SKANSKA

Vehicle Storage and Support Programme

Design control case study

Executive summary

Consolidating a site of 56 outdated military buildings into 14 modern spaces in a secure environment saw 4,000 activities scheduled on one of Skanska's biggest defence programmes – but how does the team ensure delivery stays on track?

The Skanska team working at the vehicle storage and support programme (VSSP) – to transform a key British Army fleet hub – teamed up with expert integrated design planning partners Adept Management Ltd to create and implement an integrated design control and delivery approach from the outset.

Through a structured baselining of all programme activities into an online system – known as Flow - the team created a master integrated design programme to visualise the progress of design development for key delivery milestones, making it possible to identify potential constraints, resolve these before they become issues, and clarify the key sequences to ensure the project's challenging timescales were met.

They then distilled this into dedicated work plans taking a focused medium and short-term view of the design process – with a fortnightly look ahead and reporting cycle at design team meetings to ensure the delivery of design on time to meet the demanding construction programme.

Key reasons for adopting Flow to assist in planning and programming design delivery were:

- Delivering certainty for developing and delivering an integrated design programme
- Aligning design delivery with a complex phasing of work across the site
- Ensuring the design process harnessed the benefits of the repeatability in the new buildings, whilst allowing the project team time to resolve the variables.
- Supporting the client design review & approval process alongside delivering design information for procurement and construction.

Facts

Service: Building
Market segment: Defence

Start date: 2022
Completion date: 2026

Clients: DIO, British Army

Country: UK
City: Tewkesbury

Project status: Live

Background

The design leadership team at Skanska recognised that delivering the design on time was a key success factor to overall project success on this multi-phased development, and that they needed strong control over the development of the design and engineering process.

To achieve this, Skanska reached out to Adept Management Ltd (AML), an expert in integrated design planning, in 2021 ahead of the contract award to assist the project in establishing an integrated design programme and associated project control tools. Skanska has previously collaborated with Adept Management on over 40 projects in the last 20 years. Projects have included healthcare, commercial, education, defence, aviation, infrastructure, research and custodial projects across the UK, Sweden and in the US. Together they have overcome the challenges of delivering certainty to pre-construction on some of the most complex facilities across the globe. Specific projects of note include Karolinska Hospital in Sweden, ESS Lund, Walsall Hospital and Project Wellesley.

• The project team utilised AML's bespoke 'Flow' system, previously known as the 'Analytical Design Planning Technique' (ADePT Technique), which was developed by AML in collaboration with industry and academia over 20 years ago.

Flow explained

•The approach initially involves working closely with the design team and Skanska team, to **DEFINE** both the detailed tasks required to fulfill the scope for the contract design releases, but critically to also map the key dependencies of information required, decision points, supply chain input to achieve those tasks with certainty and deliver coordinated design information.
•Having established the tasks and dependencies, the AML/Skanska team worked closely together to **STREAMLINE** and optimise the sequence of detailed tasks, reflecting the dependencies and interdependencies between design tasks whilst also aligning to the challenging phased release points. This exercise utilised the 'Flow' system's Design Structure Matrix (DSM) tool for sequence optimisation and for streamlining iterative

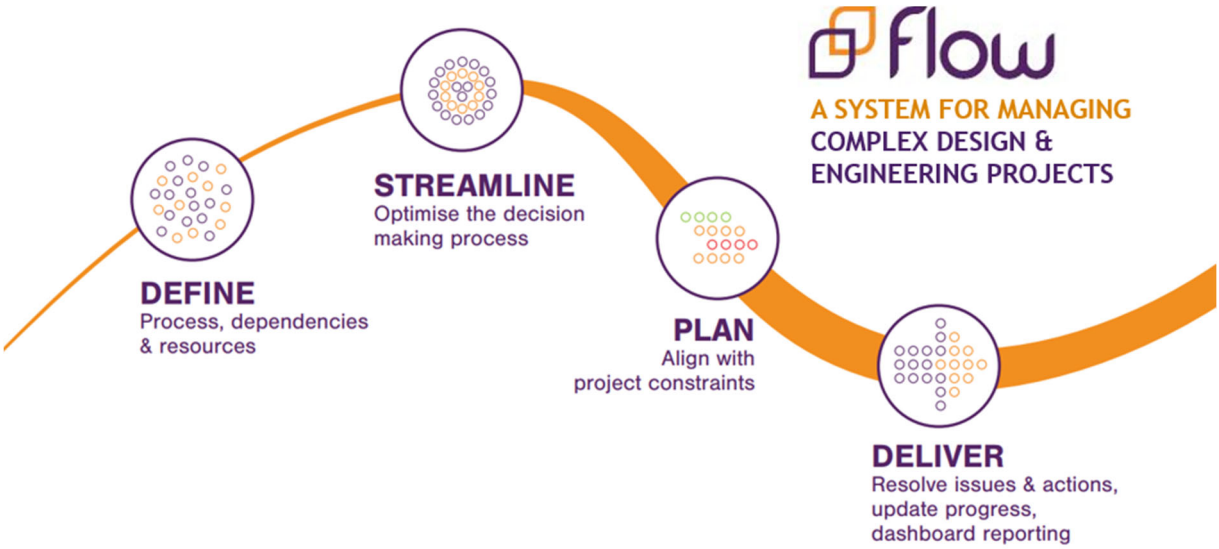
clusters of design tasks requiring closer coordination.
•The 'Flow' system's cloud-based tool then provided visibility to the entire design and Skanska team, with each member of the team able to **PLAN** and view the integrated programme, including all design dependencies and constraints that had been modelled (Figure 2). Task coding was also applied to create multiple views of the programme to suit different stakeholder's requirements. The completed programme was then incorporated into the overall master project programme to integrate and align the design, procurement and construction activities.

With a baseline 'Integrated Design Programme' established, the Skanska/AML team then utilised the 'Flow' systems unique approach to harnessing 'critical chain' and 'last planner' principles in ensuring design **DELIVERY** and production control (Figure 3). Through regular fortnightly reporting cycles, each of the consultants and stakeholders utilised dedicated workplans extracted from the programme that highlighted their key tasks to be done over the subsequent two-week period. The system provides a simple user interface for reporting, with key members of the team enabled to report progress on tasks, key issues impacting the progress and any constraints to be overcome to enable those forthcoming tasks to progress as planned.

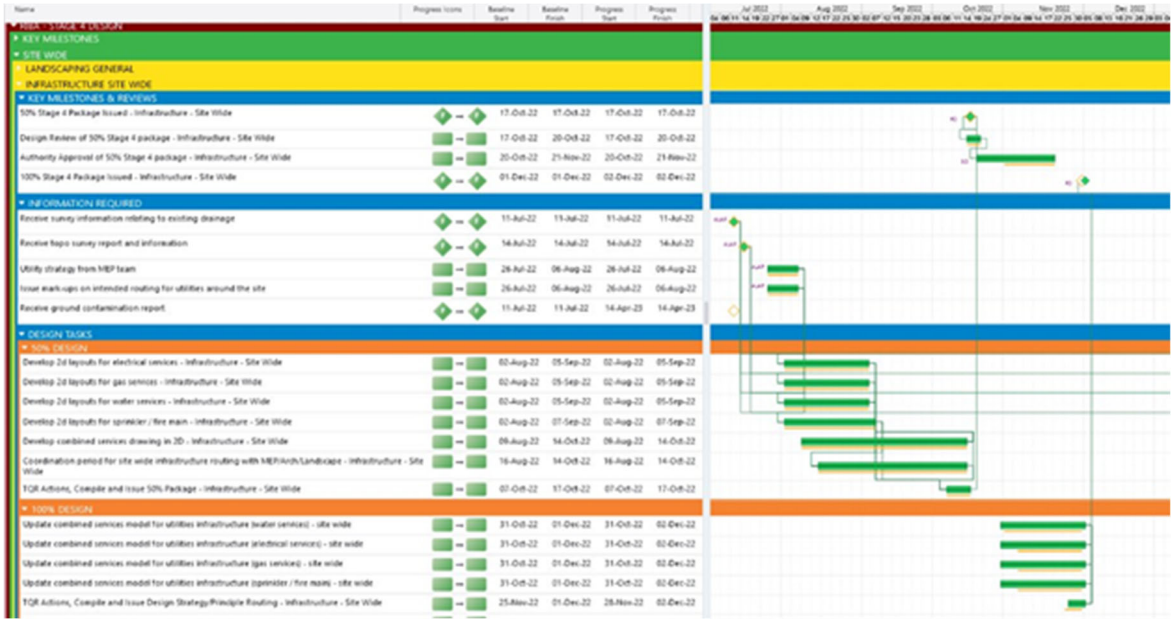
Facilities taking shape at VSSP.

Benefits of using Flow

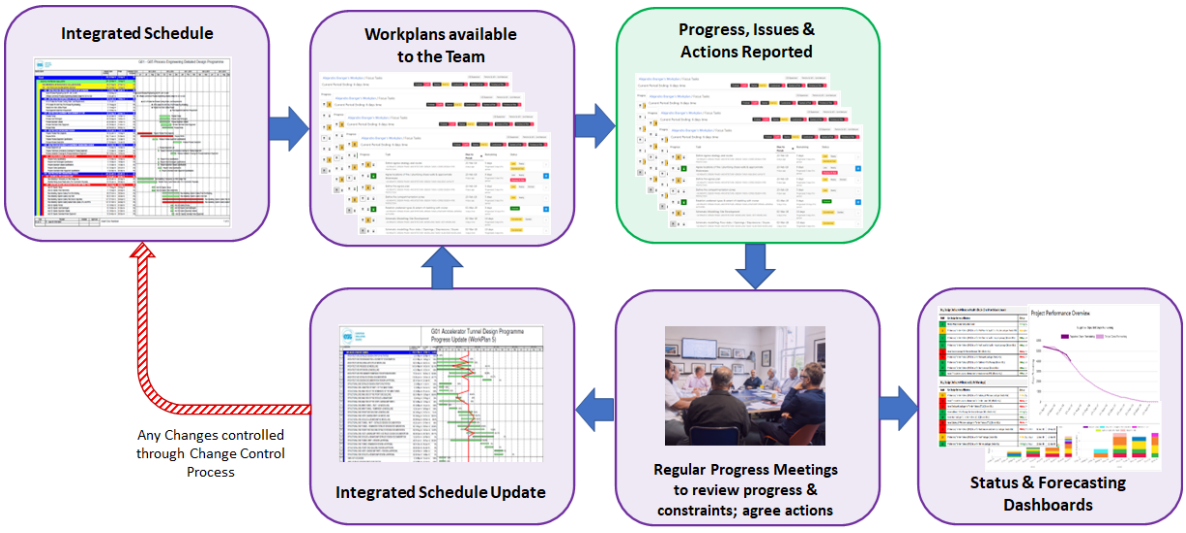
• Provided overall visibility on design progress, status and issues to focus on using a "Last Planner" short term (2-week lookahead basis) enabling design production control to be managed in co-ordination with procurement and construction programmes.
• Provided visibility for the entire project team on the key sequence in which they needed to work to achieve the challenging timescales
• Enabled collaborative engagement with the construction team and the consultant team to review programme activities that are relevant to that particular programme period. For example, highlighting technical and programme blockers which could be acted upon to improve efficiency.
• Despite the scale of the overall programme at over 4000 activities, the team were able to view the focused tasks for the given period and report efficiently, minimising the time taken in generating progress reports.
• The structured approach provided by Flow enabled a consistent line of communication with the remote located team members and a rigorous means of capturing both the progress and issues that were impacting the team so that timely action could be taken.
• Identifying early warning on the risks to delivery and visibility of the critical chain of tasks to identify where action could be taken.
• Ensured the construction team were able to progress in line with the project programme with the required design information being delivered with certainty.
• Assisted the project team in assessing the impact of proposed changes of the overall project programme. This provided improved visibility of the impact of change that could be more efficiently reported to the client.
•The provision of a focused and accurate reporting dashboard to assist in project reporting to the team and to the client.



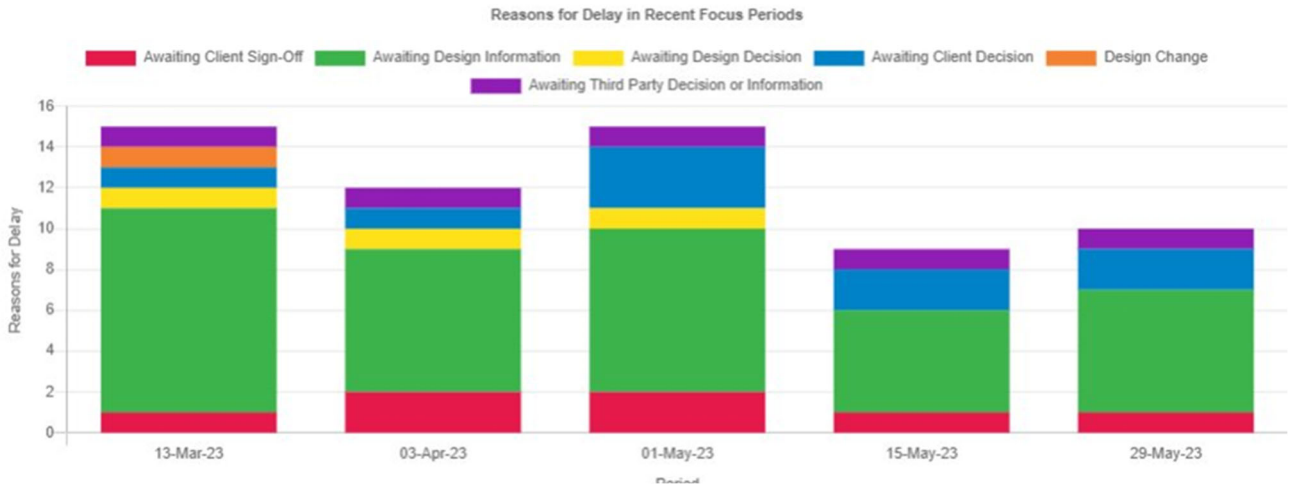
An overview of the 4 key stages of the Flow system of planning.



Example extract from Flow showing a section of the baseline design programme



Showing the 2-week lookahead delivery and reporting cycle from Flow.



A typical output from Flow summarising the key issues impacting on design delivery.

Stay connected

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