Delay and Disruption

By Richard Morris
Head of Expert Services

SYSTECH

What are delay and disruption?

'Disruption' and 'delay' are two terms that are regularly used in the same breath as they often flow from the same event. But you can have delay without disruption and vice versa as we will see later in this article.Delay events may not necessarily have a direct impact on the critical path or delay damages but just affect individual activities.However, disruption, unlike delay, has a direct consequence on financial loss. Therefore a disruption analysis should not be confined to events that are on the project's critical path.

So, what is disruption?

The Society of Construction Law ("SCL") Delay and Disruption Protocol (2nd edition , p9) defines disruption as:

> *"… disturbance, hinderance or interruption to a Contractor's normal working methods, resulting in lower productivity or efficiency in the execution of particular work activities."*

Disruption requires the demonstration of entitlement, causation and damages. It's easier to prove delay – which is a matter of fact – than to demonstrate disruption.

Demonstrating disruption is more of an art than a science, however there are guidelines and procedures to follow for an analysis to be acceptable and effective.

Extensive and detailed records are a key requirement for a successful claim for disruption.

If there is only one activity and that activity is delayed by the procuring party, then under most forms of contract the delay to the activity may be claimable as an extension of time and any delay costs may be recoverable as well. **(See Figure 1).**

However, there remains a cost in demobilising and remobilising the labour working on the activity and this will be the disruption cost.

Over this single activity the disruption is easy to identify, however, where multiple activities are affected, the disruption costs become more difficult to establish and measure.

Where several events which affect the progress of the works are disrupted the impact of any one event may not be discernible from the impact of another event. **(See Figure 2)**

Disruption is not a cause of action at law in its own right and the contractor must explain the legal basis of entitlement. Most standard forms of contract do not address recovery for disruption but may give entitlement to claim some of the events that could lead to it in the form of loss and expense or damages.

When it comes to explaining the cause of reimbursable disruption, contractors often rely upon multiple and intermingled events to explain loss of productivity and entitlement.

Once those items that can be dealt with in isolation have been quantified, it may be acceptable to deal with the remaining disruption globally. However, the bar for acceptance of a global claim is very high and therefore carries significant risks.

Mitigation or acceleration?

Core Statement 15 of the SCL Delay and Disruption Protocol states:

> *"The Contractor has a general duty to mitigate the effect on its works of Employer Risk Events. Subject to express contract wording or agreement to the contrary, the duty to mitigate does not extend to requiring the Contractor to add extra resources or to work outside its planned working hours."*

Under English Law, an injured party cannot recover damages for any loss which could have been avoided by taking reasonable steps, but the onus is on the defendant to prove any failure to mitigate.

The object of acceleration is to reduce the time taken to carry out a task or a series of tasks usually with a view to mitigate a delay that has occurred or likely to occur.

There are two principal types of acceleration, express and constructive.

Express acceleration

Where an employer risk event delays a project but the employer still wishes to retain the original date for completion and gives an instruction to accelerate – where permissible under the Contract – the measures to be taken and the basis of payment should be agreed beforehand.

Constructive acceleration

Core Statement 16 of the SCL Delay and Disruption Protocol continues:

> *"Where the Contractor is considering implementing acceleration measures to avoid the risk of liquidated damages as a result of not receiving an EOT that it considers is due, and then pursuing a constructive acceleration claim, the Contractor should first take steps to have the dispute or difference about entitlement to an EOT resolved in accordance with the contract dispute resolution provisions."*

As there is no prior agreement or instruction for this type of acceleration, the contractor places itself at risk when taking such measures, so before instigation the contractor should give notice to the employer of those measures and issue a revised programme.Methods of acceleration include the increase of resources (number and hours), but note that a Business Roundtable Report from November 1980 entitled "Scheduled Overtime Effect on Construction Projects" has key findings including this:

> *"Where a work schedule of 60 or more hours per week is continued longer than about two months, the cumulative effect of decreased productivity will cause a delay in the completion date beyond that which could have been realized with the same crew size on a 40-hour week."*

This is shown on the following graph **Figure 3** plotting output against time which shows that a productivity rate of 65% in relation to a 60 hour worked week (i.e. the equivalent of a 40 hour week) is reached after only 10 weeks.

Express acceleration

Where an employer risk event delays a project but the employer still wishes to complete the project by the original date for completion and gives an instruction to accelerate – where permissible under the Contract – the measures to be taken and the basis of payment should be agreed beforehand.

How to demonstrate disruption

Productivity loss (disruption)

Disruption is usually lost productivity, i.e. an increase in the resources required to carry out a unit of works from the "baseline" levels.

It is essential to identify the cause (an event, events, or condition(s) that have led to the productivity loss), the entitlement (a clause in the contract or entitlement at law that gives the contractor the right to claim for loss and expense arising from the cause), deal with separation (where the productivity loss is distinguishable from productivity loss for which there is no entitlement for recovery) and finally the loss must be measured. There are two ways to do this:

Time

An activity should take 10hrs/m2 but it actually takes 15hrs/m2, hence the productivity is 10/15 = 66% (or a loss of 5hrs/m2); or

Cost

An activity should cost $10/m2 but it actually costs $15/m2, hence the productivity is 10/15 = 66% (or a loss of $5/m2).

There are several distinct methods for the calculation of lost productivity resulting from disruption events, each with varying accuracy and general acceptance.

- A Measured Mile Analysis compares the difference in productivity between the impacted (disrupted) period to that of an un-impacted period and is the preferred methodology to adopt
- EVA (Earned Value Analysis) compares earned resource value against planned tender recovery, but should not be (mis)used to recover tender errors.
- Work Sampling relies upon contemporaneous records of direct works observations to determine productivity, effectively people watching and recording time and output.
- System Dynamic Modelling is a computer simulation approach using specialist software to produce a model of the disrupted project.
- Project Comparison Studies may be used when there are insufficient records available to carry out a project-specific study. Productivity on the disrupted project is compared to similar or analogous projects.
- Industry Studies can be used in instances where there are insufficient records or documentation. They can be used for projects that are disrupted by severe weather; these studies can provide factors which account for changes in temperature and their effects on tradesmen practices and productivity.
- Cost-based methods provide the least robust support for a disruption claim and are often applied when lost productivity cannot be reliably calculated utilising a productivity-based approach, such as a "global claim".

There is also a trade-off between the persuasiveness and ease of applying the methods, which is shown in **Figure 4.**

As noted in Section 18 of the SCL Protocol, with disruption claims:

> *"Compensation may be recovered for disruption only to the extent that the contract permits or there is an available cause of action at law. The objective of a disruption analysis is to demonstrate the loss of productivity and hence additional loss and expense over and above that which would have been incurred were it not for the disruption events for which the Employer is responsible."*

Hence, analytical methods and techniques should be used to establish the loss of productivity arising out of the disruption events and the resulting financial loss, rather than merely claiming the difference between what the contractor planned and what actually happened, i.e. the contractor must demonstrate the lost productivity and resultant loss has been incurred as a result of employer risk events only (i.e. excluding contractor risks).

The Measured Mile Analysis

This is generally based on the premise that:

- At certain periods of the works there are times when the progress is not disrupted (unimpacted portion)
- During these periods a "standard" or "baseline" rate of production can be established
- By comparing with the output during periods when disruption arises from claimable disrupting events it should be possible to identify that the rate of production is lower ("workhours lost")
- Where this occurs it can be claimed that there is a loss of productivity due to events or conditions for which loss and expense can be claimed.

The loss and expense during this period is usually claimed in man-hours although it is not incomprehensible that there will be additional costs in construction plant and possibly materials, but this is often more difficult to establish. During these periods a "standard" or "baseline" rate of production can be established, as shown in red in **Figure 5.**

Figures 6 and 7 show an example where there were a series of identical power generation units under construction. A number of causes of disruption affecting Unit 3 were identified by the contractor [who kept excellent labour allocation records for its operatives], that had not affected Unit 2.

Records, records, records

To achieve be able to demonstrate disruption, it is vitally important to have accurate project records … and more records … and even more records including schedules (original and regularly updated), progress reports, correspondence, resource records (who, when, where and what) and cost records.

In the English case of Van Oord UK Ltd and another v Allseas UK Ltd (2015), the contemporaneous documents failed to credibly support the claims: the contemporaneous evidence made little reference to the standing time and disruption being claimed in the Court proceedings. This, coupled with the lateness of the claims being made, were factors undermining the credibility of the claims and the case was lost.

Figure 1

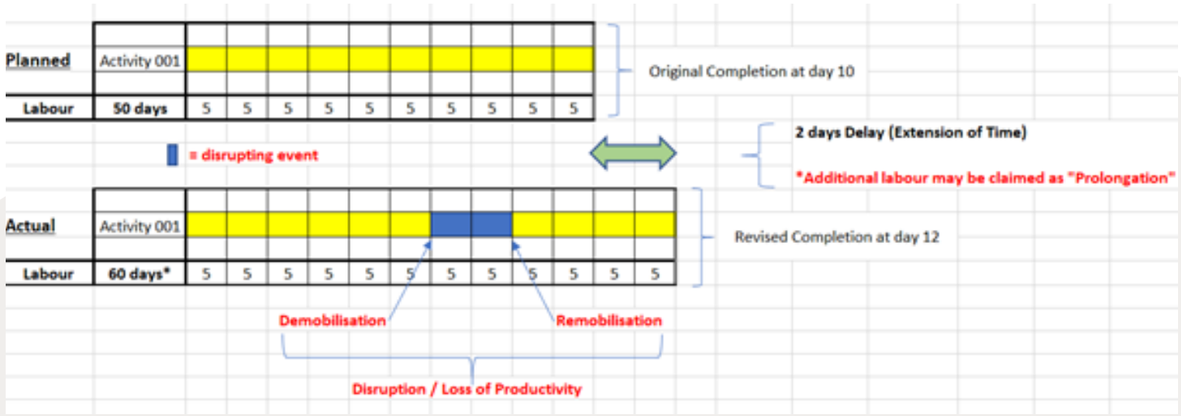

Figure 2

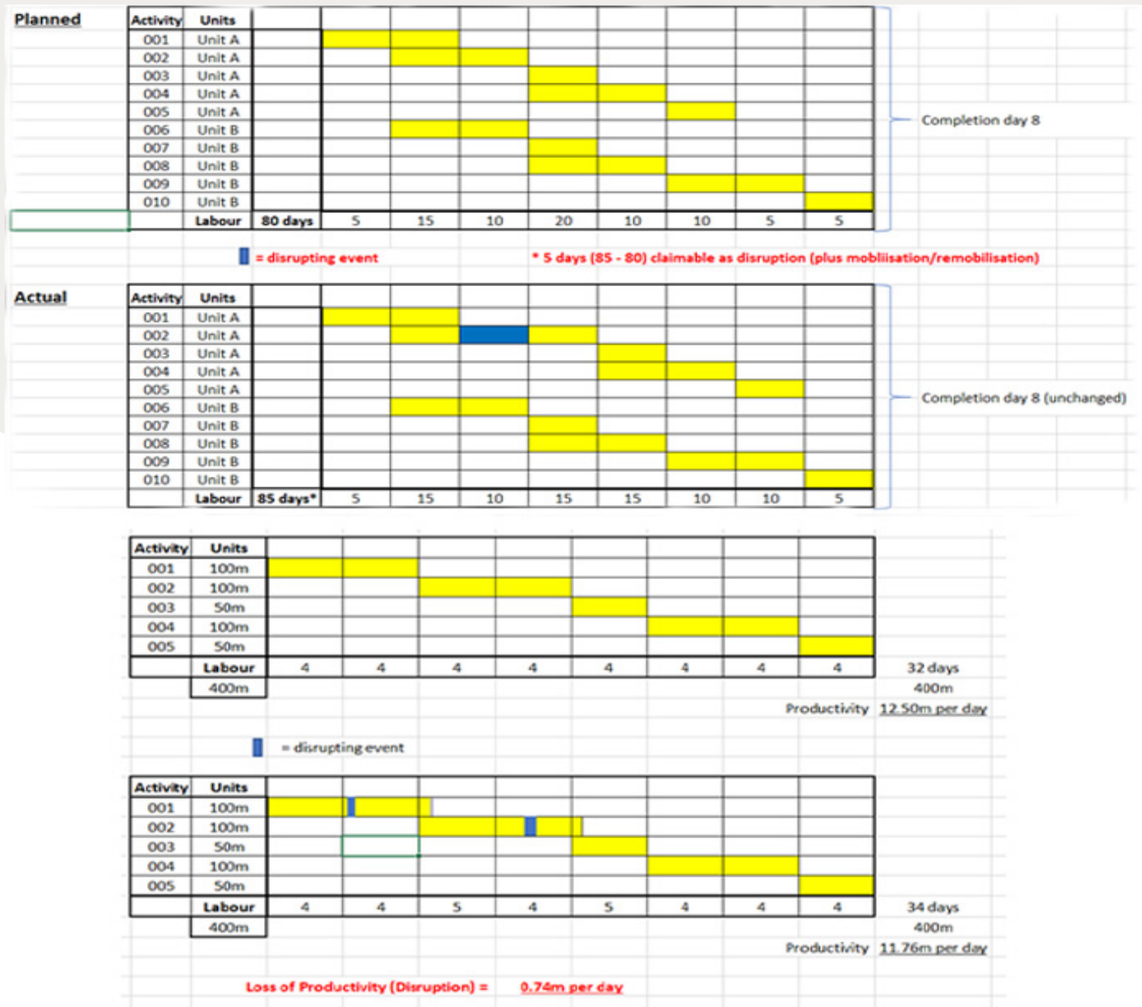

Figure 3

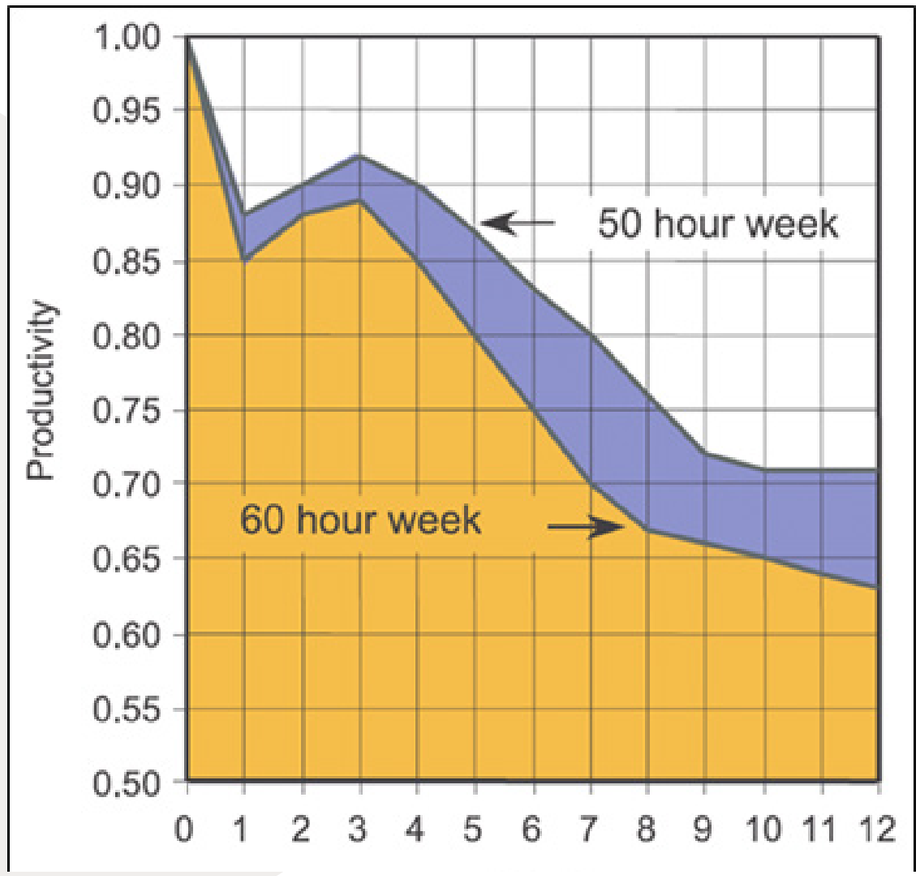

Figure 4

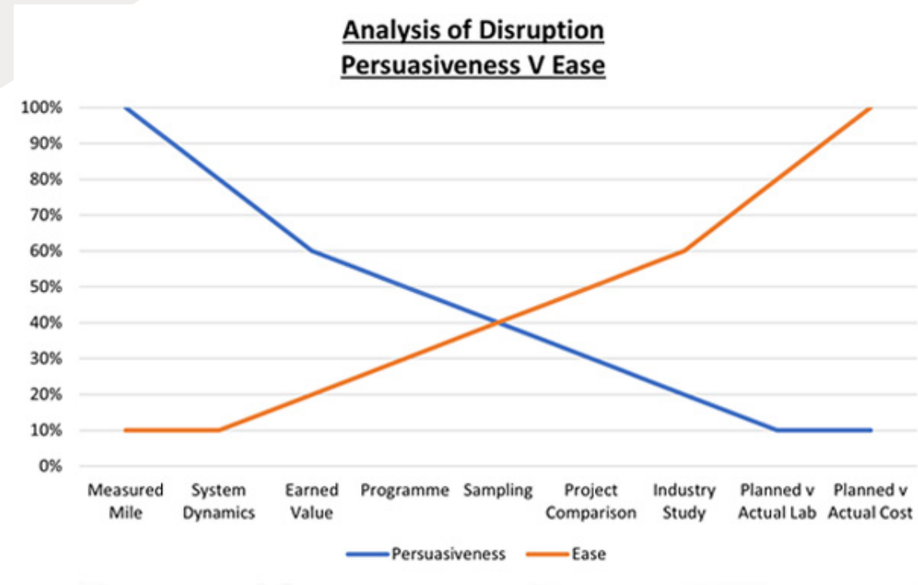

Figure 5

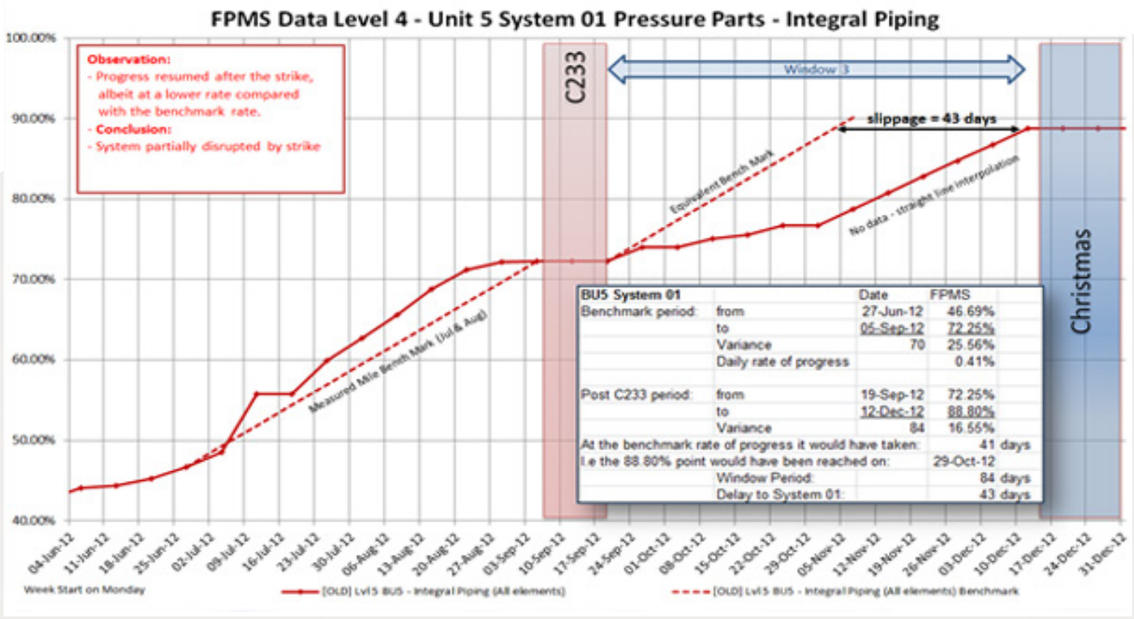

Figure 6

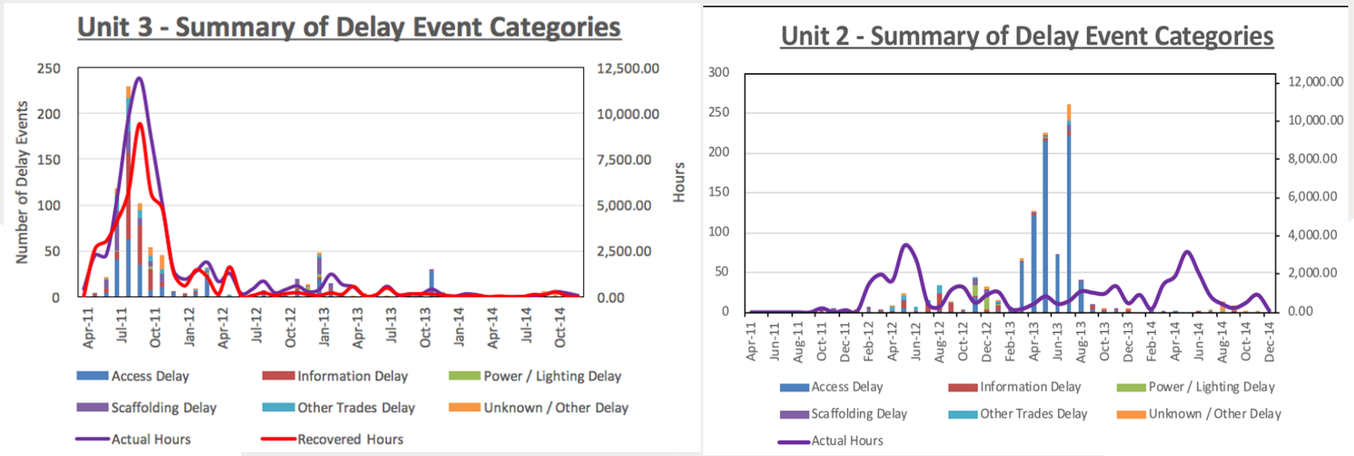

Figure 7

Productivity achieved by [Contractor] on various Units

		Unit 2	Unit 3
Actual hours (post 26 April 2011)		37,670.00	62,652.00
Less the hours recovered on Dayworks (post 26 April 2011).		- 5,003.61	- 14,019.95
Actual hours (post 26 April 2011) -all works	**Total**	**32,666.39**	**48,632.05**
Recovered Hours	**Total**	**32,161.63**	**32,774.38**
Variance between the actual hours and the recovered hours		**504.76**	**15,857.67**
Productivity achieved by [Contractor]		**98%**	**67%**

Evaluation of the lost hours

	Man hours
Actual man hours expended	48,632.05
Productive man hours based upon Unit 2 (98%)	47,659.41
Man hours recovered	32,774.18
Ascertained man hours lost	14,885.23
	Loss
Ascertained man hours lost	14,885.23
Average hourly cost of the man hours	£ 28.00
Ascertained loss	**£ 416,786.41**

The consultant of choice on major global projects

www.systech-law.com