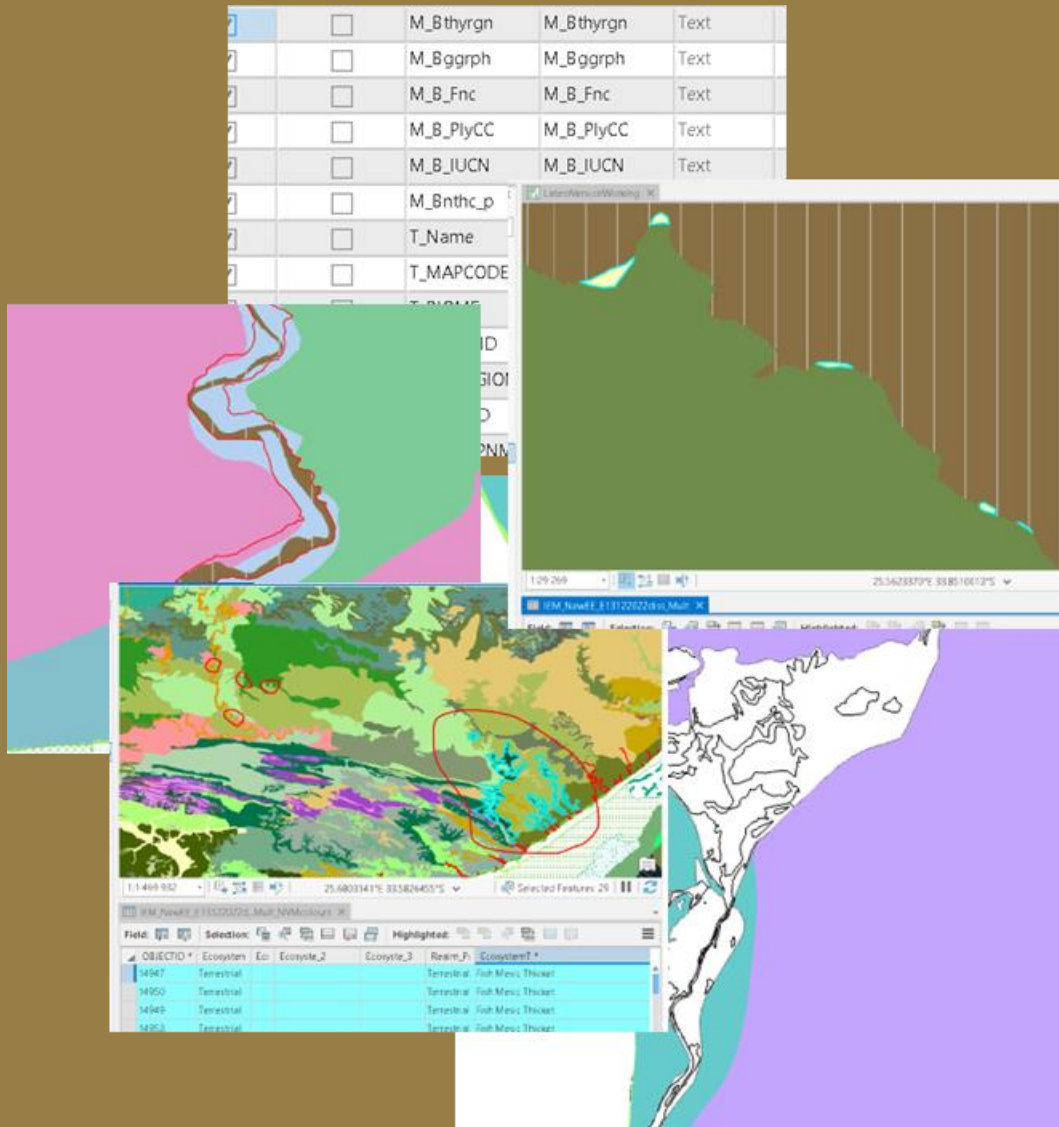


# Miscellaneous spatial edits NVM 2024

Technical proposal by Anisha Dayaram



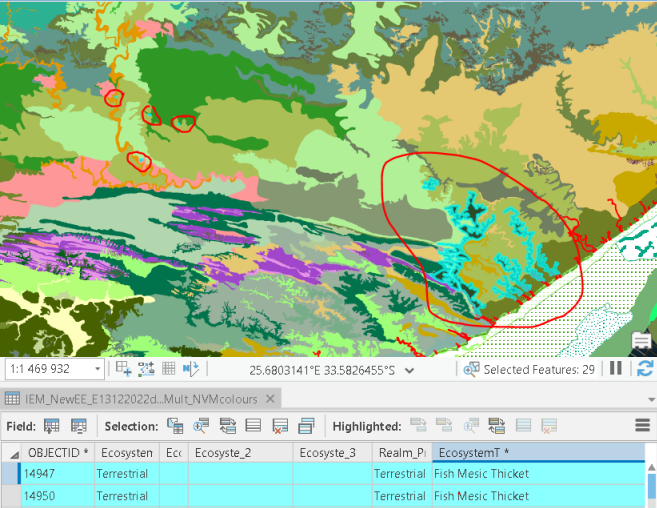
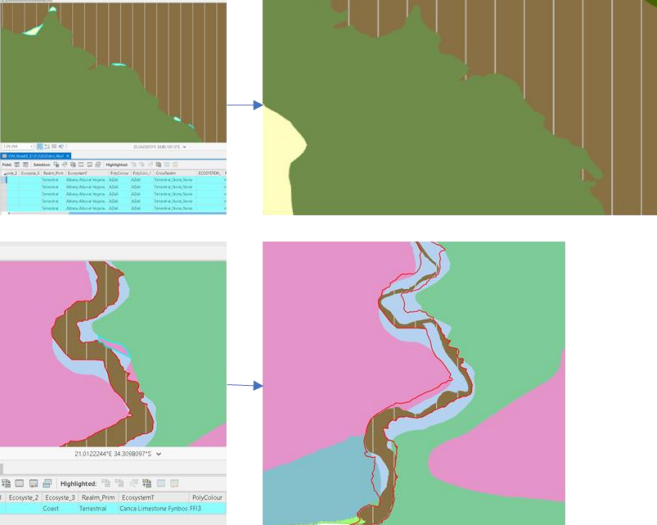
## Background and rational for edits

During the 2018 National Biodiversity Assessment the development of the maps of ecosystem types in all realms spawned the Integrated Map of Ecosystem Types which is a seamless map of ecosystem types from estuarine, terrestrial, and marine realms curated within a single spatial layer. Thus estuarine habitat polygons and Estuarine Functional Zone outlines were cut into the terrestrial map. In addition several changes were made along the vegetation types adjacent to the coast, and we undertook an overhaul of the Thicket biome.

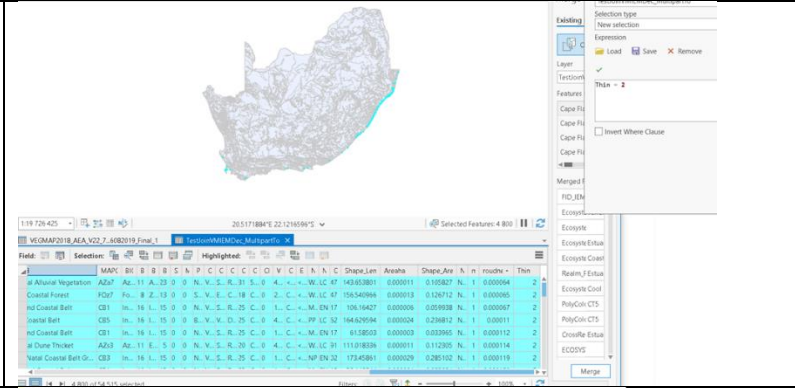
Subsequent to the release of NVM 2018 we realised that the estuarine habitats are confusing when included in the NVM and that the EFZ caused some slivers to form with adjacent terrestrial vegetation. When we merged the new thicket areas with adjacent terrestrial vegetation we also did an imperfect job of removing all slivers. The National Vegetation Map Committee decided to remove the reference to 'non-terrestrial vegetation' in the attribute table as this was confusing to users. We also removed small errors such as self-intersects and the incorrect assignment of a few polygons bioregion ID number which were indicated as NULL. Lastly we attempted to integrate all the field names from the different realms within the integrated map of ecosystem types.

A Summary of edits

The following table provides some detail on the various miscellaneous changes that were made to the Terrestrial Ecosystem/ Vegetation Map.

Change issue	Previous extent	New extent/resolution																					
<p><b>Type affected:</b> Fish Mesic Thicket  <b>Issue:</b> Less than 2ha pieces of Fish Mesic Thicket (smaller pieces have been dissolved into nearest Ecosystem Type) are present in map. These polygons appear to be too small to represent sensible landscape level areas of the ecosystem type. The polygon fragments in the north-west seem to be on outcroppings and not mesic thicket on the imagery.</p>	 <table border="1" data-bbox="653 758 1310 850"> <thead> <tr> <th>OBJECTID *</th> <th>Ecosystem</th> <th>Ec</th> <th>Ecosyste_2</th> <th>Ecosyste_3</th> <th>Realm_P</th> <th>EcosystemT *</th> </tr> </thead> <tbody> <tr> <td>14947</td> <td>Terrestrial</td> <td></td> <td></td> <td></td> <td>Terrestrial</td> <td>Fish Mesic Thicket</td> </tr> <tr> <td>14950</td> <td>Terrestrial</td> <td></td> <td></td> <td></td> <td>Terrestrial</td> <td>Fish Mesic Thicket</td> </tr> </tbody> </table>	OBJECTID *	Ecosystem	Ec	Ecosyste_2	Ecosyste_3	Realm_P	EcosystemT *	14947	Terrestrial				Terrestrial	Fish Mesic Thicket	14950	Terrestrial				Terrestrial	Fish Mesic Thicket	<p><b>Action:</b> The total extent of the types has been reduced to larger patches near the coastal i.e. inland polygons removed. Alastair Potts and Adriaan Grobler suggested dissolving all inland polygons with adjacent neighbours.</p> <p><b>RLE implications:</b> The EOO is now reduced but a more accurate reflection of the type.</p>
OBJECTID *	Ecosystem	Ec	Ecosyste_2	Ecosyste_3	Realm_P	EcosystemT *																	
14947	Terrestrial				Terrestrial	Fish Mesic Thicket																	
14950	Terrestrial				Terrestrial	Fish Mesic Thicket																	
<p><b>Type affected:</b> Various locations around the thicket biome but notably Albany Alluvial Vegetation and Canca Limestone Fynbos  <b>Issue:</b> The new thicket layer was delineated using google earth by Jan and Adriaan. As a result, the maps were not an exact overlay when it was imported into the vegetation map. Although larger discrepancies were edited to make the maps align, some smaller pieces of previous vegetation types still remained.</p>		<p><b>Action:</b> Less than 1 ha fragments of these vegetation types have now been dissolved into the neighbouring vegetation type</p> <p><b>RLE implications:</b> Very minor increases and decreases in area.</p>																					

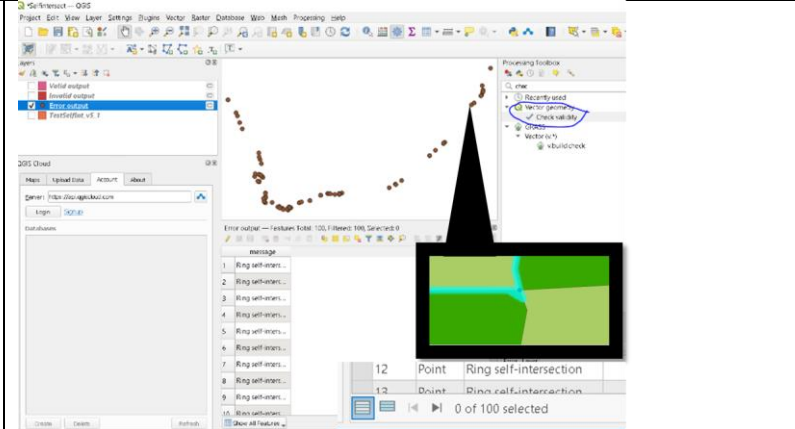
**Issue and type affected:** Many slivers appear between estuarine and terrestrial vegetation. Source unclear. Created when the 2018 NVM geodatabase was unioned with the IEM geodatabase to try to bring in the NVM field names and change polygons.



**Action:** slivers have now been dissolved into the neighbouring vegetation type

**RLE implications:** The change will influence many vegetation types adjacent to estuaries but with negligible changes to area.

**Issue and type affected:** Will influence mainly coastal and estuarine polygons. There were self-intersects identified by using the check validity tool in QGIS



**Action:** Removed self intersects by manually separating the join line for 100 areas.

**RLE implications:** Will influence many vegetation types adjacent to the coast and estuary but with almost unnoticeable changes to area.

**Affected type:** All estuarine habitat polygons  
**Issue:** The NVMC and estuarine committees discussed and decided that the estuarine habitat fields should be in a separate layer and not included in the NVM



**Action:** Dissolved all estuarine habitat polygons into the EFZ area i.e. one polygon for each estuary.

**RLE implications:** no influence on the terrestrial RLE.

<p><b>Affected type:</b> Descriptions for all types, no spatial changes.  <b>Issue:</b> With the integrated map we had repeated field names each with different data from each realm; confusing and badly named fields and confusion around which fields belong to which realm.</p>	<table border="1"> <tr><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td>M_Bthyrgn</td><td>M_Bthyrgn</td><td>Text</td></tr> <tr><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td>M_Bggrph</td><td>M_Bggrph</td><td>Text</td></tr> <tr><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td>M_B_Fnc</td><td>M_B_Fnc</td><td>Text</td></tr> <tr><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td>M_B_PlyCC</td><td>M_B_PlyCC</td><td>Text</td></tr> <tr><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td>M_B_JUCN</td><td>M_B_JUCN</td><td>Text</td></tr> <tr><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td>M_Bnthc_p</td><td>M_Bnthc_p</td><td>Text</td></tr> <tr><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td>T_Name</td><td>T_Name</td><td>Text</td></tr> <tr><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td>T_MAPCODE</td><td>T_MAPCODE</td><td>Text</td></tr> <tr><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td>T_BIOME</td><td>T_BIOME</td><td>Text</td></tr> <tr><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td>T_BIOMEID</td><td>T_BIOMEID</td><td>Double</td></tr> <tr><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td>T_BIOREGION</td><td>T_BIOREGION</td><td>Text</td></tr> <tr><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td>T_BRGNID</td><td>T_BRGNID</td><td>Double</td></tr> <tr><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td>T_SUBTYPNM</td><td>T_SUBTYPNM</td><td>Text</td></tr> </table>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	M_Bthyrgn	M_Bthyrgn	Text	<input checked="" type="checkbox"/>	<input type="checkbox"/>	M_Bggrph	M_Bggrph	Text	<input checked="" type="checkbox"/>	<input type="checkbox"/>	M_B_Fnc	M_B_Fnc	Text	<input checked="" type="checkbox"/>	<input type="checkbox"/>	M_B_PlyCC	M_B_PlyCC	Text	<input checked="" type="checkbox"/>	<input type="checkbox"/>	M_B_JUCN	M_B_JUCN	Text	<input checked="" type="checkbox"/>	<input type="checkbox"/>	M_Bnthc_p	M_Bnthc_p	Text	<input checked="" type="checkbox"/>	<input type="checkbox"/>	T_Name	T_Name	Text	<input checked="" type="checkbox"/>	<input type="checkbox"/>	T_MAPCODE	T_MAPCODE	Text	<input checked="" type="checkbox"/>	<input type="checkbox"/>	T_BIOME	T_BIOME	Text	<input checked="" type="checkbox"/>	<input type="checkbox"/>	T_BIOMEID	T_BIOMEID	Double	<input checked="" type="checkbox"/>	<input type="checkbox"/>	T_BIOREGION	T_BIOREGION	Text	<input checked="" type="checkbox"/>	<input type="checkbox"/>	T_BRGNID	T_BRGNID	Double	<input checked="" type="checkbox"/>	<input type="checkbox"/>	T_SUBTYPNM	T_SUBTYPNM	Text	<p><b>Action:</b> Renamed NVM fields as part of integration with IEM. Removed repeat fields. Shortened field names such that they will still make sense when shortened in a shapefile format, and made reordered field names so that all realm fields and IEM fields are grouped more sensibly. To differentiate fields for each realm we kept the fields the same but marked them with a prefix for the realm name e.g., by T_x</p> <p><b>RLE implications:</b> no influence on the RLE</p>
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<p><b>Affected type:</b> Descriptions  <b>Issue:</b> Some bioregions had a bioregion ID that was Null and 0 fields in EFZ and Freshwater polygons</p>	<p><b>Action:</b> All non-terrestrial polygons in the vegmap Bioregion ID changed to 0, except polygon for Lake Chirissies which was changed to bioregion of the veg type it is in.</p>	<p><b>RLE implications:</b> no influence on the RLE</p>																																																																	

### Conclusion

The changes implemented were generally small with minor to no influence on the spatial layer and consequently little influence on the RLE. However, the benefits to usability and accuracy of the map are nevertheless important.

## National Vegetation Map Proposed Edits Control Sheet

This control sheet is designed to help the VEGMAP Project team at SANBI keep a long term record of evidence submitted for edits to the National Vegetation Map. Kindly complete Sections A and B1. Please contact us if you need assistance when completing the form. See Appendix A for guidance on proposing edits, types of edits and accepted data required for a motivation. Any proposal for changes to the National Vegetation Map must be accompanied by this control sheet.

### SECTION A: Description of edit

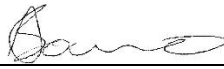
Vegetation type/types affected	Fish Mesic Thicket, Albany Alluvial Vegetation, Canca Limestone Fynbos, and various negligible changes to all coastal, and estuarine areas.
Type of Edit (tick)	<input type="checkbox"/> Major <input type="checkbox"/> Other _____ <input checked="" type="checkbox"/> Minor
Brief description: Subsequent to the release of NVM 2018 we realised that the estuarine habitats are confusing when included in the NVM and that the EFZ caused some slivers to form with adjacent terrestrial vegetation. When we merged the new thicket areas with adjacent terrestrial vegetation we also did an imperfect job of removing all slivers. The National Vegetation Map Committee decided to remove the reference to 'non-terrestrial vegetation' in the attribute table as this was confusing to users. We also removed small errors such as self-intersects and the incorrect assignment of a few polygons bioregion ID number which were indicated as NULL. Lastly we attempted to integrate all the field names from the different realms within the integrated map of ecosystem types.	

### SECTION B: Description of review process

B1: To be completed by the Proposer

Name of person/s proposing edit	Anisha Dayaram
Organisation and role	SANBI, Vegetation Scientist
Nature of evidence provided to justify change	<input type="checkbox"/> Site visits <input checked="" type="checkbox"/> Desktop delineation <input type="checkbox"/> Published technical report <input type="checkbox"/> Peer Reviewed Article <input checked="" type="checkbox"/> GIS spatial data
Change criteria cited in the motivation	<input checked="" type="checkbox"/> MN1 <input type="checkbox"/> MN2 <input type="checkbox"/> MN3 <input type="checkbox"/> MN4 <input type="checkbox"/> MN5 <input type="checkbox"/> MN6 <input type="checkbox"/> MJ1 <input type="checkbox"/> MJ2 <input type="checkbox"/> MJ3

B2: To be completed by the Reviewer/s

Name of 1 <sup>st</sup> reviewer	Dr Andrew Skowno 
Organisation and role	SANBI, NBA Science lead, Chair of NVMC
Member or associate of the National Vegetation Map Committee	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Does the proposal meet the criteria cited for the proposed change?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Approved for incorporation in a version of the National Vegetation Map?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Provisional acceptance, pending changes to proposal
Recommendations for strengthening proposal:	

## APPENDIX: The process for submitting updates and revisions

\*extracted from Section C of The National Vegetation Map Handbook: A guide for users and contributors

Guidelines for submitting proposed changes, updates and revisions to the National Vegetation Map of South Africa, Lesotho and Swaziland.

A decision has been made for the National Vegetation Map of South Africa, Lesotho and Swaziland (NVM) to be a dynamic map that can be revised and updated periodically. This ensures that the NVM will remain relevant to conservation planners and other users requiring current data at finer scales. However, a rigorous review of evidence justifying the changes proposed is required and these accepting proposals may require complex decisions. To simplify and make the process more transparent, a set of guidelines to steer the decision-making process is provided. These will aid the National Vegetation Map Committee in evaluating proposals within a transparent, defensible and justifiable framework. It also serves to inform proposers of the minimum requirements needed for any revision. Following these guidelines will streamline the process of submitting proposed changes and getting them approved, or make explicit the reasons for rejection.

Steps required to make changes to the existing NVM involves:

1. Contact the VEGMAP Project team and have a discussion about your ideas regarding potential updates. In this discussion, the points regarding the key changes will be summarised by the VEGMAP team.
2. The VEGMAP team will provide suggestions (and similar case studies) as to the process that will need to be followed and what the National Vegetation Map Committee would require to consider and implement the suggested changes.
3. The proposer, with or without help from the VEGMAP team, and in collaboration with a local vegetation expert, collates data for the refinement of the vegetation map (see Table 1 for guidelines on proposed minor and major changes). Note that a proposal can be submitted without input from the VEGMAP team, but this is discouraged as it may lead to unconsidered problems, inadequate field data and justification, and thus a rejection or the requirement of further field data and motivation.
4. The proposal is refined and prepared by VEGMAP Team for submission to the Biome Lead for review. The VEGMAP Team then makes a decision regarding whether further work needs to be done to develop the proposal/data with the local expert or user, based on advice from the biome lead/s.
5. User works with VEGMAP team to refine the new data before resubmission to the NVMC for a final decision.
6. The data are prepared and integrated into a test version of the National Vegetation Map.
7. A test version of the NVM with edits is sent to the National Vegetation Map Committee for review.
8. The Committee reaches a decision: these are done annually.
9. The edits are incorporated into the map, descriptions are edited/created and user is assigned credits for affected polygons.
10. A Beta version of the spatial dataset is uploaded onto Biodiversity Advisor for public comment for at least 4 months.
11. Comments on the beta version are addressed and a final version of the NVM is released online.

Table 1 outlines the types of changes which may be proposed to the NVM, ways in which changes can improve the NVM, issues that may arise during implementation, requirements that must be met for consideration and the approval process for implementation. Types of changes have been categorized into minor and major changes according to the degree that they may affect the integrity of the map.

- Minor changes require sound justification, but a peer reviewed publication is not mandatory. Smaller changes may not require committee approval and may be processed by the VEGMAP Team.
- Major changes will only be considered with an accompanying published peer-reviewed article and these decisions must be taken to the committee for consideration. Publication does not guarantee

that changes will be accepted. If a publication is being developed with new data, we recommend that the VEGMAP team must also have been involved in the paper, either in the planning, writing or review phases.

There are important implications that arise from the changes to the NVM: scientific, legal, political and in some cases personal. The National Vegetation Map Committee will consider these issues, using transparent protocols to ensure a consistent and defensible foundation for any decisions taken. These are outlined in Table 2.

**Table 1 Types of changes and proposal requirements**

No	Types of change	Benefit	Issues	Requirements	Process
	<b>Minor Change</b>				
MN1	Boundary shifts (realignment)	Improved spatial accuracy	The scale of the affected boundary line, and resultant gains and losses of extent will result in changes to threat status and protection levels which will have to be recalculated.	<ul style="list-style-type: none"> <li>• Motivation,</li> <li>• GIS shapefiles and data</li> <li>• Must be complete (not stop at cadastral boundaries)</li> </ul>	A proposal must be submitted to SANBI via email. The decision will be reviewed internally by the SANBI VEGMAP team.
MN2	Creation of a sub type/community within an existing vegetation type	Improved accuracy of classification and spatial data	Inconsistency in the scale at which subtypes are accepted could influence the consistency in the classification.	<ul style="list-style-type: none"> <li>• Motivation</li> <li>• GIS shapefiles and data or description of units (polygon #)</li> <li>• Publication in peer review/fine-scale biodiversity plan, Environmental Management Framework or Strategic Environmental Assessment</li> </ul>	A proposal must be submitted to SANBI via email. The decision will be reviewed internally by the SANBI VEGMAP team.
MN3	Change in Vegetation type name (without spatial or description changes) *Special circumstances for this change are described in the Handbook	Correction in spelling or name better reflects the description of the Vegetation Type e.g. Rùens to Ruens	Small mismatches with previous versions of the NVM will arise when comparing database tables.	<ul style="list-style-type: none"> <li>• The proposed new name and motivation must be submitted.</li> <li>• Must meet criteria for name changes. See Handbook.</li> </ul>	A proposal must be submitted to SANBI via email. The decision will be reviewed internally by the SANBI VEGMAP team.
MN4	Change in vegetation type description e.g. list of endemic species	Improvement in more accurate description of a vegetation type and more accurate description of dominant species, endemics etc.	Implications minor or major. Descriptions could change again if boundary shifts later. Most updated names of species must be used. May conflict with text in book	Paper with plot data and environmental data supporting description or if change is just for change in species dominance plot data with species abundance.	A proposal must be submitted to SANBI via email. The decision will be reviewed and decided by the committee.
MN5	Boundary shifts when neighbouring country or coastal borders are redefined	Map remains updated to the latest country boundaries	New areas which may not previously have been included in the map may not have any data.	<ul style="list-style-type: none"> <li>• Motivation,</li> <li>• GIS shapefiles and data</li> </ul>	A proposal must be submitted to SANBI via email. The decision will be reviewed internally by the SANBI VEGMAP team.
MN6	The creation of new polygons of an existing vegetation type that may be disjunct from existing polygons of that type and beyond a reasonable* range extension or reduction.	Improved accuracy of classification and spatial data	Scale of boundary lines, gains and losses of extent, changes to threat status and protection levels, classification consistency	<ul style="list-style-type: none"> <li>• Requires a strong motivation,</li> <li>• GIS geodatabase files or description of units (polygon #),</li> <li>• Publication in peer review/Formal technical report such as a fine-scale biodiversity plan</li> </ul>	A proposal must be submitted to SANBI via email. The decision will be reviewed and decided by the committee.

	*to be determined by the NMVC on a case by case basis				
<b>Major Change</b>					
MJ1	Removal of a Vegetation type from the classification system or downgrading a type to a level below a vegetation type e.g. subtypes.	Removal of spurious types. The polygons of the removed type will be dissolved into remaining types.	Usually associated with boundary shifts (see above) and affects classification consistency	<ul style="list-style-type: none"> <li>• Requires a strong motivation,</li> <li>• GIS geodatabase files or description of units (polygon #),</li> <li>• Publication in peer reviewed journal</li> </ul>	A proposal must be submitted to SANBI via email. The decision will be reviewed and decided by the committee.
MJ2	Create new vegetation type (replace existing) or upgrading of a subtype to a Type.	Improved accuracy of classification and spatial data	Scale of boundary lines, gains and losses of extent, changes to threat status and protection levels, classification consistency,	<ul style="list-style-type: none"> <li>• Requires a strong motivation,</li> <li>• GIS geodatabase files or description of units (polygon #),</li> <li>• Publication in peer reviewed journal</li> </ul>	A proposal must be submitted to SANBI via email. The decision will be reviewed and decided by the committee.
MJ3	Reassignment of a community in a vegetation type from an existing vegetation type to another existing vegetation type	Improved accuracy of classification	Usually associated with boundary shift (see issues above), classification consistency	<ul style="list-style-type: none"> <li>• Motivation</li> <li>• GIS shapefiles and data or description of units (polygon #)</li> <li>• Publication in peer reviewed journal</li> <li>• Fine-scale biodiversity plans, Environmental Management Framework or Strategic Environmental Assessments can be submitted</li> </ul>	A proposal must be submitted to SANBI via email. The decision will be reviewed internally by the SANBI VEGMAP team. Only peer reviewed literature will be accepted.

**Table 2 Important issues that must guide revisions**

Issues	Description	Proposed Solution
Stability vs. Improvement	The update process must allow for legitimate improvements while maintaining a stable vegetation map.	Major revisions will be released so that they are aligned with the NEM:BA listing of threatened ecosystems, while smaller changes (updates) will be allowed between listing events.
Defensibility	Scientific basis for change must be maintained;	Minor Changes: Should be supported by peer reviewed literature or official reports such as biodiversity plans, EMFs, SEAs PhD, MSc or government reports. Major Changes: Only peer reviewed literature will be accepted.
Maintain consistency	Maintaining consistency in classification hierarchy and spatial scale used within each biome. These may differ significantly.	The Committee and the VEGMAP Team needs to keep in mind the scale and classification “depth” for each biome
Alignment with other Realms	Ecosystem classification and mapping is a major focus of the NBA and as a result there will be an opportunity to discuss the integration of vegetation map with the estuary map, coastal and marine habitat map and wetland map. Alignment with catchment boundaries will also be advantageous where possible.	The National Ecosystem Classification Committee will develop a joint approach to integration of ecosystem type maps across all realms. The scale of mapping will guide the process in some instances.
Spurious changes	Systems need to be established to avoid, ad hoc updates and changes that could be considered politically or commercially motivated.	The NMVC will decide on all changes to the map apart from purely technical corrections. Submissions that meet the requirements but are deemed to be spuriously motivated will not be accepted.
Precedents set in previous versions / updates	The original veg map was a ground-breaking product, multi-author product which inherited a few inconsistencies. The updates and revisions should aim to reduce these inconsistencies, not perpetuate them.	The VEGMAP Team at SANBI in conjunction with the National Vegetation Map Committee needs to take cognisance of the existing inconsistencies and propose potential solutions for future updates.