Adaptation and Planning Strategies to Mitigate the Impact of Climate Change Induced Sea Level Rise, Flooding and Erosion at Selected Australian Department of Defence Sites

Climate change and its potential impacts are a recognized threat multiplier that will affect national security risks and pose a significant issue for public infrastructure. Since 2010, AECOM has assisted the Australian Department of Defence (Defence) with understanding risks to its assets due to climate change-induced sea level rise, storm surge, and coastal erosion across Australia. A two-stage process involving a high-level risk assessment and prioritisation of sites at greatest risk, and then detailed site assessments assessed current asset condition and facilitated local stakeholder engagement to enable Defence to understand their risk exposure and identify adaptation measures to minimize these future risks. The findings will be important for informing investment and strategic planning decisions.

RISK	ACTION	IMPACT	OUTPUT
Global military forces are labelling climate change as a "threat multiplier". Climate change presents two types of risks to the Australian Department of Defence (Defence): geo-strategic and capability risks. Geo-strategic risks relate to how climate change can exacerbate funding and maintenance problems and the ability to support the training and roles undertaken by Defence. Capability risks relate to how climate change may impact Defence infrastructure and capabilities through sea-level rise, flooding and erosion .. AECOM assisted Defence to understand risks to its key military assets due to climate change-induced sea level rise, storm surge, and coastal erosion.	The detailed US$2m study was conducted through an initial high-level risk assessment of many sites across Australia to identify and prioritise sites at greatest risk across multiple, future timeframes for detailed assessment in stage 2. A detailed methodology (Site Assessment Methodology and Framework (SAMF)) was developed to establish the context for the risk assessment of climate change impacts. The SAMF includes the following factors: • Objectives and scope • Stakeholders • Evaluation criteria • Climate change scenarios The detailed site assessments involved gathering spatial, site and climate data; physical site inspections and local stakeholder engagement; detailed site risk assessments and adaptation planning.	This project assists Defence to understand their risk exposure and identify adaptation measures to minimize future risks. The findings will be important for informing investment and strategic planning decisions. Through analysis, reporting and engagement, Defence personnel are able to develop and implement adaptation planning. Adaptation planning aims to identify and prioritize solutions to reduce the occurrence or severity of the most significant identified risks. A range of adaptation options were identified across categories including: • Policy – land use planning, standards and guidelines • Behavioral - existing processes, operational systems and procedures • Physical - Engineered solutions or asset relocation • Further specialist investigation.	The project and application of the SAMF enables Defence to understand their risk exposure and identify adaptation measures to minimize these future risks. This improved understanding will be important for informing investment and strategic planning decisions. Reports were developed to communicate project findings: • Executive report: summary of the Assessment Report findings • Site report (GIS plans, site specific findings, ratings across timeframes and risk themes, recommendations) • Site Summary Sheets: Visual summary of site specific findings A series of 'whole of branch' workshops and 'whole of Defence' seminars supported awareness as part of the Defence Global Change series.

Soldiers in the Australian Army clear mud and sludge from a major intersection in Queensland after extensive flooding" by Flickr user Australian Department of Defence licensed under CC by –NC-ND 2.0

Lessons Learned

Three key lessons were learned: 1. The value of a staged approach to ensure resources are targeted to priority sites of greatest risk. 2. The benefit of generating, with project stakeholders, a Site Assessment Methodology and Framework, tailored to specific project needs. 3. The importance of tailoring information to user needs. To support ongoing internal communication, a suite of products/reports were developed.

BUSINESS CASE

Short term benefits include building a greater awareness and planned response among Defence staff to priority climate change risks. These risks may make it more difficult for Defence to deliver service obligations and maintain assets and infrastructure. Benefits also include reducing physical and financial impacts on personnel and assets, including: effectiveness to reduce risk; cost; significance of action and community acceptance.

REPLICATION OPPORTUNITIES

The project methodology could be readily applied to organisations with assets or infrastructure distributed across large geographic areas facing differing climate change hazards. This approach would be useful to government asset managers (health and education) as well as private sector owners of facilities such as shopping centres or housing. The staged approach enables a high level risk screening to identify priority sites warranting detailed assessment.

How does the project support the implementation of the Sendai Framework targets?

1	*Reduce disaster mortality by 2030*	X	The risk assessment and prioritisation of sites at greatest risk has improved access for information to Defence staff. Detailed site assessments to assess current asset condition, risk exposures and facilitated local stakeholder engagement identified adaptation measures to minimize these future risks. When implemented, the number of people, assets affected will reduce as will the cost of damage and disruption to a critical service.
2	*Reduce number of affected people by 2030*	X	
3	*Reduce economic loss by 2030*	X	
4	*Reduce infrastructure damage and disruption of services by 2030*	X	
5	*Increase countries with DRR national/ local strategies by 2020*		
6	*Enhance international cooperation to developing countries*		
7	*Increase the availability of and access to EWS* and DR information to people by 2030*	X	

How does the project contribute to the ARISE Themes?

1	*Disaster Risk Management Strategies*	X	The strategies implemented in this project, in conjunction with the ARISE work streams include climate risk screening of a national portfolio of assets to inform adaptation planning and mitigation strategies, flowing through to investment, policy, operational and behavioural responses. Facilitated workshops and the development of a consistent framework supports the capacity of Defense personnel to replicate the process in future and assists in demonstrating a proactive risk management approach. The approach and methodology applied is replicable and able to be adapted and applied to other asset portfolios or jurisdictions.
2	*Investment metrics*	X	
3	*Benchmarking and Standards*	X	
4	*Education and Training*	X	
5	*Legal and Regulatory*		
6	*Urban Risk Reduction and Resilience*		
7	*Insurance*	X	

For More Information

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