

Case Study Title: The Last Planner® System: GEM Construction

Company Overview | GEM CONSTRUCTION | gemgroup.ie

Since 1978, GEM Construction has been more than just a main contractor; we've built a reputation as a trusted industry partner. With two offices in Dublin and our original office in Longford, our team of over 80 passionate professionals embodies unwavering commitment, constant growth, and teamwork. Our in-house development and construction expertise, integrated approach, and

strong stakeholder relationships have propelled our annual turnover from €50m to nearly €100m in the last decade. We embrace the future by integrating cutting-edge digital technologies like Procore construction management software into our processes and prioritise safety with ISO 45001 certification. GEM Construction is dedicated to excellence, client satisfaction, and a bright future in construction.

Author



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Overview & Background to the Lean Initiative

GEM Construction has been implementing lean thinking and techniques over many years, from off-site fabrication such as timber frame kits, pre-cast concrete and prefabricated balconies and using cloud-based management systems, but the benefits weren't always

realised through potential programme savings using the traditional programming and planning approach.

This case study looks at our journey so far, the transition from traditional programming methodologies, to implementing The Last Planner® System (LPS). From having no trained people in lean methodologies to 75% trained in White Belt and 3 champions trained as Green Belt, improvements in all aspects of the business have been realised.

The Last Planner® System is a system for project production that promotes the creation of a predictable workflow among various parties so that it achieves reliable results. It allows potential roadblocks to be found early and addressed before the slow down the flow.

There are six key processes in the LPS as outlined in Figure 1.

In addition to implementing the LPS, GEM has undertaken several mini projects based on the Green Belt training provided by our external training partner; Crystal Lean Solutions (CLS), which allowed us to improve other aspects of the business as well as programming and planning.

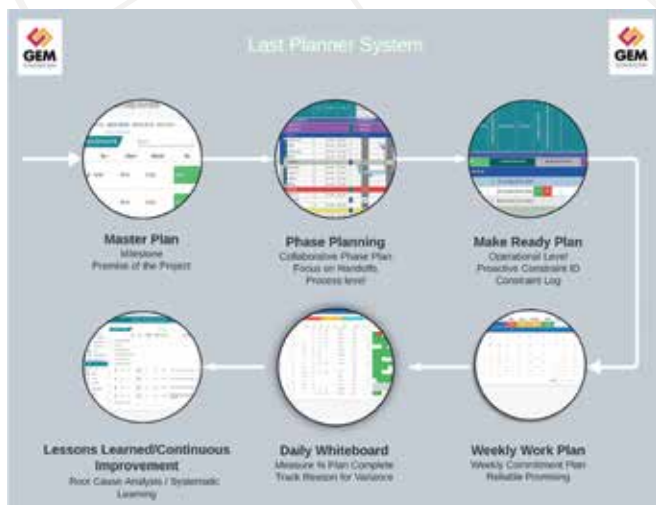


Figure 1: The Last Planner System at GEM

Lean Initiative Undertaken – Lean Thinking, Tools, Techniques

LPS was first introduced to GEM in October 2021 having experienced implementing pull planning on large scale projects in the Middle East, which recognised the importance of collaboration with the supply chain and design teams, when delivering projects of multiple units or repetitive design. With agreement from senior management, it was trialled on our Malahide Road development, a 331-unit residential building. Instantly the benefits were found through improved collaboration and communication, in tandem with modern methods of construction such as pod bathrooms and slide-

on balconies, which improved the sequencing and planning. Due to the success of the trial period, the GEM Board approved the decision to engage with CLS to train our teams and better understand the process of LPS themselves, before establishing a more strategic change management approach to implementing across all sites.

LPS Change Management Approach

Objective:

- Establish a structured method of implementing Lean and

LPS Deployment

Approach:

- Select Champions within GEM to lead the initiative.
- Develop a scope and training matrix.
- Agree level of deployment.
- Choose two projects as pilots before widespread deployment.
- Explore Build to Innovate with Enterprise Ireland.
- LPS as standard.

One Director and the Associate Contracts Director was selected as Lean sponsors and champions to deploy the initiative, and progress with an application to Enterprise Ireland. One Contracts Manager and one Project Manager were also selected as leaders of the initiative with responsibility for mentoring and guiding the implementation on the two pilot projects. The leaders were trained immediately to Green Belt standard, and a matrix for all members of GEM was developed, identifying the role in the business, and interaction with LPS. It was agreed that not only are the production teams an important part of the process but also the quantity surveyors and health & safety teams, their input is invaluable to ensure not only are production targets met but also met by carrying out the works safely, and ensuring the relevant statutory documentation is in place in advance of the task being carried out.

We agreed two projects would be trialed for a period of 8 weeks: a housing development, and an apartment complex. Using CLS as external mentors, both projects quickly established a pull planner, six weeks look ahead plan, constraints board, and weekly work plan.

Phase Planning

We take the Master Plan and identify the key milestones on the Pull Planner Board. By working back from the milestones, as a team (including subcontractors and other stakeholders), we plan the activities out to the next milestone, and agree, as a group, the sequence, and identify if there are any constraints preventing that activity from being completed.



Figure 2: Phase Planning

Figure 3: Constraints Schedule

Make Ready Planning

Each week, the project team (including subcontractors) meet to look at the next 6 weeks and try to identify what constraints may exist that will prevent the work from being executed as per the Phase Plan. With early identification, we can remove any constraints in time and map out the processes required in the phase plan to inform individual operations.

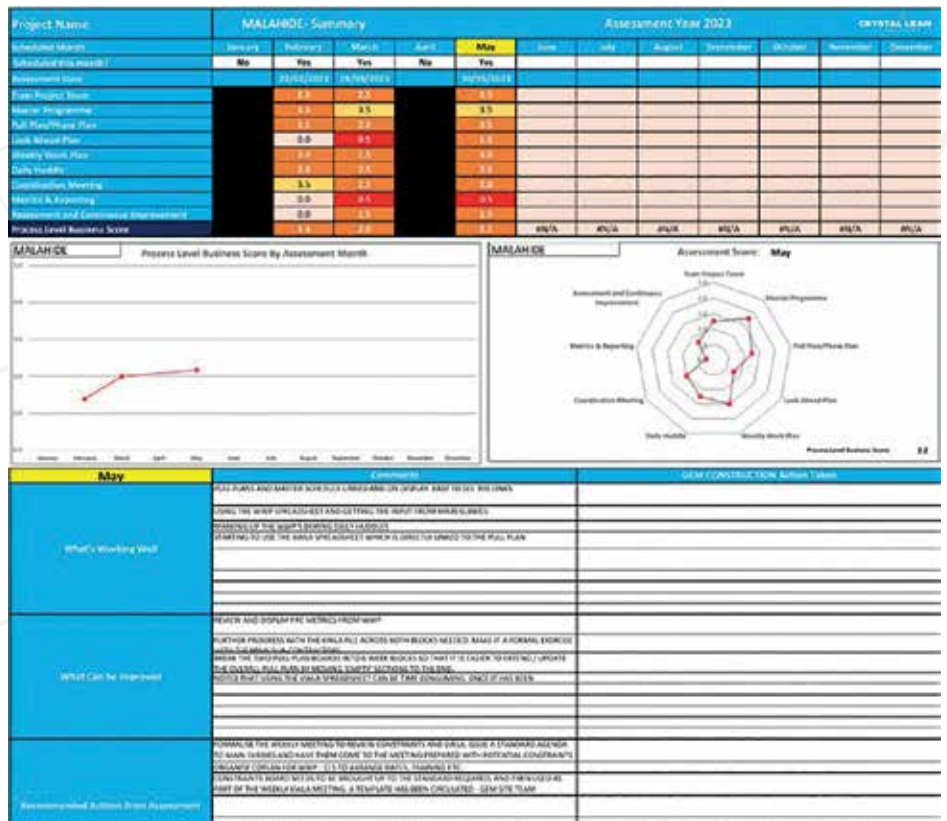


Figure 4: Measurement of System Maturity

As we get closer to the actual week that the work is planned, we are adding more and more detail until the individual work tasks are fully defined and suitable for addition to the weekly work plan. From the Six Week plan, a Constraints Schedule is updated, monitored, and reported against, weekly.

Measurement of System Maturity

At regular intervals Crystal Lean Solutions provide feedback on the

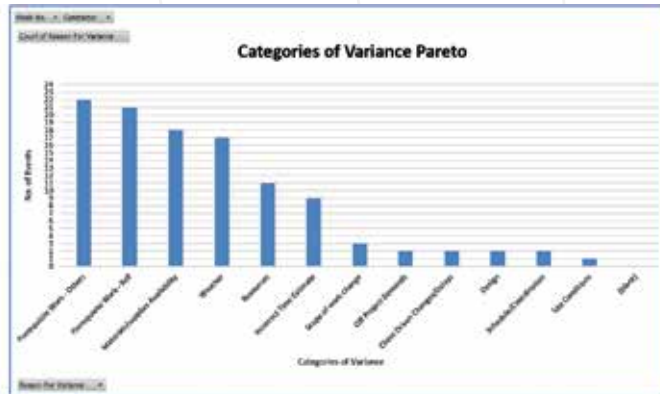


Figure 7: Percent Plan Complete (PPC) and Pareto Chart

Summary and Lessons Learned

Embarking on this journey has been rapid, but structured. The advice and mentorship from Crystal Lean Solutions has been invaluable. The support from the GEM Board has been unwavering, and we continue to reap the benefits from implementing lean techniques. Most recently, our Green Belt trained team are using the DMAIC technique to review and improve our already robust standard operating procedures related to quality, simplifying the process, making them user friendly and understanding the importance of the outcome, not just the process of doing.

We have also been successful in our application to Build to Innovate

with Enterprise Ireland, supporting us on our journey and further developing our teams through leadership, coaching and mentoring, as well as enhancing the established use of LPS.

And finally, we have been able to demonstrate our capabilities and commitment to Lean techniques by being selected as the main contracting partner with Cluid Housing on the Innovation Partnership.

The journey continues.