

Reforming Flood Insurance Clearing the Waters

Submission addressing the Reforming Flood Insurance – Clearing the Waters Report
PART B – Flood Mapping Development Framework.

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PART B – FLOOD MAPPING DEVELOPMENT FRAMEWORK

Part B of the “Reforming Flood Insurance – Clearing the Waters” identifies requirements as specified below. Landgate is able to support these initiatives through the provision of products and services and information coordination.

- **The adequacy of current of data vital to the development of strategies to deal with the risk of disaster.**
In order to develop the most appropriate and effective community strategies to deal with the risk of natural disasters, it is essential that the amount and quality of available information relating to those risks is maximised. In relation to flood, meteorological information for predicting weather events, and geospatial data indicating elevation levels and other physical characteristics of flood-prone properties, are considered to be vital.
- **Access to data is critical for the development of effective flood risk insurance products.**
Accurate data of this nature can assist with appropriate decisions about land use and development and ensure that home and business owners are fully informed of the risk of flood associated with their properties. Discussions with the insurance industry following the recent spate of flooding has highlighted that data of this kind are also critical to the pricing and development of flood risk insurance products. Improved access to reliable flood risk information could be used by insurers to better assess risk and possibly increase the range of flood risk products they offer.
- **Reliable Flood Risk Mapping to depict areas across the Nation at risk of riverine flooding, flash floods, storm surge and coastal inundation.**
In recognition of the role of reliable geospatial data in assessing and mitigating risk from flood, the Council of Australian Governments (COAG) has tasked the National Emergency Management Committee to scope a potential work program to map areas of risk relating to riverine flooding, flash floods, storm surge and coastal inundation. From the Commonwealth’s perspective, this work is being progressed by the Attorney-General’s Department.

Given the importance of reliable flood risk mapping to the insurance industry, the Australian Government has invited the Insurance Council of Australia (ICA) to play a key role in the process of scoping a potential work program to map areas of risk relating to riverine flooding, flash floods, storm surge and coastal inundation. The ICA has agreed to consult with government during the scoping of this potential government project. This will help ensure that any outcomes developed through the COAG process will take full account of the industry’s views on the technical and other requirements of any flood risk mapping. Ultimately, the goal is to ensure that communities, planners, emergency services, individuals, property owners and insurers understand the flood risks that they face, and that effective flood insurance products can be developed, potentially increasing their affordability and availability for community members with flood exposures.

Response from Landgate

Introduction

Landgate is a statutory authority with commercial powers established under the *Land Information Authority Act 2006* (the Act). It is the trusted primary source of many fundamental location information datasets and the information systems and services it provides are vital to the efficient operation of the property market and underpin the rating and tax base in WA.

Landgate is founded on dual objectives: the management and provision of location information on a not for profit basis; and the development of commercial products and services from the location information asset which can be marketed to generate a fair return for the State.

These interdependent objectives set the framework for Landgate to:

- maintain the quality and integrity of the Government's location information systems (including the State's geodetic survey, mapping, titles and valuations functions);
- provide access to location information on a fair basis; and
- operate on a sustainable commercial basis, with a view to generating profits that can be reinvested back into providing high quality, cost effective systems and services and into initiatives that deliver economic, environmental and social benefits to society.

Location information is a valuable asset because a range of economic, social and physical data can be linked to a geographic location and integrated, transforming it into location knowledge. Providing people access to knowledge of any location is powerful as it helps them to make informed and confident decisions. Better decisions lead to better economic, environmental and community outcomes.

Location information is key information which relates to Flooding. This is because it includes such information as aerial photography roads, address, topography and location of buildings for emergency services response and land ownership and Flood line mapping for recovery operations. Time series aerial photography captured before and after floods and available as 3D models provides a visualisation of the flood and its impacts.

Landgate has developed a Location Information Strategy in collaboration with the WALIS community to enhance the collection and management of WA's location information. The Location Information Strategy will be progressed by Government and industry organisations through initiatives that increase collaboration, reduce duplication, improve access to data and service delivery and provide the evidence necessary for sound decision making and the development of strategies to mitigate the risk associated with natural disasters. Landgate will take a lead role on relevant projects as part of implementing the strategy.

Full implementation of the following five strategic initiatives will ensure that WA realises the true value of its location information and builds a solid foundation for location information in the future. The initiatives are:

- Strategic capture of the State's location information.
- Enhancing access to location information.

- Citizen engagement through location technology.
- Education and career development – embedding location intelligence.
- Promoting and branding the State – Location WA.

Landgate is well positioned to be the source of quality data and can leverage established relationships and delivery channels to become the location services source for Government. Over the next five years, Landgate will facilitate the evolution of technical infrastructure and its operability underpinning the location information strategy, including the redevelopment of the 'SLIP Enabler' component of SLIP and development of the iSpatial platform.

As the primary source of many fundamental datasets that underpin the location information industry in the State (i.e. tenure, cadastre and imagery) and with a reputation as a “can do” organisation and an emerging leader, Landgate will lead the transformation of the location based knowledge sector in order to maximise the resultant economic, environmental and social benefits for the community.

Western Australia is well positioned to deliver critical location information to support the priorities and reforms in the flood risk mitigation and management. For 30 years, the Western Australian Land Information System (WALIS), a partnership between local, state and federal government, the private sector and academia, has enabled a truly holistic approach to location information management in Western Australia.

In addition, the Shared Land Information Platform (SLIP), an internationally recognised government information sharing capability, now provides shared access to a wide range of land and property information. SLIP is now connected to 25 agencies and delivers over 450 data sources online. FESA has developed an emergency management bureau service that leverages SLIP to deliver a common operating picture for emergency response agencies during incidents.

Landgate's National Flood Mapping Products

Landgate is able to provide digital data and products to support the Council of Australian Governments (COAG) and the National Emergency Management Committee (NEMC) to scope a work program to map areas of risk relating to all types of flood.

Landgate is able to provide digital data and products to support the Council of Australian Governments (COAG) initiative a work program to map areas of risk relating to all types of flood. Landgate can provide services to the National Emergency Management Committee (NEMC) to scope the work program for mapping flood risk areas. Landgate can also be called upon to provide advice to the Attorney-General's Department and the Insurance Council of Australia, which are playing a key role in this progressing this work program.

FloodMap Online

Landgate currently supplies National flood mapping products online through its Floodmap service (<http://floodmap.landgate.wa.gov.au>). FloodMap products currently include:

- daily surface water derived from orbiting satellites produced in near real time;
- a historical archive of the daily surface water;
- a relative Soil Moisture index product;
- an estimated profile available water product;
- a flood risk model derived from evidenced based satellite imagery; and
- associated satellite imagery and topographic information to assist in the interpretation of flood products.

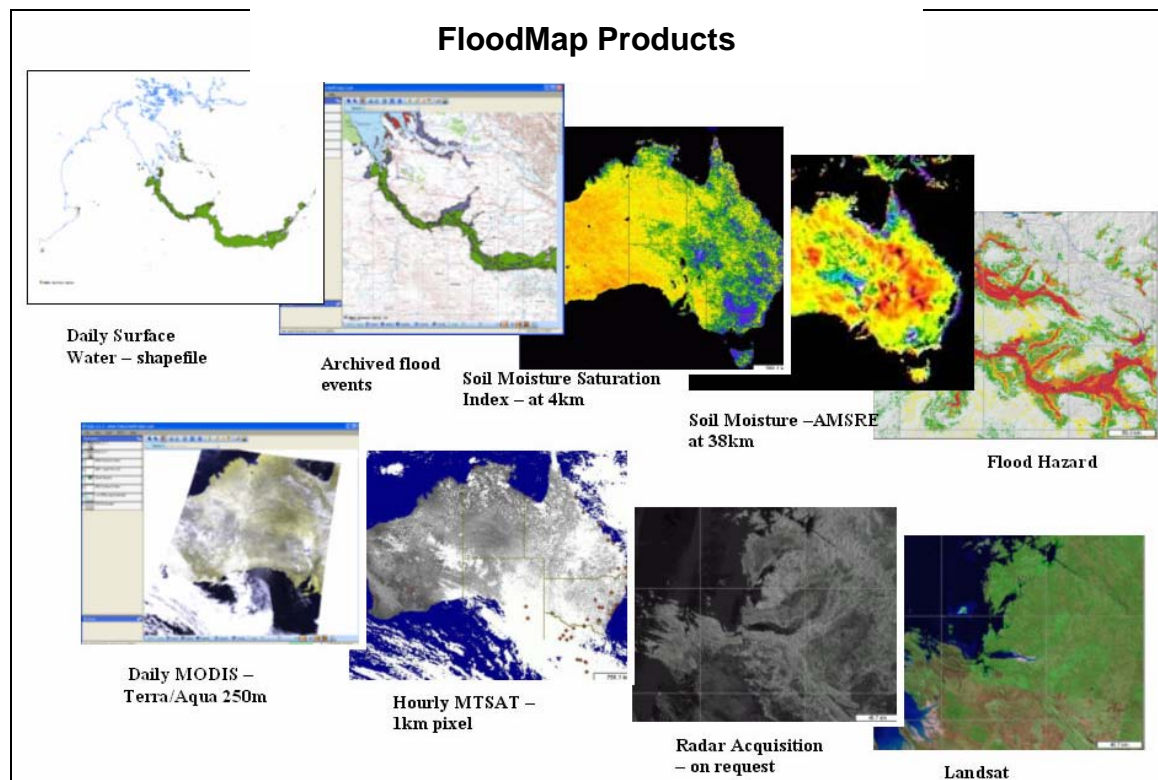


Figure 1: FloodMap Products

Available at http://floodmap.dli.wa.gov.au/landgate_floodmap_public.asp

FloodMap delivers daily mapping coverage of daily surface water across all of Australia from earth observation satellites. This product can be used and is being used to validate flood risk areas and the extent of floods in Queensland from the 2010/11 wet season. It is a product best used in regional Australia rather than urban Australia due to the spatial resolution of the imagery captured by the satellites.

Figure 2 depicts the daily surface water as at 29th December 2010 showing the extent of flooding across eastern Australia. Maps are produced as image and vector files derived from a 250m spatial resolution image. Underlying roads or other infrastructure layers clearly show where roads and other infrastructure are inundated and potentially damaged.



Figure 2: Surface Flood Water 29 December 2010

The satellites used in the production of daily surface water product span back to 1999 forming an archive of national coverage over a 12 year (and growing) period. This would be an important input into flood risk modelling and is a significant component in Landgate's National Flood Risk Model. Landgate is also investigating an additional satellite that can potentially extend the archive back to the 1980s.

For example, the map below (Figure 3) was used to compare the flood extent of the recent 2011 flood of the Fitzroy River, Western Australia relative to the 2002 flood event. The capability to perform this operation on line became essential when the Department of Water's stream gauge failed in February 2011.

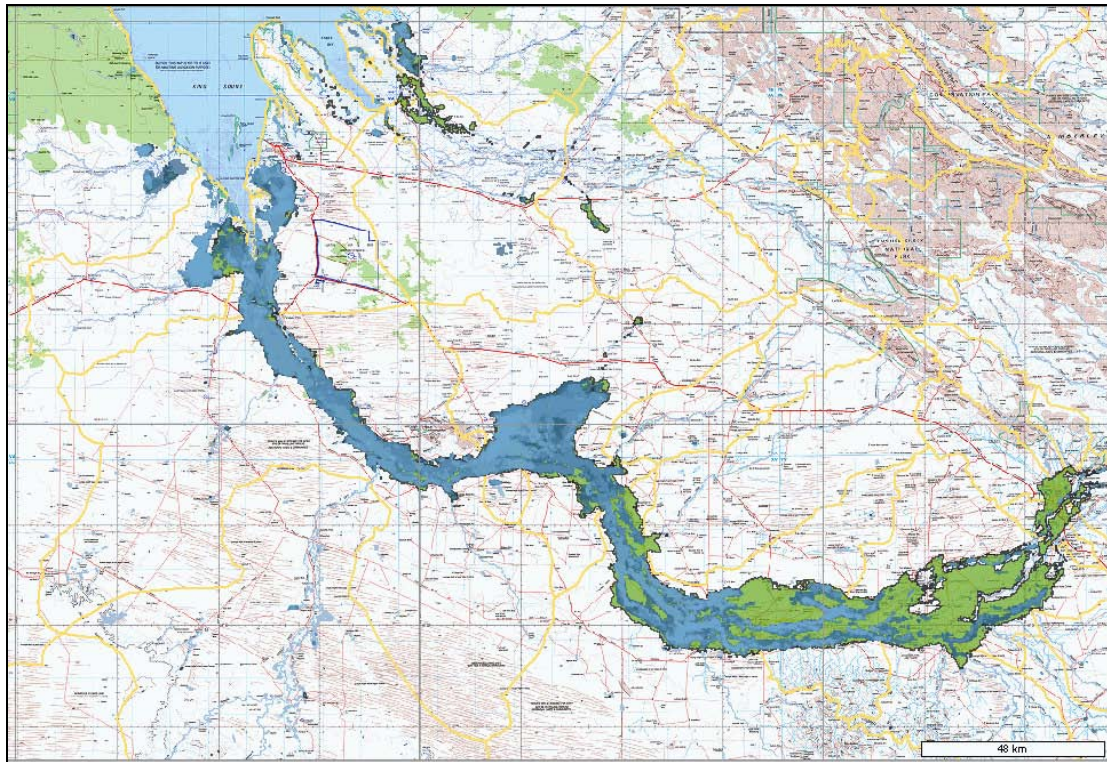


Figure 2: Flood History of Fitzroy River Western Australia. Green is 2002. Blue is 2011

Landgate has also produced a **Flood Risk Model**. Landgate has improved on traditional methods using the daily surface water from its archive to model flood risk. This is an evidenced based flood modeling approach as opposed to statistical information approach and has is proving to be an accurate indicator of flood risk. Figure 4 illustrates the output of the Flood Risk model produced by Landgate and Figures 5 and 6 illustrate the coincidence of mapped surface water for the Rockhampton region in 2010/11 relative to the Flood Risk categories produced in Landgate's Flood Risk Model.

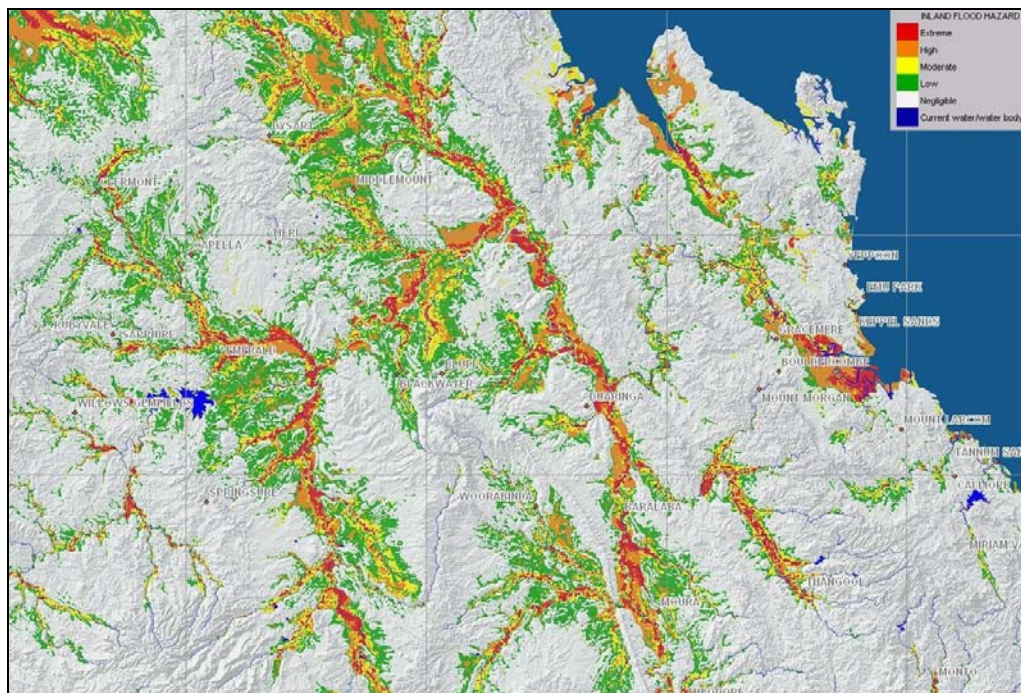


Figure 4: Portion of Landgate's National Flood Risk Model (constructed at a spatial resolution of 90m) showing the flood risk in the region of Rockhampton QLD.

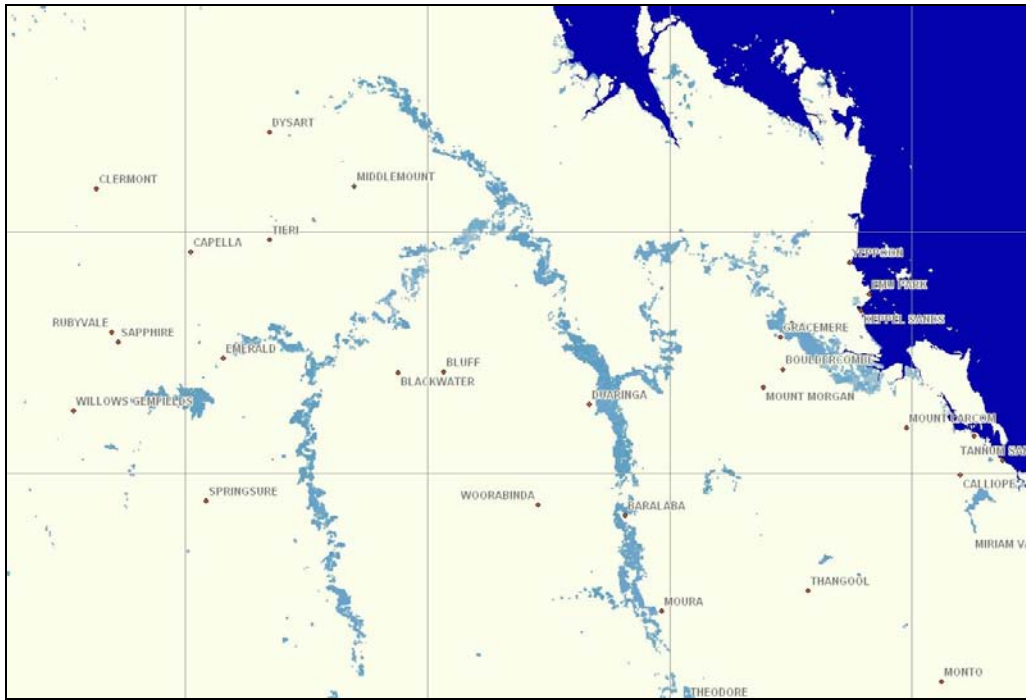


Figure 5: Landgate's daily surface water capture of the Rockhampton Flood events 2010/2011

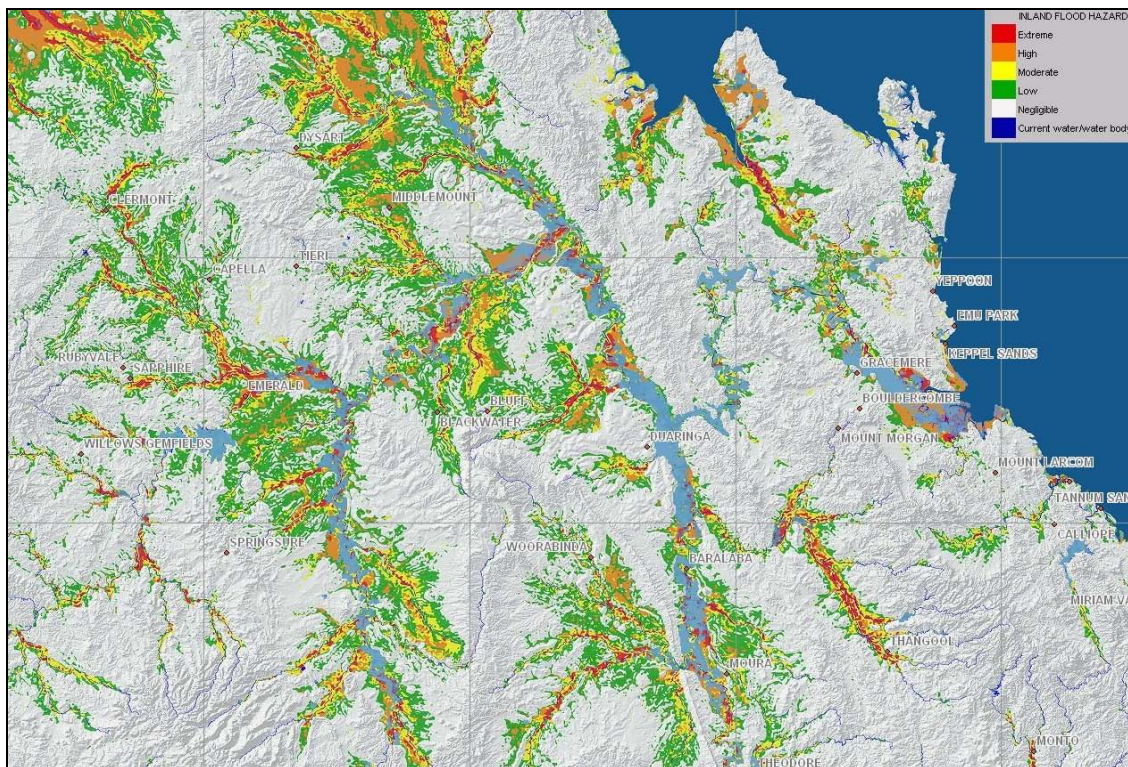


Figure 6: Observed surface water versus Flood Risk categories in the Rockhampton Region 2010/11.

Landgate currently provides a Web Map Service (WMS) for its FloodMap Products to the Western Australian Fire and Emergency Services Authority. This is used within FESA's operational systems for monitoring flood events in Western Australia.

In addition to Flood Mapping products, Landgate can provide the following services:

- Coordination of geospatial data that is required for a Flood Risk Mapping Work Program.
- Supply of Digital Elevation Models (DEM) covering Western Australia.
- Refinement of the Flood Risk Model utilising higher resolution inputs suitable for urban use or regional use.