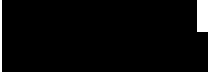




SUBMISSION TO THE QUEENSLAND FLOODS COMMISSION OF INQUIRY
BY AIFUR PTY LTD (Field Secure)

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Following is a submission to the QUEENSLAND FLOODS COMMISSION OF INQUIRY by Aifur Pty Ltd.

The tragic loss of life in the Lockyer Valley and what methods may have reduced the loss of life, is the primary focus of our submission to this enquiry.

It goes without saying that the tremendous work of Queensland Emergency Services contributed to the preservation of life in Queensland at this time.

The Toowoomba Flood and the ensuing “inland tsunami” that engulfed Murphy's Creek and the Lockyer Valley caused the catastrophic loss of life of approximately 26 Queenslanders'.

Natural disasters occur and will continue to occur, the loss of lives on this scale is however, preventable.

Commentary by the Prime Minister in the wake of this disaster related to the ability of the Department of Meteorology to predict these events. As was stated, it is almost impossible to predict events such as this, though there exists anecdotal evidence that makes a strong case regarding areas of concern especially when conditions such as the ones that precipitated the events in Toowoomba and the Lockyer Valley.

What is therefore required is a different way of analysing risk and implementing systems to provide real time detection and advanced warnings to populations.

In this paper I will discuss such systems, compare them to ones already in existence and discuss limitations and advantages.

The Geography of the Lockyer Valley

“The Lockyer Valley is a roughly circular basin of approximately 2,800 km² in southeast Queensland. The town of Gatton, population 4,600, is the largest in the valley and is 90 km west of the state capital, Brisbane.

The valley is bordered on the south and west by the Great Dividing Range which is typically 250-300 m higher than the valley floor. This range is flat-topped and covered by Tertiary age (~ 45 million years) basalt flows which weather to form dark fertile soils.

Geologically, the valley is formed of a sequence of sedimentary rocks which are dominantly sandstone. These formations consist of a sequence of Triassic and Jurassic age (~ 250-140 million years) sediments formed mainly of flat-lying fluvial (from rivers) sandstones, siltstones and shales, with minor conglomerate. These formations have different geological names.

The main stream system central to the valley is Lockyer Creek. The headwaters of the larger tributaries of the catchment abutt the basaltic ranges in the south and west. In the north, the drainage divide is less well defined and streams flowing south to Lockyer Creek are smaller and more irregular in nature.

Weathering of these sedimentary bedrocks over earlier geological time produced channels that are incised into them. Continued weathering and erosion has also provided the alluvial material that fills these channels and the adjacent valley floors.

In the larger tributaries the streams have cut into the alluvial deposits forming the existing stream channels. Under the current dry conditions, the depth of these channels can be seen.”**1

Comment: *It can be seen that the rich farming lands of the Lockyer Valley have been formed through the process of runoff from the mountain ranges that border the valley. The conclusion is that in the past there may have been weather events such as this and they may have caused similar, large water run-off from the surrounding mountain ranges. With the events of January 2011, it is also possible that such an event may occur in this location again. It then, as an extension of this, is likely that such an event may occur again in another area that has the same or similar geographic terrain.*

It was reported that after the wave of water washed through the CBD of Toowoomba, people were ringing their families and friends in the Lockyer Valley to warn them of the possible threat, of course no-one probably imagined the size, speed and danger of this mountain of water bearing down on them.

It was advised in the media that Emergency Warnings (part of the National Emergency Warning System) were delivered, up to, 6 (six) hours after the inland tsunami had passed through Grantham. Clearly this is not sufficient to ensure the preservation of life.

THE WAY FORWARD

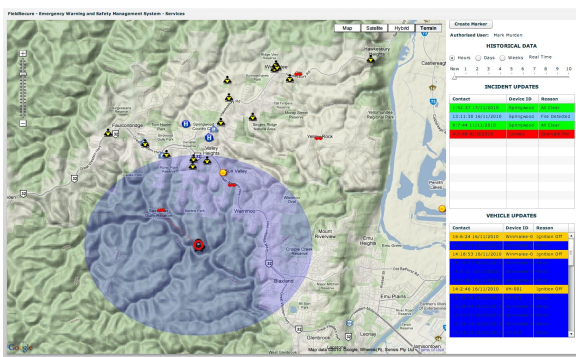
It is our position that the deaths that occurred in the Lockyer Valley could have been prevented.

Australian natural disasters, have different characteristics and while the responses to them are also different, they have several key, common requirements.

1. The need to successfully locate and identify the nature of the incident in the fastest timeframe possible,
2. The need to determine the at risk areas and implement a warning programme that will ensure that the populations that are most at risk, have sufficient time to evacuate or take action that will ensure their safety.
3. The need to inform the responding Emergency Services of the nature of the incident and co-ordinate ALL their responses, for a collectively better outcome.

Over the past 5 (five) years we at Field Secure have developed systems that meet all these requirements and I will show how this applied in the circumstances in Toowoomba/ Lockyer Valley would have prevented loss of lives and lessened the horrific impact on communities.

FIELD SECURE



Field Secure is an advanced Incident Management System, complete with incident detection characteristics and tools. Field Secure is an open standards based system that is capable of integrating data from all Emergency Services, third party solutions providers, institutions and the general public. Underpinned by AIIMS (Australasian Inter-agency Incident Management System) it allows all agencies and their staff in control centres as well as the

field to see the full picture in an incident situation. Allowing for a safer and better informed working environment for emergency workers. It allows speedier responses to incidents with access to all relevant information, all on the one page. Field Secure comes standard with personnel and vehicle tracing capabilities, Hazard (Fire, Flood, Chemical and Wind) related detection capabilities. It includes a Patent Pending, Emergency Telephony Notification System (ETNS) for warning populations of an imminent hazard. In the case of the Lockyer Valley, flow and water height sensors would have triggered a warning at the first instant that the rushing waters exceeded a preset level indicator. This would have enabled the instigation of warnings to all the downstream populations, in advance, of the need to relocate to safer locations. This is but one of the multiple features of Field Secure

LOCATE AND IDENTIFY THE INCIDENT

Simply put, if you identify that you have populations living in or around floodplains then you need to have a system that deals with flash flooding, just as you have one that deals with Bushfire, Cyclone or Chemical spills.

Field Secure has been designed to take data feeds from multiple sensor sources and in the case of flooding these are water height, volume metric based.

In the case of the Lockyer Valley these systems would have detected the rise of the water levels in the major catchments and immediately begun warning the relevant Emergency authorities of the incident and associated metrics. At a predetermined time, if there were no other actions taken, the public warning process would have begun. It should be noted that in Murphy's Creek water was flowing across open ground with volume and that needs to be catered for as well.

The location, time and metrics of the water surge would be recorded and the response activities implemented.

AT RISK AREA RESPONSE AND WARNINGS

The downstream communities that were in danger from the water sweeping through the upper reaches of the Lockyer Valley would have been identified in the design and implementation stage of Field Secure. These communities would be confirmed through hydrologists analysis of potential water flows in the case of flooding for the Lockyer Valley.

Warnings.

Globally, Emergency Telephony Notification Systems (ETNS) use voice and SMS as the preferred communications paths. This is the case in Australia with NEWS.

In a rapidly escalating disaster there is a requirement to notify a population group that may not be in earshot of landline or even mobile phone services.

In Europe, especially alpine areas, there is a need to warn of avalanches. In several countries the use of sirens, similar to air raid sirens used in World War 2, are used extensively. These provide rapid, general warnings and while broad based, they offer the best chance to immediately notify a community, simultaneously.

NEWS and similar ETNS can be integrated with Field Secure to provide warnings. Field Secure provides a Patent Pending, notification system that enables a micro view of a warned populations responses and evacuation intentions for better emergency services planning. Using terrestrial and satellite communications paths Field Secure offers the broadest range of communications mediums to capture data and events and carry out warning processes.

EMERGENCY SERVICES- COMMAND AND CONTROL

It can be said that Queensland Emergency Services staff, volunteers and members of the public, acted with great heroism during the Toowoomba and Lockyer Valley floods.

During a rapidly changing hazardous incident situation chains of command and control are stretched. Fragmented information sources or too much information are common problems in a Emergency Command Centre. This was seen in the 2009 Black Saturday Fires in Victoria.

Field Secure takes data feeds from all relevant agencies, providers and the general public and makes the **relevant** data available to emergency controllers, in the field or in Incident Control Centres.

An additional concern is the fact that Emergency Services volunteers are increasingly worried about sending workers into situations where they do not have a full picture of the incident or prevailing conditions. OH&S is currently an area of concern for several Australian Emergency Services organisations with liability for breach of safe working conditions being very broad under the current State legislations. This has the potential to dissuade volunteers in Command and Control positions from offering their services.

Field Secure is a tool that provides the complete picture to emergency workers enabling better decisions, a clearer audit trail and response time improvement.

Conclusion

The people that died in the Lockyer Valley had no timely warning of the impending disaster that was heading their way.

The technology exists for the early detection of situations that may become life threatening.

With early detection of the rising tributaries that feed the Lockyer Creek warnings could have been issued and alarms sounded that would have left no one in any doubt to the serious nature of the threat.

With that information residents could have made better, earlier plans to move to higher ground and avoid the approaching waters.

In this instance it was floods, at another time it will be fire and likely wind that threatens lives.

While we are reviewing this situation with the benefit of 20x20 hindsight, the possibility of this happening again is highly probable. When is only speculation.

One thing that cannot be understated regarding such an event is the post mortem review of the performance of services and agencies that responded to this incident. All information that is captured regarding notifications and responses by emergency services is stored. This process provides valuable data for auditing responses and actions, improving techniques for future events.

There is no doubt that an Incident management System such as Field Secure would have notified the residents of the Lockyer Valley, in advance of the water arriving and enabled people more time to evacuate to safer locations.

For the sake of brevity in this submissions we have not detailed all the available features of Field Secure and would welcome the opportunity to discuss these further in the future.

Field Secure is an Australian designed and built Incident Management System that offers levels of emergency systems integration not found in other commercial systems. Field Secure has been designed to assist the detection, management and notification of hazardous incidents in Australia.

The author is a Director of Field Secure and grew up on the Darling Downs outside Toowoomba (Cecil Plains). Family and friends were directly impacted by the events in Toowoomba and the Lockyer Valley on the 10th of January 2011.

Bibliography

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<http://www.lockyerwater.com>