[Contract Name] – [Contract Number]

Severe Weather Management Plan Template

June 2019

Document control sheet

Contact for enquiries and proposed changes

If you have any questions regarding this document or if you have a suggestion for improvements, please contact:

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Version history

| Version no. | Date | Changed by | Nature of amendment |
| --- | --- | --- | --- |
| 0.1 | 17 April 2019 | Jay Wickramatunga | Draft |
| 1.0 | 01 June 2019 | Dale Cunningham | Final |

Important Notice

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| *Any guidance text provided to help with completion of this Form will be shown in green italic font and in text tables. Delete all guidance text before submitting the form to the Contract Administrator (CA). Any subsequent changes made to this form must be communicated to the CA.* |

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# Introduction

This is the Severe Weather Management Plan (SWMP). It makes sure:

* Appropriate governance arrangements are in place to demonstrate that Transport and Main Roads and Contractor are undertaking best endeavours to minimise cost increases to Principal Arranged Insurance (PAI) providers.
* The relevant information for the site-specific SWMP are provided on Transport and Main Roads construction projects to minimise the impact of severe weather on works under construction.

# Purpose

This document is developed based on the principles that it:

* describes the arrangements and actions required in the event of a severe weather advice being issued to minimise the risk of injury, environmental impact, and financial loss to the project
* reduce the quantum of damage and delay to works following a severe weather event
* will result in the reduction in quantum of PAI claims
* will result in a reduction of Transport and Main Road's risk profile
* will maintain the consistent approach to managing severe weather on sites
* is a guidance for Principal Contractor to prepare a plan which would provide required information.

# Scope

The scope is defined by Engineering Policy EP146 *Severe Weather Management Plan*.

# Out of scope

All contractual obligations and disputes will be administered through the Contract.

# General

The SWMP will be reviewed and/or amended as needed as part of the Contract (*TIC - CO* *General Conditions of Contract* Clause 33). The Contractor is responsible for all SWMP measures being implemented and necessary suitability is obtained from the CA prior to commencing work at site.

This document must address all mandatory requirements outlined in the Engineering Policy EP146 *Severe Weather Management Plans*.

# Review and control of SWMP

A controlled copy of the SWMP document will be kept at *[Contractor to complete]*.

The Project Manager will periodically review the effectiveness of the SWMP, specifically prior to the implementation of each major stage of works to incorporate necessary amendments associated with changed conditions or particular issues. Any amendments to the plan will be implemented, and revised documents will be distributed to those affected parties. All revised versions of the SWMP will be easily traceable through use of a sequential suffix to the original document.

# Relationships with other Plans

The SWMP forms part of a suite of plans developed for the project which constitutes the Contract Plan. In particular, the SWMP should be read in conjunction with the following plans:

* Contract Plan
* Any other project related plans and reports not part of the Contract Plan.

# References

The following references were used to prepare this Severe Weather Management Plan:

* *Transport Infrastructure Contract (TIC-CO) – General Conditions of Contract (C7830)*
* Engineering Policy EP146 *Severe Weather Management Plan*
* Principal Arranged Insurance Program and its Guidelines.

# Scope of the Contract

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| *Insert a description of the Works as outlined in the Contract.**Insert the Contract number, Contractor's name and address; Date of Letter of Acceptance; Construction Period; Date for Practical Completion; and the Contract Sum.**The scope of Works needs to be defined to specify the extent of the main features of the Contract. This information will correspond to that used in the Pre construction phase documentation of the Contract.**Out of scope Works need to be identified as these Works may be delivered by the Principal but not form part of the Contract. This information may also be included in the pre construction documentation.* |

*[Insert project location map]*

# Severe Weather Monitoring, Analysis and Identification

The planning and execution of a SWMP will result in a consistent approach to managing severe weather on site and result in fewer insurance claims. Weather forecasts from the Bureau of Meteorology (BoM) will be monitored by the Project Manager, Supervisors and Engineers on a daily basis, to ensure work crews have maximum time to implement sufficient controls should a severe weather event be imminent. Once an event is forecast and identified as having the potential to impact the works, the SWMP will be actioned for each project element as outlined below.

## Severe weather identification

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| *Describe severe weather that might impact the site. Examples include bushfire, high winds, storm, cyclone, flood/inundation, extreme heat and prolonged rainfall leading to flooding. For each identified severe weather event, contractors must ensure strategies are documented to mitigate their impact on site.* |

## Severe weather monitoring

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| ***What weather conditions are Severe Weather Warnings issued for?****Severe Weather Warnings are issued for:** *Sustained winds of gale force (63 km/h) or more.*
* *Wind gusts of 90 km/h or more.*
* *Very heavy rain that may lead to flash flooding.*
* *Abnormally high tides (or storm tides) expected to exceed highest astronomical tide.*

***What information is included in the Severe Weather Warning?****Severe Weather Warnings can contain the following information:** *Standard Emergency Warning Signal (SEWS) - sounded only for the most serious events.*
* *List of severe weather phenomena expected in the warning area.*
* *Threat area.*
* *Warning issue time.*
* *(Usually) Description of the weather pattern, including forecast developments of significant weather systems.*
* *Description of the threat.*
* *Action statements.*
* *Advice of next issue time.*
* *General timeframes which information can be obtained from BOM and is to be monitored and then communicated by Project Engineers are:*
* *Posting 7 day weather forecast on all site office/complex notice boards at least twice weekly.*
* *Review notifications daily on the Bureau of Meteorology (BoM) website and provide 48 hours heads up notification to Construction Manager of potential severe weather event.*
* *Review notifications daily on the BoM website and provide 24 hours analysis to Construction Manager of probable severe weather event and potential impacts.*
* *Review Severe Weather Warnings as issued on BoM website and provide analysis of likely impacts to Construction Manager for consideration.Note that severe weather warnings will usually be updated every 6 hours, however more frequent warnings may be issued if required.*
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## Analysis of specific construction impacts from severe weather

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| *For example, a flood plain impacting upon an embankment.* |

# Risk identification, evaluation and mitigation measures

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| *Describe severe weather-related risks, treatments and mitigation measures.**Such weather-related risks include damage from high winds, flooding and damage to works susceptible to heavy or prolonged rain and bushfires which originate on site and spread through or off site; or bushfires which enter site from surrounding land.**Examples of works susceptible to prolonged rain include, but are not limited to, pavement and earthworks. Examples of works or equipment susceptible to bushfires include temporary site offices, plant, vehicles, stockpiled construction materials, erosion and sediment controls and flammable fluids or substances like fuel.**Risk mitigation measures shall be separated into three timeframes – long term, medium term and short term.* |

## Long term mitigation measures (over two months, if applicable)

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| *Describe long term measures under the control of the contractor which include (but are not limited to):** *Scheduling weather susceptible tasks outside high risk periods, such as the wet or bushfire season, and minimising critical path activities scheduled in these seasons.*
* *Training staff in good site management practices to minimise costs of rectification works as part of the toolbox talk program.*
* *Location of temporary material storage sites or laydown areas in areas of lower bushfire or flood risk.*
* *Locating temporary site buildings and assets above flood prone land and a safe distance away from bushfire prone areas with due consideration of site access during a flood or bushfire event.*
* *Ensuring appropriate equipment for suppression of small fires is available at areas of potential ignition and that staff are appropriately trained in the use of the equipment.*
* *Programming of roadworks to ensure no more than 3.0 km (per section) or 5.0 km in the aggregate of unsealed road is exposed at any one time (this restriction applies to both temporary and permanent works). Refer to the PAI contract policy terms if you need further information.*
 |

## Medium term mitigation measures (up to two months)

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| *Describe medium term measures under the control of the contractor which include (but are not limited to):** *Permanent and temporary protection measures.*
* *Stabilising pavement by adding small quantities of lime (up to 2%) or cement to the working platform where inclement weather is forecast (paid through a provisional item / variation, as instructed by the contract administrator).*
* *Increased use of side tracks, instead of working under traffic.*
* *Programming of non-critical activities outside wet seasons.*
* *Appropriate controls are in place for each activity such as angle grinding, welding, slashing and mowing and thermoplastic work which pose a high bushfire ignition risk. Avoiding unnecessary activities that have potential for bushfire ignition are recommended on high fire danger days.*
* *Earthworks methodology to allow drainage during construction.*
* *Establishing protection measures for flood events up to a minimum one in 11 year event.*
* *Programming bitumen sealing works in accordance with relevant specifications.*
 |

## Short term mitigation measures (up to seven days)

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| *Describe short term measures under the control of the contractor which include (but are not limited to):** *Monitoring the BoM website for details of rainfall forecasted, storm speed, intensity and direction and monitoring of the BoM web site for severe weather alerts such as high fire danger days.*
* *Monitoring the Queensland Fire and Emergency Services website for nearby bushfires which may threaten site.*
* *Ensuring flammable fuels or materials, including cleared vegetation, is either removed from site, or stored away from areas considered as prone to bushfires.*
* *Rolling exposed earthworks at the end of each shift.*
* *Cutting temporary channels in the verge to allow works to drain.*
* *Removing pavement rills to enable water to drain out of boxed pavements.*
* *Filling dips and hollows that allow water to pond in pavement.*
* *Bringing sealing works forward if rain is forecast (when planning work for the week).*
* *Cyclone proofing buildings.*
* *Forming a “catchbank” at the top of cuttings to prevent water running down the face.*
* *Additional pumps dewatering excavations.*
* *Head wall protection, including sand bagging.*
* *Erosion protection.*
* *Moving gear to high ground.*
* *Carrying out temporary repairs where possible to protect works from further damage.*
* *Clearing creeks and streams of debris from earlier events to improve flows.*
* *Site specific temporary relaxation of specification time periods (e.g. kerb curing times), if rain is due, enabling sealing to be carried out to weatherproof the works.*
* *Reducing the site speed limit during an event to reduce the risk of pothole damage.*
* *Maintenance crews may also work through the event to ensure all measures are operating and carrying out repair works where safe to do so.*
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# Severe Weather Loss Events

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| *Describe the work activities affected by severe weather, including:** *Pavements.*
* *Earthworks formation and batters (cuttings and embankments).*
* *Culvert construction.*
* *Drainage (permanent and temporary).*
* *Environmental protection (including silt fences and check dams).*
* *On site bushfire ignition and bushfire spread through or off site, or from bushfires which enter site from surrounding land.*
* *Major excavations.*

*The more specific causes of damage tend to be scouring, debris causing blockages and the pumping action created by running traffic on a wet pavement under construction.* |

## Flooding

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| *Describe the flood risk strategy detailing the preparation, and response to severe weather events.* |

## Earthworks formation and batters

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| * *Describe the actions to reduce impacts on the earthworks and batters from weather, for example:*
* *Ensure batters are compacted and made weather proof through rolling off and trimming as necessary.*
* *Formations to be kept rolled and free drainage to minimize the effects of wet weather.*
* *Where practicable, cover with sacrificial materials such as geo-fabric or temporary seal.*
* *Ensure site drainage maintains clean water separation from the exposed areas and dirty water channels.*
* *Ensure all stormwater drainage inlets are appropriately bunded prior to the forecasted weather event.*
* *Spray completed works with hydro-mulch, dust-bloc or other sealants to protect, as soon as practicable.*
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## Pavement

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| *Describe the actions to reduce impacts on the pavement from weather, for example:** *Reduce to a minimum the amount of unsealed areas wherever possible.*
* *Place temporary seal over completed works to protect the surface as soon as practicable.*
* *Eliminate the risk of bitumen runoff by only undertaking sealing works in fine weather conditions.*
* *Ensure all storm water drainage inlets are appropriately bunded prior to the forecasted weather event.*
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## Culverts

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| *Describe the actions to reduce impacts on culverts from weather, for example:** *Ensure works under construction are secured and equipment removed from flow path prior to storm/wet weather events.*
* *Divert water around work areas where practicable to keep clean water separate.*
* *Ensure the inlets and outlets of existing culverts are not blocked and that water flows are not hindered.*
* *Conduct upstream and downstream monitoring if works are undertaken for a ‘live creek diversion’ where works in-stream are likely to impact the flow-through water quality.*
* *For live creeks, prepare a site-specific procedure to manage risks of that creek or waterway.*
* *Review flood implications and risk access accordingly for large culverts requiring flow blockage. This is to be undertaken by the Project Engineer and reviewed by the Construction Manager as part of the planning process for culvert installation.*
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## Environmental Protection

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| *Describe the actions to reduce impacts on the environment from weather:* |

## Major Excavations

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| *Describe the actions to reduce impacts on major excavations from weather, for example:** *Design erosion control measures to comply with expected rainfall of an 80th percentile five day rain fall event (including two month sediment storage volumes), ensure controls are CPESC (Certified Practitioner Erosion and Sediment Control) certified and RPEQ (Registered Professional Engineer Queensland) designed where necessary.*
* *Ensure all storm water drainage inlets are appropriately bunded.*
* *Cover rock check dams with geo-fabric where possible.*
* *Secure and cover construction materials where required, if possible move to elevated area.*
* *Inspect all erosion and sediment controls.*
* *Clean out any sedimentation basins prior to and after each weather event.*
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## Bridge works

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| *Describe the actions to reduce impacts on the bridge works from weather, for example:** *Ensure construction materials are secured or removed as necessary.*
* *Ensure sediment controls are in place where required.*
* *Supervisor to check BOM forecast prior to commencement of excavation.*
* *Install floating silt booms along the banks of waterways (not across the waterway – causing a waterway barrier or increasing afflux during a storm event) and that they are well secured prior to storm events where necessary and/or practicable.*
* *Apply temporary batter protections for any exposed abutments (geofabric or similar) prior to storm events if flow paths exit directly to the waterway.*
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## Traffic Management in Wet Weather

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| *Describe the actions to reduce impacts on the traffic management from weather, for example:** *Evaluation will be undertaken as part of Temporary Traffic Management (TTM) in order to facilitate different stages of construction and the sub-sequential impacts of Severe Weather Events on the project works.*
* *Ensure as is reasonably practicable no water afflux enters the carriageway of all roads.*
* *All trafficable pavements that are open to the public have sufficient cross-fall drainage at all times in case of a sudden wet weather event.*
* *Inspect scupper drains in temporary and permanent road barriers to ensure immunity of the road alignment is not worsened.*
* *Reduce speed limit if there is any risk of aquaplaning on the road (note this will need to be addressed in a Traffic Guidance Scheme (TGS) unless in an emergency situation whereby the QPS are likely to direct this course of action).*
* *The project shall advise the Contract Administrator of any changes to the posted speed and/or roadwork signage as a result of a Severe Weather Event.*
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# Rectification and recovery

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| *Following a severe weather event, the contractor shall take contemporary records, including photographs of any damage.**Typical responses and procedures post event include:** *Cease work until the work site has dried out.*
* *Photos / records (separate cost codes) of the project.*
* *Notify all parties in accordance with the Emergency Response and Incident Management Plan.*
* *Notify Transport and Main Road's Insurance Broker / Insurer / Loss Adjuster and comply with Loss Adjusters brief requirements.*
* *Learnings / feedback (what can you do different next time).*
* *Establish a suitable cost capture system to record time and costs of labour, plant and materials used to make good any damage.*
* *Undertake walk through of project with construction team to highlight any new risks to the team following the event and then highlight these risks to the wider team.*

*Where it has been identified that a claim may be made under Transport and Main Road’s PAI program then the department must be notified immediately at* *PAI\_Program@tmr.qld.gov.au* |

# Contact Personnel

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| * *Contractor*

*Describe a person who is responsible for the implementation and monitoring of SWMP on behalf of the Contractor. (The department should be able to contact the nominated person or delegate 24/7).* * *Transport and Main Roads*

*The appropriate responsible personnel for severe weather risk treatments from Transport and Main Roads is the CA for the Contract. For more information, please contact the RISE team (Risk, Insurance, Scheduling and Estimating) at* *PAI\_Program@tmr.qld.gov.au* *or phone 3066 1339.* |

# Special Notes

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| *Please include additional information which had not been covered elsewhere.* |

Appendix A – Roles and Responsibilities (example)

1. **Project Director / Project Manager**
	* + Allocate responsibilities for developing and implementing this SWMP.
		+ Review and approve updates to this SWMP as identified by Project, Client and/or other relevant Third Parties and issue as “fit for purpose’.
		+ Ensure that all project personnel and sub-contractors are aware of their individual roles, responsibilities and compliance in relation to this SWMP.
		+ Notify the Construction Manager, Client and the Community Relations Manager of the possibility of a Severe Weather Event impacting the project.
		+ Update as information from Project Engineer/s is received and reviewed.
		+ Under review and advisement from relevant project personnel, instruct the Construction Manager to implement required actions for construction works to continue (with or without conditions), or the partial or complete shut-down of the project works.
		+ Notify the Client and the Community Relations Manager of the decision to activate a partial or complete shut-down of the project works.
2. **Construction Manager**
	* + Identify and undertake necessary consultation and communication processes to implement this SWMP.
		+ Ensure periodic reviews are conducted in conjunction with Project Managers and contractors.
		+ Review and input updates to this SWMP as identified by Project, Client and/or other relevant Third Parties and submit to the Project Director for review and approval.
		+ Notify Project Director/Project Manager and provide updates of pending severe weather events.
		+ Upon instruction from the Project Director/Project Manager instruct, the Project Superintendents to implement the required actions for a partial or complete shut-down of project works.
		+ Liaise with the Project Director/Project Manager for SWMP approval and make changes as necessary.
		+ Ensure project personnel are made available to assist with the facilitation of the requirements of this Plan.
		+ Be a part of and delete project personnel to respond to emergencies as a result of a severe weather event.
3. **Project Engineer**
	* + Identify severe weather that might impact the site.
		+ Document weather-related risks, treatments and controls.
		+ Schedule weather-susceptible tasks outside high-risk periods and minimise critical path activities scheduled in the wet season as practicable.
		+ Ensure accurate records are kept.
		+ Notify the Construction Manager of the possibility of a Severe Weather Event impacting the project.
4. **Project Superintendent**
	* + Familiarise themselves with this Plan and references to this Plan.
		+ Notify Works Supervisors that a direction has been received from project management to partially or completely shut-down the project works.
		+ Oversee and advise on the implementation of the required works for the partial or complete shutdown of the project works.
		+ Periodically advise the Construction Manager on the progress of the remedial works required for the partial or complete shut-down of the project works.
5. **Works Supervisor**
	* + Communicate daily and 7 day weather forecast at daily Pre-Starts.
		+ Familiarise themselves with this Plan and references to this Plan.
		+ Implement and review the requirements of this SWMP as and when required.
		+ Undertake daily monitoring of this SWMP, notify Project Superintendent of concerns and rectify as advised and action as required.
		+ Review the effectiveness of this SWMP and provide advice to the Project Director via the Project Superintendent if identification of amendments to this SWMP, as necessary.
		+ Actively monitor the workgroups under their authority to ensure that required remedial works for the partial or complete shut-down of project works are applied/installed as required.
6. **Site personnel/Workers**
	* + Continuously observe and report on any severe weather issues or forecasts to relevant supervisors and assist in the implementation of SWMP.
		+ Implement and install the requirements of a partial or complete shut-down of the project under supervision of the project Works Supervisors and/or project Leading Hands.
7. **Community Relations Manager**
	* + Notify and liaise with relevant internal project/client stakeholders in relation to the notification from the Project Director/Project Manager of the possible or actual partial or complete shut-down of project works.
		+ Address any inquires and/or complaints received from the public in relation to the implementation of the remedial works required for the partial or complete shut-down of the project works in preparation for an identified possible Severe Weather Event.