



TASMAP

Topographic mapping

Future directions

April 2015

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Introduction

TASMAP is the Tasmanian Government's base mapping service, with a long history of producing high quality mapping products, including a wide range of topographic series, national park and tourist maps, street atlas and other mapping products.

TASMAP is managed by the Information and Land Services Division (ILS) of the Department of Primary Industries, Parks, Water and Environment (DPIPWE).

In 2011, **TASMAP** conducted a comprehensive online survey to:

- ☐ obtain a thorough understanding of client expectations, requirements and usage in relation to the content and distribution of current and future products, and
- ☐ provide a sound basis for future decisions.

The survey revealed that many clients were using in-car navigation systems, hand-held Global Positioning System (GPS) devices, smartphones or Geographic Information System (GIS) software to meet their mapping needs. In addition, almost half of all respondents indicated that they would like to be able to purchase digital maps.

Current trends in topographic mapping have since substantiated the results of the survey, identifying increasing global demand for digital mapping products and improved map currency, as well as the retention of traditional hard copy maps.

Both **TASMAP** survey results and a rigorous analysis of recent trends have been key inputs into the development of future directions. This is an exciting time for Tasmanian map users, as we aim to modernise our mapping products to meet projected client needs over the next decade.

Before we finalise our new directions, we would really like to hear your views and encourage you to provide feedback on the proposals outlined in this document.

Please email all comments by close of business on **22nd MAY 2015** to julian.gill@dpipwe.tas.gov.au.

Background

KEEPING PACE WITH CHANGE

In recent times, ILS and **TASMAP** have experienced significant and progressive changes in the range and type of services we deliver to our clients, including the gradual transformation from traditionally paper-based processes to the seamless management of digital information across multiple systems.

In response to this transformation, ILS has adopted a more contemporary approach to the delivery of high quality services and authoritative information about land and property in Tasmania.

At the same time, the pace of change in mapping has been exponential. All types of spatial information – including maps – have become critical tools for evidence-based decision-making, alongside more traditional uses such as navigation, recreation, the depiction of terrain and emergency management.

Responding to the needs of map users has been an important part of **TASMAP**'s charter for over sixty years. In the early 1940s, maps were designed to satisfy military and defence requirements. As Tasmania focused on the development of hydro-electric power, mineral exploration and economic expansion in the immediate post-war era, **TASMAP** created base topographic maps to support new industrial and economic activity.

By the 1970s, tourism had become an important part of Tasmania's economy. **TASMAP** responded by producing National Park and recreational maps to cater for increasing visitor numbers. Through the 1980s and 1990s, the 1:25,000 series provided a base for natural resource management, as well as a strong foundation for the initial development of today's extensive range of statewide, digital spatial datasets.

TASMAP products are now used extensively across a range of applications and diverse user groups, including emergency planning and response, agriculture, forestry and recreational bushwalking.

TASMAP has always been proactive in keeping pace with changes in user demand and ensuring that new technologies are adopted and utilised. These future directions have been developed to ensure that our map products continue to be relevant and fit-for-purpose, both now and into the immediate future.

THE EVOLVING LANDSCAPE OF TOPOGRAPHIC MAPPING

Since the 2011 survey was conducted, the technology and application of topographic mapping have evolved even further. These factors have been critical to the development of future directions for topographic mapping in Tasmania.

SPATIAL INFORMATION FOUNDATIONS

Multi-scale topographic basemap

A significant output of the Spatial Information Foundations (SIF) project was development of a multi-scale topographic basemap, delivered via web services. The basemap web service is used by *LISTmap* as well as many other government web mapping systems; it can also be consumed by iOS and Android applications. The basemap is updated from the best available data every two months, and features 19 scale levels from 1:591,657,550 up to 1:2,256. The service is available at no cost under the provisions of Creative Commons licensing. It provides an excellent multi-scaled base for many diverse applications requiring topographic data, meeting the needs of most contemporary users. It also allows users to view and overlay an extensive range of additional GIS information, and is compatible with desktop printing.

LISTmap and COP

Another key SIF output was the development of a modern web mapping application for use in *LISTmap* and the new emergency services' *Common Operating Platform (COP)*. Both instances of the web mapping application access the multi-scaled topographic basemap, as well as hundreds of other spatial datasets, scanned topographic maps and layers of imagery. The new application has many enhanced functions, including tools for bookmarking, drawing and measuring, and the ability to print customised maps at set scales.

GREATER EXPECTATIONS OF CURRENCY

Easy access to a wide variety of online mapping and in-car navigation applications has increased community expectation that the information provided on maps will be reasonably current. Given the large number of topographic maps covering Tasmania, it is impossible to satisfy this expectation unless changes are made to both the format and resources associated with the current revision program: there are 415 maps in the 1:25,000 topographic map series with an average age of 20 years (40% ≥25 years); the 1:100,000 topographic series includes 40 maps with an average age of 10 years.

Figure 1 depicts the year of production for maps in the 1:25,000 and 1:100,000 series.

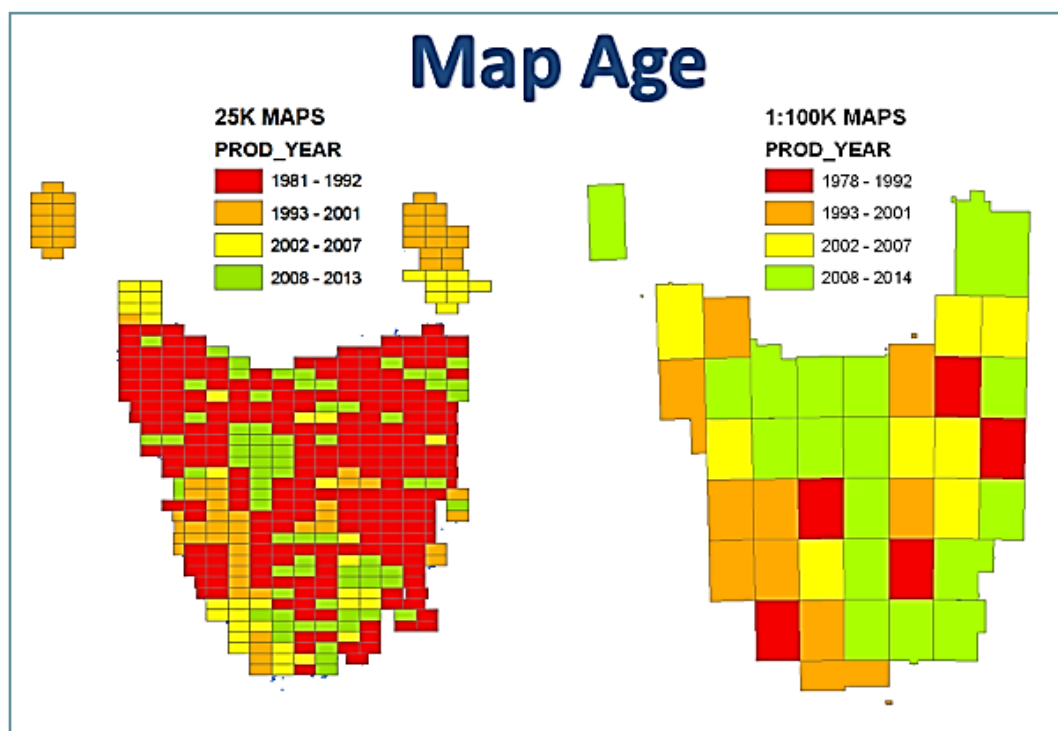


Figure 1: Topographic maps – year of production

RECENT TASMAP DEVELOPMENTS

After the survey in 2011, **TASMAP** developed a number of recommendations to improve product quality, useability and delivery, including:

- ☐ production of digital versions of products for delivery through the **TASMAP** eShop – www.tasmap.tas.gov.au – commencing with the 1:25,000 topographic series, followed by the 1:100,000 and 1:250,000 series. Digital products able to be purchased as GeoTiff, KMZ (Google Earth format) and print-ready PDF where available
- ☐ implementation of product thumbnails on www.tasmap.gov.au, enabling clients to preview map content prior to purchasing and see related products
- ☐ adoption of a simplified portrayal of vegetation cover across all series mapping products
- ☐ investigation into trialling a 1:50,000 topographic series to complement existing products.

To date, most of the above recommendations have been implemented, further informing the development of the proposed future directions.

LIMITATIONS OF LARGE FORMAT PRINTING

While there have been significant developments within the printing industry that enable cost-effective digital printing for smaller print runs of hard copy maps, those cost benefits do not apply for print sizes over A3: there is still a requirement to offset-print larger format maps, resulting in significantly higher printing costs.

UNECONOMICAL SMALL PRINT RUNS

Many of **TASMAP**'s topographic maps have low average annual sales. For example, in the 1:25,000 topographic series, only 14 maps have annual sales of more than 100 (see *Figure 2*). However, there is still a requirement for hard copy maps, for example, within Tasmania's emergency service organisations and for bushwalkers in remote areas. In general, small print runs are not cost-effective. For maps with low annual sales, it is necessary to either print very small numbers with very high unit cost, or print more and carry higher levels of (generally) out-of-date stock.

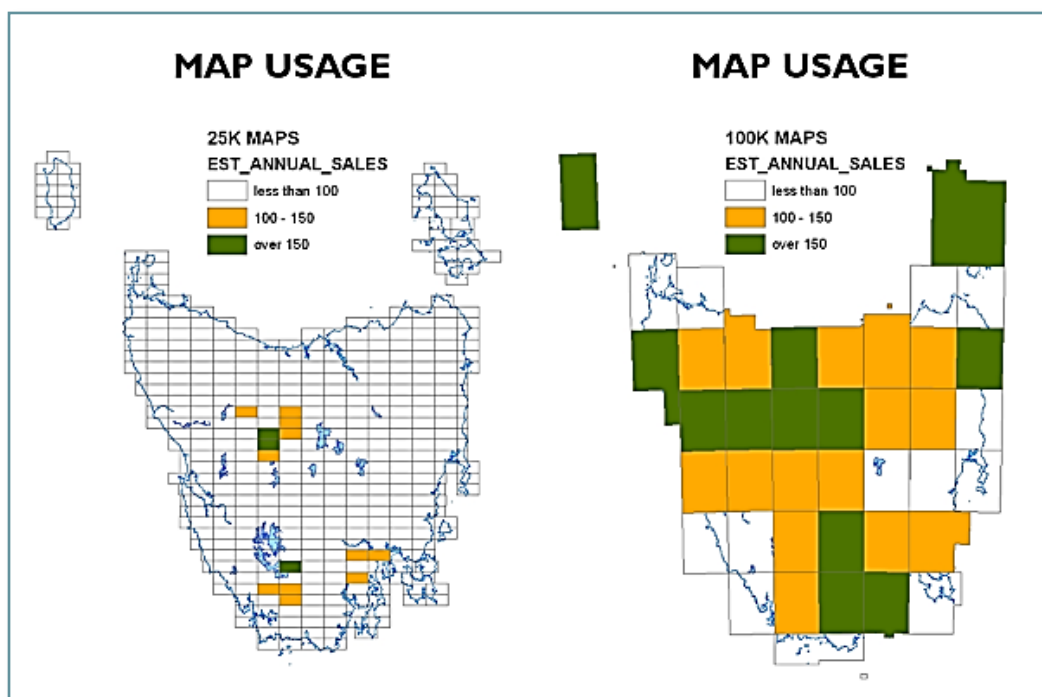


Figure 2 Depiction of current annual sales of hard copy maps

INCREASED USE OF GPS DEVICES AND SMARTPHONES

Over the last few years, the use of smartphones has increased significantly, allowing users to access online mapping applications and positional information directly from their phones. The use of hand-held GPS receivers and in-car navigation devices has also increased, albeit not to

the same extent. An issue of particular relevance to Tasmania, with its patchy network coverage, is that web-based mapping applications will not function where there is no network coverage. To some extent, this problem can be overcome by using phone applications that allow data to be loaded, but this depends on a readily available and relevant source of digital mapping data.

CROSS-UTILISATION OF DIGITAL AND HARD COPY MAPPING BY EMERGENCY SERVICES

While traditionally hard copy map users, Tasmania's emergency service organisations are increasingly dependent upon GIS and web mapping applications (such as the COP) in tandem with hard copy maps for operational management and support; there is a critical need to provide a consistent topographic map base across all mapping platforms – digital and hard copy.

CHANGING POPULATION DISTRIBUTION

Over the last 40 years, there has been a significant shift in Tasmania's population distribution, particularly an increase in rural residential living. As a result, the traditional topographic map series specifications have become difficult to implement without a substantial loss of legibility. Figure 3 shows how an altered population distribution can affect the readability of maps with standard specifications.

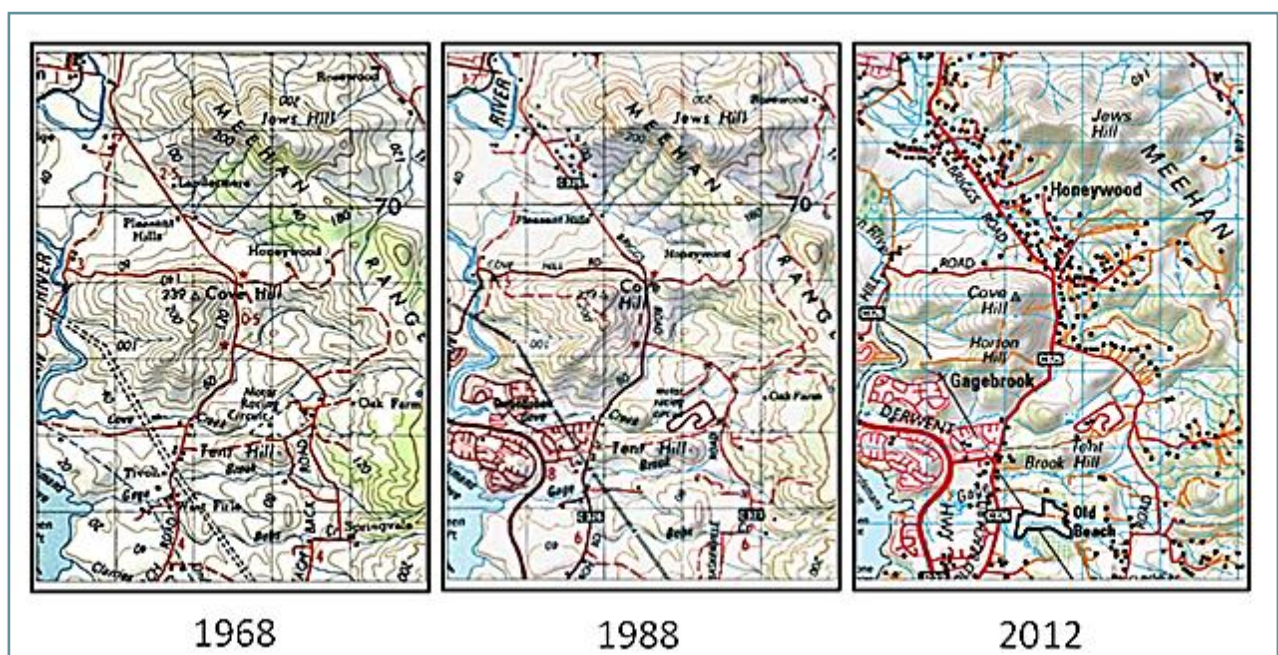


Figure 3 Changing population distribution 1:100,000 map series

OPEN DATA

There is a significant trend across all Australian jurisdictions, including Tasmania, to release government-held data with the least restrictive licensing conditions. In response to that impetus, ILS now provides access to an increasing number of foundation spatial datasets, available for digital download by all members of the public – including third party application and map developers – free of charge. This includes base topographic datasets. This enables any member of the public to produce their own customised mapping products, from a simple A4 map of an area of interest to a full-blown, custom mapping product. For more information on the range of data available at no cost, see <http://listdata.thelist.tas.gov.au/opendata>.

NATIONAL TRENDS

Both nationally and internationally, other governments have identified trends and shifts similar or identical to those referred to in this document, with the majority of jurisdictions seeking to significantly scale back the printing of series mapping, focusing more on digital products and enabling map users to ‘print on demand’.

Resource constraints are cited as a common factor in the reduction of hard copy map products, with greater emphasis placed on the digitisation and rationalisation of products. The trend is to deliver products that can better satisfy the needs of contemporary users, including the introduction of new scales for better coverage and more efficient revision. A shift towards varied scale mapping, according to the remoteness of the area mapped, is becoming increasingly popular, with prominence given to areas of concentrated population.

Proposed future directions

The proposals detailed below have been designed to provide timely, effective and relevant topographic mapping products for use by all members of the community and the Tasmanian Government, using the most current technology and informed by projected mapping trends.

1:50,000 TOPOGRAPHIC MAP SERIES

TASMAP has successfully trialled a new 1:50,000 topographic mapping series, made up of 83 individual maps. See *Figure 4*. This series is the result of in-depth research into the expectations and requirements of Tasmanian map users, combining the best features of the 1:25,000 and 1:100,000 series to provide a better and more relevant product.

It is proposed that the 1:50,000 map series will be progressively introduced over the next few years. Maps will initially be produced in areas where 1:25,000 maps are both out of stock and in high demand.

Maps will be available as digital or large format hard copy. Digital versions will be available for purchase at minimal cost through the **TASMAP** website once production is complete.

Digital versions will be current as at the last print production date of the relevant map. These products will cater for the majority of map users, enable greater opportunities for viewing, enable data to be imported to mobile devices and apps, and provide a variety of printing options.

The design of the series provides an accurate portrayal of topographic information, with symbols and map content clearly depicting buildings, hill shading and a simplified classification of vegetation.

An example is included at *Figure 5*.

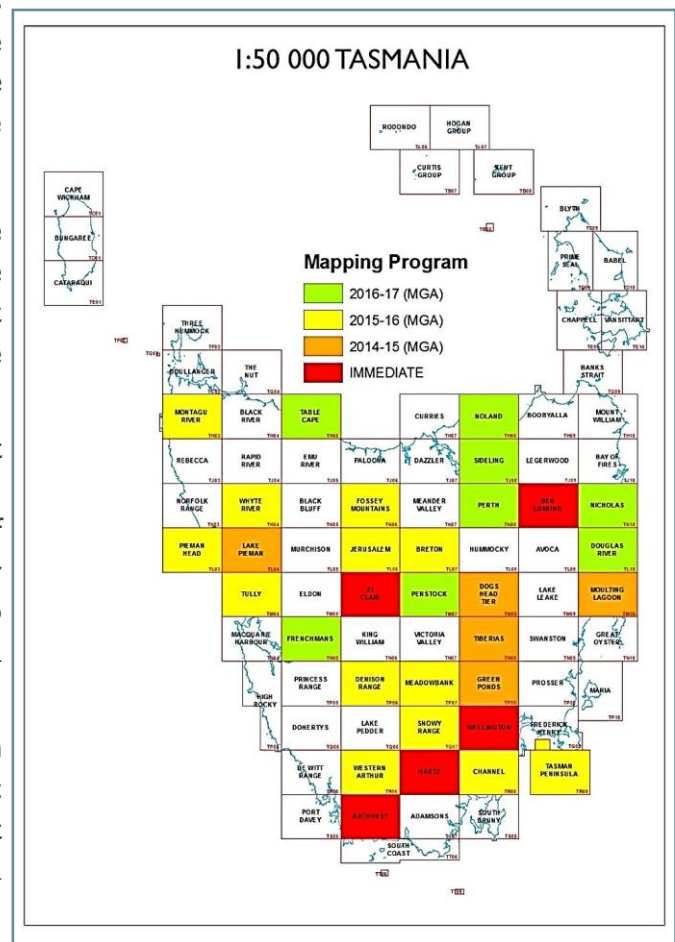


Figure 4 Proposed 1:50,000 map series program

TASMAP TOPOGRAPHIC MAPPING

Future directions

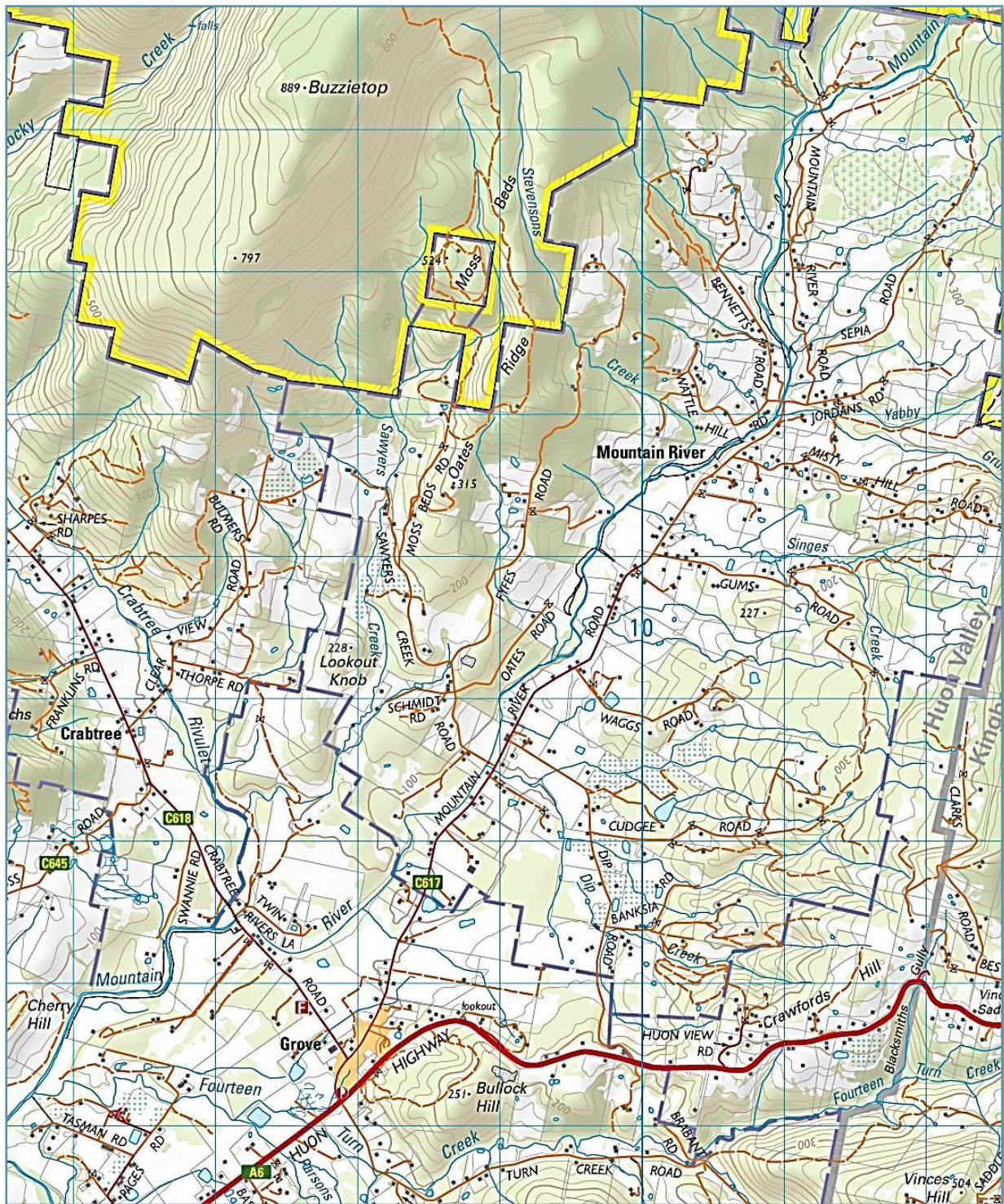


Figure 5 Example of a 1:50,000 topographic map, showing levels of detail

1:50,000 MAP BOOKS

It is proposed that production of a new *Tasmanian Map Book* series will commence in 2015. This series will comprise 301 maps and replace the original *Tasmanian Map Books* produced in 2007. Each map will cover a quarter of the 1:50,000 maps, with symbology and content common to both. The series will be designed for a more frequent revision cycle (two-three years, statewide coverage) providing the basis for maintaining a current statewide 1:50,000 map base. The series will be published as three books, based on the indexes shown in Figure 6. Digital versions of the pages will also be added to the **TASMAP** eShop in future years.

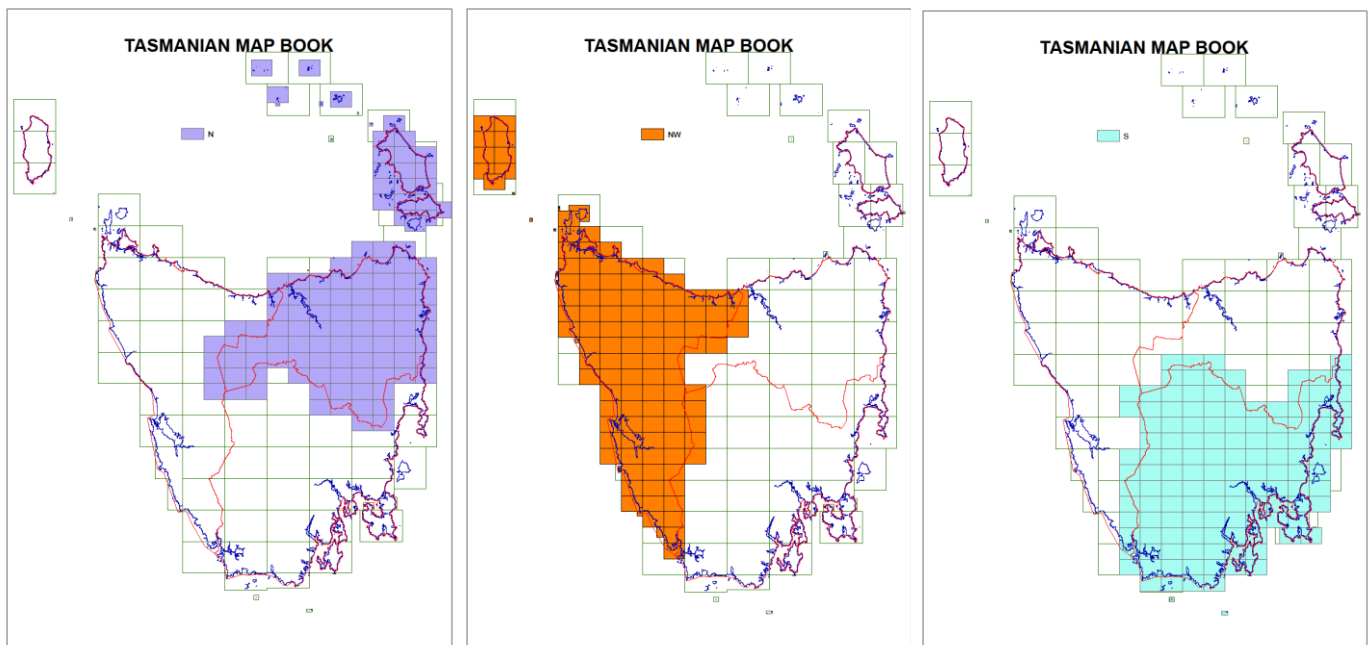


Figure 6 1:50,000 Map Book series index

1:250,000 TOPOGRAPHIC MAP SERIES

It is intended that production, maintenance and printing of the 1:250,000 topographic map series will continue, with a four-year revision cycle. Complete statewide coverage of the 1:250,000 series will continue to be available digitally at no cost through *LISTmap* and web service delivery.

NATIONAL PARK, TOURISM AND RECREATIONAL MAPS

Production, maintenance and printing of the National Park, tourism and recreational map products will continue. These products have regular revision cycles and the content and range is regularly reviewed to ensure these maps meet user needs and requirements.

TASMANIAN TOWNS STREET ATLAS

While demand for the *Tasmanian Towns Street Atlas* has diminished significantly, it is proposed that production and maintenance of the street atlas should continue for the time being, however, work on the next revision has not been scheduled.

1:25,000 TOPOGRAPHIC MAP SERIES

It is proposed that production and maintenance of the 1:25,000 map series will be discontinued, although existing hard copy maps will be available for purchase until stocks are depleted. Archived copies of final revisions will continue to be available as digital products.

1:25,000 digital products

Digital versions of all 1:25,000 maps will be available on the **TASMAP** eShop at a minimal cost of \$2¹, with formats including high resolution image and digital files for use within *Google Earth*. This approach will not only ensure continuity and cater for most 1:25,000 map series users, it will also provide enhanced opportunities for viewing, importing data for use in mobile devices and applications, and offer various print options.

1:25,000 print-ready PDF

As stock of individual 1:25,000 hard copy maps is depleted over time, print-ready PDF versions will be added to the **TASMAP** eShop for purchase at a proposed cost of \$5.50¹. This will enable the production of full-size, hard copy maps at professional printing outlets, meeting the needs of traditional paper map users into the future.

1:25,000 LISTmap

The complete set of digital 1:25,000 topographic maps is currently available at no cost through *LISTmap* and web service delivery, providing statewide coverage and the ability to use the online service in desktop GIS systems.

1:100,000 TOPOGRAPHIC MAP SERIES

It is proposed that maintenance and production of the 1:100,000 map series will be discontinued, although existing hard copy maps will be available for purchase until stocks are depleted. Archived copies of final revisions will continue to be available as digital products.

1:100,000 digital products

Digital versions of all 1:100,000 maps will be available on the **TASMAP** eShop at a minimal cost of \$2¹, with formats including high resolution image and digital files for use within *Google Earth*. This approach will not only ensure continuity and cater for most 1:100,000 map series users, it

¹ All prices quoted include GST

will also provide enhanced opportunities for viewing, importing data for use in mobile devices and applications, and offer various print options.

1:100,000 print-ready PDF

As stock of individual 1:100,000 hard copy maps is depleted over time, print-ready PDF versions will be added to the **TASMAP** eShop for purchase at a proposed cost of \$5.50¹. This will enable the production of full-size, hard copy maps at professional printing outlets, meeting the needs of traditional paper map users into the future.

1:100,000 LISTmap

The complete set of digital 1:100,000 topographic maps is currently available at no cost through *LISTmap* and web service delivery, providing statewide coverage and the ability to use the online service in desktop GIS systems.

Summary

Overview of the proposed topographic mapping directions outlined in this document:

1. Introduce a new 1:50,000 topographic map series
2. Introduce a new 1:50,000 *Tasmanian Map Book* series
3. Introduce digital versions of the base series maps: 1:25,000, 1: 50,000, 1: 100,000 and 1: 250,000
4. Archive the present version of the 1:25,000 and 1:100,000 map series, with no further revision
5. Continue to maintain and produce the 1:250,000 series, National Park, tourism and recreational maps, and the Tasmanian Towns Street Atlas.

Next steps

We welcome your views on the proposed directions for **TASMAP** and the Tasmanian Government's mapping priorities and programs. All feedback will be reviewed and collated to inform the development of final recommendations. A summary of the feedback and final recommendations will be made available on the TASMAP web site. Individuals or groups that made submissions will be notified that the documents are available.

Please email all comments by close of business on **22nd MAY 2015** to julian.gill@dpipwe.tas.gov.au.

TASMAP TOPOGRAPHIC MAPPING

Future directions

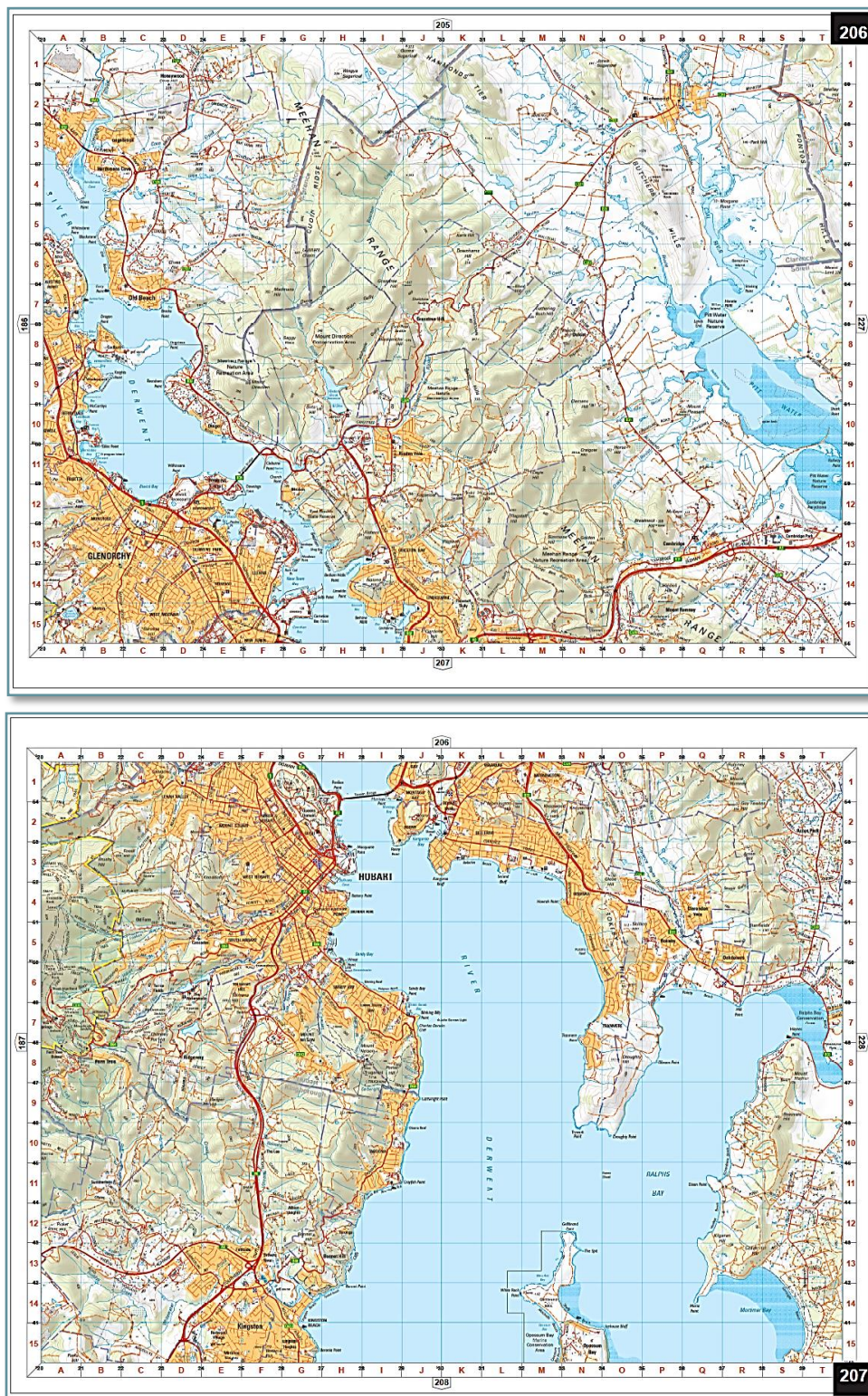


Figure 7 Examples of pages from the proposed (draft) 1:50,000 Map Book