Risk Register 2019

LEMC endorsement date:

Full review required: 2022

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Executive Summary

This report provides a summary of the Local; Community based; Risk Assessment that was undertaken by the Shire of Donnybrook - Balingup throughout a period of August 2017 - October 2017. The Emergency Risk Management (ERM) process; mandated by the Emergency Management Act 2005 and as part of the process of the LEMA review; was designed to allow consistent and comparable risk assessments across all Local Governments.

This Risk Register was designed as per the State Emergency Management Policy Statement 3.2.6 and undertaken in accordance with the Western Australian Emergency Risk Management Guideline, which is aligned with the Australian/New Zealand International Standard Organisation **(AS/NZS ISO 31000:2009)** Risk Management – Principles and Guidelines. Furthermore the Risk Register has been developed, led and administrated by key stakeholders who;

1. Are affected by the impacts of an emergency event
2. Contribute specialist knowledge to the process
3. Have jurisdictional authority for the specific hazards and/or elements at risk

The results of Risk Assessments across five specific hazards Bushfire, Flood, Storm, Electrical Supply Disruption, and Human Epidemic are demonstrated further in this document.

The Risk Assessments used in regards to these hazards is limited by stakeholder knowledge and opinion of the Community in which the assessments were held. Field experts were used where possible during this process.

Risk Assessment Workshops – Shire of Donnybrook-Balingup

Hazard Assessment	Date of Risk Assessment Workshops
Bushfire	12 September 2017
Storm	29 August 2017
Flood	29 August 2017
Human Epidemic	3 October 2017
Electrical Supply Disruption	3 October 2017
Risk Assessment Coordinator	Vik Cheema (District Emergency Management Advisor, SEMC)
Risk Assessment Facilitator	Shire of Donnybrook-Balingup (Local Government)

Tailored Risk Criteria elements used in the risk assessment workshops:	
Population	5,906
Gross Area Product	$241,000,000

Bushfire Hazard

Scenario Summary

History

Balingup is a town in the South West of Western Australia, 241 kilometres (150 miles) south of the state capital, Perth, and 31 kilometres (19 miles) southeast of the town of Donnybrook with a population of approx. 450 people.

The town is located on the South Western Highway. It originally had a train station on the railway line, opened in 1898, the same year the town was gazetted.

Balingup was known in the twentieth century for fruit and vegetable growing, and more recently for beef cattle and dairy farming.

Balingup hosts annual rural festivals, primarily the Small Farm Field Day (late April) and Medieval Carnivale (August).

Balingup is also one of the few towns through which the Bibbulmun Track passes.

Balingup is also the home of local artist Sally Darling, who specialises in portraits and Japanese paintings. The historic Southampton homestead is nearby.

A bushfire swept through the area in 2013 reducing the Southampton homestead to ruins however the Balingup Town site has had no significant bushfires recorded in the past 35 years.

Scenario

The small farm field day is under-way, bringing an influx of approx. 9000 people. Additionally, preparations for the Anzac Day are also underway. Accommodation premises are at full capacity with camping grounds also full, tents are erected for stalls and tractors / machinery and cars line the streets and the South Western Highway.

Significant amount of families with young children have congregated at Balingup for this event during school holidays. There is also a large amount of livestock as part of the festivities.

At 1030 hours, a fire has been reported in the north east corner of the Balingup Plantation, 3 kilometers north east of the Balingup Town Site. It is already 5 hectares in size and travelling at a rate of spread of 80 meter per hours.

Local Volunteer Bushfire Brigade from Balingup is dispatched immediately and arrive on scene at approx. 1100 hours. Crews have been activated from the Parks and Wildlife (Kirup) and will arrive onsite at approx. 1145 hours. Local Volunteer Bushfire Brigade have been unable to control the fire when P&W arrive. P&W water bombers were stood down on the 20th April and are no longer available.

Department of Fire and Emergency Services (DFES), Local South West Regional Duty Coordinator has been updated with information from the DFES Communication Centre.

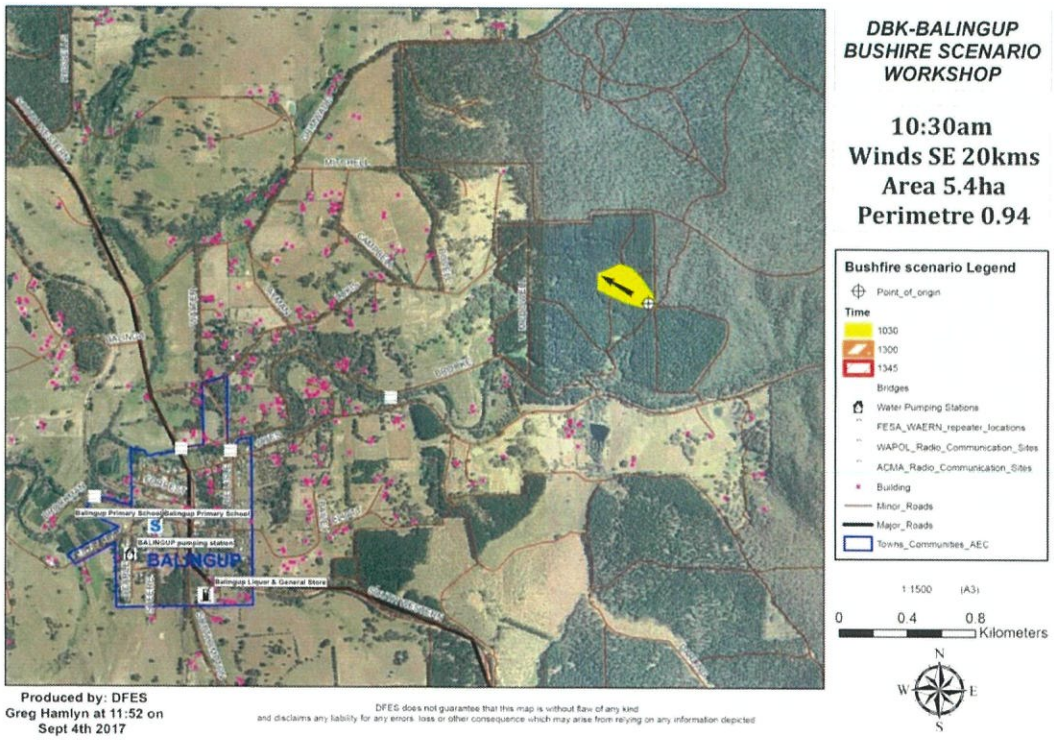


Figure 1 – Fire reported in the NE corner of the Balingup Plantation 3kms NE of the Balingup Town Site.

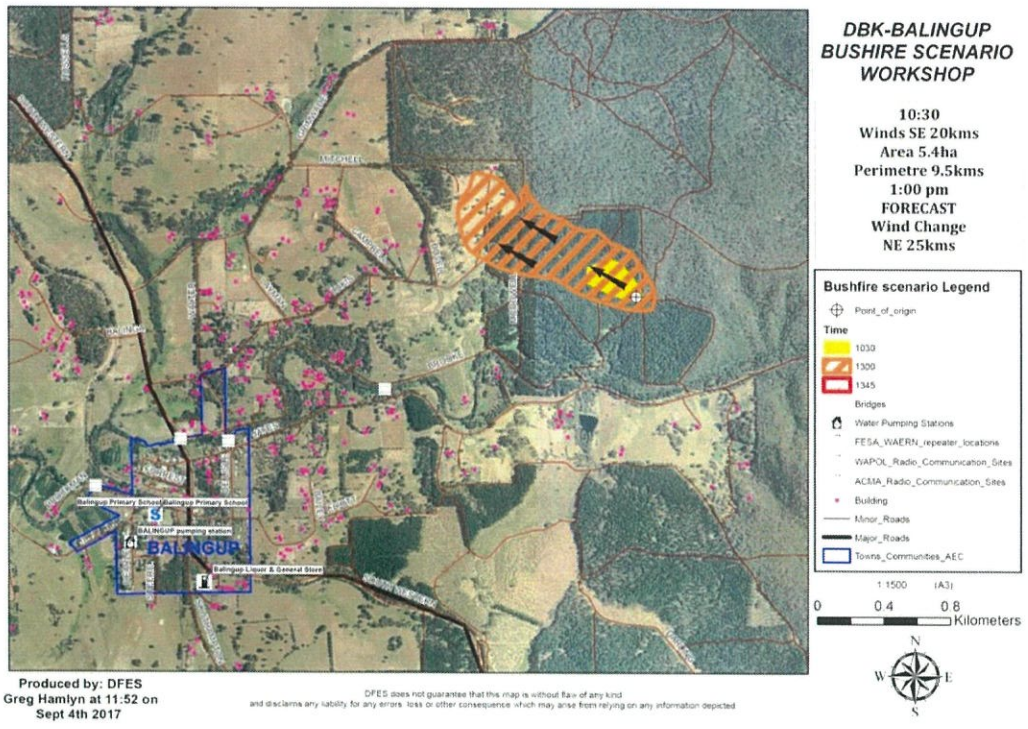


Figure 2 – Spread of fire

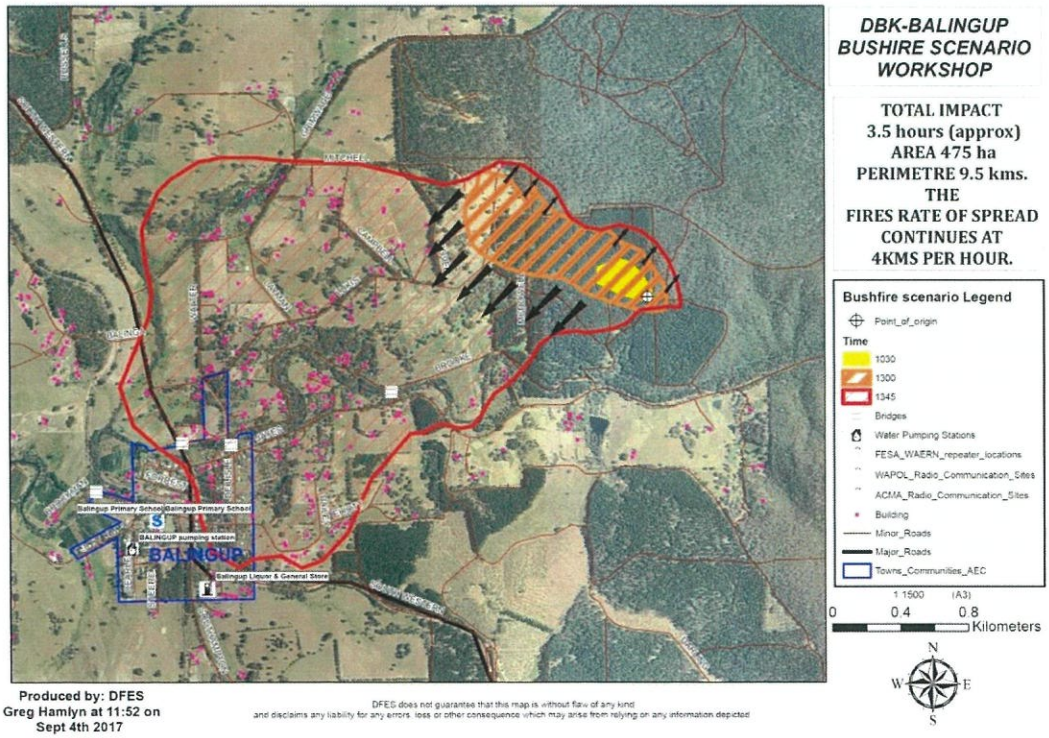


Figure 3 – Fire unable to be controlled. Water bombers no longer available

Weather

The Shire of Donnybrook-Balingup has experienced one of the driest summers on record, it is April 22nd and there has been no significant rain since November the previous year. The days looking to be fine and hot with temperatures reaching maximum 34 degrees, relative humidity 28%, winds south easterly at 15-20 km/hr in the morning turning north easterly 20-25 km/hr in the afternoon.

Rain is forecast for the 25th April.

Risk Identification

Hazard	Risk	Risk Priority Level	Treat Options – If Applicable
Bushfire	There is a risk that bushfire will impact the health of people and cause death(s).	3	Treat (recommended action)
Bushfire	There is a risk that bushfire will impact the health of people and cause injury and/or serious illness.	3	Treat (recommended action)
Bushfire	There is a risk that bushfire will impact private buildings and contents, resulting in financial losses.	3	Treat (recommended action)
Bushfire	There is a risk that bushfire will impact commercial buildings, contents and services resulting in financial losses.	3	Consider Treating
Bushfire	There is a risk that bushfire will close main road transport routes for a period of time resulting in financial losses to the local government district.	3	Consider Treating
Bushfire	There is a risk that bushfire will impact bridges, or approaches to bridges, such that sections of roads will be closed, resulting in recovery costs and financial losses.	3	

Bushfire	There is a risk that bushfire will impact aspects that support the tourism industry (such as access routes, facilities, caravan parks, wineries, orchards, camp sites, motels, food, places of interest and fuel outlets) resulting in costs to the local government district and financial losses.	3	Consider Treating
Bushfire	There is a risk that bushfire will impact horticultural industry infrastructure, (including impact to buildings, fences, shade houses, bird netting and irrigation equipment) resulting in financial losses.	3	Consider Treating
Bushfire	There is a risk that bushfire will impact on crops/cropping/plantations in the local government district (and consequently on the expected harvest), resulting in financial losses.	3	Treat (recommended action)
Bushfire	There is a risk that bushfire will require recovery works to be undertaken by Local Governments, impacting on their ability to maintain core services.	3	Consider Treating
Bushfire	There is a risk that bushfire will impact power infrastructure, causing power outages which will impact the ability to maintain core services.	3	Consider Treating

Bushfire	There is a risk that bushfire will impact the health of residents in the area and cause death or serious injury/illness, impacting the wellbeing of the community.	3	Consider Treating
Bushfire	There is a risk that bushfire will cause displacement, death or injury to domestic animals, impacting the wellbeing of the community.	3	Consider Treating
Bushfire	There is a risk that bushfire will affect the day to day functionality of educational facilities.	3	Consider Treating
Bushfire	There is a risk that bushfire will affect day to day functionality of facilities for vulnerable people (aged, childcare, disability)	3	Consider Treating
Bushfire	There is a risk that bushfire will impact heritage buildings, resulting in a loss of cultural significance.	3	Treat (recommended action)
Bushfire	There is a risk that bushfire will impact Art Galleries, Museums, Libraries, LG Buildings, resulting in loss of objects of cultural significance.	3	Treat (recommended action)
Bushfire	There is a risk that bushfire will impact the aesthetics of the area, resulting in a loss of community identity and wellbeing.	3	Consider Treating

Bushfire	There is a risk that bushfire will result in the breakdown of community social networks	3	Consider Treating
Bushfire	There is a risk that bushfire will cause emergency services (including ambulance and medical transport services such as RFDSWA) to be overwhelmed, resulting in further deaths directly attributable to the hazard event.	4	
Bushfire	There is a risk that bushfire will result in recovery activities, resulting in costs to the local government district.	4	
Bushfire	There is a risk that bushfire will impact on livestock (e.g. through death/injury/lack of pasture), resulting in financial losses.	4	
Bushfire	There is a risk that bushfire will cause contamination to the surrounding environment from the release of toxic substances (e.g. of non-natural materials such as asbestos) resulting in financial losses	4	
Bushfire	There is a risk that bushfire will cause a surge in the population of non native flora and fauna which will result in negative impacts on native flora and fauna.	4	

Bushfire	There is a risk that bushfire will impact mobile and landline communication infrastructure, causing communications failures which will impact on the ability to maintain core services.	4	
Bushfire	There is a risk that bushfire will impact transport infrastructure preventing or delaying emergency services from providing assistance.	4	
Bushfire	There is a risk that bushfire will result in reduction/loss of potable water, resulting in reduced services. (e.g. due to power outages)	4	
Bushfire	There is a risk that bushfire will cause power outages and communication failures resulting in lack of timely public information, warnings and general communication which will impact on the wellbeing of the community.	4	Consider Treating
Bushfire	There is a risk that bushfire will impact on native vegetation and result in degradation of aesthetics in the area.	5	
Bushfire	There is a risk that bushfire will impact the health of wildlife	5	

Bushfire	There is a risk that bushfire will impact flora in the local government district.	5	
Bushfire	There is a risk that bushfire will cause contamination to the surrounding environment from the release of toxic substances (e.g. of non-natural materials).	5	
Bushfire	There is a risk that bushfire will impact emergency service response buildings and facilities, impacting the ability to maintain core services.	5	
Bushfire	There is a risk that bushfire will impact arterial road networks, resulting in a disruption to the supply of essential goods and services.	5	
Bushfire	There is a risk that bushfire will result in isolation of towns in the local government district, leading to re supply efforts of basic needs, food, water, medical and fuel, affecting the ability to function as a community.	5	
Bushfire	There is a risk that bushfire will impact sewerage systems, impacting the ability to maintain core services. (e.g. due to power outages)		Further investigation required – seek comment from key stakeholders
Bushfire	There is a risk that bushfire will impact the health of residents in the area and cause death or serious		Further investigation required – seek comment from key stakeholders.

	injury/illness, impacting the wellbeing of the community.		

Risk Profile Analysis

The Shire of Donnybrook-Balingup is prone to small scale bushfire throughout the November to April period. These fires start by machinery, inattention during burning operations or lightning strike.

The scenario posed; despite the low probability; is both plausible and possible in the conditions stated. The risk itself is real and has the potential to devastate the town of Balingup.

The assessment has listed this risk with an average score of 3.67 making the risk medium priority to the Shire of Donnybrook-Balingup.

The following priorities were found to be the most concern to the wider community within the Shire;

- Community displacement through death and serious illness
- Economic loss within private sector
- Economic loss of infrastructure
- Economic loss within agricultural sector
- Loss of buildings of cultural significance

Attendance

Name	Agency
Leigh Guthridge	Manager, Development and Environmental Services, Shire of Donnybrook-Balingup
Paul Robins	Senior Ranger, Shire of Donnybrook-Balingup
Vik Cheema	District Emergency Management Advisor, SEMC
Michael Danks	WA Police
Ben Anderson	Fire and Rescue
Carol Vickridge	SES
Deb Peachey	DPAW
Robin Armstrong	Donnybrook Hospital
Phil Brandette	DFES
Steph De Bruin	DFES
Mick Zwart	Kirup Community
Peter Buckley	Water Corporation

Flood

Scenario Summary

During the 1961 – 1990 climatological baseline period, southwest Western Australia typically had hot summers with very low rainfall. The region as a whole averages just 50.4 mm over December to February. For February, the climatological average is just 18.7 mm, with only five instances of rainfall above 50 mm for the month, and one instance of rainfall over 100 mm (172.17 mm in 1955).

A low that formed off the west Kimberley coast developed as it moved to the west reaching cyclone intensity on 20 January (TC Bianca) well north of the Pilbara coast. Bianca intensified reaching category 4 intensity early on 24 January well to the west northwest of Exmouth. On 28 January, Bianca weakened to tropical low owing to increasing wind shear as it moved southwards. Between 30 January and 4 February, a cloud band associated with the TC Bianca, brought significant rainfall to western and central areas of the South West Land Division, including parts of the Central West, and South West including Perth. During this period, the BOM issued number of flood watch and flood warnings for the South West Land Division.

Daily falls between 50 mm and 100 mm were recorded between 30 January and 4 February, with the highest daily total being 140.2 mm at Collie East in the South West on the 2 February.

Four-day rainfall totals from 30 January to 2 February 2017 were between 150 mm and 200 mm in the southwest with Collie East recording the highest official total of 195.5 mm.

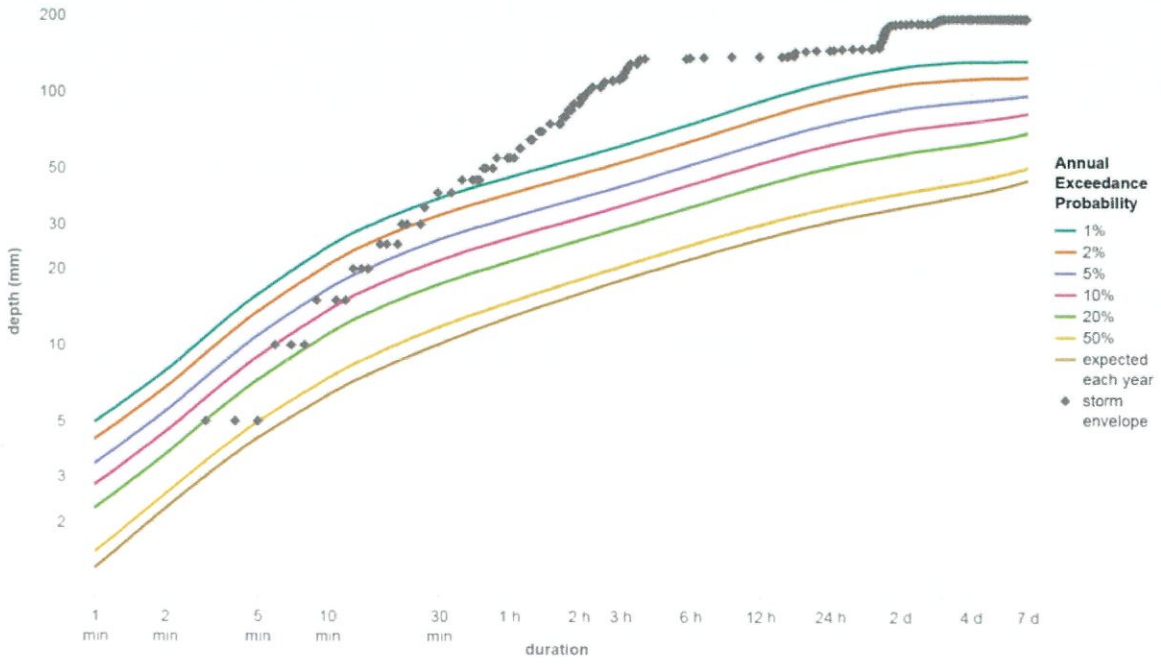


Figure 4. Rainfall Intensity–Frequency–Duration diagram for Collie East TBRG, comparing the highest rainfall intensities during the event (grey diamonds) to annual exceedance probabilities.

Site	River	Station Name	Time/Date	Max Rec Level	Date
612002	Collie River	Mungalup Tower	30/01/2018 10:00	14.625	23-Jan-82
612022	Brunswick River	Sandalwood	30/01/2018 10:00	11.668	22JAN198
611004	Preston River	Boyanup Bridge	30/01/2018 10:00	13.865	29-Aug-14
610219	Capel River	Yates Bridge	30/01/2018 10:00	14.334	15-Jul-67
610001	Margaret River	Willmots Farm	30/01/2018 10:00	12.113	25-Jun-88
610029	Cowaramup Brook	Gracetown	30/01/2018 10:00	11.389	16-Jul-16
610014	Vasse Diversion Drain	D/S Hill Rd	30/01/2018 10:00	14.18	3-Jul-99
611006	Preston River	Donnybrook	30/01/2018 10:00	14.273	22-Aug-11

Table 1. River Monitoring Stations data on 30 January 2018

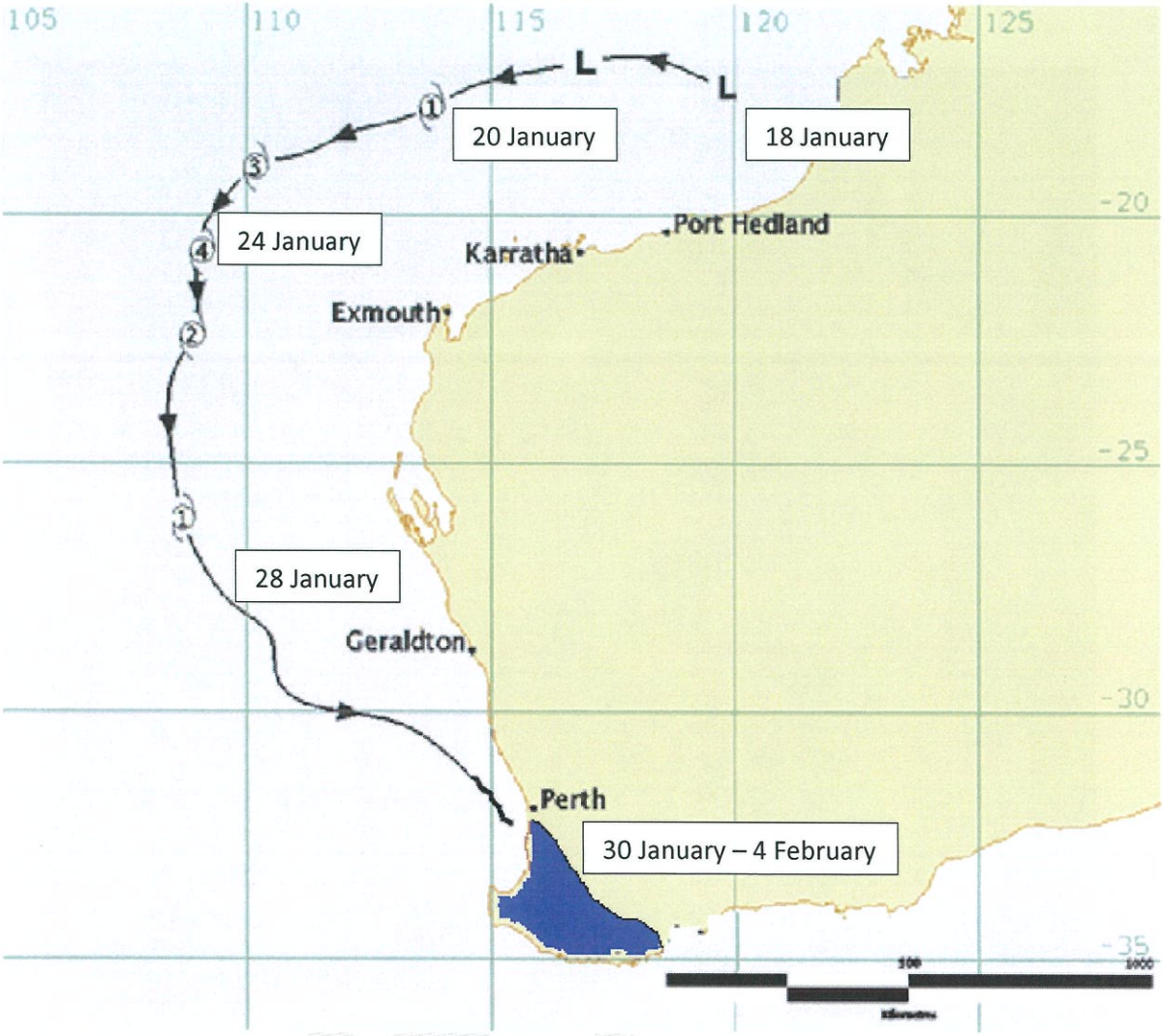


Figure 5. TC Bianca track and rain impact (blue) in the SW with a 50-100mm daily average rainfall

Figure 6 – Donnybrook River flood area

Risk Identification

Hazard	Risk	Risk Priority Level	Treat Options – If Applicable
Flood	There is a risk that flood will impact the health of people and cause death(s).	3	Treat (recommended action)
Flood	There is a risk that flood will impact the health of people and cause injury and/or serious illness.	3	Consider Treating
Flood	There is a risk that flood will damage commercial buildings, contents and services which in turn causes business interruption, business failures and loss of employment.	3	Treat (recommended action)
Flood	There is a risk that flood will damage transport infrastructure such as roads and rail, resulting in recovery costs.	3	Consider Treating
Flood	There is a risk that flood will cause damage to bridges, or approaches to bridges such that sections of many roads will be closed, causing recovery costs and transport route disruption incurring losses.	3	Treat (recommended action)

Flood	There is a risk that flood will result in loss of potable water supply due to damage to infrastructure (dams, piping, bores) resulting in financial costs.	3	Consider Treating
Flood	There is a risk that flood will cause disruption to major freight routes, resulting in financial losses.	4	Consider Treating
Flood	There is a risk that flood will cause damage to aspects that support the tourism industry (such as access routes, facilities, caravan parks, motels, food/fuel outlets, orchardists) resulting in a downturn in the tourism industry across the district.	4	
Flood	There is a risk that flood will damage crops resulting in financial losses.	4	Consider Treating
Flood	There is a risk that flood will impact mobile and landline communication infrastructure, impacting their ability to deliver core services.	4	
Flood	There is a risk that flood will impact potable water supply, impacting their ability to deliver core services.	4	Consider Treating
Flood	There is a risk that flood will impact sewerage systems, impacting their ability to deliver core services.	4	Consider Treating

Flood	There is a risk that flood will cause emergency services (including ambulance and medical transport services) to be overwhelmed, resulting in further deaths directly attributable to the hazard event.	5	
Flood	There is a risk that flood will cause health services (e.g ICU units, hospitals, remote nursing posts, small country hospitals, clinics) to be overwhelmed, resulting in further deaths directly attributable to the hazard event.	5	
Flood	There is a risk that flood will damage private buildings and contents, resulting in financial losses	5	
Flood	There is a risk that flood will cause damage to power infrastructure resulting in recovery costs and financial losses.	5	
Flood	There is a risk that flood will cause damage to sewerage systems, resulting in recovery costs.	5	
Flood	There is a risk that flood will impact flora and fauna in the local government district.	5	
Flood	There is a risk that flood will destroy or harm protected flora and fauna in National Parks.	5	

Flood	There is a risk that flood will cause significant soil erosion.	5	
Flood	There is a risk that flood will cause debris and pollutants to flow into marine and/or estuarine/riverine environments, causing contamination and/or impacting ecosystems.	5	
Flood	There is a risk that flood will cause the spread of vegetative diseases.	5	
Flood	There is a risk that flood will require recovery works to be undertaken by Local Government, impacting their ability to deliver core services.	5	
Flood	There is a risk that flood will cause an increased demand (surge) on emergency services (fire, police, ambulance), impacting their ability to deliver core services	5	
Flood	There is a risk that flood will cause an increased demand on CPFS, impacting their ability to deliver core services.	5	
Flood	There is a risk that flood will cause an increased demand (surge) on WA health services, impacting their ability to deliver core services.	5	

Flood	There is a risk that flood will impact emergency service response buildings and facilities, impacting their ability to deliver core services.	5	
Flood	There is a risk that flood will impact power infrastructure, impacting their ability to deliver core services.	5	
Flood	There is a risk that flood will impact on home-based services and service providers (such as meals on wheels, silverchain, WACHS, home care provisions).	5	
Flood	There is a risk that flood will impact the health of residents and cause death or serious injury/illness, impacting the wellbeing of the district community.	5	
Flood	There is a risk that will flood cause damage to residential dwellings and contents, impacting the wellbeing of the district community.	5	
Flood	There is a risk that flood will result in damage to commercial retail outlets and service providers, impacting the availability of basic commercial products and services.	5	

Flood	There is a risk that flood will result in short term (<14 days) displacement due to evacuation away from people's homes and work places which will result in dispersal of the community.	5	
Flood	There is a risk that flood will result in long term (>14 days) displacement due to evacuation away from people's homes and work places which will result in dispersal of the community.	5	
Flood	There is a risk that flood will affect the day to day functionality of educational facilities.	5	
Flood	There is a risk that flood will affect the day to day functionality for vulnerable people (aged, childcare, disability).	5	
Flood	There is a risk that flood will impact existing social services (NGOs, Lions, Rotary, Salvation Army, CWA, Red Cross, other volunteer organisations).	5	
Flood	There is a risk that flood will lead to towns becoming isolated with limited services and supplies for an extended period of time, affecting their ability to function as a community.	5	

Flood	There is a risk that flood will impact tourism in the area, affecting the community wellbeing.	5	

Risk Profile Analysis

The assessment has listed this risk with an average score of 4.54 making the risk low priority to the Shire of Donnybrook – Balingup.

While flooding is considered low risk, the following priorities were found to be the most concern to the wider community within the Shire;

- Community displacement through death
- Economic loss within business sector
- Economic loss of infrastructure

Attendance

Name	Agency
Leigh Guthridge	Manager, Development and Environmental Services, Shire of Donnybrook-Balingup
Paul Robins	Senior Ranger, Shire of Donnybrook-Balingup
Russell Jones	Works Supervisor, Shire of Donnybrook-Balingup
John Attwood	Recovery Coordinator, Shire of Donnybrook-Balingup
Peter Thomas	DO Emergency Management, DFES LSW
Ryan Vanderheide	OIC, South West Police
Kerry Winsor	Regional Director, WACHS
Ronan O'Mara	Western Power
Heather Taylor	Program Leader – Hazards, Vulnerabilities & Risk, Office of Emergency Management
Roma Boucher	District Emergency Services Officer, Department of Communities

Severe Storm

Scenario Summary

A series of low pressure systems and cold fronts crossed southwest Western Australia from 11 to 12 August 2017 resulting in significant damage in the region.

Four tornadoes were observed with affecting various locations causing extensive localised damage. Significant wind gusts that were some of the highest on record for the region caused an unprecedented number of power outages to mainly western parts of the Southwest Land Division (SWLD), and unusually high sea levels as a result of storm surges caused localised coastal and estuarine inundation.

Tornado events on 11 August

A trough off the west coast of the SWLD associated with a quasi-stationary low to the southwest of the state gradually moved eastward over land during the morning of 11 August. Severe thunderstorms developed on the trough and moved over the Lower West and neighbouring districts in the late morning and early afternoon, and a number of tornados were reported just after midday. These tornadoes caused Significant damage to properties including business, infrastructure including electricity distribution, local and state roads etc. Western Power reported up to 30, 000 homes lost power as a result of the storm/tornado event.

Tornadoes are a regular feature of winter weather in southwest Western Australia with an average of approximately six reported each year; however, these tornadoes are normally associated with the passage of cold fronts. In this instance, the tornadoes were not associated with a cold front, which is highly unusual in winter in southwest Western Australia.

Wind and storm surge event on 12 August

A rapidly deepening tropical low off the northwest coast of Western Australia moved south-southeastward close to the west coast during the morning on 12 August before the centre of the low crossed the Southwest district during the afternoon. Very windy

conditions were observed in the Lower West, Southwest, and South Coastal districts with numerous sites observing wind gusts in excess of 90 km/h (Table 1). The highest recorded wind gust during the event was 146 km/h at Cape Naturaliste at 1345 WST, which is the strongest wind gust observed at the site in almost 10 years of recording (daily maximum wind gust records commenced in 2003), and the 4th strongest wind gust on record in Western Australia in the May to August ("winter") period (noting higher wind gusts are common in the north in summer associated with tropical cyclones). Widespread property damage was reported in western parts of the SWLD with a significant number of trees downed. Western Power reported that unprecedented damage occurred to the electricity supply grid southwest of a line from Geraldton to Ravensthorpe where the network of more than 90,000 kilometres of power lines was significantly affected. In the south west, more than 50,000 homes lost power after 500 power lines were brought down due to the storm. Widespread rain was reported through western parts of Western Australia as result of the cloudband associated with the low pressure system. A significant storm surge was reported along the SWLD west coast on the 12th as sea levels up to approximately 0.8 m above the Highest Astronomical Tide (HAT) were recorded (Table 2).

Additional Information

Busselton recorded a sea level of 0.83 m above the HAT, but despite the unusually high sea levels, impacts were generally minor with localised inundation reported at the Port Geographe marina near Busselton. For comparison, the passage of tropical cyclone Alby in April 1978 caused a storm surge 1 m above the HAT at Busselton with significant coastal inundation and resultant damage.

Table 2

Site Number	Station Name	District	Max. Wind Gust (km/h)	Max. Wind Gust Direction	Time of Gust (WST)
009519	Cape Naturaliste	Southwest	146	SW	1345
009937	Busselton Jetty	Southwest	135	WSW	1415
009193	Rottnest Island	Lower West	119	WNW	1334
009977	Mandurah	Lower West	119	W	1404
009256	Garden Island	Lower West	117	W	1356
010916	Katanning	Great Southern	117	NW	1610
009965	Bunbury	Southwest	111	WSW	1434
009538	Swellingup Forestry	Lower West	107	W	1434
009603	Busselton Aero	Southwest	106	SW	1420

Table 3

Location	Residual Tide (storm surge) (m)	Time of Highest Residual Tide (WST)	Tide Peal (m)	HAT (m)	Height Above HAT (m)
Harvey Estuary	0.70	2300	n/a	n/a	n/a
Peel Inlet	0.60	2330	n/a	n/a	n/a
Bunbury	1.21	1455	2.00	1.23	0.77
Busselton	1.28	1425	2.27	1.44	0.83

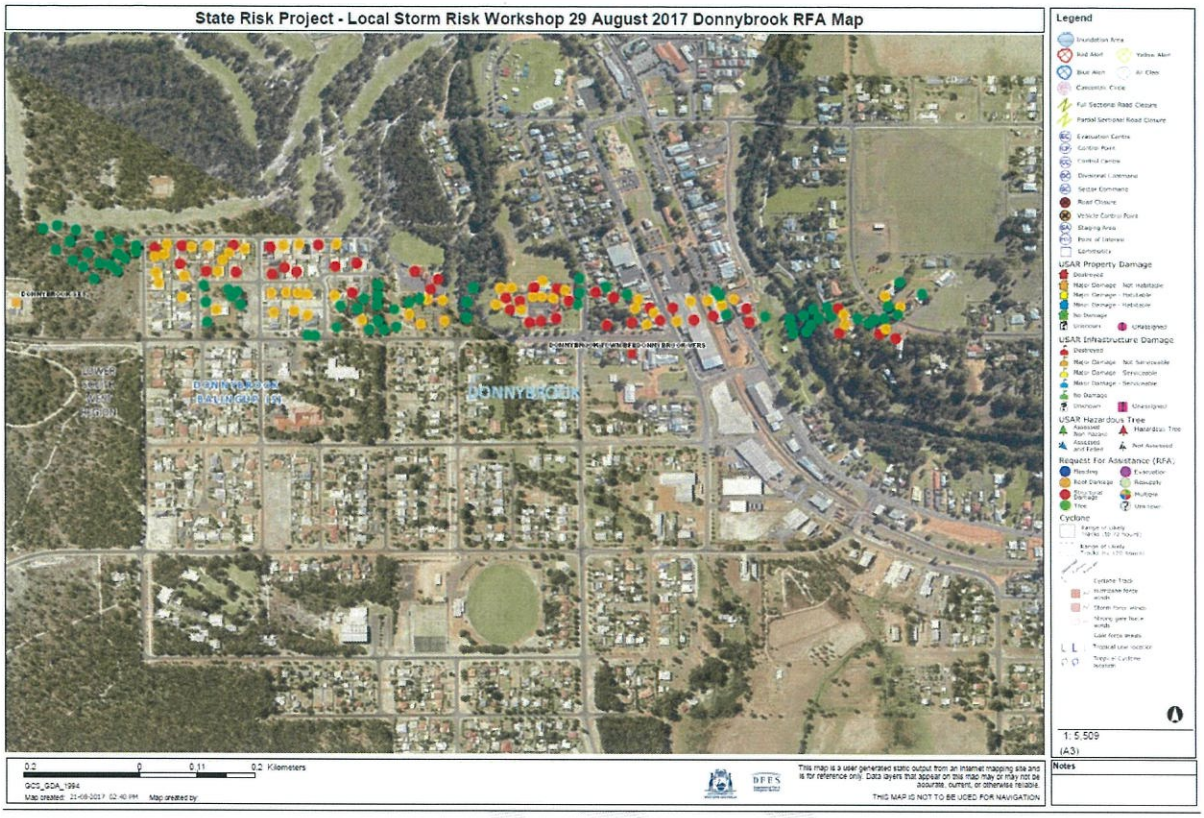


Figure 7 – Area of request for assistance.

Risk Identification

Hazard	Risk	Risk Priority Level	Treat Options – If Applicable
Severe Storm	There is a risk that severe storm will impact the health of people and cause death(s).	3	Treat (recommended action)
Severe Storm	There is a risk that severe storm will impact the health of people and cause injury and/or serious illness.	3	Treat (recommended action)
Severe Storm	There is a risk that severe storm will cause emergency services (including ambulance and medical transport services) to be overwhelmed, resulting in further deaths directly attributable to the hazard event.	3	Treat (recommended action)
Severe Storm	There is a risk that severe storm will cause health services (e.g. ICU units, hospitals, remote nursing posts, small country hospitals, clinics) to be overwhelmed, resulting in further deaths directly attributable to the hazard event.	3	Treat (recommended action)
Severe Storm	There is a risk that severe storm will damage commercial buildings, contents and services which	3	Treat (recommended action)

	in turn causes business interruption, business failures and loss of employment.		
Severe Storm	There is a risk that severe storm will damage crops resulting in financial losses.	3	Treat (recommended action)
Severe Storm	There is a risk that severe storm will impact mobile and landline communication infrastructure, impacting their ability to deliver core services.	3	Treat (recommended action)
Severe Storm	There is a risk that severe storm will cause damage to power infrastructure resulting in recovery costs and financial losses.	4	Consider Treating
Severe Storm	There is a risk that severe storm will damage private buildings and contents, resulting in financial losses	4	Consider Treating
Severe Storm	There is a risk that severe storm will cause damage to bridges, or approaches to bridges such that sections of many roads will be closed, causing recovery costs and transport route disruption incurring losses.	4	
Severe Storm	There is a risk that severe storm will cause disruption to major freight routes, resulting in financial losses.	4	Consider Treating

Severe Storm	There is a risk that severe storm will cause damage to aspects that support the tourism industry (such as access routes, facilities, caravan parks, motels, food/fuel outlets, orchardists) resulting in a downturn in the tourism industry across the district.	4	Consider Treating
Severe Storm	There is a risk that severe storm will cause an increased demand on CPFS, impacting their ability to deliver core services.	4	
Severe Storm	There is a risk that severe storm will impact potable water supply, impacting their ability to deliver core services.	4	Consider Treating
Severe Storm	There is a risk that severe storm will impact sewerage systems, impacting their ability to deliver core services.	4	Consider Treating
Severe Storm	There is a risk that severe storm will impact on home-based services and service providers (such as meals on wheels, silverchain, WACHS, home care provisions).	4	
Severe Storm	There is a risk that severe storm will result in damage to commercial retail outlets and service	4	

	providers, impacting the availability of basic commercial products and services.		
Severe Storm	There is a risk that severe storm will result in short term (<14 days) displacement due to evacuation away from people's homes and work places which will result in dispersal of the community.	4	
Severe Storm	There is a risk that severe storm will result in long term (>14 days) displacement due to evacuation away from people's homes and work places which will result in dispersal of the community.	4	
Severe Storm	There is a risk that severe storm will affect the day to day functionality of educational facilities.	4	
Severe Storm	There is a risk that severe storm will affect the day to day functionality for vulnerable people (aged, childcare, disability).	4	
Severe Storm	There is a risk that severe storm will impact tourism in the area, affecting the community wellbeing.	4	
Severe Storm	There is a risk that severe storm will damage transport infrastructure such as roads and rail, resulting in recovery costs.	5	

Severe Storm	There is a risk that severe storm will cause damage to sewerage systems, resulting in recovery costs.	5	
Severe Storm	There is a risk that severe storm will result in loss of potable water supply due to damage to infrastructure (dams, piping, bores) resulting in financial costs.	5	
Severe Storm	There is a risk that severe storm will impact flora and fauna in the local government district.	5	
Severe Storm	There is a risk that severe storm will destroy or harm protected flora and fauna in National Parks.	5	
Severe Storm	There is a risk that severe storm will cause significant soil erosion.	5	
Severe Storm	There is a risk that severe storm will cause debris and pollutants to flow into marine and/or esturine/riverine environments, causing contamination and/or impacting ecosystems.	5	
Severe Storm	There is a risk that will cause the spread of vegetative diseases.	5	
Severe Storm	There is a risk that severe storm will require recovery works to be undertaken by Local	5	

	Government, impacting their ability to deliver core services.		
Severe Storm	There is a risk that severe storm will cause an increased demand (surge) on emergency services (fire, police, ambulance), impacting their ability to deliver core services	5	
Severe Storm	There is a risk that severe storm will cause an increased demand (surge) on WA health services, impacting their ability to deliver core services.	5	
Severe Storm	There is a risk that severe storm will impact emergency service response buildings and facilities, impacting their ability to deliver core services.	5	
Severe Storm	There is a risk that severe storm will impact power infrastructure, impacting their ability to deliver core services.	5	
Severe Storm	There is a risk that severe storm will impact the health of residents and cause death or serious injury/illness, impacting the wellbeing of the district community.	5	

Severe Storm	There is a risk that severe storm will cause damage to residential dwellings and contents, impacting the wellbeing of the district community.	5	
Severe Storm	There is a risk that severe storm will impact existing social services (NGOs, Lions, Rotary, Salvation Army, CWA, Red Cross, other volunteer organisations).	5	
Severe Storm	There is a risk that severe storm will lead to towns becoming isolated with limited services and supplies for an extended period of time, affecting their ability to function as a community.	5	

Risk Profile Analysis

Severe and unanticipated storms can occur with very little warning. Due to the geography of the Shire; low lying agricultural lands, severe storms can cause fires due to lightning strike or inundation due to extensive rainfall. These events pose a significant threat to the Shire of Donnybrook-Balingup.

Available data identifies 11 storm incidents occurring in the Shire of Donnybrook-Balingup since 1 July 2010. Evidence suggests the storm incidents that have generated impacts on the Shire of Donnybrook-Balingup occurred during the winter seasons of 2011, 2012, 2013 and 2015. This includes the largest storm events in 2012/13 that caused widespread power outages across the south west land division.

The assessment has listed storm risk with an average score of 4.2 making the risk low priority to the Shire of Donnybrook-Balingup.

The following priorities were found to be the most concern to the wider community within the Shire;

- Community displacement through death and serious illness. Emergency services and health services becoming overwhelmed
- Economic loss within business sector
- Economic loss within agricultural sector
- Loss of communication infrastructure

Attendance

Name	Agency
Leigh Guthridge	Manager, Development and Environmental Services, Shire of Donnybrook-Balingup
Paul Robins	Senior Ranger, Shire of Donnybrook-Balingup
Russell Jones	Works Supervisor, Shire of Donnybrook-Balingup
John Attwood	Recovery Coordinator, Shire of Donnybrook-Balingup
Peter Thomas	DO Emergency Management, DFES LSW
Ryan Vanderheide	OIC, South West Police
Kerry Winsor	Regional Director, WACHS
Ronan O'Mara	Western Power
Heather Taylor	Program Leader – Hazards, Vulnerabilities & Risk, Office of Emergency Management
Roma Boucher	District Emergency Services Officer, Department of Communities

Electrical Supply Disruption

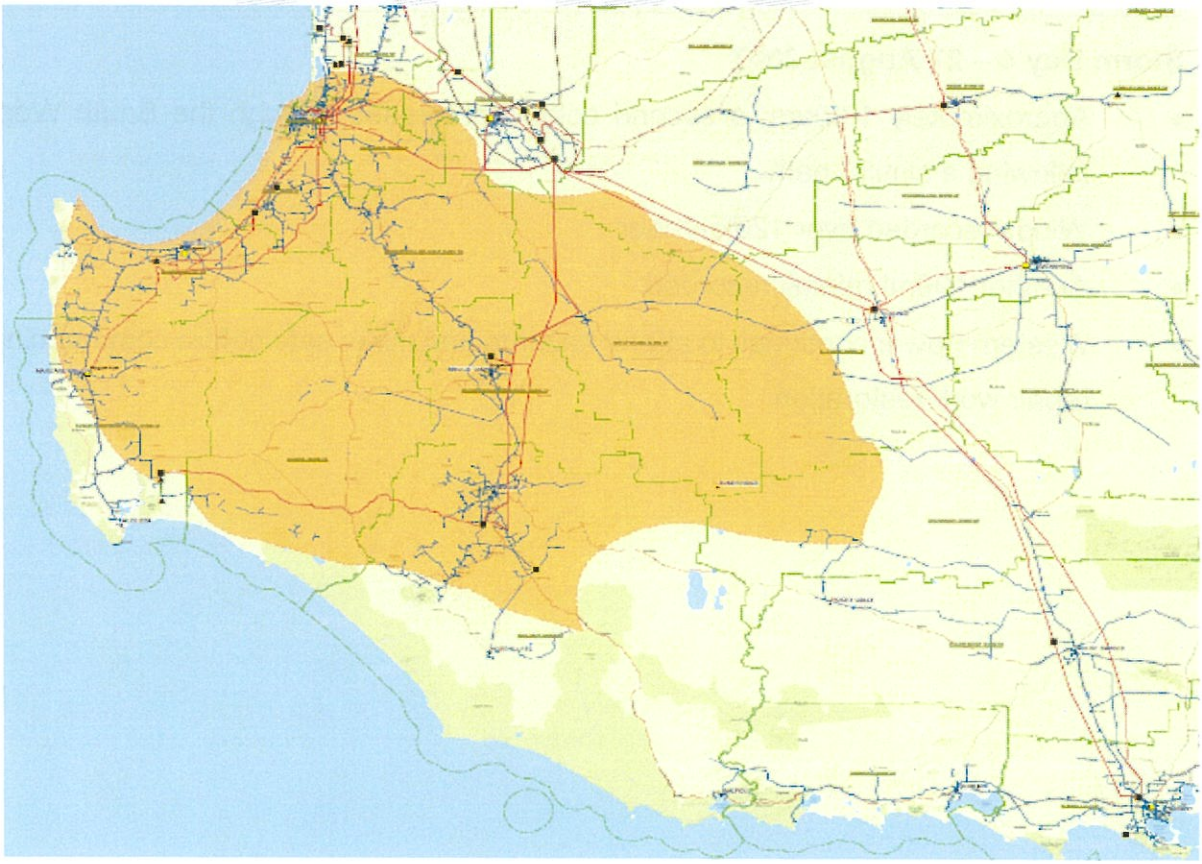
Scenario Summary

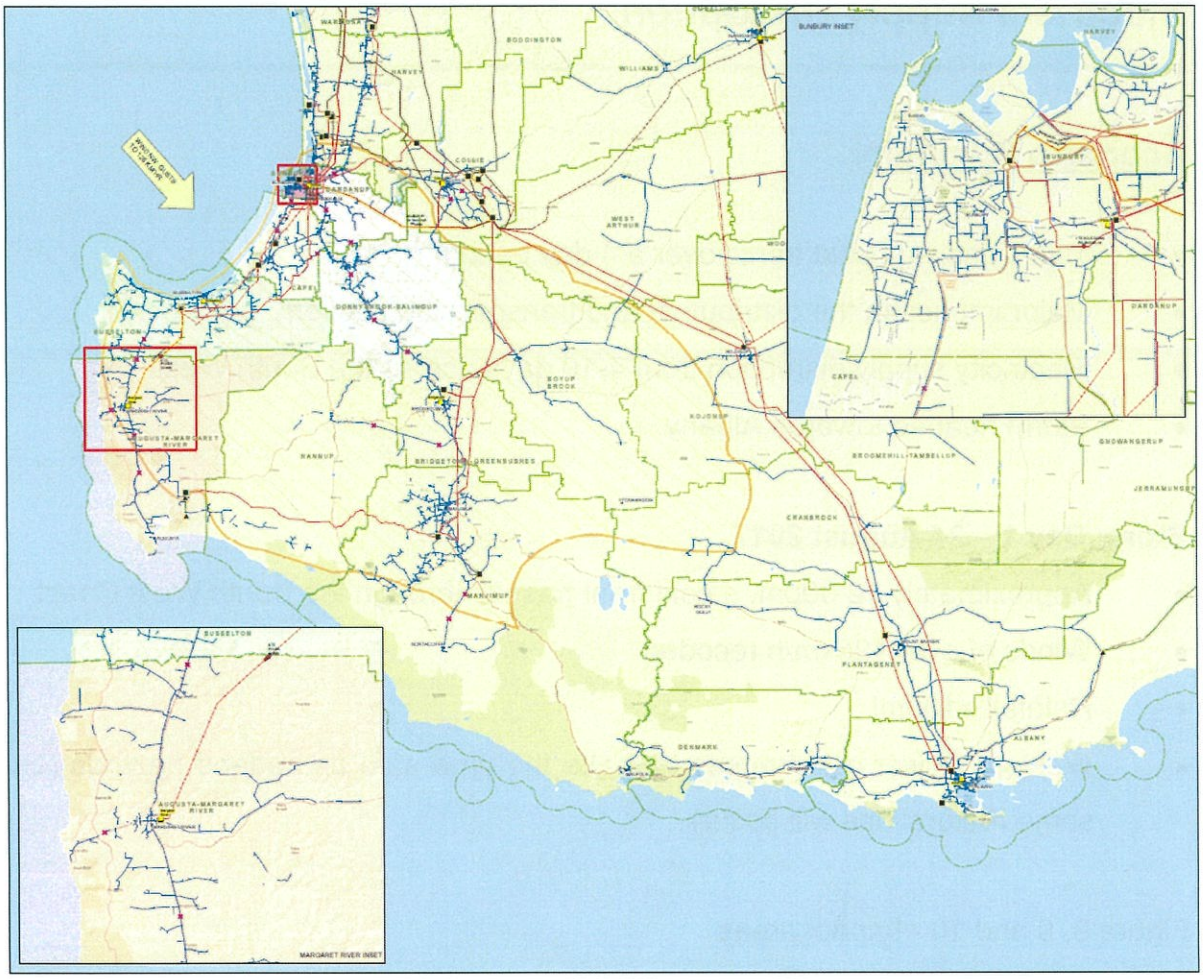
- Two significant cold fronts over a 4 day period
- Major impact on the distribution and transmission network
- Electricity supply disruption from 4-10 days across the South West
- Storm headed towards Albany

Storm Day 1 – 24 August 2017

- Approximately 12:00pm, a cold front passes through the South West Coast
- Winds of over 125km/h recoded
- Rainfall >100ml
- Western Power commences to make the area safe and attend hazards (only some restorations will occur)

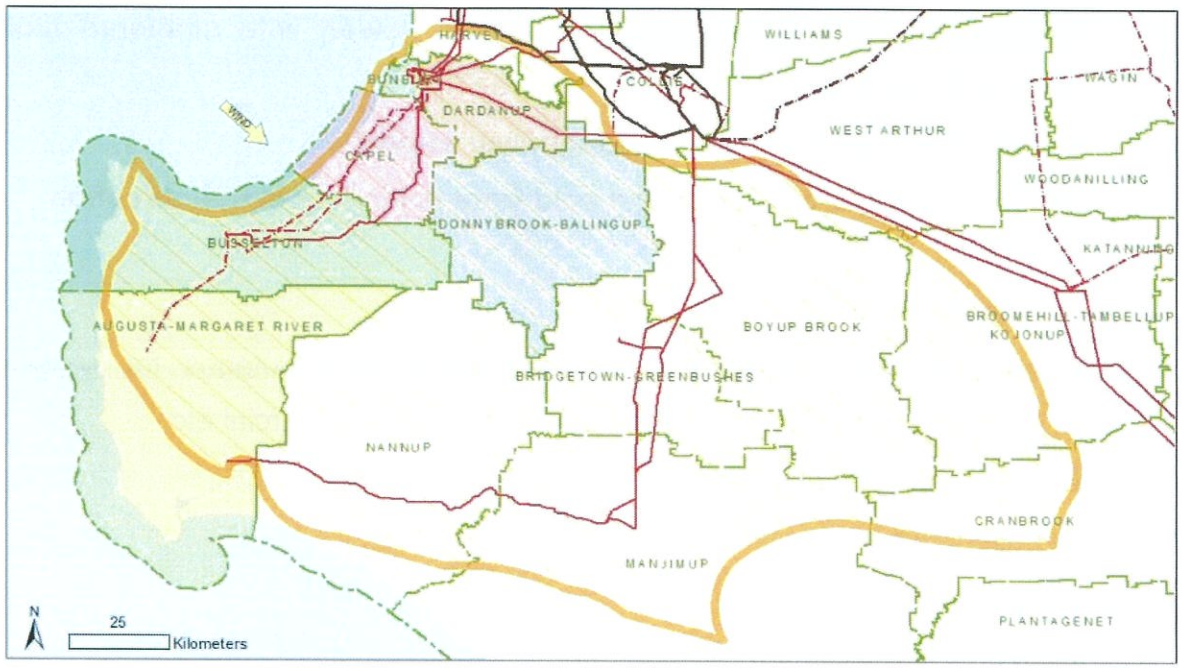
Figure 8, 9 and 10 - Impact areas





Storm Day 4 – 27 August 2017

- Approximately 1:00am, a second cold front passes through the South West following a similar path
- Winds recorded over 120km/hour
- Another 100ml rainfall recorded
- Western Power continues to attend hazards and make safe before commencing repair work/restoration



Margaret River impact

- Extensive transmission feeder line damage (4 transmission poles down)
- Wide spread damage to Western Power assets across the area
- Margaret River town site without power supply for up to 10 days (approximately 9000 customers including sensitive customers and life support equipment impacted)
- Area surrounding Margaret River without power supply for potentially 4-8 days

Bunbury impact

- Bunbury Harbour substation impacted by a Transmission outage (minimum 24 hours to reconnect transmission line)
- Both hospitals without supply
- Approximately 15,000 customers without supply including sensitive customers and life support equipment dependant customers
- Wide spread damage to Bunbury region due to extensive damage to Western Power Assets
- Recovery Time approximately 2-4 days (no power supply)

Rest of the SW impact:

- **Multiple feeder line damage across the rest of the South West including poles down, damaged assets**

- **Approximately 20,000 customers without power, with scattered faults across the region**
- **Expect 2-4 days minimum without power supply**
- **Albany on preparedness as the cold front is moving in that direction**

Scenario considerations

- Multiple feeders impacted (>20) resulting in long outages for sensitive customers e.g. Watercorp, Main Roads, schools, commercial etc
- Unknown restoration times
- Simultaneous events with two storm fronts
- Fatigue management
- Resource management
- Limited generator availability
- Environmental impact
- Planned work impacted transmission lines
- Recall times

Risk Identification

Hazard	Risk	Risk Priority Level	Treat Options – If Applicable
Electrical Supply Disruption	There is a risk that electrical supply disruption will impact the health of people and cause death(s).	3	Treat (recommended action)
Electrical Supply Disruption	There is a risk that electrical supply disruption will impact the health of people and cause injury and/or serious illness.	3	Treat (recommended action)
Electrical Supply Disruption	There is a risk that electrical supply disruption will impact emergency services (police, fire, ambulance) due to loss of electricity, resulting in further deaths directly attributable to the hazard event.	3	Treat (recommended action)
Electrical Supply Disruption	There is a risk that electrical supply disruption will impact health services, resulting in further deaths directly attributable to the hazard event.	3	Treat (recommended action)

Electrical Supply Disruption	There is a risk that electrical supply disruption will disrupt business activities, resulting in financial losses.	3	Consider Treating
Electrical Supply Disruption	There is a risk that electrical supply disruption will impact infrastructure required for potable water supply (e.g. treatment facilities, bores, pump stations), resulting in financial losses.	4	
Electrical Supply Disruption	There is a risk that electrical supply disruption will impact sewerage systems, resulting in disruption and financial losses.	4	
Electrical Supply Disruption	There is a risk that electrical supply disruption will disrupt supply chains into and within the district, resulting in financial losses.	4	
Electrical Supply Disruption	There is a risk that electrical supply disruption will cause food in supermarkets and storage warehouses to spoil, resulting in financial losses.	4	

Electrical Supply Disruption	There is a risk that electrical supply disruption will affect power companies (Western Power), impacting their ability to deliver core services.	4	Consider Treating
Electrical Supply Disruption	There is a risk that electrical supply disruption will impact communications (mobile, landline, internet) infrastructure, impacting their ability to deliver core services.	4	Consider Treating
Electrical Supply Disruption	There is a risk that electrical supply disruption will affect schools and educational facilities, impacting their ability to deliver core services.	4	Consider Treating
Electrical Supply Disruption	There is a risk that electrical supply disruption will impact the availability of basic commercial products and services (e.g. food, water, etc.).	4	Consider Treating
Electrical Supply Disruption	There is a risk that electrical supply disruption will disrupt the comfort and security for large sections of the community in their homes and workplaces	5	

Electrical Supply Disruption	There is a risk that electrical supply disruption will impact power infrastructure, resulting in disruption and financial losses for electricity provider.	5	
Electrical Supply Disruption	There is a risk that electrical supply disruption will impact communications infrastructure, resulting in disruption and financial losses.	5	
Electrical Supply Disruption	There is a risk that electrical supply disruption will impact agricultural (e.g. dairy, crops, cattle, etc.) industry, resulting in financial losses.	5	
Electrical Supply Disruption	There is a risk that electrical supply disruption will impact tourism in the district, resulting in financial losses.	5	
Electrical Supply Disruption	There is a risk that electrical supply disruption will result in disruption to major events (e.g. Iron Man event), resulting in financial losses.	5	

Electrical Supply Disruption	There is a risk that electrical supply disruption will disrupt sewerage systems causing sewage to spill into the environment causing contamination.	5	
Electrical Supply Disruption	There is a risk that electrical supply disruption will disrupt waste chemical facilities causing contamination of water ways and pastoral land.	5	
Electrical Supply Disruption	There is a risk that electrical supply disruption will affect Local Governments, impacting their ability to deliver core services.	5	
Electrical Supply Disruption	There is a risk that electrical supply disruption will impact emergency services (police, fire, ambulance, hospitals, clinics, ICU), impacting their ability to deliver core services	5	
Electrical Supply Disruption	There is a risk that electrical supply disruption will affect Human Services (e.g. Medicare, Centre Link), impacting their ability to maintain cores services.	5	

Electrical Supply Disruption	There is a risk that electrical supply disruption will require response and recovery works to be undertaken by state agencies (not mentioned above e.g. DAFWA, Education etc.), impacting their ability to deliver core services.	5	
Electrical Supply Disruption	There is a risk that electrical supply disruption will require public information management, impacting on the governing body's ability to maintain core services.	5	
Electrical Supply Disruption	There is a risk that electrical supply disruption will affect other state agencies with offices in the district, impacting their ability to deliver core services.	5	
Electrical Supply Disruption	There is a risk that will impact the health of residents and cause death or serious injury/illness, impacting the wellbeing of the district community.	5	
Electrical Supply Disruption	There is a risk that electrical supply disruption will result in loss of income/employment, impacting the district community.	5	

Electrical Supply Disruption	There is a risk that electrical supply disruption will affect the day to day functionality of educational facilities.	5	
Electrical Supply Disruption	There is a risk that electrical supply disruption will affect the day to day functionality of facilities for vulnerable people (aged, childcare, disability).	5	
Electrical Supply Disruption	There is a risk that electrical supply disruption will impact existing social service providers (NGOs, Lions, Rotary, Salvation Army, CWA, Red Cross, other volunteer organisations).	5	
Electrical Supply Disruption	There is a risk that electrical supply disruption will result in isolation of communities, affecting their ability to function as a community.	5	
Electrical Supply Disruption	There is a risk that electrical supply disruption will cause power outages and communication failures resulting in lack of timely public information, warnings and general communication which will impact on the wellbeing of the district community.	5	

Electrical Supply Disruption	There is a risk that electrical supply disruption will cause social unrest, looting, etc., impacting the district community.	5	
Electrical Supply Disruption	There is a risk that electrical supply disruption will affect Water Corp, impacting their ability to deliver core services.		Further investigation required – seek comment from key stakeholders.
Electrical Supply Disruption	There is a risk that electrical supply disruption will affect sewerage systems, impacting their ability to deliver core services.		Further investigation required – seek comment from key stakeholders.

Risk Profile Analysis

The assessment has listed this risk with an average score of 4.48 making the risk low priority to the Shire of Donnybrook – Balingup.

The following priorities were found to be the most concern to the wider community within the Shire;

- Community displacement through death and serious illness. Emergency services and health services becoming overwhelmed

Attendance

Name	Agency
Jeff Somes	Principal Environmental Health Officer, Shire of Donnybrook-Balingup
Paul Robins	Senior Ranger, Shire of Donnybrook-Balingup
Deb Vanallen	Shire of Donnybrook-Balingup
Bronwyn Hodgson	Shire of Donnybrook-Balingup
Russell Jones	Works Supervisor, Shire of Donnybrook-Balingup
John Attwood	Recovery Coordinator, Shire of Donnybrook-Balingup
Peter Thomas	DO Emergency Management, DFES LSW
Ryan Vanderheide	OIC, South West Police
Ray Deall	Western Power
Daniel Hill	Office of Emergency Management
Roma Boucher	District Emergency Services Officer, Department of Communities

Human Epidemic

Scenario Summary

- A virus that causes predictable, seasonal (winter) epidemics.
- Not a 'cold', but an infection with high fevers and muscle aches. It can lead to pneumonia and death.
- There are an estimated 1500 - 3000 deaths from influenza each year in Australia, usually among the elderly and immunocompromised.
- Incubation period 1-3 days
- Spreads mainly by droplets made when people with flu cough, sneeze or talk
- Infectious 1 day **before** symptoms develop and up to 5 to 7 days **after** becoming sick
- Viruses can survive for 8 HRS+ on hard surfaces such as door knobs, taps and key boards, 5 minutes in hand

Scenario:

3 October 8 am, listening to ABC radio on your way to work:

Pandemic flu declared in SE Asia by WHO and 50 people died. Several cases of influenza like illness backpackers from China in Perth. A few of them have travelled to Bunbury and Collie.

A local Bunbury newspaper published a story based on a community rumour that there is someone who may have bird flu at Bunbury hospital another person is in critical condition.

Situation already has deteriorated interstate – a few deaths in Sydney

A few persons are reported to be in ICU in Perth hospitals over the last couple of days

Daily societal needs

- Law enforcement
- Food deliveries
- Fuel deliveries
- Utilities
- Power plants

- Health care

Discussion

- How to prioritise essential needs?
- Staffing requirements for maintaining critical function
- Communications protocols to notify staff, partner agencies, and the public of any changes to available services.

Risk Identification

Hazard	Risk	Risk Priority Level	Treat Options – If Applicable
Human Epidemic	There is a risk that human epidemic will impact the health of people and cause death(s).	3	Treat (recommended action)
Human Epidemic	There is a risk that human epidemic will impact the health of people and cause injury and/or serious illness.	3	Treat (recommended action)
Human Epidemic	There is a risk that human epidemic will impact the health of people with other medical conditions due to the demand placed on health services by the epidemic.	3	Consider treating
Human Epidemic	There is a risk that human epidemic will impact pathological and diagnostic imaging services, impacting their ability to deliver core services.	3	Consider treating
Human Epidemic	There is a risk that human epidemic will impact private GP services, impacting their ability to deliver core services.	3	Consider treating

Human Epidemic	There is a risk that human epidemic will impact workforce attendance leading to productivity loss and consequently financial loss.	4	
Human Epidemic	There is a risk that human epidemic will impact health services, impacting their ability to deliver core services.	4	
Human Epidemic	There is a risk that human epidemic will impact educational services, impacting their ability to deliver core services.	4	
Human Epidemic	There is a risk that human epidemic will impact the day to day functionality of support systems for the vulnerable (e.g. childcare, aged, disability).	4	
Human Epidemic	There is a risk that human epidemic will impact community service providers within the district (such as NGOs, meals on wheels, silver chain).	4	
Human Epidemic	There is a risk that human epidemic will impact emergency services (e.g. medical transport services such as RFDSWA) across the local government district, resulting in deaths, injuries or illness directly attributable to the hazard event.	5	

Human Epidemic	There is a risk that human epidemic will impact commercial spending in the retail sector, resulting in financial losses or impact to the industry.	5	
Human Epidemic	There is a risk that human epidemic will impact the tourism, hospitality and entertainment industries resulting in financial losses.	5	
Human Epidemic	There is a risk that human epidemic will impact demand for medical resources resulting in costs to the local government district.	5	
Human Epidemic	There is a risk that human epidemic will impact transport providers (e.g. bus, rail or airport), resulting in financial losses.	5	
Human Epidemic	There is a risk that human epidemic will impact major events, impacting the revenue of the local government district.	5	
Human Epidemic	There is a risk that human epidemic will impact workforce attendance in the local government services sector, impacting their ability to deliver core services.	5	

Human Epidemic	There is a risk that human epidemic will impact the performance of agencies involved in issuing public information.	5	
Human Epidemic	There is a risk that human epidemic will impact ambulance services, impacting their ability to maintain core services.	5	
Human Epidemic	There is a risk that human epidemic will impact suppliers of health service goods (linens, meals, masks etc.) impacting their ability to deliver core services.	5	
Human Epidemic	There is a risk that human epidemic will impact workforce attendance within WA Police, impacting their ability to deliver core services.	5	
Human Epidemic	There is a risk that human epidemic will impact other agencies, not mentioned above (e.g. DFES, DAFWA, P&W), impacting their ability to deliver core services.	5	
Human Epidemic	There is a risk that human epidemic will impact the health of people and cause deaths, injuries or illness impacting district community wellbeing.	5	

Human Epidemic	There is a risk that human epidemic will produce symptoms associated with the disease/infection impacting local government district community wellbeing.	5	
Human Epidemic	There is a risk that human epidemic will impact the supply chain, due to absenteeism, which will impact the availability of basic needs such as food, fuel and essential goods.	5	
Human Epidemic	There is a risk that human epidemic will impact workforce attendance at commercial retail outlets and service providers, which will impact on the availability of basic commercial products and services.	5	
Human Epidemic	There is a risk that human epidemic will result in persons remaining isolated in their homes, or quarantined areas, for extended periods of time, impacting local government district community wellbeing.	5	
Human Epidemic	There is a risk that human epidemic will impact the day to day functionality of educational institutions.	5	

Human Epidemic	There is a risk that will lead to reluctance to attend workplaces, resulting in a loss of income, impacting district community wellbeing.	5	
Human Epidemic	There is a risk that human epidemic will result in the breakdown of existing family and support networks.	5	
Human Epidemic	There is a risk that human epidemic will result in the breakdown of community social networks.	5	
Human Epidemic	There is a risk that human epidemic will cause reluctance to visit churches and places of worship, impacting community wellbeing.	5	
Human Epidemic	There is a risk that human epidemic will cause reluctance to visit public facilities (e.g. art galleries, museums, libraries etc.,) which in turn may cause disruption to cultural activities.	5	
Human Epidemic	There is a risk that human epidemic will impact community activities (sports, clubs etc.).	5	
Human Epidemic	There is a risk that human epidemic will impact RFDS services, impacting their ability to deliver core services.		Further investigation required – seek comment from industry.

Risk Profile Analysis

The assessment has listed this risk with an average score of 4.55 making the risk low priority to the Shire of Donnybrook – Balingup.

The following priorities were found to be the most concern to the wider community within the Shire;

- Community displacement through death and serious illness

Attendance

Name	Agency
Jeff Somes	Principal Environmental Health Officer, Shire of Donnybrook-Balingup
Paul Robins	Senior Ranger, Shire of Donnybrook-Balingup
Deb Vanallen	Shire of Donnybrook-Balingup
Bronwyn Hodgson	Shire of Donnybrook-Balingup
Russell Jones	Works Supervisor, Shire of Donnybrook-Balingup
John Attwood	Recovery Coordinator, Shire of Donnybrook-Balingup
Peter Thomas	DO Emergency Management, DFES LSW
Ryan Vanderheide	OIC, South West Police
Ray Deall	Western Power
Daniel Hill	Office of Emergency Management
Roma Boucher	District Emergency Services Officer, Department of Communities

Annexure 1 – Shire of Donnybrook-Balingup State Risk Project - Local Risk Register