

1 September 2025

Landslide Planning Map Update

Report on mapping changes and consultation

Contents

Contents.....	ii
List of Figures.....	iii
List of Tables	iv
Glossary.....	1
Executive Summary	3
1 Introduction	5
2 Landslides in Tasmania	7
2.1 Definition and driving factors	7
2.2 History.....	7
3 Background	8
3.1 Consultation for the review of the State Planning Provisions and Landslide Planning Map	8
3.2 Development of the 2013 Landslide Planning Map and Hazard Bands	9
4 Updates to the Landslide Planning Map Components	12
4.1 Proclaimed Landslip A and B Areas	14
4.2 Tasmanian Landslide Map Series – Susceptibility Zones	14
4.3 Mapped Landslides	17
4.4 Remaining Areas – Susceptibility	18
5 Changes to the Landslide Hazard Bands policy map	21
5.1 Translation of the Components to Hazard Bands	21
5.2 Terminology	23
6 Implications of the mapping changes.....	24
7 Conclusion and suggestions for future updates	27
8 References.....	29
9 Appendix 1: Pairwise comparison table	30
10 Appendix 2: Landslide Hazard Bands Update – LGA change report.....	31

List of Figures

Figure 1. Landslide planning mapping process.....	11
Figure 2. An example of landslide component mapping for an area in part of Legana, north of Launceston. Components are derived from MRT mapping and modelling, proclaimed landslip zones, and slope thresholds, as described in Mazengarb and Stevenson (2010).	11
Figure 3. Spatial coverage of the Tasmanian Landslide Map Series. Evandale and Penna have been mapped since the previous version of the Landslide Planning Map was released.	15
Figure 4. A comparison of the components around Evandale, in 2013 (middle) and 2025 (right).....	16
Figure 5. Shallow slide and flow susceptibility mapping around Burnie, showing the addition of runout and source-low components as a result of the 2025 updates. Note that mapped landslides are also shown.....	16
Figure 6. Example of the statewide rockfall source and runout layers.....	17
Figure 7. Landslide features mapped around the Huon Valley, showing the improvement in MRT's inventory between 2013 and 2025.....	18
Figure 8. Remaining areas, slope angle components as mapped in 2013 using a 25 m DEM and the updated 2025 outputs using a 10 m DEM.....	19
Figure 9 (left). Map showing the area where the 9 degree acceptable-low threshold applies across northern Tasmania (hatched area). This area encompasses Tertiary basalts and sediments, which are more failure prone, including the Launceston Group. The threshold remains at 11 degrees elsewhere ..	20
Figure 10 (below). The distribution of landslides, buildings and vacant land by slope angle. Note the lower mean slope angles for landslides in basalt or Launceston Group sediments. Alongside the observed spatial distribution of landslides across the state, this graph further justifies the lowering of the acceptable-low threshold in areas underlain by tertiary sediments and weathered basalts.....	20
Figure 11. Graph of the Pairwise Comparison ranking scores for the 2025 components. Lower scores represent higher rankings. The breaks depicted correspond approximately to the levels shown in Table 4 below, noting that manual adjustments were made to some components.....	23
Figure 13. Statewide summary of the hazard band coverage by area, comparing 2025 and 2013.....	25
Figure 14. Comparison of the number (left) and percentage (right) of residential buildings in each hazard band in 2013 and 2025.....	26
Figure 14. Comparison of the percentage of vacant residential parcels in each hazard band in 2013 and 2025. Note the decrease in vacant lots falling within the medium band.	26

List of Tables

Table 1. Summary of landslide hazard bands and the required controls around land use planning and development.....10

Table 2. Summary of updates to the landslide component datasets that underpin the hazard banding. .12

Table 3. Summary of the pairwise comparison ranking process for the translation of the Landslide Planning Map components to hazard bands.22

Table 4. Options for hazard band names presented at the second consultation workshop.24

Table 5. Percentage change to hazard band coverage by LGA.....25

Glossary

Term	Definition	Source
Hazard*	Source of potential harm Note 1: Hazard can be a risk source	ISO 31073:2022
	A condition with the potential for causing an undesirable consequence. The description of landslide hazard should include the location, volume (or area), classification and velocity of the potential landslides and any resultant detached material and the probability of their occurrence within a given period of time.	AGS 2007a
Inventory [Landslide]	A record of the location, classification, volume, activity and date of occurrence of individual landslides in an area.	AGS 2007a
Landslide	The movement of a mass of rock, debris, or earth (soil) down a slope.	AGS 2007a
Landslip	Landslide	
Landslide Hazard Area	The land within a Landslip Planning Map which is classified into one of four landside hazard bands (Low, Medium, Medium-Active, High).	TPS-SPP
Landslide (Landslip) Planning Map - Components	The scientific datasets that underpin the landslide planning map hazard bands. These datasets include landslide inventory mapping, susceptibility modelling and slope angle mapping. See Section 7.1 for a full list of components.	
Landslide (Landslip) Hazard Bands	Five bands (acceptable, low, medium, medium–active, and high) that guide the management of landslides in Tasmania through the land use planning and building regulatory systems.	
Risk	Effect of uncertainty on objectives Note 1 to entry: An effect is a deviation from the expected — positive and/or negative. Note 2 to entry: Objectives can have different aspects (such as financial, health and safety, and environmental goals) and can apply at different levels (such as strategic, organization-wide, project, product and process). Note 3 to entry: Risk is often characterised by reference to potential events (3.5.1.3) and consequences (3.6.1.3), or a combination of these. Note 4 to entry: Risk is often expressed in terms of a combination of the consequences of an event (including changes in circumstances) and the associated likelihood (3.6.1.1) of occurrence. Note 5 to entry: Uncertainty is the state, even partial, of deficiency of information related to, understanding or knowledge of, an event, its consequence, or likelihood.	ISO 31073:2022
	A measure of the probability and severity of an adverse effect to health, property or the environment. Risk is often estimated by the product of probability and consequences. However, a more general interpretation of risk involves a comparison of the probability and consequences in a non-product form. For these	AGS 2007a

	[AGS 2007 <i>landslide risk management</i>] guidelines risk is further defined as: (a) <i>For life loss</i>, the annual probability that the person most at risk will lose his or her life taking account of the landslide hazard and the temporal spatial probability and vulnerability of the person. (b) <i>For property loss</i>, the annual probability of the consequence or the annualised loss taking account of the elements at risk, their temporal spatial probability and vulnerability.	
Susceptibility [Landslide]	A quantitative or qualitative assessment of the classification, volume (or area) and spatial distribution of landslides which exist or potentially may occur in an area. Susceptibility may also include a description of the velocity and intensity of the existing or potential landsliding.	AGS 2007a

Executive Summary

Landslide risk in Tasmania is primarily managed privately, with the issue only becoming a public concern when the landslide poses a risk to life, housing, or infrastructure. Historically, the State and local Governments have become the insurer of last resort to private landowners in these situations. The Landslide Planning Map, along with the land use planning and building control systems, aims to support landowners in understanding their potential exposure and reducing their ongoing vulnerability to new uses and developments.

The current system was developed in 2013, and the mapping that underpins it has recently been updated. This report outlines the technical changes made to the Landslide Planning Map during the 2025 update. The statutory tools are being reviewed through the State Planning Provisions Review, with updates to the provisions being progressed separately. The first update to the SPPs provisions relating to landslides was taken forward in 2024. Where possible, consultation has been coordinated.

The Landslide Planning Map is the output of a policy process to translate scientific information into a map and planning controls to reduce the risk of landslide for new use and development. The Landslide Planning Map does this by dividing the landscape into five hazard bands (acceptable, low, medium, medium-active, and high), which describe the minimum level of intervention on private land considered necessary to address a potential landslide hazard to new uses and developments. The hazard bands have been developed based on:

- mapped landslides
- proclaimed Landslip Areas (as defined under the *Mineral Resources Development Act 1995*)
- susceptibility modelling, and
- slope angle calculations.

The 2013 Landslide Planning Map was based on good scientific principles, and no change was made to the overarching mapping approach. Component datasets were updated to use the best available data, including a new LiDAR-based 10 m Digital Elevation Model. A targeted peri-urban mapping programme was undertaken to identify landslide features in previously unmapped areas of the state, and this has significantly improved Mineral Resources Tasmania's (MRT) landslide inventory database. Landslide susceptibility modelling was refreshed in the Tamar Valley and expanded in key areas (Evandale and Penna), and changes were made to the susceptibility slope angle approach where landslide evidence suggested the old thresholds were inappropriate (primarily along the northwest coast).

The 2025 mapping update has increased the total regulated area statewide by 5.6% compared to 2013. This includes a 4.1% rise in medium and a 1.6% rise in low hazard band coverage, primarily due to a reduction in the slope angle threshold from 11° to 9° in northern local government areas such as Burnie, Central Coast, Kentish, Latrobe, and Waratah-Wynyard. Conversely, Hobart and Glenorchy saw a reduction in total hazard area due to refinements in the rockfall model.

Despite the increase in total hazard coverage, the proportion of residential buildings within regulated areas has remained stable, indicating that much of the expanded hazard areas are located outside of the urban growth boundary. Vacant parcel analysis indicates that most land with likely future development potential lies within the acceptable hazard band (86%), with only a minor increase in the low hazard band. Notably, the percentage of parcels currently available for development within the medium band has decreased by 2%. This decline likely reflects the impact of maturing regulatory controls since 2013, which have successfully directed development away from higher hazard bands.

These changes were made in consultation with local government, state agencies, and private practitioners across the land use and development fields. Stakeholders have broadly agreed with the

proposed changes to the mapping and its application into the hazard bands, which will be taken forward into the statutory amendment process.

The authors note that modelling is an iterative process. Future refinements may be possible with additional data and improved methodologies. Notably, MRT has a Disaster Resilience Fund project to develop the next generation of landslide models for the state, and the Australian Geomechanics Society is currently reviewing its guidance on landslide mapping and risk analysis. The results of these projects should inform future reviews of the Landslide Planning Map and approaches to landslide management in the planning and development systems.

1 Introduction

In September 2023 the then Minister for Planning approved the review and update to Tasmania's Landslide Planning Map to reflect the latest scientific evidence and mitigate risks to public safety and property. The purpose of the review was to consider:

1. Necessary amendments to the landslide hazard planning map that consider and incorporate improvements in new scientific data and evidence,
2. The ranking, thresholds and controls for the landslide planning map – hazard bands – Acceptable, Low, Medium, Medium-active, and High,
3. Mechanisms to more readily incorporate information about newly identified and expanding areas of landslides into Tasmania's planning and building controls.

The review did not consider (or reconsider) the underlying rationale for the declaration of Landslip A or B areas that have been made under the *Mineral Resource and Development Act 1995* or prior legislation.

This report outlines the updates and outcomes of the review as they relate to the Landslide Planning Map, including base data improvements and changes to the ranking and thresholds within the map bands. At the same time, updates to the planning provisions have been progressed separately as part of the State Planning Provision review. The third element concerning the mechanisms to incorporate information about newly identified landslides is the subject of separate guidance.

The Landslide Planning Map is the instrument used to translate the science into the landslip overlay that underpins the operation of the Landslip Hazard Code in the Tasmanian Planning Scheme and the associated Building Controls. This map includes two layers: the components and hazard bands. The components are the key inputs based on scientific landslide datasets. The hazard bands are the resulting classification of land based on the available data. The Landslip Hazard Code overlay under the Tasmanian Planning Scheme then guides decision-making for appropriate land use planning and building control regulations.

The planning and building controls recognise that landslides are a natural process, commonly triggered by events such as rainfall or earthquakes. However, the effects of these natural processes can be exacerbated by development and human modification of slopes without appropriate mitigation measures. Consequently, the planning and building system seeks to reduce, as far as is reasonably practical, the exposure of developments to the risk of landslide and contribution of new developments or works to the occurrence of new landslides. To meet this objective, each hazard band has a range of interventions implemented through the planning and building system that seek to:

- move new use and development opportunities away from active landslide areas (medium-active and high hazard bands) by using performance-based solutions, including site-specific risk assessments, and
- require new use and development in the low and medium to demonstrate that site use, design, civil engineering, foundation design, groundwater management and vegetation management will not contribute to an increase in risk of landslide occurring.

The updates outlined below have been made possible through significant investment by the State Government in the capture and analysis of high-resolution elevation data for all private land in Tasmania. This initiative also received strong support from Local Government and industry bodies. While consultation between parties has been robust, these discussions have ultimately strengthened the integration of scientific data into the planning and building control systems.

2 Landslides in Tasmania

2.1 Definition and driving factors

A landslide is the downslope movement of a mass of rock, earth, or debris and includes falls, topples, slides, flows and spreads (AGS 2007b). Other geotechnical issues relating to soils, ground subsidence and shallow soil creep have been excluded and are addressed through the site classification process in the building system.

Landslides occur due to gravity, but certain combinations of land characteristics can make a slope more prone to failure. These factors may include:

- Slope angle,
- Geology, soil,
- Geomorphology, and
- Vegetation cover.

Factors that trigger landslides in susceptible areas include intense rainfall, changes to groundwater levels, human modification of slopes, and earthquakes.

2.2 History

Since the early 1950s, over 170 buildings are known to have been damaged or destroyed by landslides in Tasmania. The most significant events in Northern Tasmania include the Lawrence Vale landslide, which destroyed 43 houses in the 1950s, and the Beauty Point landslide, which destroyed 15 houses and significantly damaged another 13 in the 1970s.

More recently, landslides in Deviot and Legana led to the removal of or damage to several houses. In Southern Tasmania, the Taroona landslide affected 10 houses and a high school, and the Rosetta landslide resulted in damage and/or demolition of 23 houses since 1992. MRT publishes an inventory of landslide locations and damaged housing.

The publication of the 2013 landslide mapping led to the development of a more informed system for land use planning decision making and building control regulation. It is hoped that with the continued refinement of the data and models behind these maps and regulation, and greater consistency in decision making, landslide impacts on communities will be limited to areas developed prior to the adoption of this approach.

3 Background

3.1 Consultation for the review of the State Planning Provisions and Landslide Planning Map

The State Planning Provisions (SPPs) came into effect on 2 March 2017, as the statewide set of consistent planning rules in the Tasmanian Planning Scheme (TPS). These provisions cover 23 zones and 16 codes, and comprise a suite of requirements for the application on zones and codes for local government planning authorities to develop or adopt through the Local Provisions Schedule (LPS) for each municipal area.

The SPPs Landslip Hazard Code includes five natural hazard codes that manage proposals for use and development in areas subject to natural hazards. Clause LP1.7.12 (a) Landslip Hazard Code of the SPP requires that:

Each LPS must contain an overlay map produced by the Department of Premier and Cabinet, showing landslip hazard areas for the application of the Landslip Hazard Code, unless modified by the planning authority for part of the municipal area. If modified, the modified map must be shown.

The map that shows the landslip hazard areas was developed in 2013 to inform planning and building controls. The system was developed by DPAC and MRT in consultation with local government. Recent updates to this map are the subject of this report.

In May 2022 the then Minister for Planning launched the first 5 yearly reviews of the SPPs required by the *Land Use Planning and Approvals Act 1993* (LUPAA). A consultation process resulted in 163 submissions, which included comments on the hazard codes. The report on the consultation was published in July 2023 and outlined a work program for the SPPs review. This work programme was structured around seven Action Groups and a prioritised list of projects to address the issues.

The more complex issues raised through the SPPs Review regarding these hazard codes are being addressed through Action Group 2 projects, which include the update to the Landslide Planning Map. A more detailed review of the hazard codes will also be undertaken as an Action Group 2 project to deliver any additional improvements to their operation. There are also ongoing Action Group 6 projects for developing improved guidance material to assist with SPPs implementation and interpretation. More information on the SPPs review work program is available on the [Planning in Tasmania website](#).

Concurrent with the SPPs review, the Department of Premier and Cabinet (DPAC) was supporting West Tamar Council and MRT in the management of active landslips at Legana and Brickmakers Point along the Tamar River. While providing this support, it became apparent that the way exemptions to the Landslip Code operate can lead to developments that include significant works not appropriately considering the medium, medium-active or high landslip hazard bands. Lessons learned through this support informed the changes being made to the exemptions, the mapping review, and the development of process to advise local government of active landslide for inclusion in the planning system.

In September 2023 DPAC and MRT commenced a review and update of the 2013 Landslide Planning Map to reflect the latest scientific evidence. Consultation on the mapping update was coordinated with the SPP amendment that responded to issues raised about the interpretation and operation of the exemptions in the Landslip Hazard Code. This amendment was taken forward to the Minister in 2024.

In this consultation process, a number of concerns were raised, including:

- The accuracy of the 2013 mapping,
- The process used to categorise hazard bands,

- The need for a process to update mapping quickly in areas of active landslides,
- The terminology used to describe the hazard bands,
- That the mapping describes areas susceptible to landslide, not just areas of active landslides or with defined active landslide processes assessed in a site-specific risk assessment.
- The need for supporting documents to help with the interpretation of the planning code and building regulations.

This report and the 2025 mapping update address these concerns through improvement to the accuracy of the 2013 mapping, providing an outline of the process to review the hazard band classification, and provides guidance on the mechanisms to recognise active landslide mapping in the planning and building systems ahead of an LPS amendment.

This report also addresses questions relating to the terminology (see Section 5.2). Stakeholders supported the use of a banded approach to describe areas in which landslide hazard is addressed, as outlined in the 2013 Landslide Planning Report (DPAC 2013c) and associated policy guidance on the mitigation of natural hazards in the planning and building systems (DPAC 2013a, DPAC 2013b).

Whilst the Landslip A and B areas, which are administered by MRT and declared under the *Mineral Resources Development Act 1995*, are recognised in the Landslide Planning Map, the rationale for each declaration is not part of the scope of this report or review. During consultation, some questions were raised regarding the rationale and process to define Landslip A and B areas, along with concerns around additional regulation outside of the planning system that falls under the *Building Act 2016*. These concerns were specific to individual areas and best addressed on a case-by-case basis, independently from this review. In these cases, advice was provided to seek further advice from the relevant state and local government agencies.

The State Planning Office with MRT and CBOS are preparing supporting documents for the Landslip Hazard Code, including:

- Website updates to provide further guidance on the planning system
- Questions and Answers document.
- A fact sheet for the landslip hazard code, similar to that currently available for the coastal hazard codes.
- Development and publication of a mapping layer showing newly identified active landslides and guidance materials on how to apply in the planning and building systems.
- Reviewing the “Tasmanian Landslide Map Series technical methodology” (Mazengarb and Stevenson, 2010).

This report describes updates made to the 2025 Landslide Planning Map when compared to the 2013 Landslide Planning Map. It is intended to support the public consultation process required under LUPAA to update or amend the Local Planning Provisions.

3.2 Development of the 2013 Landslide Planning Map and Hazard Bands

The Landslide Planning Map is a planning overlay that divides Tasmania’s landscape into five hazard bands, detailed in DPAC (2013c) and summarised in Table 1. These bands were determined based on known evidence for landslide processes and models of landslide susceptibility, with the translation from scientific datasets to hazard bands undertaken in consultation with regulatory bodies and industry users. Figure 1 summarises the landslide planning mapping process, and an example of landslide component mapping and the resulting hazard bands is shown in Figure 2.

Input datasets include peer-reviewed landslide inventory mapping and landslide susceptibility modelling performed by MRT. In areas without detailed landslide mapping or susceptibility modelling, landslide susceptibility is estimated from slope angle, calculated on a 10 m Digital Elevation Model derived from LiDAR. Because susceptibility differs by type of landslide, the zones are derived by combining components (individual map layers) that separately consider shallow landslides and flows, deep-seated landslides, rockfalls/topples, and debris flows.

The methodology to translate the landslide inventory mapping and zonation into planning controls was developed jointly by the DPAC and MRT, and the boundaries between the hazard bands were defined based on a component ranking process and consultation with regulators in local government and industry practitioners. The thresholds between the bands are an expert judgment made in the workshop process in the most affected local government areas and considers the fact that the most severely impacted areas in the Greater Hobart region, Tamar Valley and Tasmania's northwest coast have undergone more detailed mapping.

The process to develop the landslide planning map in 2013 is summarised in Figure 1 and outlined in DPAC 2013C report. This review employed a similar approach, involving a series of changes to the proposed components and associated consultation, before updating the hazard banding and the final Landslide Planning Map

Table 1. Summary of landslide hazard bands and the required controls around land use planning and development.

Level	Description
Acceptable	A landslide is a rare event in this area based on current understanding of the hazard, but it may occur in some exceptional conditions. Development and use are not subject to specific landslide controls. The acceptable band covers 61% of Tasmania's land area.
Low	This area has no known landslides; however, it may be susceptible. Most use and development does not require special consideration. However, controls may be necessary to reduce the risks associated with vulnerable and hazardous uses or post-disaster and catastrophic risk-based use to ensure that risks are tolerable (as recommended by AGS 2007a) The low band covers 21% of Tasmania's land area.
Medium	The area has known landslide features, or is within a landslide susceptibility zone, or has legislated controls to limit disturbance of adjacent unstable areas. This includes the Landslip B Areas. Planning controls are necessary for all use and development to ensure that risks are tolerable (as recommended by AGS 2007a). Any vulnerable or hazardous use will only be allowed in exceptional circumstances. The medium band covers 18% of Tasmania's land area.
Medium-Active	The area has known recently active landslide features. Planning controls are necessary for all use and development to ensure that risks are tolerable (as recommended by AGS 2007a). Any vulnerable, hazardous, or post-disaster and catastrophic risk-based uses are prohibited. The medium-active band covers less than 0.1% of the land area, vacant parcels, and residential buildings.

High	The site is within a proclaimed Landslip A area. Land is subject to legislated controls for all use and development. The high band covers less than 0.1% of the land area, vacant parcels, and residential buildings.
-------------	--

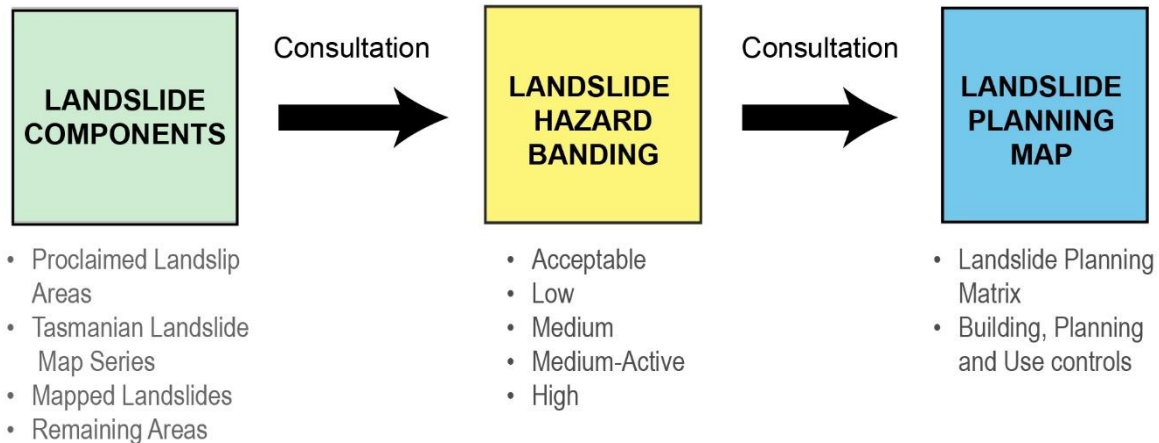


Figure 1 Process to develop the landslide planning map and hazard bands

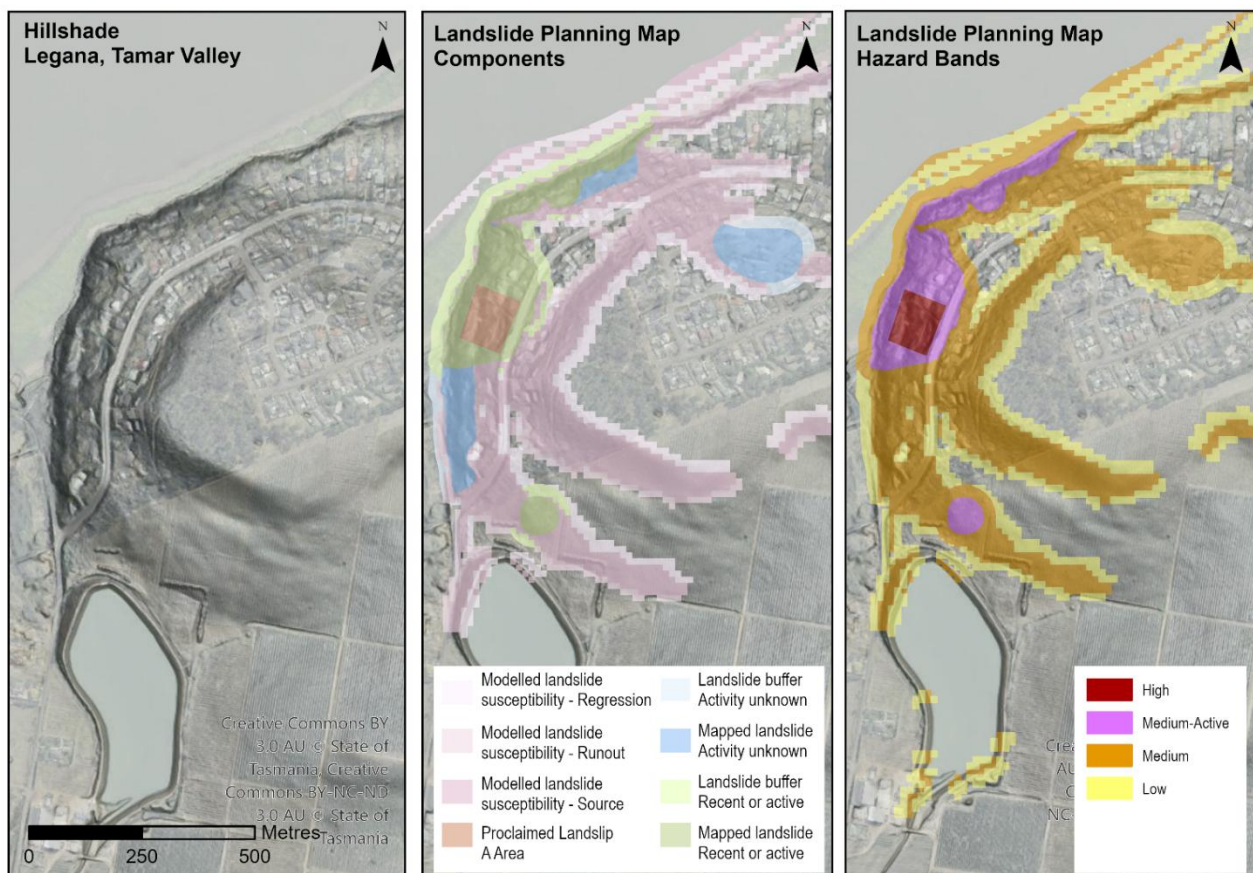


Figure 2. An example of landslide component mapping for an area in part of Legana, north of Launceston. Components are derived from MRT mapping and modelling, proclaimed landslip zones, and slope thresholds, as described in Mazengarb and Stevenson (2010).

4 Updates to the Landslide Planning Map Components

This section describes the changes to the component datasets that underpin the Landslide Planning Map Hazard Bands. In most cases, changes involve updates to input data or expansion of mapping and modelling.

Table 2 summarises the final changes to the components, which are discussed in the remainder of section 4.

Table 2. Summary of updates to the landslide component datasets that underpin the hazard banding.

Mapping type	2013 Landslide Planning Map Component	Updates	2025 Landslide Planning Map Component
Proclaimed Landslip Areas	Landslip A areas	Minor boundary updates where declared zones intersect the coastline	Landslip A areas
	Landslip B areas	Minor boundary updates where declared zones intersect the coastline	Landslip B areas
Tasmanian Landslide Map Series	Rockfall susceptibility source + runout area 34 degrees	Expanded coverage (statewide)	Rockfall susceptibility source + runout area 34 degrees
	Rockfall susceptibility runout area 30 degrees	Expanded coverage (statewide)	Rockfall susceptibility runout area 30 degrees
	NA	New component (statewide)	Regression areas adjacent to cliffs > 42 degrees
	Shallow slide + flow susceptibility source high	No change (NW Tas)	Shallow slide + flow susceptibility source high
	Shallow slide + flow susceptibility source moderate	No change (NW Tas)	Shallow slide + flow susceptibility source moderate
	Shallow slide + flow susceptibility source low	No change (NW Tas)	Shallow slide + flow susceptibility source low
	NA	New component (NW Tas)	Shallow slide + flow susceptibility runout
	Debris flow susceptibility Mountain source + runout > 30 degrees	No change	Debris flow susceptibility Mountain source + runout > 30 degrees

	Debris flow susceptibility Mountain source + runout 30-26 degrees	No change	Debris flow susceptibility Mountain source + runout 30-26 degrees
	Debris flow susceptibility Mountain source + runout 26-22 degrees	No change	Debris flow susceptibility Mountain source + runout 26-22 degrees
	Debris flow susceptibility Mountain source + runout 22-12 degrees	No change	Debris flow susceptibility Mountain source + runout 22-12 degrees
	Debris flow susceptibility Mountain runout – dam-burst	Removed component	NA
	Launceston Group slide susceptibility (large and small)	Expanded coverage – Evandale and Penna	Landslide susceptibility – Source Area
	Undifferentiated slide susceptibility (source/regression/runout)	Removed Launceston Group specification Standardised as source/regression/runout	Landslide susceptibility – Regression Area Landslide susceptibility – Runout Area
	Hobart-Glenorchy deep-seated slide susceptibility (Rosetta scenario)	No change	Deep-seated landslide susceptibility – Source (Rosetta scenario)
Known landslides - actual	Mapped slides – deep-seated/Launceston Group, recently active	Merged components and expanded to new map areas across the state	Mapped landslides – Recent or active
	Mapped slides – other slides/flows, recently active		
	Mapped slides – deep-seated/Launceston Group, activity unknown	Merged components and expanded to new map areas across the state	Mapped landslides – Activity unknown
	Mapped slides – other slides/flows, activity unknown		
Remaining areas susceptibility	Slope < 11 degrees	Updated DEM and reviewed thresholds	Remaining areas: Slope < 9 degrees (Tertiary sediments) Slope < 11 degrees (elsewhere)
	Slope 11-20 degrees	Updated DEM and reviewed thresholds. Slope threshold for Low was reduced to 9 degrees in some northern areas.	Remaining areas: Slope 9-20 degrees (Tertiary sediments) Slope 11-20 degrees (elsewhere)
	Slope > 20 degrees	Updated DEM and reviewed thresholds	Remaining areas: Slope > 20 degrees

4.1 Proclaimed Landslip A and B Areas

These areas cover recent or historically active landslides that are covered by specific legislation pertaining to their use and development. No new proclaimed Landslip A or B areas have been declared since the 2013 mapping. However, slight boundary shifts have been made in some cases where the existing proclaimed landslip areas are legally tied to cadastral or coastline boundaries. Minor adjustments have been made to the zones at Boat Harbour, St Helens, Beauty Point, and Windermere. These changes ensure that the digital layers match their counterparts (i.e. the planning map and the cadastre or mean high water mark) and do not affect the legal zone boundaries as surveyed on the ground.

Activities in Landslip A areas are controlled by separate legislation and are fundamentally different to other components in the Landslide Planning Map. The option of separating these from the other components was raised but ultimately rejected as infeasible during the consultation process.

Summary: Minor adjustments to boundaries were made where required for some Landslip A and B areas.

4.2 Tasmanian Landslide Map Series – Susceptibility Zones

The Tasmanian Landslide Map Series includes rockfall susceptibility and runout modelling, debris flow susceptibility and runout modelling, and both deep-seated and shallow landslide/flow susceptibility. In areas underlain by weak sedimentary units (e.g. Launceston Group in the Tamar Valley), shallow and deep-seated susceptibility processes have not been differentiated.

The Launceston Group susceptibility modelling distinguishes landslide source areas, regression areas, and runout areas. This mapping methodology has been extended to two new areas: Evandale (near Launceston) and Penna (near Hobart). These regions were prioritised due to observed active landslide processes coinciding with interest in development. The new susceptibility modelling was performed at 10 m resolution and the existing modelling in the Tamar Valley was refreshed for consistency and to take advantage of new LiDAR data collection. The name 'Launceston Group' has been removed from the 2013 component names and replaced with 'Landslide susceptibility – Source/Regression/Runout area'. This change has created a consistent naming convention across the entire state and has allowed corrections to be made for incorrectly categorised areas in the existing datasets. The merging of affected 2013 components does not result in any loss of information, because the underlying geology is considered in the slope thresholds applied in the susceptibility modelling. In addition, the geological information can be queried using MRT's publicly available geology layers. The coverage of MRT's detailed landslide susceptibility mapping programme is shown in Figure 3.

The Evandale mapping is an extension of the Tamar Valley and Launceston mapping available in 2013. A comparative example of the 2013 and 2025 mapping for this area (Figure 4) highlights the limitations of using simple slope thresholding to estimate landslide susceptibility in areas where the geology is complex or has low material strength. The changes here are significant because recent mapping has identified additional landslides from LiDAR mapping, and the modelling has highlighted susceptible areas that were not previously captured by the simple slope categorisation algorithm.

The shallow landslide and flow susceptibility components apply to a limited area in northern Tasmania, and have been separated into low, moderate and high susceptibility. This mapping methodology has not been extended to any other areas of the state since 2013. However, a 'Shallow landslide and flow – Runout area' component is now included alongside the 'Shallow landslide low/medium/high – Source' susceptibility areas. Note that shallow landslides do not regress like deeper failures and so there is no 'Shallow landslide and flow susceptibility – Regression' component.

Deep-seated landslide susceptibility modelling of a simpler type covers parts of the Greater Hobart region. This modelling also includes source, regression and runout areas, with no new use of this methodology since 2013. The separation between this and the northern modelling in the components has been maintained because they use different methodologies and there are significant differences in the material strength of the geological units involved.

The rockfall susceptibility coverage was limited in 2013 (around kunanyi/Mt Wellington and along the central north coast). Furthermore, it only considered rockfall source and runout areas, with thresholds of 34 degrees and 30 degrees. This modelling has been expanded to a statewide rockfall model and a rockfall regression component has been added, which represents a susceptible set-back area behind steep slopes and cliffs (>42 degrees). This modelling has been undertaken on a 10 m statewide DEM, of which approximately 70% is built from LiDAR data. An example of the rockfall source and runout mapping is shown in Figure 6.

No changes have been made to the primary debris flow susceptibility and runout components. These components were modelled on a 10 m LiDAR-based DEM and remain fit for purpose in the current mapping. However, the debris flow – dam burst component has been removed. This component was originally named to represent a scenario-specific model of the 1872 Glenorchy debris flow. This model has now been superseded by more recent data, and current scientific thinking does not support a dam burst mechanism in this event. However, it is important to note that debris flow risk remains an important consideration for Glenorchy, and the other debris flow components are still part of the Landslide Planning Map. Furthermore, low-slope-angle debris flow runout shares many characteristics of flash flooding and may be better captured by flood risk management processes.

Summary: Updates have been made to incorporate new landslide susceptibility mapping and simplify the component names. Rockfall susceptibility has been expanded to a statewide model. The debris flow – dam-burst component has been removed.

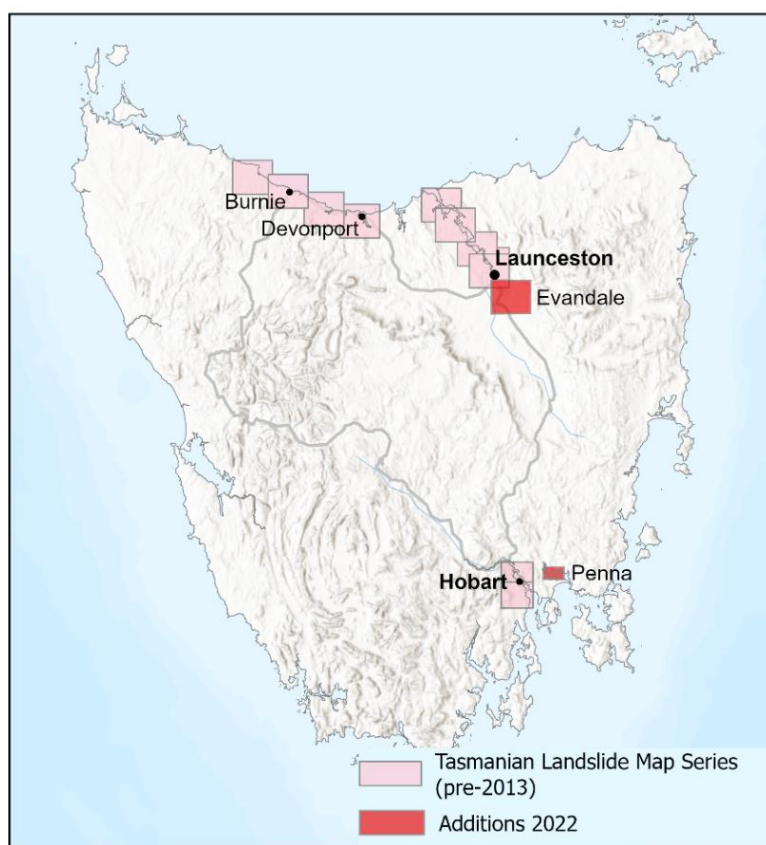


Figure 3. Spatial coverage of the Tasmanian Landslide Map Series. Evandale and Penna have been mapped since the previous version of the Landslide Planning Map was released.

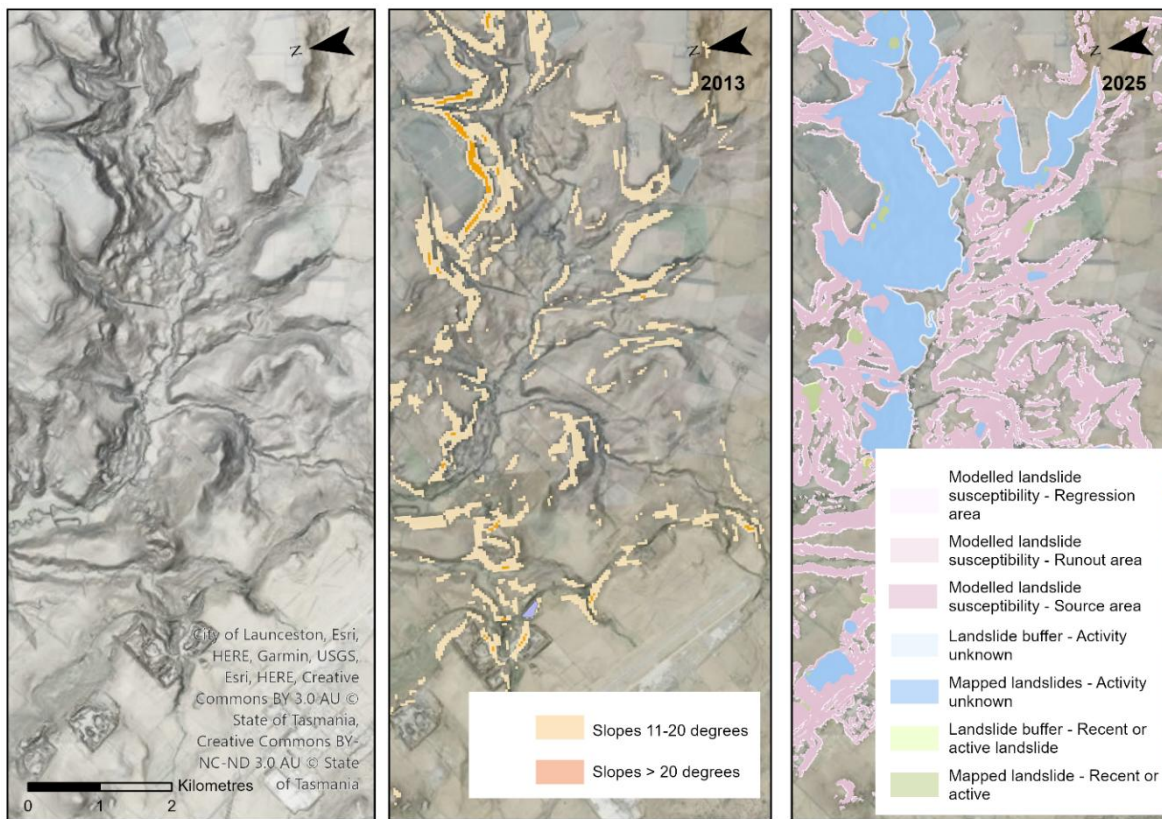


Figure 4. A comparison of the components around Evandale, in 2013 (middle) and 2025 (right).

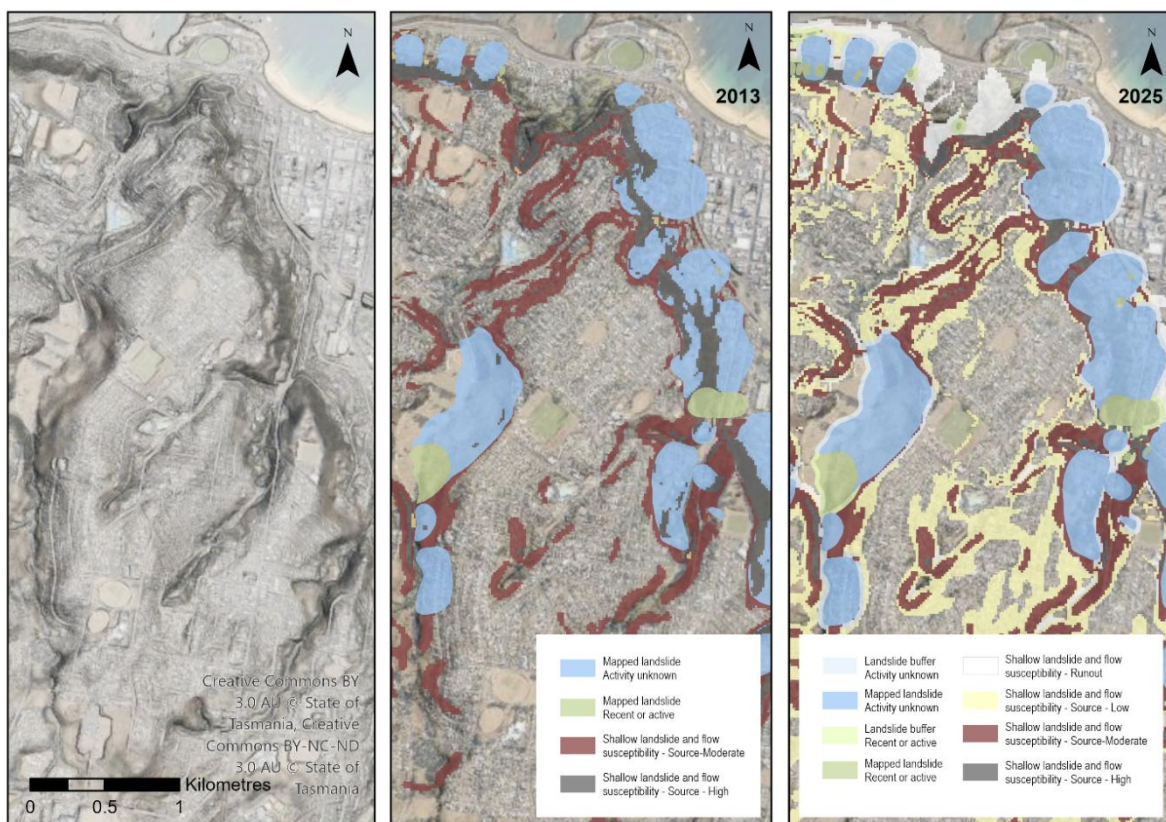


Figure 5. Shallow slide and flow susceptibility mapping around Burnie, showing the addition of runout and source-low components as a result of the 2025 updates. Note that mapped landslides are also shown.

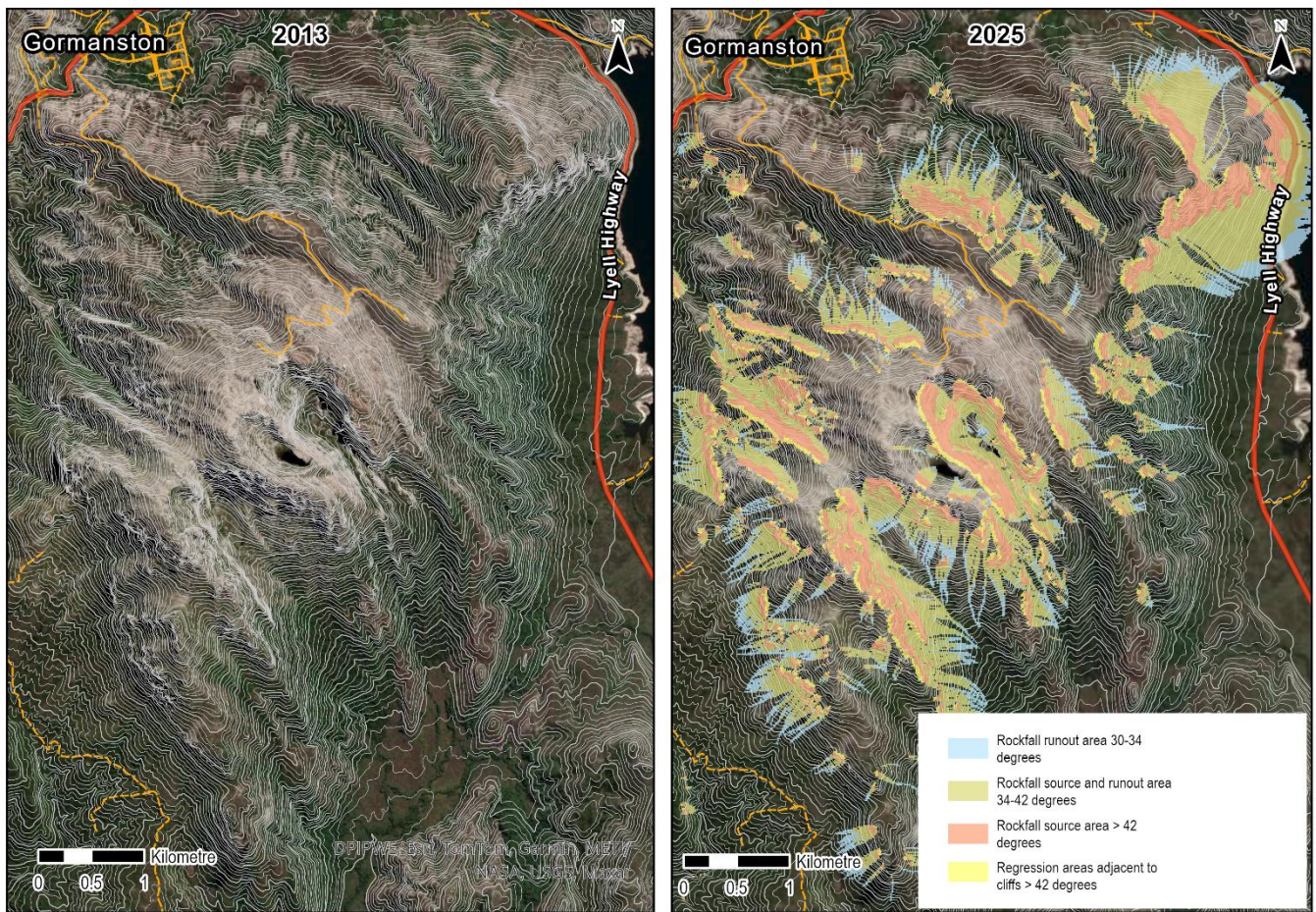


Figure 6. Example of the statewide rockfall source and runout layers.

4.3 Mapped Landslides

Landslides that appear in the Landslide Planning Map are derived from MRT's landslide database, which is a dynamic inventory that is continually updated with newly mapped landslide features. In it, mapped landslides are identified as either 'recent or active' or 'activity unknown'. The 'recent or active' group are landslides that have occurred or reactivated over the last ~200 years. If the timing of a landslide's last movement is not known, it is entered in the database as 'activity unknown'.

Many landslides that have occurred or reactivated since 2013 have been added to MRT's database since the first release of the Landslide Planning Map. Additionally, MRT recently completed a programme of systematic landslide mapping across priority urban and peri-urban areas, using LiDAR data to identify failures in the landscape. These areas include Tasman Peninsula and Greater Hobart, Central Coast, main highways, and parts of the Western Tiers. This mapping includes some landslides that clearly occurred in the last ~200 years, but most of the newly mapped features are classified as 'activity unknown'. Some of the 'activity unknown' group may still have occurred or reactivated in the last ~200 years, but most probably predate the nineteenth century. However, even dormant or relict landslide features that have not been active since European settlement could reactivate in the future. An example of the updated feature mapping in the Huon Valley area is shown in Figure 7.

The 2013 Landslide Planning Map Components further divide mapped landslides into Launceston Group deep-seated slides and other slides/flows, making a total of four components. However, some of those landslides were incorrectly mapped as Launceston Group and are located in areas with different underlying geology. In the 2025 planning map update, these four components have been simplified into two: 'Mapped landslides – Recent or active' and 'Mapped landslides – Activity unknown'. No information is lost in this merging process, as the underlying geology can be queried in MRT's publicly available

geology layers. MRT also maintains a database of point features, which represent landslides that have not been mapped in detail.

The issue of defining a landslide boundary was raised during the consultation process. To address the issue of landslides potentially expanding beyond the mapped boundary (through regression, runout, or lateral expansion), a 20 m external buffer has been added to all mapped features, which translates to the addition of two new Landslide Planning Map Components: 'Landslide Buffer – Activity Unknown', and 'Landslide Buffer – Recent or Active'.

Summary: Updates take advantage of new mapping and simplify component names. A buffer of 20 m has been generated around each landslide feature.

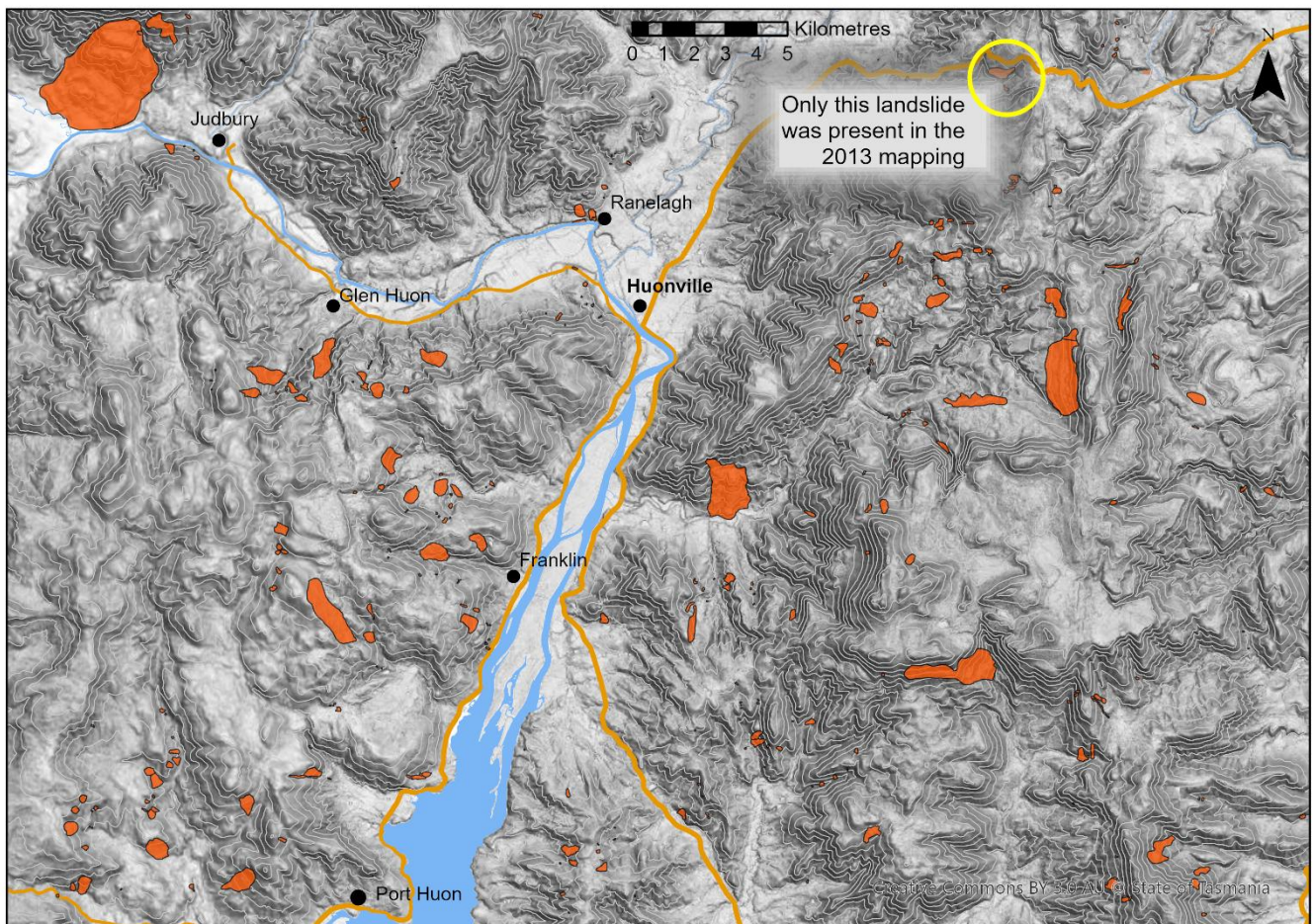


Figure 7. Landslide features mapped around the Huon Valley, showing the improvement in MRT's inventory between 2013 and 2025.

4.4 Remaining Areas – Susceptibility

Slope angle is used as a proxy for landslide susceptibility in areas that are not covered by the feature mapping or source-regression-runout susceptibility modelling. Since 2013, a substantial amount of new LiDAR data has been captured and a new 10 m DEM has been created for the state. The slope angle mapping has been refreshed using the latest DEM, which is a significant improvement from the previous 25 m DEM that underlies the 2013 slope angle calculations. An example of the improvement in resolution is shown in Figure 8.

The 2013 approach divided the landscape into three slope categories with thresholds of <11 degrees, 11-20 degrees, and >20 degrees. A statistical hot-spot analysis of mean slope angle for mapped landslides was undertaken to assess the suitability of these values. It found that a significant proportion of landslides in the northern part of the state (i.e. in the areas of Tertiary sedimentary and basaltic units) occurred on slopes < 11 degrees and were not captured by the 2013 hazard bands. The approximate boundary of these more failure-prone units was mapped (Figure 9) and the slope categories in these areas was defined by < 9 degrees, 9-20 degrees, and > 20 degrees slopes. An analysis of landslide slope angle by geology type showed that these units fail on comparatively lower slopes (Figure 10) and this finding also supports a threshold reduction in these areas.

Summary: The slope angle threshold mapping was updated using the most recent DEM for Tasmania. This change improves the slope mapping resolution from 25 m to 10 m. The acceptable-low threshold value has been decreased from 11 to 9 degrees in northern areas covered by weak sedimentary units like Tertiary sediments and basalts.

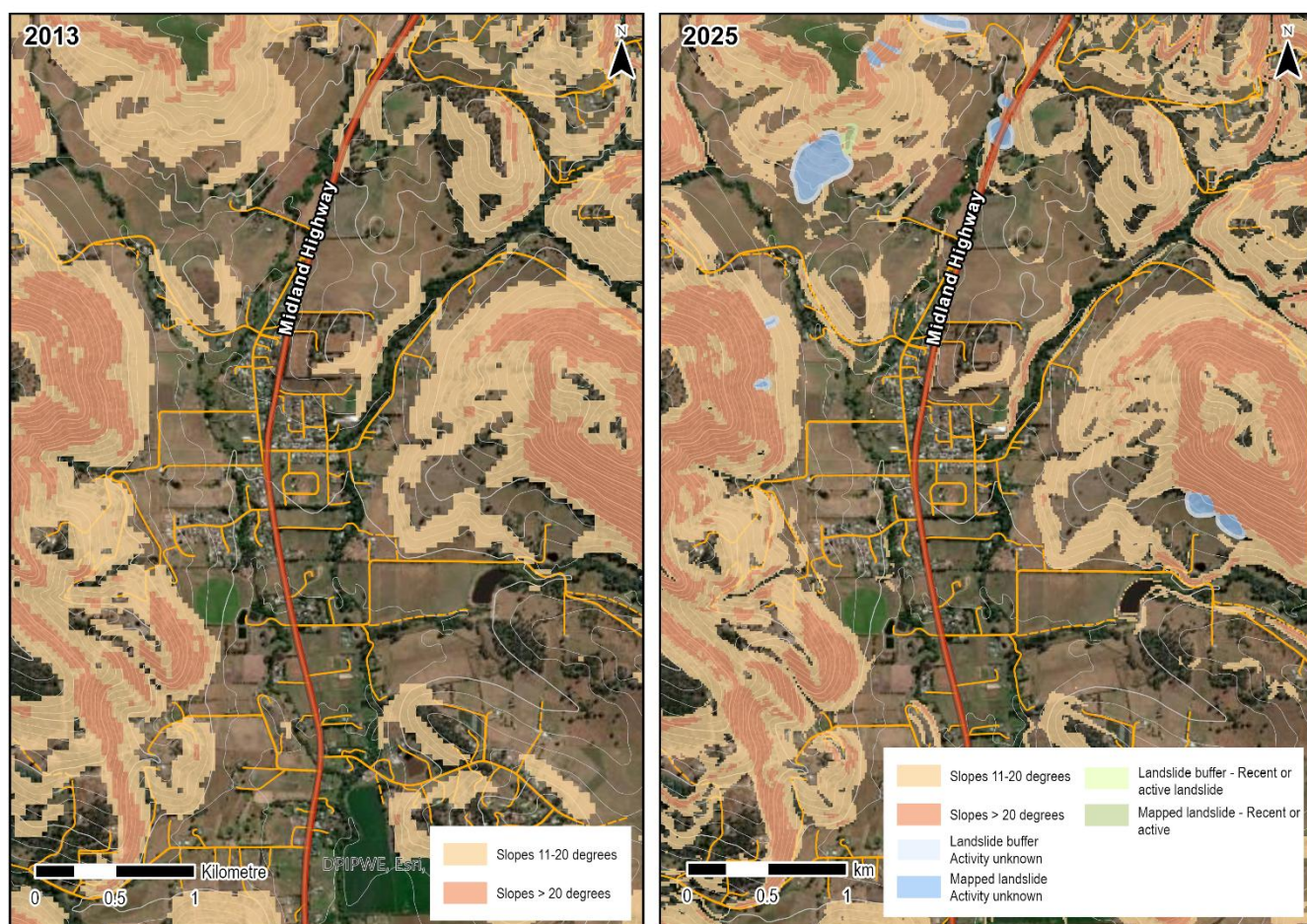


Figure 8. Remaining areas, slope angle components as mapped in 2013 using a 25 m DEM and the updated 2025 outputs using a 10 m DEM.

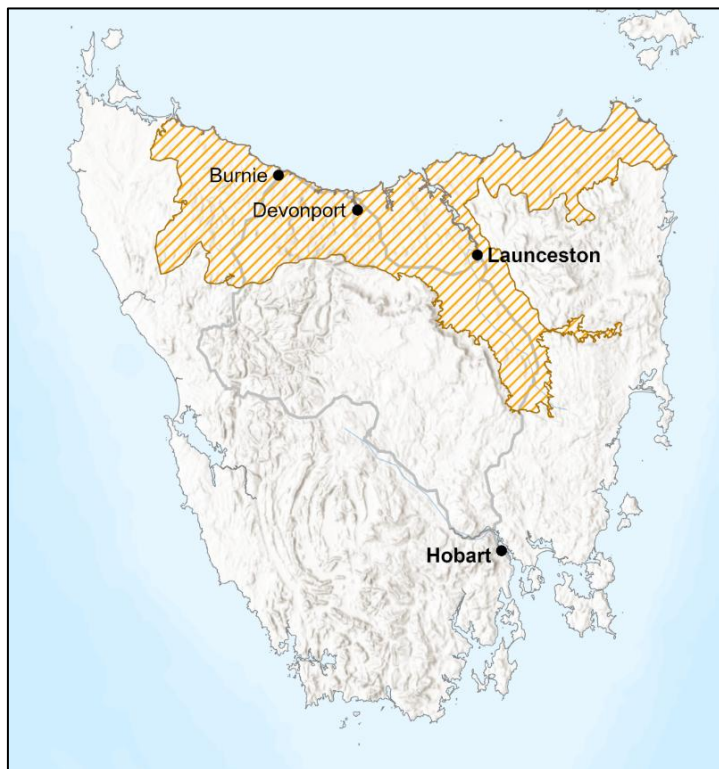
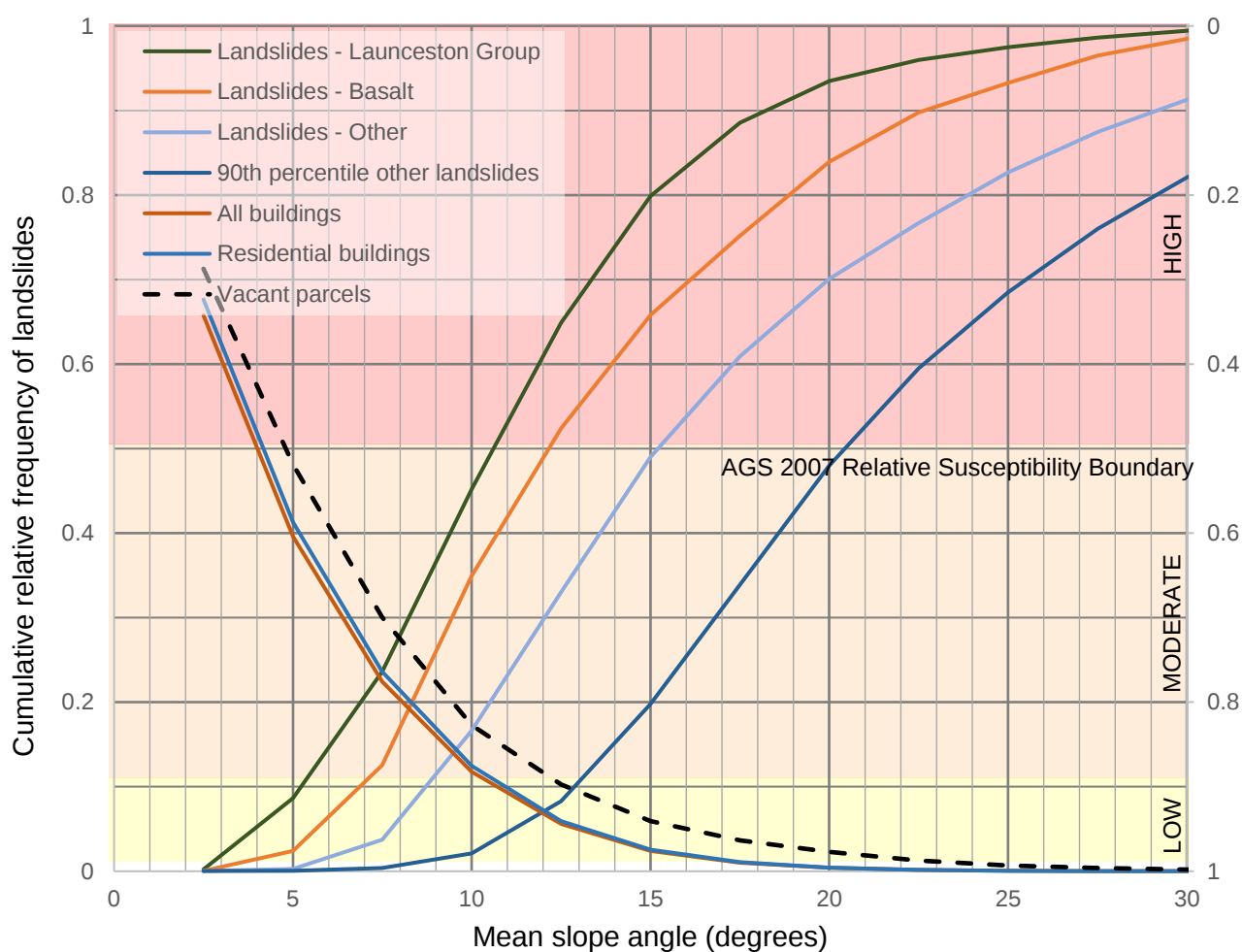


Figure 9 (left). Map showing the area where the 9 degree acceptable-low threshold applies across northern Tasmania (hatched area). This area encompasses Tertiary basalts and sediments, which are more failure prone, including the Launceston Group. The threshold remains at 11 degrees elsewhere

Figure 10 (below). The distribution of landslides, buildings and vacant land by slope angle. Note the lower mean slope angles for landslides in basalt or Launceston Group sediments. Alongside the observed spatial distribution of landslides across the state, this graph further justifies the lowering of the acceptable-low threshold in areas underlain by tertiary sediments and weathered basalts.



5 Changes to the Landslide Hazard Bands policy map

Updates to the component mapping are largely limited to improvements in input data. However, these updates have resulted in some changes to the boundaries of the zones in the hazard bands. These changes were explored in the second consultation workshop and were coordinated with the review of the State Planning Provisions (SPPs) to ensure that all changes are complementary.

5.1 Translation of the Components to Hazard Bands

The 2013 Landslide Planning Map used a pairwise assessment to rank the components. The pairwise assessment used the *Potentially All Pairwise Rankings of all possible Alternatives* (PAPRIKA) method (Hansen and Ombler, 2009). This method gives a qualitative overall rank to each component, by comparing its relative importance to every other component and summing the results. Where a component was ranked as more important than the other in a pair, it was scored 0, with the least important component scored 1000. If they were considered of equal importance, each was given a score of 100 for that pairing. The components with the lowest overall score were ranked the highest. Note that there are two types of possible pairs – dominated (implicitly ranked, such as slope angle or legislative controls) and un-dominated pairs (relying on expert judgement). When the pair is not implicitly ranked, the following criteria is used:

- Is one more likely to occur than the other?
- Which has a greater area subject to an event?
- How broad is the category, and does it encompass more than one landslide hazard type?
- Which presents the greater hazard to areas of existing or likely future development?
- Are land use controls required by legislation?

The resultant pairwise ranking table is a decision support tool that gives an indication of the relative importance of each component in terms of intervention requirements. The final ranking of the component was subject to sensitivity testing and expert judgement.

The pairwise comparison process was repeated with the 2025 components, which produced the rankings provided in Table 3 and Figure 11. The raw pairwise comparison table is shown in Appendix 1. The boundaries of the hazard bands were assigned to approximately the same pairwise score levels as 2013, to ensure the mapping fitted appropriately into the existing statutory controls. Expert judgement was applied to the results to avoid unnecessarily increasing the regulatory impost because of the changes, resulting in three manual adjustments being made to the component-hazard band translation. These included the adjustment of 'Shallow slide susceptibility-Moderate', 'Landslide susceptibility – Regression' and 'Landslide susceptibility – Runout', which moved from the medium to a low hazard band. Note that debris flow source and runout in moderate to steep slopes has increased from low to medium in the latest ranking process, and this change was retained due to the hazardous and rapid nature of debris flow processes.

Table 3. Summary of the pairwise comparison ranking process for the translation of the Landslide Planning Map components to hazard bands.

Component	Pairwise score	2025 Hazard Band	2013 Hazard Band
Mapped landslides – Recent or Active	18	Medium-Active	Medium-Active
Proclaimed Landslip A	1117	High	High
Debris flow susceptibility – Mountain source and runout – steep slopes (30-34 deg)	1710	Medium	Medium
Regression areas adjacent to major cliffs	2106	Medium	Medium
Shallow slide susceptibility – Source - High susceptibility	2106	Medium	Medium
Mapped landslides – Activity Unknown	2808	Medium	Medium
Rockfall susceptibility – Source and runout areas > 34 degrees	2907	Medium	Medium
Debris flow susceptibility – Mountain source and runout – (26-30 degrees)	3205	Medium	Medium
Proclaimed Landslip B	3205	Medium	Medium
Deep-seated slide susceptibility – Source area	4005	Medium	Medium
Statewide - Steep slopes (>20 degrees)	4509	Medium	Medium
Rockfall susceptibility – Source area and runout area >30 degrees	5706	Low	Low
Deep-seated slide susceptibility – Regression area	6804	Low	Low
Deep-seated slide susceptibility – Runout area	6903	Low	Low
Debris flow susceptibility – Mountain source and runout areas (20-26 degrees)	7506	Low	Low
Shallow slide susceptibility – Source area, moderate susceptibility	10503	Low	Low
Statewide – Moderate slopes (9-20 degrees in north, or 11-20 degrees elsewhere)	12501	Low	Low
Debris flow susceptibility – Mountain source and runout (14-20 degrees)	14103	Acceptable	Acceptable
Shallow slide susceptibility – Source, low susceptibility	16101	Acceptable	Acceptable
Statewide – Low slopes (< 9/11 degrees)	17100	Acceptable	Acceptable
Shallow slide susceptibility - Runout	18001	Acceptable	Acceptable

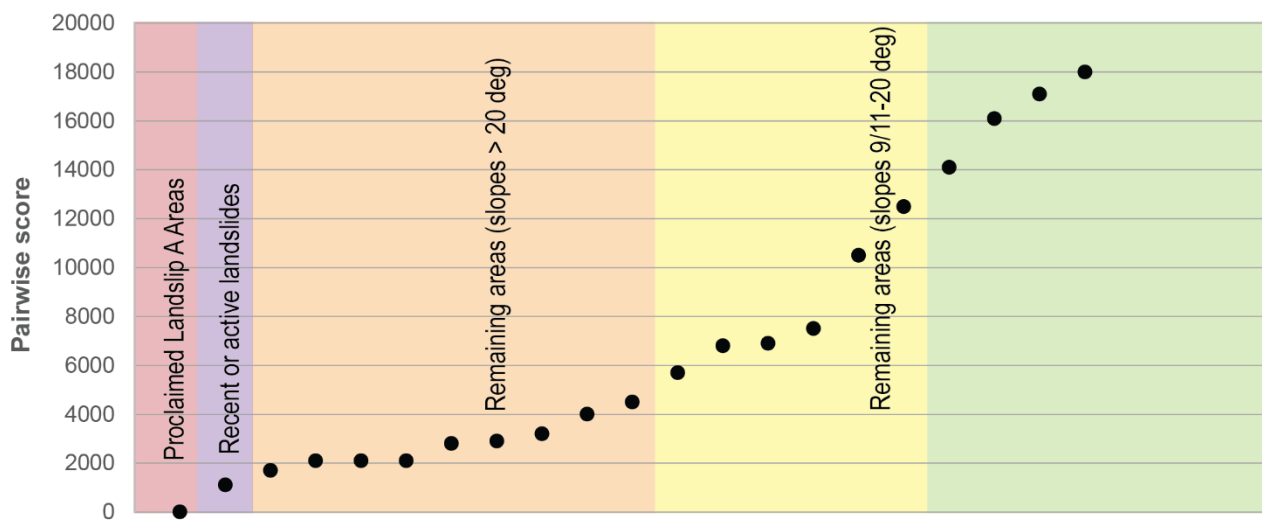


Figure 11. Graph of the Pairwise Comparison ranking scores for the 2025 components. Lower scores represent higher rankings. The breaks depicted correspond approximately to the levels shown in Table 4 below, noting that manual adjustments were made to some components.

5.2 Terminology

As part of the consultation process, the naming convention of the hazard band levels was considered. The 2013 outputs use an ordinal scale from acceptable, through low, medium, medium-active, and high (see Table 1 for a description of controls that apply to each band). Feedback from some users suggested that the difference between medium, medium-active, and high can cause confusion for users (including practitioners unfamiliar with the banding methodology).

Other potential options for naming these levels were explored and MRT put forward two possible alternatives: 1) Replace these terms with a numerical naming convention of Landslide Planning Band 1-5 (or similar); 2) Adjust the terms to very low, low, medium, high, and very high (Proclaimed Landslip A Area). The relationship between the proposed naming conventions and the 2013 system is shown in Table 4.

Most attendees in the consultation workshop favoured retaining the 2013 naming system. Reasons included familiarity with the existing system, the administrative and legislative burden of changing the names of the bands (when changes are not otherwise required), the potential to cause further confusion with the previous systems (option 1 with recently retired Tamar Valley class 1 -5 mapping), or further conflate the terminology of site specific risk assessments with the banding names, and a broad acceptance of cross-disciplinary differences in language.

Notably, there were some supporters for each of the newly proposed options, and a general agreement that if, in the future, a new approach to landslide hazard management is proposed, the naming of the bands should be considered then.

Table 4. Options for hazard band names presented at the second consultation workshop.

Current Band	Option 1	Option 2
Acceptable	Band 1	Very Low
Low	Band 2	Low
Medium	Band 3	Medium
Medium-Active	Band 4	High
High	Band 5	Very High (Proclaimed Landslip A Area)

6 Implications of the mapping changes

The mapped areas were compared to the 2013 coverage and the results were presented for consultation. When considering the changes at a statewide level (visually summarised in Figure 12), the new mapping represents a total increase in regulated area of 5.6% (3908 km²). This includes a 4.1% increase in coverage of the medium hazard band (2822 km²) and a 1.6% increase (1077 km²) in coverage of the low hazard band (Table 5).

These changes are broken down by Local Government Area (LGA) in Table 5, with the magnitude of difference and an explanation of the components driving the change detailed in Appendix 1. The greatest increase in coverage from 2013 to 2025 occurred in northern LGAs that are affected by the reduction in slope angle threshold from 11 to 9 degrees to reflect the updated understanding of the risk in these areas. These include Burnie, Central Coast, Kentish, Latrobe, and Waratah-Wynyard. Note that the coverage of the medium and low hazard bands decreased in Hobart and Glenorchy due to improvements in the rockfall modelling algorithm, which reduced the instances of isolated pixel blocks relating to rockfall hazard on the lower slopes of kunanyi/Mt Wellington.

Analysis of the impacts to residential buildings and vacant parcels (a proxy for future development) showed that the total number of residential buildings sitting within a regulated area has increased, but the percentages in each band have not changed significantly from 2013 to 2025 (Figure 13).

The relative stasis in the percentage of residential buildings within the regulated area (despite a 5.6% increase in hazard band coverage from 2013 to 2025) could be due to two factors. Firstly, much of the increase in regulated area applies to land that is outside of urban or developable areas. For example, many of the newly mapped landslide polygons occur on steep slopes above or away from urban areas. The same is true of the area covered by the new slope threshold categories. Secondly, the hazard band system has gradually come into effect over the last 10 years and so the regulatory system is now acting to restrict development in unsuitable areas across all LGAs through planning and building controls. An analysis of developable land shows that most vacant private cadastral parcels fall within the acceptable hazard band (86%), with 8% in low and less than 2% falling within medium, medium-active or high hazard bands. When comparing these numbers with the 2013 banding (Figure 14), there has been a 3% increase in the number of parcels falling within the acceptable hazard band and a drop in numbers falling within the medium hazard band. However, there has been a 2% increase in the number of parcels falling within the low hazard band. These changes are almost certainly reflecting the impacts of regulatory changes resulting from the 2013 banding, whereby subdivision and development have been subject to increased checks and balances in the higher hazard bands.

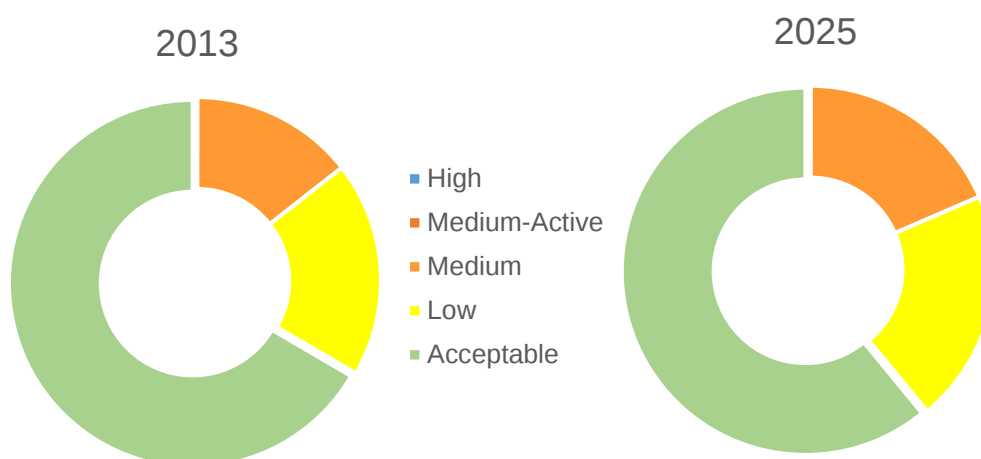


Figure 12. Statewide summary of the hazard band coverage by area, comparing 2025 and 2013.

Table 5. Percentage change to hazard band coverage by LGA.

LGA	High	Medium-Active	Medium	Low	Acceptable
Break Oday	0.0	0.0	4.6	0.4	-5.0
Brighton	0.0	0.0	2.1	1.1	-3.2
Burnie	0.0	0.0	6.4	8.3	-14.8
Central Coast	0.0	0.0	6.1	5.9	-12.1
Central Highlands	0.0	0.0	2.0	0.7	-2.7
Circular Head	0.0	0.0	3.0	4.4	-7.4
Clarence	0.0	0.0	1.4	0.6	-2.0
Derwent Valley	0.0	0.0	5.6	0.1	-5.7
Devonport	0.0	0.0	0.2	0.6	-0.9
Dorset	0.0	0.0	2.4	5.5	-7.9
Flinders	0.0	0.0	1.1	0.9	-2.0
George Town	0.0	0.0	1.4	5.6	-7.1
Glamorgan Spring Bay	0.0	0.0	3.0	0.7	-3.7
Glenorchy	0.0	2.3	3.2	-2.5	-2.9
Hobart	0.0	0.3	-1.3	-3.2	4.2
Huon Valley	0.0	0.0	5.5	-0.5	-5.1
Kentish	0.0	0.0	8.4	5.1	-13.5
King Island	0.0	0.0	0.1	0.8	-0.8
Kingborough	0.0	0.0	5.3	0.3	-5.7

Latrobe	0.0	0.0	3.6	5.5	-9.1
Launceston	0.0	0.0	4.2	0.6	-4.9
Meander Valley	0.0	0.0	6.6	1.6	-8.2
Northern Midlands	0.0	0.0	1.9	1.5	-3.5
Sorell	0.0	0.0	2.1	1.3	-3.5
Southern Midlands	0.0	0.0	2.5	1.1	-3.6
Tasman	0.0	0.0	6.6	1.1	-7.7
Waratah Wynyard	0.0	0.0	7.6	3.4	-11.0
West Coast	0.0	0.0	5.5	0.0	-5.5
West Tamar	0.0	0.0	3.4	4.7	-8.2
Statewide	0.0	0.0	4.1	1.6	-5.6

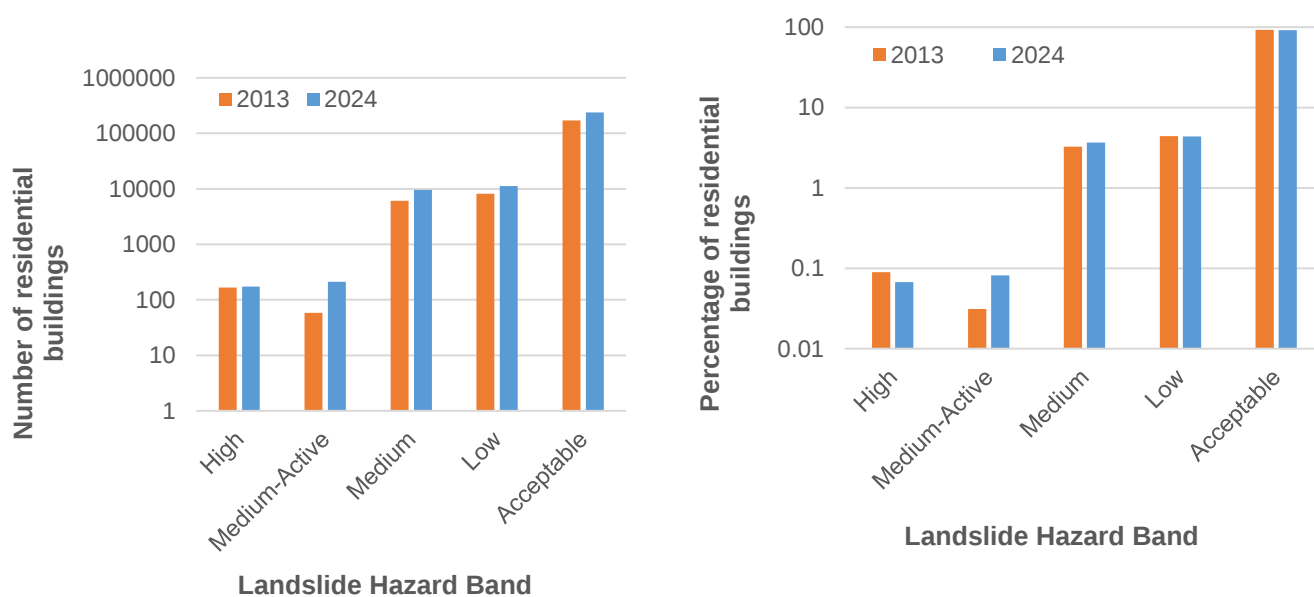


Figure 13. Comparison of the number (left) and percentage (right) of residential buildings in each hazard band in 2013 and 2025.

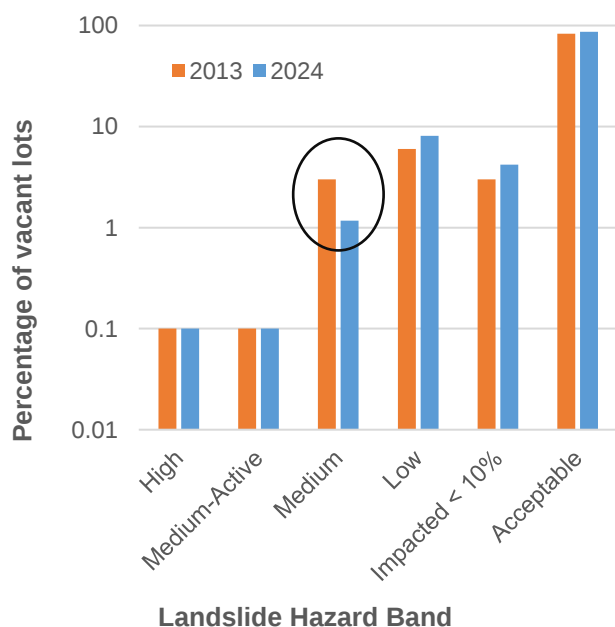


Figure 14. Comparison of the percentage of vacant residential parcels in each hazard band in 2013 and 2025. Note the decrease in vacant lots falling within the medium band.

7 Conclusion and suggestions for future updates

The mapping updates outlined in this report demonstrate that Tasmania has an approach (DPAC 2013b) (DPAC 2013c) that classifies the Tasmanian landscape into a set of landslide components made up of regional and local-level zonation with slope-based susceptibility and an inventory of active landslides. When banded together, these have enabled the general public and practitioners in the planning and building systems to make informed judgments on the type of intervention required for new use and development, as well as when to request site-specific geotechnical risk reports.

When considering stakeholder feedback and the recommendations of the AGS 2007 (a) guidelines, several challenges were identified:

- The Landslide Planning Map does not include the likelihood of failure for any location and is not a result of a risk assessment, as this is not feasible with the available information. However, it is designed to ensure, as far as is reasonably practicable, that new developments consider landslide in the use, site design, construction and site management.
- Integration of AGS guidelines into the planning system may require local governments to review current zoning of land to remain in line with the AGS recommendations.
- Both local government and state agencies indicated that significant barriers existed for them to undertake and require risk assessments that are consistent with the AGS (2007) guidelines. The barriers include:
 - The cost of the risk assessments when considering the value of the potential developments, could become prohibitive.
 - The lack of sufficient practitioners to either undertake work or peer review work.
 - The AGS guidelines are not well integrated into the existing footing and foundation classification system as set out in the AS 2870 -2011 Residential Slabs and Footings Design.
 - The lack of a state-level agency to coordinate landslide policy and support regulators in assessing complex landslide risk assessments.

MRT is undertaking a Disaster Resilience Fund project from the State and Commonwealth Governments to identify, understand and address Tasmanian active landslide and other ground movement hazards. The outcomes of this project will enable a review of the current approaches to landslide management in Tasmania and enhance geohazard risk reduction for individuals, communities, utilities, and local and state governments.

The project output will create and improve public-facing maps, overlays, and publications that enable better site management, land-use, infrastructure routing, and governance decisions. The project will achieve this by identifying and communicating the locations, extents, behaviour, likelihood, and drivers of landslides and other ground movements (sinkholes, settlement, uplift) that can threaten lives and infrastructure across Tasmania's urban and rural landscapes.

The Australian Geomechanics Society is also currently reviewing its guidance on Landslide Risk Management (2007). While it was unfortunate that this review was not available in time for the current mapping review or State Planning Provision Review to consider its recommendations, the AGS and

geotechnical practitioners did provide comment on MRT's technical mapping approach as part of a separate workshop. The authors of this review note that the Tasmanian system seeks to operationalise much of the AGS 2007 guidelines for methodologies, including the classification of land for landslide risk, the identification of landslide features, and the undertaking of site-specific risk assessments.

Despite the challenges listed above, stakeholders concluded that the current system is founded on good principles and the recent updates mean it remains fit for purpose. The next scheduled update will be well placed to take advantage of MRT's new mapping products and review broader processes to address some of the issues facing regulators and practitioners.

8 References

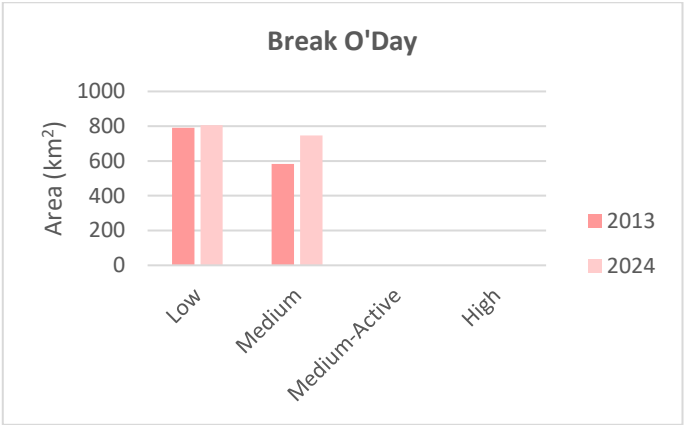
- Australian Geomechanics Society (AGS) 2007a. Guideline for Landslide Susceptibility, Hazard and Risk Zoning for Land Use Planning. *Journal and News of the Australian Geomechanics Society* 42(1). https://landsliderisk.org/wp-content/uploads/2017/04/ags_2007a1.pdf
- Australian Geomechanics Society (AGS) 2007b. Commentary on guideline for landslide susceptibility, hazard and risk zoning for land use management. *Journal and News of the Australian Geomechanics Society* 42(1). https://landsliderisk.org/wp-content/uploads/2017/04/ags_2007b.pdf
- Australian Geomechanics Society (AGS) 2007c. Practice Note Guideline for Landslide Risk Management. *Journal and News of the Australian Geomechanics Society* 42(1). https://landsliderisk.org/wp-content/uploads/2017/04/ags_2007c2.pdf
- Building Act 2016: <https://www.legislation.tas.gov.au/view/html/inforce/current/act-2016-025> [Accessed 15 July 2022]
- Building in Landslip Hazard Areas Determination: <https://www.cbos.tas.gov.au/topics/technical-regulation/building-standards/building-practitioners/landslip-hazard-areas>
- Department of Premier and Cabinet (DPAC), Tasmanian Government, 2013a: *Principles for the consideration of natural hazards in the planning system*. Report 12/11635. 16 pp.
- Department of Premier and Cabinet (DPAC), Tasmanian Government, 2013b: *Guide to considering natural hazard risks in land use planning and building control*. Report 12/11634. 43 pp.
- Department of Premier and Cabinet (DPAC), Tasmanian Government, 2013c: *Landslide Planning Report*. Report 12/11943. 84 pp.
- Hansen, P. and Ombler, F., 2009. A new method for scoring multi-attribute value models using pairwise ranking of alternatives. *Journal of Multi-Criteria Decision Analysis* 15, 87-107.
- International Organisation for Standardization (ISO) 2018: *ISO 31000:2018 – Risk Management*. <https://www.iso.org/obp/ui/#iso:std:iso:31000:ed-2:v1:en>
- International Organisation for Standardization (ISO) 2009: *ISO 73:2009 – Risk Management - Vocabulary*. <https://www.iso.org/obp/ui/#iso:std:iso:guide:73:ed-1:v1:en>
- Land Use Planning and Approvals Act 1993 (LUPAA): <https://www.legislation.tas.gov.au/view/html/inforce/current/act-1993-070>
- Landslip Hazard Code (Section C15.0 of Tasmanian Planning Scheme State Planning Provisions): <https://tpso.planning.tas.gov.au/tpso/external/planning-scheme-viewer/30/section/2?effectiveForDate=2025-07-17>
- Mazengarb, C. and Stevenson, M., 2010: Tasmanian Landslide Map Series: User Guide and Technical Methodology. *Tasmanian Geological Survey Record* 2010/01.
- Mineral Resources Tasmania: *Landslide Database – TIGER*. https://www.mrt.tas.gov.au/geoscience/engineering_geology/accordion/landslide_database
- Tasmanian Planning Scheme: <https://tpso.planning.tas.gov.au/tpso/external/tasmanian-planning-scheme>

9 Appendix 1: Pairwise comparison table

	Statewide slopes -low slopes	Statewide slopes -moderate slopes	Statewide slopes - steep slopes	Regression areas adjacent to major cliffs	Rockfall susceptibility source + runoff area > 34 degrees	Rockfall susceptibility source + runoff area 30 degrees	Debris flow susceptibility Mountain source + runoff - steep slopes	Debris flow susceptibility Mountain source + runoff moderate to steep	Debris flow susceptibility Mountain source + runoff moderate	Debris flow susceptibility Mountain source + runoff lower moderate slopes	Shallow slide susceptibility - source high susceptibility	Shallow slide susceptibility source - moderate susceptibility	Shallow slide susceptibility source - low susceptibility	Deep-seated slide susceptibility - source area	Deep-seated slide susceptibility - regression area	Deep seated slide susceptibility - runoff area	Mapped slides - Recently active	Mapped slides - Activity unknown	Proclaimed Landslip A	Proclaimed Landslip B	Shallow susceptibility - runoff
Statewide slopes -low slopes	1000	1	1	1	1	1	1	1	1	1	1	1	1	100	1	1	1	1	1	1	1
Statewide slopes -moderate slopes	1000	1000	1	1	1	100	1	1	1	1	1	1	1	100	1	100	100	1	1	1	1000
Statewide slopes - steep slopes	1000	1000	100	100	100	100	1	1	1000	1000	100	1000	1000	100	100	1000	1000	1	1	1	1000
Regression areas adjacent to major cliffs	1000	1000	100	100	100	100	100	100	1000	1000	100	1000	1000	100	1000	1000	1000	1	100	1	1000
Rockfall susceptibility source + runoff area > 34 degrees	1000	1000	100	100	1000	1	1	100	1000	1000	100	1000	1000	100	1000	1000	1000	1	100	1	1000
Rockfall susceptibility source + runoff area 30 degrees	1000	100	100	100	1	1000	1	1	100	1000	100	1000	1000	100	100	1000	1	100	1	100	1000
Debris flow susceptibility Mountain source + runoff - steep slopes	1000	1000	1000	100	1000	1000	1000	1000	1000	1000	100	1000	1000	100	100	100	1	100	1	100	1000
Debris flow susceptibility Mountain source + runoff moderate to steep	1000	1000	1000	100	1000	1000	1	1000	1000	1000	100	1000	1000	100	100	1000	1	100	1	100	1000
Debris flow susceptibility Mountain source + runoff moderate	1000	1000	1	1	100	100	1	1	1000	1000	1	1000	1000	1	1000	1000	1	100	1	100	1000
Debris flow susceptibility Mountain source + runoff lower moderate slopes	1000	1000	1	1	1	1	1	1	1	1000	1	1000	1	1000	1000	1000	1	1	1	100	1000
Shallow slide susceptibility - source high susceptibility	1000	1000	100	100	100	100	100	100	1000	1000	1000	1000	1000	100	100	100	1	100	1	100	1000
Shallow slide susceptibility source - moderate susceptibility	1000	100	1	1	1	1	1	100	100	1000	1	1000	1	100	100	100	1	1	1	1	1000
Shallow slide susceptibility source - low susceptibility	100	1000	1	1	1	1	1	1	1	1	1	1	1	1000	1	1	1	1	1	1	1000
Deep-seated slide susceptibility - source area	1000	100	100	100	100	1000	100	100	1000	1000	100	1000	1000	1000	1	1	1	100	1	100	1000
Deep-seated slide susceptibility - regression area	1000	100	1	100	1	1	100	100	1	1	100	100	1000	1000	1000	100	1	100	1	100	1000
Deep seated slide susceptibility - runoff area	1000	100	1	100	1	1	100	100	1	1	100	100	1000	1000	100	1000	1	100	1	100	1000
Mapped slides - Recently active	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1	1000	1000
Mapped slides - Activity unknown	1000	1000	1	100	100	100	100	100	100	1000	100	1000	100	100	100	100	1	1000	1000	100	1000
Proclaimed Landslip B	1000	1000	1000	100	100	100	100	100	100	100	100	1000	1000	100	100	100	1	100	1	1000	1000
Shallow susceptibility - runoff	1000	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Column totals	17100	12501	4509	2106	2808	5706	1710	2907	7506	12105	2106	10503	16101	4005	6804	6903	18	2106	1117	3205	18001

10 Appendix 2: Landslide Hazard Bands Update – LGA change report

3 May 2024



Percent change:

High	0.0
Medium-Active	0.0
Medium	4.6
Low	0.4
Acceptable	-5.0
Total (L-H)	5.0

Components driving change:

- Remaining areas, slope thresholds. (improved underlying elevation model)
- Rockfall (now statewide)

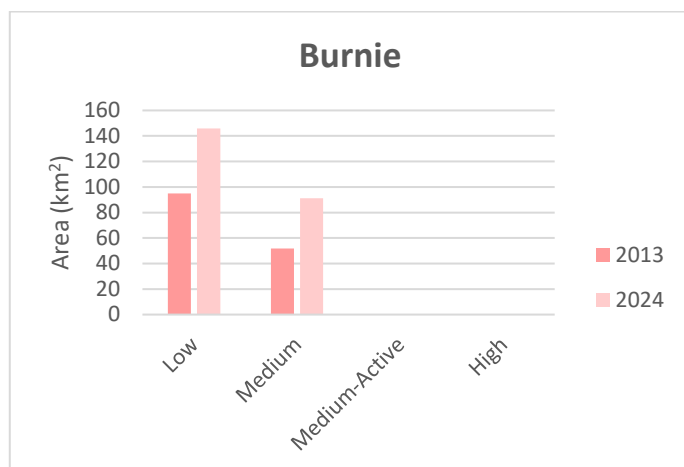


Percent change:

High	0.0
Medium-Active	0.0
Medium	2.1
Low	1.1
Acceptable	-3.2
Total (L-H)	3.2

Components driving change:

- Remaining areas, slope thresholds. (improved underlying elevation model)

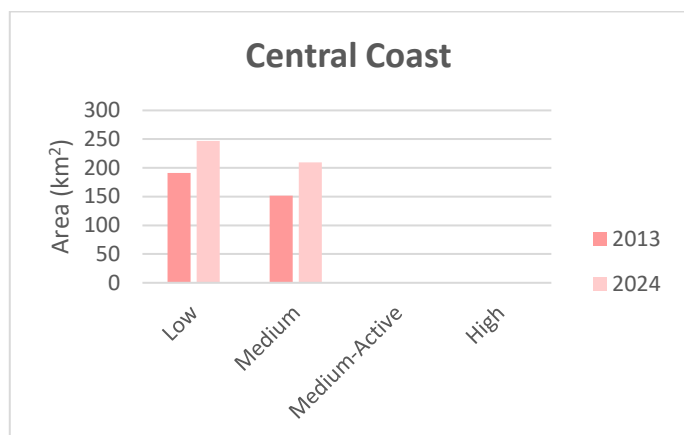


Percent change:

High	0.0
Medium-Active	0.0
Medium	6.4
Low	8.3
Acceptable	-14.8
Total (L-H)	14.8

Components driving change:

- Mapped landslides – Activity unknown (peri-urban mapping programme)
- Remaining areas, slope thresholds (threshold reduction from 11 to 9 degrees for Low)

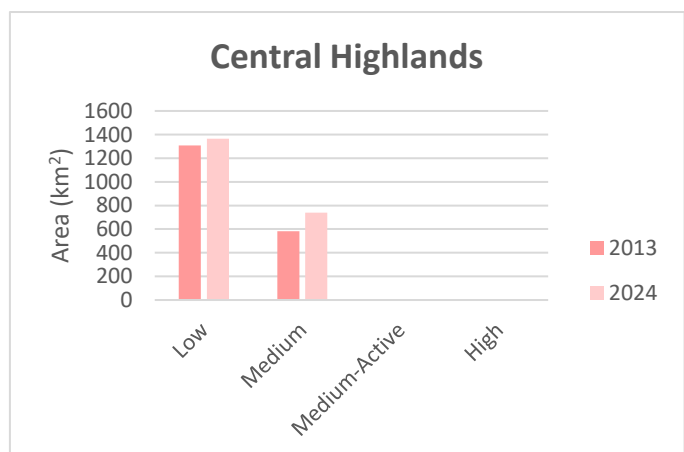


Percent change:

High	0.0
Medium-Active	0.0
Medium	6.1
Low	5.9
Acceptable	-12.1
Total (L-H)	12.1

Components driving change:

- Mapped landslides – Activity unknown (peri-urban mapping programme)
- Remaining areas, slope thresholds (threshold reduction from 11 to 9 degrees for Low)

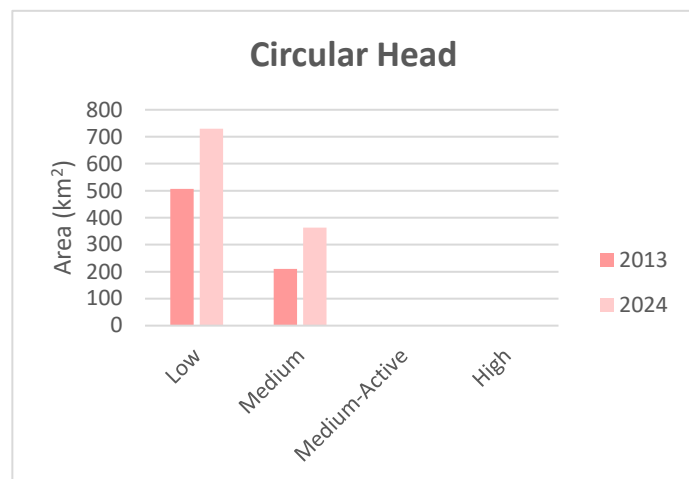


Percent change:

High	0.0
Medium-Active	0.0
Medium	2.0
Low	0.7
Acceptable	-2.7

Components driving change:

- Mapped landslides – Activity unknown (peri-urban mapping programme)
- Remaining areas, slope thresholds. (improved underlying elevation model)



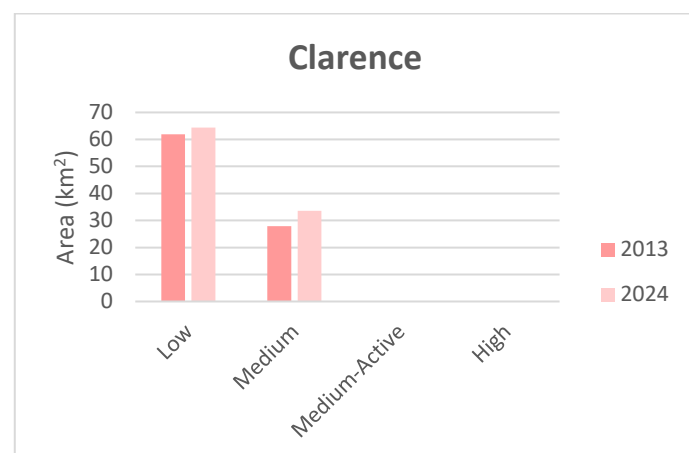
Total (L-H) 2.7
Percent change:

High 0.0
 Medium-Active 0.0
 Medium 3.0
 Low 4.4
 Acceptable -7.4

Total (L-H) 7.4

- Rockfall (now statewide)
Components driving change:

- Mapped landslides – Activity unknown (peri-urban mapping programme)
- Remaining areas, slope thresholds (partial threshold reduction from 11 to 9 degrees for Low)



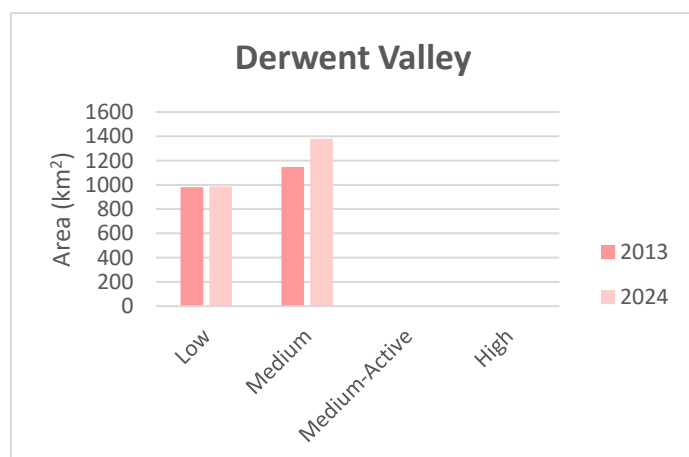
Percent change:

High 0.0
 Medium-Active 0.0
 Medium 1.4
 Low 0.6
 Acceptable -2.0

Total (L-H) 2.0

Components driving change:

- Remaining areas, slope thresholds. (improved underlying elevation model)
- Mapped landslides – Activity unknown (peri-urban mapping programme)



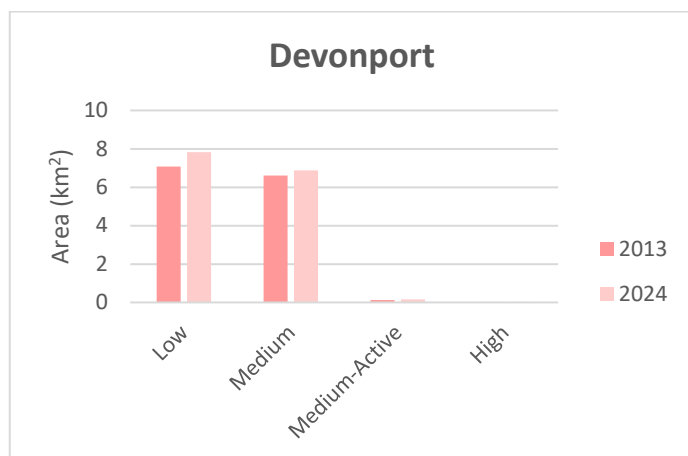
Percent change:

High 0.0
 Medium-Active 0.0
 Medium 5.6
 Low 0.1
 Acceptable -5.7

Total (L-H) 5.7

Components driving change:

- Mapped landslides – Activity unknown (peri-urban mapping programme)
- Remaining areas, slope thresholds. (improved underlying elevation model)

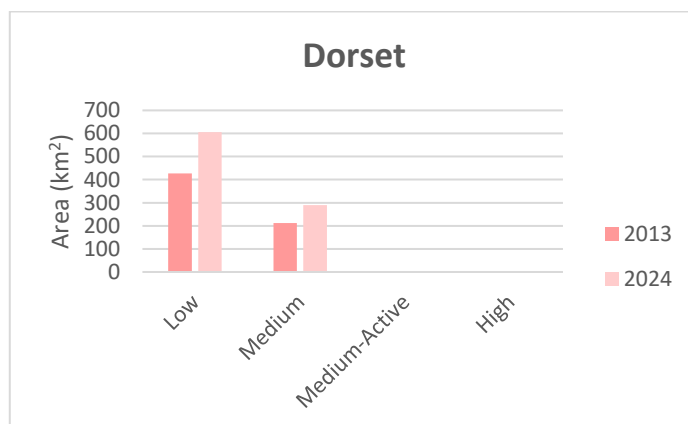


Percent change:

High	0.0
Medium-Active	0.0
Medium	0.2
Low	0.6
Acceptable	-0.9
Total (L-H)	0.9

Components driving change:

- Mapped landslides – Activity unknown (peri-urban mapping programme)
- Remaining areas, slope thresholds (threshold reduction from 11 to 9 degrees for Low)

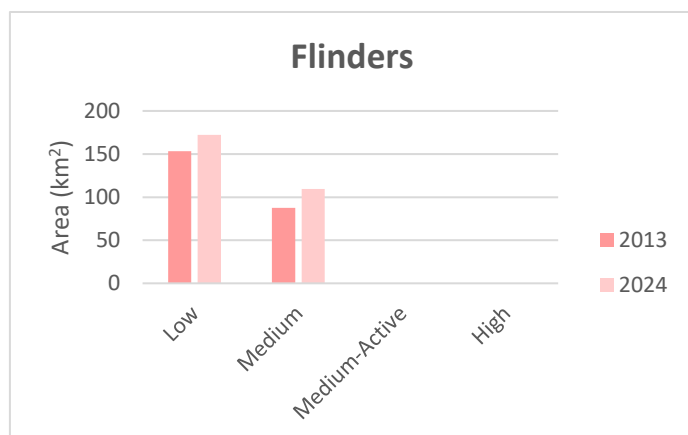


Percent change:

High	0.0
Medium-Active	0.0
Medium	2.4
Low	5.5
Acceptable	-7.9
Total (L-H)	7.9

Components driving change:

- Mapped landslides – Activity unknown (peri-urban mapping programme)
- Remaining areas, slope thresholds (threshold reduction from 11 to 9 degrees for Low)

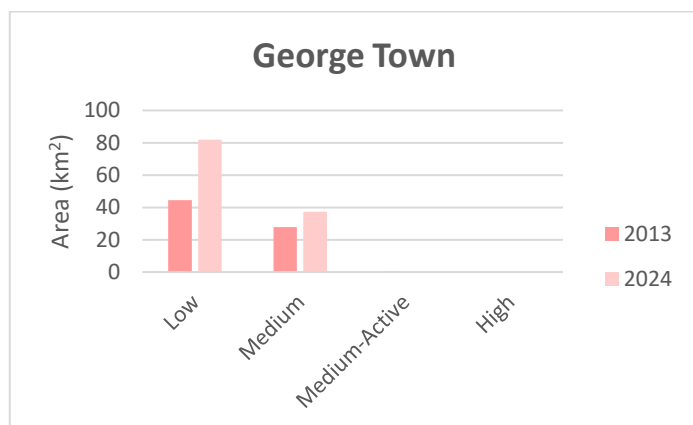


Percent change:

High	0.0
Medium-Active	0.0
Medium	1.1
Low	0.9
Acceptable	-2.0
Total (L-H)	2.0

Components driving change:

- Remaining areas, slope thresholds. (improved underlying elevation model)

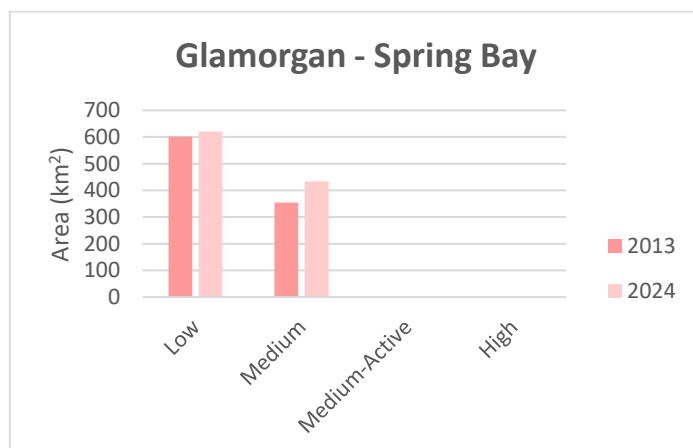


Percent change:

High	0.0
Medium-Active	0.0
Medium	1.4
Low	5.6
Acceptable	-7.1
Total (L-H)	7.1

Components driving change:

- Deep-seated landslide susceptibility (improved model for Tamar Valley)
- Mapped landslides – Activity unknown (peri-urban mapping programme)

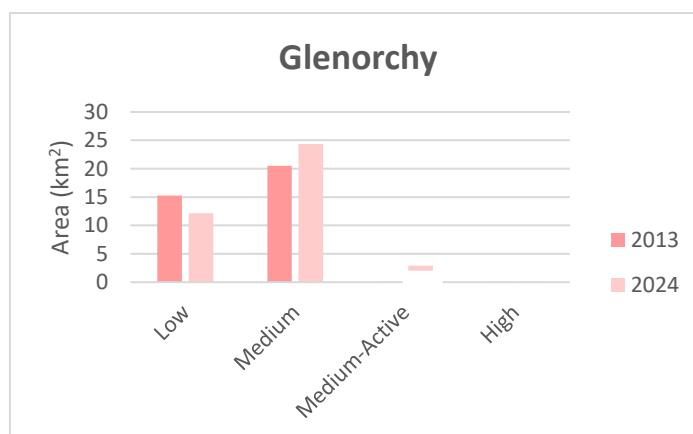


Percent change:

High	0.0
Medium-Active	0.0
Medium	3.0
Low	0.7
Acceptable	-3.7
Total (L-H)	3.7

Components driving change:

- Remaining areas, slope thresholds. (improved underlying elevation model)
- Rockfall (now statewide)

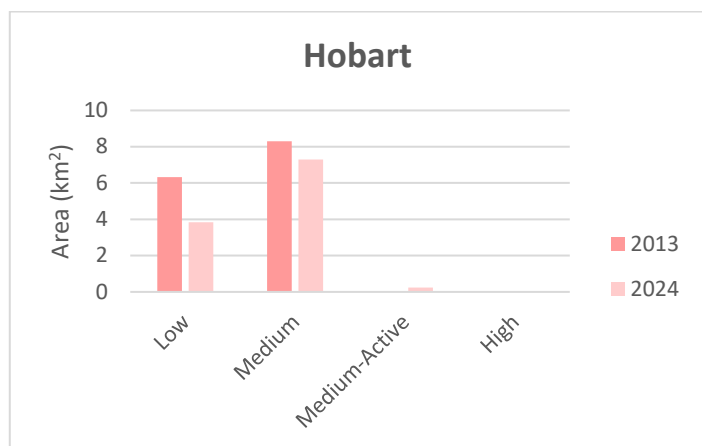


Percent change:

High	0.0
Medium-Active	2.3
Medium	3.2
Low	-2.5
Acceptable	-2.9
Total (L-H)	2.9

Components driving change:

- Mapped landslides – Activity unknown (peri-urban mapping programme)
- Rockfall (decrease in Low due to the new rockfall model)

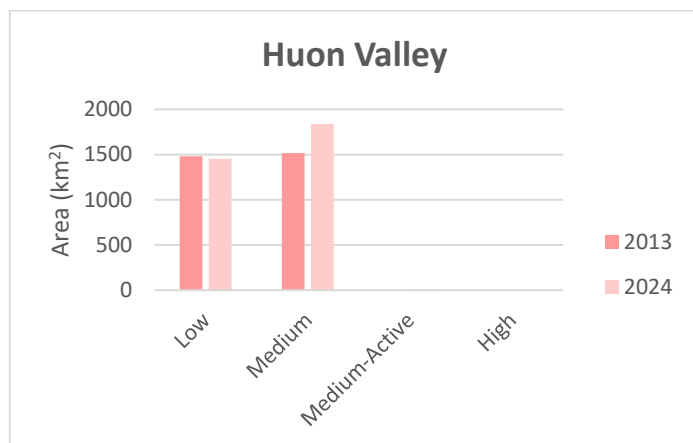


Percent change:

High	0.0
Medium-Active	0.3
Medium	-1.3
Low	-3.2
Acceptable	4.2
Total (L-H)	-4.2

Components driving change:

- Rockfall (decrease due to the new rockfall model)

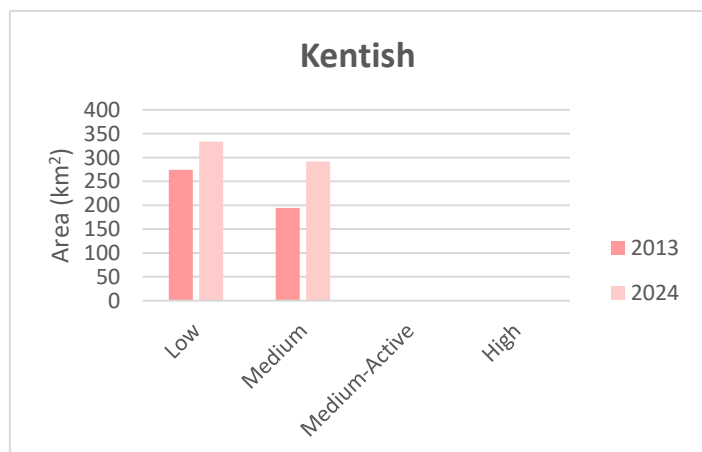


Percent change:

High	0.0
Medium-Active	0.0
Medium	5.5
Low	-0.5
Acceptable	-5.1
Total (L-H)	5.1

Components driving change:

- Mapped landslides – Activity unknown (peri-urban mapping programme)

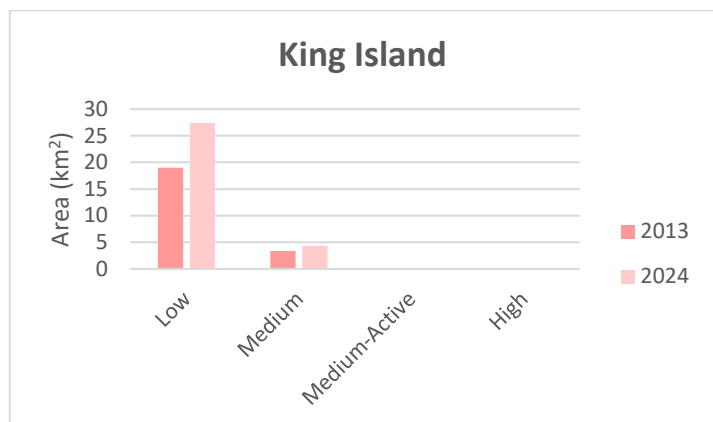


Percent change:

High	0.0
Medium-Active	0.0
Medium	8.4
Low	5.1
Acceptable	-13.5
Total (L-H)	13.5

Components driving change:

- Remaining areas, slope thresholds (partial threshold reduction from 11 to 9 degrees for Low)
- Mapped landslides – Activity unknown (peri-urban mapping programme)

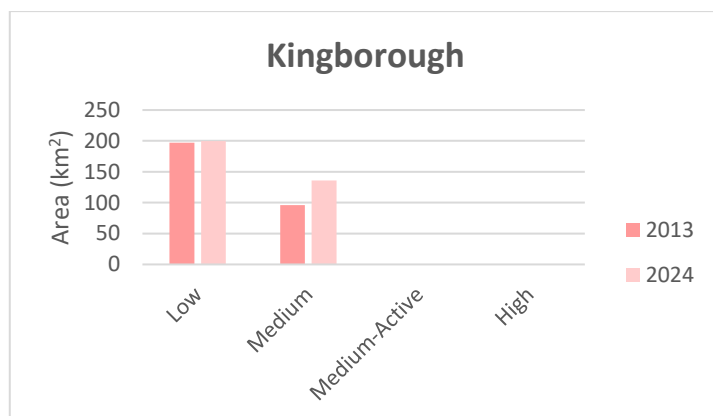


Percent change:

High	0.0
Medium-Active	0.0
Medium	0.1
Low	0.8
Acceptable	-0.8
Total (L-H)	0.8

Components driving change:

- Remaining areas, slope thresholds. (improved underlying elevation model)

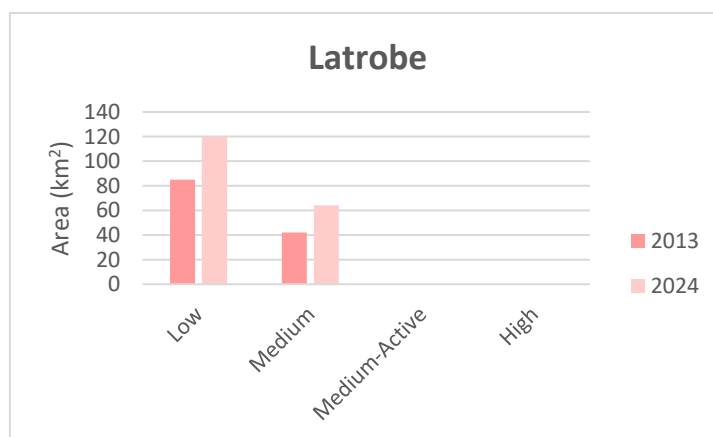


Percent change:

High	0.0
Medium-Active	0.0
Medium	5.3
Low	0.3
Acceptable	-5.7
Total (L-H)	5.7

Components driving change:

- Mapped landslides – Activity unknown (peri-urban mapping programme)
- Remaining areas, slope thresholds. (improved underlying elevation model)

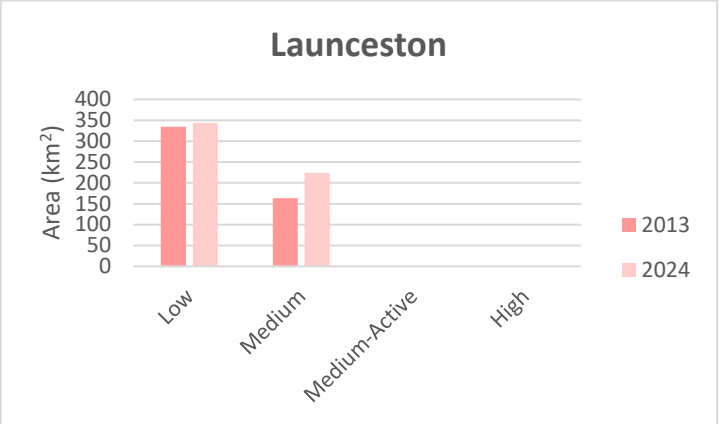


Percent change:

High	0.0
Medium-Active	0.0
Medium	3.6
Low	5.5
Acceptable	-9.1
Total (L-H)	9.1

Components driving change:

- Mapped landslides – Activity unknown (peri-urban mapping programme)
- Remaining areas, slope thresholds (threshold reduction from 11 to 9 degrees for Low)

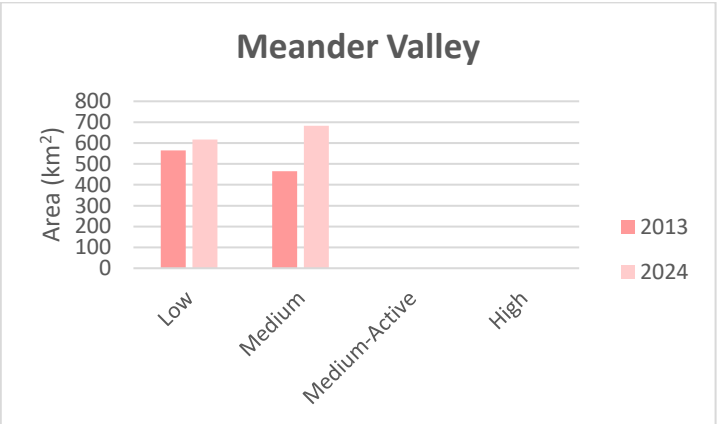


Percent change:

High	0.0
Medium-Active	0.0
Medium	4.2
Low	0.6
Acceptable	-4.9
Total (L-H)	4.9

Components driving change:

- Deep-seated landslide susceptibility (improved model for Tamar Valley)
- Mapped landslides – Activity unknown (peri-urban mapping programme)

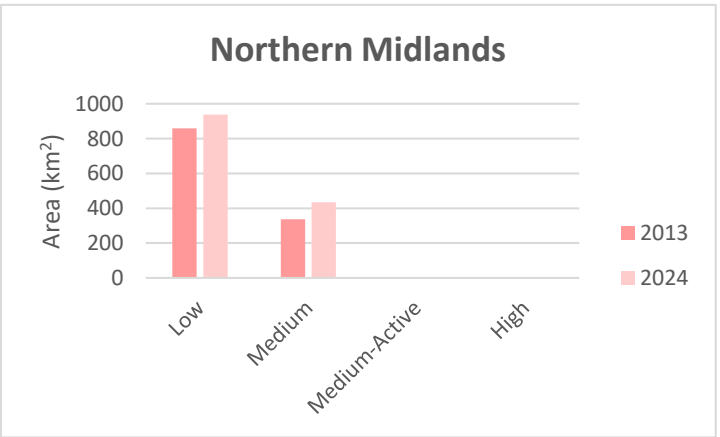


Percent change:

High	0.0
Medium-Active	0.0
Medium	6.6
Low	1.6
Acceptable	-8.2
Total (L-H)	8.2

Components driving change:

- Remaining areas, slope thresholds (partial threshold reduction from 11 to 9 degrees for Low)
- Mapped landslides – Activity unknown (peri-urban mapping programme)

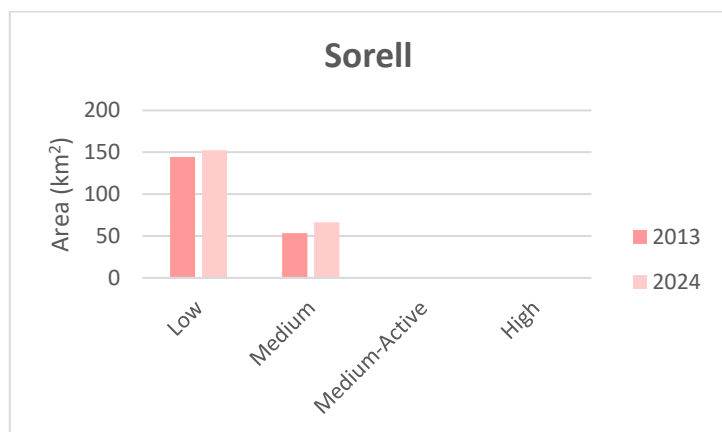


Percent change:

High	0.0
Medium-Active	0.0
Medium	1.9
Low	1.5
Acceptable	-3.5
Total (L-H)	3.5

Components driving change:

- Deep-seated landslide susceptibility (improved model for Tamar Valley)
- Remaining areas, slope thresholds (partial threshold reduction from 11 to 9 degrees for Low)

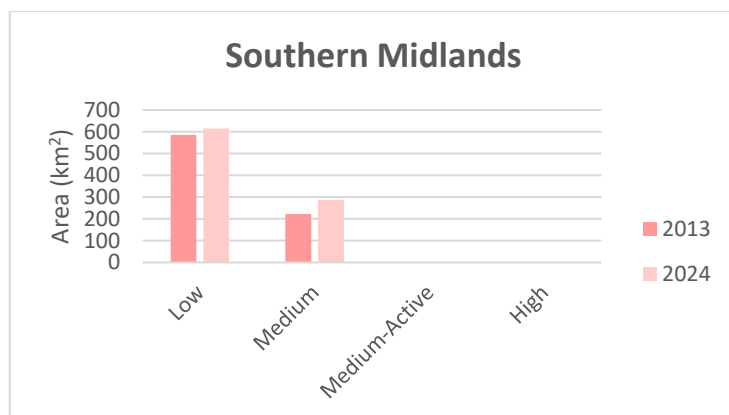


Percent change:

High	0.0
Medium-Active	0.0
Medium	2.1
Low	1.3
Acceptable	-3.5
Total (L-H)	3.5

Components driving change:

- Deep-seated landslide susceptibility (improved model for Tamar Valley)
- Mapped landslides (peri-urban mapping programme)
- Remaining areas, slope thresholds. (improved underlying elevation model)

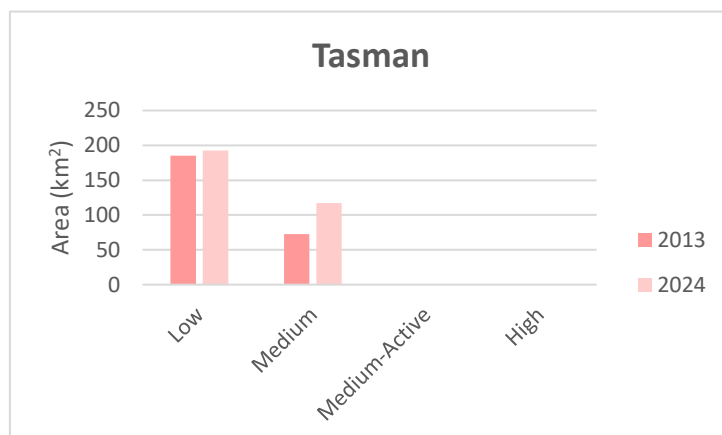


Percent change:

High	0.0
Medium-Active	0.0
Medium	2.5
Low	1.1
Acceptable	-3.6
Total (L-H)	3.6

Components driving change:

- Mapped landslides – Activity unknown (peri-urban mapping programme)
- Remaining areas, slope thresholds. (improved underlying elevation model)
- Rockfall (now statewide)

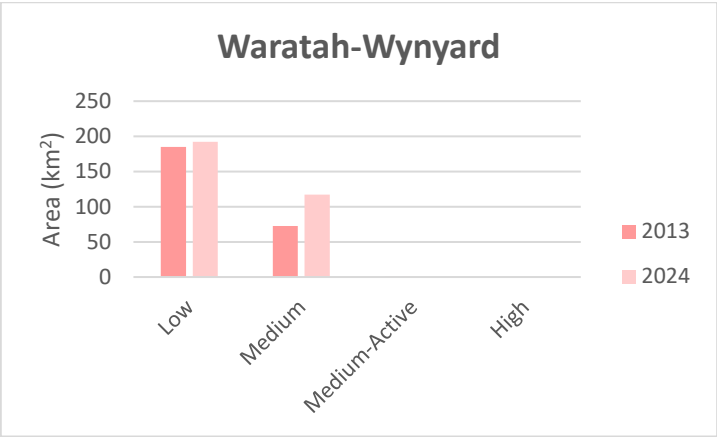


Percent change:

High	0.0
Medium-Active	0.0
Medium	6.6
Low	1.1
Acceptable	-7.7
Total (L-H)	7.7

Components driving change:

- Mapped landslides – Activity unknown (peri-urban mapping programme)
- Remaining areas, slope thresholds. (improved underlying elevation model)
- Rockfall (now statewide)

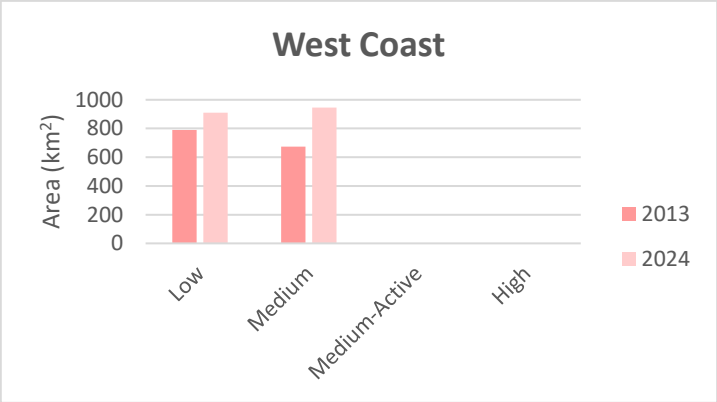


Percent change:

High	0.0
Medium-Active	0.0
Medium	7.6
Low	3.4
Acceptable	-11.0
Total (L-H)	11.0

Components driving change:

- Mapped landslides – Activity unknown (peri-urban mapping programme)
- Remaining areas, slope thresholds (partial threshold reduction from 11 to 9 degrees for Low)
- Rockfall (now statewide)

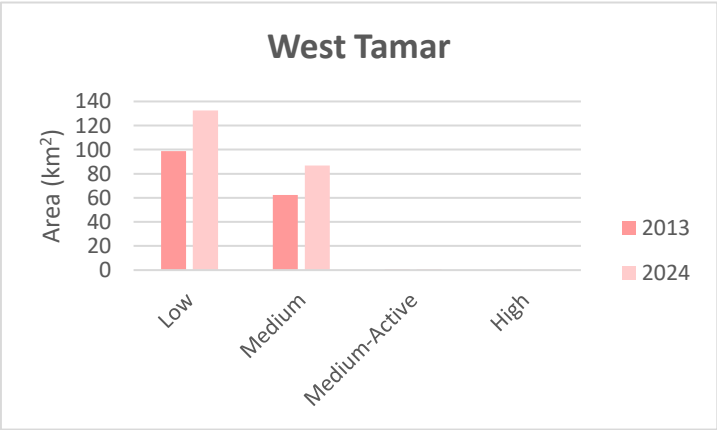


Percent change:

High	0.0
Medium-Active	0.0
Medium	5.5
Low	0.0
Acceptable	-5.5
Total (L-H)	5.5

Components driving change:

- Remaining areas, slope thresholds. (improved underlying elevation model)
- Rockfall (now statewide)



Percent change:

High	0.0
Medium-Active	0.0
Medium	3.4
Low	4.7
Acceptable	-8.2
Total (L-H)	8.2

Components driving change:

- *Error in calculation: the 2024 layers will be clipped to the coast before publication*
- Deep-seated slide susceptibility (improved model for Tamar Valley)



Department of State Growth

Street Address

Suburb TAS 7001 Australia

Phone: XX XXXX XXXX

Fax: XX XXXX XXXX

Email: XXXX@XXXX.tas.gov.au

Web: www.XXXX.tas.gov.au