



REPORT TO: CITY MANAGER

**TO BE REFERRED BY THE OFFICIAL TO MAYCO VIA THE RELEVANT FUTURE
PLANNING AND RESILIENCE SECTION 79 COMMITTEE [AFTER CONSIDERATION BY
CITY MANAGER]**

1. ITEM NUMBER

2. SUBJECT

**FEEDBACK ON THE INTERNATIONAL TRIP UNDERTAKEN FROM 16-17
JUNE 2025 TO ATTEND THE INTERNATIONAL WORKSHOP ON
UNCERTAIN CLIMATE FUTURES A NEW REALITY FOR STRUCTURAL
DESIGN AND INTEGRITY MANAGEMENT IN DENMARK**

ISIHLOKO

**INGXELO ENGEMVA KOHAMBO OLUYA PHESHEYA OLUTHATYATHWE
UKUSUSELA NGOWE16 UKUYA KOWE17 KWEYESILIMELA 2025
LOKUZIMASA IWEKSHOPHU YEHLABATHI EMALUNGA NE 'UNCERTAIN
CLIMATE FUTURES A NEW REALITY FOR STRUCTURAL DESIGN AND
INTEGRITY MANAGEMENT' EDENMARK**

ONDERWERP

**TERUGVOERING OOR DIE INTERNASIONALE REIS VAN 16 TOT
17 JUNIE 2025 VIR DIE BYWONING VAN DIE INTERNASIONALE
WERKSWINKEL IN DENEMARKE OOR ONSEKERE KLIMAATSTOEKOMS: 'N
NUWE REALITEIT VIR STRUKTURELE ONTWERP EN INTEGRITEITSBESTUUR**

S0088

3. EVENT SUMMARY

EVENT DETAILS	
CONFERENCE/SEMINAR	INTERNATIONAL WORKSHOP ON UNCERTAIN CLIMATE FUTURES A NEW REALITY FOR STRUCTURAL DESIGN AND INTEGRITY MANAGEMENT
OTHER	N/A
DATE	16-17 JUNE 2025
VENUE	INDUSTRIENS HUS
TOTAL COST TO THE CITY	R72 029.66
CITY	COPENHAGEN
COUNTRY	DENMARK

ATTENDEE DETAILS	
NAME AND SURNAME	DESIGNATION
MATTHEW BEACHCROFT-SHAW	PRINCIPAL STRUCTURAL ENGINEER

PROVIDE SUMMARY OF HOST ORGANISATION / CITY
The JCSS is a committee in the field of Structural related Risk and Reliability, acting on behalf of the Liaison Committee of the following six international professional associations: • IABSE, International Association for Bridge and Structural Engineering. • CIB, International Council for Research and Innovation in Building and Construction. • ECCS, The European Convention for Constructional Steelwork. • FIB, The International Federation for Structural Concrete. • RILEM, Reunion Internationale des Laboratoires et Experts des Matériaux. • IASS, The International Association for Shell and Spatial Structures.

4. OBJECTIVE

The primary objective of the workshop was to bring together a carefully selected group of international stakeholders representing climate science, civil and structural engineering, decision sciences, regulatory authorities, asset owners, and consulting professionals.

The aim was to establish a common understanding of the limitations of current design approaches in the context of deep uncertainties associated with future climate conditions.

The event sought to facilitate knowledge exchange across disciplines, particularly regarding the adequacy of existing structural design and integrity management practices in light of these uncertainties. A further goal was to explore how emerging academic approaches and existing industry practices could be better aligned and strengthened to ensure the long-term performance, safety, and resilience of infrastructure systems.

5. OUTCOMES

The workshop achieved a strong consensus that traditional design practices, rooted in historical climate data and probabilistic models, are no longer sufficient in the face of unpredictable and potentially irreversible climate changes.

Participants agreed that the evidence base underpinning existing codes and standards is compromised by significant uncertainty, particularly around greenhouse gas mitigation efforts and the risk of exceeding climate tipping points. As such, infrastructure designed today is unlikely to meet future safety, reliability, or sustainability expectations over its full design life, and may become obsolete well before then. While both industry and academia are actively exploring new approaches, current efforts were seen as fragmented and incomplete.

The need for a new, internationally standardised rationale for structural design and integrity management was strongly affirmed. This rationale must explicitly incorporate climate uncertainty, integrate evolving data and multiple models, and remain adaptable over time. It was agreed that this shift requires closer coordination between climate scientists, engineers, and decision analysts, and must be underpinned by rigorous international standards to ensure consistency, fairness, and global resilience.

6. ACTIONS REQUIRED

To carry this work forward, it was agreed that a dedicated special task force will be established under the auspices of the Joint Committee on Structural Safety (JCSS). This group will operate over the next four to five years and will consist primarily of workshop participants, selected to ensure broad geographic representation and technical expertise.

The task force will be mandated to develop and implement the new design rationale within a short time horizon. By the end of 2025, the task force will publish an action plan setting out its work programme.

Key deliverables include the completion of foundational JCSS documents on theory, methodology, and practical approaches by the end of Year 2; the development of a dedicated ISO standard (or an amendment to ISO 2394:2015) by Year 3; and proposed amendments to the Eurocodes, along with industry guidance materials, by the end of Year 4.

Dissemination efforts will target consulting engineers, contractors, and asset owners to ensure uptake. In parallel, the group will investigate the possibility of institutional support from the Joint Research Centre (JRC) in Ispra, Italy, to help scale and resource its efforts.

Political and professional support is essential to achieving these objectives, and stakeholders are encouraged to engage with and champion this initiative as a critical step toward climate-resilient infrastructure worldwide.

7. IMPLICATIONS

7.1 Constitutional and Policy Implications No ☒ Yes ☐

7.2 Environmental implications No ☐ Yes ☒

7.3 Financial Implications No ☒ Yes ☐

7.4 Legal Implications No ☒ Yes ☐

7.5 Staff Implications No ☒ Yes ☐

7.6 Risk Implications No ☐ Yes ☒

7.7 POPIA Compliance

☒ It is confirmed that this report has been checked and considered for POPIA Compliance.

NOTE: POPIA Section MUST be completed otherwise the report will be returned to the author for revision.

Contact your Directorate POPIA Stewards should you require assistance.

The City has a contract in place with Izani Embassy Joint Venture for the safe-keeping of Traveller's personal information as required by the POPI Act.

8. RECOMMENDATIONS

It is recommended that the feedback report on the trip **International Workshop on Uncertain Climate Futures a New Reality for Structural Design and Integrity Management** undertaken by **Matthew Beachcroft-Shaw** on **16-17 June** be considered and noted.

IZINDULULO

Kundulwe ukuba **makuthathelwe ingqalelo kwaye kuqwalaselwe** ingxelo engohambo oluya kwiwekshopu yehlabathi emalunga ne'**Uncertain Climate Futures a New Reality for Structural Design and Integrity Management**' oluthatyathwe ngu**Matthew Beachcroft-Shaw** ngowe**16** ukuya kowe**17** kweye**Silimela 2025**.

AANBEVELINGS

Daar word aanbeveel dat die terugvoeringsverslag oor **Matthew Beachcroft-Shaw** se reis van **16 tot 17 Junie 2025** vir die **internasionale werkswinkel oor onsekere klimaattoekoms: 'n nuwe realiteit vir strukturele ontwerp en integriteitsbestuur, oorweeg word**, en dat daarvan **kennis geneem word**.

9. GENERAL DISCUSSION

The workshop in Copenhagen marked a significant moment in the ongoing global discourse on climate resilience within the built environment. It brought into sharp focus a fundamental shift: the realisation that traditional, evidence-based structural design practices, underpinned by historical climate data, can no longer reliably ensure the long-term safety, serviceability, and sustainability of infrastructure systems. The core message was clear: deep uncertainties related to the trajectory of climate change, the likelihood of global mitigation success, and the risk of abrupt systemic tipping points render current design paradigms inadequate.

Participants collectively acknowledged that the prevailing engineering methodologies, while historically robust, do not sufficiently account for the compounding risks of a rapidly changing climate. Importantly, this was not presented as a failure of engineering per se, but rather a reflection of the rapidly evolving nature of the external risk environment, and the need for engineering standards and decision-making frameworks to evolve in parallel. While isolated efforts are already being made in both academia and industry to integrate climate uncertainty into planning and design, these approaches remain disjointed and lack a common reference framework.

The discussions reinforced the need for interdisciplinary cooperation – not only between engineers and climate scientists, but also with professionals in decision sciences, economics, and policy. This cross-sectoral alignment is necessary to develop design principles that are not only technically robust, but also socially acceptable, economically viable, and politically actionable. In this regard, the proposed task force under the Joint Committee on Structural Safety (JCSS) represents a critical step. By drawing on international expertise and seeking institutional partnerships, particularly with bodies such as the Joint Research Centre (JRC), the task force is well-positioned to lead the development of a globally harmonised design rationale.

Of particular interest was the workshop's recognition of the time-sensitive nature of this work. With infrastructure lifespans often extending well beyond 50 years, the structures we are designing today will be exposed to future climate conditions that are highly uncertain but increasingly likely to fall outside the bounds of current codes and assumptions. The cost of inaction, or of continued reliance on outdated assumptions, may include structural obsolescence, increased maintenance costs, public safety risks and regulatory fragmentation.

Overall, the workshop served both as a call to action and a framework for collaboration. It reinforced the importance of pre-emptive adaptation in the built environment and highlighted the urgency of updating structural design norms to ensure infrastructure remains fit for purpose over its intended life. For countries such as South Africa, where infrastructure vulnerabilities are compounded by socio-economic pressures and resource constraints, the importance of international alignment and forward-looking design thinking is particularly acute. Active participation in initiatives such as this task force will be vital to ensuring that emerging global standards are not only technically sound but also contextually relevant and implementable in diverse regions.

10. ANNEXURES

FOR FURTHER DETAILS, CONTACT:

DATE			
NAME	Matthew Beachcroft-Shaw	CONTACT NUMBER	074 275 0345
E-MAIL ADDRESS	Matthew.BeachcroftShaw.co.za		
DIRECTORATE	Future Planning and Resilience	FILE REF No	
SIGNATURE :			

EXECUTIVE DIRECTOR

GARETH MORGAN

The ED's signature represents support for report content and confirms POPIA compliance.

COMMENT:

SIGNATURE:

NAME

DATE

MANAGER: INTERNATIONAL RELATIONS

DR. DENVER VAN SCHALKWYK

SIGNATURE:

DATE

COMMENT:

☐ REPORT COMPLIANT WITH THE PROVISIONS OF COUNCIL'S DELEGATIONS, POLICIES, BY-LAWS AND ALL LEGISLATION RELATING TO THE MATTER UNDER CONSIDERATION.

LEGAL COMPLIANCE

☐ NON-COMPLIANT

COMMENT:

NAME

Certified as legally compliant based on the contents of the report.

TEL

DATE

CITY MANAGER

☒ NOTED

☒ REFER TO THE MAYORAL COMMITTEE VIA THE RELEVANT SECTION 79 COMMITTEE

DATE

COMMENT:

PLEASE NOTE THAT THE ABOVEMENTIONED CITY MANAGER'S SIGNATURE IS ONLY TO BE OBTAINED FOR OFFICIALS TRAVELLING AND NOT FOR COUNCILLORS.

THE CITY MANAGER WILL RECOMMEND THAT THE REPORT IS REFERRED TO MAYCO VIA THE RELEVANT SECTION 79 PORTFOLIO COMMITTEE BY THE OFFICIAL. IN SUCH INSTANCES, THE CITY MANAGER'S SIGNED REPORT SHOULD BE ATTACHED AS AN ANNEXURE TO THE REPORT TO THE SECTION 79 PORTFOLIO COMMITTEE AND MAYCO.