

Construction Lean Improvement Program (CLIP) – Summary of Case Studies

Case Study	Focus of Improvement	Improvements Made
Eatonfield Homes – new homes	From planning agreement to commencement of on-site work. Collaborative planning, Process Mapping, Visual Management. Used process mapping to identify their current process in detail, then used elements of problem solving and standardised work to build a future state process map. They originally set a target of 26 weeks to achieve their process (which was taking considerable longer) and mapped out exactly what had to be done each week to meet that target - adding in new or revised meetings, documentation or communication steps as they went. They then developed a visual management board to monitor how the process for each pre-commencement project was moving along.	Elapsed time reduced from 20 to 14 weeks. Recovered 9 weeks “lost” due to discovery of Saxon burial ground on site. . This led to the improvements stated in the case study at pre-commencement stage and also had the knock on effect of improving onsite performance as the communication (information) was better and therefore fewer problems occurred.
Refurbishment of Council Homes	Reduced contractor revisits, reduced snags by direct observation and use of task completion sheets.	Time taken reduced from 25 to 20 days.
Whitecross High School and Sports College	Use of room data sheets and improved sequencing of work.	Design focus to save 25% energy consumption.
Construction Time for Student Accommodation	Fit out – all trades collaborating, use of work sheets	Time reduced by 13%, including 24% reduction in time to install ceiling bars.
Seymour Council – updating pipes under road	Process modelling – improved availability of plant, labour and materials. Also learned from similar previous projects. 5C – tidying up at end of shift – easier retrieval of materials, and easier gauging of stock levels for order.	70% wasted work due to waiting for bedding and stones and 30% from waiting for pipes.

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Six Primary Settlement Tanks	Design to meet preferred construction methods; commissioning to lead the design. Design, commissioning, end user, work team collaboration – Lean process masterclass – sequence mapping, collaborative planning, risk management - understanding of each-others' constraints and needs	4 weeks saved plus 1800 cubic metres of concrete
National Contractor drives corporate strategy	Used CLIP to develop and communicate corporate strategy and build strategic business focus of suppliers – strategy network	Collaboration and communication with suppliers has improved. Supplier benefits: developed KPIs, prioritising decision making, customer selection as partners hence growth, strategic partnerships with customers and suppliers
M & E Contractor(Street Light Column replacement)	Eliminated non-value added work and waste in the process. Set up multi-task teams with right equipment to reduce number visits required	Time to replace street light column now down to 9 hours (reduced from 24 hours). Site visits pre replacement reduced from up to 10 to just 2 visits.
Regional Building Contractor (Leisure Centre)	Measured and improved processes. Did 7 wastes analysis, used production board, collaboratively planned 5 to 6 weeks ahead – led to easy corrective action when problems arise. Contractors always up to date and organise their own resources accordingly. Safety risk assessment with trades people.	On time despite changes to cladding specifications
Specialist window / door manufacturer	1 day pre-diagnostic to identify opportunities. Watched a video of the manufacturing process and quickly identified opportunities. Used simulation exercises to get buy in to need to change from workers. Changed processes and layout of factory. CLIP engineer revisited regularly to ensure improvements are locked in.	33% less time to get a new window / door through the factory

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<p>National Contractor defines corporate strategy and improved supply chain</p>	<p>Jointly developed primary contractor and supplier strategic plans. Used Strategy Network. Senior management teams shared visions and developed one-page strategic plans. Included effective leadership development, clear visioning, analysis of organisational structure and process flows were improved and KPIs developed</p>	<p>Improved collaboration and communications with suppliers and hence improved productivity and quality</p>
<p>Main Contractor improved efficiency on design and build projects (approx \$2million - \$4million)</p>	<p>Improved process flow and quality of contractor work by improving communications through Visual Management Boards (site map, planned work progress, photos and safety reports). Pareto and Pie Charts used to highlight areas for improvement. Improvements made were displayed on the visual management board. The Visual Management Boards were used at the weekly site meetings with all contractors to plan the work for the next 2 weeks ahead. Used 5C to find space for storage on site and to improve deliveries. Good data enabled quick identification of root causes of problems and hence quick correction.</p>	<p>Improved margins without increasing turnover. Non-productive work time reduced from 19.5% to 2.5%. Further improvements would be possible by applying these techniques to the design and planning phase as well as to the build phase.</p>
<p>Building Contractor improves efficiency through improved management processes for \$2.5million day care nursery project</p>	<p>Improved processes for the entire project – do the right things right way. Reduced documentation / administration. Specific people allocated to resolving snags and solutions communicated to other teams. Visual Management Boards recorded what will happen on site over the next 2 weeks. Risks identified and planned for.</p>	<p>Less administration meant people could spend more time doing value added work. Reduced defects by resolving with a defects team before hand over to client.</p>

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Regional Building Contractor – approach to a project - University student accommodation refurbishment.	Saved costs and reduced overtime and better client service. One day diagnostic with senior management team. Up front planning of activity sequence with contractors. Documented how and when each activity was undertaken. 15 Masterclass sessions with sub contractors. Visual display of plan 4 weeks ahead. Video of one floor to identify large improvements.	Time taken to refurbish reduced by 12%. No overtime. Snags reduced by 69%. Pilot learnings spread to whole office.
Galvanising company improves efficiency and profitability	Root causes of defects (Fishbone) and to reduce weight on jig analysed. Used 7 wastes analysis of film of work. Introduced process route cards to avoid bottlenecks.	Defects reduced by 63%. Weight of galvanising material on each dip increased 7%. Dips per hour up by 3%. Change of culture – now continuously looking for opportunities to improve. Has made life easier for workers.
Mechanical and Electrical Contractor improves productivity across supply chain	Worked to CLIP three projects (school, street work, hospital). Adapted their own lean strategy. Lean champion for each of 13 business units and developed own lean handbook (including tools and techniques). Applied lean at the start of each project to look for savings and plan better. Improved communications between architect, designed and themselves in replanning and refined drawings and data sheets so they were easily understood on site. Videos of actual work used – found fittings marked and measured wrong wasting 42% of work. Trolley designed to transport plumbing units for repetitive work. Best practices methods developed for next jobs.	Productivity improved by 15% on base of 7 million labour hours per annum. Time saved by 81% on some parts of the job. Time to fit plumbing units reduced by 48%. Strategic alliances formed with customers by helping them get started on lean.

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<p>Regional Building Contractor reduces waste and improves productivity at construction of community facility.</p>	<p>Built on their Achieving Construction Excellence by using CLIP tools and methods to apply best practice initiatives on site. Used on a largish site. Used pre-diagnostic to identify areas where biggest improvements could be made. CLIP workshops were held across the site, including sub-contractors. Visual Management Board used to improve communications for next weeks plan of work. Implemented best practice routine processes eg marking and chasing conduits based on ideas from the workers.</p>	<p>Finish 4 weeks early despite 8 week weather delay. Time saving by M & E fitters reduced 25%. Contracts Manager was able to focus on important decisions rather than supervising rework. Learned best to run CLIP workshop before commencing on site. Best to start using CLIP on a site where there are trades and services you use on other sites. Important to involve everyone as early as possible.</p>
<p>Two Companies Create a Virtual Team to deliver off-site manufactured solutions – a new method and cladding through an existing distributorship</p>	<p>Series of CLIP workshops – values and culture, building simulation to identify waste in the existing methods, and convince sales people of the value of the new off-site fabrication.</p> <p>Another workshop engaged an architect, a client and a contractor to look upstream in the supply chain for solutions.</p>	<p>Sales enquiries increased and income generation started for new system. Team members become evangelists for lean construction.</p>