

THE DEVELOPMENT AND USE OF LAST PLANNER® SYSTEM (LPS) GUIDANCE

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Early Research



- Karratha Gas Plant (KGP)- Integrated LNG plant 200 Ha
- 5 LNG Trains
- 2 Domestic LNG Trains
- 6 Condensate Stabilisation Towers
- 3 LPG Fractionation Units
- Jetty and shipping facilities

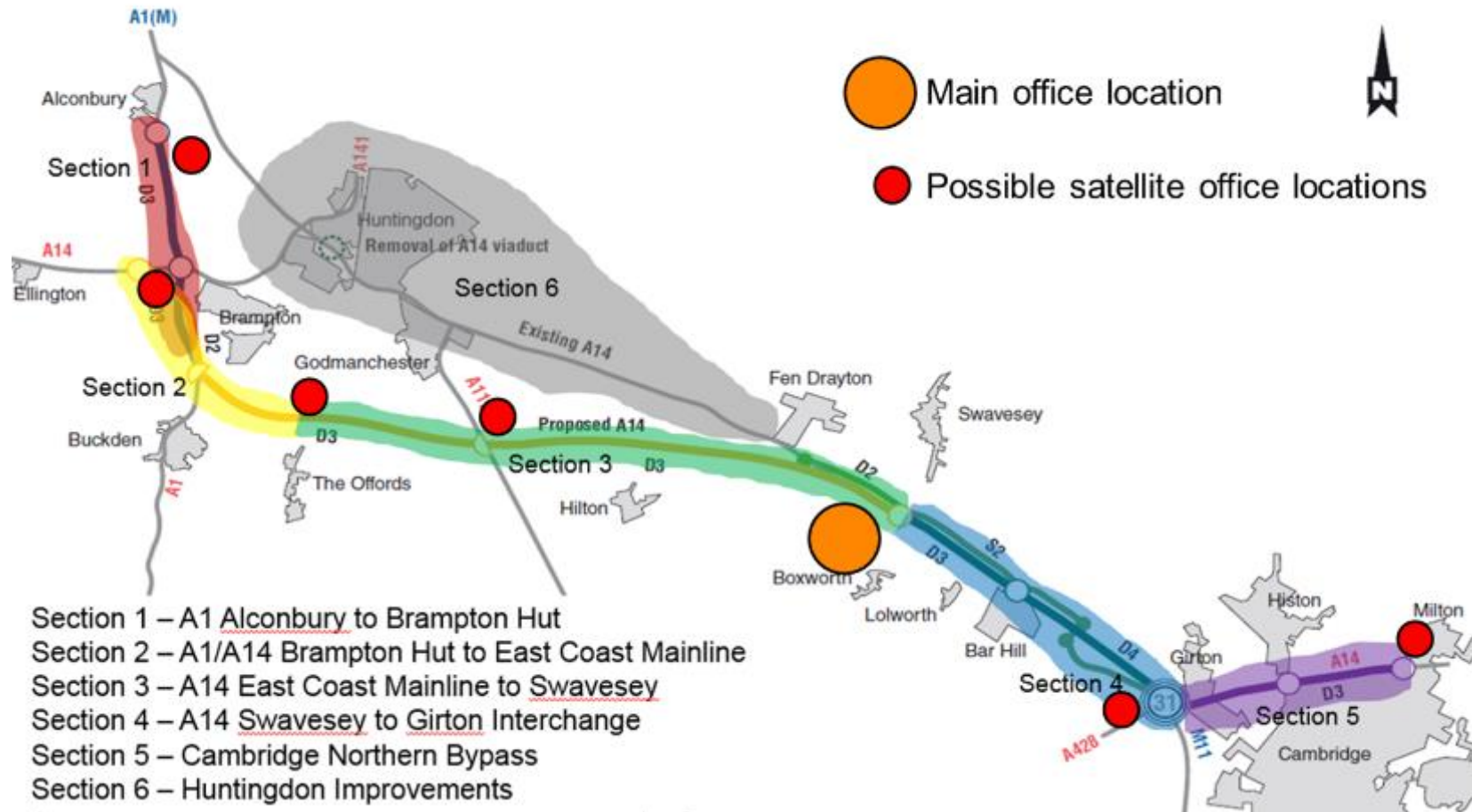
Research and Outcome Implementation

- Aim: development and use of last planner system (LPS) implementation guidance. Understand the outcomes from the use of critical path method (CPM) project planning
- Research Method: Action Research - the research method used, integrates “learning by doing” where learning is aided by reflection. Learning is used to bring about change, by collaborating with those who do the work and who will eventually embed worthwhile change.
- Outcomes: Guidance principles developed. Issues revealed with traditional planning, particularly the critical path method.

Guidance Developed

1. Obtain real buy in and support from executive management including clients
2. Identify and engage formal leaders especially senior management
3. Identify and engage informal leaders
4. Identify and engage change agents
5. Use early development of a high-level strategy and a robust logical milestone map
6. Use of master schedule milestones to inform the LPS pull planning process
7. Use a disciplined approach
8. Use of boundary objects
9. Use LPS meetings to assist continuous improvement and innovative practice
10. Use pre-existing lean or lean type knowledge and existing initiatives
11. Standardise good practice and continuous improvement.

A14 Project Cambridgeshire UK – Using the Guidance

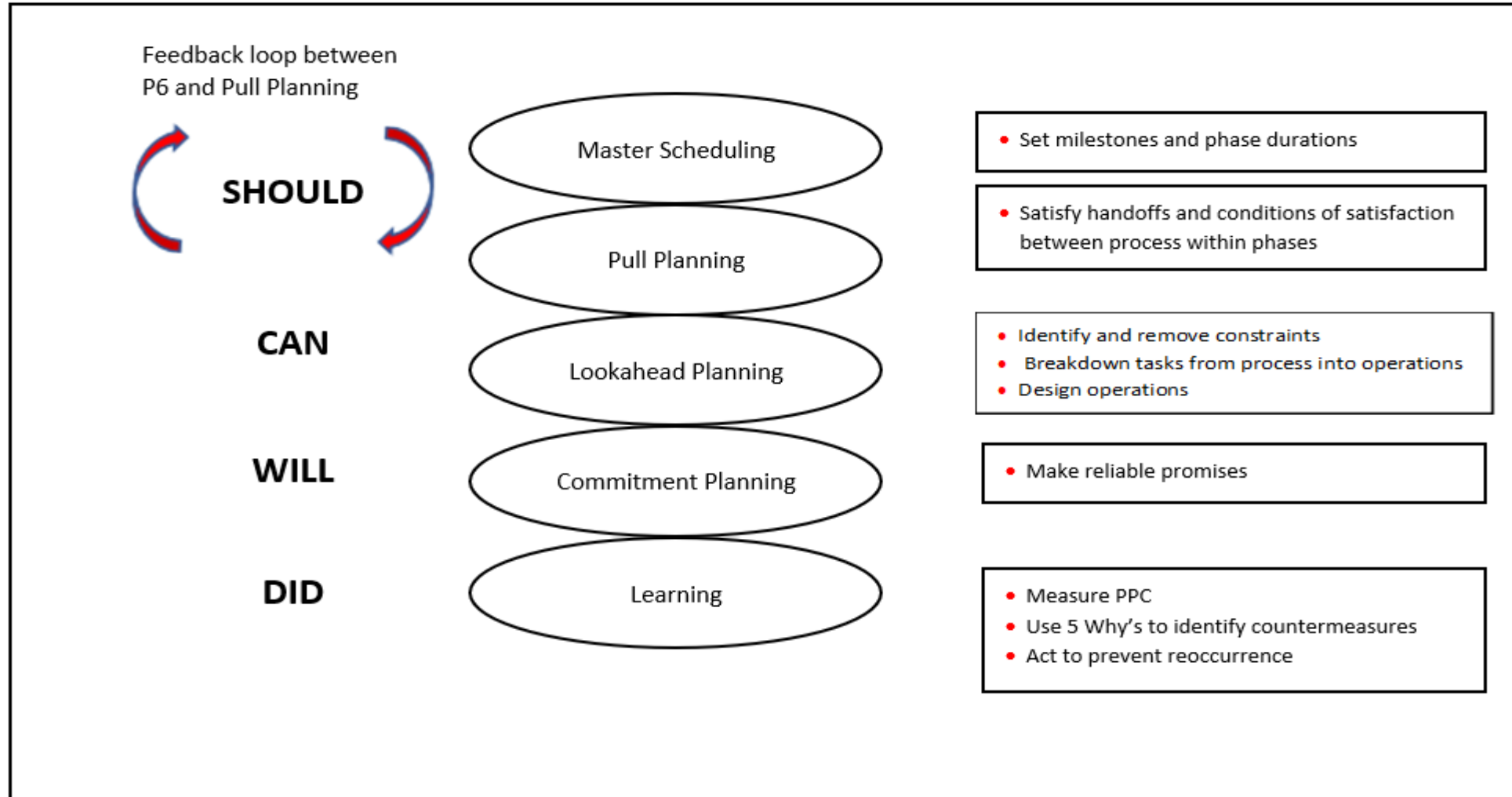


Delivering the A14

- 34 kilometres consisting of on-line and off-line highway construction
- £1.5 billion, contract period Oct 2016- Dec 2020
- High amount of constraints including
 - Service diversions, including gas, water, electric, fibre optics, fuel supply pipework
 - Archology
 - Existing road networks
- Earthworks (off-line)
 - 3.4 million m³ of topsoil/subsoil to strip and replace
 - 1.9 million m³ cut to fill plus 4.7million m³ of fill from borrow pits
- Landmark structures (on-line)
 - Steel construction
 - 80m high piers
 - 180m clear span



The LPS Process



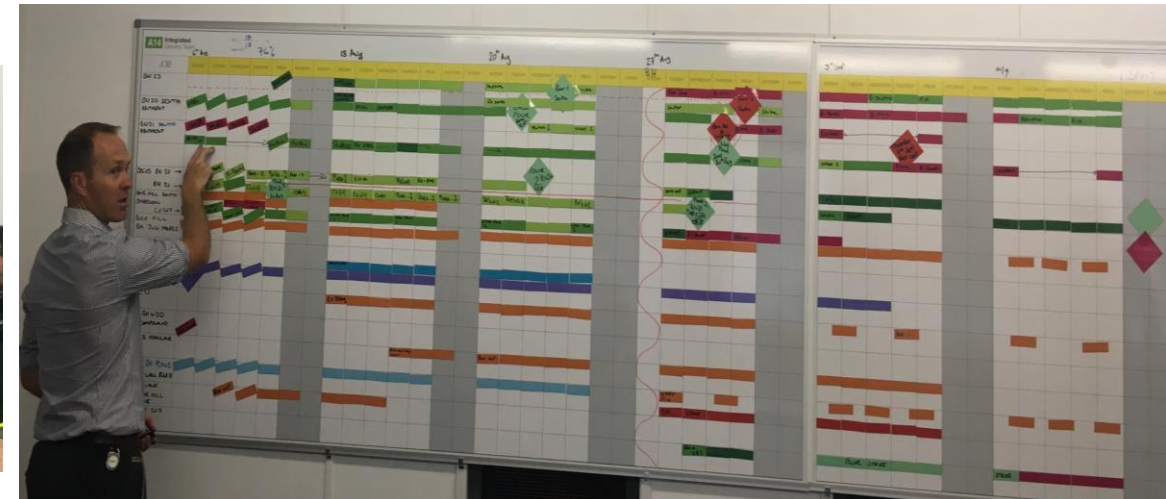
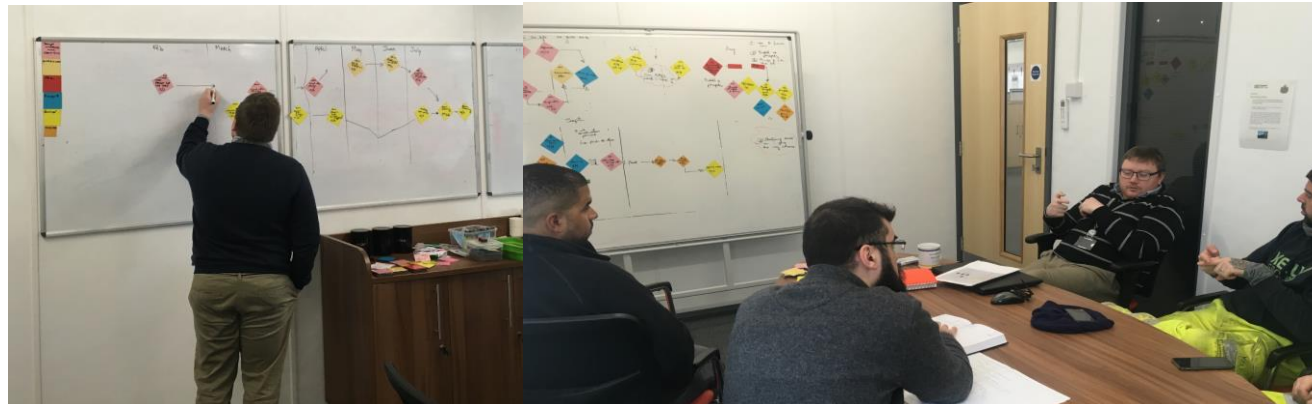
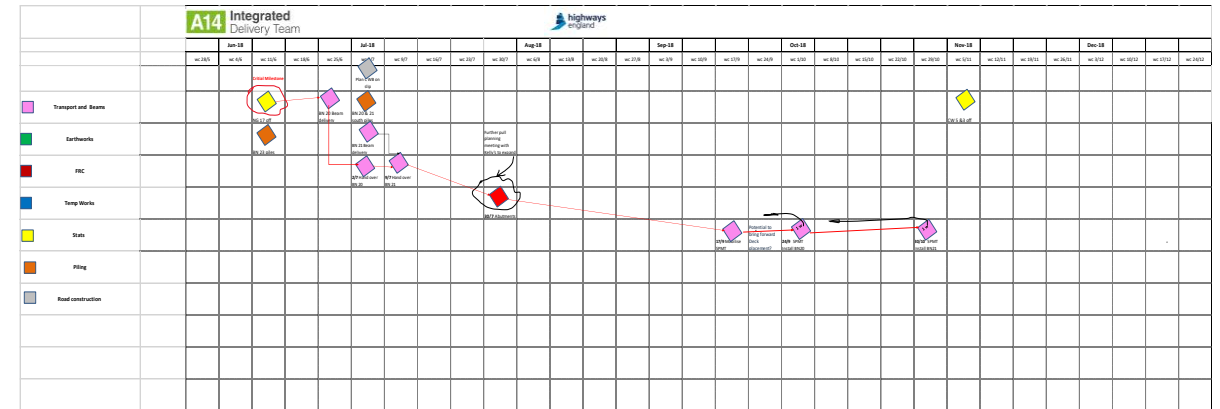
Too busy cutting wood to sharpen the axe?



SPMT lift- Previous Lessons Learned from earlier A14 Lean Production use

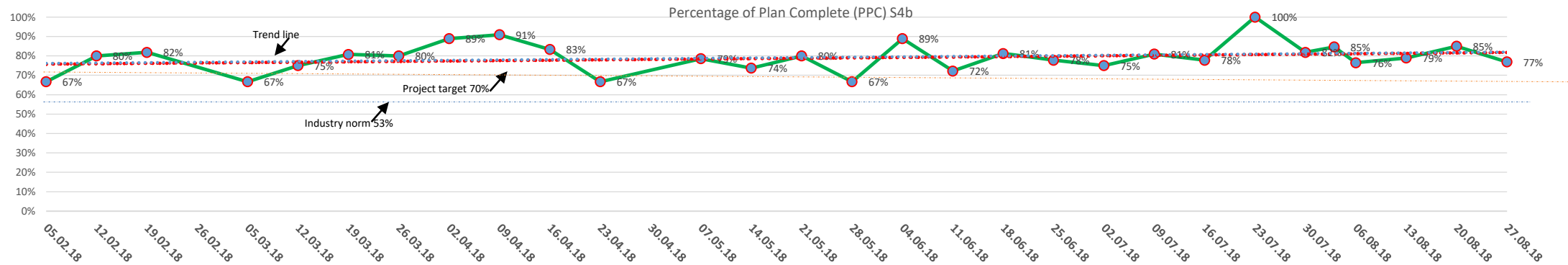
- A lack of pre-planning and interface with supply chain and sub- contractors.
- A limited use of BIM as a visualisation tool.
- Failure to adhere to pre-planning undertaken – particularly sequencing
- Breakdown in logistics control- deliveries out of synchronisation
- Traditional construction mind-set predominant
- Use of batch and queue rather than just in time (JIT) logistics
- High amounts of defects with dependence on expediting at the end of process

Implementing the LPS



Outcomes

PPC $\left(\frac{\text{Activities completed}}{\text{Activities planned}} \right)$ Trend



Innovative practice deriving from LPS meetings



This implementation is one of the more robust, with early consistently high PPC metrics achieved, correlating to enhanced schedule performance and continuous improvement. An example; the SPMT lift, a critical path activity achieved schedule compression of 5 weeks, equating to a 25% performance improvement, with a world first of a dual SPMT deck lift over one weekend closure (<https://binged.it/2TBDTQM>).

Discussion