THE NATIONAL ELEVATION DATA FRAMEWORK (NEDF) (2008-2011)

Strategic Planning Document

Purpose of this Document

The purpose of this document is to set out the program of activities that will guide Australia's development of a properly constructed National Elevation Data Framework (NEDF) over three years from 2009 in order to help Australia with its fundamental needs in tackling climate change, water management and a range of other dependent requirements.

The Need

Australia's future safety, prosperity and sustainability depends on making informed policy and investment decisions that meet the needs of today, and the decades ahead. Digital elevation data which describes Australia's landforms and seabed is crucial for addressing issues relating to the impacts of climate change, disaster management, water security, environmental management, urban planning and infrastructure design. Over the past decade advances in technology have made it possible to collect and use accurate elevation data to address these issues. Consequently, the use of such data has increased dramatically across all levels of government, the private sector and research organisations.

Vision

To ensure that decision makers, investors and the community have access to the best available elevation data describing Australia's landforms and sea bed to address the needs of today and the decades ahead.

Mission

The mission of the NEDF is to optimise investment and access to existing and future data collections and ensure this investment is directed at policy and operational needs at national, state/territory and local levels. The NEDF will benefit federal, state and local agencies, the public, and the private sector by:

- enhancing access to information across all levels of government, industry, academia and the community
- minimising duplication of effort
- increasing the utility of data by developing and promoting flexible standards that meet the needs of users and providers and 'future proof' of our investment in data
- promoting industry development through the coordination of acquisition programs, adoption of standards, partnerships and development of appropriate licensing arrangements
- influencing the development of national and international capacity to mitigate and adapt to the impacts of climate change.

Strategies

The Federal Government has established a strategy comprising three pillars to tackle climate change; adaption, mitigation and international cooperation. It has also placed a greater emphasis on the importance of information in helping promote social inclusion (that the ability of individuals and

communities to make sound decisions based on a good flow of information) and recognising inter-generational equity.

In order for the NEDF to achieve its mission of dramatically improving Australia's Spatial Data Infrastructure in relation to elevation and related data, there must be a shared and sustained commitment from government and industry to address broad strategies which focus on both short and long term needs of users and providers. Over the next three years the NEDF will develop improved:

- **governance structures** that enhance coordination and cooperation across all levels of government and industry and define the roles and responsibilities of stakeholders
- **mechanisms for funding** which promote cost sharing, and coordination of data acquisitions which meet whole of government requirements. These strategies will be seeking value for the taxpayer and promotion of industry development
- **technical standards** which maximise the utility and interoperability of data to meet local, regional, national and international needs
- **access, distribution and use arrangements** which ensure information is discoverable, accessible and able to be used (without restriction) by government, industry and the community for improved decision making. These strategies will be underpinned by the expectation that data collected using public monies will reside within the NEDF
- **industry development and capacity building** to help grow the ability of industry to meet the expanding needs of Australia in this area of technology. This will also involve getting the right market drivers and the appropriate training programs.

Actions

Governance structures

- a National Steering Committee has been established with the support of Senator the Hon Penny Wong Minister for Climate Change and Water. The Committee has representatives from:
  - ANZLIC - the Spatial Information Council representing State jurisdictions
  - Department of Climate Change, Geoscience Australia and Bureau of Meteorology representing the Australian Government
  - Australian Spatial Industry Business Association representing the private sector, and the
  - Cooperative Research Centre for Spatial Information representing the research community.

- the Steering Committee is providing leadership and program oversight. It also oversees the Technical and Project Committees.

Mechanisms for Funding

- In June 2008 the Senator the Hon Penny Wong Minister for Climate Change and Water announced $2.0 million in funding for the acquisition and processing of high resolution elevation data of priority coastal areas. The Urban DEM project will fill gaps in information over key urban and industrial areas which may be subject to inundation due to the impacts of climate change or storm surge. The project will also address key technical issues associated with the ongoing development of the NEDF.

- In September 2008, the Bureau of Meteorology, Geoscience Australia, CSIRO and the Australian National University committed approximately $3 million over 12 months to the development of a new national DEM at 1 second or ~30m resolution. The SRTM-2 data was made available from

the US Defence Force and Australia's Defence Imagery and Geospatial Organisation. The current national DEM has a resolution of 9 seconds or ~250m. A Digital Surface Model (DSM) was released on a restricted basis for government use in early 2009. By late 2009, a 'bare earth' DEM was completed for around 80 per cent of Australia. A funded plan will also be developed to complete the remaining 20 per cent. The program also involves work to integrate water bodies and streams into the DEM for water accounting purposes.

- A detailed national data audit was completed by early 2009 that identified all major high resolution elevation data holdings and current access arrangements. The data audit will form the basis of a detailed gap analysis and costed plan for accessing existing data, and completing data acquisition at a range of resolutions on a priority basis.

- A map of Australia is being prepared showing; all existing DEM datasets that meet the NEDF standard and that are available for use, the priority for acquisition on an area by area basis showing the resolution required for all areas of Australia (terrestrial and marine) to meet the anticipated needs of the nation over the five years to end 2013. The three priority vertical resolutions (terrestrially) are; approx 15cm, 1-2m and greater than 2m.

- Options for funding of a nationally coordinated acquisition program will be investigated and implementation plans developed on a priority basis.

Technical Standards

- The Intergovernmental Committee for Surveying and Mapping has established a Technical Working Group responsible for the development of technical and guidelines and standards:

    - Version 1.0 of the National Guidelines for Elevation Data Acquisition was released in August 2008
    - development of national best practice product, quality assurance and metadata specifications has been completed in conjunction with the Urban DEM project.

Access, Distribution and Use Arrangements

- A 'Virtual Data Repository' and on-line portal will be developed that allows easy discovery of existing elevation data holdings, metadata, and current access conditions. The portal will provide links to national, state, local and commercial data custodians for delivery of project level data. The portal will also allow users to register their interest in future data collections to facilitate the development of funding consortia.
- High resolution project level data will be progressively incorporated into standardised national products and made available online for public access.
- In recognition that project-based funds will be crucial for ongoing development, procurement and licensing guidelines will be developed to address intellectual property, access and use arrangements, and adoption of national technical standards, to ensure new data can be incorporated into the NEDF. This activity will focus on ensuring publicly funded data is accessible and able to be used by government, industry and the community for improved decision making.
- The CRC for Spatial Information will undertake a number of pilot studies funded by the Urban DEM project to review and test current best practice approaches for storing, processing and disseminating large volumes of elevation data. This work will feed into strategies for implementation under the NEDF. The critical areas for research are:

- determining the most efficient mechanisms for data management, processing and web-based delivery and the appropriate architecture
- greater automation of integration of nested DEM's of differing scales into the national DEM framework
- resolving the MSL-AHD datum discrepancies in the high priority coastal regions
- determining the most efficient mechanisms for collecting data in the inter-tidal and near-coastal zone.

Other issues

There are a range of other issues that will need consideration under the NEDF:

- the role of licensing and in particular creative commons licensing and open access arrangements
- emerging international issues with Australia's Pacific neighbours in particular and international relationships in general
- the links between the NEDF and the process models required for climate change, water management, urban planning and the many other areas that can benefit from improved DEMs.

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