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Green Paper  
Department of Justice  
Reply Paid 87276  
Melbourne VIC 8060

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Dear Sir/Madam

### **EMERGENCY MANAGEMENT GREEN PAPER**

I write on behalf of the Victorian Spatial Council (VSC) in response to the call for public submissions on the Emergency Management Green Paper, *Towards a More Disaster Resilient and Safer Victoria*.

The VSC is Victoria's peak body for spatial (or location) information policy and management; it also facilitates opportunities for a strategic focus on its development through greater partnership building, collaboration, cooperation and education.

Its members come from all sectors of government, the private sector, the professions and academia. The emergency services sector is also represented.

The Council has a particular interest in providing an environment in which spatial information is available and able to be used, and that development and accessibility of that information is supported by the latest technologies.

Through its current 2011-2014 Strategy, the Council is seeking to support the creation of the conditions in which the right frameworks, standards and technical developments are in place to ensure both these goals are met.

The needs of emergency management for reliable and available information are a critical aspect of the Council's deliberations.

In relation to the Green Paper, the Council would like to submit that information – and in particular spatial or location information – has the potential to be a significant contributor to improving emergency management, including response, in Victoria.

In relation to the matters raised in the Green Paper, the Council believes that policy frameworks governing information management could contribute to the package of reforms to be considered as part of the scope of the policy response that will follow.

Improvements in coordination arrangements around the availability of information have the potential to address the issues raised, not only in the Green Paper, but also in the Flood Review interim report, namely *a framework that truly provides for an 'all hazards', 'all agencies' approach to emergency management, and an effective enabling policy framework to 'drive' this philosophy.*

The comments in the following pages set out proposed approaches for taking advantage of location related information, to improve its quality and usefulness, and the factors that may be considered as contributing to the improvements to emergency management that the Green Paper seeks to identify.

The Council also makes comments on the opportunities provided by new 'smart' technologies. The additional information these technologies are capable of providing is resulting in a public that is more informed about events specifically related to their location, and thus able to make more informed decisions. Such developments also provide opportunities for building community resilience in responding to emergency situations.

The Council is not responding directly to the questions in the Green Paper; rather it suggests a range of matters that should be considered for ongoing capacity building based on the ready availability of up to date information to support all aspects of emergency management, including response.

The Council would welcome the opportunity to discuss its submission further should the opportunity arise.

In the meantime, further information about the Council and its activities is available via our website: [www.victorianspatialcouncil.org](http://www.victorianspatialcouncil.org).

Yours faithfully

A handwritten signature in black ink, appearing to read 'Olaf Hedberg'.

**Olaf Hedberg, AM**  
**Independent Chair**

# Victorian Spatial Council submission to *Towards a More Disaster Resilient and Safer Victoria*, the Emergency Management Green Paper

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## ***Introductory Remarks***

The Victorian Government's Emergency Management Paper, *Towards a More Disaster Resilient and Safer Victoria*, sets out a number of issues that need to be resolved to improve the State's emergency management arrangements. The availability and use of appropriate information where and when it is needed is one of those issues.

The capacity of the emergency agencies to respond to the challenge of obtaining and providing information will be influenced by the characteristics of the information management environment and their ability to be adaptable to changes in technologies, practices, and the increasing skills of the community in transmitting and using information.

The Victorian Spatial Council (VSC) notes that the Green Paper seeks to establish emergency management arrangements that will protect the lives and property of Victorians both now and into the future.

This protection has to be based on the ability of Victoria's public safety agencies to be able to make sound and timely decisions, not just in times of crisis and disasters, but through the full range of requests from Victorians for help, from a single event to a full scale emergency situation.

In other words, both decision making capability and capacity has to be scalable and based upon not just the best information available but the best possible analysis of this information to inform decision making.

The Council recognises that in emergency management language this is about 'Situational Awareness' in order to form the Complete Operating Picture upon which decisions can be made regarding the appropriate type and level of response.

We are in the midst of a new era of information generation, accessibility and sharing thanks to technologies which are themselves developing and converging at an unprecedented rate.

*Managing this information spatially* will underpin our ability to analyse and make sense of it in order to make effective decisions that will affect both our personal and business lives. In emergency events the decisions made by individuals, communities and public safety agencies can often have life changing impacts.

Public safety agencies struggle to keep pace with the capacity technologies such as broadband and Long Term Evolution (LTE) are providing to 'see' an event they are responding to for the first time.

Likewise the structural arrangements for public safety agencies and their respective responsibilities must be able to facilitate and coordinate a decision making process capable of determining the type and level of response to an event that will meet the expectations of a public which is better placed than ever before to use spatial based technology in real time to access help from public safety agencies.

The best example of this is the forthcoming use of multimedia to access help through the 000 number based upon the premise that people can use their preferred choice of technology to both request this access and then to monitor and assess the performance of the public safety agencies in responding.

The VSC believes Victoria and Australia is extremely well positioned to be able to manage information spatially as a result of the products and services offered as part of the authoritative information provided by Government, through its platform underpinned by the Vicmap spatial data, which continues to evolve under the guidance of the Council's Victorian Spatial Information Strategy (VSIS).

This platform has the capability to underpin the arrangements that eventuate from Government's consideration of the responses received to the Green Paper, in the same way that it has already become embedded in other government and departmental business arrangements.

The following pages describe what the Council has done and continues to do to support the delivery of the above arrangements.

It would encourage the Government to adopt the approaches it has developed for use in managing information and making it available for emergency management.

### **The Victorian Spatial Council**

The VSC's role is to support the creation of an environment in which spatial (or location) information is available and able to be used, and in which development and accessibility of that information is supported by the latest technologies. Through its current Strategy (VSIS 2011-14), the Council is seeking to support the creation of the conditions in which the right frameworks, standards and technical developments are in place to ensure both these goals are met.

Government is a significant creator and provider of information, and therefore can influence its availability through the policies it applies for its management, provision and re-use.

One of the key characteristics of recent developments in information and technology, in particular as a result of digitisation and the internet, is that individual datasets held by many agencies and collected for a particular purpose can be brought together from these various sources and readily combined to support planning and decision making in other subject areas.

Given appropriate planning and coordination, this can happen with significant saving of costs. To take full advantage of this principle, the data must be consistent, it must be of an acceptable standard, its existence must be widely known, it must be accessible, and there must be an easily identified, authoritative source for the data.

However, these opportunities also bring challenges. The VSC has a particular interest in the underlying institutional environment and the management arrangements that ensure information is available and able to be used.

The Council has developed a comprehensive foundation for spatial information management that will ensure the data is being managed and made available in a way that facilitates and encourages its use, and is clearly understood by users. However, it also recognises there are challenges, such as opening up access to that information and coordination between all creators of information and the technologies that can make it more accessible.

The remainder of this submission will outline the Council's current thinking on spatial information as an important infrastructure for Victoria, and the responses it is pursuing.

The Council's goal in doing so is to illustrate how spatial information can contribute to addressing the questions set out in the Green Paper and to the range of considerations that could be further explored with the aim of improving Victoria's emergency management arrangements.

In the following pages, the Council provides further comments on two parts of the Green Paper:

- Part 5.3, the Common Operating Picture (p.34)
- Part 6.1, Information as a tool in building community resilience (p.43)

## **Common Operating Picture**

In this section, the Council is addressing the following Green Paper remarks:

*To respond effectively to emergencies of State significance, all agencies must have a common operating picture, although the contexts in which they operate and the decisions they make are different. Ministers and senior officials need to have a common frame through which to view the situation, determine what actions departments and agencies should take to support the emergency response or recovery (including considering the activation of specific powers), assess where the effort is going and measure progress against where it needs to go.*

*Access to the right information, in the right form, at the right time is critical to coordinated operations and effective decision-making.*

*Currently, a wide variety of assessment material is produced across government and through different control and coordination centres that lacks consistency and rigor, reducing its value to decision-makers.*

*Government also needs accurate and timely impact assessments to plan both short- and long-term recovery. At present, the way in which this information is collected and collated makes it difficult for State and local government to respond effectively to community needs.*

Information resources should be available for an all hazards approach and full emergency management (prevention, preparedness, response and recovery), not just during the time of an event as the scope of the remarks above appear to suggest.

Having this capacity however, requires that there be a consistent approach to information management, applied across all relevant agencies (and these may include data suppliers outside the public sector, such as utilities). Such an approach should incorporate requirements for custodianship of data, publishing data and metadata, awareness and access, among others.

The Victorian Spatial Council's Spatial Information Management Framework provides just such a governance mechanism to ensure that data is well managed and is available and accessible when and wherever it is needed.

The Framework is set out in full on the Council's web site:

<http://victorianspatialcouncil.org/page/resources/spatial-information-management-framework>

The Council notes that the importance of a Framework for ensuring availability of information for all aspects of emergency management was confirmed as far back as 2003 by the *Final Report of the Inquiry into the 2002-2003 Victorian Bushfires* (Chapter 25, p.230-232), which noted that ‘emergency management relies extensively on the interaction of a number of critical support systems’, including spatial information, and that

*access to reliable and timely information is critical for effective emergency management, both in terms of preparedness and response. Less obvious is the importance of information management for mitigation and prevention. Collecting and maintaining high-quality datasets should allow for more sophisticated performance evaluation of prevention or mitigation programs (p.231, para 25.27).*

The report acknowledged that a number of shortcomings existed; two in particular are still valid today: datasets are not all of a sufficient quality or completeness, and collecting and maintaining appropriate datasets is not always seen as a priority for organisations.

### **A shared, always available information capability**

The Council believes that a shared, always available information capability can address these issues, and should be developed for all facets of emergency management.

The focus should be to encourage and direct the development of a network of government agencies and private sector organisations that will work together to deliver coordinated and managed spatial information for emergency management.

The key features of such a capability are summarised below.

It should be based on ensuring participants are *prepared and connected* (ie always available), evidenced by:

- availability and quality of relevant data
- knowing that data exists
- knowing who to contact to get it
- having clearance to get it
- knowing that it will technically fit with other data (ie compatibility of data and systems, and ‘interconnectivity’ to enable the exchange and sharing of data and products)
- being able to achieve this in meaningful timeframes (hours, not days or weeks)

It should improve the way in which information is gathered and managed by agencies, stored in appropriate repositories, made available to other users, used to generate an understanding about the nature of an emergency and how to respond to it, and how to recover from that emergency.

Participants should contribute data that complies with agreed quality requirements. Existing responsibilities for data (that is, ownership and custodianship) should not change, but the data provided should be quality assured and integrated into a consistent information resource available for distribution to all participants, subject to appropriate security and privacy provisions.

Critical data should be brought under a standard management regime (to ensure comparable quality); a central store for that information should be established, and the connectivity put in place to make

that information immediately available for an emergency (and establish physical distribution arrangements for routine operations).

As noted earlier in this paper, Government already has a significant information resource, as well as the capability to publish and deliver spatial information by both public and private sector organisations, but it is often incompatible with other information, difficult to obtain (for example, for commercial or confidentiality reasons), or otherwise requires upgrading to bring it to the standard required for emergency management.

The Council notes that the Inquiry into the 2002-03 Victorian Bushfires also recommended that

*all emergency service agencies... give greater priority to information management,*

and that

*Government acknowledge the importance of spatial information as a key element of planning, operations and program evaluation, and [ensure] integrated and co-ordinated information management on a whole-of-Government basis (Recommendations 25.37 and 25.38).*

The Council acknowledges that there is recognition of the value of spatial information in day to day operations, and that there are a range of activities underway to acquire and manage spatial datasets. However they are often duplicated throughout both Government and ESOs.

It is possible to estimate the potential for savings if this duplication is reduced, through avoided costs, and from potential benefits through increased effectiveness (ie, capability and capacity).

In 2000, a report for the United States Federal Geographic Data Committee noted:

*The true value of a ready-made web-enabled, pre-constructed set of digital geographic data can only be truly appreciated if one understands the significant project time, budget, and personnel time consumed in the geographic database building process. (FGDC 2000)*

The report goes on to note that 75% of project time is devoted to locating, integrating and assembling data, and that of the remaining 25%, some 75% is spent in navigating between data elements and types, resulting in only 6.25% of project resources being available to meet the project objectives.

Consequently a shared, always available information resource has the potential to obviate up to 75% of individual spatial project costs by providing 'ready-made, pre-constructed spatial data', and the real potential to provide further benefits by ensuring that most, if not all, entities in Victoria are drawing on the same information resource.

Although these figures were published a decade ago, they remain valid, and the Council has a keen interest in promoting practices that address the issues they highlight.

One of the means by which it is doing this is defining an appropriate model for making spatial information accessible and available (as it has done in its new Victorian Spatial Information Strategy 2011-14), based on five core capabilities that it has demonstrated should be available to spatial information providers and users:

- Custodians should be able to **Publish** their data
- Users should be able to **Discover** and **Access** it
- Users also want to access it in easier ways such as through web services – so providers are finding more effective ways to **Present** it

- And, users and custodians should be able to give, receive and respond to **Feedback**

At the same time, the delivery of these capabilities must be supported through provision of the institutional environment and supporting infrastructure, comprising

- Governance
- ‘Acquisition’ [or creation of data]
- Maintain/ edit [the data]
- Supply infrastructure [to receive data into relevant data libraries and stores]
- Delivery infrastructure [to underpin delivery channels]
- Delivery channels [to get data to users]

All of these capabilities and services are already in development or being provided in some form. Yet up to now, they have not been consistently addressed as a holistic model.

*The Council believes that the issues raised and proposals set out in the Green Paper present an opportunity to further develop this model, and would welcome the opportunity to discuss it further as Government develops its policy response.*

### ***The need for authoritative information in light of new technologies***

In this section, the Council addresses the following Green Paper remarks:

*New technologies – online and mobile media are now well established as significant tools for public communication among communities and emergency response agencies. Agencies need to harness technology, including social media effectively, to provide official warnings. They also need to manage the challenge of information being disseminated ahead of or in conflict with authorised information. In other words, governments need to keep people informed while avoiding the spread of misinformation. (p.43)*

The Council notes that the community, especially in remote areas, can benefit from social media as well as web-based access to mapped data that will aid risk mitigation planning, in the context of bushfires and other natural disaster preparation in particular.

Such tools can also support communities where ESO response cannot be relied upon.

For example, it is not difficult to use spatial information to estimate the number of dwellings that will go without fire fighting support and for how long in certain scenarios. This could therefore become the basis for targeted education and briefings on mitigation strategies for certain communities that are more exposed to fire risk than others. As well as the traditional approach of holding public meetings, relevant information could be made available on the web, acknowledging possible bandwidth limits. Even on the latter point, however, images in jpeg format can be downloaded relatively quickly.

In this way, a coordinated approach to spatial information provision could serve as a foundation for a Statewide risk mitigation strategy, covering all conceivable risks not just bushfires.

## **Contribution of Smart Technologies to building resilience**

The growing application of smart technologies, such as smart phones and smart energy meters, and the incorporation of location related information (such as features of interest and positioning) as part of their core functionality, also provides potential for building community resilience.

As a result of the additional information these technologies are capable of providing, the public can be made more informed about events specifically related to their location, which in turn will enable them to make more informed decisions.

As well as its interests described earlier in this paper, the Council also works to ensure that development and accessibility of information is supported by the latest technologies.

In particular, it is a keen supporter of a collaborative initiative being led by the Department of Sustainability and Environment (and funded by the Government's Market Validation Program<sup>1</sup>) to develop a smart sensing platform that leverages the base infrastructure and communications capabilities of the Victorian AMI network (the 'Smart Sensors Project').

Our support is further demonstrated through the recent appointment of one of our members as Chair of the Steering Committee for the Smart Sensors Project.

The Smart Sensors project aims to develop an innovative platform that builds on the base capabilities of the Victorian Smart Meter network to enable a number of new and innovative applications.

It is developing applications that wirelessly link small devices to the Smart Meter for the purpose of communicating with the householder in a variety of situations, including emergency preparedness or energy appliance usage.

One of the key benefits that will be realised from the sensor adaptor that will be attached to the smart meter is the capacity to provide for *Geographically Targeted Messaging* – an additional broadcast channel to targeted premises for early warnings, such as the Country Fire Authority 4-Day Fire Danger Rating Forecasts over the Advanced Metering Infrastructure.

### *The Fire Danger Rating Forecast Fridge Magnet*

One of the unique interfaces that are being developed by the project is the 'Fire Danger Rating Forecast Fridge Magnet'.

The Magnet will connect to the smart meter and provide information on an attractive, low cost, simple in-home Fire Danger Rating monitor, such as that illustrated in Figure 2 on the following page.

The magnet will inform and empower households through an ambient information display, designed to be perceived at a glance without requiring the user to interact with the device or demanding user attention.

In November 2010, the project began its Proof of Concept for Geographically Targeted Messaging, which will deliver public safety messaging to Home Area Network devices in a small number of volunteer premises. This first proof of concept delivers the 4-day Fire Danger Rating forecast to premises in bushfire prone areas, enabling the fire danger rating to be displayed on In Home Displays or DSE 'fridge magnets'.

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1. The Smart Small and Medium Enterprises Market Validation Program is a Victorian Government grants program that seeks to engage government with business to promote innovation. It aims to support Victorian based small and medium enterprises to develop innovative products, processes and services focused on meeting the future technology needs of Victorian public sector entities.

The Fire Danger Rating magnet communicates via the Victorian Advanced Metering Infrastructure network and the Smart Meter. It receives fire danger rating forecast information from the Country Fire Authority via the Distribution Businesses and the Advanced Metering Infrastructure communications networks and displays this information to the householder.



Figure 2 – Fire Danger Rating Forecast Fridge Magnet

*The Council strongly believes that the Government has a major role in supporting and encouraging the innovative use of smart technologies over the medium to long term, and in educating the public in their benefits and encouraging their adoption.*

### **The need for authoritative information underpinning new media**

The importance of *authoritative information* underpinning the use of new media as recognised in the Green Paper cannot be underestimated.

During 2011, this was demonstrated by questions that emerged about the appropriate use of commercial APIs<sup>2</sup> in public facing web sites vis a vis the risks of using information that may be out of date, particularly in the case of emergency communications.

Three main quality issues, associated with the currency, completeness and reliability of the data they use, have been identified; these are sufficient to raise public safety, reputation and liability concerns, particularly where the commercial API information is being presented on a Government website, and believed by the public to be Government information.

Members of the public using the maps developed on commercial APIs to ascertain an address may, in some cases, be presented with incorrect and/or out of date information, or not be able to find recently created addresses in newly developing areas.

There is also the further risk of the Government agency itself acting on the basis of incorrect information.

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2. API is Application Programming Interface. Sites such as Flickr, Facebook, Twitter and Google Maps use APIs to share content and data between communities and applications via the internet.

## *Legislation*

In response to such issues, the Council believes that the reliability and availability of the right spatial information, for emergency management and more generally, could be enhanced by an appropriate 'rules framework', which may incorporate legislation.

In 2010 it commissioned a review to determine the need and feasibility of a legislative approach (vis a vis alternative approaches) to simplify and streamline the provision and management of spatial information to ensure it is accessible and useable.

The investigation concluded that, while there had been significant advances in the management and delivery of spatial information over the past 15 years in Victoria, there are numerous emerging reasons for change.

A number of key issues and concerns were identified in the review, including (but not limited to):

- increasing importance of spatial information, and growing need for data quality and consistency
- current lack of standardisation and consistency of data (particularly address data (*'standardised address data is the most pressing spatial information issue in Victoria at the present time'*))
- insufficient cooperation and data sharing
- unclear roles, leading to institutional relationship problems
- duplication of effort

As a consequence of these shortcomings, there is at present no consistent, up-to-date, overarching management framework for the supply, management and delivery of spatial information in Victoria. This is also relevant to ensuring the proposals made by the Council earlier in this paper could be effectively implemented.

Importantly, there is currently no formal basis for achieving consistency in digital spatial information datasets.

The review further found that with the right rules framework for spatial information several types of benefit will be generated, including:

- improved data quality, including at the local council level. Councils are rightly custodians of certain datasets, but the state-wide importance of those datasets means that consistency in data quality and metadata is essential
- improved data access, as organisations would be able to obtain the full benefit of access to spatial information products and services produced by others
- reduced compliance costs, eg. by reducing repetition of data requests for standard information in forms
- reduced data search costs from reduced duplication and data inconsistencies, and improved metadata (search costs are a large component of data-related costs)
- operational cost savings from greater coordination of spatial information management, and clearer organisational roles and responsibilities
- transparency benefits from improved data quality

On the basis of the analysis conducted during the review, it concluded that a new authorising environment and framework of rules is needed to formalise roles and responsibilities for managing spatial information, to define a set of fundamental or core information, and to set out requirements for exchanging and making that information available.

The new framework of rules should include new legislation that would:

- play an ‘enabling’ role for the creation and management of spatial information
- promote the sharing of spatial information
- set a framework for spatial information standards, guidelines, and for consistency and interoperability between datasets
- clarify and standardise terminology in order to reduce the presently large role for interpretation due to the lack of clear and common definitions
- clarify roles and responsibilities, and reduce overlap

It also concluded that legislative reform should involve a new Act rather than solely seek to amend a series of existing Acts that are interdependent in complex ways, and in some cases are inconsistent.

*The Council would welcome the consideration of these issues and the recommended solution as part of the response to the Green Paper. The ready availability and appropriate management of information is of growing importance to appropriate emergency response, as well as a critical part of emergency management as a whole.*

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