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**Regulatory Factors Contributing to a Building  
Collapse in South Africa: A Case Study**

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# Background (1)

- Causes of building collapse are linked to **non-compliance to regulations**
- Non-compliance has been flagged by the DoL on construction sites in South Africa
- The Tongaat mall building collapse experienced several regulatory failures
- Labour Minister = in a media briefing on 24th of May 2016 says the accident forensic report will be handed to the National Prosecuting Authority (NPA)
- Labour Minister = amendments to the OHS Act & Construction Regulations would make it difficult for construction companies to break the law

# Background (2)

<b>Failure</b>	<b>Description</b>
Construction work / Supervision	Slab sagged before collapse
Construction work / Supervision	Scaffold / Formwork / False work removed too soon
Construction work / Supervision	Weak concrete used for construction on site
Construction work / Supervision	Severe lapses in construction work and supervision
Construction work / Supervision	Reasons for construction failure - beams
Structural design	Reasons for construction failure - design
Structural design / Construction work	Reinforcing steel bars missing in the elements - slabs, beams, etc.
Construction work / Supervision	Lack of H&S audit on project site
Regulatory control	Mall plans rejected / Failed approval four times
Regulatory control	Demolition of the site was never approved
Regulatory control	Developer was consistently fined for failures
Regulatory control	Workers instructed to keep working despite official notice

**Table 1: A summary of causal factors of the Tongaat mall collapse**

# Research Method

- A case study approach was used to ‘interrogate’ the events
- Primary data collection:
  - Content analysis:
    - Official inquiry documents of the DoL
    - Online and printed news materials / images
  - Face-to-face interviews:
    - 9 actual interviews (male construction workers)
    - 5 off the record discussions with members of the inquiry (H&S specialists, community liaison officer, and local municipality building inspectors, and subcontractors)
    - 33 Interviews (open ended questions)

# Findings (1)

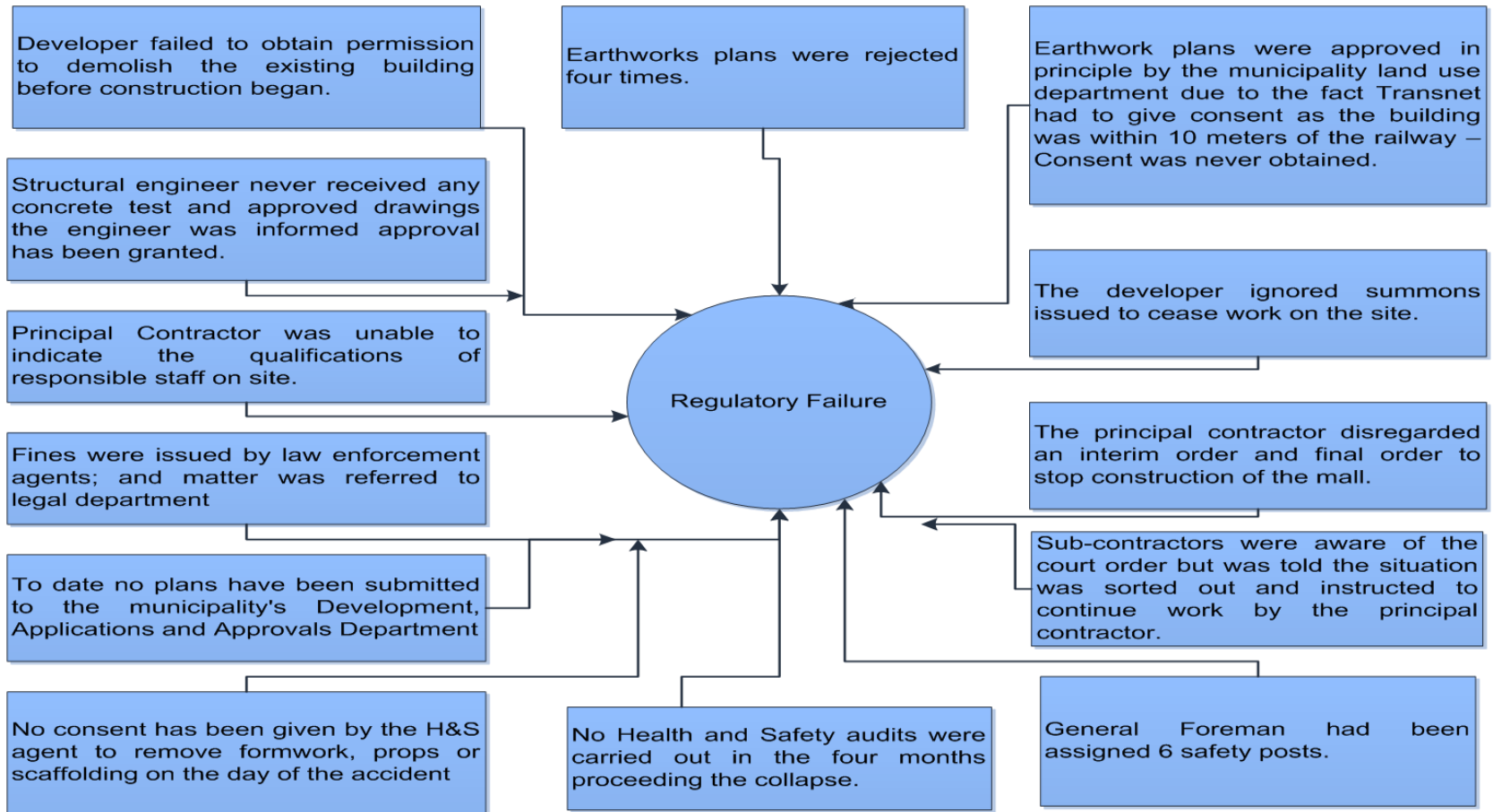
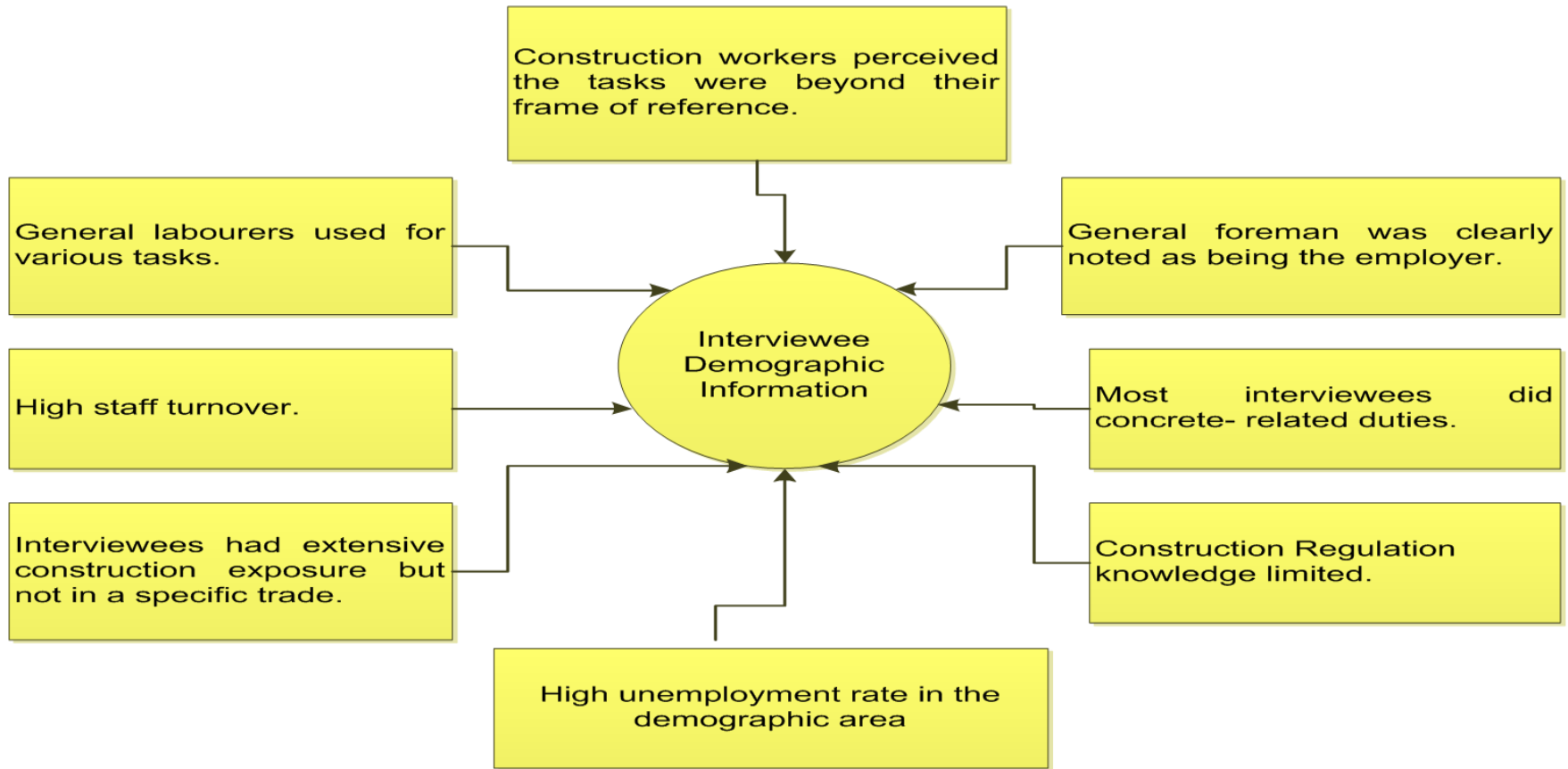


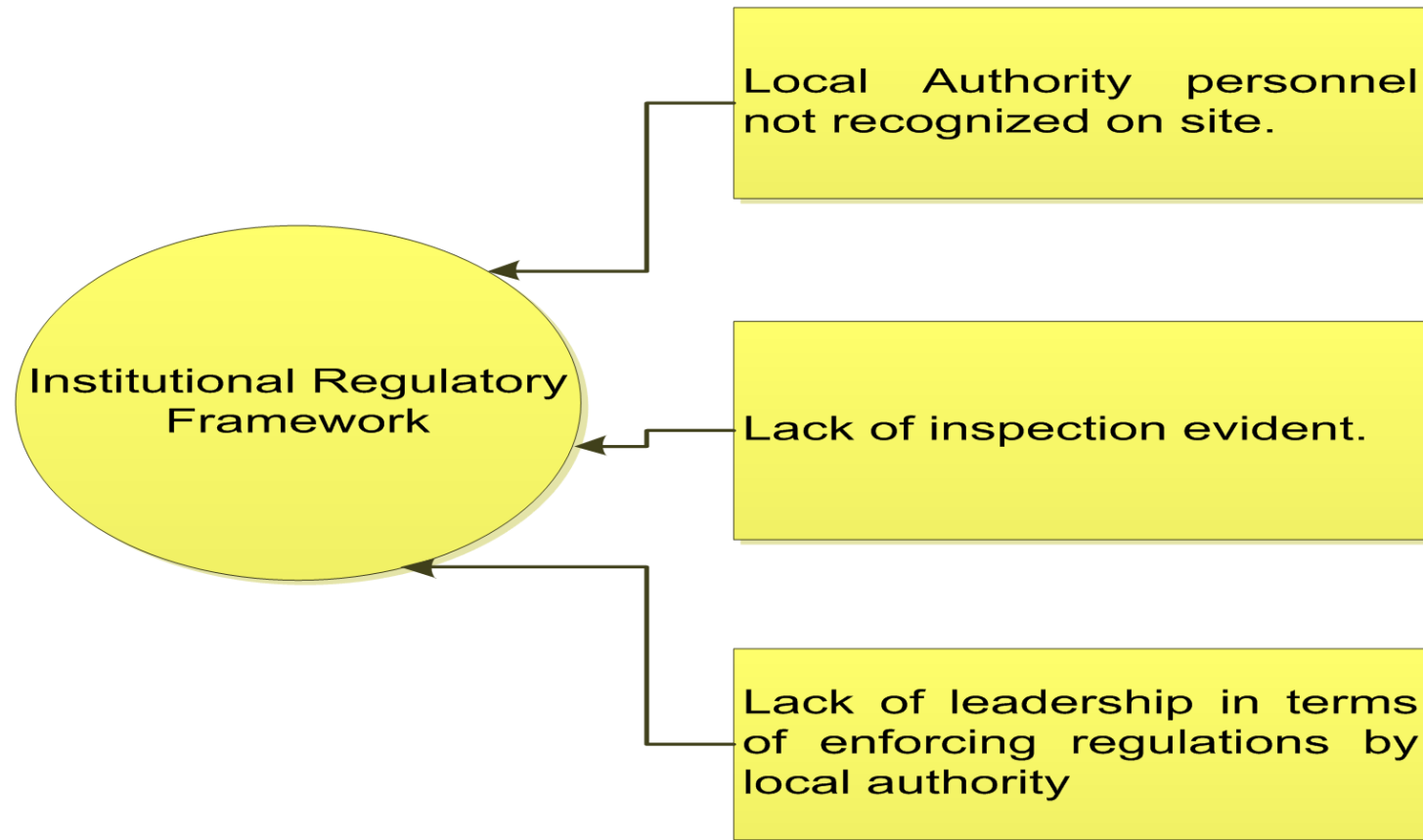
Figure 1: A summary of the regulatory failures extracted from document analysis.

# Research Findings (2)



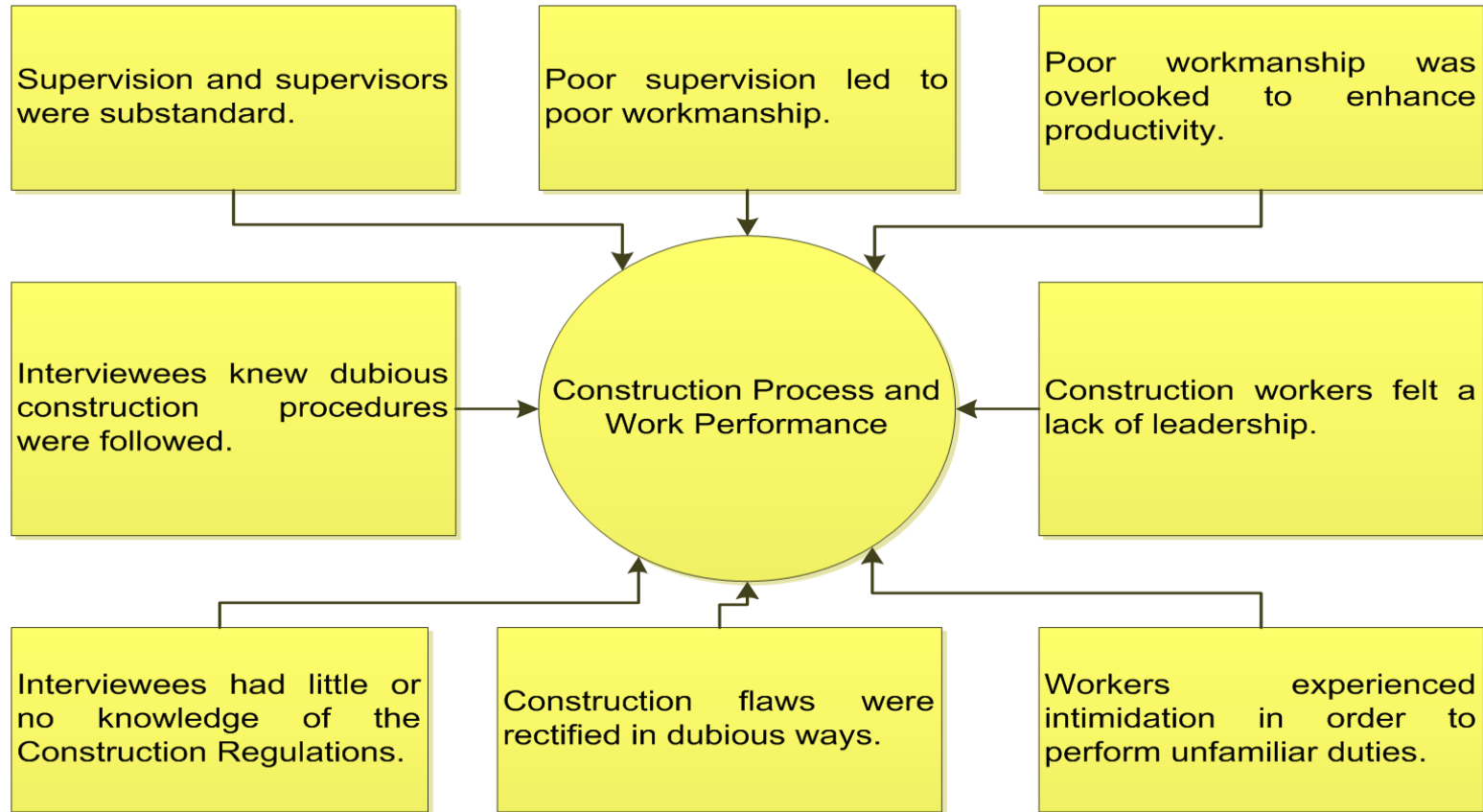
**Figure 2: Background information from the interviewees in the Tongaat project**

# Research Findings (3)



**Figure 3: Interviewees' perceptions of the regulatory environment on the Tongaat project.**

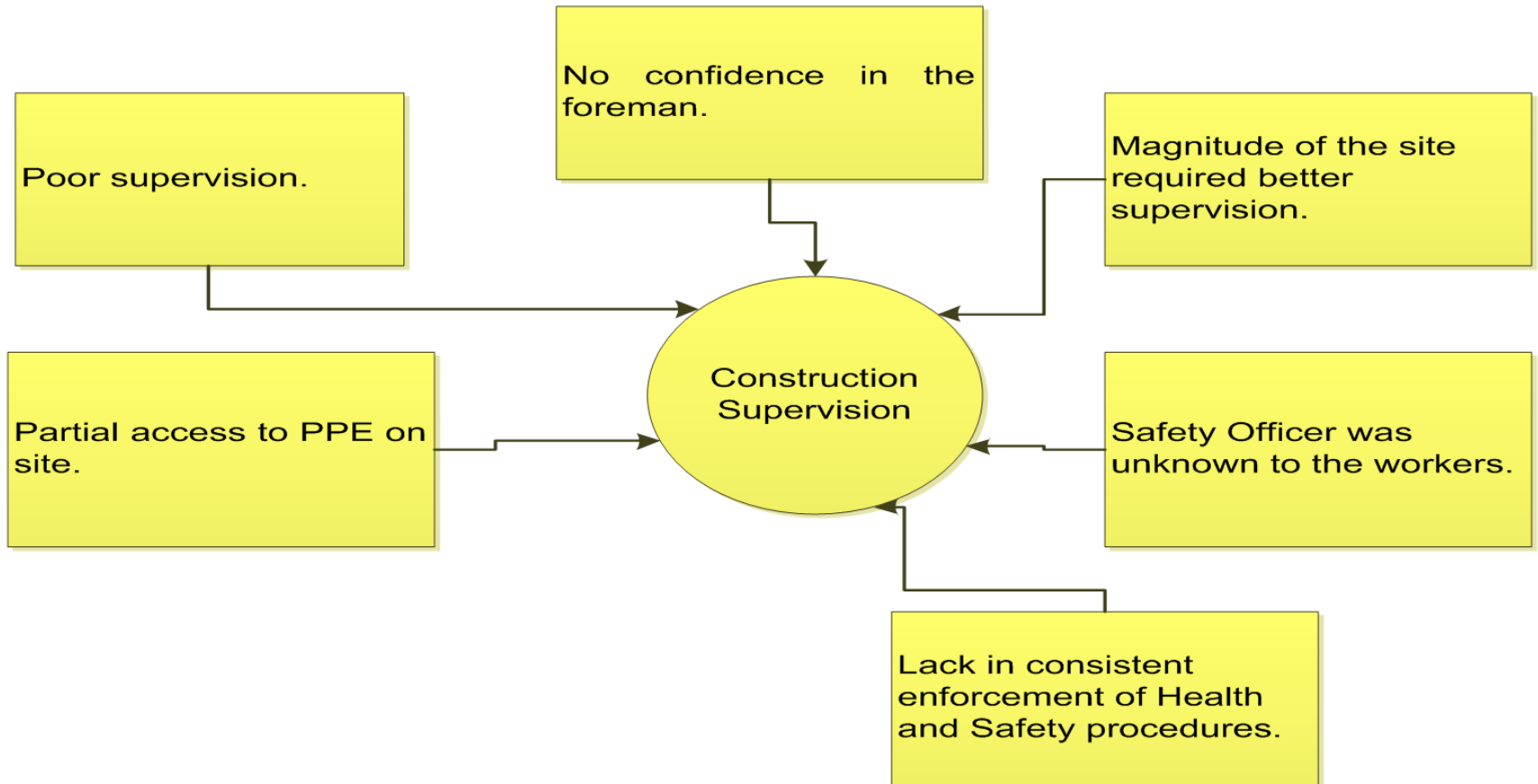
# Research Findings (4)



**Figure 4: Interviewees' perceptions of the construction process and work performance on the Tongaat project.**



# Research Findings (5)



**Figure 5: Insights from the interviewees in terms of construction supervision on the Tongaat project.**

# Conclusions (1)

- **Regulatory failures propagated multiple causal accident factors**
- **The DoL determined the following:**
  - **The poor construction of Beam 7 triggered the collapse**
  - **The piles for some of the columns had been overloaded and under-designed**
  - **A lack of supervision of construction work**
  - **Lack of knowledge to execute the complex, interdependent structure**
  - **Defective materials such as cement imported from Pakistan that did not meet SA National Standards**
  - **Failure to prepare and work from drawings**
  - **Poor construction methods**

# Conclusions (2)

- **The DoL also discovered contraventions of:**
  - **Section 4 of the National Building Regulations and Building Standards Act because building started before approval by a local authority**
  - **Sections of the Occupational Health and Safety Act: manufacturers did not discharge their duties and the employer did not inform employees with respect to H&S standards**
- **If interested, please refer to the following media briefings:**
  - <https://www.youtube.com/watch?v=7VxdMbF-cfQ>
  - <http://www.enca.com/south-africa/poor-construction-methods-to-blame-for-tongaat-mall-collapse-probe>