

Improve Project Performance by Removing the Rocks

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In the UK, only 45-60% of construction projects are delivered in line with their original budget or programme¹. Whilst some organisations achieve better results, average performance in recent years has plateaued at this level.

Unpredictability limits a team's opportunities to plan ahead and make most efficient use of resources. It can also give rise to costly surprises. Even where projects are delivered as predicted, this is not the whole story. Budgets and programmes have often been developed using data from projects that did not run smoothly and may include unnecessary buffers as a result.

There are therefore significant benefits awaiting any company able to improve both the predictability and delivery performance of its projects. On a recent retail construction scheme, **tbi** helped our client reduce the programme by 30%. This was achieved by helping to create a more stable programme, removing blockers and enhancing productivity of construction activities.

Project progress should flow smoothly

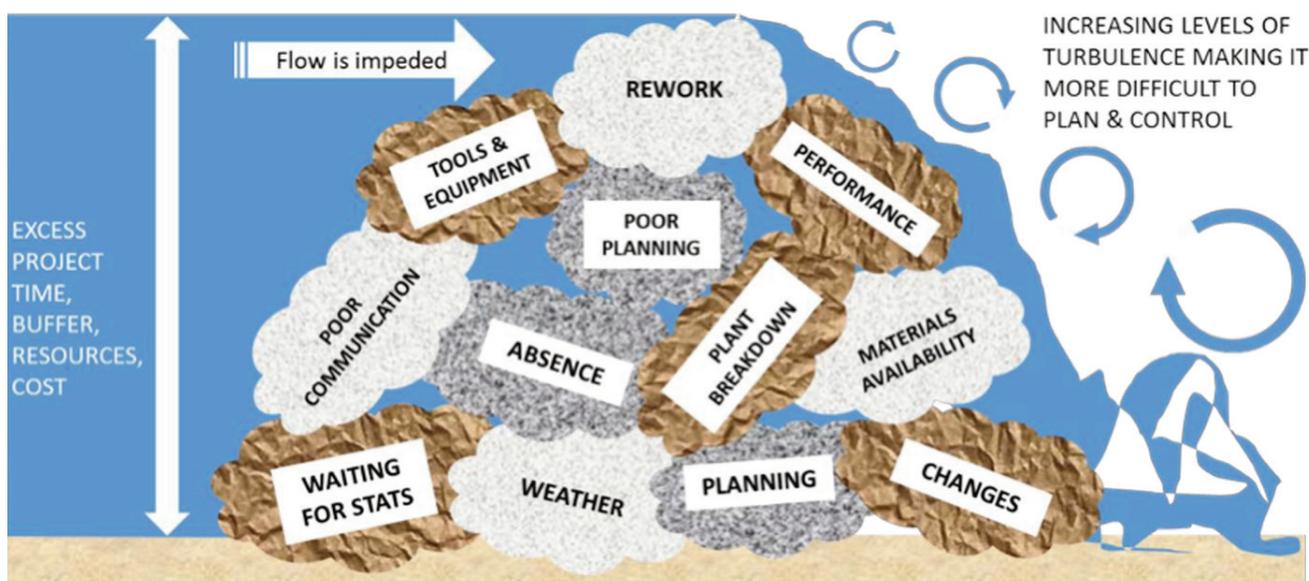
If we imagine the course of a project as running like a river, the ideal is for progress to flow smoothly and predictably, from project start to the safe harbour of handover. When planning and delivering a scheme, it is normal to use a programme defining when work activities should be carried out, with activities expressed in terms of sequence, durations and relationships with other tasks. This can be taken as the map we need to navigate the river.

However, very often, the water in a river encounters rocks and other obstacles that impede its progress and cause turbulence. Whilst a project programme provides good structure, unexpected events can still occur and hold up planned activities. For example, asbestos may be found on site. Things might also not happen as and when they should. For example, design information may not be available when needed, inclement weather could hold up construction and required materials may not be available. These events (or non-events) are often referred to as blockers.

Fig. 1 depicts such blockers as rocks in a river. Note that this is not a complete 'pile' of rocks; many others can exist. Ask yourself, on your projects, what rocks have you encountered? Do you find any of them repeating from one project to the next?

Dealing with the turbulence created by these rocks requires additional time and effort. Turbulence can mean delay, increased costs, reputational damage and worse. On the contrary, removing the rocks can enhance project performance, with reduced programme durations and better predictability. Significant opportunity is available to project planning teams who look at the stretch of water ahead of them, predict where the rocks lie and find ways to navigate around or remove them from their course. Why, then, do we continue to tolerate them?

Fig 1:
Blockers on a project shown as rocks in a river



What is holding us back?

When asked how many of the rocks they have influence over, project teams typically respond between 70-90%. However, despite this awareness, little concerted effort is spent trying to design them out or implement measures to minimise their impacts. There are a number of reasons for this, including:

Attitude	An acceptance that this is just 'the way the industry is' – unpredictable and rocky. Or that, since 'every project is different', the issues faced are unique and unpredictable and therefore difficult and costly to address.
Client prevarication	Where a scheme's scope and design is not finalised early enough, or there are changes in scope, design and client requirements during construction. Both situations can result in delays and a need for reworking.
Contracts	Commercial arrangements do not always encourage a true 'one team' approach with project partners aligned to agreed delivery objectives. Contracts can also incentivise a 'variations culture' instead of a culture of financial stability based on mutually agreed prices, cost transparency, incentives and improving project performance.
The transient nature of project teams	Typically project teams change in terms of the individuals or parties involved from one project to the next. When project teams come together, they may have little incentive to share lessons learnt, meaning the rocks from the last project do not get addressed collectively.

We live with the rocks by raising the water level!

Instead of taking action to address the rocks systematically, teams often build inflated activity duration, time risk allowance or buffer into the project programme to protect themselves. This extra time can be added intentionally or planned activity durations may include it automatically. In the latter case, this is often because durations have been based on what happened on previous projects, where experience was shaped by delays, disruptions, issues and blockers – the rocks!

What this is doing, in terms of our river analogy, is raising the water level. In *Fig. 1*, the depth of water ahead of the mound of rocks represents the additional activity time or buffer that can exist in a programme, the increased level of resources required

and the extra cost of dealing with issues that arise. The 'deeper water' this provides may allow a project to pass over some of the rocks more easily, but at greater cost and over a longer programme duration than is necessary.

We could also say that an excessive water level hides the rocks. By making them harder to see it becomes hard to take action to remove them. For example, the existence of buffers in programme durations – a common practice – makes it more difficult to see where action can be taken to improve performance. Neither is this likely to be a key collective goal for the project team since out of sight is out of mind.

Also, just as water will often seek the path of least resistance to get around the rocks, we might re-plan construction activities or re-deploy working gangs onto other out-of-sequence works to maintain project 'flow' or progress. While this might help keep things moving, it can have wider consequences. Working out of sequence can introduce additional waste and inefficiencies, interrupt trades working in other areas and set the project on a vicious circle of continually re-planning, and therefore living with the rocks!

Unless the rocks are addressed directly it will be difficult to improve programme delivery performance since:

- An excessively long, sub-optimal programme will be created.
- Activity durations will contain buffer which is difficult to see.
- Inflated durations will allow for a reduced or variable level of productivity, preventing 'flow' of work between trades.
- People may work to 'fill' the allocated programme time, even though tasks could be completed earlier.
- The flow of planned works will be reduced, with activity sequence and trade interaction based on estimates of what might happen, rather than a plan of what we want to happen.
- It will be difficult to capitalise on gains made on programmed activities since tasks planned to occur later may not be ready to be pulled forward.

What are the impacts of having to deal with the rocks?

Where navigating through rocks is unavoidable, the impacts can be significant. They can include:

- Delay to planned activities and time lost in the programme, harming predictability and productivity.
- Resources being taken off the project. Replacement personnel will then have to go through a new learning curve before becoming highly productive.
- Resources being redeployed onto project works other than those planned. This upsets the sequence and activity flow within the programme.
- Activities needing to be re-programmed.
- Additional management and supervision effort and time required, reducing time available to do the good, value-adding stuff.
- Interrupted flow within the programme, impacting efficiency and the 'best' deployment of resources.
- Extended programme duration and acceleration towards the end of a project, which can increase safety risk, resource requirements and cost.

Imagine a project where things run smoothly, work activities are started and completed when planned, quality is right first time, correct information is available when needed, the right materials are delivered when scheduled, plant and equipment operates well, work productivity is high and everything is under control. Is such a situation even possible?

Yes, or at least we can work towards this goal! Proactively removing or reducing the rocks faced by a project gives a much better chance of achieving this calmer state.

Fig. 2 shows the same river as Fig. 1, with fewer rocks and a lower water level. Potential issues have been foreseen and designed out and less allowance has been made, in terms of time or money, for things to go wrong.

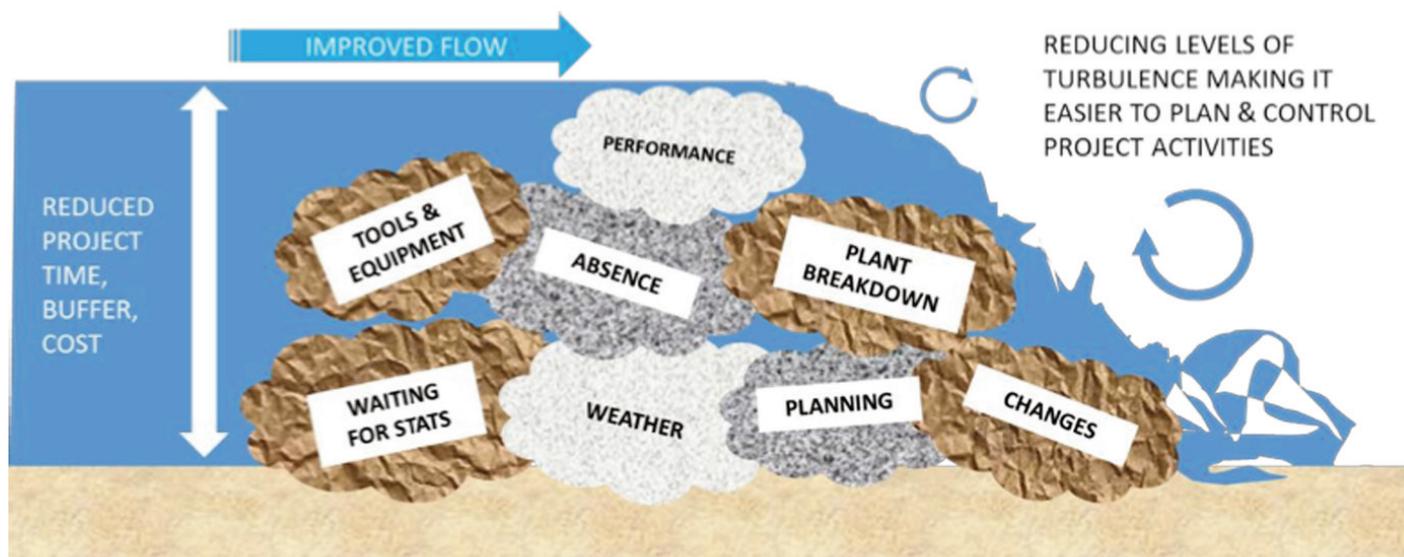
There is always a risk that problems may occur and hold back the timely and efficient delivery of planned activities. Therefore some rocks remain in Fig. 2. However, the level of turbulence created by any water crashing over these remaining rocks would be much less. With less turbulence comes a more controlled project environment, which is easier to plan and control. As less time is needed to deal with the consequences of the rocks, more time becomes available to introduce further improvements, making things even more calm and efficient.

As the rocks reduce, so can the water level, meaning the amount of buffer (or risk time allowance) can be reduced in the programme. Project teams can have more confidence that work activities will be completed as planned and delivering the project will take less time, resource and cost.

Improve project delivery – Remove the rocks and reduce the water level

What if we took action to reduce the water level instead? What would this do to time and cost predictability and overall project performance?

Fig 2:
Reducing the size and number of rocks gives a lower water level, smoother flow and reduced turbulence



Let's throw the rocks away!

How can we go about removing the rocks? Two approaches can be taken:

1. Be proactive – Design out the known rocks
At the start of a project, take action as a team to identify the rocks which typically occur on that type and scale of project. Agree actions to eliminate rocks that can be eliminated. Act to reduce the size of the rocks that remain – by reducing the likelihood, frequency and impact on planned work activities of occurrence.
This proactive approach is a key element of the collaborative planning process², where, once the 'best' programme for all involved has been developed, actions to protect it are defined (also known as the Plan to Protect), improving predictability of programme and cost.
2. Continually expose and throw the rocks away. Even with the best-defined plan, rocks can still appear. If the project team is enacting the Plan to Protect effectively, the rocks should be fewer, smaller and rarer. Even so, to limit their impact, the team should be prepared to spot quickly when rocks appear, and agree collectively how to minimise their impact. This rapid response behaviour should form part of a project's daily and weekly production control processes. Data on any rocks should be collected covering what they are (i.e. the type of quality issues, delays, disruptions, etc.), their impacts on planned work (e.g. number of hours delay or lost) and their causes. At an agreed frequency,

project team members can then analyse this data to identify the rocks which are causing the most pain. They can then get rid of the biggest rocks by identifying and resolving the root causes using tools such as structured problem solving (the subject of a separate article available from **tbi**).

The benefits of removing the rocks

Why should project teams and organisations look to remove rocks? Benefits will result both for individuals and their projects. These include:

- Improved predictability of planned activities, programme duration and cost. This gives greater certainty about the level, type and deployment of resources needed and better control over costs, which could lead to greater profit.
- Productivity improvements – **tbi** has helped teams increase output by over 40%. This makes additional time and capacity available to carry out value-adding work and improvements.
- Less turbulence, reducing the need for reactive crisis management and simplifying planning and control.
- Smoother flow and greater ability to improve line balance, with trades working closer together and progressing work at a more consistent pace.
- A 'leaner' programme, typically of reduced duration with improved work methodology and activity sequence – **tbi** has helped clients reduce programme duration by up to 66%.

References:

1. UK Industry Performance Report 2015
2. Implementing Lean in Construction – Lean tools and techniques – an introduction Richard O'Connor and Brian Swain, CIRIA 2013, ISBN 978-0-86017-732-6

What do your business and projects stand to gain from taking action to identify and remove the rocks you face? **tbi** has helped more than 200 organisations save more than £40 million by teaching them to apply lean principles and techniques. This includes giving them the tools to systematically identify and eliminate rocks similar to those described here to improve value flow. Tools such as structured problem solving, value stream mapping, collaborative planning and productivity improvement, which we discuss further in separate focussed articles also available from our website www.transformingbusiness.co.uk

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