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The Department of Primary
Industries

Erosion and Landslide Inventory for the CCMA Region

Supporting Document to the
Corangamite Soil Health Strategy

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1. Introduction and Background

The Corangamite Catchment Management Authority (CCMA) has developed the Corangamite Soil Health Strategy (CSHS) as a sub-strategy of the Corangamite Regional Catchment Strategy (CRCS). The CSHS links to state and federal frameworks and aims to compliment other sub-strategies under the CRCS. This will allow an integrated approach to the protection of key assets identified under this and other sub-strategies.

The CSHS addresses a diverse range of soil health issues and will provide the basis for investment in regional soil health over the coming years. As such, a key aim of the CSHS is to assist the CCMA and other stakeholders in guiding investment to protect and enhance assets in the region that are at risk from threatening processes associated with soil health.

The CSHS uses a *relative risk to asset* based approach to identify priority areas where soil threatening processes are impacting important assets. The process considered 12 different soil threatening processes in 15 sub-catchment or landscape zones. By superimposing the distribution of 5 primary assets classes with these threats, a series of risk to assets combinations were evaluated and the top 20 combinations of threats, assets and landscape zones were chosen as the initial priority zones for the CSHS.

The resulting top 20 priority zones contained 15 combinations, including threats of landslides or erosion, emphasizing the importance of these soil threats within the CCMA region. As a result much of the initial research and focus has been placed on landslide and erosion in the early phases of the CSHS.

A key element of the erosion and landslide research has been the establishment of a CCMA erosion and landslide database. An existing database contained data from a number of different data sources and reflects a format that has evolved from a number of earlier data inventories. The focus of this report is on the review of the existing erosion and landslide inventory and efforts to review, verify and upgrade it as part of the 2006/2007 CSHS program.

2. Scope of Commission

The development of the CSHS is being managed and coordinated by the Department of Primary Industries (DPI) on behalf of the CCMA. The CSHS development commenced in 2003 and detailed annual programs have been developed and implemented since this time. A key focus under the 2006/2007 CSHS program has been the consolidation of existing information with a view to strengthening the justification for future phases of the overall strategy.

Given the importance of erosion and landslide issues in the CCMA and their known significance in many of the top 20 priority zones, A.S. Miner Geotechnical was commissioned by DPI to undertake the following tasks:

- Assess the origins of the current inventory and identify any inconsistencies with the way data has been compiled in the past
- Review the earlier data sources and confirm the consistency of the original data
- Review and verify the spatial or positional accuracy of occurrences in the existing erosion and landslide database.
- Reproject all previous data into the current standard for position (i.e. MGA GDA94)
- Add existing data known to be missing from the current erosion and landslide inventory
- Search out new sources of data and add to the inventory
- Compile metadata for previous and new data sets
- Confirm all new and previous data are in an appropriate GIS format for use in possible web-based delivery systems

This report details the tasks undertaken in carrying out the above scope of work. It includes confirmation of earlier data sources and the review of previous inventories. The report then describes new data sources, the process of standardising the map projection and datum for the GIS layers produced and, where possible, the compilation of metadata for data sets.

3. Data Sources

3.1 Introduction

Numerous data sources have been assessed during the course of the various studies undertaken within the region. One of the earliest and most important of these was the Cooney (1980) study entitled "Slope Hazard Study in the Otway Ranges" which commenced in 1979 by the Department of Minerals and Energy (DM&E) under the direction of John Neilson. The first progress report was produced in 1980 and indicated the initial two phases of a five stage program had been completed at this time. These initial stages included:

1. Delineation of slope failures and zones of potential failure from aerial photographs: provisional classification of them.
2. Field mapping to check photo-interpretation and study environments, causes and mechanisms of failure: revision of photo-mapping.

It should be noted that the initial study area was extensive, covering approximately 4,300 km². The area was bounded by Curdies River in the west, the volcanic plains in the north and the coastline to the east and south.

Photo interpretation was undertaken on a series of 1:16,000 black and white air photographs flown between 1946 and 1950. The base map was compiled from the then NatMap 1:100,000 series for the Port Campbell, Corangamite, Princetown, Colac and Otway sheets. 1: 63,360 military survey map of Anglesea was reduced to provide coverage in the east. Information was transferred to the base map by means of an omnigraph.

A detailed description of the results is contained in the progress report (Cooney 1980) and over 900 landslides were mapped during the course of this study. Whilst it was indicated that landslides in the region range from a fraction of a hectare to well in excess of 50 hectares, the study was only able to map the larger slides. Note, Cooney grouped the slides as small (up to 2 ha), medium (2 to 5 ha) and large (in excess of 5 ha).

Due to the complexity of the disturbed areas contained within many of the landslides, only the headscarps were mapped for the majority of the slides in the study area. This has been a major impediment to the use of this data set in future modelling and analysis projects.

The nature of other data sources used to compile information on landslides and erosion in the CCMA region is diverse and varied. Such sources may include:

- Unpublished reports from various Victorian State Government departments such as the Geological Survey of Victoria
- Inspection notes and internal reports from authorities such as VicRoads
- Old Soil Conservation Authority (SCA) reports
- Consultant's Reports
- Theses and research reports from universities and educational institutions such as the University of Ballarat.
- Journal and Conference papers

At present, 87 different sources of data have been used to compile the current version of the landslide and erosion database for south-western Victoria. At least 15 other potentially useful data sources are known to exist but have yet to be accessed whilst it is likely many others also exist within various authorities and organisations.

The current listing of data sets used in the compilation of the inventory is shown on Figures 1 to 3 and detailed in tabular form in Appendix A.

4. Previous Inventories

4.1 Introduction

The early study by Cooney (1980) probably represented the first version of an inventory of landslides for south-western Victoria. However, information attached to each mapped occurrence is unclear and the format in which the data was stored is unknown.

Whilst individual data sources on landslides have been produced since the early 1980's, formal data inventories have only been assembled since 2000 and have been associated with the work undertaken or supervised by Peter Dahlhaus at the University of Ballarat. Some of this work has been undertaken on a commercial basis but much of the recent inventory work has been collated during research into landslides and more recently erosion within the region as part of the CSHS.

The following sections detail the various versions of inventory databases undertaken for the south-western Victorian region

4.2 Dahlhaus 2001

The initial process of combining known landslide data sources was first undertaken by Peter Dahlhaus as part of a three year study of land capability in the Colac Otway Shire. (Dahlhaus 2000 and 2001).

Dahlhaus brought together the following data sources which fell within the Colac Otway Shire although the Cooney data extended well beyond the COS local government boundary.

Data Source	Location mapped	Number of landslides	Method used and data	Estimated Accuracy
Cooney, 1980	Shire area south of Colac	702	1946- 1950 Aerial photo interpretation, limited field checks, 1980	± 200 m
Wood, 1982	Area between Wild Dog Creek and Busty Road	35	Detailed field mapping, 1982	± 25 m
Tickell, et al., 1991	Colac 1:50,000 scale mapsheet	72	Field mapping and aerial photo interpretation, 1986 – 1987	± 100 m
Edwards, et al., 1996	Colac 1:250,000 scale mapsheet	10	Compilation of existing maps, 1996	± 250 m
Previous geotechnical assessments	Development sites within existing EMO control area	41	Field observation, 1986 – 1999	Located to property polygon
TOTAL		860		

Table1 List of Data Sources Used in Original Dahlhaus Inventory

The initial attributes attached to each mapped feature were relatively simple with generally 10 fields captured as follows:

- Landslide ID
- Mapped By
- Method (of initial interpretation)
- Date (of original data source)
- Capture Method
- Captured By
- Capture Date
- Source (of data)
- Comment
- Feature

It should also be noted that there were some variations in the initial fields captured and in particular the MapInfo (GIS) table set up for the previous geotechnical assessments contained other, more detailed geotechnical parameters to cater for the diverse nature of reports from which this data set was compiled.

4.3 McVeigh 2001

John McVeigh (2001) refined the earlier datasets produced by Dahlhaus as part of a geology honours thesis at the University of Ballarat. As a result of this study, report entitled "A landslide Database fro Southwest Victoria" was produced which included the MapInfo table SW_Landslides Version 1.0.

This database included the 5 original data sources from Dahlhaus plus additional information in the Heytesbury settlement obtained from Buenen (1995). A limited number of other landslides were also added from field observations undertaken by McVeigh during the course of his studies.

As a result, the McVeigh database included 1416 slope failures drawn from the 7 identified data sources discussed above. Each mapped occurrence within the database included 60 fields which were separated into 3 major components as follows:

- The acquisition of the source data
- The landslide features and characteristics including field observations.
- Historical information

McVeigh stated that the information for the first component was completed for each occurrence whilst much of the remaining information was not available at the time of the study.

The fields were essentially chosen to assist users in applying the principles of the Australian Geomechanics Society's recent landslide risk management guidelines (AGS 2000). In addition, McVeigh also included reference to international dataset structures such as the IAEG's working

party on landslide inventory (UNESCO 1990, 1991 and 1993). Extensive details on each of the fields and their intended purpose are contained in McVeigh (2001).

4.4 COGG 2004

A pilot study aimed at the implementation of an Erosion Management Overlay for the City of Greater Geelong (CoGG) was commenced in 2004 as part of a co-investment arrangement between the CoGG and the CCMA (GHD 2004). The project was aimed at addressing both landslides and erosion within the city's local government boundary.

A personal geodatabase system (ESRI ArcGIS database format) was set up at the request of the IT department at CoGG, and information on the occurrence of landslides and erosion was assembled. Information was drawn from a diverse range of data sources including previous reports, newspaper articles, anecdotal evidence/observations, limited non-stereo photo interpretation, plans and maps.

71 instances of mapped occurrences were reviewed and collated as a result of the GHD study. This included 38 landslides, 8 erosion and 25 instances of coastal erosion.

The database structure was based on an inter-relational format whereby the main table (EMO_Main) included identification data. More detailed parameters were then contained in a series of individual tables for landslides, erosion and coastal erosion. Various fields have been included relating to topics such as hazard sub-type, geometry, recurrence, monitoring references and risk assessment. In all over 130 different fields were contained in 14 different database tables.

The final information was provided in ArcGIS format with a series of shapefiles provided for safe integration with CoGG corporate GIS. Full details of the database structure and parameter fields are contained in the GHD report.

4.5 Feltham 2004-2006

A research project aimed at creating an erosion and landslide database for the Corangamite Catchment Management Authority (CCMA) region was commenced in 2004 by Warren Feltham at the University of Ballarat. The project was funded as part of the Corangamite Soil Health Strategy (CSHS) and was specifically to be used for the development of resource condition targets.

The database structure was established during initial meetings with PirVIC DPI in September 2004 and focused on segregating the features into soil degradation type (i.e. landslide, gully erosion, sheet erosion, stream bank erosion and other areas of bare or exposed terrain).

16 database fields were chosen for the structure and these included:

- Poly ID
- Centroid X
- Centroid Y
- Confidence
- Gully
- Sheet
- Mass Wasting

- Stream Bank Erosion
- Other
- Date captured
- Map method
- Data aerial photo
- Date mapped
- Mapped by
- Data source
- Comment

The data fields are reflective of the non-stereo aerial photo interpretation (API) method of data capture used by Feltham whilst allowing for the identification of multiple degradation types at any location.

The API mapping using the available ortho-corrected photo mosaics for each municipality was completed for the entire CCMA region and was field checked over numerous days resulting in the insitu verification of over 160 sites. This data set was then combined with three other inventories or data sources which included:

- SW_Landslide database (McVeigh 2001 see above)
- City of Greater Geelong EMO database
- Woody Yallock Catchment Erosion Map (Graeme Stockfeld 1993)

The Stockfeld data was collected in 1993 as a field mapping project undertaken under the Graduate Diploma of Land Rehabilitation at the University of Ballarat. Information was digitised from a hard copy maps and features captured as polylines and geo-referenced directly into MapInfo.

The initial research project was expanded by Feltham into an honours thesis in 2005 and additional information was added to the database from field observations undertaken by Landcare groups throughout the CCMA region. A series of hard copy maps at 1:25,000 were produced using the aerial photo mosaic as a background and these maps were then distributed to the various Landcare groups. Field observations of landslides and erosion were marked directly onto the maps and these then later transferred back into MapInfo using the same system of data attributes as the earlier Feltham inventory.

Finally, further aerial photo interpretation was conducted in 2006 by Feltham to supplement information for the three municipalities whose boundaries extend outside the CCMA region, i.e. Corangamite Shire, Moorabool Shire and the City of Ballarat. Mapping was again completed using photo interpretation of the ortho-corrected photo mosaics and information was transferred directly into the previous MapInfo table using the same field attributes as before.

5. Current Inventory Work

5.1 Introduction

The current inventory work for landslides and erosion in the CCMA region was commissioned as part of the Corangamite Soil Health Strategy's (CSHS) 2006/2007 program. The work commenced in June 2006 and has been undertaken by A.S. Miner Geotechnical and is described in detail in the following sections.

5.2 Reassessment of Original Data Sources

One of the initial steps in the current inventory project was a critical reassessment of the spatial accuracy of the previous inventories. Initial review of the Feltham 2004 CCMA landslide and erosion database indicated occurrences from the earlier Cooney study had been mis-projected when they were combined with later data. As a result, it was not possible to correct or readjust the database to achieve the appropriate spatial position for all the entries. This also raised some doubts about the spatial accuracy of other data sources added at later dates.

A second issue with the Feltham database was the choice of map projection and datum, being WGS84. This corresponded to the GPS coordinates system used in Feltham's field verification but contrasted with the initial projections for the Dahlhaus inventory (located in latitude and longitude) and the other base layers used to verify the spatial accuracy of the Feltham layers (AGD 66 for roads and hydrological features and MGA Zone 54 GDA 94 for some of the later aerial ortho mosaics). Whilst most if not all GIS applications can reproject different projections on the fly, ongoing anomalies were noted with the locations of various occurrences in the Feltham database due to the "hard wired" nature of the mis-projection issue within the database itself.

As a result a decision was made to return to the original source data sets and verify each specific data set individually. As a result, each data set was reviewed and checked for spatial accuracy and then reprojected to a common projection and datum, being MGA Zone 54/55 GDA 94.

As a result, individual GIS layers have now been established for each specific data source. They all share a common projection and datum of MGA Zone 54 or 55 depending on location and GDA 94.

Specific data sources have been further split up into polygons, polylines and points as a result of formatting requirements of the GIS application (ArcView 9.1) used to carry out the revisions described above.

5.3 Choice of Inventory Attributes

As original data sets were chosen for the verification of positional accuracy, all reviewed and reprojected GIS layers now maintain as far as possible, the original attributes as initially captured by the original data compiler.

New data sources captured under the current program (i.e. GIS layers designated as *Miner 2007*) have been attributed with the following fields (where those indicated with italics represent system-generated fields):

- *FID*
- *Shape*
- ID
- Hazard_Typ
- Hazard_Sub
- Input_By
- Date_Input
- Source_Typ
- Source_Dat
- Report_By
- DataCapMet
- SceDataDat
- PosAcc
- Date1stOcc
- DateRecur
- Width
- Length
- Depth
- Area
- Volume
- TravelDist
- Comments
- Trigger
- HazardID
- SourceDet
- Source

5.4 The Addition of New Data Sources.

One of the key aims of the current inventory work was to include additional data known to exist but which had not been previously captured in any of the previous inventories. As a result, new GIS layers were compiled (designated as Miner 2007) which include mapped occurrences of both erosion and landslides from a diverse range of data sources. These include unpublished reports from the Geological Survey of Victoria, consultant's reports, journal articles, conference proceedings and university theses.

The quality, nature, scale, method of capture and overall reliability of this broad data set varies from data source to data source. As a result, an estimate of spatial accuracy has been attached with each record and such accuracy varies widely from +/- 10 m to +/- 200m.

Also included in the new data sources are the trend mapping analyses completed by Ian Roberts in 2006 under the supervision of A.S. Miner Geotechnical.

A full list of all data sources used in the compilation of the newly revised erosion and landslide database is included in Appendix A. This list includes approximately 83 different data sources and represents the evolution of data capture starting from the original datasets first assembled by Dahlhaus and progressing up to the latest sources added under the current 2006/2007 CSHS program.

6. Current GIS Inventory Layers

As discussed in the preceding sections, all previous data sources as well as the latest data additions have been reviewed and spatially verified. This process was undertaken using the GIS application ArcView 9.1. Data has been created in the form of polygons, polylines and points in accordance with the ArcView format protocols.

Approximately 83 different data sources have been used in the compilation of the current database although numerous other sources have yet to be added to the current inventory due to budget and time constraints. It is also postulated that other data sources which are not yet known to the researchers will also become available in the ensuing stages of the project.

At present 114 GIS layers have been created to correspond with the various data sources. Some data sources produce multiple layers due to occurrences being in multi-format (e.g. polygons and points). All GIS layers have a common projection and datum (i.e. MGA zone 54 or 55 dependent on location GDA 94).

A full list of the current GIS data layers is contained in Appendix B

7. Metadata

The provision of metadata is considered to be a vital part of any data compilation process. No metadata files were available with any of the previous data. As a result a standard metadata structure was based on the ANZLIC model and applied to both the previous and the new data sets. Hence, a series of retrospective metadata files has been produced for each of the original data sets where possible. Information has been included based on the available data from these early studies although it is recognised that limitations exist with the completeness of much of the data.

Metadata for the new data sources has been produced as a consolidated summary only for each of the new GIS layers (designated as *Miner_2007_xxxxx*), as it was not possible to complete individual files for each of the new data sources under the current budget and timeframe restraints.

Details of the new metadata files are contained in Appendix C.

8. Comments and Recommendations

The works undertaken under the 2006/2007 CSHS program has resulted in significant advances in the quality of the CCMA erosion and landslide database. The spatial accuracy of existing features has been reviewed and verified whilst a significant number of new data sources have been accessed and new data added.

All previous and new occurrences have been reprojected into a single coordinate system commensurate with the present day standards.

However, there is an ongoing need to continue the data collection process as even more new information and data is known to exist. In addition, the ongoing stakeholder engagement currently being undertaken as part of the 2006/2007 CSHS program is also expected to unearth new, previously unknown data sources.

It should be noted that the majority of erosion and landslide features have been captured using some form of aerial photograph interpretation and this places limits on the size of features that can be interpreted to about 25 metres in diameter. Hence, there will almost certainly be other smaller features which have not yet been captured in areas already assessed.

Whilst the current inventory is considered to be a good representation of the distribution of erosion and landslides, increased accuracy in this distribution will be needed if refinements to the existing susceptibility modelling and mapping is to be undertaken in any future program. In addition any attempts at hazard and risk modelling and mapping will also greatly benefit from the best possible data inventory

As an aside to the current CSHS project, Geoscience Australia has also indicated interest in integrating the CCMA landslide occurrences into their overall national landslide inventory. It should be noted that additional further work will be required to add more extensive attribute fields to landslide occurrences if they are to be compatible with a national inventory format.

Figures

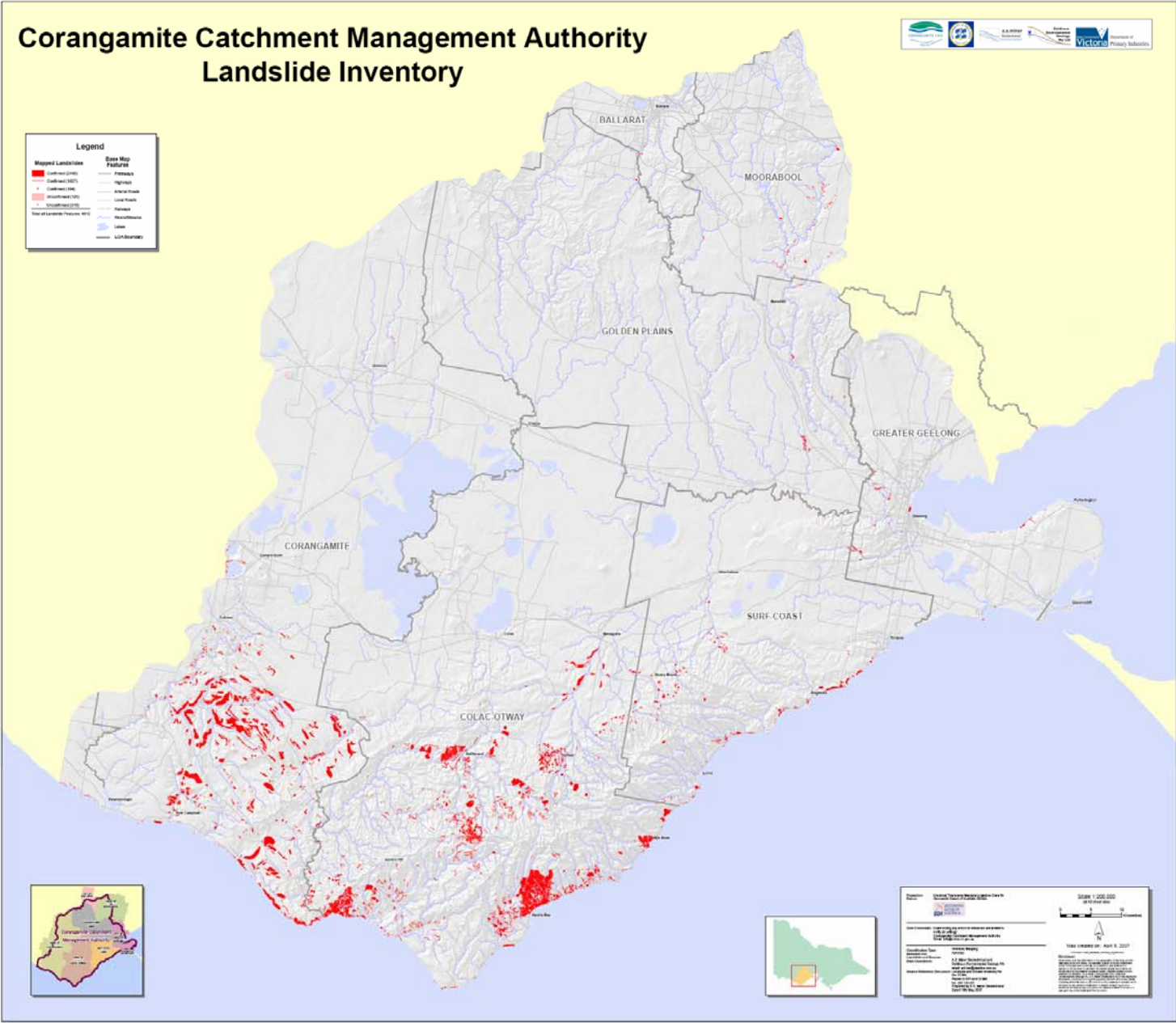


Figure 3 Landslide Inventory Only

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Appendix A

List of Data Sources Used to Assemble Inventory

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Project 357.1 Inventory and database

Data sources used to assemble Landslide and Erosion Inventory
Updated AMS 28-02-07

I.D	Status	Data Type	Report No	Shire	Location	Title	Author	Date	Hazard	Scale of data	Comment	Capture Details
CCMA-01	complete	Unpublished Report	UR 1980/76	Various	CCMA region	Otway Range Susceptibility Study-First progress report	A.M. Cooney		1980 Landslides	1:100000	Plan shows landslides mapped from 1946 photos	Poor quality A0+ plan accompanying the original report
CCMA-02	complete	Honours Research Thesis		Corangamite	Heytesbury	Soil slope failure processes in the Heytesbury Region	BJ Buenen		1995 Landslides	1:25,000	Base maps produced from state topographic series	Good quality maps plus some larger scale maps from 1946 and 1981
CCMA-03	complete	Geological Map Series	SJ54-12	Colac Otway	Colac otway	1:50 000 Geological Map Colac and part fo Beech Forest Sheet	Geological Survey of Vict		1996 Landslides	1:250000	Quality geological map series	to scale
CCMA-04	complete	Geological Map Series	7621_3 Zone 54	Colac Otway	Colac and Beech f	1:250 000 Geological Map Colac Sheet	Geological Survey of Vict		1991 Landslides	1:50000	Quality geological map series	to scale
CCMA-05	complete	Major Project		Various	CCMA region	CCMA Landslide and erosion database	Warren Feltham		2004 Landslides and erosion	Scaleless	Initial database development	Provided in MapInfo format
CCMA-06	complete	Research report		Various	CCMA region	CCMA Landslide and erosion database. Version 2	Warren Feltham		2005 Landslides and erosion	Scaleless	Includes additions to database and statistics	Provided in MapInfo format
CCMA-07	complete	Honours Research Thesis		Various	CCMA region	Erosion in the Corangamite Region	Warren Feltham		2006 Landslides and erosion	Scaleless	Includes further database additions, statistics and susceptib	Provided in MapInfo format
CCMA-08	complete	Consultants Report		Colac Otway	Wye River Separa	Coastal Community Revitalisation Project	Dahlhaus Env geology ar		2003 Landslides	1:10000	Aerial photo interpretation conducted on large scale photos.	Transferred onto map and directly into MapInfo by Pete Dahlhaus.
CCMA-09	complete	Consultants Report	31/14896/42	CoGG	CoGG	Erosion Management Overlay- for the City of Greater Geelong Pha	GHD		2004 Landslides and erosion	1:15000	Landslides and erosion present in GIS format	Presneted on 1:15000 maps but scaleless in GIS
CCMA-10	complete	Consultants Report		Colac Otway	Colac Otway	Landslide Risk Management_final report	Dahlhaus Env geology		2001 Landslides	GIS	Previous geotechnical assessments presents as points	Contained in associated MapInfo layer
CCMA-11	complete	Consultants Report	306/01/06	Various	CCMA region	Land slide and eroison Susceptibility Mapping in the CCMA region	A.S.Miner Geotechnical		2006 Landslides and erosion	1:25000	Susceptibility maps based on available inventory	Plans at A3 in rpeort but intended for A1 map production
CCMA-12	complete	Aerial Photo Interpretation		Moorabool	Ballan	CCMA Urban Salinity Temporal Window 2000	Ian Roberts		2006 Landslides	1:25000	Scanned map only no photo tiles available	A1 plan needs to be scanned
CCMA-13	complete	Aerial Photo Interpretation		Moorabool	Bacchus Marsh	CCMA Urban Salinity Temporal Window 2001	Ian Roberts		2006 Landslides	1:25000	Scanned map only no photo tiles available	A1 plan needs to be scanned
CCMA-14	complete	Report Thesis		COGG	Curlewis	Coastal Slope stability investigation at Curlewis	K. Glennon		1980 Landslide	1:2500	Aerial	A4 photo to be scanned and slide marked on
CCMA-15	complete	Major Project		Corangamite	Scotts Creek	Report on a landsldie at Block 68 Williams Rd Scotts Ck	T Davidson		1994 Landslide	1:1000	Hand drawn map	A4 page to be scanned
CCMA-16	complete	Report Major Project		Corangamite	Scotts Creek	Landslide Hazard assessment and risk reduction for the happy walk	A West		1993 Landslides	Unsure	Series of site plans related to an overall locality plan	A3 map with centroid locations/details of slides on rough plans
CCMA-17	complete	Consultants Report	11177	Corangamite	Scotts Creek	Site investigation-proposed stabilisation works	PJ Yttrup and Assocs		1998 Landslides	NTS	Three sites of slips on road cuttings/embankments	Only chainages available then large scale site plans
CCMA-18	complete	VicRoads	GR91-099	Corangamite	Port Campbell	Report No GR91-099	VicRoads		1990 Landslides	NTS	Locality off VicRoads Country directroy	Some details on slide areas but very general
CCMA-19	complete	Unpublished Report	UR1982/70	Corangamite	Jancourt East	Report on landslide investigation Block 41 Bucks Rd Jancourt East	A.M. Cooney (GSV)		1982 Landslides	1:1000 at A3	Detailed site plan	Plans have been reduced but still able to be georeferenced.
CCMA-20	complete	Report Thesis		COS	Otways	A Landslide Database for Southwest Victoria	MCVeigh		2001 Landslides	Variable	GPS coordinates and permiert plots	10 sites at detail
CCMA-21	complete	Report Thesis		Corangamite	Heytesbury	Soil slope fiature processes in the Heytesbury Region	Buenen		1995 Landslides	Unsure	rough locations able to be obtained from geolo map	2 new sites
CCMA-22	complete	Consultants Report	13425	COS	Apollo Bay	Big Slide on Wild Dog Creek Rd	PJ Yttrup and Assocs		2001 Landslides	1:3500	Good data on slide activity	A3 map in report
CCMA-23	complete	Consultants Report	13625	COS	Wye River	Landslide Review at Durimil Ave Wye River	PJ Yttrup and Assocs		2001 Landslide	1:2000	possibly captured in CCRP report	A4 in report
CCMA-24	complete	Report 3rd Year project		COS	Apollo Bay	Investigation of a large landslide - Wild Dog Road Apollo Bay	A Rrust		1993 Landslide	1:8575	Very poor plan but shows good activity	Half A4 page in report
CCMA-25	complete	Field workshop Notes		COS	Otways	Field Workshop on Landslides Victorian Section	GSV		1987 Landslide	variable	Various plans including Vines and Lake Elizabeth	Varying
CCMA-26	complete	Consultants Report	M6022/1-AG	COGG	Clifton springs	Landslide Risk Assessment	Coffey		2006 Landslide	1:750	excellent plan of complex many slides	A3 in report
CCMA-27	complete	Unpublished Report		GSV	Otways	Report on Drilling results in the Parishes of Kaanglang, Krambruk a	CA Cooney (GSV)		1982 Landslides	1:25000 ??	Poor quality landslide maps	Varying copies in report
CCMA-28	complete	Consultants Report	M6022/2-AB	COGG	Clifton springs	Assessment of risk to beach users from geological hazards bewtee	Coffey		2006 Landslides	1:2000	Good plan of a few coastal slides including edgewater	A3 in report
CCMA-29	complete	Report		Moorabool	Parwan Melton	Sites of Geological and Geomorphological significance in the weste	Rosengren		1986 Landslides	1:25000 ??	Poor quality maps	A4 poor quality
CCMA-30	complete	Report		COS	Otways	Sites of Geological and Geomorphological significance in the Shire	Rosengren		1984 Landslides	1:25000 ??	a number of good maps	A4
CCMA-32	complete	Journal Paper		Various	Various	Some raes of landslide activity in Victoria	Evans and Joyce		Landslides	Various	Good reference incl hazard map for Windy Point	
CCMA-33	complete	Thesis		Moorabool	Parwan Valley	Landslide risk assement of the Parwan Valley	C Daws	??	Landslides	1:25000	Risk map only no inventory	A1 to be scanned
CCMA-34	complete	Consultants Report	13166	CoGG	Ocean Grove	Geotechnical Investigation and stability study for Sewer Route	PJ Yttrup and Assocs		2000 Landslides	1:500 at A1	Contour map needs slidie definition	A1 to be scanned
CCMA-35	complete	Unpublished Report		GSV	Wye River	Docuemntation prepraed in support of Assessment of Lot 44 River	P.Dahlhaus and A Coone		1987 Landslides	1:1000 at A3	Poor quality plan	A3 in report
CCMA-36	complete	Thesis		CoGG	Barwon heads	Rockfall Hazard Assessment of The Bluff barwon heads	B Muller		2003 Rockfall	unsure	Limited site map	
CCMA-37	complete	Consultants Report		Surfcoast	Anglesea	Report on Coastal Stability Demons Bluff	Douglas Partners		1999 Landslides	1:1000	good geomorphological maps	3 x A4 in rpeort
CCMA-38	complete	Unpublished Report	UR 1962/79	COGG	Anakie	Investigation of Basalt Scoria Deposit near Anakie	D.Spencer Jones (GSV)		1962 Landslide	20ft to 1 inch	Poor plan with little indication of slide	
CCMA-39	complete - but not well defined slide	Unpublished Report	UR 1983/7	COS	Johanna	Inspection of landslides on Portion 63, Parish of Aire	A.M. Cooney (GSV)		1983 Landslide	no map	Reference only to aerial photos form 1946 which we have	
CCMA-40	complete	Unpublished Report	1986/16	COS	Skenes Creek	Appraisal of the failure of the Skenes Creek Road Embankment at l	Cooney		1986 Landslide	Sketch only	Possible to use Ortho to impose location	
CCMA-41	complete	Unpublished Report	1982/85	COS	Wild Dog	Wild Dog Creek Landslide Study	P Wood		1982 Landslides	1:16666 at A3		A3 in report
CCMA-42	complete	Consultants Report	106005.01R02	COS	Apollo Bay	Further geotechnical Investigation Seafarers Motel Great Ocean Rc	MPA Williams		2006 Landslides	1:16000 at A4	Old aerials onto which slides have been marked	A4 in report
CCMA-43	complete	Unpublished Report	UR1974/27	Surfcoast	Anglesea	Observations of the Melba Parade Land Slip	J Neilson		1974 Landslides	No plan	Very useful info and we know where it is	
CCMA-44	complete	Journal Paper		Surfcoast	Windy Point	The stabilization of a large moving rock slide with Cbale Anchors	A Williams and A Muir		1972 Landslides	1:1538 at A4	Difficult map to accurately locate but we have others to help	
CCMA-45	complete	Consultants Report	233/01	COS	Apollo bay	Landslide Stability assessment at Seymour cres Apollo Bay	AS Miner Geotech		2004 Landslides	1:1405 at A4	head scarp and toe bulge	A4 in report
CCMA-46	complete	Consultants Report	237/02	COS	Kennet River	Inspection at hawdonAve/ Addis Cr	AS Miner Geotech		2004 Tunnel Erosion	Unsure	Possibel maps shwoing tunnels	A4 in file
CCMA-47	complete	Drainage Design Plans		CoGG	Clifton springs	Coronae drive Gully restoration draianage Design	Earthtech		2003 Streambank and gully erosion	1:500 at A3	Section of effected gully only	
CCMA-48	complete	Consultants Report	82/03	COS	Forrest	East barwon Water Supply Channel Stability Assessment	AS Miner Geotech		2003 Landslides	Unsure	Barwon Water plans may show location at A1	
CCMA-49	complete	Consultants Report		COS	Beech Forrest	Turtons Track	VicRoads		2005 Landslides	no map	Chainages along road	
CCMA-50	complete	Consultants Report		Golden Plains	Bannockburn	Bruces Creek	GHD		2004 Landslides	no map	Broad observations along creek	
CCMA-51	complete	Consultants Report		Golden Plains	Bannockburn	Bruces Creek	PB		2005 Landslides/erosion	1:1428 at A3	Broad observations along creek	
CCMA-52	complete	Consultants Report		COS	Birregurra	Geological Note Phillips Landslide	Dahlhaus Env geology		2005 Landslides/erosion	1:1000	Separate Survey plan by TGM	In DWG format
CCMA-53	complete	Consultants Report	108/03	COS	Aire Valley	Site Inspection Landslide Risk assessment the Dungeon and Willow	AS Miner Geotech		2003 Landslides	1:15000	Hancocks Forrestry Map also location in rpeort off ortho	
CCMA-54	complete	Consultants Report	BW_01/2001	Golden Plains	Sheoaks	Sheoaks Montpellier Aqueduct	Dahlhaus Env geology		2001 Landslide	Unsure	See other reports	
CCMA-55	complete	Consultants Report	25-Feb	Golden Plains	Shelford	Leigh erosion site tour including Meekees on Robs Rd	AS Miner Geotech		2002 Erosion		Pete has provided GIS maps	
CCMA-56	complete	Journal Paper		Ballarat	Lal Lal Falls	Estimating the Occurrence of Rockfalls in Columnar Basalt	Dahlhaus and Miner		1999 Rockfall		Journal paper with poor maps	hard copy form and .PDF
CCMA-57	complete	Final Year Project		COS	Apollo Bay	Landslide Development in the Apollo Bay Region	Buchholtz		2005 Landslide	Unsure		
CCMA-58	complete	Consultants Report	13165	CoGG	Geelong	Western beach stability study and failures in Feb 2005	PJ Yttrup and Assocs		2005 Landslides/erosion	1:500 at A1	observations of landslides and eroison on the foreshore	plans reduced to A4 in the report
CCMA-59	complete	Consultants Report	308/01/06	COS	Otways	Aerial Photo interpretation and Mapping of Landslides in Selected A	AS Miner Geotech		2006 Landslide	1:16000 to 1:25000	Report yet to be ocmpleted	API transferred from hard copy to GIS
CCMA-60	complete	Consultants Report	356.1/01/07	COS	Otways	Historical Trend Analysis in selcted areas in the CCMA region	AS Miner Geotech		2007 Landslides/erosion	1:16000 to 1:25000	Report yet to be ocmpleted	API transferred from hard copy to GIS
Reports now in possession BUT not yet entered due to Time and Budget constraints												
CCMA-61	no data capture of any type	No report only photos??		COS	Wongarra	Sunnyside Rd	Dahlhaus Env Geology		1986 Landslide	No Plans		
CCMA-62	no data capture of any type	Consultants Report	241/01/04	COS	Skenes Cr	Various slides below Beacon Pt Rd	AS Miner geotech		2004 Landslide	No Plans		
CCMA-63	no data capture of any type	Consultants Report	305/01/05	COS	Kawarren	Slide below Kawarren East rd	AS Miner geotech		2005 Landslide	No Plans		
CCMA-64	no data capture of any type	Inspection note	251/01/05	CoGG	Bellarine	Various slides on coast (incl Moorpanyal Pk) during Feb 2005	AS Miner geotech		2005 Landslide	No Plans		
CCMA-65	no data capture of any type	Preliminary report		Surfcoast	Demons Bluff (An	A preliminary assessment of cliff hazards at Demons Bluff, Anglesea	Dr Eric Bird (Geostudies,		Undated Cliff collapse	No Plans	Very insightful report but no plans	comments only
CCMA-66	nearing completion??	Consultants Report		Surfcoast	Anglesea	Coastal Stability Point lonsdale Boat ramp to Anglesea River	Black Geotechnical		2001 Landslides and Rockfall	No Plans	General locations referred to	
CCMA-67	nearing completion??	Consultants Report		Surfcoast	Anglesea	Coastal Stability Point lonsdale Boat ramp to Anglesea River	Black Geotechnical		2003 Landslides and Rockfall	No Plans	General locations referred to	
CCMA-68	nearing completion??	Consultants Report		Surfcoast	Anglesea	Geological report on the beach access ram,p at the Anglesea surf l	Graeme webber		2005 Erosion	No Plans	Location can be established very easily	
CCMA-69	nearing completion??	Consultants Report		Surfcoast	Painkalac Ck	Geotechnical review Painkalac Creek	BFP Consultants		2000 Landslides and Rockfall	No Plans	Possibel to assess location thru text	
CCMA-70	nearing completion??	Consultants Report		Surfcoast	Aireys Inlet	Sunnymeade lookout boundary Rd Aireys Inlet	Black Geotechnical		2002 landslides	Plans at 1:1000 anc excellent location of multiple slides		A4 in report
CCMA-71	nearing completion??	Consultants Report		Surfcoast	Anglesea	Anglesea Foreshore Study Final report	Lubec Consulting		1994 Landslides and erosion	Aerials at unknown	No featrues to be captured	Aerials at about A4 look to be 1:25,000 scale
CCMA-72	nearing completion??	Consultants Report		Surfcoast	point Addis	Coastal Stability study Point addis	Dougals Partners		2001 landslides	Drawings missing		
CCMA-73	nearing completion??	Consultants Report		Surfcoast	Anglesea	Geotechnical investigation Anglesea lookout parking Bay	Dougals Partners		1998 Landslides and erosion	Approx 1:8000 and	poor quality plans will be difficult to georeference	both at A4
CCMA-74	nearing completion??	Consultants Report		Surfcoast	Anglesea	Coastal stability report Demons Bluff Anglesea (FINAL)	Dougals Partners		2000 Landslides	1:1000	good geomorphological maps	3 x A4 in rpeort
CCMA-75	no data capture of any type	Consultants Report		COS	marengo	Mounts Bay Beach Report on Coastal Erosion	G Byrne (Vantree P/L)		1997 Erosion on beach	Aerials at unknown	Beach eroison captured but mor eto do with movement of s	Aerials at much less than A4 look to be 1:25,000 scale
CCMA-76	nearing completion??	Consultants Report		Surfcoast	Aireys Inlet	Sunnymeade Lookout Aireys Inlet	Dougals Partners		2004 Landslides	1:2500 at A4	Excellent plan with a few slips	A4 in report
CCMA-77	no data capture of any type	Consultants Report		Surfcoast	Jan Juc	Coastal stability report Jan Juc	Dougals Partners		2002 Landslides	1:4500 and 1:10000	Good geomorphological plans but a small scale	A4 in report
CCMA-78	nearing completion??	Consultants Report		Surfcoast	Anglesea	Geotechnical risk assessment viewing platforms off Melba Parade.	Dougals Partners		1999 Landslides	1:3333 at half A4	poor plan with only general locations.	Half A4 in report
CCMA-79	no data capture of any type	Consultants Report		Ballarat	Durham Lead	Brief report on the erosion adjacent to Mt mercer Rd Durham Lead	Dahlhaus Env Geology		2005 Erosion		Aerial photo at 1:15	Good quality and easy to georef
CCMA-80	no data capture of any type	Consultants Report		Ballarat	Mt helen	Brief report on the erosion control requirements for the constructor	Dahlhaus Env Geology		2005 Erosion	GIS plan at 1:6842	Excellent for georeferencing	Aerials help locate erosion zone.
CCMA-81	no data capture of any type	Consultants Report		Ballarat	Black Hill	Assessment of road subsidence	Dahlhaus Env Geology		2003 Tunnel erosion subsidence	No plans		
CCMA-82	no data capture of any type	Consultants Report		Surfcoast	Anglesea	Coastal stability study including melba Parade landslip Pt Roadknig	GC Balck and Associates		1997 Landslides	A3 plan at 1:5000	Excellent quality	Streets will allow georeferencing
CCMA-83	no data capture of any type	Consultants Report	C0034	Surfcoast	Lorne	Re: lot 3 Sincocks Rd Deans Marsh	Provincial Geotechnical		2000 Landslides	1:1000	No map with original report but contour maps shows feature	Reduced to A4 and will need interpreting
Reports not in possession yet												
CCMA-84		Consultants Report		Ballarat	Black Hill	Assessment of geological Hazards	Dahlhaus Env Geology		2001 Subsidence??			
CCMA-85		Consultants Report		Surfcoast	Torquay	Bells Beach	Coffey					
CCMA-86		Consultants Report		CoGG	Geelong	Buckleys Fall	PJ Yttrup		Rockfall Hazard only		No actual falls recorded. Pete Dahlhaus has a copy	
CCMA-87		Consultants Report		COS	Otways	West Gellibrand	GHD		Landslide		Possibly can obatin thru Barwon Water	
CCMA-88		Thesis		COS	Otways	Various sites	Ben Cairns		Landslides		Pete Dahlhaus has a copy	
CCMA-89		Consultants Report		COS	Wye River	Morley Ave	AS James??					
CCMA-90		Consultants Report										

Appendix B
List of Current GIS Inventory Data
Layers

AS Miner Geotechnical - Geohazard Database
Version 1.6
March 3, 2007

Dataset Number	Number of Certain Features	Number of Uncertain Features	Geohazard Type	Dataset Name	Format	Inventory/Trend	Status	Location of completed data	Metadata	Comments and questions
1	N/A	N/A	Erosion	erosion_asm_2004_polygons_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
2	N/A	N/A	Erosion	erosion_asm_coronae_2004_polygons_mga55	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
3	N/A	N/A	Erosion	erosion_asm_leigh_2002_points_mga55	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
5	N/A	N/A	Erosion	erosion_coffey_dell_feb_2006_polygons_mga55	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
6	N/A	N/A	Erosion	erosion_cooney_1986-16_polygons_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
7	N/A	N/A	Erosion	erosion_douglas_1999_anglesea_lookout_polygons_mga55	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
8	N/A	N/A	Erosion	erosion_douglas_2000_anglesea_demons_bluff_polygons_mga55	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
9	N/A	N/A	Erosion	erosion_douglas_2002_jan_juc_polygons_mga55	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
10	N/A	N/A	Erosion	erosion_dpi_wallis_2007_points_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
11	N/A	N/A	Erosion	erosion_dpi_wallis_2007_polygons_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
12	N/A	N/A	Erosion	erosion_feltham_2005_1990_ilabarook_sheet-rill_polygons_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
13	N/A	8	Erosion	erosion_feltham_2005_1990_ilabarook_sheet-rill_uncertain_polygons_mga54	Minor new	Inventory	Complete	Inventory	N/A	
14	1085	N/A	Erosion	erosion_feltham_2004_gully_polygons_mga54	Major	Inventory	Complete	Inventory	N	
15	N/A	9	Erosion	erosion_feltham_2004_gully_uncertain_points_mga54	Major	Inventory	Complete	Inventory	N/A	
16	N/A	9	Erosion	erosion_feltham_2004_gully_uncertain_polygons_mga54	Major	Inventory	Complete	Inventory	N/A	
17	N/A	26	Erosion	erosion_feltham_2004_gully_uncertain_polygons_mga54	Major	Inventory	Complete	Inventory	N/A	
18	1067	N/A	Erosion	erosion_feltham_2004_sheet-rill_polygons_mga54	Major	Inventory	Complete	Inventory	N	
19	N/A	9	Erosion	erosion_feltham_2004_sheet-rill_uncertain_points_mga54	Major	Inventory	Complete	Inventory	N/A	
20	N/A	137	Erosion	erosion_feltham_2004_sheet-rill_uncertain_polygons_mga54	Major	Inventory	Complete	Inventory	N/A	
21	386	N/A	Erosion	erosion_feltham_2006_gully_polygons_mga54	Major	Inventory	Complete	Inventory	N	
22	N/A	6	Erosion	erosion_feltham_2006_gully_uncertain_points_mga54	Major	Inventory	Complete	Inventory	N/A	
23	N/A	10	Erosion	erosion_feltham_2006_gully_uncertain_polygons_mga54	Major	Inventory	Complete	Inventory	N/A	
24	N/A	1	Erosion	erosion_feltham_2006_gully_uncertain_polygons_mga54	Major	Inventory	Complete	Inventory	N/A	
25	1054	N/A	Erosion	erosion_feltham_2006_sheet-rill_polygons_mga54	Major	Inventory	Complete	Inventory	N	
26	N/A	29	Erosion	erosion_feltham_2006_sheet-rill_uncertain_points_mga54	Major	Inventory	Complete	Inventory	N/A	
27	N/A	16	Erosion	erosion_feltham_2006_sheet-rill_uncertain_polygons_mga54	Major	Inventory	Complete	Inventory	N/A	
28	10	N/A	Erosion	erosion_landcare_gully_points_mga54	Major	Inventory	Complete	Inventory	Y	
29	236	N/A	Erosion	erosion_landcare_gully_polygons_mga54	Major	Inventory	Complete	Inventory	Y	
30	4	N/A	Erosion	erosion_landcare_sheet-rill_polygons_mga54	Major	Inventory	Complete	Inventory	Y	
31	18	N/A	Erosion	erosion_miner_2007_points_mga54	Major	Inventory	Complete	Inventory	N	Consolidated dataset of all Minor New data with one metadata record
32	5	N/A	Erosion	erosion_miner_2007_polygons_mga54	Major	Inventory	Complete	Inventory	N	Consolidated dataset of all Minor New data with one metadata record
33	56	N/A	Erosion	erosion_miner_2007_polygons_mga54	Major	Inventory	Complete	Inventory	N	Consolidated dataset of all Minor New data with one metadata record
34	N/A	N/A	Erosion	erosion_pb_2005_polygons_mga55	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
35	14	N/A	Erosion	erosion_roberts_2006_2000_moorabool_polygons_mga55	Major	Inventory	Complete	Inventory	Y	Salinity data
36	714	N/A	Erosion	erosion_roberts_2006_2000_gully_polygons_mga54	Major	Inventory	Complete	Inventory	Y	Eclipse Creek-Misery Moonlight-Shefford Mt Mercer consolidated into one layer
37	409	N/A	Erosion	erosion_roberts_2006_2000_sheet-rill_polygons_mga54	Major	Inventory	Complete	Inventory	Y	Eclipse Creek-Misery Moonlight-Shefford Mt Mercer consolidated into one layer
38	93	N/A	Erosion	erosion_roberts_2006_2004_colac-otway_polygons_mga54	Major	Inventory	Complete	Inventory	Y	Yeodene-Barongrook
39	212	N/A	Erosion	erosion_stockfield_gully_polygons_mga54	Major	Inventory	Complete	Inventory	Y - ongoing	
40	1	N/A	Erosion	erosion_stockfield_sheet-rill_polygons_mga54	Major	Inventory	Complete	Inventory	Y - ongoing	
41	N/A	N/A	Erosion	erosion_yttrup_western_2000_points_mga55	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
42	N/A	N/A	Erosion	erosion_yttrup_western_2000_polygons_mga55	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
43	16	N/A	Features	features_miner_2007_points_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
Total Erosion	5380	260								
44	N/A	N/A	Features	features_yttrup_western_2000_points_mga55	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
45	N/A	N/A	Landslide	landslide_asm_2003_points_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
46	N/A	N/A	Landslide	landslide_asm_2003_polygons_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
47	N/A	N/A	Landslide	landslide_asm_2004_polygons_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
48	N/A	N/A	Landslide	landslide_black_2002_aireys_inlet_polygons_mga55	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
49	N/A	N/A	Landslide	landslide_bond_corangamite_points_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
50	N/A	N/A	Landslide	landslide_buchholtz_2005_polygons_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
51	241	N/A	Landslide	landslide_buinen_polygons_mga54	Major	Inventory	Complete	Inventory	Y - ongoing	
52	N/A	N/A	Landslide	landslide_buinen_1995_polygons_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
53	N/A	N/A	Landslide	landslide_coffey_dell_feb_2006_polygons_mga55	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
54	N/A	N/A	Landslide	landslide_coffey_dell_feb_2006_polygons_mga55	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
55	34	N/A	Landslide	landslide_cogg_polygons_mga54	Major	Inventory	Complete	Inventory	Y	
56	88	N/A	Landslide	landslide_cooney_ur1980-76_points_mga54	Major	Inventory	Complete	Inventory	Y	
57	202	N/A	Landslide	landslide_cooney_ur1980-76_polygons_mga54	Major	Inventory	Complete	Inventory	Y	
58	674	N/A	Landslide	landslide_cooney_ur1980-76_polygons_mga54	Major	Inventory	Complete	Inventory	Y	
59	N/A	N/A	Landslide	landslide_cooney_1982-70_polygons_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
60	N/A	N/A	Landslide	landslide_cooney_1982-100_polygons_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
61	N/A	N/A	Landslide	landslide_cooney_1983-7_points_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
62	N/A	N/A	Landslide	landslide_cooney_1986-16_polygons_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
63	41	N/A	Landslide	landslide_cos_geo-reports_points_mga54	Major	Inventory	Complete	Inventory	Y	
64	32	N/A	Landslide	landslide_dahlihaus_ccrp2003_polygons_mga54	Major	Inventory	Complete	Inventory	Y	
65	N/A	N/A	Landslide	landslide_dahlihaus_2003_polygons_mga55	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
66	N/A	N/A	Landslide	landslide_dahlihaus_2005_polygons_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
67	N/A	N/A	Landslide	landslide_dahlihaus_cooney_1987_polygons_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
68	N/A	N/A	Landslide	landslide_dahlihaus_miner_1999_points_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
69	N/A	N/A	Landslide	landslide_davidson_1994_polygons_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
70	N/A	N/A	Landslide	landslide_douglas_1999_anglesea_lookout_polygons_mga55	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
71	N/A	N/A	Landslide	landslide_douglas_1999_anglesea_melba_polygons_mga55	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
72	N/A	N/A	Landslide	landslide_douglas_2000_anglesea_demons_bluff_points_mga55	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
73	N/A	N/A	Landslide	landslide_douglas_2000_anglesea_demons_bluff_polygons_mga55	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
74	N/A	N/A	Landslide	landslide_douglas_2002_jan_juc_polygons_mga55	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
75	N/A	N/A	Landslide	landslide_douglas_2004_aireys_inlet_polygons_mga55	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
76	N/A	N/A	Landslide	landslide_dpi_wallis_2007_polygons_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
77	29	N/A	Landslide	landslide_feltham_2004_points_mga54	Major	Inventory	Complete	Inventory	Y	Resolve Certain and Uncertain
78	484	N/A	Landslide	landslide_feltham_2004_polygons_mga54	Major	Inventory	Complete	Inventory	Y	Resolve Certain and Uncertain
79	N/A	243	Landslide	landslide_feltham_2004_uncertain_points_mga54	Major	Inventory	Complete	Inventory	N/A	
80	N/A	71	Landslide	landslide_feltham_2004_uncertain_polygons_mga54	Major	Inventory	Complete	Inventory	N/A	
81	15	N/A	Landslide	landslide_feltham_2006_points_mga54	Major	Inventory	Complete	Inventory	Y	
82	190	N/A	Landslide	landslide_feltham_2006_polygons_mga54	Major	Inventory	Complete	Inventory	Y	
83	N/A	79	Landslide	landslide_feltham_2006_uncertain_points_mga54	Major	Inventory	Complete	Inventory	N/A	
84	N/A	54	Landslide	landslide_feltham_2006_uncertain_polygons_mga54	Major	Inventory	Complete	Inventory	N/A	
85	N/A	N/A	Landslide	landslide_ghd_2004_polygons_mga55	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
86	N/A	N/A	Landslide	landslide_glennon_1980_polygons_mga55	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
87	N/A	N/A	Landslide	landslide_gsv_1962_polygons_mga55	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
88	N/A	N/A	Landslide	landslide_gsv_1987_polygons_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
89	10	N/A	Landslide	landslide_gsv_250k_polygons_mga54	Major	Inventory	Complete	Inventory	Y	
90	72	N/A	Landslide	landslide_gsv_50k_polygons_mga54	Major	Inventory	Complete	Inventory	Y	
91	N/A	N/A	Landslide	landslide_joyce_evans_1973_points_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
92	N/A	N/A	Landslide	landslide_joyce_evans_1973_polygons_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
93	5	N/A	Landslide	landslide_landcare_points_mga54	Major	Inventory	Complete	Inventory	Y	
94	42	N/A	Landslide	landslide_landcare_polygons_mga54	Major	Inventory	Complete	Inventory	Y	
95	N/A	N/A	Landslide	landslide_mcveigh_2001_points_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
96	N/A	N/A	Landslide	landslide_mcveigh_2001_polygons_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
97	16	N/A	Landslide	landslide_miner_2007_points_mga54	Major	Inventory	Complete	Inventory	N	Consolidated dataset of all Minor New data with one metadata record
98	350	N/A	Landslide	landslide_miner_2007_polygons_mga54	Major	Inventory	Complete	Inventory	N	Consolidated dataset of all Minor New data with one metadata record
99	N/A	N/A	Landslide	landslide_muller_2003_polygons_mga55	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
100	N/A	N/A	Landslide	landslide_nelson_1974_polygons_mga55	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
101	N/A	N/A	Landslide	landslide_pb_2005_polygons_mga55	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
102	48	N/A	Landslide	landslide_roberts_2006_2000_moorabool_polygons_mga55	Major	Inventory	Complete	Inventory	N	Salinity data
103	764	N/A	Landslide	landslide_roberts_2006_2004_colac-otway_polygons_mga54	Major	Inventory	Complete	Inventory	N	roberts_landslides_2004_polygons, (Windle) and EMOSlides_region - consolidated and placed into polygon layer. Selected only slides. roberts_scars_2004_polygons, (Windle) and scarp_polyline (Slater) - consolidated and placed into polyline layer.
104	1121	N/A	Landslide	landslide_roberts_2006_2004_colac-otway_polygons_mga54	Major	Inventory	Complete	Inventory	N	
105	N/A	N/A	Landslide	landslide_rosengren_1984_polygons_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
106	N/A	N/A	Landslide	landslide_rosengren_1986_polygons_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
107	N/A	N/A	Landslide	landslide_rust_1993_polygons_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
108	N/A	N/A	Landslide	landslide_vicroads_2005_polygons_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
109	N/A	N/A	Landslide	landslide_vicroads_gr91-099_points_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
110	N/A	N/A	Landslide	landslide_west_1993_polygons_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
111	N/A	N/A	Landslide	landslide_williams_2006_polygons_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
112	N/A	N/A	Landslide	landslide_williams_muir_1972_polygons_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
113	42	N/A	Landslide	landslide_wood_ur1982-85_polygons_mga54	Major	Inventory	Complete	Inventory	Y	
114	N/A	N/A	Landslide	landslide_yttrup_1998_polygons_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
115	N/A	N/A	Landslide	landslide_yttrup_2000_polygons_mga55	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
116	N/A	N/A	Landslide	landslide_yttrup_2001_polygons_mga54	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
117	N/A	N/A	Landslide	landslide_yttrup_western_2000_points_mga55	Minor new	Inventory	Complete	Inventory	N/A Consolidated	
Total Landslide	4500	447								
Totals:	9880	707								

Landslide	bullenmerri_1973				Historical Trend	Uncertain	Historical_trends		Still to finalise with ASM as to what to do with Historical Trend data
Erosion	erosion_roberts_eclipse_creek_1985_sheet-rill_active-suspended_polygon_mga54				Historical Trend	Uncertain	Historical_trends		Still to finalise with ASM as to what to do with Historical Trend data
Erosion	erosion_roberts_eclipse_creek_1985_stream_active-suspended_polyline_mga54				Historical Trend	Uncertain	Historical_trends		Still to finalise with ASM as to what to do with Historical Trend data
Erosion	erosion_roberts_eclipse_creek_2000_sheet-rill_active-suspended_polygon_mga54				Historical Trend	Uncertain	Historical_trends		Still to finalise with ASM as to what to do with Historical Trend data
Erosion	erosion_roberts_eclipse_creek_2000_stream_active-suspended_polyline_mga54				Historical Trend	Uncertain	Historical_trends		Still to finalise with ASM as to what to do with Historical Trend data
Landslide	landslide_west_1993_1969_polygons_mga54				Historical Trend	Uncertain	Historical_trends		Still to finalise with ASM as to what to do with Historical Trend data
Landslide	landslide_west_1993_1991_polygons_mga54				Historical Trend	Uncertain	Historical_trends		Still to finalise with ASM as to what to do with Historical Trend data
Landslide	heytesbury1946				Historical Trend	Uncertain	Historical_trends		Still to finalise with ASM as to what to do with Historical Trend data
Landslide	heytesbury1982				Historical Trend	Uncertain	Historical_trends		Still to finalise with ASM as to what to do with Historical Trend data
Landslide	heytesbury1991				Historical Trend	Uncertain	Historical_trends		Still to finalise with ASM as to what to do with Historical Trend data
Erosion	erosion_feltham_1970_ilabarook_study_area_certain-uncertain_sheet_polygons_mga54v2				Historical Trend	Uncertain	Historical_trends		Still to finalise with ASM as to what to do with Historical Trend data
Erosion	erosion_feltham_1981_ilabarook_study_area_certain-uncertain_sheet_polygons_mga54v2				Historical Trend	Uncertain	Historical_trends		Still to finalise with ASM as to what to do with Historical Trend data
Erosion	erosion_feltham_1981_ilabarook_study_area_certain-uncertain_sheet_polygons_mga54v2				Historical Trend	Uncertain	Historical_trends		Still to finalise with ASM as to what to do with Historical Trend data
Erosion	erosion_feltham_2004_il								

Appendix C

List of Metadata Files

<i>Hazard Type</i>	<i>General Data ID</i>	<i>Data Layer For Which Metadata Is Available</i>	
Landslide	Buenen	landslide_buenen_polygons_mga54	
	COGG	landslide_cogg_polygons_mga54	
	Cooney 1980		landslide_cooney_ur1980-76_points_mga54
			landslide_cooney_ur1980-76_polygons_mga54
			landslide_cooney_ur1980-76_polylines_mga54
	COS Reports	landslide_cos_geo-reports_points_mga54	
	Dahlhaus CCRP	landslide_dahlhaus_ccrp2003_polylines_mga54	
	Feltham 2004		landslide_feltham_2004_points_mga54
			landslide_feltham_2004_polygons_mga54
	Feltham 2006		landslide_feltham_2006_points_mga54
			landslide_feltham_2006_polygons_mga54
	GSV		landslide_gsv_50k_polygons_mga54
			landslide_gsv_250k_polygons_mga54
	Landcare		landslide_landcare_points_mga54
			landslide_landcare_polygons_mga54
	Wood 1982	landslide_wood_ur1982-85_polygons_mga54	
	Miner 2007		landslide_miner_2007_points_mga54
		landslide_miner_2007_polygons_mga54	

Table C1_Metadata Files Produced for Landslide Occurrences

<i>Hazard Type</i>	<i>General data ID</i>	<i>Data Layer For Which Metadata Is Available</i>
Erosion	Landcare	erosion_landcare_gully_points_mga54
		erosion_landcare_gully_polylines_mga54
		erosion_landcare_sheet-rill_polygons_mga54
	Roberts 2006	erosion_roberts_2006_2000_gully_polylines_mga54
		erosion_roberts_2006_2000_sheet-rill_polygons_mga54
		erosion_roberts_2006_2004_colac-otway_polylines_mga54
		erosion_roberts_2006_2000_moorabool_polygons_mga55
	Stockfield	erosion_stockfield_gully_polylines_mga54
		erosion_stockfield_sheet-rill_polygons_mga54
	Feltham 2004	erosion_feltham_2004_gully_polylines_mga54
		erosion_feltham_2004_sheet-rill_polygons_mga54
	Feltham 2006	erosion_feltham_2006_gully_polylines_mga54
		erosion_feltham_2006_sheet-rill_polygons_mga54
	Miner 2007	erosion_miner_2007_points_mga54
		erosion_miner_2007_polygons_mga54
erosion_miner_2007_polylines_mga54		

Table C2_Metadata Files Produced for Erosion Occurrences