DIGITAL CAREERS IN CONSTRUCTION MANAGEMENT

Developed by:

CGF
CONSTRUCTION GROWTH FOUNDATION

Building Institute Aotearoa

BUILT ENVIRONMENT CAREER STREAMS

Ngā ara rerekē o te ao hanga taiao

DIGITAL CAREERS IN CONSTRUCTION MANAGEMENT

This guide provides a helpful overview of the digital skills required for careers in construction management. It's designed to help you understand:

- The digital skills you need for different types of roles and at different career stages
- How to develop these skills through practical application and training
- How digital capabilities can accelerate your career progression
- Whether digital specialisation might be right for you

This supplementary document should be read alongside the main 'Construction Management Career Stream' guide. Together, these guides offer a clear picture of how digital capabilities can support those in construction management careers to provide practical problem-solving, team leadership, and project delivery excellence.

WHY DIGITAL SKILLS MATTER IN CONSTRUCTION MANAGEMENT

Construction management is experiencing rapid digital transformation. Building Information Modelling (BIM), reality capture, digital programme management tools, and data-driven decision-making are changing the way projects are planned, coordinated and delivered on site.

Every construction management professional now requires digital literacy – from cadets learning to use total stations for site layout, to project directors using data-rich dashboards for portfolio oversight. Specialist digital roles are also emerging within construction management, offering new career pathways for those who can combine practical construction knowledge with advanced technical capabilities.

Digital skills are no longer optional extras – they are core competencies that enhance traditional abilities in site management and project delivery.

THE DIGITAL SKILLS LANDSCAPE

Even without intending to become a digital specialist, construction managers are increasingly expected to have a high level of familiarity and comfort with digital tools, across all aspects of the role.

Digital skills in construction management include:

- Foundational technical capabilities – Model navigation and interrogation, digital programme management tools, cloud-based project management software, tablet-based site documentation, digital quality management systems, and basic data literacy for dashboards and reporting.
- Site coordination and construction technology – Digital site logistics planning, BIM coordination for construction sequencing, digital as-built documentation, reality capture and surveying technology, digital RFI and variation management, integration of digital information with physical site activities.
- Collaboration and team communication – Facilitating digital site meetings and toolbox talks, communicating technical digital requirements to subcontractors and trades, managing change adoption on site, coordinating digital information across project teams.
- Programme and commercial management – Digital progress tracking and reporting, data-driven decision-making for programme recovery, digital cost control and variation management, client reporting through digital platforms, using analytics to identify risks and opportunities.

> **"I don't think there's any role that shouldn't have digital functionality. Ultimately, the I in BIM stands for 'information', and information is what we do - it's our bread and butter. Whether it's design, whether it's commercial, whether it's programme time, it's all information. So everyone should be able to pick up some kind of digital tool."**
>
> – Christian McCartney, BIM & Technology Systems Lead, Hawkins

- Integration of digital and site management – Connecting digital planning tools with physical site realities, using digital coordination to solve practical construction challenges, maintaining quality and safety standards through digital systems, and ensuring digital information supports efficient site delivery.

INTEGRATING DIGITAL AND TRADITIONAL SKILLS

Digital skills enhance rather than replace traditional site management capabilities. Every construction manager can benefit from developing digital literacy, no matter what their career stage or specialisation. The key is practical application rather than technical expertise – construction managers need to be confident users of digital tools, not software developers or IT specialists.

What matters is knowing which digital tools to use for specific construction challenges, how to interpret digital information to inform site decisions, and how to integrate digital coordination with physical construction activities. Construction managers don't need to understand how the underlying systems work, but they need to understand how to use them effectively to solve practical site problems.

Strong digital literacy, combined with solid construction experience, creates construction managers who can combine the best of both traditional expertise and modern technology, using digital tools to coordinate more effectively, make better-informed decisions, and deliver projects more efficiently.

Digital skills required for construction management include:

- **Site coordination and logistics** – Effective site coordination requires understanding of construction sequences, trade dependencies, and practical site constraints, as well as experience-based judgement about realistic timeframes and risk factors. Digital scheduling tools can help support better planning and enable real-time tracking of deliveries, materials and equipment.
- **Methodology and planning** – Time-based simulation ("4D BIM") enables detailed visualisation of construction sequencing and methodology. These tools allow construction managers to plan and communicate complex build sequences, identify logistical constraints, and coordinate trades more effectively before work begins on site.
- **Programme management** – Software is used to generate critical path analyses and track progress. Creating this data still requires an understanding of how weather, labour availability, and construction methodology can affect activities on site – however, digital progress tracking is a useful tool in reporting, updating and communicating programmes.
- **Quality control and inspections** – Quality assurance depends on knowing what good work looks like, understanding construction tolerances, and recognising when something isn't right on site. Mobile inspection apps and digital checklists allow remote check-ins which can bring off-site experts into the process – and can also be used to support documentation and monitoring.
- **Subcontractor coordination** – Managing subcontractor relationships requires the people skills, industry knowledge, and practical credibility that come from site experience. Digital communication platforms work alongside that expertise to facilitate information exchange and ensure all parties have access to accurate and up-to-date information.
- **Health and safety management** – Creating a genuine safety culture requires leadership, visible commitment, and the ability to influence behaviour on site. Digital safety management systems support this through records management and compliance tracking, while use of a 3D model and information exchange platforms provide systems for effective communication and planning to support good decision-making for safe forms of work.

DIGITAL SPECIALISTS IN CONSTRUCTION MANAGEMENT

Several digital specialist roles are emerging in construction management, but the size of the New Zealand industry means that companies may not have the scope to employ people in separate roles. Digital specialists may find that they need to be a 'jack of all trades', with the knowledge and skills to support some or all of these specialist areas, when needed.

BIM COORDINATION AND MANAGEMENT

Construction-focused BIM coordinators and BIM managers work within contractor and sub-contractor organisations to coordinate digital models, manage information flow, and ensure models support practical construction delivery.

Core responsibilities

- **Model coordination and clash detection** – Amalgamating models from architects, engineers and other specialists to identify where building elements conflict (e.g. pipes clashing with beams) before construction begins, then prioritising conflicts for resolution based on impact.
- **Construction information management** – Managing the flow of digital information between design teams, site teams and subcontractors, maintaining version control so everyone works from current information, and ensuring teams can access the models and data they need when they need them.
- **Site-based digital coordination** – Supporting site teams to view and extract information from models for construction planning, providing set-out dimensions and locations, enabling quality checks by comparing what's built against what was designed, and solving coordination problems using digital models.

DIGITAL CONSTRUCTION PLANNING

Digital construction planners use time-based simulation technologies (4D BIM) and advanced visualisation tools to develop construction methodologies, sequence complex construction activities, identify logistical constraints, and communicate construction approaches to clients, approval authorities, and project teams.

Core responsibilities

- **4D simulation development** – Linking 3D models to construction programmes to create time-based visualisations, testing construction sequence alternatives, and animating methodologies to show how buildings will be assembled.
- **Construction logistics optimisation** – Using simulation to identify timing and spatial conflicts, optimising crane positioning and site logistics, and planning temporary works before construction begins.
- **Programme visualisation and communication** – Creating visual progress animations for clients and stakeholders, developing accessible programme representations, and producing methodology presentations for competitive tenders.

REALITY CAPTURE AND SITE DOCUMENTATION

Reality capture specialists use laser scanning, photogrammetry, drones, and 360-degree imaging to document existing site conditions, track construction progress, verify installation quality, and create accurate as-built records.

Core responsibilities

- **Existing conditions and progress documentation** – Conducting laser scans of existing buildings for refurbishment projects, creating accurate as-built models from scan data, documenting construction progress at key milestones.
- **Quality verification and dimensional control** – Comparing as-built installations against design models using point cloud analysis, verifying dimensional accuracy of critical installations, identifying out-of-tolerance work.
- **As-built documentation creation** – Developing accurate as-built BIM models from reality capture data, documenting buried services before concealment, providing spatial documentation for facility management handover.

> **"Within the digital team, we have quite a few different roles. We've got design managers, we've got BIM managers, and then we have what we call survey technicians who are doing the work with the total station and the point cloud scanning. Then we have our Revit drafters who are doing all the temporary works for the projects and modelling tricky connections and things like that, which need to be figured out prior to going on site."**
>
> – Hanna Hawke, BIM Manager, LT McGuinness

DATA ANALYTICS AND PERFORMANCE MANAGEMENT

Data analyst is an emerging role within the construction industry, focusing on using construction data for performance tracking, predictive analytics, and evidence-based decision-making. This specialist role combines data science capabilities with construction knowledge to help organisations make informed, data-driven decisions.

Core responsibilities

- **Performance dashboard development** – Creating real-time dashboards for project performance monitoring, visualising key performance indicators (such as programme, cost, safety and quality), integrating data from multiple sources into unified views.
- **Programme and cost analytics** – Analysing historical performance data to improve estimating accuracy, identifying patterns in delays and cost overruns, developing predictive models for risk identification, benchmarking actual versus planned performance.

- **Safety and quality analytics** – Analysing incident data to identify risk patterns, tracking defect and non-conformance patterns, developing leading indicator dashboards, and supporting preventive interventions through data analysis.

INNOVATION AND TECHNOLOGY IMPLEMENTATION

Innovation specialists evaluate emerging construction technologies, pilot new digital tools, and lead organisational adoption of innovative approaches to project delivery. These diverse roles involve construction operations, technology, and organisational change management, and tend to sit alongside senior leadership responsibilities.

Core responsibilities

- **Technology evaluation** – Researching emerging construction technologies, evaluating vendor solutions against organisational requirements, designing and managing technology pilot projects, making recommendations on full-scale implementation.
- **Implementation and capability building** – Planning organisation-wide technology rollouts, developing training programmes and support materials, establishing digital standards and workflows, supporting teams through technology transitions.
- **Strategic digital planning and measurement** – Developing organisational digital strategies, aligning technology initiatives with business objectives, and representing the organisation in industry digital initiatives.

BUILDING DIGITAL CAPACITY

SELF-DIRECTED LEARNING

Most digital learning happens outside formal training programmes. Self-directed learners who explore tools and solve problems independently often develop digital capabilities more quickly. Options include:

- **Online tutorials** – free resources for most construction software, searchable for specific tasks.
- **Software vendor resources** – most major software providers offer structured learning paths.
- **Industry webinars** – regular online workshops from software vendors and industry organisations.
- **Trial versions** – most construction software offers free trials or educational licences.

ON-THE-JOB LEARNING

While the most effective learning happens through practical application on projects, actively seeking digital responsibilities within your current role can accelerate development. You could:

- Volunteer for digital pilot projects
- Shadow digital specialists
- Take on digital coordination tasks
- Become the digital champion for your team
- Document and improve processes

Aim to demonstrate both technical capability and practical judgement – showing that you not only understand how to use digital tools, but when and why they add value.

FORMAL EDUCATION AND TRAINING

Tertiary education organisations, including vocational providers, wānanga, and universities increasingly include digital construction skills in their programmes.

Institutions offer courses, diploma and degree options that cover digital documentation, BIM model development, digital project delivery concepts, data management and emerging construction technologies.

PROFESSIONAL DEVELOPMENT

Ongoing professional development keeps digital capabilities current and connects you to wider digital construction communities. Consider:

- **Industry conferences** – Building Institute Aotearoa's DigiComm conference with digital streams, vendor-run conferences, Australasian digital construction events.
- **Workshops** – hands-on technical training sessions, software-specific courses, methodology workshops for planning or coordination.
- **User groups** – BIMinNZ and other user groups in major centres, software user communities, informal knowledge sharing.

GET THE GUIDE

Use the QR code to download the full Built Environment Digital Career Streams guide and explore the many rewarding pathways in the construction sector.

Or head to the website: **BECareerStreams.nz**

CAREER STORIES

Hanna Hawke – BIM Manager, LT McGuinness

After ten years as a retail manager, Hanna Hawke made a dramatic career change when COVID-19 presented an unexpected opportunity. "I didn't really know what I wanted to do, apart from knowing I was interested in architecture and interior design," she explains. The government's Targeted Trade and Apprenticeships Fund enabled her to study architectural technology at WelTec for free, giving her the confidence to make a career change, even while supporting her young family.

Her pathway into construction was also fortuitous when a tutor was contacted by LT McGuinness to see if they had any graduates interested in transitioning to construction. At the interview for a BIM technician role, the project manager asked: "Can you talk to people? Can you be in meetings? Can you learn digital skills? I didn't really know what a BIM technical was, but I said yes to everything," she reflects.

Starting on the major Heke Rua Archives project in Wellington, Hanna found herself on a steep learning curve. "It was a learning journey for everyone, not just me, but they made that pretty clear from the start so I didn't feel too overwhelmed." Her retail background proved unexpectedly invaluable, thanks to her well-developed people skills.

Hanna's curiosity and drive to learn more was essential to her career development. "Anytime I didn't know something, I would just Google it, go onto YouTube, watch all the videos, or just ask questions. I made quite an effort to network … being curious was the main driver for getting knowledge." She is also grateful for the mentoring she received from other digital specialists on the project. "I feel very lucky – I don't know that everyone has the same experience."

Only three years later, Hanna has progressed quickly to a BIM Manager role, leading digital initiatives on projects including the Te Matapihi Central Library project in Wellington, and in the Early Contractor Engagement (ECE) phase of the Scott Base redevelopment in Antarctica. She is also helping to develop a digital cadet pathway at LT McGuinness, so she can pass on her experience to others.

Hanna's experience shows that curiosity, communication skills, and willingness to learn are the characteristics required to thrive in a digital construction role. Her advice to anyone choosing a digital pathway? "Ask lots of questions. Always push yourself to learn something new. Make friends and network, because you never know who's going to offer you the solution to your problems."