



# THE STATE OF VICTORIA'S NEW WORKPLACE MANSLAUGHTER LEGISLATION AS AT 01-JULY 2020

The impact of new legislation on Planning and  
Scheduling , Costs and potential time delay to  
project delivery

by

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# Causation of Delays in Schedules and project delivery



# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

**According to some Construction PM's the causes of Schedule Delays in Construction Projects are**

1. Construction site access
2. Differing site conditions
3. Force majeure
4. Adverse weather

# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

- ▶ It is interesting to note whilst researching the internet for this paper that nowhere in the, multitude of learned material, and literature, government inquiries, etc. there is very little if not no reference to schedule delays caused by Fatalities and LTI's and other safety issues
- ▶ That it is obvious when researching this topic through google, indicates that little research into safety and the impact on a Schedule exists

# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

- ▶ Early in the 21<sup>st</sup> century, the construction fatality and incident rates are noticeably higher than the average of all industries worldwide (Lingard & Rowlinson, 2004; Sunindijo & Zou, 2011).

# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

- ▶ So, in 2004, the Victorian Government passed
  - ▶ The **Occupational Health and Safety Act 2004** and related regulations aim to keep Victorian workplaces safe. Occupational Health and Safety Act 2004 The Occupational Health and Safety Act 2004 (OHS Act) is the main workplace health and safety law in Victoria. It sets out key principles, duties and rights about OHS.

# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

- ▶ However ,over the intervening years whilst fatalities were dropping slowly, deaths continued
  - ▶ **Falls from heights fatalities. A total of 48 construction workers were killed by falls from heights in the five years from 2008-9 to 2012-13. The most at risk construction occupations for falls from heights fatalities were: Painting and decorating; Roofing; Plumbing; Housing construction**

# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

- ▶ Due to pressure from the workplace concerned about the continuing number of fatalities not being addressed by the 2004 legislation , in 2018 the Andrews government promised if re-elected they would introduce tougher laws
- ▶ The state government was returned and so a toughening of the existing legislation was passed through parliament in 2019 and was promulgated by 01-July -2020



# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

- ▶ A new criminal offence of workplace manslaughter has been introduced by the government of the State of Victoria into occupational health and safety laws.
- ▶ The offence applies to negligent conduct by an employer or other duty holders as outlined below, or an officer of an organisation, which breaches certain duties under the Occupational Health and Safety Act 2004 (OHS Act) and causes the death of another person who was owed the duty.
- ▶ The law provides for a custodial sentence of up to 20 years and a company fine of \$16.5 million

# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

- ▶ Why has the legislation been changed?
- ▶ Because even though many countries had a Occupation, Health and Safety legislation laws, when a fatality occurred it often did not result in prosecution as the law was focussed on the organisation and not the person who may have caused the fatality as a result of their actions

# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

- ▶ Firstly, need to understand the reasons for why this change to legislation has occurred and secondly the likelihood of this change becoming the norm in many other jurisdictions
- ▶ It has occurred because of the following

# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

- ▶ In 2019 62% of worker fatalities occurred in the following industries:
  - Transport, postal and warehousing (58 fatalities)
  - Agriculture, forestry and fishing (30 fatalities)
  - **Construction (26 fatalities)**
- ▶ The most common causes of worker fatalities in 2019 were:
  - Vehicle collisions (43%)
  - Falls from a height (11%)
  - Hit by falling objects (11%)

# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

## The statistics

### ▶ Work-related fatalities

▶ When it comes to work-related fatalities, the most recent statistics from the Construction Industry Profile show that between 2003–13, 401 workers died on construction sites in Australia. The majority of those (28% or 112 workers) involved falls from a height:

- 40 involved ladders, mobile ramps, stairways and scaffolding
- 32 involved a fall from a roof
- 17 involved buildings under construction or demolition.

### ▶ Other fatalities during this period were made up of:

- vehicle collisions 16% (65)
- electrocution 15% (61)
- being hit by a moving object 12% (48)
- being hit by a falling object 11% (46)
- being trapped between or in equipment 8% (31)
- other causes 9% (38).

# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

- ▶ Also Lost Time Injuries have increased which has implications to the schedule as does fatalities



## CONSTRUCTION - A national priority industry

### CONSTRUCTION FATALITIES for 5 years, from 2008-9 to 2012-13

#### Mechanism



Sources of information:  
 Safe Work Australia's National Data Set for  
 Compensation-based Statistics (NDS)  
 Summative Injuries Fatality dataset (TIF)

### CONSTRUCTION SERIOUS INJURIES for 5 years, from 2008-9 to 2012-13

#### Mechanism



#### Result



#### Prevention

You can change these statistics!  
 Principles of Good Work Design - A work health and safety handbook  
 model Code of Practice - Construction Work  
 model Code of Practice - Demolition Work  
 model Code of Practice - Excavation Work  
 model Code of Practice - Safe Design of Structures, and  
 model Code of Practice - Preventing Falls in Housing Construction  
 Safety Solutions Injury Hotspots  
 For more information on prevention see your local work health and safety regulator.

### FALLS FROM HEIGHTS FATALITIES for 5 years, from 2008-9 to 2012-13

#### Mechanism



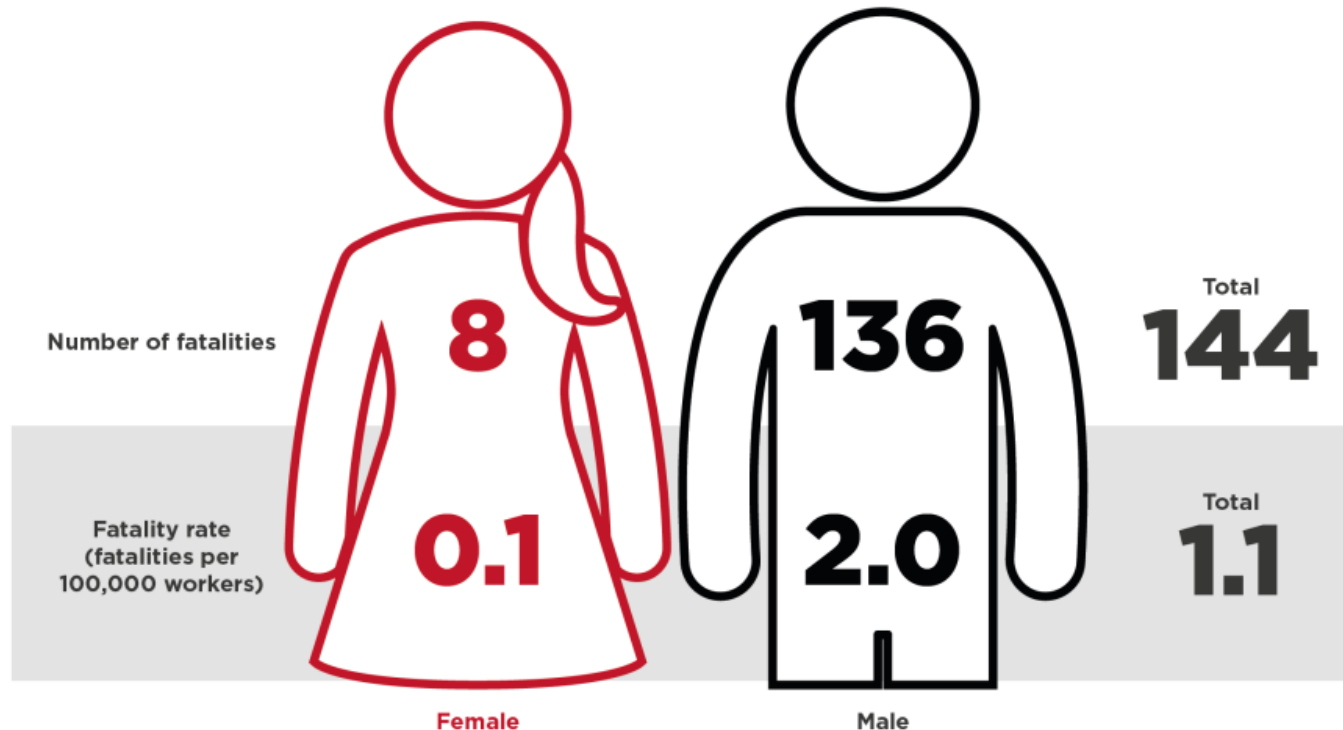
#### Most at risk



# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

## Work-related injury fatalities by gender, 2018





# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

## Key WHS statistics Australia 2019

Work-related injury fatalities



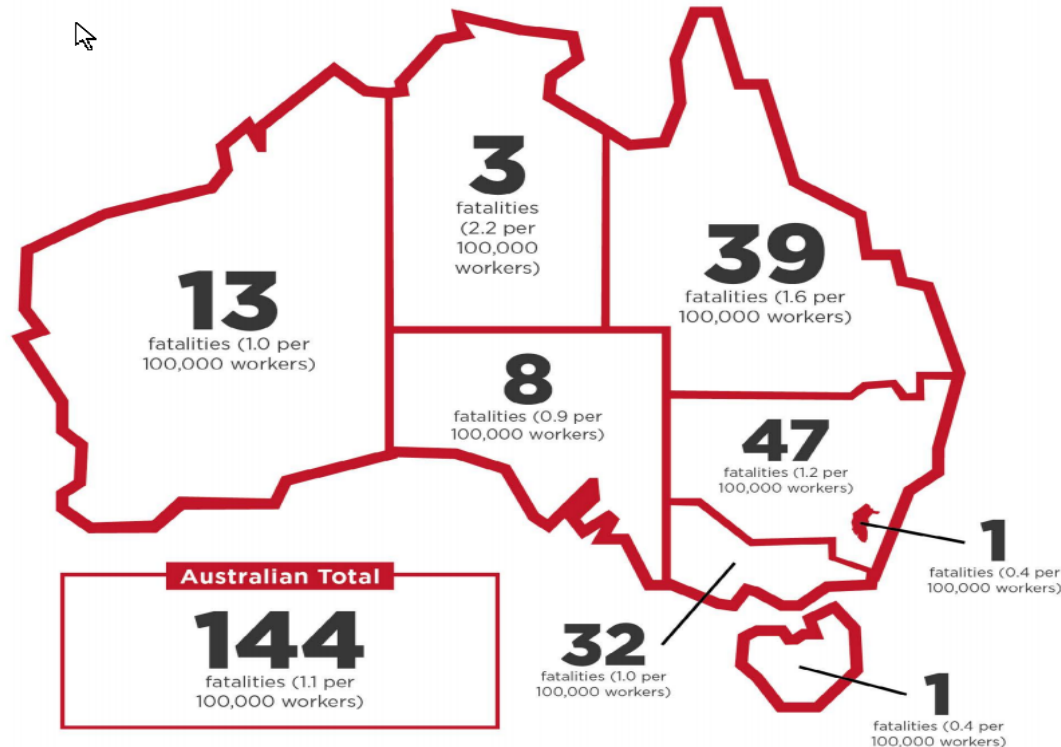
safe work australia

### Work-related injury fatalities by age group, 2018

Age group (years)	Number of fatalities	Fatality rate (fatalities per 100,000 workers)
Under 25	19	1.0
25-34	24	0.8
35-44	25	0.9
45-54	27	1.0
55-64	31	1.7
65 and over	18	3.3
<b>Total</b>	<b>144</b>	<b>1.1</b>

# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

**Work-related injury fatalities by state/territory, 2018\***



# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

► Thus what is the impact on the project plan, the schedule and cost from now on?

# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING,COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

## ► Research

- Recent studies indicate that investing in health and safety can yield financial advantages. Some highlights:
  - Accident prevention can be improved without higher costs and slower schedules.
  - **Workplace injuries account for 6-9% of project costs** whereas an effective health and safety program accounts for only 2.5% of those costs.
  - The higher the safety investment in a project, the lower the injury rates and the higher the profit.
  - Increased training, more frequent inspections, and more health and safety meetings with field supervisors result in fewer lost-time injuries, lower costs, and a larger profit margin.
  - CSAO found that construction workers with back injuries who participate in a back care program are less likely to be re-injured than those who don't participate.

# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY



Photo credit: U.S. Department of Labor

In the United States the fatality rate is considerable higher than Australia

# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

- ▶ In the USA, the Occupational Safety and Health Administration is responsible for all aspects of work safety and health
- ▶ **Work-related fatalities for cases inspected by Federal or State OSHA**
- ▶ provides data on work-related fatalities that occurred under Federal OSHA and State Plan jurisdiction for cases that have been closed or citations issued on or after January 1, 2017.
- ▶ Employers must report worker fatalities to OSHA within eight hours. OSHA investigates all work-related fatalities in all covered workplaces. The agency has up to six months to complete an investigation and determine whether citations will be issued.

# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

## ▶ OSHA provides

- ▶ Reports of fatalities for CY17-20.
- ▶ (The information is not comprehensive. We continue to update it as data becomes available).
- ▶ Fatality summaries are listed in descending order from newest to oldest. In the table below

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Date of Incident	City	Select State	Hazard Description	Inspection Number	Federal or State Plan	Citation Issued Related to Fatality
Date	City	Select State	Keyword	Number	Select Category	Select Yes or No
10/03/2020	Spanish Fork	UT	Worker died in trench collapse.	1495752	State	No
09/29/2020	Jacksonville	FL	Worker fatally shot coworker, then self.	1495044	Federal	No
09/09/2020	Salt Lake City	UT	Worker fatally struck by arm of recycling truck.	1492089	State	No
08/24/2020	Smithville	TN	Worker electrocuted when guide twine contacted power line.	1489625	State	No
08/17/2020	Wethersfield	CT	Worker fatally struck by passing vehicle.	1488724	Federal	No
08/14/2020	Waterloo	IA	Worker fatally injured after falling backward and striking head.	1488675	State	No
08/11/2020	Ogden	UT	Worker fatally crushed by excavator bucket.	1487677	State	No
08/08/2020	Arrington	TN	Worker died when truck rolled down embankment.	1487282	State	Yes
08/04/2020	Blountville	TN	Worker fatally struck by passing vehicle.	1486741	State	No
08/03/2020	Heber City	UT	Worker died in fall down stairwell.	1486894	State	No



# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY



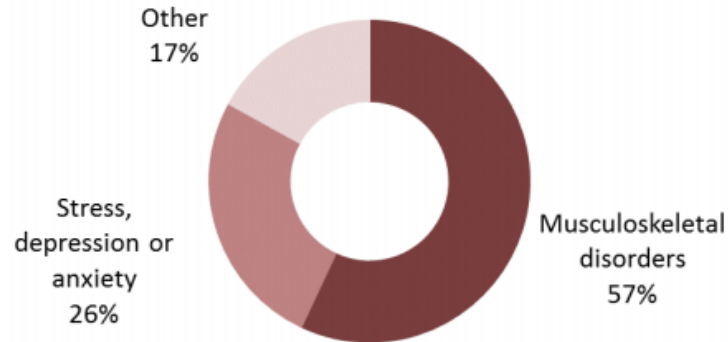
## Key statistics

in the Construction sector in Great Britain, 2020



**81,000**

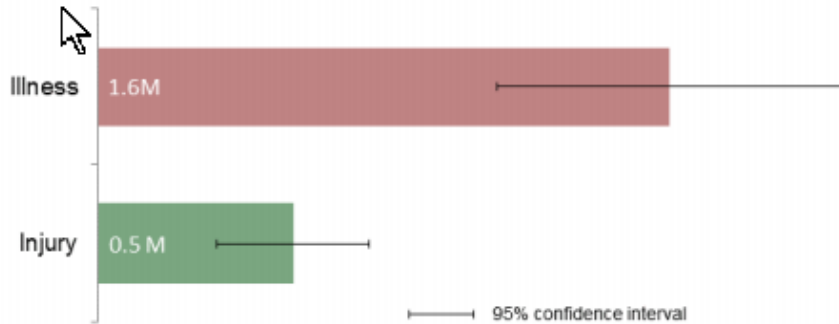
workers suffering from work-related ill health (new or long-standing)



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## UNITED KINGDOM WORKING DAYS LOST

### Working days lost



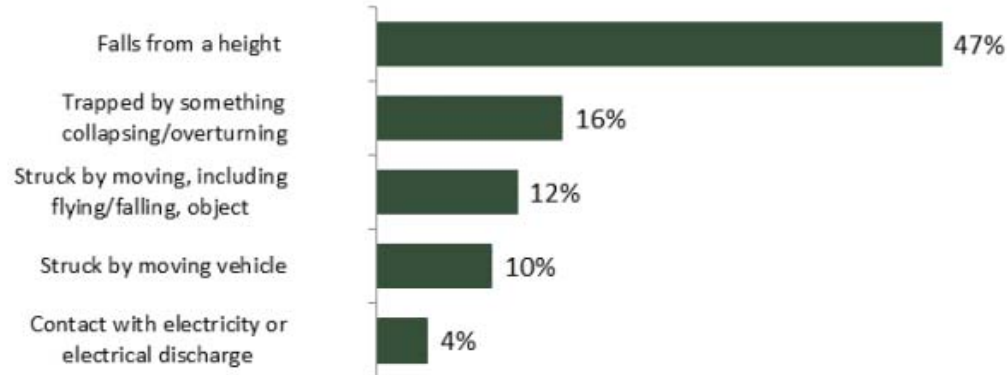
Source: LFS, estimated annual average 2017/18-2019/20

In Construction around **2.1 million working days** (full-day equivalent) were lost each year between 2017/18 and 2019/20 due to:

- workplace injury (25%) and
- work-related illness (75%).

# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

Sources: LFS estimated annual average 2017/18-2019/20.



**40** fatal injuries to workers in 2019/20p

This is similar to the annual average number of 37 fatalities for 2015/16-2019/20p

# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

- ▶ All jurisdictions around the world have similar laws, but it is rare to find the average Planner and or Scheduler who has any reasonable knowledge of the compulsory nature of all the requirements so that they can make informed decisions as to estimate of the impact of the particular regulation on the duration of a task.
- ▶ The Planner must take into account all of the dependent work and safety requirements before determining the task duration but most often there is no visibility in the schedule to indicate that safety risks have been mitigated

# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING,COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

- ▶ It is very rare to see in a construction schedule where the time required for safety tasks have been included.
- ▶ It is often said to be included in the JSA or SWMS
- ▶ Some major contractors do plan and schedule such that any safety risk has been mitigated and that the work to ensure the worker's safety is visible
- ▶ However these contractors are in a minority

# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

- ▶ A serious shortcoming in maintaining safety in the daily work flow, is when a project is running behind schedule and the project director is pressurising the foreman to get the work done as need to complete on time is emphasised
- ▶ The workers themselves feel that pressure and will take shortcuts to get the task completed and inevitably cause an accident, which may prove fatal

# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

- ▶ For more information in this area read “Distinguished Professor Helen Lingard” of RMIT seminal work

## Integrating Work Health and Safety into Construction Project Management

July 2019

DOI: [10.1002/9781119159933](https://doi.org/10.1002/9781119159933)

ISBN: 9781119159926

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# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

- ▶ In Australia, when a fatality occurs on a construction site it is immediately closed down by the local Work Safe organisation



# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING,COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

- ▶ Fatalities involve both direct costs and indirect costs.
- ▶ Direct costs consist of
  - medical expenses such as ambulance, hospital, and doctors' fees, medication
  - Counselling of site employees and contractors
  - compensation payments
  - WorkSafe Victoria premium increases
  - litigation costs.

# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

- ▶ Indirect costs include disrupted work schedules, lost productivity, clean-up and repair, hiring and training replacement workers, bad publicity, and time spent on accident investigation, claims management, and litigation.
- ▶ Re-engineering,
  - ▶ Design implication
  - ▶ Constructability / methodology
- ▶ Having to replan and reschedule the remaining work on the project, which may a serious impact on the project completion date

# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

- ▶ Since the Westgate and the Milford Haven box girder bridges collapses back in the 1970's strong OHS laws have been promulgated to prevent such events
- ▶ The introduction of
  - ▶ **Job Safety Analysis (JSA) and a Safe Work Method Statement (SWMS). documentation to mitigate any risks which may be present in the construction process, are now mandatory**

# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

- ▶ However, in many schedules it is not obvious as to how much time has been allowed by the planner in the task durations for the implementation of the defined safety requirements.
- ▶ The safety and work methodology is generally discussed at a “Toolbox meeting” first thing at the start of day or shift
- ▶ As well as other identified risks as defined in the JSA or SWMS

# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

## Top Risks Facing the Industry

### Owner Perspective

1. Availability of Qualified Contractors
2. Shortage of Internal Resources
- 3. Managing Risk**
4. Rising Cost of Construction
5. Environmental Matters
6. Availability of Qualified Vendors
7. Delivery on Time and Budget
8. Regulatory Matters
9. Technology
10. Transferring Risk
11. Entering New Markets

### Contractor Perspective

1. Shortage of Qualified Resources
- 2. Managing Risk**
3. Transferring Risk
4. Securing Forward Workload
5. Entering New Markets
6. Gaining Competitive Edge
7. Succession Planning
8. Bonding Capacity
9. Reducing Overhead
10. Industrial Relations

Source: KPMG's 2005 Global Construction Survey

# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

- ▶ Notice that OHS& E is not considered a risk, which says it all
- ▶ This would indicate that the schedule will fail to deliver if a serious safety event occurs, especially a fatality

# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

- ▶ According to J.J. Smallwood, Associate Professor, Department of Construction Management, University of Port Elizabeth, Port Elizabeth, South Africa in his paper on
- ▶ THE ROLE OF HEALTH AND SAFETY IN PROJECT MANAGEMENT
  - ▶ Inadequate or the lack of occupational health and safety not only negatively affects the traditional construction project parameters of cost, quality and schedule, but the sustainability of the environment. Occupational fatalities, injuries and disease constitute defects as they are not project requirements. They also contribute to the cost of construction and development as workers' compensation insurance is included as a labour overhead and the cost of accidents is integrated into the cost structure of contractors.

# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

## ▶ Plan Ahead

- ▶ Ensure all prework activities, such as approvals, are completed before work begins. A thoughtful planning process can help the workday start on a more efficient and safer standing. Implement zoning to block off areas where certain tasks will take place, install nets and catch platforms, and apply any other safety measures.. Keep the work areas free from building refuse.

## ▶ Because



# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

- ▶ • ...major programs are not just magnified versions of smaller projects, they are a completely different breed in terms of their level of aspiration, lead times, complexity, and stakeholder involvement.<sup>1</sup>
- ▶ • ...9 out of 10 major programs incur cost overruns.<sup>2</sup>
- ▶ • ...cost overruns of 50-100% are not uncommon for major programs.<sup>2</sup>•
- ▶ ...end-user demand and overall benefits of major programs are typically overestimated by 20-70% compared with actual developments.<sup>2</sup> •
- ▶ construction disputes are increasing due to complex programs; multi-geography delivery, faster paced schedules and external economic factors<sup>3</sup>
  
- ▶ 1 Bent Flyvberg: What You Should Know About Megaprojects and Why: An Overview (2014)
- ▶ 2 Bent Flyvberg: Over Budget, Over Time, Over and Over Again: Managing Major Projects (2011)
- ▶ 3 Arcadis: Construction Disputes Report (2015)

# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

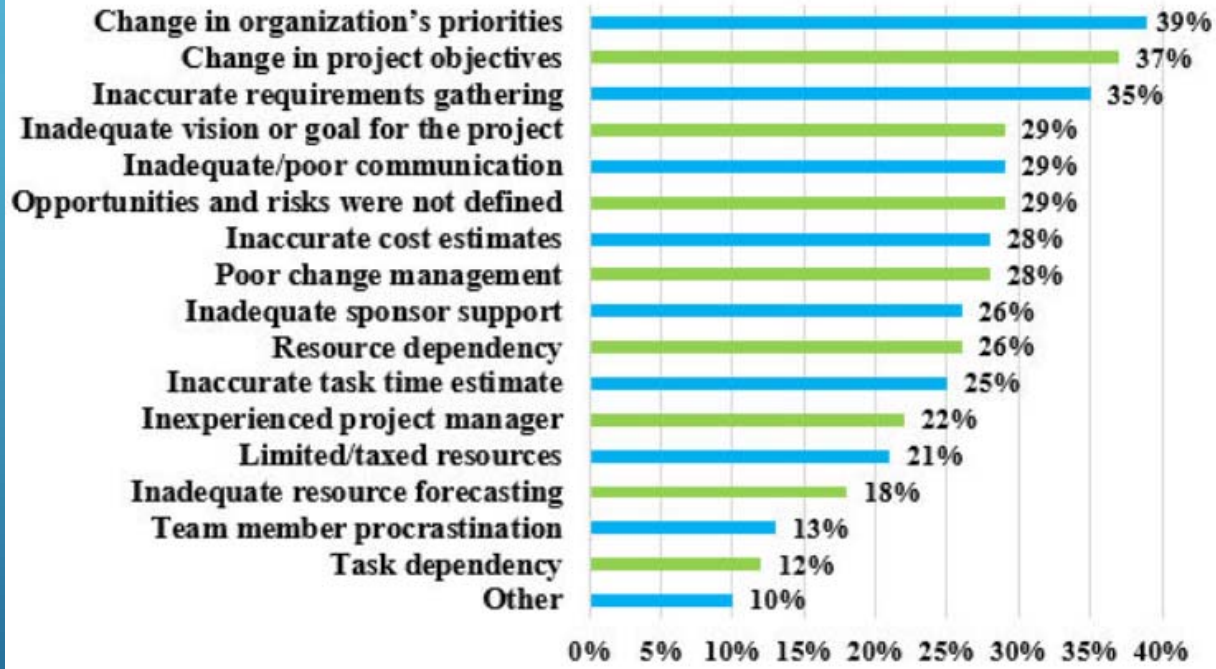
According to Saleh Al-Wadei in his

## Study on the Main Causes of Project Schedule Delays

Saleh Al-Wadei (*PMI Central Italy Chapter*) - May 29, 2020

# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

## Primary Causes of Project Failures in 2018



: Primary causes of project failures based on PMI's Pulse of the Profession® 2018 (PMI, 2018)

# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

In Saleh's dissertation, there is no mention of OHS & E and / or safety issues as being a cause of project schedule failures, his research is based on a wide range of projects in several countries but does not consider how the failure to ensure safety has quite an impact on schedule delay

# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

So what can be done to mitigate the delays due to LTI's and Fatalities

- The Planner when developing the plan for the schedule should identify all those areas of the project and the site which have safety implications and identify those tasks which are to be implemented in those areas .
- These tasks should be coded such that the different types of safety risks which have been identified so that they can be selected in reports which can be used when preparing the JSA's or SWMS, as this will provide the lead trade with the schedule information and duration planned for the task. This may of course indicate that once the sub tasks are specified in the JSA that the planned duration is either too short or most unlikely, too long.
- These reports should be produced at least two weeks before the planned start of the tasks

# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

The scheduler within the schedule must show visibility of the pre-work required for a complex task which may have to comply with various safety requirements as defined by the site OHS&E superintendent. Also ensuring that the duration allows time to ensure safe work

If in the unfortunate event of a fatality on the task, then it is the subject of a criminal offence in Australia, a Culpable Homicide in the US and in the UK, which of course will shut the project site down until the Worksafe /OSHA inspectors determine that the site is safe after work has taken place to make sure. I

- In the UK A Company director and project manager were sentenced after construction worker sustained fatal crush injuries, as well as a fine

# THE IMPACT OF NEW LEGISLATION ON PLANNING AND SCHEDULING, COSTS AND POTENTIAL DELAY TO PROJECT DELIVERY

I would appreciate any research material you may have to help me with my work in this most important area of scheduling.

I would like examples of P6, MSP, OPP, ASTA and Micro Planner schedules showing the fact that then scheduler did include the prework and provided a sensible duration to ensure safety of the workers performing the work

Please forward to me:  
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