QUEENSLAND RECONSTRUCTION AUTHORITY

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Queensland Disaster Resilience and Mitigation Investment Framework

February 2019



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1 Context

The *Queensland Disaster Resilience and Mitigation Investment Framework* (the Framework) provides guidance on effective investment decision-making and prioritisation to support disaster resilience and mitigation across Queensland.

The Framework complements existing global, national, state and local policy frameworks, and translates the intent of these documents into a pragmatic, consistent approach for disaster resilience and mitigation investment across Queensland.

Recognising Queensland's significant work already undertaken in disaster resilience and mitigation, the Framework has been developed in alignment with the:

- Queensland Strategy for Disaster Resilience (QSDR) (QSDR web page)
- Resilient Queensland 2018-21 Delivering the Queensland Strategy for Disaster Resilience (Resilient Queensland web page)
- Queensland State Natural Hazard Risk Assessment 2017 (.pdf | 16.8MB)
- Queensland Emergency Risk Management Framework (link to Disaster Management portal)
- Queensland State Disaster Management Plan (.pdf | 7.19MB)
- Pathways to a climate resilient Queensland Queensland Climate Adaptation Strategy 2017-2030 (pdf| 2.02MB).

Natural disasters are an unfortunate, but realistic, factor of our modern world. Queensland is disproportionately affected by the consequences of these disasters, with the total economic costs of natural disasters across the state projected to be \$18.3 billion per annum by 2050¹.

For Queensland to continue to build on its capability to recover from and adapt to natural disasters, it is important that we work together to build resilience and address our vulnerabilities.

¹ *Building resilience to natural disasters in our states and territories*, Australian Business Roundtable, 2017.

2 Positioning the Framework

2.1 Vision

The Framework embraces the guiding principles of the QSDR and will enable the four QSDR objectives:

- Queenslanders understand their disaster risk
- Strengthened disaster risk management
- Queenslanders are invested in disaster risk reduction
- There is continuous improvement in disaster preparedness, response and recovery.

Recognising our vulnerabilities and need to be adaptable we invest in Disaster Risk Reduction and mitigation to increase our resilience. Therefore in line with the QSDR and Resilient Queensland, the Framework is guided by the following vision:

To make Queensland the most disaster resilient state in Australia, through effective prioritisation of disaster resilience and mitigation investment.

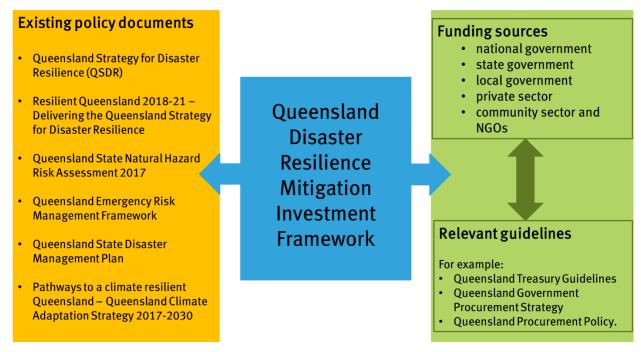
2.2 Purpose

The purpose of the Framework is to:

- support decision-makers in the assessment and prioritisation of infrastructure-based resilience and mitigation investments and non-infrastructure or community resilience
- establish a consistent state-wide approach to recognising how an investment contributes value to Queensland's resilience agenda
- guide Queensland Government agencies in the development of strategic and detailed funding guidelines for allocation of funding for disaster resilience through investment in disaster risk reduction, mitigation and adaptation.
- create a targeted approach to building resilience through clear principles for decision-making and prioritisation of investments in disaster risk reduction, mitigation and adaptation that can be applied across the public, private and community sectors
- facilitate progress of investment in disaster risk reduction, mitigation and adaptation by acting as both a link and enabler between existing Queensland policy documents, funding sources, guidelines, and approaches to investment and procurement
- recognise national and international disaster risk reduction, mitigation and adaptation approaches, including the:
 - Sendai Framework for Disaster Risk Reduction
 - National Disaster Risk Reduction Framework (NDRRF).

The Framework will act as a link between, and an enabler of, a range of existing Queensland policy documents, funding sources, guidelines and investment and procurement approaches.

Figure 1. Framework linkages



2.3 Scope

Audience

The Framework was developed by the Queensland Reconstruction Authority (QRA) on behalf of the Queensland Government.

The Framework supports the alignment of funding programs with Queensland's resilience priorities. It provides guidance to public sector agencies in the development of guidelines to determine investment prioritisation for a specific funding program.

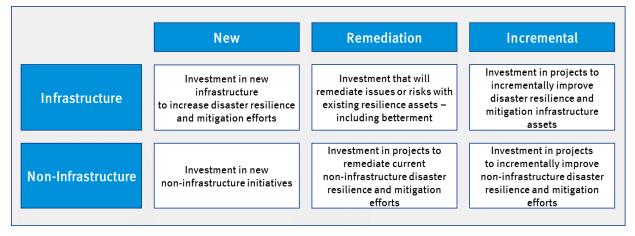
It provides guidance for a wide range of investments in terms of scale, type of hazard and level of disaster risk.

Application – Investment types

The Framework has the flexibility to support the assessment and prioritisation of infrastructure-based resilience and mitigation investments, as well as non-infrastructure or community resilience measures.

The Framework is applicable to three specific types of investment, as identified below.

Figure 2. Investment types



Responsibility

In line with Queensland Government policy (refer to Figure 1. Framework linkages), there is shared responsibility for achieving a resilient Queensland. Success will depend on the collective effort of the Queensland and Australian Governments, local governments, businesses, the tertiary sector, community groups and individuals.

It is envisaged that agencies with responsibility for the administration of disaster mitigation and resilience funding programs will leverage this Framework in development of funding guidelines.

Consultation

The Framework was developed in close consultation with government agencies and other stakeholders. It provides both useability and scalability to support the development of detailed assessment guidelines across a wide range of strategic investment options.

Review

The Framework will be reviewed on an as-needs basis to incorporate amendments that reflect the evolving, best practice approaches to disaster resilience and mitigation, related changes in government policy and new research, evidence and insights.

2.4 Guiding principles

The Framework is guided by six key principles to articulate the broad intent and direction for investment in disaster resilience and mitigation across Queensland. These principles underpin considerations for assessing applications for investment.

Figure 3.

Guiding principles of the Queensland Disaster Resilience and Mitigation Investment Framework

✓ We value resilience investments that are cost-effective	e and evidence based.
✓ We share responsibility for the management of risk.	
✓ We consult and collaborate to realise efficiencies and	l avoid duplication.
 We commit to an environmentally and economically future generations. 	sustainable approach for the benefit of
✓ We recognise that investment is required for continu	ous improvement in community resilience.
✓ We recognise that resilience must be continuously p	ursued through efforts and investments.

3 Applying the Framework

3.1 Understanding the key considerations

The Framework includes six key considerations and one additional consideration; innovation.

Agencies are encouraged to consider how the six key and one additional consideration might be weighted within a specific funding program, in order to prioritise investments that support the intended outcomes of that funding stream.

Figure 4. Key and additional considerations



Issue identification

As a precursor for any investment, a needs analysis must be conducted in order to determine the issue that will be addressed. As part of this process, a statement of the risk, need or vulnerability must be articulated. If a need has not been identified, there is no clear basis for the proposed investment.

Issue identification considers the following sub-consideration:

Identified need	The proposed investment demonstrates that a need has been identified and that the investment seeks to address this need. For example, the need may be identified by the <i>Queensland State Natural Hazard Risk Assessment</i> or be endorsed by appropriate, independent research.
Options analysis	The proposed investment case considers a range of options, including the potential outcome of inaction. Applicants must justify the selection of their proposed approach on the basis of value to Queensland communities, and the extent to which it addresses the identified need(s).

Alignment to broader government policy

This consideration articulates the value of a proposed investment aligning to broader government policy objectives. This supports the alignment of investment goals and objectives with the current policy landscape.

This may involve consideration of the alignment of the investment with a range of existing policy documentation, including, but not limited to:

- the Queensland Strategy for Disaster Resilience 2017
- Resilient Queensland 2018-2021: Delivering the Queensland Strategy for Disaster Resilience
- the Queensland State Natural Hazard Risk Assessment 2017
- the Queensland Climate Adaptation Strategy 2017 2030
- policies specifically targeted through the grant or funding scheme in question
- any other relevant government policy, current at the time detailed funding guidelines are developed.

Cost-benefit analysis

A comprehensive economic evaluation of the costs (both quantitative and qualitative) and benefits associated with a proposed investment should be undertaken in order to determine the most economic use of resources.

Cost-benefit analyses provide a measure of the forecast effectiveness of an investment. In the development of detailed assessment and prioritisation guidelines, it is expected that demonstrating a viable cost-benefit analysis be considered a minimum standard for all applications, noting that the rigour of the analysis is expected to vary according to the attributable cost of a proposed investment.

While quantifiable measures are of key importance in this methodology, in the context of disaster mitigation and resilience, qualitative considerations must also be taken into account. As such, cost-benefit analysis should consider the following sub-considerations, which have been informed by the Queensland Treasury *Project Assessment Framework (PAF) Guidance on Cost-Benefit Analysis* (July 2015), and account for the characteristics specific to disaster mitigation and resilience.

Whole of life costs	An estimation of the full cost of the investment is clearly stated. This must include initial capital outlay as well as crucial ongoing costs related to operation and maintenance that will be incurred throughout the lifetime of the investment.
Return on investment / timeframe / longevity of assessment	A detailed assessment of the net profit and outlay costs spanning the lifetime of the investment is provided.
Avoided costs (stakeholders)	The proposed investment has considered the avoided costs to the stakeholders when calculating benefits.
Qualitative considerations	The proposed investment takes into account the qualitative/intangible costs and benefits (i.e. non-monetary costs and benefits) such as social, health or environmental impacts, while maintaining rigour as to what is included in benefit considerations.
Scalability and incremental investment	The proposed investment promotes scalable solutions that consider and draw on incremental investments to sustain and improve existing investments.

Evidence base

This consideration articulates the value of the use of investigation, research and evidence in determining the extent to which an investment demonstrates an informed and measured approach to an identified risk. It provides a measurement of the forecast effectiveness of an investment toward achieving a general or specific resilience or mitigation outcome.

In the development of detailed assessment and prioritisation guidelines, it is expected that this consideration should receive a relative weighting against other considerations, in line with the value of the investment. For example, specific funding programs may weight this consideration more heavily for higher cost investments.

It considers the following sub-considerations:

Data and research	The proposed investment is supported by scientific or other evidentiary research including relevant modelling.
Risk & vulnerability	The proposed investment has identified, analysed, and addresses a risk or vulnerability that may arise when a natural disaster occurs.
	Alternatively, in the event the proposed investment does not address a risk or vulnerability, the investment seeks to undertake research to better understand, assess or monitor a risk and / or vulnerability.
Risk mitigation	The proposed investment provides the opportunity to identify a gap or reduce a risk which exists in the current state.
Unintended consequences	The proposed investment has considered secondary effects or externalities (both positive and negative).
Compliance	The proposed investment will address the identified risk, and in doing so will remain compliant with legislative, administrative and ethical requirements.

Community benefits realisation

This consideration articulates the value of investments that consider the potential impact of a natural disaster event, and then work to mitigate that risk and increase resilience.

It is expected that this consideration will be more heavily weighted in funding programs that aim to target non-infrastructure or social resilience measures.

It considers the following sub-considerations:

Community education	The proposed investment will inform and educate the community and individuals, supporting them to improve their resilience in an ongoing manner.
Ongoing capacity building	The proposed investment will provide continued and increased capacity building, by which individuals and communities can obtain and/or improve their disaster resilience.
Community, cultural, health and environmental benefits	The proposed investment demonstrates a clear intervention that improves the capacity for society to recover from the

	impacts of a disaster, and for social, cultural, health and environmental benefits to be realised.
Resilient services	The proposed investment demonstrates how the capacity of local services and infrastructure will be improved, supporting ongoing community resilience.

Collaboration

This consideration articulates the value of investments that encourage, facilitate and demonstrate cross-agency or partnership-based collaboration in the delivery of resilience activities. Further, it articulates the value in investments that are considered to have significant long-term benefits in supporting the ongoing interoperability of Queensland's disaster resilience and mitigation effort.

It considers the following four sub-considerations:

Interoperability with other initiatives	The proposed investment has appropriately considered other, related initiatives, including the extent to which all efficiencies have been captured and quantified, and how the proposed investment will complement and enhance the outcomes.
Integration with broader resilience efforts	The proposed investment demonstrates that it is in line with current interdependencies in disaster related efforts in Queensland and reflects that resilience is a shared responsibility.
Organisational engagement	The proposed investment indicates that relevant organisations and partner agencies have been engaged and are committed to contribute to the investment where relevant. This includes both inter-agency and intra-agency engagement and this is reflected through co-contribution.
Community engagement	The proposed investment has the support of relevant community groups, and consideration has been given to the extent to which the investment may encounter support or opposition.

Innovation

The Framework identifies innovation as an additional consideration for disaster resilience and mitigation applications, and encourages investments that demonstrate innovative solutions to long-standing risks.

While an investment that does not address this consideration should not be disadvantaged, those that do should be given particular consideration for funding on the basis that they may introduce new methods, approaches and technologies that will enhance the existing landscape.

3.2 Applying the Framework

Developing an assessment and prioritisation approach

In applying the Framework to the development of funding guidelines, the following should be taken into account:

- The relative weighting of key considerations to support the intended outcomes of the funding program, for example, a large infrastructure program may place more weight on the cost benefit analysis, while a small, community-based program may place more weight on benefits realisation
- The relative weighting of key sub-considerations to support the intended outcomes of the funding program, for example, a funding program for grassroots community resilience activities may place specific emphasis on the sub-factor of 'social, cultural, health and environmental benefits' under community benefits realisation
- The extent to which funding can be specifically allocated to support innovation, for example, targeting of investment in projects that demonstrate innovation.

Assessment of projects and activities

In the assessment of investment proposals, the following should be taken into account:

- **The composition of the assessment panel**, for example, inclusion of other government agencies or local government representatives on the assessment panel
- The need to consult across the public, private and community sectors to understand the potential impacts of a proposed investment, for example, understanding the impact on the private sector of a public-sector initiated funding allocation
- The need to ensure and promote transparency and consistency in assessment processes, both across and within programs.
- **The need for funding applications to be scalable,** for example, an investment of \$10 million should require more robust justification than a \$10,000 investment.

Measuring success

Detailed assessment and prioritisation guidelines for each funding program drawing from the Framework should include consideration of how the success of any given investment is measured. Outcomes from monitoring and evaluation activities regarding funding allocations should be made available across the disaster resilience and mitigation sector, supporting continuous learning and improvement on a state-wide level.

The approach to monitoring and evaluation should be tailored to the intended outcomes of any given program or project, and should consider the following questions:

- What were the intended outcomes?
- Which components were efficiently and effectively implemented / achieved?
- Which components could have been improved / achieved differently?
- What are the lessons learnt?
- Were there any unanticipated consequences (positive or negative)?

This Framework is intended as a first step to coordinating investment in disaster resilience and mitigation. Success will be measured via:

- reduced community and economic impacts of disasters (Sendai Framework Monitor online management tool)
- utilisation of the Framework by funding administrators in the development of program guidelines.

Annex 1. Key definitions

This Framework adopts key definitions used throughout other Queensland Government disaster resilience and mitigation policy and strategy documents, as set out below.

- **Cost-Benefit Analysis (CBA):** 'A cost-benefit analysis involves a comprehensive economic evaluation of all the costs and benefits associated with each proposed project option, including financial, environmental and social. The objective is to determine the most economic use of resources. Costs and benefits are valued in dollar terms and adjusted for market distortions or imputed where the market does not exist as defined by Queensland Treasury'.²
- **Disaster Mitigation**: The taking of preventative measures to reduce the likelihood of an event occurring or, if an event occurs, to reduce the severity of the event.³
- **Disaster Risk Reduction (DRR):** Disaster risk reduction is aimed at preventing new and reducing existing disaster risk and managing residual risk, all of which contribute to strengthening resilience and therefore to the achievement of sustainable development.⁴
- **Natural Disaster:** a natural disaster is a serious disruption in a community, caused by the impact of a naturally occurring event that requires a significant coordinated response by the State and other entities to help the community recover from the disruption.
- **Resilience:** A system or community's ability to rapidly accommodate and recover from the impacts of hazards, restore essential structures and desired functionality, and adapt to new circumstances.⁵

² Queensland Treasury, *Project Assessment Framework (PAF) Guidance on Cost-Benefit Analysis*, July 2015.

³ State of Queensland, *Resilient Queensland 2018-21*, v 1.0, May 2018, referring to Queensland Government, *Queensland State Disaster Management Plan*, last reviewed 2016.

⁴ Inspector-General Emergency Management, *Queensland Disaster Management Lexicon*, v 1.0, last reviewed 24 August 2018.

⁵ (QRA, *Queensland Strategy for Disaster Resilience*, 2017; and Inspector-General Emergency Management, *Queensland Disaster Management Lexicon*, v 1.0, last reviewed 24 August 2018.

Annex 2. Detailed guidance

The below provides further guidance on the attributes that funding guidelines may incorporate. These are intended as a guide, are not exhaustive and do not represent all factors that may or should be considered.

Key considerations

Issue identification

Sub-considerations	Key attributes
Identified need	 The proposed investment clearly articulates: the issue to be addressed how the need has been identified the appropriateness of the solution.
Options analysis	 The proposed investment clearly articulates: that a range of options have been considered, including the potential outcome of inaction
	• why the chosen option is the most suitable on the basis of addressing the identified need(s).

Alignment to broader government policy

In the development of funding guidelines, it is suggested that alignment with relevant Government policies are clearly articulated.

Cost-benefit analysis

Sub-considerations	Key attributes
Sub-considerations Whole of life costs	 Key attributes The proposed investment clearly articulates: that all costs are accounted for, including acquisition costs, operation costs, maintenance costs, development costs (if any) and disposal costs for the lifetime of the asset that the objectives and scope of the asset/project have been considered in consultation with relevant stakeholders that all feasible options have been considered and rigorously tested against the 'status quo' and project constraints have been identified and assessed (functional, budgetary, environmental, heritage or performance) that a risk analysis has been conducted and included in the estimates that alternative funding for the asset has been considered that net present value⁶ (NPV) has been calculated and a sensitivity analysis has been conducted
	 that the whole of life costs contribute to addressing a need or risk.

⁶ Net present value - 'the discounted value of the expected benefits of a project, less the discounted value of the expected costs' Australian Government Department of Finance

Sub-considerations	Key attributes
Return on investment / timeframe / longevity of assessment	 The proposed investment clearly articulates: the total cost of the investment over its lifetime the net revenue and avoided costs that will be realised over the lifetime of the investment any reduction in greenhouse gas emissions over the full life cycle of the investment.
Avoided costs (stakeholders)	 The proposed investment clearly articulates: a detailed assessment comparing the status quo scenario to the potential benefits has been conducted avoided costs have been quantified for the purpose of comparison.
Qualitative considerations	 The proposed investment clearly articulates: all qualitative and intangible benefits and costs (social, environmental and health) have undergone valuation and all difficult to quantify values explicitly state assumptions on which the estimates were made shadow pricing has occurred for investments that do not have a market price
Scalability and incremental investment	 The proposed investment clearly articulates: that the investment currently exists why the investment needs additional funding in order to sustain itself that the investment outcomes have been effective in the past and therefore, should be continued.

Evidence base

Sub-considerations	Desirable attributes
Data and research	 The proposed investment clearly articulates: that the applicant has conducted research related to the investment, which may include research into potential or actual risks and vulnerabilities, as well as research into the type of disasters, the threats they pose and the various ways to mitigate all of these that the research is factually correct and applicable, e.g. direct relevance, sample size that the research is independent and is not subject to any intentional or unintentional biases that the research is consistent with any previous research and public information and if it is inconsistent, that it identifies and
	 public information, and if it is inconsistent, that it identifies and justifies the cause of this inconsistency that local knowledge and experience has been considered.
Risk & vulnerability	The proposed investment clearly articulates:that a risk or vulnerability has been identified

Sub-considerations	Desirable attributes
	 that the risk or vulnerability, if left unmitigated, is substantial and intolerable that the investment is targeted and will address this risk or vulnerability, thereby reducing or eliminating it that this reduction in risk or vulnerability is substantial that the investment is one of the most viable methods to address the risk or vulnerability.
Risk mitigation	The application clearly articulates how the investment will address a risk or fill a gap that currently exists.
Unintended consequences	The proposed investment has considered secondary effects or externalities (both positive and negative) if the investment were to be implemented.
Compliance	 The proposed investment clearly articulates: that a detailed audit of existing policies has been conducted to ensure that the investment is compliant with legislative, administrative and ethical requirements if relevant, ethical approvals have been obtained.

Community benefits realisation

Sub-considerations	Desirable attributes
Community education	 The proposed investment clearly articulates: that a community or other demographic of individuals has been identified that the project provides targeted information and education to this community or group of individuals that the education activity minimises displacement or increases self-sufficiency during a disaster that the education activity and outcomes increases the capacity and/or capability of a community or individuals to recover from a disaster (risk reduction).
Ongoing capacity building	 The proposed investment clearly articulates: that the investment increases a community or individuals' capacity to tolerate and/or respond after a disaster event that this increased capacity to sustain and/or respond is an effective and efficient method for handling the disaster risk that the required input to build the capacity to sustain and/or respond is reasonable and proportional that the increased capacity is on-going, and not simply a one-off occurrence.
Community, health, environmental benefits	The proposed investment clearly articulates:that the investment creates new social, health or environmental impacts

Sub-considerations	Desirable attributes
	 that these impacts affect a society, a community or individuals either directly or indirectly that the effects of these impacts are positive, and result in the betterment of the society, community or individuals.
Resilient services	 The proposed investment clearly articulates: how the investment builds the capacity of local services such as transport, power, etc. to become more resilient to disaster events which services will be impacted by this project at the community level.

Collaboration

Proposed investments may demonstrate collaboration through various means, such as co-funding of an investment or collaboration through partnerships between local districts, communities, organisations or governments.

The proposed investment should demonstrate how it contributes to and promotes collaboration.

Sub-considerations	Key attributes
Interoperability with other initiatives	 The proposed investment clearly articulates: the intersection of the investment with other related initiatives how efficiencies will be realised how duplication or inefficiencies will be avoided.
Integration with broader resilience efforts	 The proposed investment clearly articulates: how the investment will integrate with the rest of the system how the investment relates to the current state of disaster resilience efforts in Queensland, Australia and globally how the investment reflects the concept that resilience is a shared responsibility how the investment will assist the other projects in achieving their outcomes.
Organisational engagement	 The proposed investment clearly articulates: which partner agencies have been engaged and whether there are relevant capabilities and capacity to be leveraged agencies that receive benefit or leveraging off the project are contributing if relevant, how partner agencies will work together.
Community engagement	 The proposed investment clearly articulates: who has been involved in developing the investment approach, and who has been engaged to provide relevant input what opportunities have been provided to stakeholders (including the community) to voice concerns or discuss the investment how the proposed investment is viewed among the stakeholder group, with a clear articulation of any negative sentiment and how the project will address that.

Other considerations

Innovation

Sub-considerations	Desirable attributes
Innovation	 The proposed investment should: outline how the project is innovative, and demonstrate how it is expected to contribute to disaster resilience and mitigation efforts.



For more information

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