

Guideline 3: Cost estimation for essential public assets

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1. Introduction

Victoria's Natural Disaster Financial Assistance (NDFA) scheme is available to Delivery Agencies including local councils, Catchment Management Authorities (CMAs) and state agencies, to relieve some of the financial burden that may be experienced following a natural disaster, in accordance with the Australian Government's Disaster Recovery Funding Arrangements (DRFA).

The DRFA is intended to support relief and recovery measures delivered by the states. In Victoria and under the DRFA, eligible reconstruction works are to be jointly funded by the Australian and Victorian governments.

Under the DRFA, the Australian Government will reimburse the states under an estimates-based model for the Reconstruction of Essential Public Assets (REPA) following an eligible disaster. The DRFA specifies that:

"States must establish the estimated reconstruction cost for the reconstruction of an essential public asset through:

- (a) market response, or*
- (b) cost estimation.*

A critical step in this process is the estimate of the reconstruction cost of the essential public asset and identification of a total project cost. States must develop the estimated reconstruction cost for the reconstruction of an essential public asset comprising eligible state expenditure for construction, design and project management, contingency and cost escalation." (DRFA 2018, Section 6.4.2–6.4.3).

Consistency in the application of overhead and indirect allowances is crucial across the program of works from both a controls perspective and to ensure auditability.

1.2 Purpose

This guideline documents the process adopted by the State of Victoria for developing an estimated reconstruction cost following an eligible disaster and is consistent with the requirements of the DRFA published by the Australian Government.

1.3 Scope

This guideline applies to REPA works undertaken following damage from eligible disasters activated under *Category B, 4.3.2(d)* of the DRFA.

Emergency works for essential public assets, immediate reconstruction works for essential public assets and counter disaster operations for the protection of the general public are reimbursed based on actual cost expended and are out of the scope of this guideline.

1.4 Timeframes

Identification of damage, scoping of works, investigations and design and estimation of project costs should occur as soon as reasonably practical following an event.

Endeavours should be made to sufficiently design, quantify and mitigate project specific risks to provide greater confidence in the estimated project costs. Estimates must be submitted to the Assessing Authority no later than 31 March in the financial year after the eligible disaster occurred, and prior to undertaking the reconstruction works. REPA works must be completed within two years from the end of the financial year in which the eligible disaster occurred.

1.5 Estimate by projects

For the purpose of defining a project, a project shall be considered one of the following:

- a single essential public asset, or
- a group of related essential public assets which could be contracted jointly.

For the purposes of ongoing document control and audit, efforts should be made to align submissions with the intended packaging of works for delivery or contract.

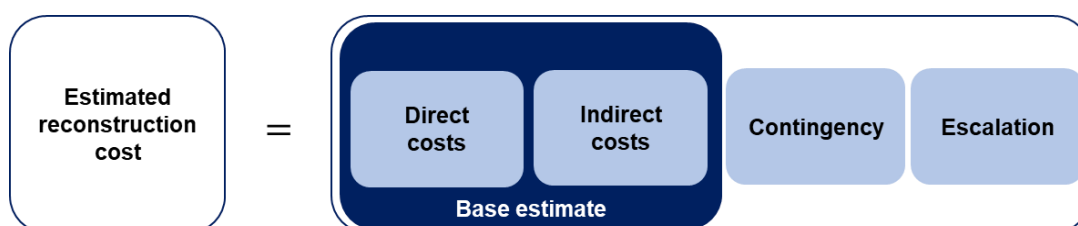
All reconstruction projects within a given financial year should be included in a single claim to the Assessing Authority.

1.6 Approach

The estimated reconstruction cost should be established by determining the base estimate on which contingency and escalation is applied as a percentage. The base estimate should include:

- direct costs; and
- indirect costs (design and project management costs).

Figure 1: Breakdown of estimated reconstruction cost



Refer to the following sections for detailed guidance on each component of the estimated reconstruction cost:

- direct costs, Section 2;
- indirect costs, Section 3;
- contingency, Section 4; and
- escalation, Section 5.

2. Direct costs

The first component of the estimated reconstruction is direct costs. Direct costs may be established through cost estimation or market response. The following sections provide guidance for the application of these approaches.

2.1 Cost estimation

2.1.1 Process

Cost estimates, utilising the 'cost estimation' mechanism is to be undertaken using first principles estimation.

To facilitate consistency and ease of estimation, an estimating tool for standard treatments has been developed for typical and common types of works undertaken in response to damage sustained from disasters. The estimating tool for standard treatments can be customised to the applicants' local construction rates and specific arrangements. All estimates are exclusive of Goods and Services Tax (GST).

Where non-standard treatments are required, a first principles or itemised cost estimate can also be provided using the 'other' category in the cost estimating tool.

2.1.2 Standard treatments

Standard treatments most commonly used in Victoria's reconstruction activities have been collated. The use of common terminology and unit of measure aims to provide consistency across REPA works to:

- assist applicants during scoping;
- assist the review process; and
- audit of claims.

Twenty-four standard treatments have been identified, with an 'other' category provided for non-standard treatments that are unique in nature. The standard treatments are listed below.

Table 1: Standard treatments

Category	No.	Treatment	Unit
Unsealed pavements	ST1	Light formation grading	m
	ST2	Medium formation grading	m
	ST3	Heavy formation grading	m
	ST4	Gravel material supply	m ³
	ST5	Gravel re-sheeting	m ³
Sealed pavement repairs	ST6	In-situ stabilisation – including additional material as required	m ²
	ST7	Granular overlay – overlay with imported material (≤150mm)	m ²

Category	No.	Treatment	Unit
	ST8	Reconstruct unbound granular pavement	m ²
	ST9	Patch repair – patch unbound pavement failure	m ³
	ST10	Pothole repair	tonne
	ST11	Heavy shoulder grading	m
	ST12	Shoulder reconstruction	m
	ST13	Asphalt	m ³
Clearing and earthworks	ST14	Bulk excavate surplus material or debris and remove from site	m ³
	ST15	Bulk fill	m ³
	ST16	Rock protection	m ³
	ST17	Reshape table drain	m
Road furniture and delineation	ST18	Replace road signage	each
	ST19	Replace roadside barriers	m
	ST20	Replace guide posts or markers	each
Concrete	ST21	Reconstruct reinforced concrete	m ³
Drainage structures	ST22	Repair drainage structure – excavate, repair and reinstate	m
	ST23	Replace Reinforced Concrete Box Culvert (RCBC)	m
	ST24	Replace concrete pipe	m
Other	OT1	'Other' – including structures, retaining items	lump sum

Within Victoria, the CMAs also undertake REPA works. Whilst the above standard treatments are road focused, there are several treatments that may be applied across assets owned by the CMAs that are damaged by an eligible disaster. These standards include:

- ST15 – Bulk fill (for levees);
- ST16 – Rock protection (for protection around bridge structures);
- ST21 – Reconstruct reinforced concrete (for the replacement of culvert headwalls and end structures);
- ST22 – Repair drainage structure;
- ST23 – Replace RCBC;
- ST24 – Replace concrete pipe; and
- OT1 – Other.

The cost estimation tool (outlined in Section 2.1.4 below) includes the provision for the addition or removal of the nominated resources within the standard treatments, to establish the direct cost estimate. This allows the standard treatments to be tailored to the resources that are expected to be available and used during reconstruction.

The 'OT1 – Other' treatment has been included in the tool for any treatment that is unique in nature and is not reflected in any of the standard treatments. Due to the unique nature (type, size, location, etc.) of the assets owned by the CMAs it is expected that many of the required treatments would fall within this 'OT1 – Other' treatment category. By adopting this treatment, the CMAs may derive the direct cost estimates using existing proven practises. It is expected that the basis of the derivation of the direct cost rates will be reviewed as part of the claim assessment process.

To support each of the standard treatments, a 'Standard Treatment Guideline' is included in Appendix B to further detail the work activities and scope of works included in each of these treatments.

2.1.3 First principles estimation

First principles estimation is the process of assigning plant, labour and material rates to a given work activity or standard treatment. The process used to develop resource build-ups is outlined below:

- standard treatment build-up
- applicant specific treatment build-up.

The standard treatment build-ups account for common inputs to develop a first principles estimate for a reconstruction treatment. These include:

- construction methodologies (type of plant, labour, materials);
- basis for rates (resource rates to take into account current market conditions including supply and demand);
- size and number of sites;
- productivity;
- remote locations or distance of travel; and
- materials availability.

2.1.4 Cost estimation tool

A cost estimation tool has been developed for each of the standard treatments listed in Section 2.1.2. With the adoption of this tool for the standard treatments, Delivery Agencies are able to input the resource (plant, labour and materials) and other input factors (productivities, travel times) to develop a first principles estimate.

2.1.5 Standard treatment build-up

Resource based treatment build-ups have been developed for the standard treatments. The treatments have been allocated a Work Breakdown Structure (WBS) and assigned a typical batch size and length of site and corresponding quantities or measure-ups. Resource rates for plant, labour and materials, typical productivities and other inputs can be applied to derive the proposed direct cost estimate.

2.1.6 Applicant specific treatment build-up

2.1.6.1 Construction methodologies

Typical resources have been included in the standard treatments. Whilst these resources are commonly used as part of the respective standard treatments, there is capability within the estimating tool for the Delivery Agencies to amend the resources to be in-line with likely construction methodologies. This includes consideration of locally available plant and skilled resources.

2.1.6.2 Basis for rates

Plant and labour rates should reflect the market rate relevant to the applicant. Materials rates should be based upon the applicants typical supply arrangements. Where market rates are not available or internal material resources are predominantly used, internal supply rates should be provided.

Key inputs typically include:

- materials supply rates;
- standing offer arrangements;
- contractor plant hire rates;
- council plant and equipment rates (if approved);
- day labour rates (if approved); and
- site establishment and disestablishment costs.

2.1.6.3 Productivities

Productivities represent the rate of delivery with regard to time, typically expressed per day. Baseline productivity rates established for each standard treatment should be varied according to the applicants amended construction methodology and local conditions (including remoteness of works, delivery of materials, and workability of materials).

2.1.7 Review, validation and assurance

The first principles cost estimates are to be reviewed by the Assessing Authority as part of the claim review process. This review shall consider the value of plant, labour and materials and the expected duration to complete the works.

The unit rates derived from the estimate may be compared against other similar types of works undertaken recently in the area. Over time, it is expected that a library of unit rates will be compiled along with some historical information on actual costs and unit rates achieved.

2.2 Market response

2.2.8 Process

A market response methodology may be used in assigning direct costs to an estimated reconstruction cost.

If market response is the selected method, applicable procurement processes must be followed when requesting pricing from the market.

Various procurement options, depending on the size and complexity of works are available in sourcing market response. Works may be awarded based on standing offer arrangements, tender or other competitive process. In addition, works may be awarded as a design and construct contract where the scale of works is appropriate.

When using a market response, the awarded contract, detailing the scope and applicable rates must be provided to the Assessing Authority by 31 March following the financial year in which the disaster occurred.

2.2.9 Considerations

To minimise ongoing risk of cost overruns, contractual variations or delay claims, best practices should be implemented to ensure a successful tendering process. Best practices include:

- ensuring works area is adequately scoped and designed;
- ensuring quantities and price schedule are accurate;
- providing sufficient time for contractors to price;
- programming works to avoid known periods of weather-related disruptions;
- using contractors for concurrent projects in the same region where value for money can be maintained; and
- ensuring Delivery Agency's procurement guidelines are adhered to.

2.2.10 Procurement

In addition to meeting relevant procurement requirements, effective procurement may include:

- using appropriate means to invite tenders;
- running a robust evaluation process, including documenting evaluation criteria and reasons for selecting; and
- appropriate consideration and weighting of price and non-price criteria.

3. Indirect costs

Under the DRFA, the estimated reconstruction cost must include the following indirect costs:

- design
- project management.

The estimation of these components of the estimated reconstruction cost are summarised below.

3.1 Design

Design costs can vary widely depending on the complexity of the works and location. Works may vary from simple maintenance style interventions through to complex geotechnical projects with difficult environmental interfaces. Accordingly, design costs may vary from 0.5 to 15 per cent.

Design includes, but is not limited to, the following activities:

- options identification and analysis;
- design development;
- detailed design and tender design documentation;
- investigations covering requirements and supply for geotechnical, land, materials and water;
- surveys, including topographical and property;
- utilities surveys, searches and reports;
- technical studies, including (for example): noise, environment, flora, fauna, cultural, heritage, air quality, safety, hydrological, etc;
- updating design documentation and reports;
- independent verifier or certifier; and
- environmental impact studies.

3.2 Project management

Similarly, project management costs can vary subject to the ease of procurement, delivery method and complexity of works. For example, works delivered by a contractor, adopting a standing offer arrangement, using principle supplied materials will have different project management costs to a custom build with pre-fabrication of time crucial elements of a structure. Accordingly, project management costs may vary from 3 to 15 per cent.

Project management includes, but is not limited to, the following activities:

- program administration;
- stakeholder consultation and communication;
- contract administration;

- legal and commercial;
- planning and programming;
- risk assessment;
- Occupational Health and Safety (OH&S) activities;
- project and progress reporting; and
- consents and approvals.

Combining design and project management costs, an overall percentage of between 5 and 30 per cent may be required depending on the complexity of the works, location of works, delivery method and need for monitoring.

4. Contingency

4.1 Introduction

Recognising the uncertainties in disaster recovery works, including pressures on the workforce, short supplies of materials and difficulty of access, allowance has been made within the DRFA for the inclusion of reasonable contingency.

'In estimating reconstruction costs, the states will be required to account for residual risks through the inclusion of a contingency allowance.

*The calculation of a contingency allowance estimate should reflect the reconstruction project risk profile, complexity, investment lifecycle, benchmarks and past performance for similar projects. In determining a contingency allowance, the Commonwealth will require the states to use an appropriate contingency estimation approach, noting that **a deterministic factor based cost estimation approach will be suitable for most reconstruction projects**. For certain reconstruction projects, states may consider a streamlined approach to the application of a contingency allowance based on the type of treatment required and the unique characteristics of a particular region of a state. However more sophisticated approaches to estimating contingency may also be appropriate for complex/high dollar value reconstruction projects.*

In identifying a contingency allowance, states will be expected to follow the established cost estimation guidance published by the Commonwealth Department of Infrastructure, Regional Development and Cities at www.investment.infrastructure.gov.au (DRFA 2018, Section 6.5)

To allow the use of the 'streamlined approach to the application of a contingency allowance', treatment categories and grouping by region is required.

4.2 Risk profiles – treatment types

Standard treatments have been developed to assist the cost estimation process. These treatments fall within the following categories:

- Unsealed pavements
- sealed pavement repairs
- clearing and earthworks
- road furniture and delineation
- concrete
- drainage structures
- ‘other’ – complex projects, geotechnical and structures.

Although the categories (and treatments) are common, the risks associated with each category is different. Common considerations in terms of the risk for each of the categories is included in the table below.

Table 2: Key risk considerations by treatment categories

Treatment category	Key risk considerations
Unsealed pavements	<ul style="list-style-type: none"> • Located in remote areas • High camp or mobilisation costs for remote works • Loss of productivity due to travel times • Lack of resource availability or distance to source may require long hauls of gravel or water • Higher risk of plant and labour shortages
Sealed pavement repairs	<ul style="list-style-type: none"> • Higher order roads with ongoing operation imperative • Lost productivity and increased traffic control costs • Potential subgrade issues and conflicts with services or underground drainage
Clearing and earthworks	<ul style="list-style-type: none"> • Difficulties in quantification • Risk of contaminated materials • Difficulty of access
Road furniture and delineation	<ul style="list-style-type: none"> • Low productivity due to spread over long distances • Potential need for mobile traffic control
Concrete	<ul style="list-style-type: none"> • Supply availability • Distance to supply • Quality of supply • Labour shortages for skilled steel fixers • Loss of productivity due to small sites • Design risks

Treatment category	Key risk considerations
Drainage structures	<ul style="list-style-type: none"> • Potential trigger of statutory approvals • Environmental complexities • Subject to weather and season • Variable materials • Difficulty of access • Supply and haulage costs
Other	<ul style="list-style-type: none"> • Detailed investigations and design • Ongoing design requirements • Statutory approvals • Environmental complexities • Variable materials • Complex interfaces with traffic or other infrastructure • Difficulty of access • Availability of suitable plant, equipment and labour

4.3 Risk profiles – location

The delineation of regions is useful in considering local risks and their impacts on reconstruction works. Risks include:

- Increased haulage due to reduced water or gravel supply;
- Higher cost of labour due to labour shortages;
- High costs of mobilisation and camp due to remoteness;
- Availability of local supplies;
- Delays and further investigations due to environmental risks;
- Traffic related risks due to complex staging requirements; and
- Impact associated with the climate in the region.

4.4 Deterministic approach – typical reconstruction projects

In considering the regional specific risks, the deterministic approach to calculating contingencies can be applied by treatment category as is detailed in the standard deterministic matrix developed for common risk factors, included in Appendix C.

Typical contingency ranges, correlating to a first principles estimate stage for each treatment category have also been provided in Appendix C. Regional characteristics and risks will determine where within this range each treatment should site or whether an adjustment to the range is required. For each risk listed it is necessary to determine the level of confidence and reliability and hence the appropriate risk adjustment. It is recommended that the deterministic risk matrix in Appendix C is used for each of the standard treatments included in a project cost estimate.

Should a market response be used to price the works, a lower contingency should be considered. Prior to seeking a market response, investigations should have been carried out, and design developed sufficiently to enable pricing by the market. As a result, reductions (or removal) of allowances for project scope, key dates and site-specific risks should be considered. Consequently, a contingency range of 12 to 20 per cent may be more suitable (with the exception of complex geotechnical or marine projects).

4.5 Probabilistic approach – high value and complex projects

The DRFA also allows:

‘sophisticated approaches to estimating contingency may also be appropriate for complex/high dollar value reconstruction projects’ (DRFA 2018, Section 6.5.2)

The use of a probabilistic (rather than deterministic) calculation of contingency and the review of its calculation involves considerably more effort and should be applied to very large projects only.

Further information and guidance regarding this approach can be found in guidance note 3A: probabilistic contingency estimation in Appendix D.

5. Escalation

Escalation is the allowance for expected changes in capital costs throughout the project lifecycle. The DRFA states:

‘Cost escalation allowances are applied to an estimated reconstruction cost to ensure adequate capital funding is provided to compensate for the expected change, generally positive, in costs over the life of a reconstruction project. These cost increases can be the result of a number of factors including price fluctuations in labour, plant and material, and global and local market pressures.

The Commonwealth expects that at the time of preparing the estimated reconstruction cost the states will be required to account for cost changes, generally increases, over the life of a reconstruction project by establishing a realistic cost escalation allowance. Consistent with the objectives of ensuring the reconstruction of an essential public asset following an eligible disaster is achieved, cost escalation would at a maximum only be applied and eligible for a period of three years from the end of the financial year in which the eligible disaster occurred.

States will be expected to utilise the escalation rates and the escalation calculation methodology included in the state specific road construction cost escalation forecasts prepared annually by the Commonwealth Department of Infrastructure, Regional Development and Cities, and provided to each state and territory infrastructure delivery agency.’ (DRFA 2018, Section 6.6)

Escalation should be allowed for in accordance with the DRFA. The DRFA refers to the rates published in the Road Construction Cost Escalation Forecasts (RCCEF) prepared annually by the Australian Government department of Infrastructure and Regional Development. The DRFA provides for up to three years of escalation to be applied to estimates.

By way of example, a present value of \$100.00, with three years of escalation applied (at 5 per cent, 5 per cent and 4 per cent) equates to \$114.66.

Table 3: Forecast annual escalation

	Present value	FY1	FY2	FY3
Forecast annual escalation		5%	5%	4%
Value	\$100.00	\$105.00	\$110.25	\$114.66

The application of escalation should consider the date of the estimate, forecast program commencement, and forecast program completion.

Should a market response be utilised to price the works, escalation should be removed, if escalation is priced into the contract.

6. Document information

For the list of documentation related to cost estimation, refer to Appendix A: Cost estimation standard forms and templates.

6.1 Document details

Criteria	Details
TRIM ID:	
Document title:	Guideline 3: Cost estimation for essential public assets
Document owner:	Emergency Management Victoria, Department of Justice and Community Safety

6.2 Version control

Version	Date	Description	Author
V1.0	12 10 18	Issued for IDC review	
V2.0	24 10 18	Issued for IDC approval	
V2.1	26 10 18	Minor updates to final issue	
V2.2	30.10.18	Working document	
V2.3	07.01.19	Updates to glossary	

Version	Date	Description	Author
V2.4	31/10/19	Update Administering Authority Minor update to Introduction	

6.3 Document approval

This document requires the following approval:

Name	Title	Organisation

6.4 Reference material

Attached references	TRIM ID/Location

Bibliography	Author	TRIM ID/Location
Disaster recovery funding arrangements 2018	The Australian Government	

6.5 Acronyms

Acronyms	Description
CMA	Catchment Management Authority
DRFA	Disaster Recovery Funding Arrangements
DTF	Department of Treasury and Finance
GST	Goods and services tax
OH&S	Occupational health and safety
RCBC	Reinforced concrete box culvert
RCCEF	Road construction cost escalation forecasts
REPA	Reconstruction of essential public assets
WBS	Work breakdown structure

6.6 Glossary of terms

Terms	Description
Administering Authority	The Administering Authority for the DRFA in Victoria is Emergency Management Victoria, the Department of Justice and Community Safety. DJCS serves as the single point of contact with the Australian Government and oversees the implementation of the DRFA across state agencies and local council.
Allowable time limits	Prescribed timeframes under the DRFA including, but not limited to, the following activities: <ul style="list-style-type: none"> • Notification of the Australian Government of a disaster event • Completion of emergency works and non-REPA reconstruction works • Provision of evidence of damage to the State for an eligible disaster event • Approval of cost estimates related to a disaster event • Period to incur REPA expenses
ASAE3150	ASAE3150 Assurance Engagements on Controls, issued by the Auditing and Assurance Standards Board
ASA 800	Auditing Standard ASA 800 Special Considerations-Audits of Financial Reports Prepared in Accordance with Special Purpose Frameworks, issued by the Auditing and Assurance Standards Board.
Assessing Authority	The Assessing Authority assesses claims for the reconstruction of essential public assets on behalf of DTF. The Assessing Authority will depend on the Delivery Agency that has undertaken the works.
Borrow pit	A borrow pit is an area where material (usually soil, gravel or sand) has been excavated for use at another location
Claim pack	The financial reporting pack provided by the Australian Government to the State each year.
Contingency	The allowance reflecting the reconstruction project risk profile, complexity, investment lifecycle, benchmarks and past performance for similar projects.
Control agency	The agency who is responsible to undertaking the control activity to mitigate the risk to ensure that the control objective(s) can be met.
Control objectives	The control objectives established within these arrangements, as required under ASAE3150
Cost estimation	The process of developing the estimated reconstruction cost for the reconstruction of essential public assets by building up the component elements including: <ul style="list-style-type: none"> • scoping and defining the works required for reconstruction of the essential public asset; • applying relevant assumptions and exclusions, and • using available historical data of actual costs (that is, benchmark pricing) and/or supplier quotes to estimate the cost of reconstruction works.
Counter disaster operations	Activities undertaken by the state in response to the occurrence of a disaster event to protect a community from the impacts of the disaster event
Day Labour	The use of a Delivery Agency's own plant, equipment or resources to reconstruct an asset. The key components of day labour are plant, labour and materials.

Terms	Description
Disaster event activation	Under the DRFA, for an event to be activated, the following conditions must be satisfied: <ul style="list-style-type: none"> • Meets the definition of a natural disaster or terrorist event and eligible disaster; and • Has impacted an eligible undertaking.
Disaster Recovery Funding Arrangements Management System	The processes and controls implemented by <i>state agency</i> and third party organisations (where applicable) in relation to an <i>estimated reconstruction cost</i> , as defined by these <i>arrangements</i> .
Delivery Agency	A State or Local Government agency responsible for delivering emergency or reconstruction works to restore an asset post-disaster.
Direct costs	Costs directly associated with the reconstruction of an eligible essential public asset, commonly referred to as construction costs.
Eligible disaster	A natural disaster or terrorist act for which: <ul style="list-style-type: none"> • a coordinated multi-agency response was required, and • state expenditure exceeds the small disaster criterion.
Eligible measure	A relief or recovery assistance measure specified in these arrangements, or a cost to the state under clause 8.1 of these arrangements.
Eligible undertaking	A body that: <ul style="list-style-type: none"> • is one of the following: <ul style="list-style-type: none"> – a department or other agency of a <i>state</i> government, or – established by or under <i>state</i> legislation for public purposes (for example, a local council), and • in the operation of the asset provides services free of charge or at a rate that is 50 per cent or less of the cost to provide those services.
Emergency works	Urgent activities necessary following an eligible disaster to temporarily restore an essential public asset to enable it to operate/be operated at an acceptable level of efficiency to support the immediate recovery of a community, and take place: <ul style="list-style-type: none"> • prior to the state commencing essential public asset reconstruction works in accordance with these arrangements, or • prior to or at the same time as immediate reconstruction works and where no essential public asset reconstruction works are required.
Escalation	The allowance for expected changes in capital costs throughout the project lifecycle.
Essential public asset	A transport or public infrastructure asset of an eligible undertaking which, the state considers, and the Australian Government agrees, is a necessary part of a state's infrastructure and is integral to the normal functioning of a community.
Essential public asset function framework	The Essential Public Asset Function Framework as defined by these arrangements (refer to clause 6.3).
Essential public asset reconstruction works	Reconstruction works on an essential public asset directly damaged by an eligible disaster for which an estimated reconstruction cost has been developed.
Estimated reconstruction costs	The estimated cost of reconstruction of an essential public asset damaged by an eligible disaster and calculated in accordance with these arrangements.
Extensions to allowable time limits	Extensions to prescribed timeframes under special/ extenuating circumstances to maintain eligibility of a claim under the DRFA

Terms	Description
First principles estimation	The process of assigning plant, labour and material rates to a given work activity or standard treatment.
Immediate reconstruction works	Immediate reconstruction activities following an eligible disaster to fully reconstruct an essential public asset, and where no essential public asset reconstruction works are required.
Ineligible works	Works that are not eligible for claiming under the DRFA arrangements
Indirect costs	Costs indirectly related to the reconstruction of an eligible essential public asset, including overheads, project management, procurement and engineering assessment costs.
Independent Technical Review	A review of estimated reconstruction costs in accordance with the DRFA
Market response	The process of developing estimated reconstruction cost for reconstruction of essential public assets by tender or competitive bidding.
Monitoring agency	The agency who is responsible for monitoring that the control activity has been undertaken to successfully meet the control objective(s).
Natural disasters	According to the DRFA, a natural disaster is one, or a combination of the following rapid onset events: Bushfire, earthquake, flood, storm, cyclone, storm surge, landslide, tsunامي, meteorite strike or tornado.
Pre-disaster condition	Condition of an eligible asset prior to the occurrence of the disaster event
Post-disaster condition	Condition of an eligible asset in the aftermath of a disaster event occurring
Pre-disaster asset function	Under the DRFA, the Australian Government will provide funding equivalent to reconstruct an essential public asset to its pre-disaster function. Therefore, the pre-disaster function must be determined to establish the proposed treatment and subsequent estimated reconstruction cost. It is important to note that pre-disaster condition of the asset is still an important factor, and evidence of the assets condition prior to the disaster event is required as part of the funding claims process.
Project	For the purpose of defining a project, a project shall be considered one of the following: <ul style="list-style-type: none"> a single asset up to 10 individual assets with estimated costs of ≤\$50,000 each (totalling no more than \$500,000).
Public infrastructure	An asset that is an integral part of a state's infrastructure and is associated with health, education, justice or welfare.
Reconstruction	The restoration or replacement of an essential public asset.
Re-damaged essential public asset	An essential public asset is re-damaged if it suffers additional damage from a subsequent eligible disaster which occurs after the development of an estimated reconstruction cost for the preceding eligible disaster.
Reasonable assurance engagement	An assurance engagement in which the assurance practitioner reduces engagement risk to an acceptably low level in the circumstances of the engagement as the basis for the assurance practitioner's conclusion. The assurance practitioner's conclusion is expressed in a form that conveys the assurance practitioner's opinion on the outcome of the measurement or evaluation of the underlying subject matter against criteria
Responsible agency	The agency who is responsible for undertaking the activity as prescribed under the DRFA.

Terms	Description
Small disaster criterion	For the purposes of these arrangements, the amount of \$240 000 or an amount as published by the department.
Special Circumstances	Where the estimated reconstruction cost is lower than the actual cost of a project as a result of special circumstances, and the variance does not meet the criteria for an Independent Technical Review, delivery agencies can adjust the estimated reconstruction cost to reflect the variance. The Delivery Agency must provide evidence to the Assessing Authority to demonstrate the special circumstances encountered, including why the special circumstances could not reasonably have been foreseen.
Standard treatment(s)	Common or typical reconstruction/ repair procedures undertaken in response to damage sustained from natural disasters
The System (Disaster Recovery Funding Arrangements Management System)	The processes and controls implemented by a <i>state agency</i> and third party organisations (i.e. delivery agencies where applicable) in relation to an estimated reconstruction cost, as defined by the DRFA.
Terrorist act	<p>An action or a series of actions committed in Australia which the Minister has determined is a terrorist act for the purposes of an eligible disaster under these arrangements.</p> <p>Without limiting the matters to which the Minister may have regard in determining whether the action or series of actions is a terrorist act, the Minister may have regard to:</p> <ul style="list-style-type: none"> the definition of a terrorist act under section 100.1 of the Criminal Code Act 1995, and if available, the advice of other Commonwealth agencies. <p>In the event of one or more acts, the Minister may determine two or more related acts to be a single terrorist act.</p>

Appendices

Appendix A: Cost estimation standard forms and templates

Item	Description	Form/Doc ID
1	Victorian DRFA Guideline 3 – Cost estimation for essential public assets	GL-3
2	Victorian DRFA Fact Sheet 3 – Cost estimation for essential public assets	FS-3
3	Standard treatment guidelines for cost estimation	GL-3 App B
4	Standard Deterministic Risk Matrix – Victoria	GL-3 App C
5	Guidance Note 3A	GL-3 App D
6	Victorian DRFA Cost estimation tool	VT-CE

Appendix B: Standard treatment guidelines

Reference Appendix B: Standard treatment guidelines under separate cover.

Appendix C: Standard deterministic risk matrix – Victoria

Table C.1: Standard deterministic risk matrix – Victoria

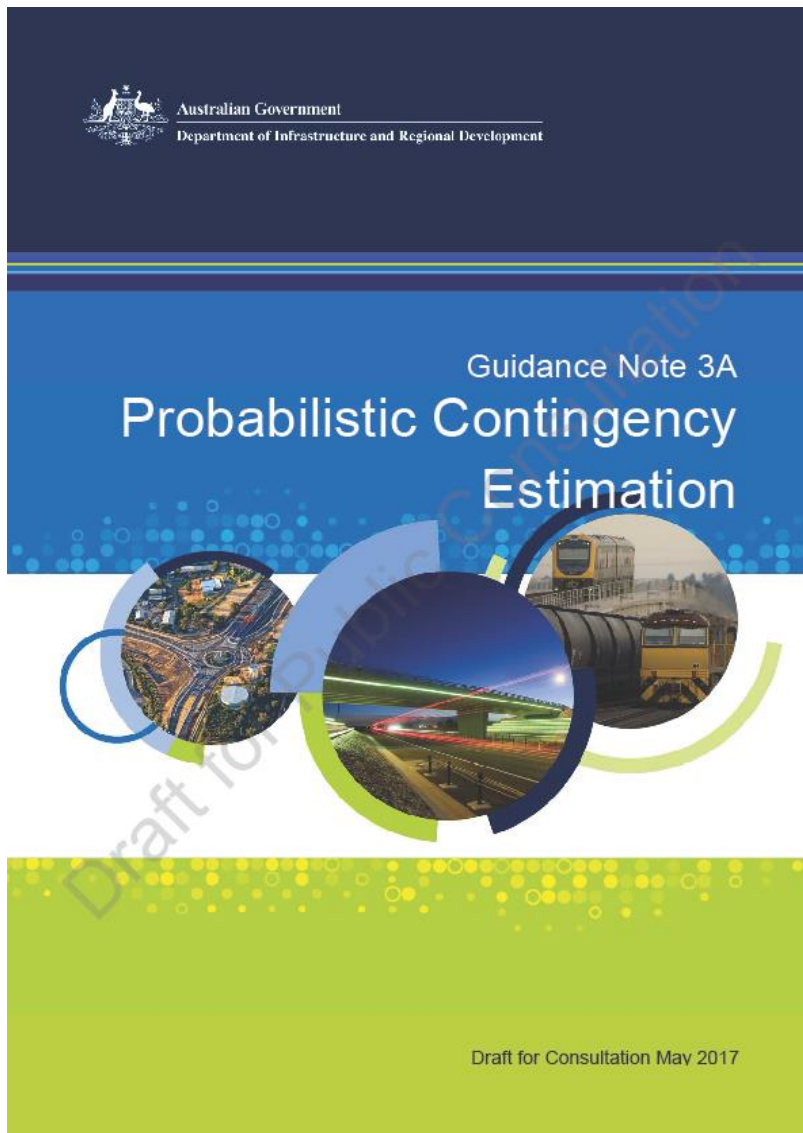
	Available information on which the estimate is based	Questions as relevant to works	Confidence and reliability		
			Highly confident and reliable	Reasonably confident and reliable	Not confident and not reliable
Project scope	A set of well-defined project objectives and related performance criteria.	What is the level of confidence and reliability in the scope and quantities inherent to this treatment?	6%	7%	9%
	Investigations or test results, design report and design drawings.		Precast items and discreet elements (e.g. headwalls, culvert units and aprons).	Scope and quantities defined by road chainage and length and depth.	Scope and quantities cannot be readily measured (e.g. scour holes, debris blockage).
			Scope and quantities relate to elements that are both easily quantifiable and distinct from the surrounding environment.	Investigation and design undertaken, however uncertainties exist with subgrade or subsurface conditions.	Conditions and materials are variable. Ongoing investigations and design anticipated.
Risk identification	Risk analysis of significant risks (political, community, technical, financial, environmental, labour and materials).	What is the level of confidence with:	6%	7%	9%
		1. the availability of labour to undertake the works?	The treatment is not reliant on materials supply.	Regional areas with variable availability of labour.	Region consists of predominantly remote areas with limited suppliers
		2. the availability of the materials to undertake the works?	Good materials supply throughout the region.	Materials supply occasionally affected by environmental conditions (e.g. drought affecting water supply).	Materials supply frequently affected by environmental conditions (e.g. drought affecting water supply).

	Available information on which the estimate is based	Questions as relevant to works	Confidence and reliability		
			Highly confident and reliable	Reasonably confident and reliable	Not confident and not reliable
Constructability	A constructability, staging and construction access review and construction program.	What is the level of confidence and reliability in the treatment cost with respect to constructability or complexity?	3% The treatment is typically undertaken in isolation to other activities.	4% The treatment is typically delivered concurrently with other construction activities where there is minimal likelihood of one activity significantly impacting the other.	5% The treatment is typically delivered concurrently with other construction activities with the potential for interrelated delays due to conflicts.
Key dates	A set of project dates (to enable outturn cost to be assessed).	What is the level of confidence and reliability that the works be completed within the required timeframe?	1% The region's construction period is typically independent of seasonal weather patterns.	2% The region's construction period is somewhat influenced by seasonal weather patterns.	3% The region's construction period is heavily influenced by seasonal weather patterns.
Site specific information	Sufficient and documented investigation of concept design (geotechnical, heritage, environmental, technical, hydraulic).	What level of confidence is there in the treatment cost with respect to statutory approvals?	5% Works associated with this treatment are unlikely to be associated with statutory approvals or require additional investigations.	6% Works associated with this treatment may require statutory approvals and additional investigations.	9% Works associated with this treatment are likely to require statutory approvals and additional investigations.
Project interfaces	External interfaces (identified and defined in terms of scope, access and risk).	What level of confidence and reliability is there in the treatment cost with respect to interfaces with adjacent assets?	3% Works associated with this treatment can be undertaken with little to no disruption to asset operations during construction.	4% Works associated with this treatment typically involve moderate complexity in maintaining existing asset operations during construction.	5% Works associated with this treatment typically involve significant complexity in maintaining existing asset operations during construction.

Table C.2: Typical contingency ranges by treatment categories

Treatment category	Typical contingency ranges
Unsealed pavements	24-30%
Sealed pavement repairs	24-30%
Clearing and earthworks	28-34%
Road furniture and delineation	24-34%
Concrete	30-40%
Drainage structures	30-40%
Other	40%
Total	24-40%

Appendix D: Guidance note 3A



Note: This is an embedded document. Please double click on the image to access document.

