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# Disrupted? Prove it!

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# Disrupted? Prove it

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- What does 'Disruption' mean?
- Disruption on Construction Projects
- Making a Disruption Claim
- How to Prove Disruption -
  - Causation
  - Quantification

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# Disruption Defined

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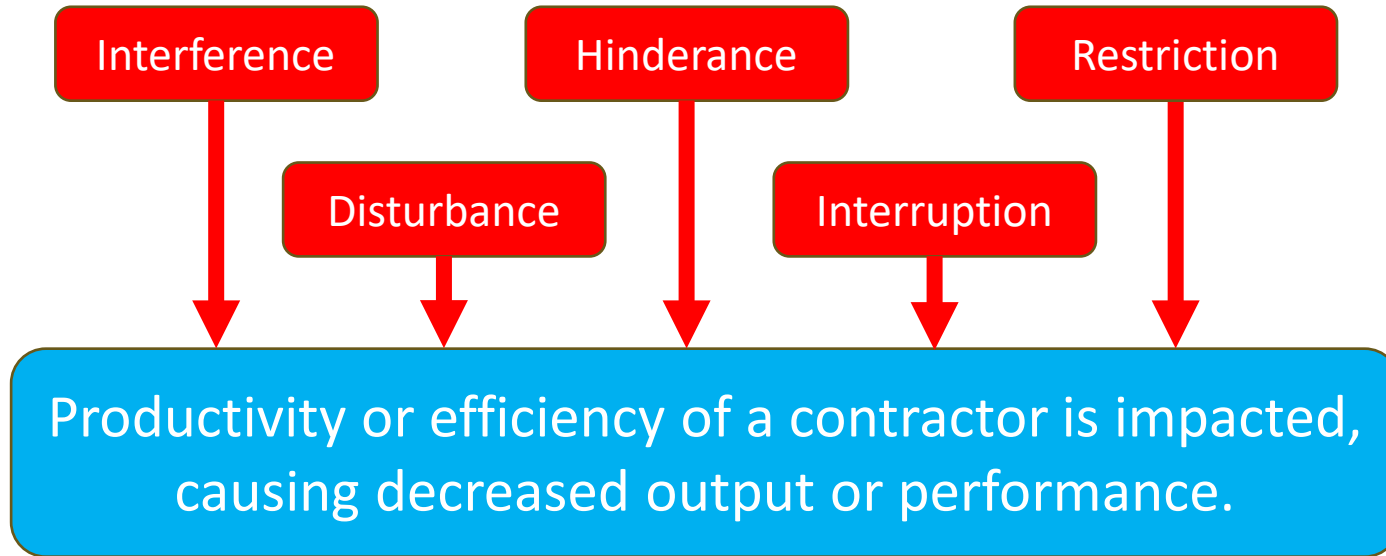
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- Disturbance or problems which interrupt an event, activity, or process.
- The action of preventing something, especially a system, process or event from continuing as usual or as expected.



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# Disruption in Construction



# Disruption is not Delay...

Hudson's Building and Engineering  
Construction Contracts:

*“The distinction between delay and disruption is important, but rarely articulated, and is to an extent a matter of definition. Delay is usually used to mean a delay to the completion date, which presupposes that the activity which was delayed was on the critical path. Disruption to progress may or may not cause a delay to overall completion, depending on whether the activity delayed is on the critical path as explained above, but will result in additional cost where labour or plant is under-utilised as a consequence of the event.”*

[14<sup>th</sup> Edition, Chapter 6, Paragraph 6-068]



# Disruption Claims (1)

SCL Delay and Disruption Protocol, Section 18:



*“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”.*

Supported by Mr Justice Akenhead in *Walter Lilly v (1) Giles Mackay and (2) DMW Developments* [2012] EWHC 1773 (TCC) – see paragraph 486(a)



# Disruption Claims (2)

- 1) Events occurred which give rise to an entitlement to loss and expense;
- 2) That those events caused disruption;  
and
- 3) That the disruption caused loss and/or expense (or damage) to be incurred.



# Disruption Claims (3)

- 1) Events occurred which give rise to an entitlement to loss and expense
  - SCL Protocol description – *“disruption events for which the Employer is responsible”*
  - Disruption is not a not a cause of action at law in its own right – must show basis of legal entitlement
  - Relevant Matters under the JCT D&B (clause 4.21)
    - E.g. – clause 4.21.5 – *“Any impediment, prevention or default, whether by act or omission, by the Employer... except to the extent caused or contributed to by the Contractor...”*
  - Compensation Events under NEC4 (clause 60)
    - E.g. – clause 60.1(3) – *“The Client does not provide something which it is to provide by the date shown in the Accepted Programme”*
    - E.g. – clause 60.1(18) – *“A breach of contract by the Client which is not one of the other compensation events in the contract”*



# Disruption Claims (4)

An Event of Disruption has occurred – DON'T FORGET TO NOTIFY!!!

*Van Oord v Allseas UK Ltd* [2015] EWHC 2074 (TCC)

- Contractor made various claims for loss and expense (as well as EOTs) in respect of unforeseen ground conditions;
- Condition precedent in the Contract required the Contractor to notify the Employer of the event within 5 days of “the occurrence of any such event”;
- Unforeseen ground conditions were discovered on 11/12 October 2011;
- Event was notified on 19 October 2011;
- Notice was 2 days late = NO ENTITLEMENT TO LOSS AND EXPENSE.

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50<sup>+</sup> YEARS HELD



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# Proving Disruption claims

Some terminology....

**Production:** The amount of work produced over a period of time

**Productivity:** The number hours taken to produce a unit of work (Hours per m<sup>3</sup>, man-days per floor, etc).

**Efficiency:** The difference between planned and actual productivity

Efficient = meeting planned productivity

Inefficient = not meeting planned productivity

Terms like “lost efficiency”, “low productivity” etc all mean basically the same thing.

Proving a disruption claim simply involves showing how many additional hours were probably worked as the result of the relevant matters (and not other events).

# Proving Disruption claims

## Essential Records

Weaker claim

Stronger claim



Tender budget breakdown

Monthly timesheet hours for each trade

List of disruption causes

Records of % work performed

Monthly time sheet hours for each area

Detailed list of disruption events

Time sheet hours for each activity

Records of quantities completed

Detailed daily records of  
disruption events

# Proving Disruption claims

## Three methods:

1. Earned value
2. Measured mile
3. Assessment using contemporaneous records

# Earned value

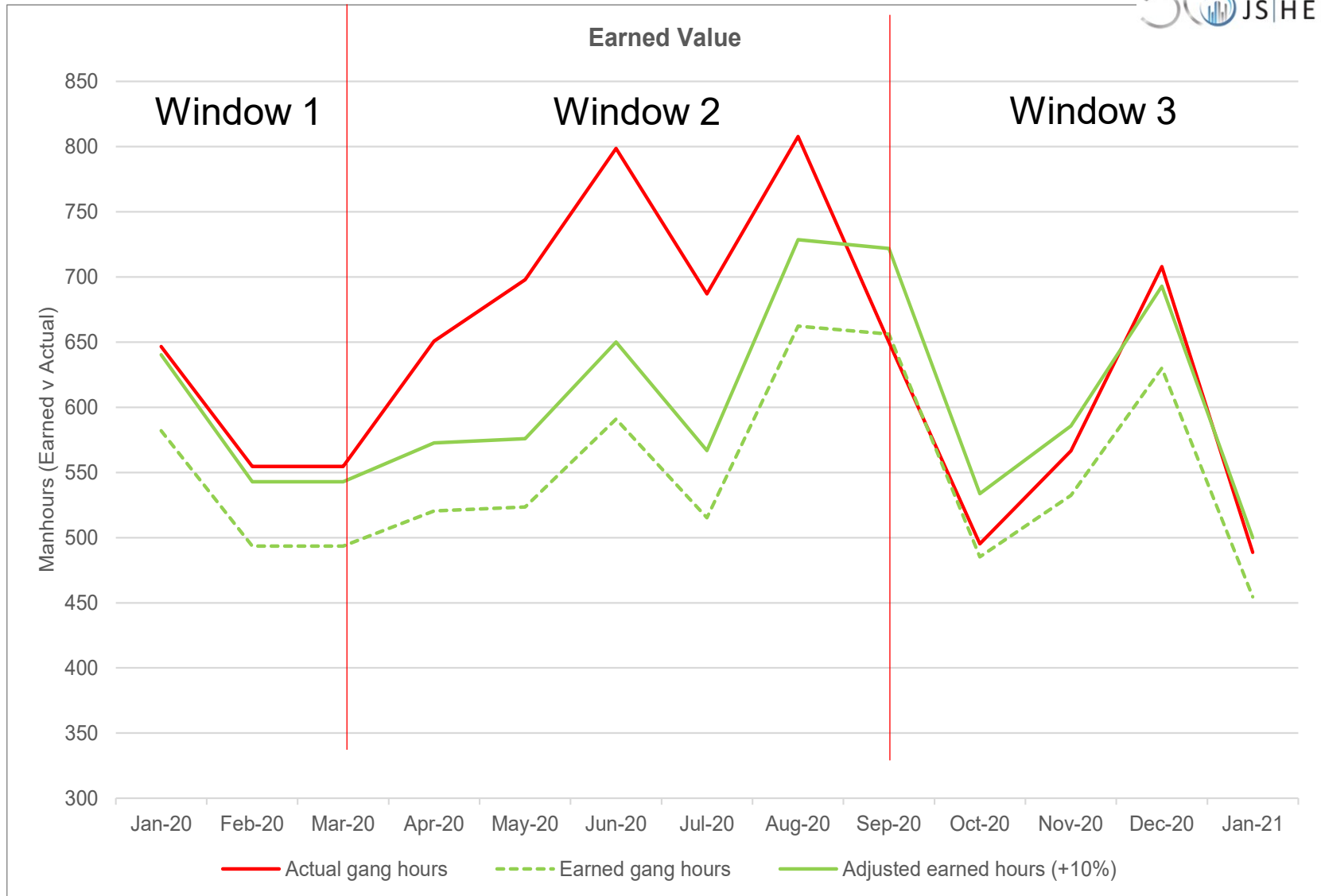
## A reconciliation of budgeted vs actual hours for monthly or weekly **production** (work performed)

E.g. Disruption due to late access in Window 2

100mm Blockwork: Level 10      12000 m2  
Planned gang hours                      9000 hrs  
Planned Productivity                      1.33 m2/hr

	Window 1			Window 2					Window 3				
Month	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21
Earned gang hours from P6	582	494	494	521	524	591	515	662	656	485	533	630	455
Adjusted earned hours (say, +10%)	640	543	543	573	576	650	567	728	722	534	586	693	500
Actual gang hours	647	554	554	651	698	799	687	808	650	495	566	708	489
<b>Disruption hrs (Month)</b>	6	12	12	78	122	149	120	79	-72	-39	-19	15	-11
<b>Disruption hrs (Window)</b>	30			548					-126				

# Earned value





# Earned value

E.g. Disruption due to late access in Window 2:

Window 2 total blockwork gang hours	3,642 hrs
Less Window 2 adjusted-earned hours	-3,094 hrs
<b>Disrupted gang hours</b>	<b>548 hrs</b>
<b>Lost Efficiency</b>	<b>15%</b>

# Earned value

## Pros

Simple and easy to perform

Not directly reliant on actual production data (lm/m<sup>2</sup>/m<sup>3</sup>) – use P6 resources etc

Used more frequently in practice

## Cons

Strength dictated by detail of earned and actual manhours (breakdown by date/location/trade adds to strength of analysis)

Adjusted-earned must be assessed on a case-by-case basis

Less suitable with multiple disruption causes

# Measured Mile

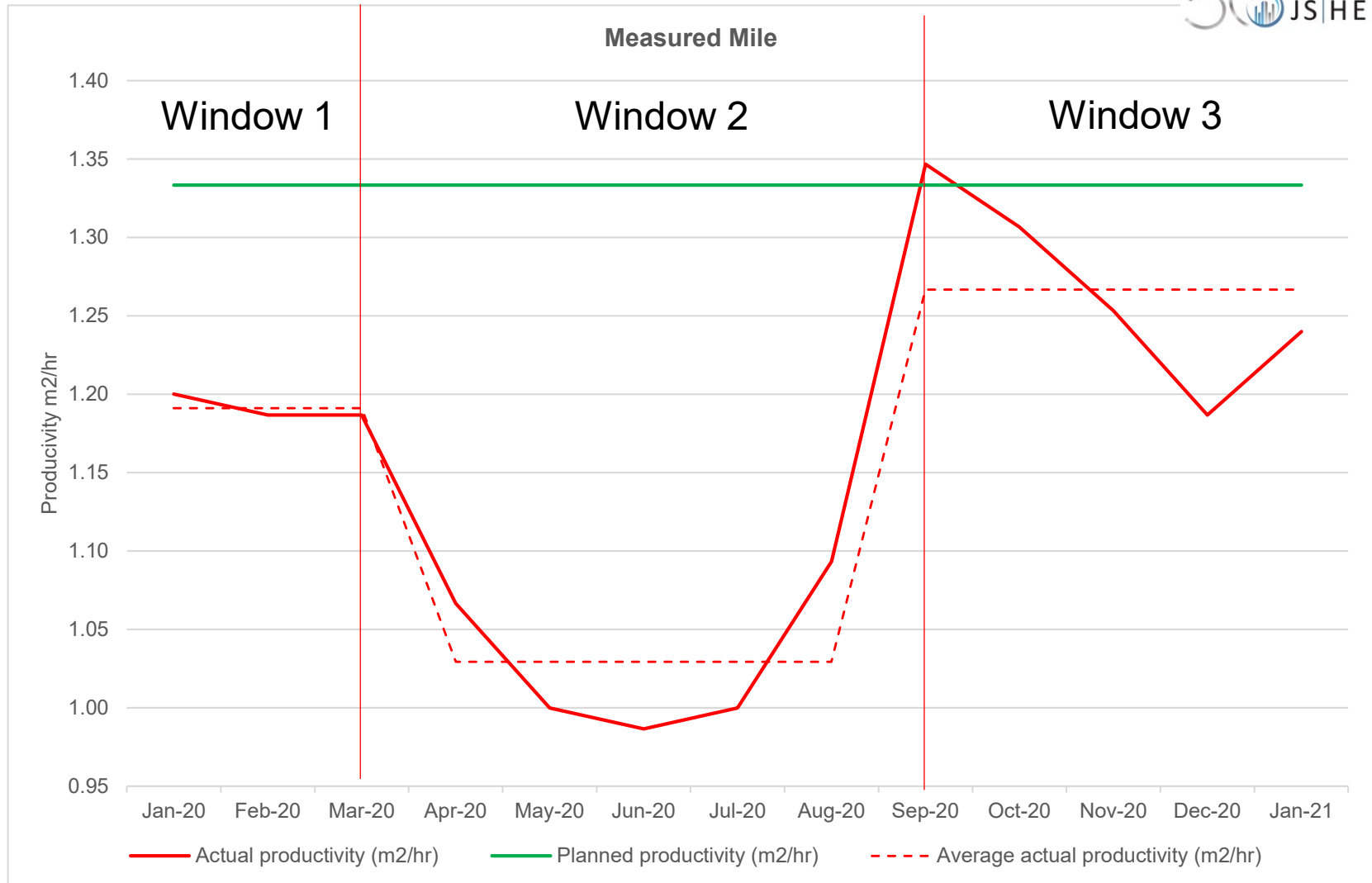
## A comparison of actual **productivity** in disrupted period vs non-disrupted period

E.g. Disruption due to late access in Window 2

100mm Blockwork: Level 10      12000 m2  
 Planned gang hours                      9000 hrs  
 Planned Productivity                      1.33 m2/hr

	Window 1			Window 2					Window 3				
Month	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21
Blocks (m2)	776	658	658	694	698	788	687	883	875	647	710	840	606
Gang Hours (hrs)	647	554	554	651	698	799	687	808	650	495	566	708	489
<b>Actual productivity (m2/hr)</b>	<b>1.20</b>	<b>1.19</b>	<b>1.19</b>	<b>1.07</b>	<b>1.00</b>	<b>0.99</b>	<b>1.00</b>	<b>1.09</b>	<b>1.35</b>	<b>1.31</b>	<b>1.25</b>	<b>1.19</b>	<b>1.24</b>
Lost Efficiency	-10%	-11%	-11%	-20%	-25%	-26%	-25%	-18%	1%	-2%	-6%	-11%	-7%
<b>Average Productivity (m2/hr)</b>	<b>1.19</b>			<b>1.03</b>					<b>1.27</b>				

# Measured Mile



# Measured Mile

E.g. Disruption due to late access in Window 2:

Window 2 total blockwork gang hours	3,642 hrs
Measured Mile productivity (Window 1)	1.19 m <sup>2</sup> /hr
Actual productivity (Window 2)	1.03m <sup>2</sup> /hr
<b>Lost Efficiency</b>	<b>14%</b>
<b>Disrupted gang hours</b>	<b>495 hrs</b>

# Measured Mile

## Pros

Intuitive and easy to understand

Derived from contemporary evidence

Captures actual productivity

## Cons

Unsuitable without detailed daily allocation records showing labour and production achieved (main contractors will struggle)

Less suitable with multiple disruption causes

Rarely used for these reasons

# Contemporaneous records

## A reasoned estimate of additional hours worked due to each disruption event

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Nr	Disruption Event	Description	Disruption Event Type	Relevant CE or CI	Start Date of Disruption Event	Finish Date of Disruption Event	Reference Document	Section affected	Area affected	Activity affected	Effect	Disruption Assessment (Shifts)	MC Liability (Shifts)	SC Liability (Shifts)
16	Full access not provided to LEER 2 for Electrical installations	LEER room 2 civil works incomplete. M&E electrical components cannot be installed until the room is watertight.	Fragmented work	N/A	17/10/2018	10/01/2019	[L][L] Narrative_Disruption (Section 5.0), paras. 5.3.14 – 5.3.18 / DIS001-Photos / Prog-13 (August 2019)	LEER 2	EER Room Fit Out	Installation and commissioning of Lift Changeover Panels	The event led to mobilisations/de-mobilisations. According to Prog-13 (August 2019) the mobilisation/demobilisation occurred 2nr times. Based on the planned resources (DIS003) of 1nr labour and a requirement of an estimated 3hrs for each of the mobilisation/demobilisation process, the estimate is that the disruption event should have accounted for 6 hrs (2mob/demob * 1person * 3hrs) = 0.6 Shifts (10hrs/shift assumption)	0.6	0.6	0.0
17	Access to Bridge Spans later than indicated on CI-38	[ ] not providing overall access for the commencement of works as per CI-38	N/A	CI-38 / CE-118	22/10/2018	26/11/2018	[L][L] Narrative_Disruption (Section 5.0), paras. 5.3.7 – 5.3.18 / DIS001-Photos / 180919_[L]_CL_038_[L]_Revised Access Date / 181123_CE_118_[L]_SNTFD_Revised Access Dates / Prog-13 (August 2019)	Link Bridge	Bridge Span	Overall	The late provision of access when compared to the CI-38 is not considered to be a Disruption Event, as works had not commenced in the area	0.0	0.0	0.0
18	Access not provided to Mezzanine Deck	The Mezzanine Deck suffered multiple delays due to roofing works and stud welding/painting outstanding.	N/A	CE-SNTFD-200 / CE-SNTFD-179	12/11/2018	15/03/2019	[L][L] Narrative_Disruption (Section 5.0), para. 5.3.22 / CE_200_[L]_SNTFD_Access to Mezzanine Deck_18.03.19 / Prog-3 (October 2018) / CE_179_[L]_SNTFD_Access to Mezzanine Deck 18 Full Site Studs	Link Bridge	Mezzanine Deck	Overall	The late provision of access when compared to the Prog-3 (October 2018) is not considered to be a Disruption Event, as works had not commenced in the area	0.0	0.0	0.0
19	CMS changes	[ ] to provide direction on CMS changes for the Column Mounted Lighting	Fragmented work	N/A	12/11/2018	21/12/2018	Prog-13 (August 2019), Activity ID [ ]-2103705	Platform 4	Lighting	Column Mounted	As work on the Column Mounted Lighting had commenced, the event led to mobilisations/de-mobilisations. According to Prog-13 (August 2019) the mobilisation/demobilisation occurred 2nr times due to the event. Based on the planned resources (DIS003) of 6nr labour and a requirement of an estimated 3hrs for each of the mobilisation/demobilisation process, the estimate is that the disruption event should have accounted for 36 hrs (2mob/demob * 6 people * 3hrs) = 3.6 Shifts (10hrs/shift assumption)	3.6	3.6	0.0
20	Marking Out Studs	Subcontractor to mark out the studs required on the steel fabrication drawings to allow for the M&E, including SISS services to be installed	Variations	CE-115	16/11/2018	26/03/2019	[L][L] Narrative_Disruption (Section 5.0), para. 5.3.22 / 181116_CE_115_[L]_Marking Out Studs (CI078) / 181116_CL_078_[L]_Marking Out Studs (CE115) / 181116_CL_079_[L]_Marking Out Studs (QTE) / 190326_CA_23_[L]_Marking Out Studs quote /	Overall	Overall	Overall	The understanding is that this variation would require 3 additional shifts as a result of disruption	3.0	3.0	0.0
21	Access to Staircase 1 later than indicated on CI-38	[ ] not providing overall access for the commencement of works as per CI-38	N/A	CI-38 / CE-118	19/11/2018	21/01/2019	[L][L] Narrative_Disruption (Section 5.0), paras. 5.3.7 – 5.3.18 / 180919_[L]_CL_038_[L]_Revised Access Date / 181123_CE_118_[L]_SNTFD_Revised Access Dates / Prog-13 (August 2019)	Link Bridge	Staircase 1	Overall	The late provision of access when compared to the CI-38 is not considered to be a Disruption Event, as works had not commenced in the area	0.0	0.0	0.0
22	Access to Staircase 2 later than indicated on CI-38	[ ] not providing overall access for the commencement of works as per CI-38	N/A	CI-38 / CE-118	19/11/2018	18/12/2018	[L][L] Narrative_Disruption (Section 5.0), paras. 5.3.7 – 5.3.18 / 180919_[L]_CL_038_[L]_Revised Access Date / 181123_CE_118_[L]_SNTFD_Revised Access Dates / Prog-13 (August 2019)	Link Bridge	Staircase 2	Overall	The late provision of access when compared to the CI-38 is not considered to be a Disruption Event, as works had not commenced in the area	0.0	0.0	0.0
23	Full access not provided on Link Bridge for the Bridge Span CMS works (roofing/cladding to Link Bridge and edge protection removal)	There had been incomplete works by others that resulted to fragmented work - the supporting evidence is required from [ ] to validate all [ ]sment based on Claim Narrative	Fragmented work	CE-118	26/11/2018	31/01/2019	[L][L] Narrative_Disruption (Section 5.0), paras. 5.3.14 – 5.3.18, 5.5.19 / 181123_CE_118_[L]_SNTFD_Revised Access Dates / Prog-13 (August 2019)	Link Bridge	Bridge Span	CMS	The event led to mobilisations/de-mobilisations. According to para. 5.5.19 of [ ] Narrative disruption the mobilisation/demobilisation occurred 8nr times. Based on the provided actual resources daily average of 4.5nr people and a requirement of an estimated 3hrs for each of the mobilisation/demobilisation process, the estimate is that the disruption event should have accounted for 120 hrs (8mob/demob * 5 people * 3hrs) = 12 Shifts (10hrs/shift assumption)	12.0	12.0	0.0



# Contemporaneous records

Summarise assessment by category of event:

Disruption Event Type	Total Impact Assessment (Shifts)	Clamed Events	□ Responsibility
Fragmented work (mobilisation/ demobilisation)	45.0	45.0	0
Reduced productivity (e.g. due to possible reassignment of manpower or possible alteration to the planned work sequence)	62.8	54.5	8.3
Re-work, errors and omissions	46.0	46.0	0
Variations	3.0	3.0	0
Temporary “blocker” to the progress of works	27.5	8.3	19.2
<b>Total</b>	<b>184.3</b>	<b>156.8</b>	<b>27.5</b>

# Contemporaneous records

## Pros

Simple and easy to perform

Derived from contemporary evidence

More suitable with multiple disruption causes

## Cons

Estimates may be subjective if not supported by evidence

Still requires detailed daily/weekly records

Time consuming

# Proving Disruption claims

## What records do we need to prove a disruption claim?

#	Records Required	Earned Value	Measured Mile	Assessment
1	Tender budget breakdown	X		
2	Monthly timesheet hours for each trade	X		
3	Monthly time sheet hours for each area	Preferrable		
4	Daily time sheet hours for each activity	Preferrable	X	Preferrable
5	Records of % work performed	X		Preferrable
6	Records of quantities completed		X	Preferrable
7	List of disruption causes	X		
8	Detailed list of disruption events	Preferrable	X	X
9	Detailed daily records of disruption events	Preferrable	Preferrable	or X

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**Thank you.  
Questions?**

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