



# DUTIES OF DESIGNER IN OSHCIM

Presented by:

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Workshop I: 23<sup>rd</sup> August 2023



Dubai I,  
MATRADE Exhibition & Convention Centre





## Enam kereta rosak ditimpa serpihan tangki air pecah

Oleh **Samadi Ahmad**  
Oktober 28, 2022 @ 8:11 am  
[bhnews@bh.com.my](mailto:bhnews@bh.com.my)



Enam kereta mengalami kerosakan akibat ditimpa serpihan tangki air pecah di Apartmen B, Penaga Mas, Taman Mas, Sepang. Foto Ihsan PDRM

PUTRAJAYA: Enam kereta dilaporkan rosak teruk akibat ditimpa serpihan tangki air yang pecah di pangsapuri Blok B, Penaga Mas, Taman Mas, Sepang, semalam.



## Sekumpulan pelajar cedera, tangki air pecah timpa laluan siar kaki

Nor Fazlina Abdul Rahim  
[nfazlina@nstp.com.my](mailto:nfazlina@nstp.com.my)  
August 9, 2022 @ 2:15pm



Keadaan laluan siar kaki SMK Melor yang rosak akibat ditimpa tangki air yang pecah. - Foto FB Radzi Jidin

KOTA BHARU: Sekumpulan pelajar cedera selepas tangki air pecah dan menimpa laluan siar kaki Sekolah Menengah Kebangsaan (SMK) Melor, hari ini.

# PAST ACCIDENTS: HAVE WE LEARNED OUR LESSON?

# PENANG FATAL LANDSLIDE COURT FINES ENGINEER, CONSULTANT COMPANY RM80,000



## REPORT OF THE COMMISSION OF ENQUIRY: 22 JULY 2019

5.17 Mr T disclosed that his “supervision work” consisted mainly of taking photographs of ongoing construction works, and sending them to Ir K by WhatsApp, for the latter to have a look and to give him further instructions<sup>3</sup>. Mr Tan himself had insufficient knowledge and experience to know whether or not all the construction works were being carried out properly.

5.21 It is not an exaggeration to say that what Ir K was doing, most of the time, was ‘supervising by remote control’.

## PAST ACCIDENTS: HAVE WE LEARNED OUR LESSON?

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Opalyn Mok  
11 September 2019



Rescue workers search for victims of a landslide at a construction site in Tanjung Bungah, George Town October 22, 2017. — Reuters pic

GEORGE TOWN, Sept 11 — A consultant engineer and an engineering consultancy firm were fined RM40,000 each for failing to provide safe working procedures that led to a fatal landslide at the Granito project site in 2017.

The consultant engineer, Khoo Koon Tai, and Perunding KAA Sdn Bhd both changed their plea and admitted to the offence when the case came up for mention at the Sessions Court today.

Perunding KAA Sdn Bhd was charged under Section 15 (1) of the Occupational Safety and Health Act 1994 in which as an employer, it had failed to provide engineering calculations for the temporary slope where the fatal landslide occurred and therefore had failed to ensure the safety, health and welfare of all workers at the site.



**JABATAN KESELAMATAN DAN KESIHATAN PEKERJAAN SELANGOR**  
Tingkat 7 & 8 (East Wing), Wisma Consplant 2, Jalan SS16/1,  
47500 Subang Jaya, Selangor  
Tel: 03-5623 6400, Faks: 03-5638 9159  
Laman web: [www.dosh.gov.my](http://www.dosh.gov.my)

**SIARAN MEDIA**  
UNTUK LIPUTAN MEDIA MASSA

**JURUTERA PROFESIONAL DIDAKWA DI BAWAH**  
**AKTA KESELAMATAN DAN KESIHATAN PEKERJAAN 1994**

**Klang, 26 April 2022** – Hakim Mahkamah Sesyen Jenayah Klang, Puan Rohatul Akmar Binti Abdullah hari ini telah menjatuhkan hukuman denda Dua Puluh Lapan Ribu Ringgit (RM28,000) atau sepuluh (10) hari penjara terhadap Chu Kwai Kuen yang mengaku bersalah bagi pertuduhan di bawah Seksyen 17(1), Akta Keselamatan dan Kesihatan Pekerjaan 1994, (Akta 514).

Chu Kwai Kuen sebagai Jurutera Profesional yang diwakili peguam dari Tetuan Derek Chong, didapati telah gagal memastikan kewajipan setakat yang praktik keselamatan dan kesihatan orang lain, yang bukan pekerjaanya, dengan gagal memastikan pemasangan struktur penyangga dapat menampung beban yang dikenakan ke atasnya, sehingga menyebabkan kemalangan maut ke atas seorang pekerja akibat dihempap oleh struktur *falsework* yang runtuh, manakala dua lagi pekerja turut cedera semasa kejadian tersebut. Kesalahan dilakukan di tapak projek LRT3, Pakej GS09, di

Muka surat 1 dari 2

Muka surat 2 dari 2

Tiang P22-41, Bandar Bukit Tinggi 1/KS6, Jalan Langat, 41200 Klang, Selangor, pada 29 Julai 2021 yang lalu, lebih kurang jam 2.30 petang.

Pendakwaan bagi kes ini dikendalikan oleh Pegawai Pendakwa dari Jabatan Keselamatan dan Kesihatan Pekerjaan (JKKP) Selangor, Encik Muhammad Redzuan Bin Razali. Manakala, siasatan telah dijalankan oleh Pegawai Penyiasat JKKP Selangor, Encik Mohamad Firdaus Bin Abu Hassan. Kes ini diharap dapat memberi pengajaran kepada semua majikan-majikan dan pekerja agar pematuhan kepada undang-undang perlu diambil berat demi kepentingan awam dan keselamatan pekerja.

###

Dikeluarkan oleh:  
Pejabat Pengarah  
Jabatan Keselamatan dan Kesihatan Pekerjaan Selangor  
Kementerian Sumber Manusia  
26 April 2022

Jabatan Keselamatan dan Kesihatan Pekerjaan Malaysia (JKKP/DOSH) merupakan salah satu Jabatan di bawah Kementerian Sumber Manusia (KSM) yang menguatkuasakan Akta Keselamatan Dan Keselamatan Pekerjaan 1994 dan Akta Klang Dan Jentera 1967. JKKP/DOSH bertanggungjawab untuk memastikan keselamatan, kesihatan dan kebajikan orang yang sedang bekerja, dan melindungi orang lain daripada bahaya-bahaya keselamatan dan kesihatan yang berpunca daripada aktiviti pekerjaan pelbagai sektor.

# PAST ACCIDENTS:

## LRT 3 SITE, 29 July 2021

# Construction value chain

Julat pemain industri yang harus bekerjasama dan berkomunikasi sebagai **SATU PASUKAN**



- Developer
- Architect
- Engineer
- Quantity surveyor
- Project manager
- Government agencies and regulatory bodies

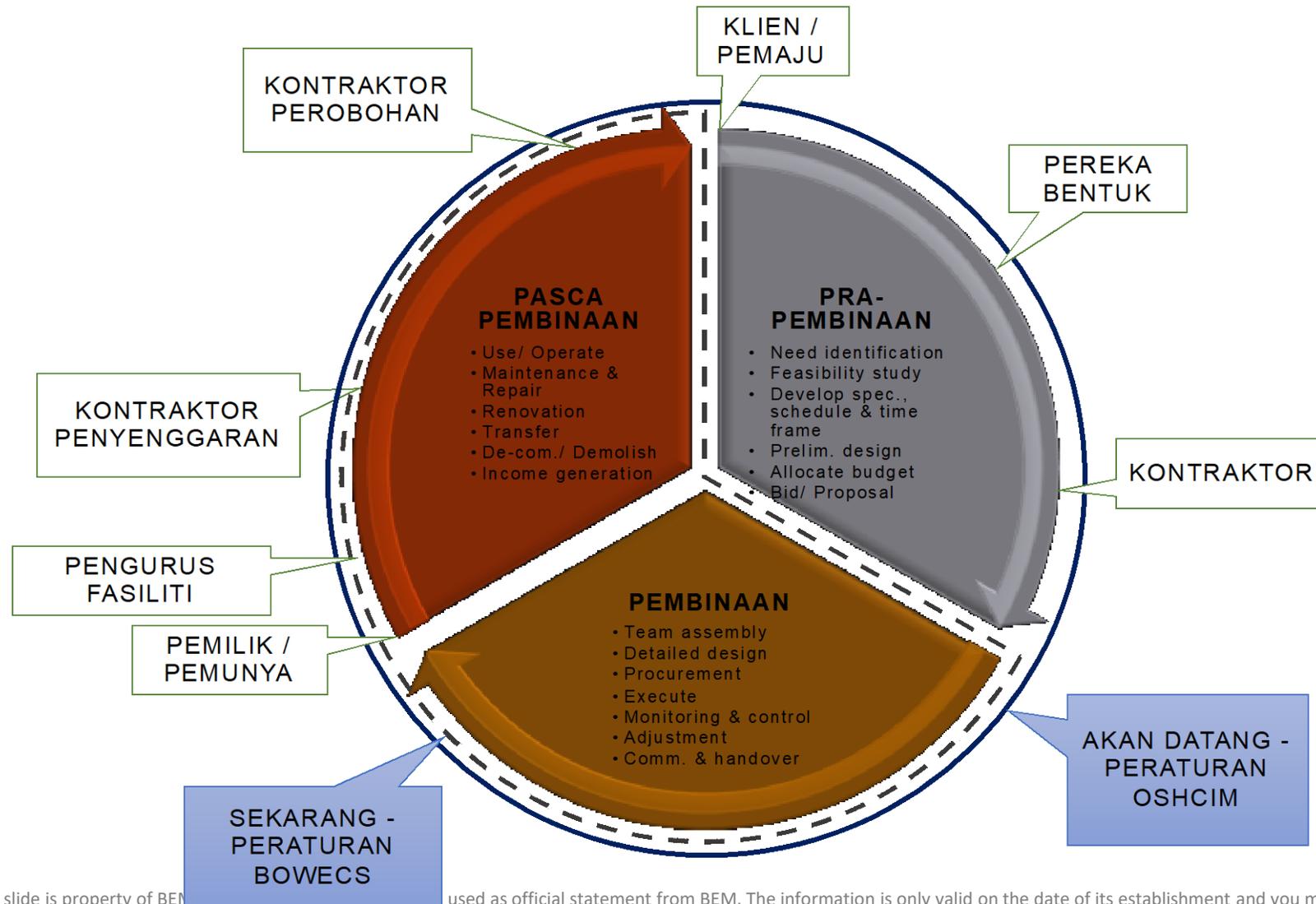
- Developer
- Architect
- Engineer
- Quantity surveyor
- Project manager
- Main contractor

- Architect
- Engineer
- Quantity surveyor
- Project manager
- Main contractor
- Subcontractor
- Construction site staff
- Construction worker
- Government agencies and regulatory bodies

- Developer
- Architect
- Engineer
- Quantity surveyor
- Project manager
- Main contractor
- Management corporation
- Government agencies and regulatory bodies



# OSH regulations for construction



# Outline of Presentation



**Who is CW designer (CWD)?**

**What is design?**

**Why is CWD important to OSH?**

**What should a CWD do?**



# Who is CW designer?



## CW designer (CWD) means any person who...

- a) prepares design,
- b) modifies design,
- c) arranges for or instructs, any person under his control to do a) or b)

..relating to a building, structure, product or mechanical or electrical system

(para. 52, 54, 55)



# Who is CW designer?



## CW designer (CWD) includes...

- a) engineer/architect contributes to or has overall responsibility for, design
- b) building services engineer designing details mech/elect system
- c) surveyor specifying plant or substance or drawing up specifications for remedial works
- d) contractor in design and build project
- e) anyone with authority to specify or alter specification of designs
- f) temporary works engineer designing scaffold, formwork, falsework
- g) interior designer, landscape architect

# What is design?



**Design means any drawing and its details and includes...**

- specification
- bills of quantity
- calculation

(para. 53)



# Why is CWD important to OSH?



## **Designer has strong influence during concept and feasibility**

- earliest decisions can fundamentally affect the safety and health of those who will construct, maintain, repair, clean, refurbish and eventually demolish a building
- safety and health of those who use a building as a workplace may also be affected
- contractor may find it hard to devise safe ways of working once they are on site
- client may also be forced to make costly late changes, so the building can be used and maintained safely once it is built.

(para. 56-57)



# Design and OSH

- Design and construction are interlinked
- Design is one of the contributing factor in OSH accidents
  - Validated by 16 studies conducted between 2008 to 2020 (Jin, Gambatase, Karakhan *et al.*, 2023)

Across US, **42%** of construction fatalities were **related to design issues** between the years 1990 and 2003<sup>1</sup>

A 1991 study done in Europe found that **60%** of fatalities were **the result of decisions made before the site work even began**<sup>2</sup>

**63%** of all fatalities and injuries could be attributed to design decisions of lack of planning<sup>3</sup>

<sup>1</sup> Behm, M., *Linking construction fatalities to the design for construction concept* (2005)

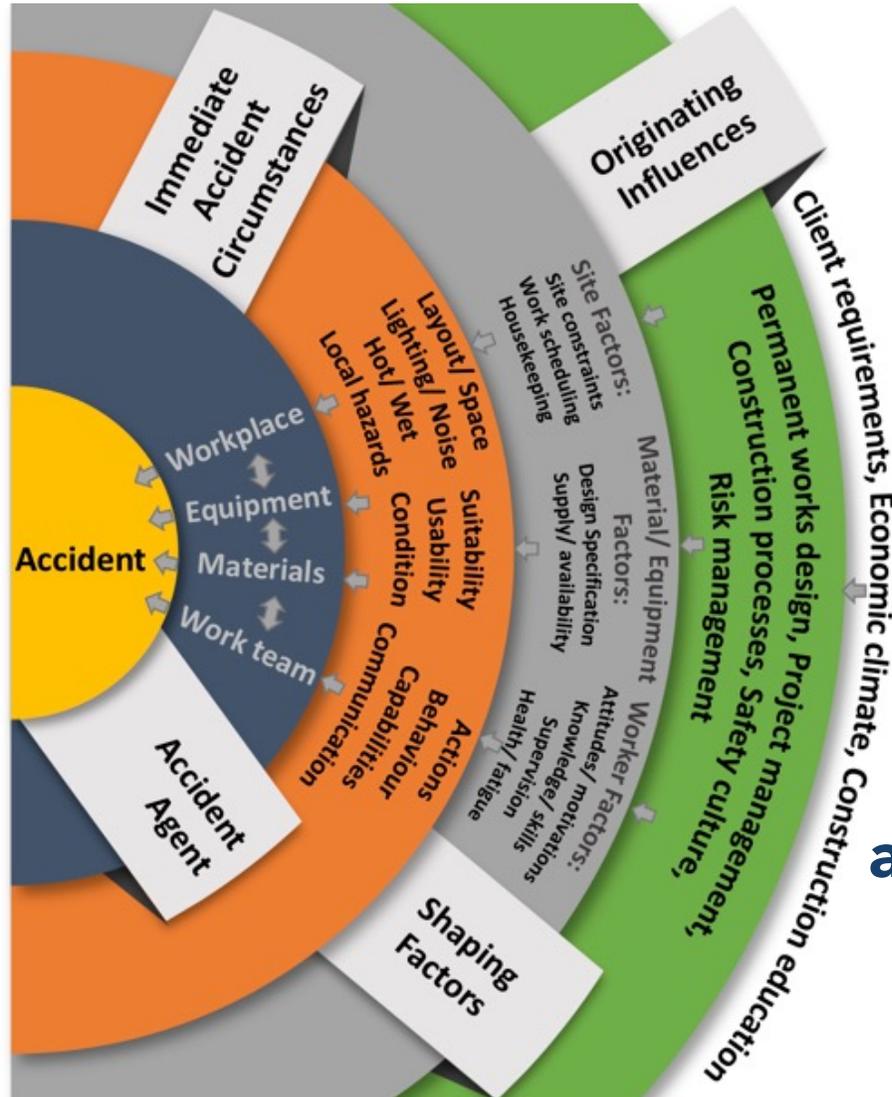
<sup>2</sup> *European Foundation for the Improvement of Living and Working Conditions* (1991)

<sup>3</sup> NSW WorkCover, *CHAIR Safety in Design Tool* (2001)

# Construction Accident Model Gibb et al. (2006)



- Illustrating the **hierarchy of influences** in construction accidents
- Accidents arise from a failure in the interaction between work team, workplace, equipment & materials (immediate circumstances)



“

Achieving a **sustained** improvement in safety would require efforts by **all stakeholders**, directed at all levels in the influence hierarchy.

*Gibb et al. (2006)*



# What *should* a CWD do?



## 1. Appointment

*CWD should* not accept appointment to a project unless he has safety and health skills, knowledge and experience,

necessary to fulfil the role that he is appointed to undertake, in a manner that secures the safety and health of any person involved or affected by the project.

(para. 43-45)



# What *should* a CWD do?



## 1. Appointment (guidance)

In addition to core design capabilities, CWD *should* also have:

- a) knowledge of OSH legislation;
- b) understanding intended purpose of structure;
- c) knowledge of risk assessment processes;
- d) knowledge of technical design standards; and
- e) Appreciation of construction methods and impact on design.

(para. 43-45)



# What *should* a CWD do?



## 1. Appointment (guidance)

Many design projects are too large and complex to be fully understood by one person.

Various persons with specific skills and expertise may need to be included in the design team or consulted during the design process to fill any skill, knowledge or experience gaps, eg. ergonomists and hygienists.

(para. 43-45)



# What *should* a CWD do?



## 2. Cooperation, communication

*CWD should cooperate* with any other person working on or in relation to a project, at the same or an adjoining construction site to the extent necessary to enable any person with any duty or function to fulfil that duty or function.

*CWD should continue to cooperate* with CWC as construction phase progresses to keep up-to-date with design changes

(para. 46-47, 72-73)

# What *should* a CWD do?



## 3. Reporting

CWD working on a project under the control of another person *should* report to that person (in control of the work) anything he is aware of in relation to the project which is likely to endanger his own safety or health or the others.

Person in control should instruct worker to stop work and report dangerous conditions when he sees them.

(para. 48)



# What *should* a CWD do?



## 4. Client awareness

*CWD should* not commence any work in relation to a project unless he is satisfied that the client is aware of client's duties.

(para. 60-61)



# What *should* a CWD do?



## 5. Consider General Principles of Prevention (GPP) & Pre-Construction Information (PCI)

CWD *should* take into account GPP and PCI

to eliminate, so far as practicable, foreseeable risks to safety or health of any

- a) construction worker or other person liable to be affected by construction work;
- b) maintenance worker or cleaner a structure; or
- c) worker using structure designed as a place of work.

(para. 62-69)



# What *should* a CWD do?



## 5. Consider General Principles of Prevention (GPP) & Pre-Construction Information (PCI)

If it is not possible to eliminate the risks, *CWD should*, so far as practicable

- a) take steps to reduce, or if that is not possible, control risks through subsequent design process;
- b) provide information about the risks to PCWD; and
- c) ensure appropriate information is included in SHF.

(para. 62-69)



# What *should* a CWD do?



## 5. Consider General Principles of Prevention (GPP) & Pre-Construction Information (PCI)

PCI *should* be

- a) provided by the client as soon as practicable;
- b) sufficient to enable CWD to judge whether it is possible to eliminate, reduce and control foreseeable risks; and
- c) provided at a stage where CWD can take account of it – as early in the design process as is practicable.

(para. 159)

# What *should* a CWD do?



## 6. Provide design information

CWD *should* take all reasonable steps

- a) to provide, with design, sufficient information about design, construction or maintenance of the structure; and
- b) to adequately assist client, other CWD and CWC to comply their duties.

CWD *should* agree with PCWD the arrangements for sharing information to avoid omissions or duplicated effort.

(para. 70-71)



# What *should* a CWD do?



## 6. Provide information/instruction

CWD *should* ensure information or instruction is

- a) comprehensive; and
- b) provided as soon as practicable.

CWD *should* provide information about significant risks\*  
CWD unable to eliminate through design process and steps  
taken to reduce or control those risks.

(para. 49-51)

\* Significant risk is not necessarily greatest risk, but that (including health risk) is not likely to be obvious, is unusual, or likely to be difficult to manage effectively.



# What *should* a CWD do?



## 6. Provide information (SHF)

CWD *should* ensure appropriate information is included in SHF about steps taken to reduce or control safety and health risks.

CWD *should* liaise with

- a) PCWD
- b) PCWC

CWD *should* provide information to the PCWD/PCWC as early as possible before CWD's work ends on the project.

(para. 200)



# Impact

## #1 Reduce accident

### Pra-OSHCIM

### Pasca OSHCIM

Penguatkuasaan di tapak pembinaan

Penguatkuasaan di tapak pembinaan + libat urus/ konsultasi projek pembinaan

Tanggungjawab kontraktor

Tanggungjawab kontraktor + klien & pereka

Pengurusan risiko KKP tapak

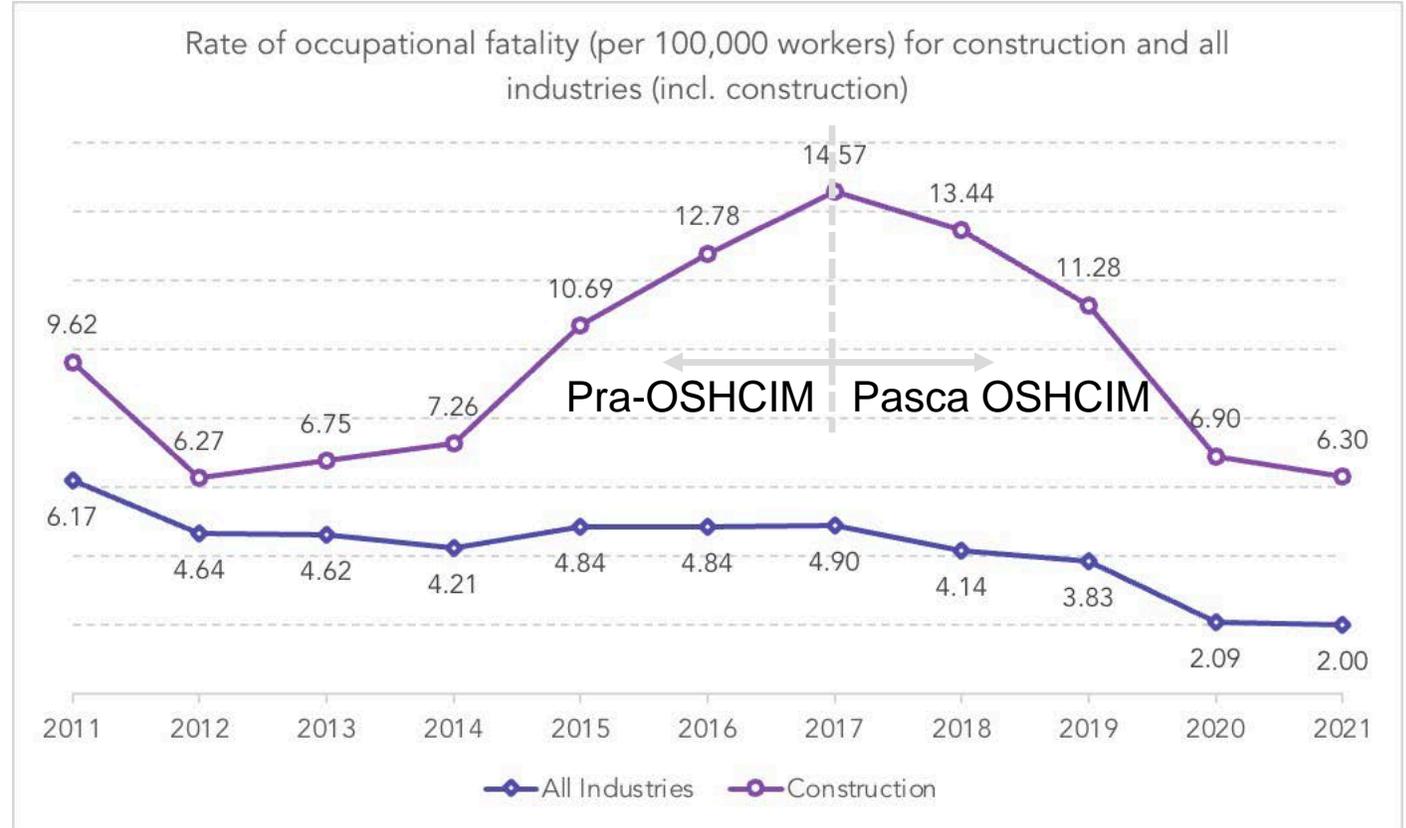
Pengurusan risiko KKP projek

KKP ketika fasa pembinaan & pasca pembinaan

KKP ketika pra-pembinaan, pembinaan & pasca pembinaan

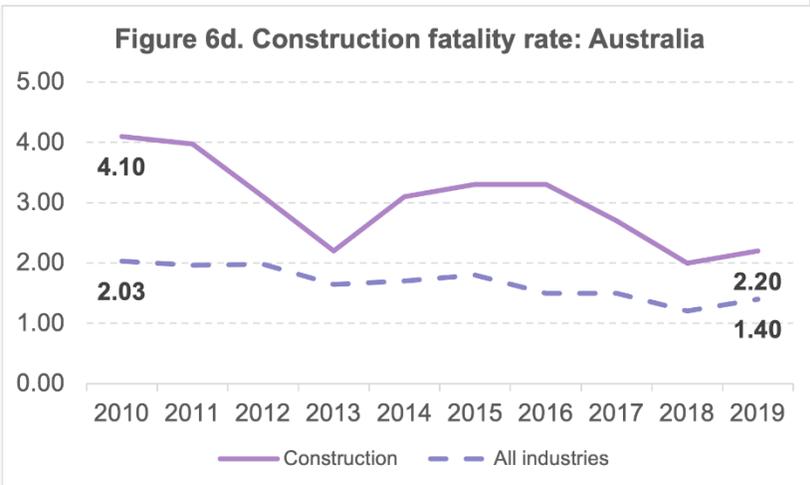
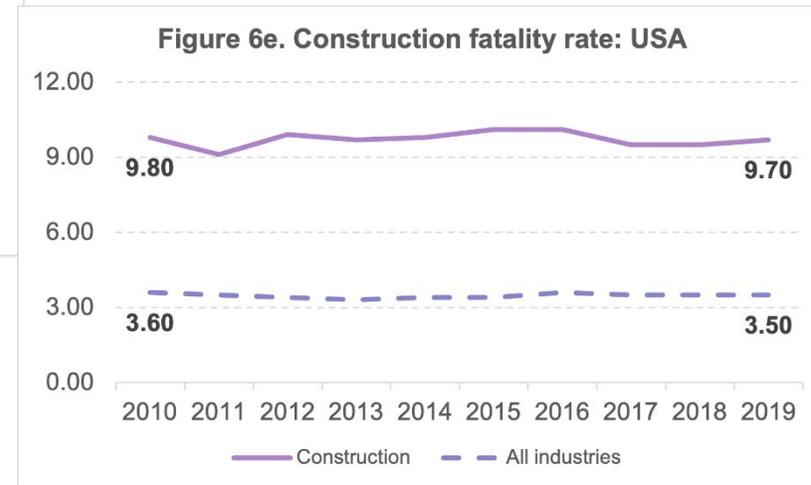
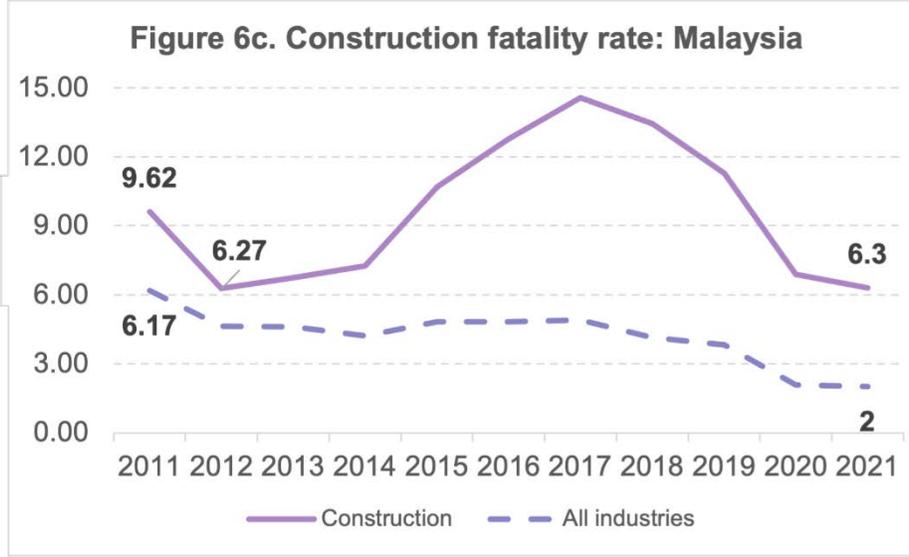
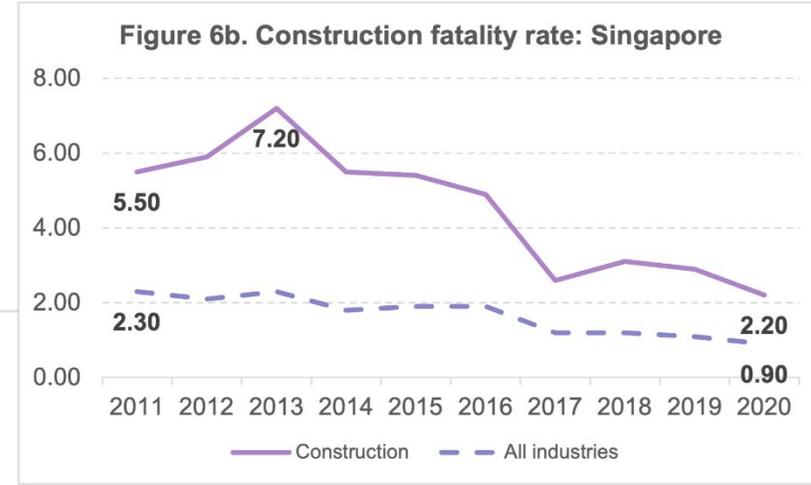
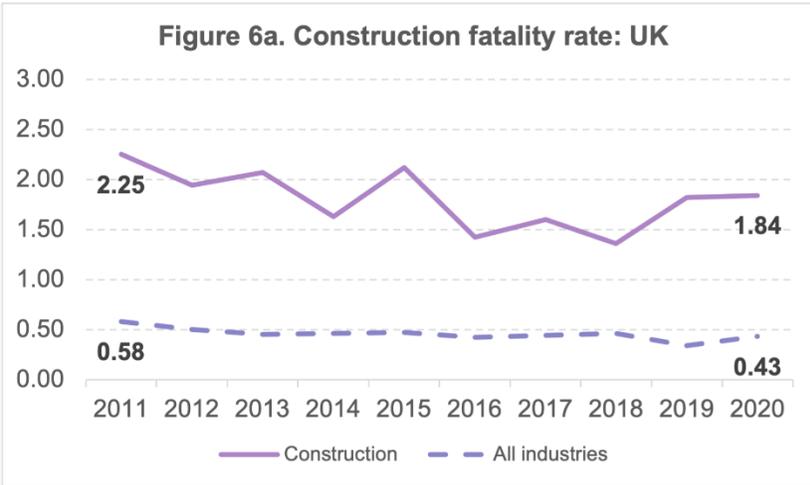
Trend kadar pekerja maut **meningkat**

Trend kadar pekerja maut **menurun**



# Impact

## #1 Reduce accident

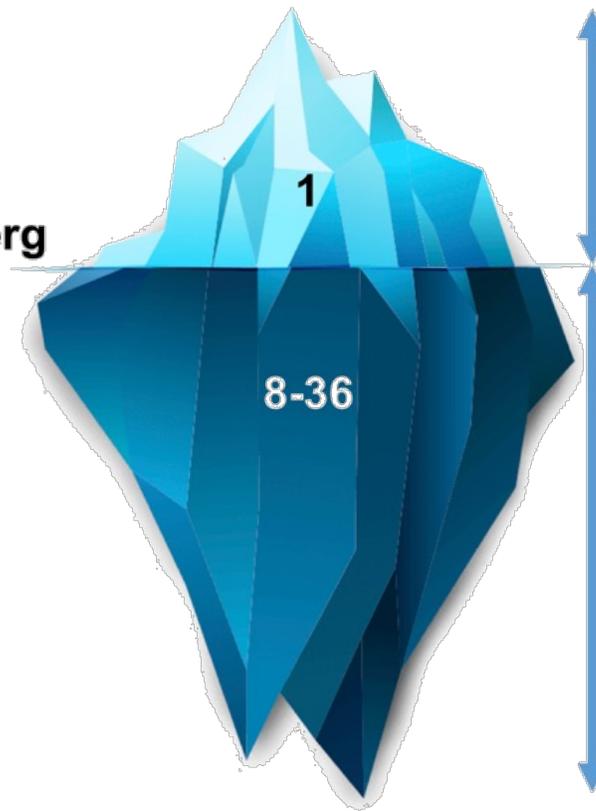


# COSTS OF ACCIDENT

“ Lack of adequate safety measures goes beyond health concerns, since the costs of construction injuries can have a substantial impact on the financial success of construction organizations and **increase the overall costs of construction up to 15%**

Hallowell (2011)

Accident Iceberg



## Uninsured costs

- Product and material damage
- Legal costs
- Emergency supplies
- Cleaning up site
- Production delays
- Temporary labour
- Lost orders
- Investigation time
- Fines
- Loss of expertise etc.

= 6.5% of the value of completed construction<sup>1</sup>

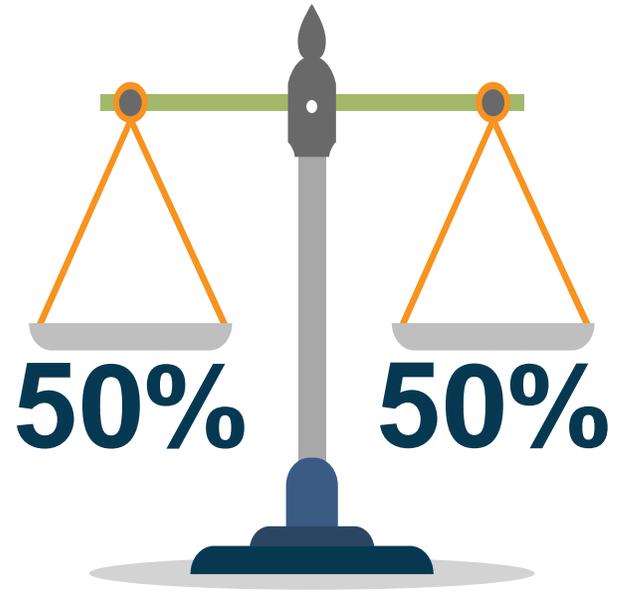
= 8.5% of tender price<sup>2</sup>

<sup>1</sup> The Business Roundtable 1995. Improving construction safety performance, Report A-3. New York: The Business Roundtable.

<sup>2</sup> Anderson, J. 1997. The problems with construction. *The Safety and Health Practitioner*, May, pp 29-30.

# Impact

## #2 Increase cost



The costs and benefits arising from the Regulations are likely in practice to be at least in balance.

HSC (1992)

Costs	Benefits
Professionals' fees	Site accidents reduction
Designers' risk assessments	Improving management procedures
Pre-Construction Information	Improving productivity
Construction Phase Plan	Improving quality
Safety and Health File	

Beal (2007)

“ The cost of CDM (1994) does not appear to exceed 2% of the project value for any duty holder. The proportion of the project value decreases as the project value increases (particularly for clients and principal contractors).

HSE Report RR555 (2007)

# Impact

## #3 Better planning - better design, constructability, easy/safer to maintain

CDM Regulations  
The regulations bring **safety and health management**, on *obligatory basis*, into the planning and design of construction work, of all projects



*Health and safety risk management* has always been an integral subset of project management irrespective of any legislative connection.

Summerhayes. 2010. John Wiley & Sons.

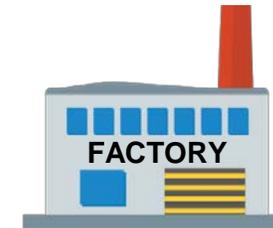
## Bangunan berkualiti tinggi boleh



Mempercepat pulih di hospital sebanyak **27%**



Menambahbaik pembelajaran di sekolah sebanyak **10%**

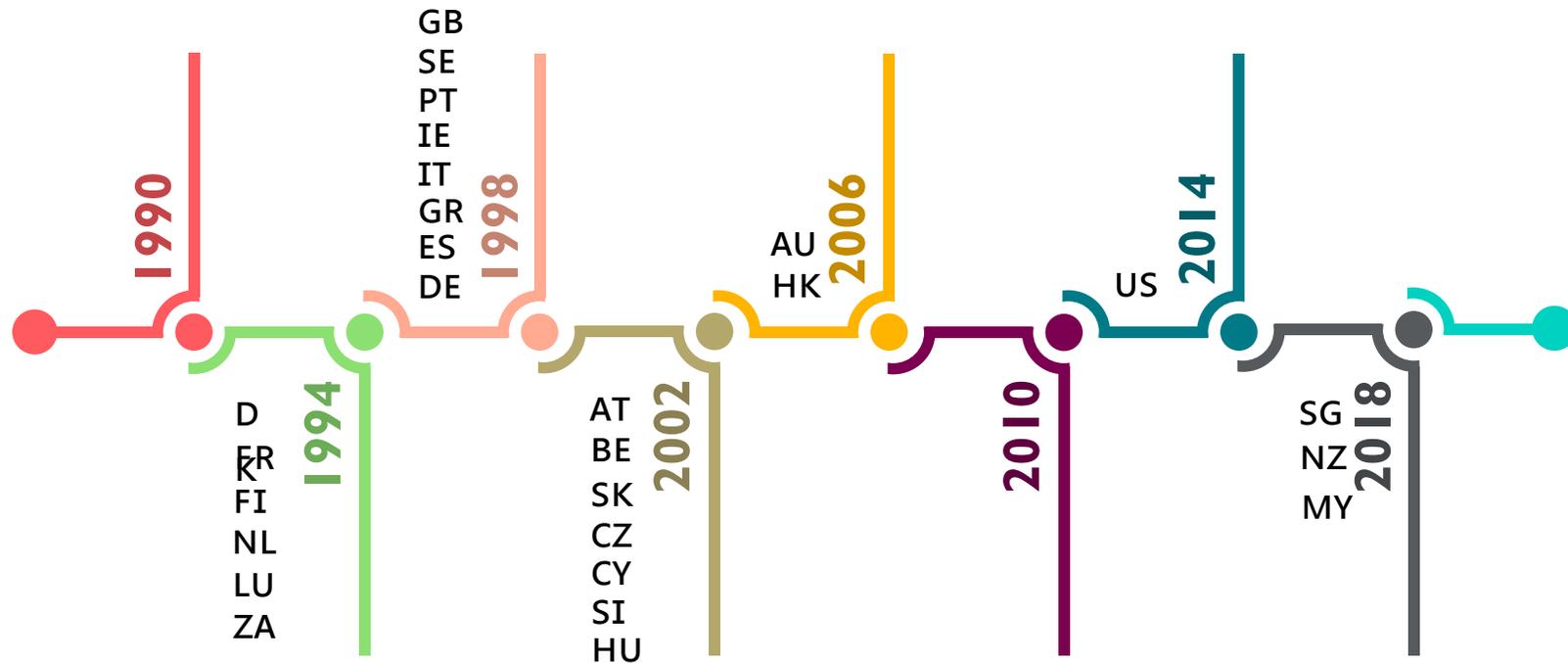


Meningkatkan produktiviti di tempat kerja sebanyak **20%**



Membantu mengurangkan kadar jenayah sebanyak **67%**

Rujukan: The value of good design: How building and spaces create economic and social value. Commission for Architecture and the Built Environment (CABE), UK



Reference:  
Martínez Aires, M.D., Rubio Gámez, M.C.,  
Gibb, A., 2010. Prevention through design:  
the effect of European Directives on  
construction workplace accidents. *Safety  
Science*. 48, 248-258.

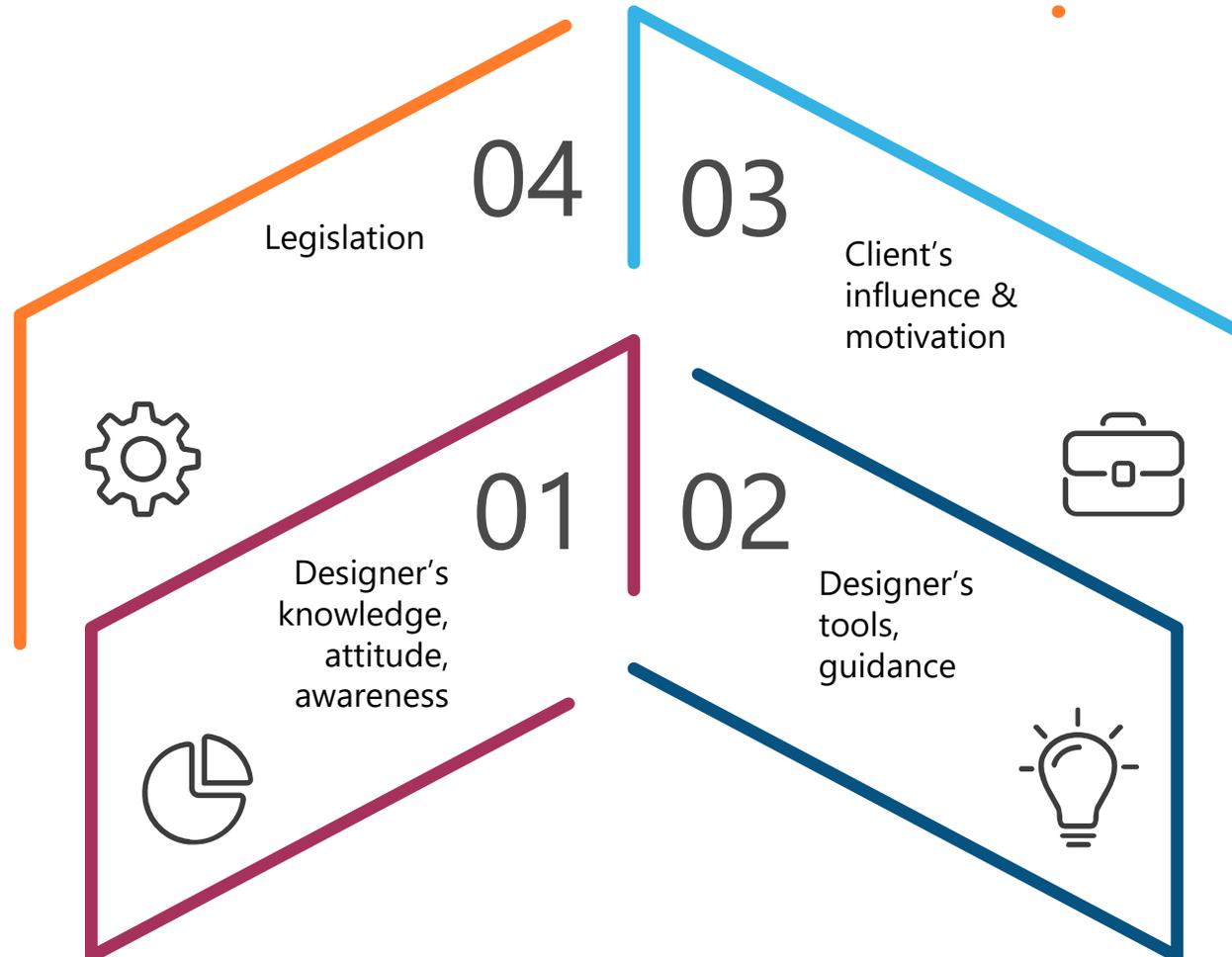
# Implementation

prevention through design

# Implementation Factors



Poghosyan *et al.* (2018)



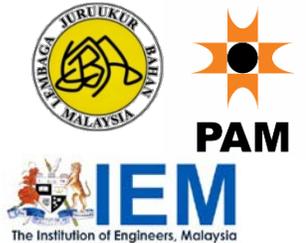
KONTRAKTOR PEROBOHAN  
mula di sini

KLIEN  
mula di sini



PEREKA BENTUK UTAMA  
mula di sini

PEREKA BENTUK  
mula di sini



KONTRAKTOR  
UTAMA mula di sini

Garis Panduan  
OSHCIM

Peraturan  
BOWECS

KONTRAKTOR  
mula di sini



### PASCA PEMBINAAN

- Use/ Operate
- Maintenance & Repair
- Renovation
- Transfer
- De-com./ Demolish
- Income generation

### PRAPEMBINAAN

- Need identification
- Feasibility study
- Develop spec., schedule & time frame
- Prelim. design
- Allocate budget
- Bid/ Proposal

### PEMBINAAN

- Team assembly
- Detailed design
- Procurement
- Execute
- Monitoring & control
- Adjustment
- Comm. & handover

KONTRAKTOR  
PENYENGGARA  
mula di sini

PENGURUS BANGUNAN  
mula di sini

PEMILIK  
mula di sini

# project lifecycle STAKEHOLDERS

## BOWECS v OSHCIM

# What *should* a CWD do?



## 1. World

It is a long established fact that a reader will be distracted by the readable content.

## 2. Settings

It is a long established fact that a reader will be distracted by the readable content.

## 3. Gift

It is a long established fact that a reader will be distracted by the readable content.

## 4. Hierarchy

It is a long established fact that a reader will be distracted by the readable content.





## 1. World

It is a long established fact that a reader will be distracted by the readable content.

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It is a long established fact that a reader will be distracted by the readable content.

## 4. Hierarchy

It is a long established fact that a reader will be distracted by the readable content.





# Q & A





# THANK YOU



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