Operations Resilience

Resilient

Credit: 17

Points: 2

Outcome

The building can respond to acute shocks and chronic stresses that can affect its operations over time.

Criteria

Credit Achievement	**2 points**	• The project team undertakes a comprehensive review of the acute shocks and chronic stresses likely to influence future building operations. • The building's design and future operational plan addresses any high or extreme system-level interdependency risks. • The building's design maintains a level of survivability and design purpose in a blackout.

Additional information

Stage implementation

Strategy	**Brief**	**Concept**	**Design**	Tender	Construction	**Handover**	**Use**

Synergies with other credits

- Verification and Handover
- Climate Change Resilience
- Grid Resilience
- Community Resilience
- Energy Use
- Water Use

Sustainable Development Goals

- Goal 11 (Sustainable Cities and Communities)

Relevant reporting initiatives

- GRESB
- TCFD

Requirements

Credit Achievement

The project must comply with **all three** of the following criteria:

- Comprehensive Risk Assessment
- Managing Risks
- Addressing Power Loss

Comprehensive Risk Assessment

The suitably qualified professional authoring the operations resilience assessment must:

- Identify a set of clear resilience objectives and performance goals for the building
- Collaborate with key internal and external project stakeholders, including community representatives, to identify and confirm the relevant acute shocks and chronic stresses likely to impact the functionality of the building and its ability to meet performance goals
- Identify and confirm the interdependent infrastructure systems, networks, services, and assets the building relies on
- Identify key areas of system vulnerability, specifically how these may be affected by the identified shocks and stresses that may impact the building through reduced capacity and/or functionality
- Outline response procedures in the event of an identified shock event impacting the building and the local community
- Consult with relevant authorities with regards to evacuation procedures and emergency actions

As a minimum, the following shocks and stresses must be addressed in the assessment:

Shocks

- Failure of critical infrastructure (power, water and digital)
- Health pandemic
- Water security
- Geological hazards (landslides, earthquakes, tsunamis)
- Direct attack (cyber and physical)

Stresses

- Ageing infrastructure
- Rising cyber dependency
- Increasing energy costs
- Lack of transport accessibility and availability

Managing Risks

The project team must ensure risks are addressed as follows:

- All risks rated as 'Extreme' must be addressed through specific design responses. This includes where Low Damage Design is incorporated to address Geological risks.
- All risks rated as 'High' must be addressed through design or future operational responses
- Regardless of risk rating, at least two risks identified in the assessment must be addressed by specific design responses

Addressing Power Loss

The project team must perform an assessment of the building's survivability in the case of a blackout. The building must then be designed to account for its design purpose and provide a measure of survivability for the likely occupants.

The project team must identify:

- The design purpose of the building, and the potential for the building to be occupied in the case of a blackout.
- The needs of occupants in such a situation. This may include the building being used by the community as refuge in the case of a blackout.
- The servicing needs of that building to ensure the occupants are safe during the blackout.
- The appropriate duration that the building can maintain its design purpose during the blackout.
- How the building can remain safely habitable after a blackout (specifically fire systems, ventilation, temperature, water pumping and vertical transportation).
- How the building will be able to operate in island mode, with consideration to loss of internet services for the Building Management System or for situations where the building is being powered on-site.

The building's design must account for these issues. The range of measures that can be used to address these problems can be active (through on-site generation) or passive (such as increased thermal mass to manage temperature).

Justification of whether addressing power loss is appropriate based on the project type and function may be allowed through a technical question.

Submission content

Submissions for this credit must contain:

- **Submission form**
- **Evidence** to support claims made in the submission

Recommended evidence:

- Operations resilience assessment
- Details of how shocks and stresses have been assessed
- Risk assessment criteria, including the likelihood and consequence tables, and any assumptions significant in the development of the assessment
- Details of the adaptation responses
- Assessment of the building's survivability during a blackout with design responsesLow Damage Design strategies. These shall be documented in two categories, outlining the specific design responses:

  Planning, Architectural and Building Services strategies. Planning involves carrying out the lead consultant role to assist the Structural Engineer and Client to agree priorities, including which areas of the building are to be targeted and how the priorities of mitigating acceleration vs. displacement are agreed, and for displacement, the agreed allowances where damage is to be controlled. Detailing incorporated in all non-structural aspects of the building fabric should be included demonstrating compliance with the agreed strategy, and the proportion of the total at-risk building fabric that has been targeted.

  Structural strategies. The level of shaking (in terms of Building Code return period) that is being targeted shall be identified, along with the system(s) employed. The expected performance in terms of repairability/replaceability, damage avoidance, and risk reduction (e.g. Base Isolation) shall be described in terms of this/these targets,

  Both categories require specific responses to compare how strategies/detailing of the building is modified relative to typical contemporary detailing for a building of the same typology.

Alternate documentation can also be used by project teams to demonstrate compliance.

The recommended evidence listed above is applicable to the as built submission. See the *Design Assessment* section in the Introduction for more information on submitting evidence for the Design assessment.

The key requirement is that evidence is provided to support each claim made within the Submission form.

Guidance

Staging

The *Operations Resilience* risk assessment should be completed as early during the project's design phase as possible, such as in the concept or schematic design phase, to allow maximum benefit and opportunity to inform design decisions and implement appropriate and meaningful responses.

Climate Change Resilience

There is a strong link between this credit and the *Climate Change Resilience* credit, and it is encouraged that these are done in parallel, ideally within the same risk assessment.

If the *Climate Change Resilience* credit has been completed, the climate-related shocks and stresses addressed in the credit do not need to be repeated for this credit. However, if the *Climate Change Resilience* credit has not been completed, climate-related shocks and stresses will form part of the assessment for this credit, with appropriate physical and non-physical responses identified. Refer to the *Climate Change Resilience* credit for examples of climate-related shocks and stresses.

Project scope

For the *Operations Resilience* credit, the relationship between the base building and tenanted spaces may be affected where a tenant is particularly impacted by a shock or stress that is not otherwise identified or prioritised by the building.

The project should consider where such a scenario may occur and identify potential risks to the core function of the building, or building's ability to cater to the needs of the tenant where extraordinary conditions exist. For example, if a tenant requires uninterrupted power supply, the building will need to consider if an appropriate response can be formulated to meet this requirement, and how this will affect the core function of the building. Outcomes should be communicated to tenants.

Definitions

Assessment

In the context of this credit, assessment refers to the operations risk and adaptation assessment.

Suitably qualified professional

This should comprise a professional in environmental science, risk management, or engineering with a minimum five years' experience in risk management or business continuity.

Systems

In the context of this credit, 'systems' refers to the building as a system interacting with its surroundings. It does not refer to the mechanical building systems, such as HVAC.

Shocks and stresses

Shocks are relatively short-lived events that can be human made (such as conflict or technological shocks) or naturally occurring (such as droughts or floods). Stresses are longer-term pressures that undermine the stability of a system (such as unemployment or ageing infrastructure).

Supporting information

The following resources support this credit:

- Climate Change Resilience credit

Australian and New Zealand Standard AS/NZ ISO 31000:2009 Risk Management