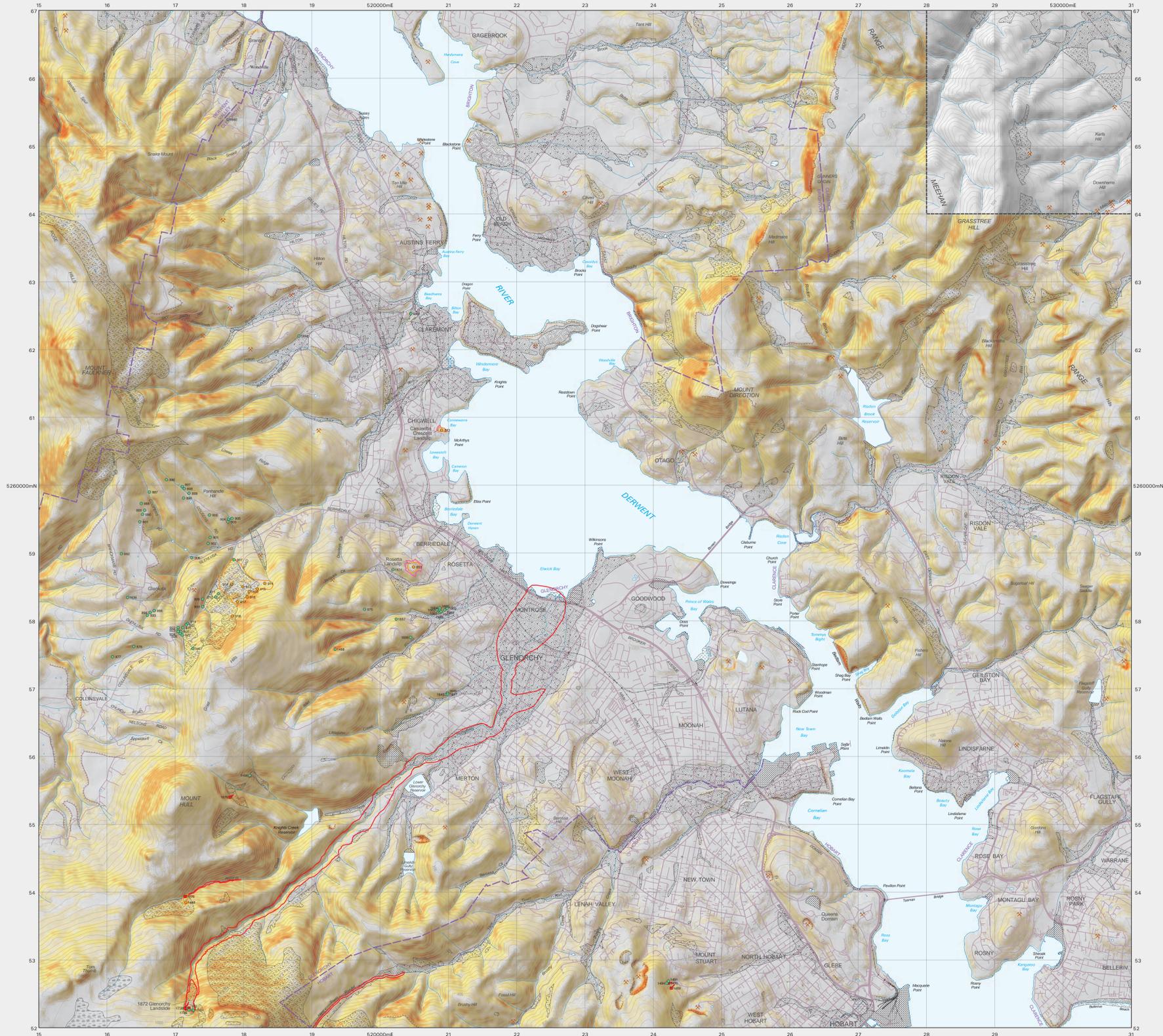


# TASMANIAN LANDSLIDE HAZARD SERIES

## GLENORCHY – LANDSLIDE INVENTORY AND GEOMORPHOLOGY

MAP 1 OF 5



### Landslide Inventory and Geomorphology

#### Background, Aim and Purpose

Large tracts of land throughout Tasmania are subject to slope instability and about 60 houses have been destroyed by landslides since the 1920s. Fortunately only minimal loss of life has occurred in the time but such events are highly traumatic to those directly affected and the financial cost to individuals, organisations and the State runs into many millions of dollars. Recent disasters such as the Thredbo Landslide in New South Wales, serve to remind society of the potential for loss of lives from residential areas. Fortunately, landslide damage can be avoided when ground conditions are properly understood before construction proceeds and in already developed areas, the understanding can be used to mitigate the hazard through various measures.

Regional landslide hazard maps are produced to provide an insight into the natural hazards that may potentially affect the area concerned. Mineral Resources Tasmania, in partnership with the Glenorchy City Council has produced a new landslide hazard map of the urban Glenorchy area and surrounds. The information provided is in the public domain and anyone is free to use it provided they read and understand the caveats for use.

#### Hazard and Risk

According to the joint Australian/New Zealand Standard (AS/NZS 4360:1999) risk is defined as the chance of something happening that will impact upon objectives. It is measured in terms of consequences and likelihood.

The definition of risk is often expressed by the following equation:

$$Risk = Hazard \times Vulnerability \times Elements at Risk$$

A hazard is defined as a source of potential harm or a situation with a potential to cause loss. A hazard, such as a landslide can be measured in terms of location, volume (or area), type, velocity and likelihood with time. Vulnerability refers to the susceptibility and resilience of structures, community and the environment to the hazard. The 'Elements at Risk' refers to the number of those structures, people, etc. exposed to the hazard.

A hazard map attempts to portray the processes operating in an area, conveying all or some of the hazard parameters, generally in a qualitative to semi-quantitative manner. Because of the uncertainties involved, the translation of regional hazard maps into risk maps is challenging and seldom precise. An indication of the likely risk level is provided for each hazard at a regional scale but this will vary in detail. However, provided the limitations of the maps are understood, hazard maps can be used for many purposes in order to achieve the overall goal of safe and resilient communities.

#### Caveats for Use

- The following caveats shall apply to the maps.
- The hazards identified are based on imperfect knowledge of ground conditions and models to represent our current understanding of the landslide process. As this knowledge improves our perception of the hazards and the depiction of the zones on the map may also change.
- These maps can be used as a guide (or flag) to the need for specific assessment in potential hazard areas.
- Planning decisions should not be made solely on the basis of the hazard zones delineated on the map.

- The scale limitations of the data should be considered at all times as exceeding this limit could lead to inaccurate decisions about the hazard.
- Specific assessment of landslide hazard and risk should be undertaken by suitably qualified and experienced practitioners in the fields of engineering geology and geotechnical engineering.
- Practitioners undertaking specific assessments should read the text and appendices attached to the maps and obtain a thorough understanding of the methodology and limitations of the maps.
- Areas where no hazard is shown can still have issues with slope instability.
- Anthropogenic influence on slopes cannot be predicted and the occurrence of slope instability resulting from the influence of human actions is specifically excluded from these maps.
- The identification and performance of cut and filled slopes have not been specifically considered in map production and their scale is such that they often cannot be resolved on the maps. The presence of such slopes should always be considered in specific assessments.

#### Method

A methodology has been specially developed for these maps and will be used for other urban areas of Tasmania.

The methodology used is based on:

- Recording observations of land instability in-and-arounding the study area (the landslide inventory).
- Analysis of the processes that control each landslide type.
- Computer assisted modelling that simulates each of the landslide processes to predict areas that could be affected by future landslides.

#### Landslide Database

Landslide data shown on this and associated maps is sourced from an electronic landslide database created by Mineral Resources Tasmania (MRT) for the storage of landslide related information in the State. Officially known as the 'Geohazards Module' and part of MRT's TIER1 information system, the database has been built to comply with Australian and international standards for the description of landslide information. Data stored within the module is sourced from both MRT records and external sources. Hobart City Council provided a significant number of geotechnical reports to contribute the knowledge base. However, MRT cannot guarantee that all historic information on landslides held by other parties is in its possession. Further, it is likely that there are a number of unrecorded landslides in the landscape that may be revealed in time after these maps are published.

As part of the completion process, all data shown on the maps has been checked by geologists to ensure that it meets the necessary minimum standards for landslide description. All reasonable effort has been made to ensure the data is accurately located and attributed. Some of the landslides have been inspected in the field by MRT geologists whereas the remainder are heavily reliant on the quality of the original investigation. Landslides that haven't passed MRT quality standards are not shown on the map but kept in closed file.

The Geohazards Module is a public database that is being developed with the view of making it available on the MRT internet site in the near future. GIS layers developed by MRT and shown on the map are supplied to each council in the study area once the maps are completed.

#### Geomorphology

The geomorphology component on this map shows a number of features that assist in understanding the landscape.

A slope model provides a classification of the landscape in 5 categories.

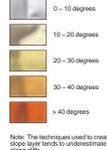
Surficial geological units have been extracted from the 1:25,000 geological map series of Tasmania. As a general rule, the geological map series is heavily focused on understanding the bedrock geology and surficial units are only shown where they have sufficient dimensions and/or obscure the underlying bedrock. The units shown have been simplified into:

- Cliffs, escarpments, quarry walls and major road cuts are depicted as scale permits. Quarry contours from MRT's construction material database (CMPODB) are shown to identify areas of significant artificial land disturbance.

#### Further Information

Further information on these maps or Tasmanian landslides in general can be obtained from the MRT web site at [www.mrt.tas.gov.au](http://www.mrt.tas.gov.au), or by contacting the agency directly.

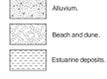
### Slope Data



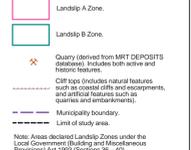
### Landslide Data



### Depositional Type



### Declared Landslip Zones



### Scale

Scale: 1:25 000

AGD66 - AMG Zone 55. Contour interval 20m



Citation:  
Macgregor, C. 2004. Map 1: Glenorchy - Landslide Inventory and Geomorphology. Tasmanian Landslide Hazard Series. Mineral Resources Tasmania, Department of Infrastructure Energy and Resources, Hobart.

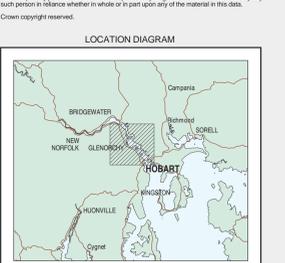
Acknowledgements:  
Landslide data entry and capture by N. Lathrope, C. Calver, S. Forsyth and A. Bray. Landslip modelling, geomorphology and text by Colin Macgregor. Base data from the LIST. © State of Tasmania.

Map produced by the Data Management Branch, Mineral Resources Tasmania under GIS software.

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### LOCATION DIAGRAM



LANDSLIDE HAZARD SERIES  
Data correct & plotfile generated: 24-MAY-2006