

Case Study Title: The use of process mapping and 5S to optimise tender success and profitability

Company Overview | HAWTHORN HEIGHTS | hawthornheights.co.uk

Established in 1999, Hawthorn Heights started as a landscaping contractor working mainly on private dwellings and some small public works. The company has since expanded into completing large civil landscaping projects and the design and build of play parks,

sports pitches and outdoor exercise facilities within the commercial and public sectors. It has become a major player within the Irish and Scottish markets with the headquarters based in Eglinton, Co. Derry.

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Overview & Background to the Lean Initiative

In 2017, Hawthorn Heights embarked on a cross border Intertrade Ireland business development project (FUSION Programme) working with the Institute of Technology Sligo (now Atlantic Technological University, ATU). The aim of the project was to carry out detailed analysis of the design, supply, and installation processes within the company. The overall process would then be optimised using lean and project management best practices to improve efficiency and create a new, bespoke 3D design function. (Up to that point, it was generally using 2D for design and outsourcing 3D design which was causing delays). It was hoped that in doing so, it would meet the demands of the changing market and fulfil individual client requirements. In addition, it was envisaged that a lean thinking mind-set would be embedded in the company, through the use of tools and techniques that would assist the project. The FUSION programme offered the company the input of academic expertise and supported recruitment of a project manager who would oversee the implementation. Running for eighteen months, the project would be monitored through monthly steering group meetings and quarterly progress management meetings (involving all stakeholders). On completion of the project, a full report was

generated to assess the success of the project. Intertrade Ireland recognised the impact from this project and presented the team with an exemplar award.



Figure 2: Presentation of Intertrade Ireland Exemplar Award, pictured left to right: Trevor McSharry, ATU; Margaret Hearty, Intertrade Ireland; Ciaran Farren, Pauline Harrigan, Stephen McGuinness, Hawthorn Heights.

Lean Initiative Undertaken – Lean Thinking, Tools, Techniques

Process Mapping Analysis:

With the project focusing on analysing processes and procedures, it was important to identify an effective way to assess how the company was performing in these areas. Input from the academic advisor from IT Sligo (now ATU), Trevor McSharry suggested the introduction of lean tools and techniques to conduct the assessment. In order to ensure the project covered all aspects of the business, a process mapping exercise was conducted. The main benefit of this exercise was the visual flow map produced as it clearly showed how the business operated and was very useful in identifying areas where processes didn't flow smoothly or areas that were under a lot of demand. It was a very useful tool for streamlining processes and/or resources as required to ensure everything flowed in the most efficient way possible. It also highlighted bottlenecks and areas of the company that were under resourced, from a human resource or equipment perspective. The exercise led to the production of

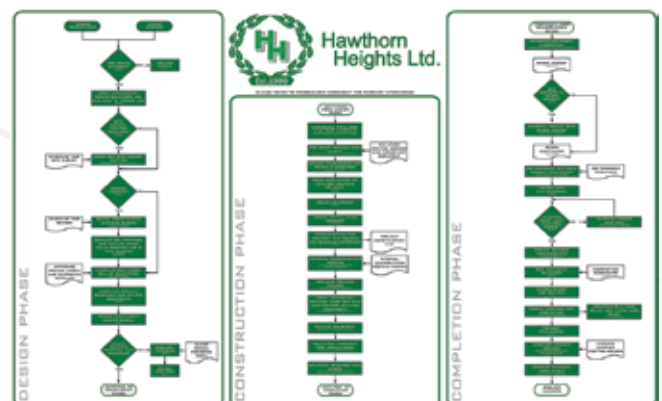


Figure 1: Process Flow Chart for Design, Construction and Completion Phases.

a simple, but effective, design and construction process flow chart that is reviewed on a monthly basis. Projects are now broken into different process phases, which can be reviewed for performance and clearly identify the step in which an issue may have arose. Incorporated also are key project management best practices such as project kick off meetings, check list templates, key performance indicator (KPI) monitoring, formalised client feedback and lessons learned meetings for continuous improvement.

Supply Chain Analysis and Partnerships:

An exercise mapping out the wider company supply chain was also conducted. This allowed Hawthorn Heights to identify areas where the company was too reliant on one provider or were using suppliers at the geographical disadvantage. It offered the company an opportunity to form supplier partnerships in areas that were more financially competitive and offer a wider range of products to the market. It also provided an opportunity to discuss exclusive distribution rights with suppliers who would provide the company with a competitive advantage in the market.

Lean Construction Ireland (LCi) Lean Waste Audit Tool:

Use of the LCi 'Lean Waste Audit Tool' allowed Hawthorn Heights to audit the company processes and identify the biggest issues with regards to the Lean 8 wastes. Accessing areas such as inventory, defects, overproduction, unnecessary motion, over processing,

Waste Type (Site or Office)	Where	Score 1 to 7	Cause & Effect	Comments/ Actions Required
Defects	Site	7	Re-work due to material supplied & installed being faulty from manufacture	Feedback loops to suppliers, possibility of passing on associated cost with re-visit to supplier to be considered? Have common spare parts etc. which may be missing regularly?
Unnecessary Motion	Office	5	"Using an office" looking for missing information, drawings, permits, etc.	Gradually transfer administration systems to software and cloud based data management to reduce time consumed in data searching. Will be important as HR requests internationally. Use of 'Risk Pit' to be piloted.
Unnecessary Motion	Office	4	Lack of technology leading to unnecessary motion looking for information that could be shared via better technology	See above
Other	Site	4	No defined measurement of weekly progress against the program and budget leading to poor forecasting and issues too late to rectify.	Systems to be put in place to measure equipment/materials/labour cost for each job so that budget is actual can be monitored. Project schedule to be managed live. Weekly all site should be involvement in a project dashboard with key performance indicators of schedule/scope/budget on a regular basis to manage overall operations and resources.
Other	Office	4	Fragmented or complicated systems leading to waste due to multiple entering of data and lack of understanding of each system and where information is held	Currently working on paper copies, soft copies, also logs in not integrated into company systems. Consider cloud systems to manage operations which work together. Suggest Workflow and Sage training/implementation.
Inventory	Site	4	Production manager not allowing material	Supply chain of equipment to be reviewed closely. Consider separate of tasks to prevent another on site waiting for materials/equipment. Each site to have identified foreman accountable for managing staff, materials and project schedule/budget.
Inventory	Site	3	No set work lists ahead in practice identifying material requirements	Procurement activities will increase as turnover increases. This could become a centralised dedicated resource to coordinate procurement, get equipment value from suppliers via contracts of sale etc.

Figure 2: Sample of lean audit waste analysis

waiting/delay and transport handling provide a complete review of the company. The tool asks over 120 questions that can then be ranked to allow the company identify the top 20% issues via a Pareto chart. This offered very clear results as to where the company was and was not performing and broke the areas of issue into small manageable 'chunks' that they could then address accordingly. Below shows a sample of some of the initial issues identified as well as their cause/effect and actions required.

Company Expansion and 5S:

Hawthorn Heights moved to new premises halfway through the project. This offered an opportunity to introduce lean systems such as the 5S (sort, set in order, shine, standardise and sustain) at an early stage and correct some of the issues identified in the lean audit. Using an ethos of having resources in the right place at the right time, the company created a plan for all areas of the business, including the office layout, yard layout and van shelving layouts. The office layout consisted of positioning the correct people in the best location for team working and having access to their appropriate resources. Resources also were given a set location to ensure that any depleting stock would be easily identified. This approach was also implemented in the planning of the new yard, with everything having a designated location. Again this offered a clear indication of stock levels and helped reduce the risk of project delays due to a shortage of material. As the company could see the benefits of this lean planning at an early stage, they made the decision to go a step further and invest in fitting out the company vans with shelving with specific locations for tools, fittings and fixings. This made it very clear for the workforce to identify if something was missing or left behind and meant every van was accurately equipped to complete the required project each day.

The company also introduced a project log tool which helped the company clearly identify their annual capacity for project submissions, success rate and returning customers. This offered an opportunity for Hawthorn Heights to reduce their overall total submissions and focus on submitting for clients that they were historically successful with. This not only reduced the workload on staff but increased the quality of the submission, as staff were not spread across multiple projects. It also offers an opportunity to identify who is the preferred supplier for clients who the company has had little success in tendering for.

Lean Initiative Improvements & Impact

As a result of this project, Hawthorn Heights have gained vast improvements in both efficiency and client satisfaction. Conducting a full assessment of the company processes and procedures through the user-friendly lean audit tool, allowed the company to 'de-bottleneck' different areas of the business and increase efficiency, throughput capacity, tender success rate and customer satisfaction. Through the introduction of an in-house 3D design service, the company increased efficiency and removed the time wasted in outsourcing the process. This provided full control of the process, quicker turnaround time and enabled better quality designs which are more customer focused.

The lean assessment also identified an opportunity to offer a more bespoke range of equipment through new distribution agreements and the new design capabilities. This in turn led to increased tender success due to higher quality proposals and a more efficient tender

process. As a result of the increased productivity and success rate, new partnerships were established with leading play equipment manufacturers in the UK and Germany. This provided an ability to be more competitive within the market and develop more services to a wide scope of clients. The assessment identified the reliance of the company on a small number of providers for various materials. This made the company less competitive with some materials and in some cases caused delay to projects due to availability of stock at the existing suppliers. Expanding the company's network of suppliers for materials has provided a more competitive supply chain that, with the exceptions of the recent issues surrounding BREXIT and the pandemic, has been able to cope with the demand for materials. Integration of lean practices into the new company headquarters from the outset has helped to eliminate waste previously experienced at the old premises. The move took place at the halfway point of the innovation project, meaning issues identified in the lean

audit tool could be addressed in the setup of the new premises. This included issues relating to the location of materials and goods that had previously been spread across a number of different yards with little to no organisation. In setting up the new yard, a detailed yard

plan was created to ensure everything had its place. This reduced the time wasted looking for items and partnered with a stock log allowed employees to clearly identify items and flag any depleting stock levels.

Summary and Lessons Learned

The project was very beneficial for Hawthorn Heights in increasing its tender success rate, and the company efficiency and profitability. This was mainly because of improving the existing processes and procedures. It provided a base line for the project to work from and offered a clear overview of the workings of the business on a day-to-day basis. Process assessment and development could then take place. It was clear from analysis that in the past, Hawthorn Heights had focused on submitting for a high number of projects with the expectation that this would result in more secured work. In reality, it did the opposite, as the workforce were stretched across multiple projects with the quality of work suffering due to time constraints.

Moving to a process that reviews the likelihood of a successful submission, using previously submitted tenders records in the project log, Hawthorn Heights could be more selective in choosing the work they were submitting for. This in turn increased the quality of the work and increased both success rate and turnover. The main lesson learned from the project was to focus on quality over quantity. While initially it may cause a decrease in workload, the quality of work produced, profitability and moral of staff will improve leaving any company in a better position to grow, while doing the work they are best equipped to complete.