry feedback on ways to encourage people to participate in site supervision based on survey responses and nationwide meetings held throughout New Zealand.

### 3. BACKGROUND

Waihanga Ara Rau Construction and Infrastructure Workforce Development Council manages the qualifications and credentials for the industry sectors we represent, including over 50 industries across eleven strategic sectors.

### Strategic sectors

- Access Trades
- ▶ Civil Infrastructure
- ► Construction and Infrastructure Services
- ► Electricity Supply
- ► Electrotechnology
- Finishing Trades
- ► Gas Infrastructure
- ▶ Off Site Construction
- ▶ On Site Construction
- ▶ Plumbing Gasfitting & Drainlaying
- Water Services

### WORKFORCE INFORMATION ON SHORTAGE OF SUPERVISION SKILLS

Waihanga Ara Rau has information on workforce development for each sector. The Workforce Development Plan for Civil Infrastructure can be found at <a href="https://www.workforce.nz/civil-infrastructure">https://www.workforce.nz/civil-infrastructure</a>.

Waihanga Ara Rau *Te Ara Whakamua Statement of Strategic Direction 2023–2028* was developed after reaching out and consulting with our industries and their kaimahi (staff). Key feedback themes to address industry shortages included the need for work-ready candidates and supervisory training (pages 9 and 13). Waihanga Ara Rau will strive to address this theme through this project. WAR SSD 2023–28 FINAL SCREEN.pdf (waihangaararau.nz).

Te Waihanga NZ Infrastructure publication *Rautaki Hanganga o Aotearoa 2022 – 2052,* New Zealand Infrastructure Strategy (page 155), stated that 'our historic workforce shortages have been made worse by the fact the infrastructure sector isn't equally drawing on the talents of all New Zealanders, especially in

managerial, professional, and higher-skilled roles. Building capabilities to improve infrastructure delivery, New Zealand needs people with the skills to plan, build, operate and maintain the infrastructure we need, such as construction management roles, including site supervisors, site engineering staff and construction managers. Strategy | Rautaki Hanganga o Aotearoa | New Zealand Infrastructure Strategy (tewaihanga.govt.nz).

The Construction Industry Survey 2021 (page 16) states that the significant shortage of workers is at the field worker, machine operator and site supervisor levels, and the industry is facing a workforce crisis as there are not enough experienced people working at the **supervisor level** to allow many companies to scale up (page 39)

https://civilcontractors.co.nz/filescust/CMS/Documents/Construction%20Industry%20Survey%20Report%202021.pdf.

# 4. SURVEY RESULTS

From February to May 2024, an online survey was conducted on the Waihanga Ara Rau website to begin scoping the skills required by site supervisors.

While some skills were not required in some workplaces, there was overall agreement that site supervisors required the following skills.

### TEAM LEADERSHIP

- 1. Communication skills
- 2. Coaching skills
- 3. Delegation skills
- 4. Driving positive behaviours and team culture
- 5. Recognising team members personal and emotional triggers
- 6. Supporting own and others' professional development
- 7. Role modelling industry best practice
- 8. Building confidence in others
- 9. Developing an effective team health and safety culture
- 10. Supporting and mentoring the team.

# SITE SUPERVISION SKILLS

- 1. Developing a health and safety culture on the worksite
- 2. Implementing plans, company processes and procedures
- 3. Monitoring and recording quality assurance requirements
- 4. Supervising daily activities on the worksite
- 5. Critical thinking and problem-solving issues on the worksite
- 6. Monitoring worksite resources
- 7. Engaging with worksite personnel
- 8. Coordinating and monitoring the location of services
- 9. Implementing environmental controls
- 10. Conducting worksite briefings and encouraging staff input
- 11. Risk assessment
- 12. Using technology.

### SKILLS TO IMPLEMENT A CONTRACT

- 1. Understanding roles and responsibilities for contract implementation
- 2. Monitoring contract schedules and work sequences
- 3. Meeting outcomes and special conditions of the contract
- 4. Reviewing progress against the plan
- 5. Minimising contract issues relating to work processes and timelines
- 6. Contract reporting and communication requirements (public relations, safety, traffic control).
- 7. Co-ordinating permits and approvals
- 8. Identifying contract issues and recommending improvements
- 9. Implementing sustainable practices.

### PERSONAL SKILLS OF A SITE SUPERVISOR

- 1. Self-awareness and reflection
- 2. Confidence in own abilities
- 3. Resilience
- 4. Adaptability
- 5. Fostering belonging and diversity
- 6. Goal setting
- 7. Honesty
- 8. Accountability
- 9. Discretion.

# 5. MEETING RESPONSES AND THEMES

Meetings were held around the country from March to May. Attendees were asked to give feedback on the survey responses by completing two activities. One was to provide input on the critical skills of site supervisors identified in the survey responses, and the other was to give feedback on ways to encourage people into site supervision.

### RESPONSES TO CRITICAL SKILLS FOR SITE SUPERVISION

Supervisors should be aware of the costs of completing a job. They should also be able to plan, complete progress reports, and follow a timeline.

They should know how to plan collaboratively, work with a crew, and set expectations. Standard operating procedures are essential when setting expectations to ensure the work is done safely.

The site supervisor is the site leader, ensuring adequate risk assessment and addressing changing site conditions. Understanding risk assessment is critical for their role. There are often multiple crews on site, all doing different tasks. This means there will be different risk control plans to manage.

For site supervisors, accountability and who can stop the job should be common knowledge. They should know when to stop the job if there is a health or safety issue. Supervisors should be confident in their ability to take control and go to the site engineer or senior superintendent when they have identified issues.

### **CONTRACT REQUIREMENTS**

The comment was made that site supervision does not involve sighting the contract documents; instead, site supervisors are told by their project or contract manager what needs to be done. They need to have some idea of the contract documentation. The language of a contract is different from the language of a work plan. The site supervisor should understand the impact of the contract requirements on the work plan. They should have the right amount of knowledge and understanding of the parts of the contract requirements that are critical to supervising a site. There may be a need for a course to identify parts of the contract and understand the contract requirements. There is currently one short course from NZIHT/WITT on NZS3910:2023 Conditions of Contract for Building and Civil Engineering construction.

Infrastructure projects have a contract or project manager and the site supervisor, so they need to understand each other's roles and responsibilities, including the decision-making process around contract management and/or project management. Site supervision also requires understanding how the site crew fits in with the work needed for the contract.

We heard people don't like to put their hand up for site supervision roles. This causes a few issues when learners sign up for a qualification that doesn't match their role and work. There was feedback that it is tricky getting evidence for work they don't carry out.

Currently there are provider and employer courses that don't align with unit standards or the site supervision qualification. It comes down to developing a company's internal modules that meet a need. People are being reactive rather than proactive about asking what they can do to upskill. Courses that can be accessed at the appropriate time for the learners are excellent.

### RESPONSES: THEME - CRITICAL SKILLS FOR SITE SUPERVISION

We heard from participants the qualification must focus on the critical skills required to successfully supervise a site in an infrastructure environment. Participants were clear about not repeating skills, especially when you have already done a Level 4 technical qualification, and focusing on the skills that matter.

We heard that a learner's motivation to achieve a qualification is important for training to be successful. Therefore, learning and skill development should be focussed on the relevant skills. Participants said the qualification needs to be leadership-based skills, suitable for team leaders in infrastructure, not generic unit standards that don't apply to the learner's context, and include encouraging good patience, fair tolerance for different personalities, good time management and organisation skills,

There was a discussion about the roles, responsibilities, and scope within infrastructure. For example, different companies may have a leading hand, a foreman, a supervisor, a senior supervisor, and a superintendent. These roles are not equitable across companies, so qualifications and standards should not be about roles but critical skills required for site supervision. Site supervision is focused on the skills and interactions related to day-to-day planning and organising tasks. The engineer or someone else will ensure QAs are met and manage stocks and orders.

Health and safety must include an understanding of the roles and responsibilities of everyone, from the PCBU to the crew member, and collaboration between all these people.

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Electricity Supply is a heavily regulated industry, and part of infrastructure has additional and sometimes unique requirements. Participants agreed that through the qualification reviewed, it would be great if it could be used more widely across the infrastructure industry.

There might be some transferrable skills that map across Workforce Development Councils (WDCs) that would be useful. Civil may not suit some learners/workers, but they may transition into construction, electricity supply, surveying, or plumbing.

### RESPONSES: THEME - PEOPLE MANAGEMENT SKILLS

People management skills were seen as critical to the success of site supervisors. The meeting participants talked about a behaviour change for the industry. When an operator steps up to foreman, it can be their first time managing people. When discussing people management, the industry was clear site supervision does not include performance management.

Participants agreed that people management skills are one of the most significant parts of a site supervisor's role, but there are no training courses that suit industry needs. This is the area where there is the highest need for support. People management skills give people the edge, leading to productivity that will win companies contracts.

The crew's mental health and well-being, including the supervisor's, is a critical factor for site supervisors. Mates in Construction was a programme mentioned during the consultation. Participants expressed the days of toughening up and just getting on with it are over. Skills to support this change in approach include the wellbeing of the crew and the site supervisor, coping with stresses related to site supervision, and valuing and recognising one's own skills.

### RESPONSES: THEME - DRIVING PRODUCTIVITY

Meeting participants talked about timeliness. Arriving late to the site or something not working and causing delays could negatively affect the project and have roll-on consequences, including personally impacting those in supervision roles and the organisation.

Driving productivity requires site supervisors to monitor a site and step back to see what's happening and whether the crew is productive. Participants described the difference between the crew on the job looking busy but maybe not actually being that productive. Monitoring the site works extends to the health and safety aspects, as well as the resources.

Record-keeping and documentation, including site diaries, are required for monitoring and project productivity. Part of the PCBU requirements is keeping training records and knowing the crew's competence and capabilities.

# RESPONSES: THEME - SMALLER PACKAGES OF LEARNING

All meeting participants supported Waihanga Ara Rau in breaking up the site supervisor unit standards into smaller learning packages and then sharing them with industry for their feedback. It was agreed that supervision qualifications should be a block-building exercise. There is an instant search, instant result mentality in our industry. If you can't do something, or you've got a new task that you can't do, you go straight onto the internet and YouTube.

People management was seen as a great set of skills for a taster micro-credential that people could do before entering a site supervisor qualification. If it is not to their liking or they realise supervision is not a career path for them, they have at least had a micro-credential without the commitment of signing up for a qualification and not completing it.

The question was raised about micro-credentials for the industry and how they could be used to cope with the differences between the roles and responsibilities for different areas of supervision. This could be an option to allow individuals to choose the ones that apply to them in areas they would like to develop and the work their company undertakes.

The group discussed the current site supervision programme content and how difficult it can be to complete a qualification over two years when it includes work individuals don't do. Participants agreed it would be better to allow for smaller "building blocks" that lead to the qualification so people can complete the parts they select in a shorter time.

Suggestions for smaller packages of learning that focus on skills for site supervisors that need further development are:

- ▶ People management skills and health and wellbeing of your crew
- ▶ Coaching
- Leadership
- ► Financial skills for site supervision
- ▶ Environmental protection
- ▶ Sustainable practices.

Civil Contractors New Zealand (CCNZ) is working on a business support programme that includes finance, budgeting, profit and loss, tendering, and the tendering process. These related areas are identified as causing considerable costs to the business.

Through consultation, it was also identified that companies are creating their own courses that represent their own values, and each company manages those to set itself apart from other businesses.

An example of some non-unit standard-based courses available are:

- ▶ ACE to train in software like Outlook, Excel, and SharePoint.
- ▶ Playing Fair
- Power Up (health and wellbeing)
- ▶ Step Up
- Gear Up
- Whakatupu leadership course emerging Māori and Pasifika learners
- ► Tools for Talking
- ▶ NZIHT/WITT on NZS3910:2023 Conditions of contract for building and civil engineering construction.

# 6. ENCOURAGING PEOPLE INTO SITE SUPERVISION

Demand for site supervisors has increased to respond to work generated by events like the Kaikoura earthquake and the cyclone extreme weather event on the East Coast. This can mean people are promoted to site supervision when they are unprepared and set up to fail. Taster courses could be one way of solving this.

It is possible to come up through the ranks, complete a Level 4 technical qualification, and then move into site supervision. We heard from one person, "We've got a young surveyor, and he's earned his diploma in surveying. He knows how to talk to the construction workers when he goes on site because he's been one. He knows how to speak to the crews. Having managers who support you to succeed is crucial for ongoing development and the wrap-around support required while site supervisors are gaining skills for the role." However, in other instances, participants expressed that a site supervision qualification of 110 credits (nearly two years), in addition to a Level 4 technical qualification, can be a big ask. If not careful, workers may get burnout before getting into those leadership positions.

Workers can be reluctant to take on jobs if they don't think they are competent and haven't had enough health and safety training. Knowing that an employer has done all they can to keep workers safe (backed by the HSWA Act 2015) is reassuring for site supervisors. When there is collaboration between the employer, managers, supervisors, and colleagues, people are less reluctant to step up to supervisor roles.

Other suggestions heard from participants to support people in site supervision included:

Encourage workers to have confidence in their unique skill set and know the company will pay good money for the skills. Participants talked about the lightbulb moments when people realise they've got these fantastic skills.

For later starters, encourage a little bit of study and then encourage to do a little more. It becomes a habit.

Councils stipulating a level of qualification in their contracts. It could be a contractual requirement to have a qualification to work on assets, and the qualification is built into the contract requirements.

Having the backing of the business:

- Achievement of credits aligning to successful achievement of their training plan. One company links pay rises to qualification achievement to encourage people to step up, which is working.
- ▶ Collective employment agreements that stipulate pay rises.
- ▶ Managers are instrumental in putting people forward for training opportunities, observing them, and encouraging people who desire to get ahead.
- ▶ Offering two hours per week of paid study time shows that you are investing in your people and getting a return on your investment.
- ▶ Regular one-on-one, documented feedback on progression, goal setting and development.
- Promote leadership opportunities.
- Allow leadership opportunities (when the team leader is away, acting role).

Start leadership training earlier, i.e., at the leading hand level, on smaller projects and provide mentoring. Too often, good people are thrust into a leadership role with little to no training, which often sets them back.

Make learners aware of what this qualification can do for them. Use learner stories; focus on what they learned and how it changed their workplace practice.

Be specific about learning, developing knowledge, and building confidence, which need to be supported in a work-based environment.

Recognise internal training as credit towards a micro-credential or a qualification. Incorporate leadership and supervision into individual development plans. This would also support the milestone approach to smaller/flexible learning packages.

Utilise recognition of current competence (RCC) or something similar so learners don't have to redo learning they have already achieved.

Network with other leaders. Foster collaboration between small and large companies for internships, information sharing, and mentoring.

Outline the challenges, highlight the positive outcomes, and show them what "good and successful" supervision is. Use relatable role models so that learners are prepared for the role ahead.

An industry programme that recognises and rewards leaders, e.g., Black Hats, IPP, and goal setting.

# 7. DELIVERY

While the consultation's focus was not specific to delivering the training that leads to the award of the site supervision qualification, participants provided useful suggestions worth sharing in this report.

Participants recognised that supervisors are busy people and that it can be difficult for them to find jobs where they can get workplace evidence if skills they don't need are included in the programme. They also suggested that having assessors in the workplace reduces costs, ensures the assessments are relevant to people's work, and engages learners in the content they are learning.

One participant runs weekly study evenings where learners can come and complete their work. If they struggle to understand questions, they have someone to support them.

Another provider said the difference in their course was that they have a construction background. Because we know the learner's language, the problems, what hurts, and what makes sense, we know what doesn't work, what's fluffy, and what won't stick. Training becomes unstuck when the tutors don't have experience—they're just showing learners something step by step. "If it's for infrastructure, it must come from infrastructure."

### RESOURCE DEVELOPMENT

Resources came up regularly in discussions with participants, along with suggestions for future consideration:

- Resources should be relevant to companies and use correct terminology and plain language. The resource development should be aware of different learning needs. Participants said people in the industry with learning issues get embarrassed when confronted with learning that has an academic focus and contains words they don't use.
- ▶ Site supervisors need confidence-building resources. If they need to take toolbox talks or step into a health and safety role, filling out workbooks when they are already in a stressful situation can be taxing. Participants talked about being put off by the large workbooks required to be completed when signing up for a qualification.
- ▶ Participants recognised that literacy and numeracy skill development is important: "You need to calculate things and ensure the answer is accurate, and you can't get away from the written work you need to do as a site supervisor".

### **IDENTIFYING THE LEARNER**

One of the provider interview participants talked about identifying their learners. They described their learners under three broad categories:

- 1. A learner who decides they want to enrol for the qualification is highly motivated and has the capability to achieve it, even though it's an inconvenience. I'll just get it done.
- 2. A learner enrolled in the qualification because they need it, doesn't find it easy but gets it done because they persevere and get there in the end.
- 3. A learner who enrols in the qualification might want it, but they need the skills or support to self-manage the journey. It is terribly painful and almost impossible; these people often don't complete it. This is where the focus should be, especially for learners with great verbal but not literacy skills.

One participant said, "The learners that drop off are the ones we're asking to fit into something, but they are not yet ready." Therefore, identifying readiness to undertake and sign up for the site supervision qualification is also an important consideration. For this reason, it was identified that learners have difficulty finding time to complete workbooks, and it would be easier with smaller learning packages.

### SCENARIOS FOR CRITICAL THINKING

Participants talked about using scenarios as a learning method to demonstrate how people improve productivity and then discussed those scenarios using critical thinking skills to develop solutions.

One of the interview participants suggested the development of a robust assessment based on three months after completing the course. The evaluation would cover what the graduate has implemented from the course, how it went, what has changed for the graduate, what evidence they have of this, and what the manager has seen as evidence of these changes.

### **USING TECHNOLOGY**

There was the acknowledgement of technology and ways this could be utilised for learning and assessment. It was expressed there is a need to move on from a workbook-only approach for all learners (although there will still be a place for them for those who prefer this type of learning and assessment).

One question raised was whether, to support a learner's achievement, future training could be available digitally, for example, webinars (visual), podcasts (audio), online tutorials or chat rooms.

Workplace videos were seen as an excellent tool for learning. Some could be technical, and others about moving from foreman to supervisor. Having videos or podcasts of site supervisors with real mana talking about what they do, how they got there, and what is important to them, the new ones coming through would find that helpful.

For assessment, the real benefit is using technology to record their workplace performance by uploading photos and video clips of their work, interviews with their managers, etc. Participants asked if there could be more ways to collect video evidence or photographs and have a level of trust those photos are accurate.

Participants referenced the Level 2 online certificate (Connexis Infrastructure Works L2 programme) and expressed that they would like to see more of that sort of delivery.

# 8. PATHWAYS

Participants explained the importance of discussing pathways with the broader view of learning, not just qualifications, but collecting skills and knowledge as you progress through your working life.

While infrastructure companies use different role titles, generally, a Level 3 person works as a crew member before they achieve a Level 4 technical qualification and then step up to a Level 4 team leader or site supervisor role. The subsequent roles are the advanced supervisor and Superintendent, and there are Level 5 infrastructure qualifications for project and contract management skills.

A bridging micro-credential before beginning the site supervision qualification would show people there is a pathway and that they could have a taste of the skills and expectations of site supervision roles.

### ADVANCING SUPERVISION SKILLS

We heard from participants about pathways and skills to support career progression from a site supervision to Advanced Supervision, Superintendent, and management of contracts and projects.

One interviewee said project management is probably one of the things she was hearing as the next stepping stone—certainly the financial side of things and building on that leadership. It is moving into a different leadership style. It requires influencing and negotiating skills or advanced management skills. This interviewee said they are seeing a lot of senior managers doing roles and tasks they really shouldn't be doing. They should be delegating and are not doing that for whatever reason.

However, it was noted that workers need time in a site supervision role before moving into senior supervision or contract management roles.

### SUPERVISION OF MULTIPLE CREWS

One participant shared that they have just started a new group of senior supervisors at the top of their game. They are a step up from the site supervisor but not at the superintendent level, and they have more experience and often manage multiple sites and crews.

It makes it easy for the engineers if you have a great supervisor. It doesn't have to be an engineer who does this senior supervisor role. There is a need for site supervisors to become more confident, have time to develop at Level 4, and then support them to move up to Level 5 supervision.

One participant said skills related to commercial acumen would be valuable, including those step-up conversations with people you perceive as above you, such as talking to financial managers.

Advanced supervision should be explored for larger contracts, and it could be suited for more in-office roles than onsite supervision. The participants expressed that site supervisors who have progressed into these types of roles are very good, and they do well in project and contract management because "they get how things work on the ground."

A progression from site supervision might include the supervision of two or three crews. That's project managing and planning for three crews. They would be signing work out to 3 crews, monitoring that work, and have a requirement to bring it in on time. That's a mini project, so project management is very relevant.

### **CONTRACT MANAGEMENT & PROJECT MANAGEMENT**

At Level 5, contract and project management may not be separate in a typical job role. This is dependent on the size, scope, and complexity of the project.

Participants agreed site supervisors know the people, the specifications, and the quality aspects of the job. Still, it's the contract management they struggle with, and again, this is because there isn't enough support for them to gain this knowledge. There is an opportunity to think about how foreman/supervisors can progress into a qualification and learn about project and contract management before they start doing this work at their workplace, whether this is micro-credentials, which are bridging credentials between site supervision and project and contracts, or they learn enough skills to get into this work.

# 9. SKILL GAPS IDENTIFIED BY SURVEY RESPONDENTS

The skill gaps identified by the survey responses were used for activities at the nationwide meetings to generate discussion.

The skill gaps were in leadership, productivity, people management, the health and wellbeing of your team, how to handle difficult people, financial awareness, understanding costs and contract conditions.

A complete list of the skill gaps will be used to inform the skills and knowledge included in the unit standards as the Technical Advisory Group reviews them.