Town of Bassendean

Emergency Risk Management Profile 2010

Emergency Management Services
EM-Powering Communities

AWARE
All West Australians Reducing Emergencies

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LIST OF ACCRONYMS

AWARE: All West Australians Reducing Emergencies

BOM: Bureau of Meteorology

CERM: Community Emergency Risk Management

DCP: Department for Child Protection

DEMC: District Emergency Management Committee

DPI: Department of Planning and Infrastructure

EM: Emergency Management

EMA: Emergency Management Australia

ERM: Emergency Risk Management

FESA: Fire and Emergency Services Authority

GA: Geoscience Australia

HMA: Hazard management Agency

ISO: International Standards Organisation

LEMC: Local Emergency Management Committee

MRWA: Main Roads WA

PPRR: Prevention, Preparedness, Response, Recovery

SEMC: State Emergency Management Committee

SES: State Emergency Service

ToB: Town of Bassendean

WAPol: Western Australia Police

1. Executive summary

The Town of Bassendean is located approximately 10 kilometres north-east of Perth and 5 minutes from the Swan Valley vineyards. With a total area of 11 square kilometres, the Town is bounded by the Swan River, the City of Swan to the north and the City of Bayswater to the west. It has a river frontage of 7 kilometres.

Bassendean has always engendered the small country town feel for its residents but the reality is that it is surrounded by all the trappings of a large, modern industrial city and the risks that come with that close proximity.

Well served by metropolitan train and bus services, Bassendean is collocated with industrial parks on the south and north side of Guildford Road. There is clearly a need to identify and manage a large number of hazards that may present in the Town of Bassendean. In order that these hazards may be identified and analysed, the Community Emergency Risk Management Project (CERMP) was commenced in November 2009.

Project stages

This project had three distinct stages:

Stage One – Establishing the context

Stage Two – Identify the risks

Stage Three – Evaluate and analyse the risks

Recommendations

The following recommendations were made by the LEMC resulting from this study and these include:

Recommendation 1

That the Town of Bassendean LEMC review and update its Local Emergency Management Arrangements ensuring that information gathered through the CERM process is incorporated within those arrangements.

Recommendation 2

That the Town of Bassendean Local Emergency Management Committee engages in a complete review of its risk profile in 2014/15.

Recommendation 3

Following the review and update of the Local Emergency Management Arrangements, a review is undertaken of the Town of Bassendean risk treatment schedule as identified in the CERM process.

Recommendation 4

That the LEMC ensure the Town of Bassendean Emergency Risk Register and Risk Treatment Schedule is included in the LEMC business plan and that treatment options for identified risks are actioned.

Recommendation 5

That this report be posted on the Town of Bassendean Website as a public document.

2. Introduction

In Western Australia and nationally, the management of emergencies and disasters is conducted under a process known as the comprehensive all hazards approach to emergency management. This process is described as follows:

- **Prevention** – Measures taken to eliminate or reduce the incidence or severity of emergency events;
- **Preparedness** – Measures taken to ensure that, should an emergency occur, communities, resources and services are capable of coping with the effects;
- **Response** – Measures taken in anticipation of, during and immediately after and emergency to ensure its effects are minimised;
- **Recovery** – Measures which support emergency affected individuals and communities in the reconstruction of the physical infrastructure and restoration of emotional, economic, environmental and physical wellbeing.

The Emergency Risk Management (ERM) process forms the foundation of local emergency management planning and should be undertaken at least every five years in order to account for the changing face of the landscape and the community generally. The ERM process supports the negotiation and development of shared responsibilities necessary for the establishment of effective emergency management arrangements within local governments.

The current standard for analysing risk AS/NZS ISO 31,000:2009. The CERM project has also utilised the guidance of the following publications:

- Western Australian Emergency Risk Management Guide (FESA/WALGA publication)
- Australian Emergency Risk Management Manual 5 (Emergency Management Australia publication)
- There are measurable benefits to be derived by the local government from conducting a managed ERM process including:
- Establishment of a formal decision making process;
- Fostering the involvement of the local community in the risk management process;
- Engaging the assistance and partnership of a wide range of Hazard Management Agencies, Non-government organisations and service providers;
- Establishing an ongoing cycle of review.

The Town of Bassendean conducted a self funded risk management processes in 2006 which assisted in the establishment of the Local Emergency Management Arrangements. The current standard for analysing risk AS/NZS ISO 31,000:2009. The CERM project has also utilised the guidance of the following publications:

Western Australian Emergency Risk Management Guide (FESA/WALGA publication)

Australian Emergency Risk Management Manual 5 (Emergency Management Australia publication)

3. Project plan

Aim

This project aims to identify emergency risks from rapid onset natural hazards along with risk from man caused hazards that may directly impact on the Town of Bassendean and to identify strategies to prevent or mitigate the risks.

Objectives

- Create a safer community by identifying, analysing and evaluating risks;
- Establish the community perspective of risks to the community by public survey and information sessions;
- Prepare a project management plan and communications strategy;
- To establish an emergency risk management working group representative of the LEMC to oversee the CERM process.
- Identify the sources of risk and elements at risk to the Town of Bassendean;
- Determine treatment options for identified risks; and
- Establish a monitoring and review process for the future.

Project scope

The CERM project focuses on elements within the community of the Town of Bassendean that may be may be impacted upon by emergency events. This project encapsulates the whole of the local government area and includes the following suburbs:

Bassendean

Eden Hill

Ashfield

Project authority

The authority to conduct this project was provided by the Town of Bassendean Local Emergency Management Committee and endorsed by the Director Community Development and the Town of Bassendean Council.

Project timeframes

This project commenced in October 2009 with notification from FESA of the successful application for funding under the AWARE program. The completion date for this project was 30 June 2010.

Training

Part of the AWARE funding is targeted at providing relevant emergency management training to LEMC members and local government staff.

On 3 June 2010 FESA staff conducted a one day course Introduction to Emergency Risk Management which was attended by LEMC members and staff from the Town of Bassendean as well as other local governments.

Funding

The Town of Bassendean applied for and received funding in 2009 via the All West Australians Reducing Emergencies (AWARE) program established by the Commonwealth Government and administered in WA by FESA. The aim of the program is to assist local governments to undertake the emergency risk management process. The AWARE funding assisted in the retention of Western Australian Local Government Association – Emergency Management Services consultant John Lane as project coordinator and assisted in part funding the salary of Ms Sharna Murton, Senior Ranger and project officer on a part time basis.

Funding from this source will be the last of its kind for WA in its current form as a new funding model agreed between the States, Territories and Canberra known as the Natural Disaster Resilience Program will take effect in 2010.

The Town of Bassendean

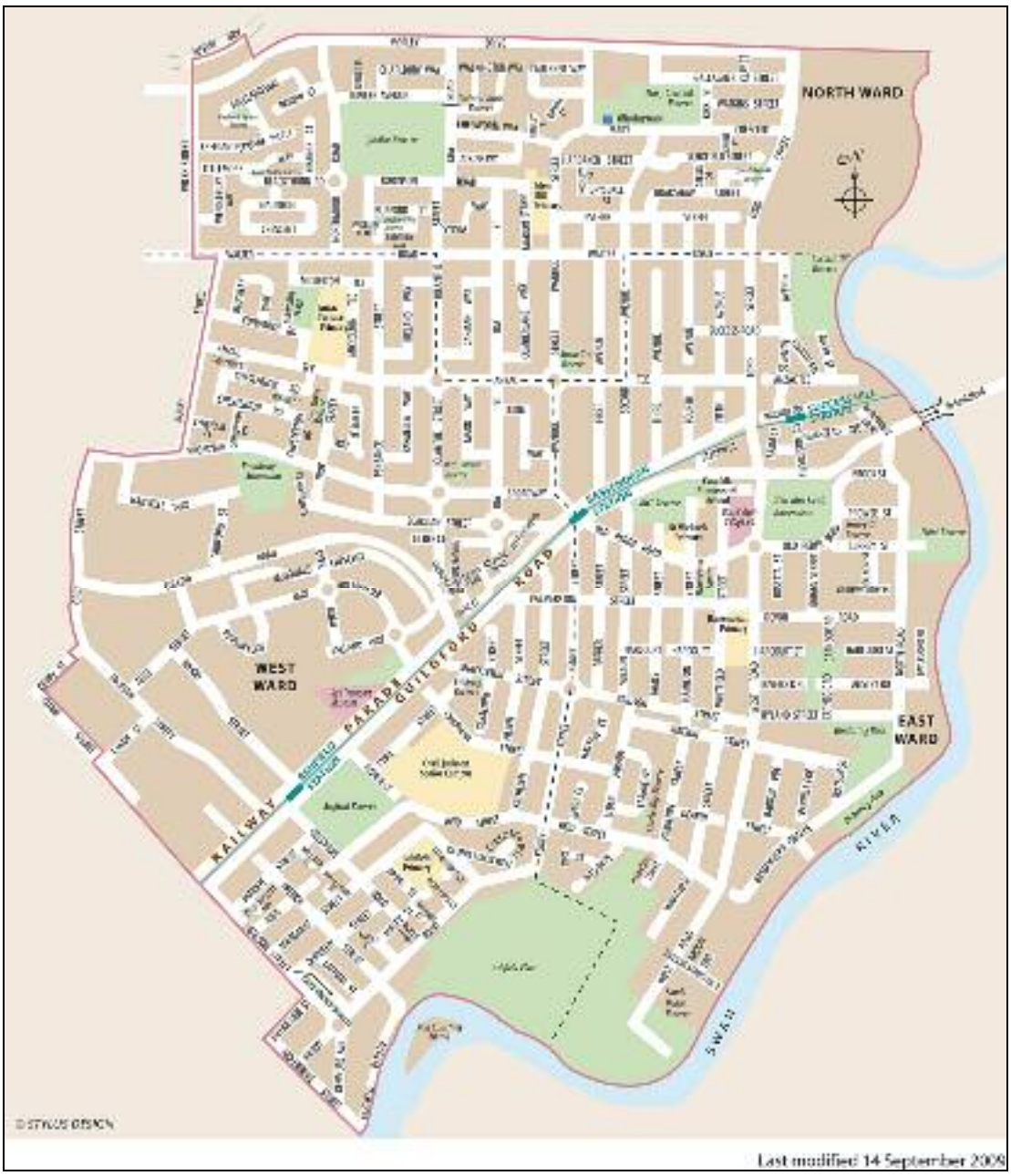


Figure 1 – Town of Bassendean Municipal Area

General

The Town of Bassendean is a close knit suburban community situated on the banks of the Swan River approximately 10 kilometres from the Perth CBD. The Town of Bassendean consists of a total area of eleven square kilometres and contains three suburbs; Bassendean, Ashfield and Eden Hill.

With a population of 14,463, Bassendean is a mix of private dwellings, local shops and businesses and the Tonkin Business Park which is the light industrial area. The town is well serviced by transport links to the city along the road and rail network. Bassendean is an environment conscious community which prides itself on the local environmentally sensitive areas such as Sandy Beach Reserve, Point Reserve, Success Hill Reserve, Ashfield Flats and Pickering Park. Much is done in the community to ensure the environment is protected from the impact of humans and natural hazards.

The project plan can be viewed in **APPENDIX A**.

Neighbouring Local Authorities

Neighbouring local authorities include:

The City of Swan and the City of Bayswater

Access

The major arterial route servicing the Town of Bassendean is Guildford Road running from Maylands to Guildford while the Industrial park is serviced by Railway Parade and Collier Road which joins Tonkin Highway.

Running parallel with Railway parade and Guildford road is the passenger rail network joining Midland with Perth. The line is also used for passenger rail services to and from the Eastern States.

Riverine Setting

The Town of Bassendean has seven kilometres of Swan River foreshore and is actively engaged in the preservation of this natural asset. The Town has a representative on the Swan River Trust and continues to work with other agencies, the Federal Government and community environmental groups to ensure the environmentally sensitive areas along the river such as Success Hill, the Ashfield reserve are maintained and protected.

Riverine flooding highlighted in the recent community survey as a natural hazard has been a constant subject for risk mitigation strategies for many years. Flooding events on the Swan River at Bassendean occur only occasionally but can impact on a significant number of dwellings located within the projected flood plain areas for a 1:10, 1:25 and 1:100 year flood event. The Town has identified these flood heights by marking lamp poles in the area and this strategy will be earmarked for review in the coming years to ensure that it is based on up-to-date data. The review will form part of the Risk Treatment Schedule.

Figure 2 Swan River from Pickering Park

Wetlands

Ashfield Flats is a significant wetland sanctuary for wildlife on the banks of the Swan River and is subject of an ecological restoration project.

Figure 3 Ashfield Flats

Administration, Works and Services

The Town's main administration centre is located at 48 Old Perth Road, Bassendean and is the main administration centre for the Town's main functions and services. The Council Depot is home to the Asset Service Business Unit. Asset Services conducts an annual works program to maintain and enhance the Town's assets including its parks and gardens, roads, footpaths and public buildings.

The core function of the Asset Services Business Unit is to manage, maintain, and upgrade the Town's infrastructure assets including parks, gardens, and reserves; roads, footpaths, and drains; and Council owned buildings. Activities in support of our core functions include the provision of engineering design services, purchasing services, and fleet maintenance. Asset Services also provide support and services to other business units within the Town, and to external agencies, including Public Utility Providers, State Emergency Services, and the Volunteer Fire Brigade.

Community Descriptions

Population: 13,463
Total area: 11 square Km
Number of dwellings: 6,186
Number of electors: 9,803
Sealed roads: 11 km

Table 1 – General statistics for the local government – Source ABS 2006

Demographics

Australia	***9,000***	***66.8%***
England	1,143	8.5%
New Zealand	344	2.6%
Italy	191	1.4%
Scotland	186	1.4%
India	169	1.3%
Aboriginal & Torres Straight	374	2.8%

Table 2 – Country of origin

AGE	*Selected Region*	*% of total persons in Region*
0-4 years	822	6.1%
5-14 years	1,585	11.8%
15-24 years	1,663	12.4%
25-54 years	5,912	43.9%
55-64 years	1,477	11.0%
65 years and over	2,004	14.9%
Median age of persons	39	-

Table 3 – Age groups

4 Project Stage 1- Establish the Context

Establishing the context allows the project committee to:

- Understand the strategic and community issues that may impact on the ERM process;
- Define the parameters within which the risks can be identified; and
- Define the scope for the risk plan.

The current ERM project focused on areas within the municipal jurisdiction of the Town of Bassendean. The first step was to make application to FESA for funding under the AWARE funding program. Upon receipt of the official notification that the project had received funding, a project steering committee was set up to monitor the project progress.

The project committee consisted of the following personnel:

Mr. Graeme Haggart; Director Community Development Town of Bassendean – Project Manager;

Mr. John Lane; Coordinator WALGA Emergency Management Services – Project consultant;

Senior Sergeant John Waghorn OIC Kiara Police Station;

Mr. Gordon Munday Manager Bassendean SES Unit;

Ms. Sharna Murton Senior Ranger Town of Bassendean – Administration Assistant;

The process was regularly reported to the Town of Bassendean Local Emergency Management Committee.

Legislation and Policy

The Emergency Management Act 2005 establishes the role of local government in emergency management planning for their community. Emergency Risk Management forms the basis of local government emergency management planning and the risk identification and analysis process should be conducted at least every five years to ensure that natural and man made hazards are correctly identified and mitigation strategies are adopted. The Town of Bassendean has always had a proactive stance towards emergency planning and protection of the community it represents.

Risk Evaluation Criteria

The risk evaluation criteria are an important aspect of the risk process and assist the working group to make informed assessments of the prioritization of risks. Risk evaluation criteria assist to establish a clear priority where two risks have been evaluated as having the same likelihood and consequence level. The evaluation criteria were based on several considerations including; people, property, environment, economy, industry, infrastructure and social setting.

Elements at Risk	*Scope*	*Risk Evaluation Criteria*	*Priority*
People	Life/ Injury/health	Any accident or incident that causes death, serious injury or harms the health of people is unacceptable	**1**
Infrastructure	Lifelines e.g. power water sewerage, gas or communications	Any accident or incident that causes loss of or damage to infrastructure is unacceptable.	**2**
Property	All physical structures e.g. Houses, local government buildings and heritage listed buildings	Any accident or incident that causes damage to or loss of property is unacceptable.	**3**
Industry	Industrial complexes and business	Any accident or incident that causes the loss of or damage to industry is unacceptable.	**4**
Economy	Private enterprises, government sector financial loss, loss of revenue.	Any accident or incident that causes loss to the economy is unacceptable.	**5**
Social Setting	Community support infrastructure, quality of life, reduction of services	Aby accident or incident that causes loss of or damage to the social/cultural structures is unacceptable.	**6**
Environment	Eco systems, species and landscapes, environmental damage	Any accident or incident that causes loss of or damage to the environment is not acceptable	**7**

Table 4 – Risk Evaluation Criteria

5 Project Stage 2 – Identify Risks

The Risk Assessment Process

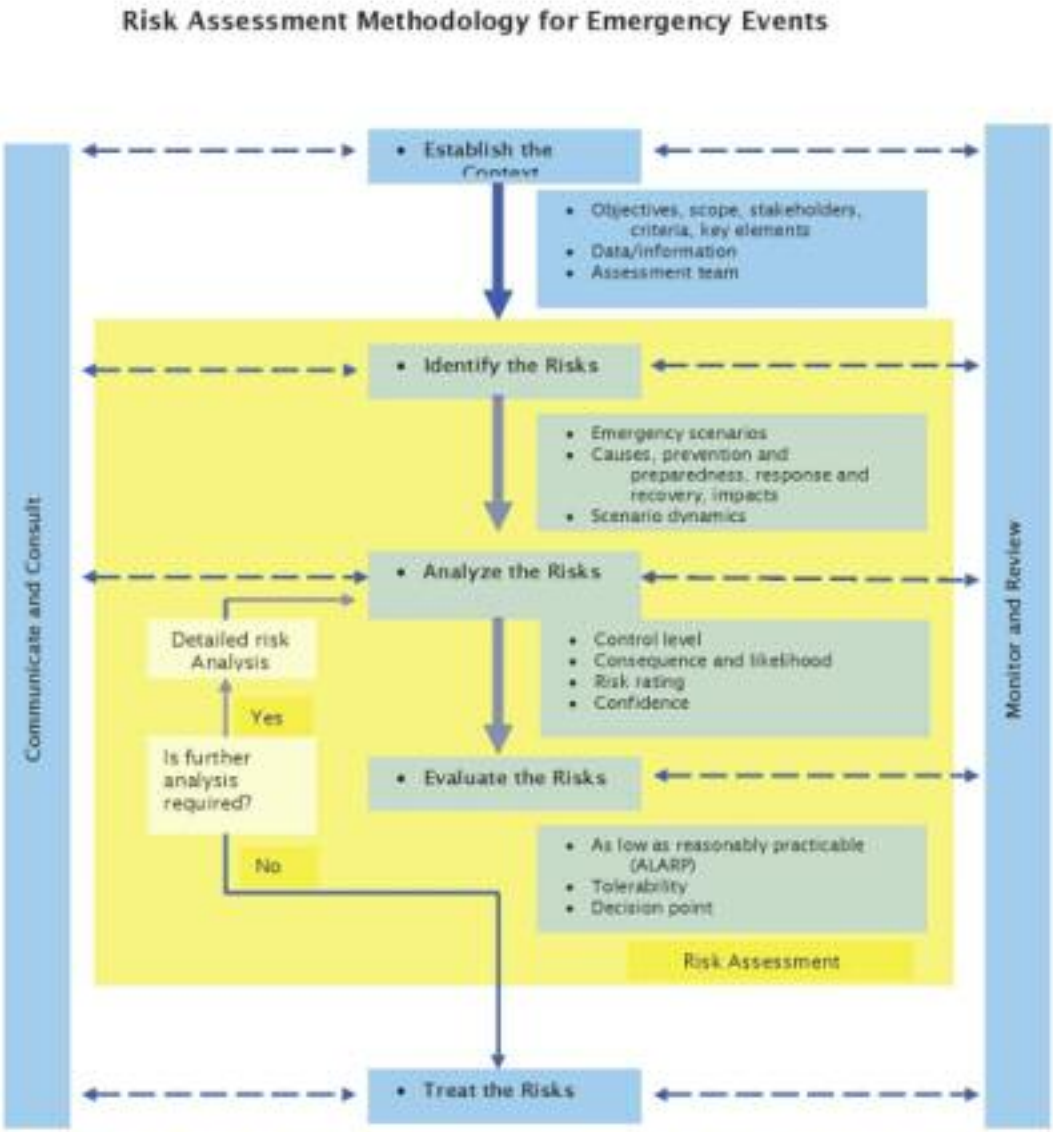


Table 5 Risk Assessment Methodology Diagram

Risks are generated by the potential for sources of risk to impact t on an element at risk in the community. Each source of risk needs to be first identified as being one that has the potential to impact on the community. A number of risks as identified by State emergency management policy were discussed by the committee in relation to the following:

- location of the Town of Bassendean relevant to environmental impacts;
- The demography
- The local economy
- Council services and facilities
- Previous emergencies and historical information

Community Consultation

The project sought in the first instance to survey the community to gain an insight into what the community saw as sources of risks that may impact on the Town of Bassendean and what affect those sources of risk may have if they were to impact on the local community. The community survey was sent out to all dwellings and businesses within the local government area. A total of 5,800 surveys were circulated with a return of 221 completed surveys representing 12.8% of the total. Refer to **Annex D**

The community identified the following sources of risk as having the greatest likelihood of impacting on the Town of Bassendean based on a rating scale of 1 being low likelihood and 6 being high likelihood:

Source of Risk	*Average Rating*
Severe storm event	4.07
Structure Fire	3.97
Road Transport Emergency	3.86
Rail Transport Emergency	3.54
Hazardous Materials Spills	3.40
Flooding/Flash Flooding	3.31
Bushfire	3.25

Table 6 - Risk Identification Matrix

The survey also asked the respondents to assess the impact the source of risk might have on the elements at risk within the community. The Project Team considered that hazardous materials should also be examined along with road transport emergencies.

The community consultation report was compiled by the project team and is attached to ANNEX B.

6 Project Stage 3 – Analyse and Evaluate Risk

Analysis of the identified risks involves conducting a qualitative and quantitative analysis to enable the group to understand the dynamics of each of the sources of risk and establish the level of risk the local government was exposed to for each identified hazard. The best method of coming to a consensus as to how the local government might be impacted by each source of risk was to conduct ERM workshops.

Risk Analysis Workshops

The Town of Bassendean conducted two risk analysis workshops in May 2010. The analysis of the identified risks was divided over two half day workshops as described below. In order to capture the views and comments of each participant a workshop workbook was produced. These workbooks proved to be an efficient way of ensuring that the views and comments of workshop attendees were captured and recorded. A sample of each project workbook can be viewed at **Appendix F**.

Workshop 1 analysed the following sources of risk:

- Road transport emergencies
- Rail transport emergencies
- Hazardous materials spills

Workshop 2 also conducted in May analysed the following risks:

- Severe storm
- Flash flooding/Riverine flooding
- Bush fire
- Structure fire

Sources of Risk

Both workshops identified and explored the sources of risk to the community as identified by the community risk survey. Each source of risk description statement identified the intensity, extent to which the local community may be affected, the likelihood of the occurrence and the time frame including warning times and duration.

Description of Source of Risk
Road Transport Emergency *Description:* ***The Town of Bassendean has an extensive road network maintained by the Town and Main Roads. The roads are utilised by private and commercial vehicles, with the main arterial roads (Guildford Road, Railway Parade, Collier Road, Walter Road and Morley Drive) being utilised by a large variety of heavy vehicular traffic who may carry dangerous goods, heavy machinery, livestock, etc at all times of the day. Though road transport emergencies are uncommon, the main arterial roads are immediately adjacent to residential areas and an incident could have a varying impact on the community and receivers/deliverers of any goods that may be lost.*** *Manageability:* ***Driver management (e.g. fatigue, drugs, etc) and vehicle maintenance issues and policies developed by and enforced by transport companies could reduce future incidents from occurring. Correct road maintenance by state and local governments will ensure road suitability for vehicular traffic movement,. The Department of Planning and Infrastructure addresses issues by monitoring and keeping current nationally-consistent compliance in the road transport industry, improved road safety, and better protection for infrastructure and the environment. The Western Australian Police conduct Road Safety Education campaigns and enforces relevant legislation to reduce the occurrence of Road Transport Emergencies and the Town of Bassendean is a member of the Roadwise program.***

Rail Transport Emergency

Description:

Rail transport services bisect the Town of Bassendean running south west to north east. The rail network consists of three lines one standard gauge trans continental route and two narrow gauge lines for commuter traffic. Both lines are owned and maintained by the Public Transport Authority. The lines are co located between Guildford Road and Railway Avenue. Essentially the railway is a dedicated to the busy Perth to Midland commuter rail service which carries an estimated 6 million passengers per annum. Passenger services between Perth and Midland run early morning until late evening every day of the week. Though rail transport emergencies on this line are uncommon, there is always the risk that a serious rail crash may occur at any of the level crossings located within the Town of Bassendean boundaries. These incidents could occur at any time between early mornings through to late evening on any day of the week and could have serious consequences for rail commuters, road users and residents of nearby homes.

Manageability:

All level crossings that bisect the line are controlled by boom gates and flashing signals minimising the risk of level crossing crashes, however some intersect with major roads also controlled by traffic control lights and where these operate in conjunction with boom gates, there is a heightened risk of crashes. The PTA manages the safe operation of the rail system and strictly monitors and controls traffic movement on the line. PTA is also responsible for the maintenance and inspection of level crossing safety mechanisms. Main Roads WA are responsible for the maintenance and operation of traffic control lights at intersections. PTA has developed detailed emergency management plans that deal with all threats and risks on its rail network. The Western Australian Police conduct Road Safety Education campaigns and enforces relevant legislation to reduce the occurrence of Road Transport Emergencies and the Town of Bassendean is a member of the Roadwise program.

Hazardous Materials Spills

Description:

At all times of the year there is movement of hazardous materials on roads, the use and storage of chemicals in containers, the use of hazardous materials in commercial facilities and the storage of hazardous materials on industrial estates within the Town boundaries. Due to the amount of hazardous materials travelling through, being used and stored within the Town, there is concern that a hazardous material incident could occur at any time. As hazardous materials are used for a variety of purposes within the industrial precincts of the Town of Bassendean, the impact of an incident would have varying consequences on the community and environment dependant on the hazardous material type, the size of the incident, the location of the incident, etc. There are records of Hazardous Material incidents of a major nature that have occurred in adjacent LG areas, though there are no known records of the community being affected. The major industrial area within the Town of Bassendean is Tonkin Business Park.

Manageability:

The Department of Consumer and Employment Protection through its Resources Safety Division deals with storage and transport of Hazardous Materials. All applications are authorised by the department with any relevant licenses being issued. The Town is notified of any application and license or amendment to current licenses to ensure local statutory planning requirements are met. The Department regulates specified transport routes for Hazardous Materials and issues Guidance Notes to ensure correct transport methods are adhered to.

Severe Storm

Description:

Severe storm events affect the Perth metropolitan area including the Town of Bassendean on an annual basis. The Bureau of Meteorology ensures that severe weather warnings are available with sufficient lead time to ensure community preparedness. Storms can occur throughout the year but are normally confined to the period between May and August. Wind gust may be common up to 100 km/h and damage to homes, business and the environment from hail and flash flooding can occur. There may also be significant disruption caused to lifelines such as power in the form of power outages for extended periods which has the flow on effect of causing drainage and sewerage backup.

Manageability:

The Bureau of Meteorology produces daily weather forecasts and predictions for public awareness. Public awareness is also undertaken by the media and FESA by promoting hazard reduction. Local government contributes to hazard reduction through bulk rubbish collections to reduce loose items around properties, conducts street tree maintenance to reduce power line interference.

Flash Flooding

Description:

The Perth metropolitan area can experience heavy rain events at any time in the year due mainly to abnormal weather patterns. Flash flooding results from relatively short intense bursts of rainfall, commonly from thunderstorms, and can occur in almost all parts of WA. Because of the speed with which it occurs, this type of flooding poses one of the greatest threats of loss of life and can result in significant damage to property as well as causing major social disruption. Flash flooding tends to be localised and it is difficult to provide effective warning. The potential for damage and loss of life due to flash flooding is steadily increasing due to spreading urbanisation especially in small catchments, floodplain encroachment, land clearance and other land use practices which have a marked increase on the rate of runoff.

Flash flooding is usually associated with severe storms where torrential rain over short periods may cause debris from trees and runoff to clog drains resulting in localised flooding in some low lying areas.

Manageability:

Department of Water (DoW) has floodplain mapping datasets freely available. DoW also has Digital Elevation Models for a number of locations across the State. Local governments maintain a system of local drains aimed at lessening the affects of flash flooding. Rainfall information is collected by the Bureau of Meteorology (BoM). BoM is responsible for providing a flood forecasting and warning service for WA. BoM operate telemetered rainfall monitoring sites throughout WA to support this role along with telemetered stream flow, rainfall and flood warning information.

Riverine Flooding

Description:

Traditionally riverine flooding of the Swan River occurs after heavy rain over short periods. Telemetry systems ensure that adequate warning to the community can occur. A heavy rain event does not automatically result in a rise in river levels sufficiently high to cause a riverine flood event. Flooding of the Swan River is a rare event that can be predicted to occur 1:100 years, 1:50 years and 1:25 years. While properties in low lying areas of the associated flood plain around Bassendean may be affected by flooding, more significant flooding on the Swan River is associated with heavy rainfall over prolonged periods. Heavy rain events may saturate the catchment and raise river levels to extra ordinary levels primarily during winter periods. History records that the Swan River can rise several metres in less than eight hours at Guildford in response to heavy rain when associated with extreme weather events such as tropical cyclones and significant rain events in the hills to the east of Midland.

Manageability:

BoM is responsible for providing a flood forecasting and warning service for WA. BoM operate telemetered rainfall monitoring sites throughout WA to support this role. The Australian Flood Studies Database maintained by Geoscience Australia provides a record of flood studies undertaken nationally since 1980. Floodplain Management in Australia: Best Practice Principles and Guidelines (SCARM Report 73). WA Floodplain Development Manual is being developed and is scheduled for completion June 2010. Local Governments include floodplain management strategies/policies in Region Planning Schemes and Town Planning Schemes. Australian Building Code Board – Building in Flood prone areas - This project considers options through the regulatory review process to minimise damage for buildings in flood prone areas.

Assessment Workshop Risk Register

The following risk statements were presented at the analysis workshops and rated for likelihood and consequence. A level of risk was assigned to each statement and an action priority dependent upon the community risk evaluation criteria.

Risk Statements: – Road Transport Emergency	**Likelihood**	**Consequences**	**Level of Risk**	Action Priority
There is a risk that road transport emergency will cause death or serious injury	Likely	Minor	Medium	**1**
There is a risk that a road transport emergency will cause damage to or destroy infrastructure	Possible	Minor	Low	**7**
There is a risk that a road transport emergency will cause loss of or damage to property	Likely	Minor	Medium	**2**
There is a risk that a road transport emergency will cause disruption to industry	Possible	Minor	Low	**5**
There is a risk that a road transport emergency will affect the economy of the community	Possible	Minor	Low	**4**

There is a risk that a road transport emergency will affect the social and cultural aspects of the community	Possible	Minor	Low	**6**
There is a risk that a road transport emergency will cause loss of or damage to the environment	Possible	Moderate	Medium	**3**
Risk Statement: Rail Transport Emergency	**Likelihood**	**Consequences**	**Level of Risk**	**Action Priority**
There is a risk that a rail transport emergency will cause death or serious injury	Almost Certain	Moderate	High	**1**
There is a risk that a rail transport emergency will cause damage to or destroy infrastructure	Possible	Minor	Low	**4**
There is a risk that a rail transport emergency will cause loss or damage to property	Likely	Minor	Medium	**3**
There is a risk that a rail transport emergency will cause disruption to industry	Unlikely	Minor	Low	**6**
There is a risk that a rail transport emergency will affect the economy of the community	Unlikely	Minor	Low	**5**
There is a risk that a rail transport emergency will affect the social/cultural aspects of the community	Almost Certain	Moderate	High	**1**
There is a risk that a rail transport emergency will affect the environment	Unlikely	Insignificant	Low	**7**
Risk Statements: Hazardous Materials Spills	**Likelihood**	**Consequences**	**Level of Risk**	**Action Priority**
There is a risk that a hazardous materials spill will cause death or serious injury	Possible	Moderate	Medium	**2**
There is a risk that a hazardous materials spill will cause damage to or destroy infrastructure	Rare	Minor	Low	**7**

There is a risk that a hazardous materials spill will cause damage to or destroy property	Unlikely	Minor	Low	**6**
There is a risk that a hazardous materials spill will cause damage to or disruption of industry	Possible	Minor	Low	**5**
There is a risk that a hazardous material spill will impact on the social/cultural aspects of the community	Possible	Moderate	Medium	**3**
There is a risk that a hazardous materials spill will affect the economy	Possible	Minor	Low	**4**
There is a risk that a hazardous materials spill will cause damage to or destroy the environment	Likely	Moderate	High	**1**
Risk Statements: – Severe Storm	**Likelihood**	**Consequences**	**Level of Risk**	**Action Priority**
There is a risk that a severe storm will cause death or serious injury	Unlikely	Minor	Low	**4**
There is a risk that a severe storm will cause damage to or destroy infrastructure	Likely	Moderate	High	**2**
There is a risk that a severe storm will cause loss of or damage to property	Likely	Moderate	High	**1**
There is a risk that a severe storm will cause disruption to industry	Possible	Minor	Low	**6**
There is a risk that a severe storm will affect the economy of the community	Possible	Minor	Low	**5**
There is a risk that a severe storm will affect the social/cultural aspects of the community	Likely	Minor	Medium	**3**
There is a risk that a severe storm will cause loss or damage of the environment	Possible	Minor	Low	**7**

Risk Statements: Flash Flooding	Likelihood	Consequences	Level of Risk	Action Priority
There is a risk that flash flooding will cause death or serious injury	Unlikely	Minor	Low	**4**
There is a risk that flash flooding will damage to or destroy infrastructure	Possible	Minor	Low	**3**
There is a risk that flash flooding will cause loss or damage to property	Likely	Moderate	High	**1**
There is a risk that flash flooding will cause disruption to industry	Unlikely	Minor	Low	**5**
There is a risk that flash flooding will affect the economy of the community	Possible	Minor	Low	**2**
There is a risk that flash flooding will affect the social/cultural aspects of the community	Unlikely	Minor	Low	**6**
There is a risk that flash flooding will cause loss or damage to the environment	Unlikely	Minor	Low	**7**
Risk Statements: Riverine Flooding	**Likelihood**	**Consequences**	**Level of Risk**	**Action Priority**
There is a risk that a riverine flood will cause death or serious injury	Unlikely	Minor	Low	**7**
There is a risk that a riverine flood will damage or destroy infrastructure	Possible	Moderate	Medium	**3**
There is a risk that a riverine flood will cause loss of or damage to property	Almost Certain	Major	Extreme	**1**
There is a risk that a riverine flood will cause disruption to industry	Possible	Minor	Low	**6**
There is a risk that a riverine flood will affect the economy of the community	Possible	Minor	Low	**5**

There is a risk that a riverine flood will affect the social/cultural aspects of the community	Possible	Moderate	Medium	**2**
There is a risk that a riverine flood will affect the environment	Possible	Moderate	Medium	**4**
Risk Statements: Bush Fire	**Likelihood**	**Consequences**	**Level of Risk**	**Action Priority**
There is a risk that a bush fire will cause death or serious injury	Unlikely	Minor	Low	**5**
There is a risk that a bush fire will cause damage to or destroy infrastructure	Possible	Minor	Low	**2**
There is a risk that a bush fire will cause damage to or destruction of property	Possible	Minor	Low	**3**
There is a risk that a bush fire will cause damage to or disrupt[pt industry	Unlikely	Insignificant	Low	**7**
There is a risk that a bush fire will affect the economy of the community	Unlikely	Insignificant	Low	**6**
There is a risk that a bush fire will impact on the social/cultural aspects of the community	Possible	Minor	Low	**4**
There is a risk that a bush fire will cause damage to or destroy the environment	Likely	Moderate	High	**1**
Risk Statements: Structure Fire	**Likelihood**	**Consequences**	**Level of Risk**	**Action Priority**
There is a risk that a structure fire will cause death or serious injury	Almost Certain	Moderate	High	**1**
There is a risk that a structure fire will cause damage to or destroy infrastructure	Likely	Minor	Medium	**3**
There is a risk that a structure fire will cause damage to or the destruction of property	Almost Certain	Minor	Medium	**2**

There is a risk that a structure fire will cause damage to or disruption to industry	Possible	Minor	Low	**5**
There is a risk that a structure fire will impact on the social/cultural aspects of the community	Possible	Minor	Low	**6**
There is a risk that a structure fire will cause damage to or destroy the environment	Rare	Insignificant	Low	**7**

TOWN OF BASSENDEAN RISK REGISTER

TOWN OF BASSENDEAN - RISK REGISTER								
RISK No.	RISK STATEMENT	LIKELIHOOD RATING	CONSEQUENCE RATING	LEVEL OF RISK	PRIORITY (Workshop)	PRIORITY (LEMC)	FINAL	TREAT Y/N
01/10	There is a risk that if a 1:50 year or a 1:100 year riverine flood occurred there would be significant inundation of housing in the lower lying areas of Bassendean and Ashfield which will cause loss of or damage to those properties. There could also be some damage to council property.	Almost Certain	Major	Extreme	1	1	1	Y
02/10	There is a risk that if a rail transport emergency in the form of a derailment that death or serious injury to people would result. Rail commuters would be at risk of either death or receiving life threatening injuries as a result.	Almost Certain	Moderate	High	1			N
03/10	There is a risk that rail transport emergency will affect the social or cultural aspects of the community, dependant upon the type of incident significant community disruption may be caused through loss of the service for a long period of time.	Likely	Moderate	High	2			N
04/10	There is a risk that if a significant hazardous materials spill was to occur within the Town of Bassendean it will cause damage to or destroy the environment. The ToB places high emphasis on its local eco systems and biodiversity. These ecosystems such as wetlands and river quality may be damage due to seepage of chemicals through the drainage systems.	Likely	Moderate	High	1	2	2	Y
05/10	There is a risk that a severe storm will cause damage to or destroy infrastructure. Local government infrastructure in the form of halls, child care facilities and public amenities and government infrastructure such as schools is at risk of damage in severe weather events.	Likely	Moderate	High	7			N
06/10	There is a risk that a severe storm will cause loss of or damage to property. Local government and private property in the form of homes and business premises may suffer total loss or severe damage.	Likely	Moderate	High	1	5	5	Y

07/10	There is a risk that a flash flood will cause loss of or damage to property. Flash flooding occurs when localised heavy rain events cause a build up of runoff with drainage systems unable to cope. Flash flooding can occur in most parts of the Town of Bassendean.	Likely	Moderate	High	1	4	4	Y
08/10	There is a risk that if a bush fire occurs in the various parklands within the urban environment in the Town of Bassendean that it will cause damage to or destroy the environment. While some eco systems may regenerate over time, some such as endangered animal species or rare native plants will be destroyed.	Likely	Moderate	High	1			N
09/10	There is a risk that a structure fire that occurs in a private home, factory or building will cause death or serious injury to people.	Almost Certain	Moderate	High	1			N
10/10	There is a risk that if a severe storm event occurred that impacted on the Town of Bassendean it will affect the social and cultural aspects of the community	Likely	Minor	Medium	3			N
11/10	There is a risk that a riverine flood will cause damage to or destroy infrastructure. Certain parts of the Town of Bassendean are at risk of being impacted by a 1:50 or 1:100 year flood event. Council infrastructure such as roads and drainage systems may be damaged.	Possible	Moderate	Medium	3			N
12/10	There is a risk that a 1:50 or 1:100 year riverine flood will affect the social or cultural aspects of the community. People could be displaced from their homes and the community for long periods of time dependant upon the severity of the impact and damage caused.	Possible	Moderate	Medium	2	6	6	Y
13/10	There is a risk that a 1:50 or 1:100 year riverine flood will have an affect on the environment and cause damage to fragile riverine and wetland ecosystems.	Possible	Moderate	Medium	4	3	3	Y
14/10	There is a risk that structure fires will cause damage to or destroy infrastructure. Structure fire may not be isolated to private dwellings but may also include local business premises, factories which can in turn cause damage to public roads and other infrastructure nearby.	Likely	Minor	Medium	3			N
15/10	There is a risk that structure fires will cause damage to or destroy property. Local government property and private property could be lost as a result of a structural fire.	Almost Certain	Minor	Medium	2			N

16/10	There is a risk that a large scale road transport emergency in the form of an event involving the interaction between heavy transport vehicles and commuter vehicles will cause death or serious injury to people. The Town of Bassendean has large volumes of traffic passing along Guildford Road in close proximity to the urban environment, schools, shopping centres and sporting facilities.	Likely	Minor	Medium	1			N
17/10	There is a risk that a road transport emergency will cause loss of or damage to property. Because of the close proximity of major roads to residential areas there is the likelihood that property may be damaged.	Likely	Minor	Medium	2			N
18/10	There is a risk that a road transport emergency will cause loss of or damage to the environment. The eco systems in the Town of Bassendean are valued highly by the community and could be damaged by road transport emergencies.	Possible	Moderate	Medium	3			N
19/10	There is a risk that a rail transport emergency will cause loss of or damage to property. When rail transport emergencies occur they have the ability to cause damage to council property and private property.	Likely	Minor	Medium	3			N
20/10	There is a risk that a hazardous materials spill will harm human health. Hazardous materials are carried on main arterial roads throughout the Town of Bassendean and depending upon the severity of the spill could affect the cultural aspects of community life.	Possible	Moderate	Medium	2			N

TOWN OF BASSENDEAN RISK TREATMENT SCHEDULE

Risk No. 01/10

RISK STATEMENT: **DATE: 26/05/10**

There is a risk that if a 1:50 or 1:100 year riverine flood event occurred on the Swan River there would be significant inundation of housing in the lower lying areas of Bassendean and Ashfield which will cause **loss of or damage to those properties**. There could also be damage to Council property.

Likelihood	Consequence	Level of Risk	Risk Priority
Almost Certain	**Major**	**Extreme**	**1**

Vulnerability Data:

Traditionally riverine flooding occurs on the Swan River after heavy upstream rains over extended periods. Telemetry systems in place ensure that the community can be adequately warned. A heavy rain event does not always result in river levels sufficiently high to cause a riverine flood that would impact upon homes. Heavy rain events may saturate the catchment and raise the river levels to extraordinary levels primarily during winter periods.

Agency/Group/Persons with emergency risk management responsibilities:

BoM is the agency responsible for providing a flood forecasting and warnings to the community and operate flood telemetry throughout the Swan River catchment. FESA are the agency charged with response to flooding events. The WA Flood Plain Development Manual is currently in development for the Department of Water scheduled for completion by June 2010.

Existing prevention & preparedness strategies	Agency
Areas of the Town have been identified at risk of riverine flooding.	Department of Water
1:50 and 10:100 year flood level markers have been installed on selected Western Power poles in relevant areas	Town of Bassendean
Suggested prevention & preparedness options	
A project be undertaken to apply updated Department of Water data sets to the flood plain map of the area, review existing markers and adjust where necessary.	Town of Bassendean in partnership with Department of Water
Application for funding under NDRP	Town of Bassendean
Timeframe	
Priority task for NDRP 2010/11	

Risk No. 04/10

RISK STATEMENT: **DATE: 26/05/10**

There is a risk that if a significant hazardous materials spill was to occur within the Town of Bassendean it will cause **damage to or destroy the environment.** The Town of Bassendean places high emphasis on its local eco systems and biodiversity. These eco systems such as wetlands and river quality may be damaged due to seepage of chemicals through the drainage systems.

Likelihood	Consequence	Level of Risk	Risk Priority
Likely	Moderate	High	2

Vulnerability Data:

At all times of the year there is movement of hazardous materials on roads, the use of and storage of chemicals in containers, the use of hazardous materials of varying quantities in commercial premises and the storage of hazardous materials on industrial estates. There is anecdotal evidence of hazardous materials incidents occurring in neighbouring local government areas though there is no record of the ToB community being directly affected.

Agency/Group/Persons with emergency risk management responsibilities:

The Department of Consumer and Employment Protection (DoCEP) through its resources safety division regulates the storage of hazardous materials. The department deals with all applications for the storage of hazardous materials in reportable quantities. The local government may not be informed of those arrangements in most circumstances unless quantities are large. FESA is the HMA for hazardous materials incidents.

Existing prevention & preparedness strategies	Agency
Regulated storage and transport requirements	DoCEP
Westplan HAZMAT reviewed and tested annually	FESA, WAPol

Suggested prevention & preparedness options	
Recently revised Town of Bassendean drainage mapping meta data to be provided to Langate and FESA Spatial Land Information Platform–Emergeo (SLIP-EM).	Town of Bassendean

Timeframe

To be supplied immediately

Risk No. 13/10

RISK STATEMENT: **DATE: 26/05/10**

There is a risk that a 1:50 or a 1:100 year riverine flood will have an impact on the **environment** and cause damage to fragile riverine and wetland ecosystems.

Likelihood	Consequence	Level of Risk	Risk Priority
Possible	**Moderate**	**Medium**	**3**

Vulnerability Data:

Traditionally riverine flooding occurs on the Swan River after heavy upstream rains over extended periods. Telemetry systems in place ensure that the community can be adequately warned. A heavy rain event does not always result in river levels sufficiently high to cause a riverine flood that would impact upon homes. Heavy rain events may saturate the catchment and raise the river levels to extraordinary levels primarily during winter periods.

Agency/Group/Persons with emergency risk management responsibilities:

BoM is the agency responsible for providing a flood forecasting and warnings to the community and operate flood telemetry throughout the Swan River catchment. FESA are the agency charged with response to flooding events. The WA Flood Plain Development Manual is currently in development for the Department of Water scheduled for completion by June 2010.

Existing prevention & preparedness strategies	**Agency**
River foreshore maintained in good order	Town of Bassendean
Success Hill Reserve river banks maintained	Town of Bassendean
Ashfield Flats environmental project	Town of Bassendean

Suggested prevention & preparedness options

Timeframe

Risk No. 08/10

RISK STATEMENT: **DATE: 26/05/10**

There is a risk that is a bush fire occurs in the various parklands within the urban environment in the Town of Bassendean that it will cause **damage to or destroy the environment**. While some eco systems may regenerate over time, some such as endangered animal species or plants will be destroyed.

Likelihood	Consequence	Level of Risk	Risk Priority
Likely	Moderate	High	4

Vulnerability Data:

Bush fires can occur annually within the Town of Bassendean and are restricted to the specific areas of Success Hill, The Ashfield Flats, Pryton and the abandoned Swan Valley Noongar settlement on Lord Street. These areas range from open grassland to low scrub and heavily wooded areas. The fire behaviour can range from very mild to extremely unpredictable dependant on fuel loads, weather conditions, topography etc. The most severe fires occur manly from November through to March. There may be little or limited warning to the community in the initial stages of a fire and the duration and impacts are unpredictable.

Agency/Group/Persons with emergency risk management responsibilities:

There is a continual public awareness of the consequences and reduction methods for bush fire throughout the State. The Town of Bassendean carries out fuel load reduction work and weed control to reduce the fire hazard. Property owners are required to maintain fire breaks prior to November each year. FESA is the agency responsible for response to bush fires on the urban fringe and in bush lands that are encompassed within the Gazetted Fire District.

Existing prevention & preparedness strategies	Agency
Bassendean Volunteer Bush Fire Brigade	Town of Bassendean
FESA Fire and Rescue Service Gazetted Fire District	FESA
Local fire break laws and enforcement program	Town of Bassendean
Neighbouring local governments	Partner Local Governments

Suggested prevention & preparedness options	
Identify areas where a concerted weed eradication program would significantly reduce the fuel load. Seek funding assistance from NDRP	Town of Bassendean

Timeframe

2010/11

Risk No. 06/10

RISK STATEMENT: **DATE: 26/05/10**

There is a risk that a severe storm will cause loss of or **damage to property**. Local government and private property in the form of homes and business premises may suffer loss or severe damage as a result of winter storms.

Likelihood	Consequence	Level of Risk	Risk Priority
Likely	Moderate	High	5

Vulnerability Data:

Severe storm events affect the Perth metropolitan area including the Town of Bassendean on an annual basis. Storms can occur throughout the year but are normally confined to the period between May and August. Wind gusts are common up to 100 km/h and damage to homes and business from hail and flash flooding can occur. Tornados have often been associated with severe winter weather events. Storms can cause disruptions to the power grid for extended periods.

Agency/Group/Persons with emergency risk management responsibilities:

The Bureau of Meteorology ensures that severe weather alerts are forecast and broadcast to the community. Public awareness is also taken up by FESA and local government through public awareness campaigns. Local government and Western Power conduct tree pruning activities. FESA is the HMA responsible for flooding and storm damage response.

Existing prevention & preparedness strategies	Agency
FESA Prepare and distribute Storm Safe information kits annually	FESA
Storm Safe information published to Bassendean briefings prior to the commencement of the winter storm season	Town of Bassendean

Suggested prevention & preparedness options	
Regular maintenance of local drains and catchments	Town of Bassendean
Maintenance program to be monitored	Town of Bassendean

Timeframe

Ongoing

Risk No. 12/10

RISK STATEMENT: **DATE: 26/05/10**

There is a risk that a 1:50 or a 1:100 year riverine flood will affect the **social or cultura**l aspects of the community. People could be displaced from their homes and the community for long periods of time dependant upon the severity of the impact and damage caused.

Likelihood	Consequence	Level of Risk	Risk Priority
Possible	**Moderate**	**Medium**	**6**

Vulnerability Data:

Traditionally riverine flooding occurs on the Swan River after heavy upstream rains over extended periods. Telemetry systems in place ensure that the community can be adequately warned. A heavy rain event does not always result in river levels sufficiently high to cause a riverine flood that would impact upon homes. Heavy rain events may saturate the catchment and raise the river levels to extraordinary levels primarily during winter periods.

Agency/Group/Persons with emergency risk management responsibilities:

BoM is the agency responsible for providing a flood forecasting and warnings to the community and operate flood telemetry throughout the Swan River catchment. FESA are the agency charged with response to flooding events. The WA Flood Plain Development Manual is currently in development for the Department of Water scheduled for completion by June 2010.

Existing prevention & preparedness strategies	Agency
Areas of the Town have been identified at risk of riverine flooding.	Department of Water
1:50 and 10:100 year flood level markers have been installed on selected Western Power poles in relevant areas	Town of Bassendean

Suggested prevention & preparedness options	
Review Local EM Arrangements and recovery plan to ensure compliance with State EM Plans and Policy	Town of Bassendean

Timeframe

2010/11

7. Project Evaluation

The evaluation of this project will be undertaken by the Town of Bassendean LEMC and will be measured against the efficiency and effectiveness criteria outlined below:

Effectiveness objectives

1. Community engaged to identify risks to the Town of Bassendean.
2. Community identified risks are evaluated, analysed and documented.
3. Risk Register and Treatment Schedule produced and adopted by the LEMC.

Effectiveness indicators

Indicator	What	When	Achieved
Indicator 1	• Collate returned community surveys • Compile community survey report	February 2010	Yes
Indicator 2	• Community identified risks are evaluated; • Risk statement produced and documented, • Community identified risks are analysed;	May 2010	Yes
Indicator 3	• Risk Register populated with risk statements; • Risks are prioritised; • Treatment Schedule produced; • Treatment Schedule adopted by LEMC.	June 2010	Yes

Efficiency objectives

The efficiency objectives are:

- The project was delivered on time and on budget;
- The requirements of the AWARE Funding Contract have been addressed

Efficiency indicators

The efficiency indicators are:

1. The project was delivered on time and on budget
    - Actual expenses versus budget
    - Timetable was realistic.

2. The requirements of the AWARE funding contract have been addressed.
    - The project report is endorsed by the LEMC;
    - The project report is endorsed by the funding body FESA.

The information needed to collect to measure success for each efficiency indicator is as follows:

Indicator	**What**	**When**	**Achieved**
Indicator 1	• Budget reconciliation report • Project timelines versus actual timelines	July 2010	Yes
Indicator 2	• Actual outcomes delivered by the project compared to AWARE contract requirements • Project Report endorsed by LEMC • Project Report endorsed by funding body FESA	July 2010	Yes

ANNEX A – PROJECT PLAN

TOWN OF BASSENDEAN AWARE PROJECT

AWARE Stage 1

Goal

The aim of the AWARE project is to improve protection of life, property, the environment and enhance community safety and resilience.

Objective

The objective of this project will be to create a safer community by identifying, analysing, evaluating risks and recommending treatment options based on Emergency Management Australia's Emergency Risk Management Applications Guide and the Western Australian Emergency Risk Management Guide

Outcomes for Stage 1

- Understanding the context
- Develop a project management plan (including training plan)
- Develop a communication and consultation plan
- Draft risk evaluation criteria
- Develop a list of stakeholders (Internal & external)
- Develop a list of hazards, within the community and environment (sources of risk)
- Develop a description of community vulnerability (elements at risk)
- Develop risk statements
- Develop a community profile
- Develop a community consultation and marketing plan
- Produce progress reports to FESA and LEMC
- Timeline/Tasks/Responsibilities/Resources for Stage 2

Task	Responsibility	Resource	Date
Establish Project Committee			June 09
ERM Training			
AWARE Introduction to Emergency Risk management	FESA	ToB venue/catering/stationary	TBA
AWARE Introduction to recovery management	FESA	ToB venue/catering/stationary	TBA
Establish the Context			
Identify strategic issues for consultation and community issues that will influence or impact upon the project.	Project team	ToB Venue/catering/stationary	Aug 09
Establish the management framework	Project team	ToB venue/catering/stationary	Aug 09

Develop and draft communication and consultation plan	Project team	ToB venue/catering/stationary	Aug 09
Develop draft risk evaluation criteria	Project team	ToB venue/catering/stationary	Aug 09
Develop list of stakeholders	Project team	ToB venue/catering/stationary	Aug 09
Review project plan and present to LEMC	Project team	ToB venue/catering/stationary	Aug 09
Develop a marketing plan	Project Team	ToB venue/catering/stationary	Aug 09
Identify Risk			
Descriptions of sources of risk and elements at risk	Project team	ToB venue/catering/stationary	Aug 09
Community input (surveys and workshops)	Project Coordinator/Project Team	Stationary/printing/postage/ advertising costs	Aug/Sep 09
Collate survey	Project Coordinator		Sep 09
Produce a risk identification relationship matrix	Project team	ToB venue/catering/stationary	Oct 09
Produce risk statements relating to each source of risk, the element at risk and consequences	Project Team	ToB venue/catering/stationary	Oct 09
Produce interim progress report to Local Emergency Management Committee and FESA	Project Coordinator		Nov/Dec 09
Monitor and review process	Project Coordinator		Jan 10
AWARE STAGE 2			
Analyse & Evaluate Risk			
Establish level of risk and set risk priority	Project Coordinator/ workshop participants	Meeting rooms, stationary	May 2010
Indentify options to treat priority risks	Project Coordinator/workshop participants		May 2010
Monitor and review	Project team		May 2010

AWARE STAGE 3			
Treat Risk			
Identify treatment options	Project Team/LEMC		June 2010
Evaluate treatment options	Project team/LEMC		June 2010
Produce final report for Local Emergency management Committee and FESA	Project Coordinator		June 2010
Implement preferred treatment options	LEMC/Council	Identified funding opportunities through NDRP	2010/11
Monitor and review	LEMC	On going program of review	Ongoing

MARKETING PLAN

TOWN OF BASSENDEAN AWARE PROJECT

Executive Summary

The purpose of the marketing plan is to identify and timeline all promotional opportunities for the AWARE Project. It is important that the branding of the program is recognisable as being AWARE funded and that the FESA and Town of Bassendean Logos appear together on all printed material. It is also of importance that the community gains an understanding and appreciation of the risk management process.

Marketing Strategies

The following strategies will assist the Town of Bassendean to get in touch with people who might want to support the AWARE Project in some way:

- Staying in touch with Stakeholders
  The Marketing Plan will help us stay in contact with Stakeholders and the community.

- Building public legitimacy, confidence or support:
  As our marketing gains attention it is hoped that our profile increases, public confidence and awareness in and of the AWARE Project grows as a consequence.

- Brand Recognition:
  By using the AWARE and Town of Bassendean Logo's it is expected to create further identification of and for the project.

Objectives

To create community awareness of the AWARE project, risk management and the intended outcomes

Strengths

- Government Backing – Changes to Legislation (EM Act 2005 and EM Regulations 2006)
- Local Knowledge/ Local Participants
- Project owned and controlled by the LEMC
- Group is already involved in Emergency Services Provision
- Strong Community Spirit and identity
- Strong Local Volunteer Commitment (Across Community)

Weaknesses

- Lack of consultation with community in regards to emergency processes
- Lack of communication strategy in regards to emergency plans
- Staging of process into three phases leads to lack continuity
- Process of risk management has not been formally undertaken by the ToB previously
- AWARE Logo does not have Brand Recognition in Town of Bassendean

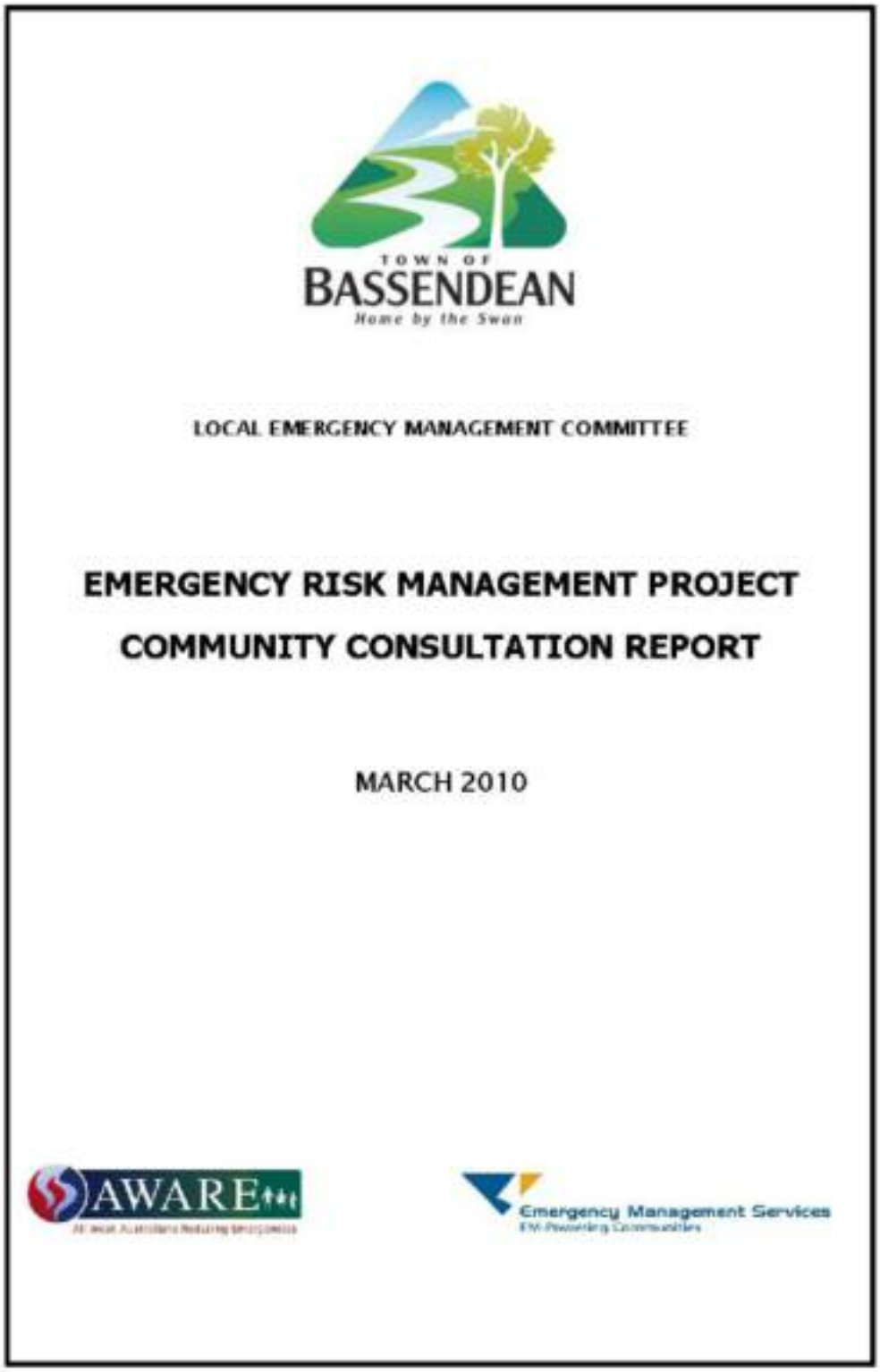
Opportunities

- Actively involve the community for the first time in the emergency management decision making process
- Increase the profile of the AWARE program to the wider community
- Introduce emergency risk management into local government business planning processes
- Local government staff receives ERM training and retain ERM knowledge.

Threats

- Grant funding is not approved
- The community fails to engage in the process

ANNEX B – COMMUNITY CONSULTATION REPORT



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Introduction

Western Australia is a diverse state that presents a variety of hazards and risks that differ from one local government area to another. The Town of Bassendean is located approximately 10 kilometres north-east of Perth and 5 minutes from the Swan Valley vineyards. With a total area of 11 square kilometres, the Town is bounded by the Swan River, the City of Swan to the north and the City of Bayswater to the west. It has a river frontage of 7 kilometres.

The Swan River provides a natural drain and functional ecosystem. The trees and shrubs, rushes and sedges prevent soil erosion along the river. The nearby wetlands provide a natural habitat for frogs, water birds and tortoises. Natural parklands waterways and wetlands are a natural homeland for diverse animals, fish and bird life.

Beginning as a small settlement called West Guildford in 1829, Bassendean was renamed in 1922. Bounded on two sides by the Swan River, Bassendean became a separate local authority in 1901. The Town now has a mix of housing, parks and recreational areas, as well as light industry and commercial areas. It also has riverside public open space, some of which was land used by Aboriginal people for thousands of years as ceremonial places.

Although on the face of it Bassendean could be mistaken for a small country town the harsh reality is that it is surrounded by all the trappings of a large, modern industrial city and the risks that come with that close proximity.

Well served by metropolitan train and bus services, Bassendean is collocated with industrial parks on the south and north side of Guildford Road. There is clearly a need to identify and manage a large number of hazards that may present in the Town of Bassendean. In order that these hazards may be identified and analysed, the Community Emergency Risk Management Project (CERMP) was commenced in November 2009.

In Western Australia and nationally, the management of emergencies and disasters is conducted under a process known as the *all hazards approach* to emergency management. This process is described as follows:

Prevention – Measures taken to eliminate or reduce the incidence or severity of emergency events;

Preparedness – Measures taken to ensure that, should an emergency occur, communities, resources and services are capable of coping with the effects;

Response – Measures taken in anticipation of, during and immediately after and emergency to ensure its effects are minimised;

Recovery – Measures which support emergency affected individuals and communities in the reconstruction of the physical infrastructure and restoration of emotional, economic, environmental and physical wellbeing.

The emergency risk management process assists the local government to understand the dynamics of each identified hazard and put into place local plans and mitigation strategies aimed at significantly reducing the impact on the community should an emergency occur.

Project Funding

Identifying the risks associated with natural onset and man caused hazards and how they may impact upon the Town of Bassendean is a task that all local governments need to undertake every five years to ensure they comply with their responsibilities under the State's emergency management legislation and policy. In addition to the legislative duties, the Town of Bassendean has a moral and legal obligation to ensure that everything is done that may be reasonably done to protect its citizens, its built and natural environments against the affects of known hazards. As the identification of risks to the community is also a State and national responsibility, funding is provided for this purpose. In Western Australia this fund is known as the *All West Australians Reducing Emergencies* (AWARE) *Fund.* An AWARE Project committee was formed from members of the Town of Bassendean Local Emergency Management Committee to oversee the project.

The Risk Management Process

The Emergency Risk Management (ERM) process forms the foundation of local emergency management planning and should be undertaken at least every five years in order to account for the changing face of the landscape and the community generally. The ERM supports the negotiation and development of shared responsibilities necessary for the establishment of effective emergency management arrangements within local governments.

The current standard for analysing risk AS/NZS ISO 31,000:2009. The CERM project has also utilised the guidance of the following publications:

Western Australian Emergency Risk Management Guide (FESA/WALGA publication)

Australian Emergency Risk Management Manual 5 (Emergency Management Australia publication)

Project Stages

This project has three distinct stages:

Stage One – Community risk survey

Stage Two – Analysis and evaluation of the risks

Stage Three – Treat the risks (mitigation)

Stage One – Community Survey

Consulting with the community is an important and basic function of emergency risk management. For the whole process to have relevance it must at its base have community input.

In December 2009, a community survey was distributed by post to the households and businesses within the Town of Bassendean. The survey was designed and discussed by the AWARE Committee before distribution to ensure that all relevant risks that could impact on the Town of Bassendean had been identified. A total of 5800 surveys were distributed to the community with 221 being returned representing a return rate of 12.8 percent. Data entry for the returned surveys was completed with the following risks being identified by the community as being most likely to occur within the Town of Bassendean.

Community Survey Results

The community identified the following sources of risk as having the greatest likelihood of occurring in the Town of Bassendean:

Likelihood

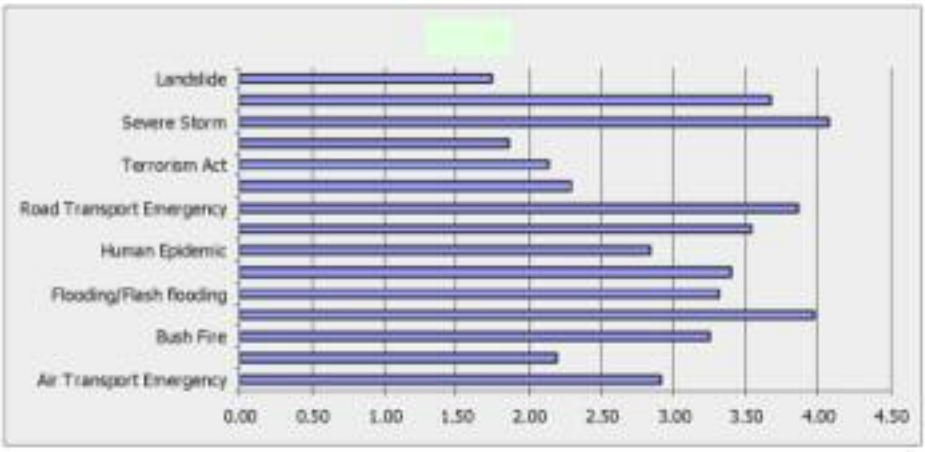
Response to Question 1

In your opinion what is the likelihood (the likelihood that an emergency will impact on the Town of Bassendean) and consequence (the implications for the community if the event actually occurred) of the following emergencies occurring within the Town of Bassendean? Please rate all listed emergencies by placing a circle around the appropriate number for likelihood and consequence. E.g. The likelihood of a terrorist attack on the Town of Bassendean is Low while the consequence if one was to occur would be high

Answer Options	1	2	3	4	5	6	Rating Average	Response Count
Air Transport Emergency	43	48	50	45	20	10	2.91	216
Earthquake	77	65	42	20	4	6	2.19	214
Bush Fire	33	43	45	46	36	15	3.25	218
Structure Fire	8	23	52	50	56	30	3.97	219
Flooding/Flash flooding	26	41	51	50	36	13	3.31	217
Hazardous Materials Spills	22	34	53	67	28	14	3.40	218
Human Epidemic	46	56	46	39	22	10	2.84	219
Rail Transport Emergency	14	33	53	66	39	11	3.54	216
Road Transport Emergency	14	21	49	55	53	25	3.86	217
Dam/Water storage Failure	79	66	29	24	12	7	2.29	217
Terrorism Act	95	53	36	15	9	8	2.14	216
Space Re-entry Debris	125	43	25	11	8	6	1.86	218
Severe Storm	9	17	43	61	55	32	4.07	217
Critical infrastructure Failure (water, gas, power etc)	16	31	52	48	43	24	3.67	214
Landslide	122	57	22	10	5	2	1.74	218
						answered question		**219**
						skipped question		**1**

Severe storm event – Average rating 4.07
Structure Fire – Average rating 3.97
Road Transport Emergency – Average rating 3.86
Rail Transport Emergency – Average rating 3.54
Hazardous Materials Spills – Average rating 3.40
Flooding/Flash Flooding – Average rating 3.31
Bushfire – Average rating 3.25

A rating of 4 indicates that in the opinion of the majority surveyed, the likelihood of the particular event occurring is almost certain to occur while a ranking of 3 would indicate that an event is likely to occur.



Consequences

Responses to Question 2

This question deals with Consequences (the affect on the community) if one of the below listed emergency events actually occurred within the Town of Bassendean. Please rate the consequences with 1 being low consequence and six being catastrophic consequences for each hazard listed below

Answer Options	1	2	3	4	5	6	Response Count
Air Transport Emergency	16	21	29	57	51	38	212
Earth Quake	16	24	39	57	42	35	213
Bush Fire	9	16	44	58	53	31	211
Structure Fire	8	16	60	64	39	25	212
Flood/Flash flooding	9	23	44	64	49	24	213
Hazardous Materials Spills	6	18	50	59	55	25	213
Human Epidemic	8	17	40	54	59	36	214
Rail Transport Emergency	6	26	57	65	43	16	213
Road Transport Emergency	5	32	54	66	38	19	214
Dam/Water Storage Failure	25	28	40	43	40	36	212
Terrorism	27	20	38	38	50	38	211
Space Debris re-entry	43	32	55	29	26	27	212
Severe Storm	5	6	33	60	70	37	211
Critical Infrastructure failure	7	13	37	49	63	45	214
Landslide	53	28	52	36	27	18	214
				answered question			**217**
				skipped question			**3**

The community was asked to rate the consequence level for each of the identified risks. The consequence level is used to gauge the impact a source of risk like a severe storm would have on the community if such an event was to impact on the

Town of Bassendean or one of its suburban areas. Following is a list of the sources of risk the community considered would have the greatest impact or highest consequence for Bassendean.

The following sources of risk rated 5.0. Translated for qualitative analysis this means that the community rates them as having a major to catastrophic impact on the community if an event was to occur.

Human Epidemic

Severe Storm

Terrorism and

Critical Infrastructure Failure

The following risk

The following sources of risk rated 4.0 and translated for qualitative analysis this means that the community rated these sources of risk as having a moderate to major impact on the community should an event occur.

Road Transport Emergency

Rail Transport Emergency

Structure Fire

Flash Flooding

Bushfire

Air Transport Emergency

Earth Quake

Demographics

The next three questions asked in the survey were about the demographic makeup of the survey respondents i.e. sex, age and suburb.

The demographic details are represented as follows:

What is your gender?		
Answer Options	**Response Percent**	**Response Count**
Male	35.6%	78
Female	64.4%	141
	answered question	**219**
	skipped question	**1**

Please select your age range.		
Answer Options	**Response Percent**	**Response Count**
18-24	0.5%	1
25-35	8.2%	18
36-45	19.6%	43
46-55	22.4%	49
56-65	24.7%	54
65-75	13.7%	30
76 and over	11.0%	24
	answered question	**219**
	skipped question	**1**

In which of the following localities of the Town of Bassendean do you live?		
Answer Options	**Response Percent**	**Response Count**
Ashfield	10.1%	22
Bassendean	74.7%	162
Eden Hill	15.2%	33
	answered question	**217**
	skipped question	**3**

Stage Two- Analyse and Evaluate Risk

Stage 2 of the AWARE ERM process will commence shortly. The Local Emergency Management Committee (LEMC) will examine the results of the community survey and consider which of the identified natural and man made hazards will require further analysis. At least two workshops will be conducted in-line with the laid down procedures for qualitative and quantitative risk analysis. Theses workshops will examine historical data sets including the State Risk Register, a document that lists all of the natural hazards for Western Australia along with the current treatment strategies being undertaken by the Hazard Management Agencies (HMA). The workshops will be hosted by the Town of Bassendean and will include members of the LEMC, members of the District Emergency Management Committee (DEMC) personnel from the HMAs and invited members of the community.

The analysis phase will again require that the sources of risk and consequences are examined in detail and this analysis process will be supported by all the expert opinion and statistical data available. An informed decision will then be made as to which risks should be assigned further treatment and in what order or priority. The results of these decisions and deliberations will form the basis of a risk matrix and treatment schedule for the Town of Bassendean for the next five years.

Stage Three- Treating the Risks

Stage 3 is outside the scope of this current project and will require further funding in partnership with other government agencies where required. The first two stages are critical to ensuring that the Town of Bassendean is able to gain funding through the

Federal process for any mitigation works it will undertake. A full report of the emergency risk management project will be made available for public scrutiny at the conclusion of this project in June 2010.

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ANNEX C: Community Survey Letter

Dear Resident,

You have been selected to express your views on emergency management within the Town of Bassendean. This survey is part of the 'All West Australians Reducing Emergencies' (AWARE) Project, a joint initiative between the Town of Bassendean and the Fire and Emergency Services Authority (FESA). This survey will assist with the review of Local Emergency Management Arrangements, which are used to effectively coordinate arrangements in the event of an emergency in order to minimise damage, injury and loss of life.

The purpose of the survey is to consult with the community on major emergencies that may threaten the safety and wellbeing of the community and environment within the Town of Bassendean. The survey questions are for information purposes only and refer to potential emergency situations; **they are not intended to cause any alarm or feelings of insecurity**.

The survey will take approximately 10 minutes to complete and **all personal details will remain confidential and anonymous.** All information collected will be summarised in a report and no individuals will be identified. To thank you for your participation we are offering five (5) people the chance to win a First Aid Kit. All entry forms will be separated from the survey forms when first received to ensure confidentiality and anonymity of the surveys. If you agree to participate, simply complete the survey and entry form, and return them in the reply paid envelope provided by 10 November 2006. All winners will be notified by mail.

Alternatively, the survey can be completed on line through the Town of Bassendean web site. To access the web site, go to www.bassendean.wa.gov.au 'Town of Bassendean AWARE project' and follow the links. If you have any queries regarding this survey please do not hesitate to contact the Project Officer, Sharna Murton on 9377-7480. Thank you for taking the time to participate in this important and worthwhile project.

Good luck in the draw!

Yours Sincerely

WG (Tina) Klein JP Mayor

ANNEX D: Community Survey

Please complete the following survey.

1. **In your opinion** what is the likelihood (the likelihood that an emergency will impact on the Town of Bassendean) and consequence (the implications for the community if the event actually occurred) of the following emergencies occurring within the Town of Bassendean? Please rate ***all*** listed emergencies by placing a circle around the appropriate number for likelihood and consequence.

   E.g. The likelihood of a terrorist attack on the Town of Bassendean is Low while the consequence if one was to occur would be high

Risk Ranking

Type of Emergency	Likelihood		Consequence	
	Low	High	Low	High
Air Transport Emergency	1 2 3 4 5 6		1 2 3 4 5 6	
Earth Quake	1 2 3 4 5 6		1 2 3 4 5 6	
Bush Fire	1 2 3 4 5 6		1 2 3 4 5 6	
Structure Fire	1 2 3 4 5 6		1 2 3 4 5 6	
Flood/Flash Flooding	1 2 3 4 5 6		1 2 3 4 5 6	
Hazardous Materials Spills	1 2 3 4 5 6		1 2 3 4 5 6	
Human Epidemic	1 2 3 4 5 6		1 2 3 4 5 6	
Rail Transport Emergency	1 2 3 4 5 6		1 2 3 4 5 6	
Road Transport Emergency	1 2 3 4 5 6		1 2 3 4 5 6	
Dam/ Water Storage Failure	1 2 3 4 5 6		1 2 3 4 5 6	
Terrorism	1 2 3 4 5 6		1 2 3 4 5 6	
Space re-entry Debris	1 2 3 4 5 6		1 2 3 4 5 6	
Severe Storm	1 2 3 4 5 6		1 2 3 4 5 6	
Building Collapse	1 2 3 4 5 6		1 2 3 4 5 6	
Critical Infrastructure Failure (Water, Power, Gas, Sewerage)	1 2 3 4 5 6		1 2 3 4 5 6	
Civil Disobedience	1 2 3 4 5 6		1 2 3 4 5 6	

2. In an emergency community assets may be at risk of damage or loss. What is the risk of loss and how much do you value the following assets? Please rate ***all*** listed assets by placing a circle around the appropriate number.

Please rate the risk of loss/damage and the values of the following community assets.

Type of Asset	Asset Loss/Value	
	Risk of Loss	Value
	Low High	Low High
Hospitals/Medical Centres Aged Care Facilities	1 2 3 4 5 6	1 2 3 4 5 6
Residential Buildings (Homes)	1 2 3 4 5 6	1 2 3 4 5 6
Utilities (water, power, gas)	1 2 3 4 5 6	1 2 3 4 5 6
Roads, Rail systems	1 2 3 4 5 6	1 2 3 4 5 6
Schools, Child Care Facilities	1 2 3 4 5 6	1 2 3 4 5 6
Public Buildings and Recreational Facilities	1 2 3 4 5 6	1 2 3 4 5 6
Commercial Buildings	1 2 3 4 5 6	1 2 3 4 5 6
Town Administration/ Government Centres	1 2 3 4 5 6	1 2 3 4 5 6
Industrial Areas	1 2 3 4 5 6	1 2 3 4 5 6
Cultural, Religious Icons	1 2 3 4 5 6	1 2 3 4 5 6
Radio, Television Stations	1 2 3 4 5 6	1 2 3 4 5 6
Emergency Service Facilities (Police Fire Ambulance)	1 2 3 4 5 6	1 2 3 4 5 6
Natural environment i.e. bush land or foreshore	1 2 3 4 5 6	1 2 3 4 5 6
Other Assets.....	1 2 3 4 5 6	1 2 3 4 5 6

DEMOGRAPHICS

By recording the demographics of the person completing the survey, the AWARE Project Committee can determine the variation of importance, if any, of the survey results in relation to gender, age group, suburb and residence.

The following is to be completed by the person answering the questionnaire. Please select the appropriate information by placing a tick or cross in the appropriate box.

3. Gender ☐ Male ☐ Female

4. Please select your age group

☐ 18-24 ☐ 25- 35 ☐ 36-45 ☐ 46- 55 ☐ 56-65

☐ 65-75 ☐ 76 and over

5. In which of the following suburbs of the Town of Bassendean do you live?

☐ Ashfield ☐ Bassendean ☐ Eden Hill

6. Are you interested in becoming a volunteer with any of the following community organisations?

☐ SES ☐ Volunteer Bush Fire Brigade

7. Are there any comments you would like to make regarding major risks or emergency management in your area?

_____

_____

_____

_____

8. If an emergency was occurring in your area, by which of the following methods would a broadcast warning message best reach you?

☐ ABC Radio ☐ Commercial Radio ☐ Television ☐ Mobile text message

☐ Email ☐ A combination of these

Thank you for your participation. Please complete this section to be included in the prize draw with a chance to win a First Aid Kit to the value of $50 each. (Winners will be notified by mail)

Name: _____

Address: _____

Contact Phone Number: _____

ANNEX E: Community News Article

This is a great opportunity to gain some professional development in the Arts and to increase your skills in the area of visual arts. This training is free. Please register your interest by Friday, 21 May.

When things go pear shaped!

"Are you well enough prepared? When things go pear shaped—and it's a matter of when, rather than if—can you say that you will be in a position to respond effectively to an emergency situation?" asked Assistant Police Commissioner John McRoberts during a visit to the Town.

Flood, industrial fire, rail crash—these are but a few of the risks identified by residents as being significant in a recent survey of all households in the Town of Bassendean.

For many years, Council has had a Local Emergency Management Committee in place. The Committee is responsible for developing and maintaining an up-to-date Emergency Management Plan. Council has recently been successful in acquiring a $30,000 grant from FESA from their All West Australians Reducing Emergencies (AWARE) funding and has employed WALGA Emergency Services to work with the Town's Local Emergency Management Committee to review and amend the Local Emergency Risk Profile and work with the community on community preparedness and mitigation strategies.

In recent times we hear in the media, "Enact your Fire Evacuation Plan now!" Developing a personal evacuation plan requires thought and consideration. The Town is hosting a feedback workshop on the survey results and on the steps individuals can take to protect their property and safety.

Residents interested in attending the workshop, which will be held on Saturday 24 April from 9.30am to 12.00pm are encouraged to register their interest by calling Julie Hein on 9377 8073 or emailing jhein@bassendean.wa.gov.au on or before Friday 16 April.

ANNEX F: Risk Analysis Workbook Example

LOCAL EMERGENCY MANAGEMENT COMMITTEE

AWARE Project Stage 2

EMERGENCY RISK MANAGEMENT WORKSHOPS

Workbook

ROAD TRANSPORT EMERGENCY
RAIL TRANSPORT EMERGENCY
HAZARDOUS MATERIALS SPILLS

FACILITATOR:	John Lane, **Western Australian Local Government Association**
LOCATION:	Town of Bassendean, 48 Old Perth Road, Bassendean
Date:	12 April 2010
Time:	1300hrs – 1700hrs

Road, Rail, & HAZMAT

Work Shop Program

1.00pm	Introduction
1.10pm	Review Description of Sources of Risk & Consequences
1.30pm	Existing Treatments
2.00pm	Review Existing Risk Statements
2.30pm	Determine Consequence Rating
3.00pm	Break for refreshments
3.15pm	Determine Likelihood Rating
3.45pm	Determine Level of Risk
4.00pm	Identify Further Treatment Options
4.30pm	Allocate Treatment Priority
4.45pm	Monitor and Review/Workshop Evaluation
5.00pm	Closure

WORK BOOK OVERVIEW

The purpose of this work book is to gather information from workshop participants through activities conducted during the workshop. When participating in an activity, any notes or comments should be written in the workbook against the relevant item. On conclusion of the workshop, the workbook will be collected and the information will be collated and summarised to ensure the workshop outcomes are met. The workbook also provides a documented record of the process undertaken which will support any future activities carried out during the emergency risk management project.

Though the activities are mainly table and group focused, please ensure that any notes or comments made individually are documented in your workbook. Throughout the workshop, if you have any comments, suggestions or ideas, feel free to make notes on any page in the workbook.

NOTE: Due to the intensity of the program, there maybe times where discussion needs to be limited. If you have a question or a comment that is not addressed during the workshop, please make note of it in the workbook and individual follow up will occur.

Once the workshop is complete, please hand in the workbooks for collection. The information collated from the workshop will be documented and when the final report has been developed, a copy will be forwarded to each participant for their information.

The Town of Bassendean community thanks you for assisting with the emergency risk management process and helping to make our community a safer community to live and work in. We look forward to working with you into the future.

AWARE Project Definitions

The following definitions apply throughout the presentation and workbook for the purposes of the AWARE Project:

ECONOMY – when referring to consequences, 'economy' is described as the loss of income, labour, public/business confidence, etc

EMERGENCY - an event, actual or imminent, which endangers or threatens to endanger life, property or the environment, and which is beyond the resources of a single organisation or which requires the coordination of a number of significant emergency management activities.

NOTE: The terms "emergency" and "disaster" are used nationally and internationally to describe events that require special arrangements to manage the situation. "Emergencies" or "disasters" are characterised by the need to deal with the hazard and its impact on the community.

The term "emergency" is used on the understanding that it also includes any meaning of the word "disaster".

EMERGENCY MANAGEMENT - is a range of measures to manage risks to communities and the environment. It involves the development and maintenance of arrangements to prevent or mitigate, prepare for, respond to, and recover from emergencies and disasters in both peace and war.

EMERGENCY RISK MANAGEMENT – A systematic process that produces a range of measures that, on being implemented, contributes to the safety and wellbeing of communities and the environment.

ENVIRONMENT - when referring to consequences, the' environment' is described as the loss of ecosystems of the natural world, both plant and animal, air quality, water quality, soil quality, etc

HAZARD - a situation or condition with potential for loss or harm to the community or the environment.

INDUSTRY – when referring to consequences, 'industry' is described as the loss of businesses that supplement the economy through tourism, manufacturing, transportation, shopping centres, etc

INFRASTRUCTURE – when referring to consequences, 'infrastructure' is described as community lifelines/services and community infrastructure. Lifelines/services include communications, water, gas power, transportation networks, etc and community infrastructure includes community facilities (recreation grounds, public halls, etc), hospitals, schools, etc

LIFELINES – systems or networks that provide for the circulation of people, goods, services and information upon which health, safety, comfort and economic activity depend.

PEOPLE – when referring to consequences, 'people' are described as the loss of health (life, injury, mental and physical health, etc)

PROPERTY - when referring to consequences, 'property' is described as the loss of assets, structures, stock, etc.

RISK - a concept used to describe the likelihood of harmful consequences, arising from the interaction of hazards, communities and the environment.

SOCIAL & CULTURAL - when referring to consequences, 'social and cultural' is described as the loss of social networks (community and sporting groups, etc), and cultural networks (religious and ethnic, heritage buildings, etc).

DESCRIPTION OF SOURCE OF RISK

SOURCE OF RISK : Road Transport Emergency

Description

The Town of Bassendean has an extensive road network maintained by the Town and Main Roads. The roads are utilised by private and commercial vehicles, with the main arterial roads (Guildford Road, Railway Parade, Collier Road, Walter Road and Morley Drive) being utilised by a large variety of heavy vehicular traffic who may carry dangerous goods, heavy machinery, livestock, etc at all times of the day.

Though road transport emergencies are uncommon, the main arterial roads are immediately adjacent to residential areas and an incident could have a varying impact on the community and receivers/deliverers of any goods that may be lost.

Driver management (e.g. fatigue, drugs, etc) and vehicle maintenance issues and policies developed by and enforced by transport companies could reduce future incidents from occurring. Correct road maintenance by state and local governments will ensure road suitability for vehicular traffic movement. The Department of Planning and Infrastructure addresses issues by monitoring and keeping current nationally-consistent compliance in the road transport industry, improved road safety, and better protection for infrastructure and the environment. The Western Australian Police conduct Road Safety Education campaigns and enforces relevant legislation to reduce the occurrence of Road Transport Emergencies and the Town of Bassendean is a member of the Roadwise program.

Consequences

PEOPLE	PROPERTY	ENVIRONMENT	ECONOMY	INDUSTRY	INFRASTRUCTURE	SOCIAL & CULTURAL
• Death • Permanent Injury • Serious Injury • Minor Injury • Psychological • Displacement	Private • Structures • Vehicles Commercial • Structures • Vehicles • Produce Public Structures	• Air Pollution • Chemical Contamination • Fire • Runoff into drains	• Major Financial Loss • Moderate Financial Loss • Minor Financial Loss • Loss of employment - direct - indirect	• Secondary • Service Sector	• Communication Systems • Power • Gas • Water • Roads • Parks and reserves • Rail network	• Social Networks • Schools • Aged Care • Vulnerable Groups • Evacuations • Public perceptions • Recreation facilities

DESCRIPTION OF SOURCE OF RISK

SOURCE OF RISK : Rail Transport Emergency

Description

Rail transport services bisect the Town of Bassendean running south west to north east. The rail network consists of three lines one standard gauge trans continental route and two narrow gauge lines for commuter traffic. Both lines are owned and maintained by the Public Transport Authority. The lines are co located between Guildford Road and Railway Avenue. Essentially the railway is a dedicated to the busy Perth to Midland commuter rail service which carries an estimated 6 million passengers per annum. Passenger services between Perth and Midland run early morning until late evening every day of the week. Though rail transport emergencies on this line are uncommon, there is always the risk that a serious rail crash may occur at any of the level crossings located within the Town of Bassendean boundaries. These incidents could occur at any time between early mornings through to late evening on any day of the week and could have serious consequences for rail commuters, road users and residents of nearby homes.

All level crossings that bisect the line are controlled by boom gates and flashing signals minimising the risk of level crossing crashes, however some intersect with major roads also controlled by traffic control lights and where these operate in conjunction with boom gates, there is a heightened risk of crashes. The PTA manages the safe operation of the rail system and strictly monitors and controls traffic movement on the line. PTA is also responsible for the maintenance and inspection of level crossing safety mechanisms. Main Roads WA are responsible for the maintenance and operation of traffic control lights at intersections. PTA has developed detailed emergency management plans that deal with all threats and risks on its rail network. The Western Australian Police conduct Road Safety Education campaigns and enforces relevant legislation to reduce the occurrence of Road Transport Emergencies and the Town of Bassendean is a member of the Roadwise program.

Rail Transport Emergency

Consequences

PEOPLE	PROPERTY	ENVIRONMENT	ECONOMY	INDUSTRY	INFRASTRUCTURE	SOCIAL & CULTURAL
• Death • Permanent Injury • Serious Injury • Minor Injury • Psychological	Private • Vehicles Commercial • Vehicles • Produce	• Air Pollution • Chemical Contamination • Fire	• Major Financial Loss • Moderate Financial Loss • Minor Financial Loss	• Primary • Secondary • Service Sector	• Communications Systems • Power • Gas • Water • Roads • Rail	• Social Networks • Aged care • Vulnerable groups • Evacuation • Public perceptions

DESCRIPTION OF SOURCE OF RISK

SOURCE OF RISK: Hazardous Materials

Description

At all times of the year there is movement of hazardous materials on roads, the use and storage of chemicals in containers, the use of hazardous materials in commercial facilities and the storage of hazardous materials on industrial estates within the Town boundaries. Due to the amount of hazardous materials travelling through, being used and stored within the Town, there is concern that a hazardous material incident could occur at any time. As hazardous materials are used for a variety of purposes within the industrial precincts of the Town of Bassendean, the impact of an incident would have varying consequences on the community and environment dependant on the hazardous material type, the size of the incident, the location of the incident, etc. There are records of Hazardous Material incidents of a major nature that have occurred in adjacent LG areas, though there are no known records of the community being affected. The major industrial area within the Town of Bassendean is Tonkin Business Park.

The Department of Consumer and Employment Protection through its Resources Safety Division deals with storage and transport of Hazardous Materials. All applications are authorised by the department with any relevant licenses being issued. The Town is notified of any application and license or amendment to current licences to ensure local statutory planning requirements are met. The Department regulates specified transport routes for Hazardous Materials and issues Guidance Notes to ensure correct transport methods are adhered to.

Hazardous Materials

Consequences

PEOPLE	PROPERTY	ENVIRONMENT	ECONOMY	INDUSTRY	INFRASTRUCTURE	SOCIAL & CULTURAL
• Death • Permanent Injury • Serious Injury • Minor Injury • Displacement	Private • Structures • Vehicles Commercial • Structures • Vehicles • Produce Public • Structures • Recreational • Heritage buildings	• Flora and Fauna Habitat • Flora and Fauna • Fire • Air Pollution • Water Catchment • Chemical Contamination	• Major Financial Loss • Moderate Financial Loss • Minor Financial Loss • Tourism	• Primary • Secondary • Service Sector	• Communications Systems • Power • Gas • Water • Roads • Drainage • Parks and reserves	• Social Networks • Aged care • Vulnerable groups • Evacuation • Recreation

Existing Treatments - Rail Transport Emergency

Identify and document below the treatments that exist at a State local government or national level.

Prevention

Preparedness

Response

Recovery

Existing Treatments – Hazardous Materials

Identify and document below the treatments that exist at a State, local government or national level.

Prevention

Preparedness

Response

Recovery

Existing Treatments – Road Transport Emergency

Identify and document below the treatments that exist at a State, local government or national level.

Prevention

Preparedness

Response

Recovery

RAIL TRANSPORT EMERGENCY

While considering the existing treatments, write down other possible treatments against the corresponding risk statement.

Risk Statement	Likelihood	Consequence	Level of Risk	Action Priority
There is a risk that a rail transport emergency will cause death or serious injury	A	3	M	2
There is a risk that a rail transport emergency will cause damage or destroy infrastructure.	C	2	L	7
There is a risk that a rail transport emergency will cause loss or damage to property.	B	2	L	6
There is a risk that a rail transport emergency will cause disruption to industry.	D	2	L	5
There is a risk that a rail transport emergency will affect the economy of the community.	D	3	M	3
There is a risk that a road transport emergency will affect the social/cultural aspects of the community.	B	2	L	4
There is a risk that a road transport emergency will cause loss of or damage to the environment.	D	3	H	1

RAIL TRANSPORT EMERGENCY

While considering the existing treatments, write down other possible treatments against the corresponding risk statement.

Risk Statement	Likelihood	Consequence	Level of Risk	Action Priority
There is a risk that a rail transport emergency will cause death or serious injury	A	3	M	2
There is a risk that a rail transport emergency will cause damage or destroy infrastructure.	C	2	L	7
There is a risk that a rail transport emergency will cause loss or damage to property.	B	2	L	6
There is a risk that a rail transport emergency will cause disruption to industry.	D	2	L	5
There is a risk that a rail transport emergency will affect the economy of the community.	D	3	M	3
There is a risk that a road transport emergency will affect the social/cultural aspects of the community.	B	2	L	4
There is a risk that a road transport emergency will cause loss of or damage to the environment.	D	3	H	1

HAZARDOUS MATERIALS

While considering the existing treatments, write down other possible treatments against the corresponding risk statement.

Risk Statement	Likelihood	Consequence	Level of Risk	Action Priority
There is a risk that hazardous material spills will affect human health	C	3	M	2
There is a risk that hazardous material spills will cause damage to or destroy infrastructure.	E	2	L	7
There is a risk that hazardous material spills will cause damage to or destruction of property	D	2	L	6
There is a risk that hazardous material spills will cause damage or disruption to industry	C	2	L	5
There is a risk that a rail transport emergency will affect the economy of the community.	C	3	M	3
There is a risk that hazardous material spills will impact on the social/cultural aspects of the community.	C	2	L	4
There is a risk that hazardous material spills will cause damage to or destroy the environment.	B	3	H	1

CONSIDER TREATMENTS – ROAD TRANSPORT EMERGENCY

While considering the existing treatments, write down other possible treatments against the corresponding risk statement.

Risk Statement	Possible Treatments
There is a risk that a road transport emergency will cause death or serious injury	Construct a round-a-bout at the Grey Road, Collier Road Intersection.
There is a risk that a road transport emergency will cause damage or destroy infrastructure.	
There is a risk that a road transport emergency will cause loss of or damage to property.	
There is a risk that a road transport emergency will cause disruption to industry.	
There is a risk that a road transport emergency will affect the economy of the community.	
There is a risk that a road transport emergency will affect the social/cultural aspects of the community.	
There is a risk that a road transport emergency will cause loss or damage to the environment.	
There is a risk that	
There is a risk that	

CONSIDER TREATMENTS – HAZARDOUS MATERIAL SPILLS

While considering the existing treatments, write down other possible treatments against the corresponding risk statement.

Risk Statement	Possible Treatments
There is a risk that hazardous material spills will affect human health	
There is a risk that hazardous material spills will cause damage to or destroy infrastructure.	
There is a risk that hazardous material spills will cause damage to or destruction of property	
There is a risk that hazardous material spills will damage or disruption to industry	
There is a risk that hazardous material spills will impact on the social/ cultural aspects of the community	
There is a risk that a rail transport emergency will affect the economy of the community.	
There is a risk that hazardous material spills will cause damage to or destroy the environment.	Provide local drainage plans to FESA to assist in the upgrading of data sets within Slip Emergeo program
There is a risk that:	
There is a risk that:	

Workshop Evaluation Form

The Town of Bassendean, the Western Australian Local Government Association (WALGA) and the Fire and Emergency Services Authority of Western Australia (FESA) are committed to enhancing community safety, resilience and awareness of emergencies. Your feedback is important to ensure that the workshop you have just completed is enhanced to maximise the learning opportunities and outcomes for future workshops. Please take a few moments to summarise your thoughts on the workshop and leave this form with the facilitator.

Name (Optional):

Position (Optional): Organisation (Optional):

Workshop Title: **Road/Rail Transport & Hazardous material Workshop**

Venue: Town of Bassendean Administration

Date: 12 April 2010

Why did you attend this workshop?

1. On the following scale, please indicate your overall assessment of this workshop?

Poor			Excellent
1	2	3	4
☐	☐	☐	☐

Comment:

2. What would you consider to be the best aspects/features of the Workshop?

Comment:

3. Workshop content/materials:

Poor			Excellent
1	2	3	4
☐	☐	☐	☐

Comment:

(Please continue over the page)

4. Are there any topics covered in the workshop you think require further exploration?

Comment:

5. Would you be prepared to attend future workshops?

Comment:

6. Venue evaluation:

Poor			Excellent
1	2	3	4
☐	☐	☐	☐

Comment:

7. Catering evaluation:

Poor			Excellent
1	2	3	4
☐	☐	☐	☐

Comment:

8. Follow-up (OPTIONAL)

The AWARE Project Coordinator or WALGA may contact participants in this workshop for additional feedback. Please provide a telephone number where we can contact you for additional feedback on your workshop participation:

(_____)_____

Thank you for your feedback

LOCAL EMERGENCY MANAGEMENT COMMITTEE

AWARE Project Stage 2

EMERGENCY RISK MANAGEMENT WORKSHOPS

Workbook

SEVERE STORM /FLASH FLOOD
RIVERINE FLOODING
BUSH FIRE
STRUCTURE FIRE

FACILITATOR:	John Lane, **Western Australian Local Government Association**
LOCATION:	Town of Bassendean, 48 Old Perth Road, Bassendean
Date:	19 April 2010
Time:	1300hrs – 1700hrs

Severe Storm/Flash flooding/ Riverine flood, Bush Fire, Structure Fire

Work Shop Program

1.00pm	Introduction
1.10pm	Review Description of Sources of Risk & Consequences
1.30pm	Existing Treatments
2.00pm	Review Existing Risk Statements
2.30pm	Determine Consequence Rating
3.00pm	Break for refreshments
3.15pm	Determine Likelihood Rating
3.45pm	Determine Level of Risk
4.00pm	Identify Further Treatment Options
4.30pm	Allocate Treatment Priority
4.45pm	Monitor and Review/Workshop Evaluation
5.00pm	Closure

WORK BOOK OVERVIEW

The purpose of this work book is to gather information from workshop participants through activities conducted during the workshop. When participating in an activity, any notes or comments should be written in the workbook against the relevant item. On conclusion of the workshop, the workbook will be collected and the information will be collated and summarised to ensure the workshop outcomes are met. The workbook also provides a documented record of the process undertaken which will support any future activities carried out during the emergency risk management project.

Though the activities are mainly table and group focused, please ensure that any notes or comments made individually are documented in your workbook. Throughout the workshop, if you have any comments, suggestions or ideas, feel free to make notes on any page in the workbook.

NOTE: Due to the intensity of the program, there maybe times where discussion needs to be limited. If you have a question or a comment that is not addressed during the workshop, please make note of it in the workbook and individual follow up will occur.

Once the workshop is complete, please hand in the workbooks for collection. The information collated from the workshop will be documented and when the final report has been developed, a copy will be forwarded to each participant for their information.

The Town of Bassendean community thanks you for assisting with the emergency risk management process and helping to make our community a safer community to live and work in. We look forward to working with you into the future.

AWARE Project Definitions

The following definitions apply throughout the presentation and workbook for the purposes of the AWARE Project:

ECONOMY – when referring to consequences, 'economy' is described as the loss of income, labour, public/business confidence, etc

EMERGENCY - an event, actual or imminent, which endangers or threatens to endanger life, property or the environment, and which is beyond the resources of a single organisation or which requires the coordination of a number of significant emergency management activities.

NOTE: The terms "emergency" and "disaster" are used nationally and internationally to describe events that require special arrangements to manage the situation. "Emergencies" or "disasters" are characterised by the need to deal with the hazard and its impact on the community.

The term "emergency" is used on the understanding that it also includes any meaning of the word "disaster".

EMERGENCY MANAGEMENT - is a range of measures to manage risks to communities and the environment. It involves the development and maintenance of arrangements to prevent or mitigate, prepare for, respond to, and recover from emergencies and disasters in both peace and war.

EMERGENCY RISK MANAGEMENT – A systematic process that produces a range of measures that, on being implemented, contributes to the safety and wellbeing of communities and the environment.

ENVIRONMENT - when referring to consequences, the' environment' is described as the loss of ecosystems of the natural world, both plant and animal, air quality, water quality, soil quality, etc

HAZARD - a situation or condition with potential for loss or harm to the community or the environment.

INDUSTRY – when referring to consequences, 'industry' is described as the loss of businesses that supplement the economy through tourism, manufacturing, transportation, shopping centres, etc

INFRASTRUCTURE – when referring to consequences, 'infrastructure' is described as community lifelines/services and community infrastructure. Lifelines/services include communications, water, gas power, transportation networks, etc and community infrastructure includes community facilities (recreation grounds, public halls, etc), hospitals, schools, etc

LIFELINES – systems or networks that provide for the circulation of people, goods, services and information upon which health, safety, comfort and economic activity depend.

PEOPLE – when referring to consequences, 'people' are described as the loss of health (life, injury, mental and physical health, etc)

PROPERTY - when referring to consequences, 'property' is described as the loss of assets, structures, stock, etc.

RISK - a concept used to describe the likelihood of harmful consequences, arising from the interaction of hazards, communities and the environment.

SOCIAL & CULTURAL - when referring to consequences, 'social and cultural' is described as the loss of social networks (community and sporting groups, etc), and cultural networks (religious and ethnic, heritage buildings, etc).

Consider the 'Description' as currently documented and review to ensure the 'Descriptors of Risk' are accurate and the 'Description' as a whole is relevant to the Town of Bassendean.

Make any alterations you see as appropriate and write a corrected version if required or make some notes.

DESCRIPTION OF SOURCE OF RISK

Source of Risk : Severe Storm

Severe storm events affect the Perth metropolitan area including the Town of Bassendean on an annual basis. The Bureau of Meteorology ensures that severe weather warnings are available with sufficient lead time to ensure community preparedness. Storms can occur throughout the year but are normally confined to the period between May and August. Wind gust may be common up to 100 km/h and damage to homes, business, lifelines and infrastructure and the environment from hail and flash flooding can occur. There may also be significant disruption caused to lifelines such as power in the form of power outages for extended periods which has the flow on effect of causing drainage and sewerage backup.

The Bureau of Meteorology produces daily weather forecasts and predictions for public awareness. Public awareness is also undertaken by the media and FESA by promoting hazard reduction. Local government contributes to hazard reduction through bulk rubbish collections to reduce loose items around properties, conducts street tree maintenance to reduce power line interference..

Description:

The description is a broad statement which includes 'Descriptors of Risk':

- **Intensity (how big, fast, powerful the source of risk maybe)**
- **Extent (the area that a source of risk may impact);**
- **Likelihood of occurrence (frequency of the event, not impact);**
- **Time frame (warning time, duration, time of day/week/year);**
- *Manageability (what can be done about it).*

Descriptions

DESCRIPTION OF SOURCE OF RISK

SOURCE OF RISK : Bush Fire

Description:

Bush Fires can occur **annually** within the local government area of Bassendean and are restricted to **specific areas such as Success Hill, the Ashfield flats, Pyrton and the abandoned Swan Valley Noongar settlement on Lord Street.** These areas range from open grasslands to low scrub and heavily wooded areas.The fire behaviour can range from **very mild to extremely unpredictable,** dependant on fuel loads, weather, topography, etc. The most severe fires occur mainly from **November through to March.** There may be **limited notification** to the community at the initial stages of a fire, with the duration and impact being unpredictable.

There is continual public awareness regarding the consequences and reduction methods of Bush Fire throughout the State every year and locally by the ToB. Hazard reduction work is required to be undertaken prior to November and maintained by property owners from November through to March every year. The Bush Fires Act 1954 legislates for the control of fire which ultimately reduces the potential occurrence of Bush Fire. Bureau of Meteorology– weather data (rainfall, wind, temp, RH, lightning occurrence, curing data. Other data and information is also available. FESA provides a fire fighting capacity through the Fire and Rescue Service while local government provides fire fighting capacity through the Bassendean volunteer Bush Fire Brigade.

Description:

The description is a broad statement which includes 'Descriptors of Risk':

- **Intensity (how big, fast, powerful the source of risk maybe)**
- **Extent (the area that a source of risk may impact);**
- **Likelihood of occurrence (frequency of the event, not impact);**
- **Time frame (warning time, duration, time of day/week/year);**
- *Manageability (what can be done about it).*

Description:

Below are the elements at risk previously identified and documented.

Severe Storm/Flash flooding						
Consequences						
PEOPLE	**PROPERTY**	**ENVIRONMENT**	**ECONOMY**	**INDUSTRY**	**INFRASTRUCTURE**	**SOCIAL & CULTURAL**
• Death • Permanent Injury • Serious Injury • Minor Injury	Private + Structures + Vehicles Commercial • Structures + Vehicles + Produce Public Structures	• Erosion damage • Fire caused by lightning strikes • Tree damage	+ Major Financial Loss + Moderate Financial Loss + Minor Financial Loss	• Secondary • Service Sector	+ Communications Systems • Power • Gas • Water • Roads + Community buildings	• Social Networks • Evacuation issues • Relocation • Looting • Law and order • Displacement

The 'consequence' considers elements within the community and the vulnerability of those elements if the source of risk was to impact on them.

Write down as many elements within the community that may be affected if a severe storm and flash flooding was to occur in the following table.

Riverine Flooding						
Consequences						
PEOPLE	**PROPERTY**	**ENVIRONMENT**	**ECONOMY**	**INDUSTRY**	**INFRASTRUCTURE**	**SOCIAL & CULTURAL**
• Death • Permanent Injury • Serious Injury • Minor Injury	Private + Vehicles • Household goods + Houses Commercial + Vehicles • Produce + Buildings	• Erosion of river banks • Chemical Contamination from out flows • Sewerage leaching • Soil erosion • Water catchment pollution	• Major Financial Loss + Moderate Financial Loss + Minor Financial Loss	• Manufacturing • Service Sector	• Communications Systems • Power • Gas • Water • Roads • Rail + Public buildings	• Social Networks • Relocation + Evacuation • Looting + Law and order • Displacement

Existing Treatments – /Severe storm/ flash flooding

Identify and document below the treatments that exist at a State, local government or national level.

Prevention

Preparedness

Regular drainage maintenance ongoing

Storm Safe winter storm information kit

Storm Safe info distributed and articles published in Bassendean Briefings

Response

SES Local unit

Recovery

Local recovery plans

Existing Treatments – Riverine Flood

Identify and document below the treatments that exist at a State local government or national level.

Prevention

Preparedness

1:50 and 1:100 flood height datum marks on selected Western Power poles throughout the affected area

Response

SES Local Unit flood boat capacity for rescue

Recovery

Local Recovery plan

Existing Treatments – Bush Fires

Identify and document below the treatments that exist at a State, local government or national level.

Prevention
Bush Fire ready Group operates within the Town of Bassendean
Bassendean Volunteer Bush Fire Brigade activities
Preparedness
Bassendean local brigade trained and equipped
Weed management programs in parks and reserves
Fire break notices issued annually
Fire break maintenance by local residents monitored
Response
Bassendean Volunteer Fire Brigade
FESA Fire and Rescue Service
Adjoining local government response capability
Recovery
Local recovery plan

Existing Treatments – Structure Fires

Identify and document below the treatments that exist at a State, local government or national level.

Prevention
School based fire prevention programs undertaken
FESA community information
Preparedness
Smoke alarm laws upheld
Information to the public about smoke alarms
Response
FESA Fire and Rescue Service
Recovery
Local recovery plan

RISK REGISTER

SEVERE STORM

Risk Statement	Likelihood	Consequence	Level of Risk	Action Priority
There is a risk that a severe storm will cause death or serious injury	D	2	L	4
There is a risk that a severe storm will cause damage to or destroy infrastructure.	B	3	H	2
There is a risk that a severe storm will cause loss of or damage to property.	B	3	H	1
There is a risk that a severe storm will cause disruption to industry.	C	2	L	6
There is a risk that a severe storm will affect the economy of the community.	C	2	L	5
There is a risk that a severe storm will affect the social/cultural aspects of the community.	B	2	M	3
There is a risk that a severe storm will cause loss or damage to the environment.	C	2	L	7

RISK REGISTER

FLASH FLOODING

Risk Statement	Likelihood	Consequence	Level of Risk	Action Priority
There is a risk that flash flooding will cause death or serious injury	D	2	L	4
There is a risk that flash flooding will cause damage to or destroy infrastructure.	C	2	L	3
There is a risk that flash flooding will cause loss of or damage to property.	B	3	H	1
There is a risk that flash flooding will cause disruption to industry.	D	2	L	5
There is a risk that flash flooding will affect the economy of the community.	C	2	L	2
There is a risk that flash flooding will affect the social/cultural aspects of the community.	D	2	L	6
There is a risk that flash flooding will cause loss or damage to the environment.	D	2	L	7

RIVERINE FLOODING

Risk Statement	Likelihood	Consequence	Level of Risk	Action Priority
There is a risk that a riverine flood will cause death or serious injury	D	2	L	7
There is a risk that a riverine flood emergency will cause damage or destroy infrastructure.	C	3	M	3
There is a risk that a riverine flood will cause loss or damage to property.	A	4	E	1
There is a risk that a riverine flood will cause disruption to industry.	C	2	L	6
There is a risk that a riverine flood will affect the economy of the community.	C	2	L	5
There is a risk that a riverine flood will affect the social/cultural aspects of the community.	C	3	M	2
There is a risk that a riverine flood will affect the environment.	C	3	M	4

BUSH FIRE

Risk Statement	Likelihood	Consequence	Level of Risk	Action Priority
There is a risk that bush fires will cause death or serious injury.	D	2	L	5
There is a risk that bush fires will cause damage to or destroy infrastructure.	C	2	L	2
There is a risk that bush fires will cause damage to or destruction of property	C	2	L	3
There is a risk that bush fires will damage or disruption to industry	D	1	L	7
There is a risk that bush fires will impact on the social/ cultural aspects of the community	D	1	L	6
There is a risk that bush fires will impact on the social/cultural aspects of the community.	C	2	L	4
There is a risk that bush fires will cause damage to or destroy the environment.	B	3	H	1

STRUCTURE FIRE

Risk Statement	Likelihood	Consequence	Level of Risk	Action Priority
There is a risk that structure fires will cause death or serious injury.	A	3	H	1
There is a risk that structure fires will cause damage to or destroy infrastructure.	B	2	M	3
There is a risk that structure fires will cause damage to or destruction of property	A	2	M	2
There is a risk that structure fires will damage or disruption to industry	C	2	L	5
There is a risk that structure fires will impact on the social/ cultural aspects of the community	C	2	L	4
There is a risk that structure fires will impact on the social/cultural aspects of the community.	C	2	L	6
There is a risk that structure fires will cause damage to or destroy the environment.	E	1	L	7

CONSIDER TREATMENTS – SEVERE STORM

While considering the existing treatments, write down other possible treatments against the corresponding risk statement.

Risk Statement	Possible Treatments
There is a risk that a severe storm will cause death or serious injury	
There is a risk that a severe storm will cause damage to or destroy infrastructure.	Underground power installation programs in older areas
There is a risk that a severe storm will cause loss of or damage to property.	Flood markings to be remarked in line with updated flood height mapping
There is a risk that a severe storm will cause disruption to industry.	
There is a risk that a severe storm will affect the economy of the community.	
There is a risk that a severe storm will affect the social/cultural aspects of the community.	
There is a risk that a severe storm will cause loss or damage to the environment.	
There is a risk that	
There is a risk	

CONSIDER TREATMENTS – FLASH FLOODING

While considering the existing treatments, write down other possible treatments against the corresponding risk statement.

Risk Statement	Possible Treatments
There is a risk that flash flooding will cause death or serious injury	
There is a risk that flash flooding will cause damage to or destroy infrastructure.	
There is a risk that flash flooding will cause loss of or damage to property.	
There is a risk that flash flooding will cause disruption to industry.	
There is a risk that flash flooding will affect the economy of the community.	
There is a risk that flash flooding will affect the social/cultural aspects of the community.	
There is a risk that flash flooding will cause loss or damage to the environment.	
There is a risk that	
There is a risk that	

CONSIDER TREATMENTS – RIVERINE FLOODING

While considering the existing treatments, write down other possible treatments against the corresponding risk statement.

Risk Statement	Possible Treatments
There is a risk that a riverine flood will cause death or serious injury	
There is a risk that a riverine flood emergency will cause damage or destroy infrastructure.	
There is a risk that a riverine flood will cause loss or damage to property.	
There is a risk that a riverine flood will cause disruption to industry.	
There is a risk that a riverine flood will affect the economy of the community.	
There is a risk that a riverine flood will affect the social/cultural aspects of the community.	
There is a risk that a riverine flood will affect the environment.	
There is a risk that	
There is a risk that	

CONSIDER TREATMENTS – BUSH FIRE

While considering the existing treatments, write down other possible treatments against the corresponding risk statement.

Risk Statement	Possible Treatments
There is a risk that bush fires will cause death or serious injury.	
There is a risk that bush fires will cause damage to or destroy infrastructure.	
There is a risk that bush fires will cause damage to or destruction of property	
There is a risk that bush fires will damage or disruption to industry	
There is a risk that bush fires will impact on the social/ cultural aspects of the community	
There is a risk that bush fires will impact on the social/cultural aspects of the community.	
There is a risk that bush fires will cause damage to or destroy the environment.	Weed reduction processes to be assessed Steam weed eradication methods to be trialled
There is a risk that	
There is a risk that	

CONSIDER TREATMENTS – STRUCTURE FIRE

While considering the existing treatments, write down other possible treatments against the corresponding risk statement.

Risk Statement	Possible Treatments
There is a risk that structure fires will cause death or serious injury.	
There is a risk that structure fires will cause damage to or destroy infrastructure.	
There is a risk that structure fires will cause damage to or destruction of property	
There is a risk that structure fires will damage or disruption to industry	
There is a risk that structure fires will impact on the social/ cultural aspects of the community	
There is a risk that structure fires will impact on the social/cultural aspects of the community.	
There is a risk that structure fires will cause damage to or destroy the environment.	
There is a risk that	
There is a risk that	