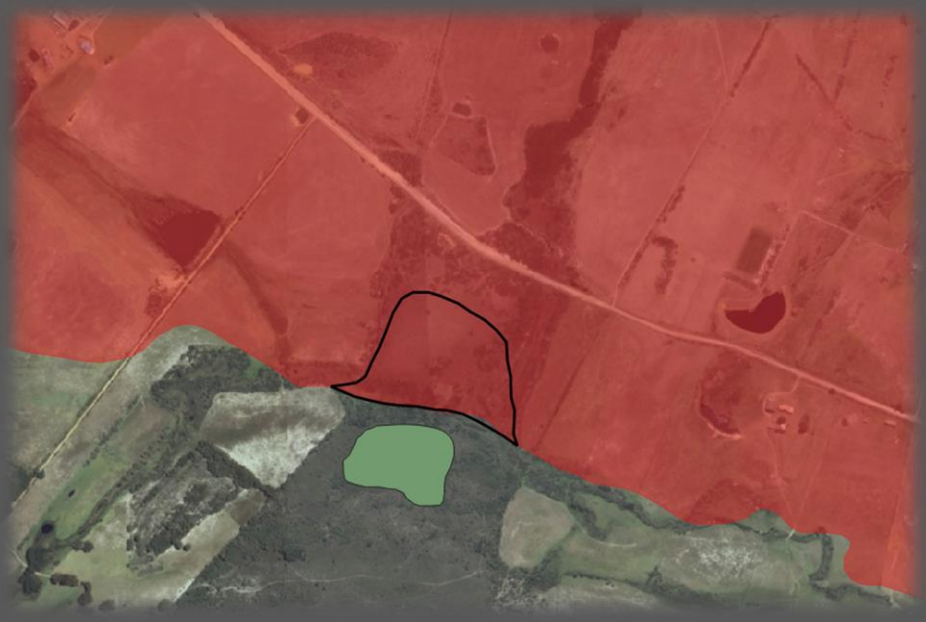
SANBI
Biodiversity for Life
South African National Biodiversity Institute

Correcting the shape of FFf1, FFf12, FFd7

Technical proposal by Rebecca Dames



VEGMAP 2019 changes: FFf1, FFf12, FFd7

Rebecca Dames from the Grootbos Foundation identified 5 possible sites where the VEGMAP 2018 did not accurately describe the vegetation on the ground. Fieldwork to ground-truth possible errors was done in September and October 2019. Rebecca imported the National Vegetation map onto Google my maps to determine where the existing boundaries of the vegetation types were and whether the boundaries should be adjusted. The Grootbos Foundation has spent the last three years mapping all remnant patches of critically endangered Elim Ferricrete Fynbos in the Agulhas Plain. Through this, an in-depth study has been conducted on all areas identified as Elim Ferricrete Fynbos. Some areas that are natural within the existing boundaries of this vegetation type are not that as which is indicated on the National Vegetation map, and some areas of this vegetation type are not found within the existing boundaries of this vegetation type. The sites mentioned below were walked with a GPS to map out the changes for the vegetation map. Adjustments to the boundaries of vegetation type polygons were made based on in-depth field work. The sites mentioned below are the first set of possible changes to the VEGMAP, the Grootbos Foundation is working extensively on Elim Ferricrete Fynbos and there will be more changes to follow.

1. **Site 1 – ID:1**
   FFf1 to FFd7

Shape file ID code	1
Current vegetation type	FFf1 Elim Ferricrete Fynbos
Proposed new vegetation type	FFd7 Agulhas Sand Fynbos
Assessor	Rebecca Dames – Grootbos Foundation
Reason for suggested change	The area that remains natural within the suggested polygon of Elim Ferricrete fynbos has deep sandy soils which do not host any indicator species of Elim Ferricrete Fynbos. It is suggested that this section is changed to Agulhas Sand Fynbos, which is the most fitting representation of the vegetation which is found there. The underlying geology of the area is ferricrete, while there is deep sands covering it, making the vegetation community Agulhas Sand Fynbos.
Dominant fynbos species	*Mimetes cucullatus, Serruria nervosa, Bobartia indica, Leucadendron salignum, Edmondia sessamoides, Struthiola ciliate*
Type of change	Boundary change
Justification of change	Groundtruthed evidence

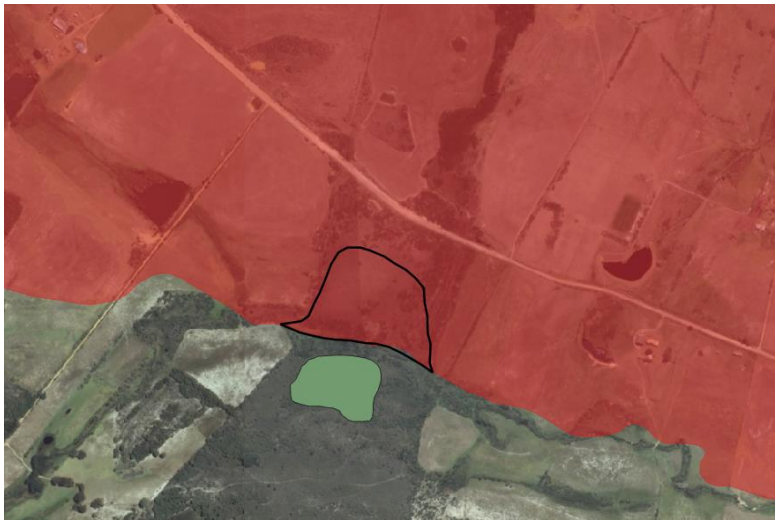


Figure 1: Currently on the National Vegetation Map, the red is Elim Ferricrete Fynbos (FFf1) and green is Agulhas Sand Fynbos (FFd7). The black polygon is the proposed area to be excluded from FFf1 and changed to FFd7. The bright green polygon is an existing area of Elim Ferricrete Fynbos (FFf1) is separately covered in proposal #5 below.

Figure 2: Area of Agulhas Sand Fynbos that was mapped as Elim Ferricrete Fynbos on the National Vegetation Map 2018.

2. Site 2 – ID:2

Shape file ID code	2
Current vegetation type	FFs12 Overberg Sandstone Fynbos
Proposed new vegetation type	FFf1 Elim Ferricrete Fynbos
Assessor	Rebecca Dames – Grootbos Foundation

Reason for suggested change	The slope is predominantly Overberg Sandstone Fynbos with an area of ferricrete protruding to the surface giving rise to an area of Elim Ferricrete Fynbos with the presence of *Leucadendron elimense.*
Dominant fynbos species	*Leucadendron elimense, Serruria elongata, Leucospermum truncatulum, Erica viscari, Erica plukenetti var. linearis, Brunia laevis, Aulax umbellata*
Type of change	Boundary change
Justification of change	Groundtruthed evidence

Figure 3: The proposed polygon is highlighted in black, overlaid with the National Vegetation map of South Africa highlighting the different vegetation communities, with Elim Ferricrete Fynbos in red. The polygon is based on actual infield data and walking the boundaries of the protruding ferricrete within the sandstone slope.

Figure 4: Image of *Leucadendron elimense* in field where the ferricrete protrudes from the sandstone.

3. Site 3 – ID:3

Shape file ID code	3
Current vegetation type	FFs12 Overberg Sandstone Fynbos
Proposed new vegetation type	FFf1 Elim Ferricrete Fynbos
Assessor	Rebecca Dames – Grootbos Foundation
Reason for suggested change	While this area is clearly a transitional zone between Sandstone and Ferricrete Fynbos, the vegetation community expresses more signs of Ferricrete Fynbos. The vegetation community is dominated by *Leucadendron modestum*.
Dominant fynbos species	*Leucadendron modestum, Protea repens, Serruria rubricaulis, Erica nudiflora, Aulax umbellate, Protea scabra, Serruria nervosa, Erica axilliaris, Brunia laevis, Aristea glauca*
Type of change	Boundary change
Justification of change	Groundtruthed evidence

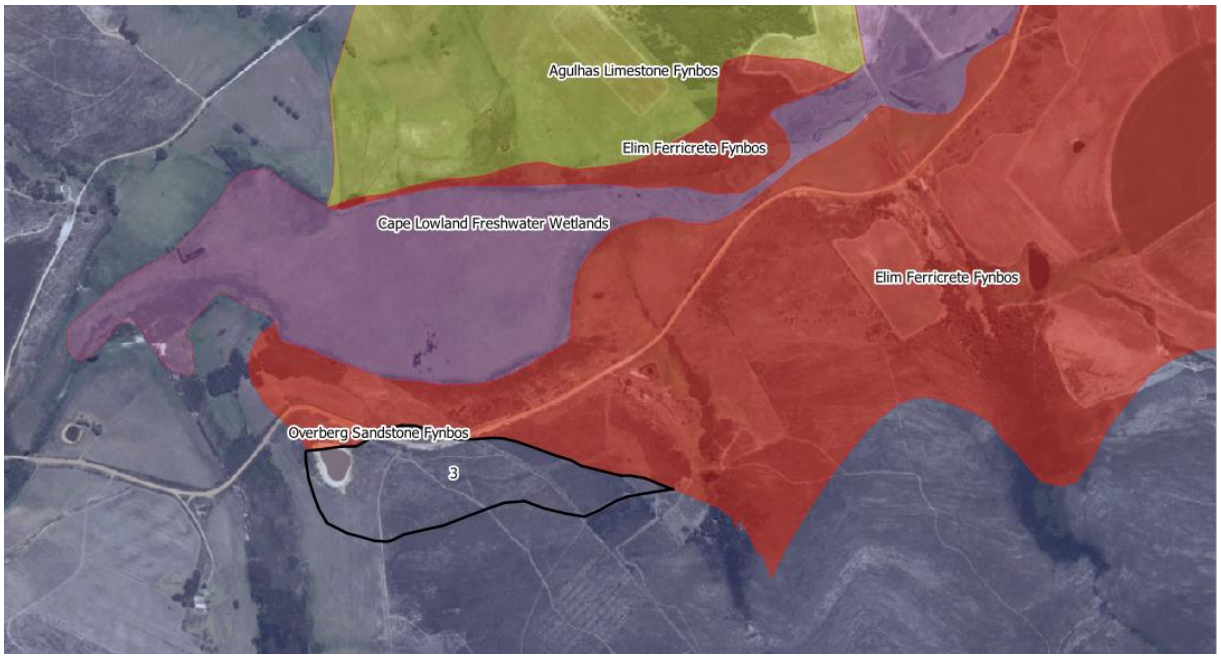


Figure 5: Proposed boundary shift of Elim Ferricrete Fynbos (red) in black (3), showing the Overberg Sandstone Fynbos (grey) to be replaced. .

Figure 6: *Leucadendron modestum* dominated veld

4. Site 4 – ID:4

Shape file ID code	4
Current vegetation type	FFl1 Agulhas Limestone Fynbos
Proposed new vegetation type	FFd7 Agulhas Sand Fynbos
Assessor	Rebecca Dames – Grootbos Foundation
Reason for suggested change	Deposition of sand has resulted in deep sand fynbos with the absence of protruding limestone rocks. Absence of limestone endemic species which are present on the limestone ridges adjacent to site. A permanent vegetation plot has been set up in this area to monitor the change in species composition over time. This list is available upon request to further support the possible shift in vegetation boundary.
Dominant fynbos species	*Mimetes cucullatus, Erica interrupta, Leucospermum hypophyllocarpadendron, Leucospermum prostratum, Bobartia indica, Lachnaea densiflora, Leucospermum heterophyllum*
Type of change	Boundary change
Justification of change	Groundtruthed evidence

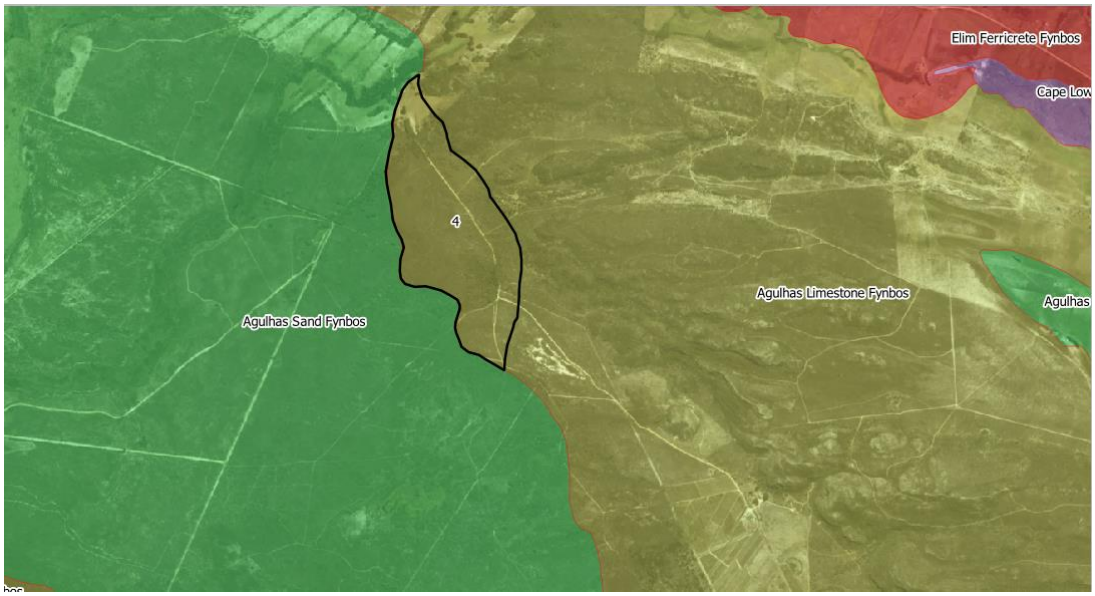


Figure 7: The proposed boundary shift of Agulhas Sand Fynbos (green) in black (4) to replace Agulhas Limestone Fynbos (yellow).

Figure 8: The limestone hills are visible in the back of the above images, while the deposition of sand has resulted in Agulhas Sand Fynbos in the lower lying areas.

5. Site 5 – ID:5

Shape file ID code	5
Current vegetation type	FFl1 Agulhas Limestone Fynbos
Proposed new vegetation type	FFf1 Elim Ferricrete Fynbos
Assessor	Rebecca Dames – Grootbos Foundation
Reason for suggested change	An area of rocky ferricrete soils amongst deeper sand fynbos. This area is dominated by *Leucadendron elimense* and *Leucadendron laxum*, both Elim Ferricrete Endemic species. Unlike the surrounding soils, this area has red soils with protruding Ferricrete geology.

	This is one of the sites that we took Dr. Tony Rebelo and Pat Holmes too during their visit. While the area is currently highly invaded with invasive Acacia species, the vegetation community of the area is Elim Ferricrete Fynbos.
Dominant fynbos species	*Leucadendron elimense, Leucadendron laxum, Erica axilliflora*
Type of change	Boundary change
Justification of change	Groundtruthed evidence

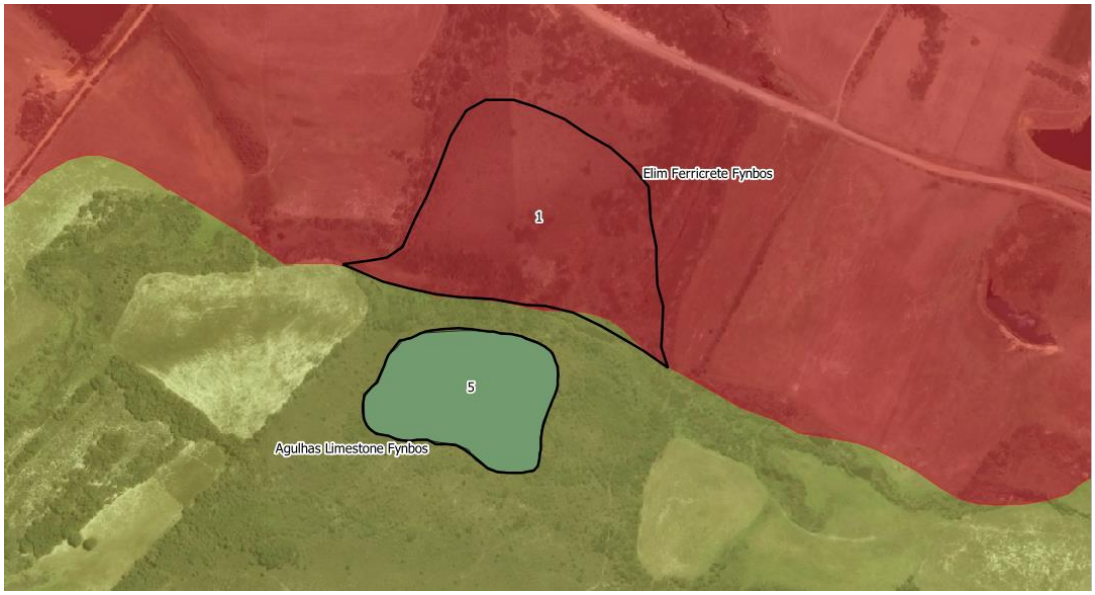


Figure 9: Area of protruding Elim Ferricrete Fynbos (red) drawn in black and coloured green (#5) that replaces the mapped Agulhas Limestone Fynbos (yellow). The upper black polygon is proposal #1.

Figure 10: *Leucadendron elimense* in field on the site

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	FFf1, FFf12, FFd7
Type of Edit (tick)	☐Major ☒Minor ☐Other _____ *refer to appendix
Brief description Rebecca Dames from the Grootbos Foundation identified 5 possible sites where the VEGMAP 2018 did not accurately describe the vegetation on the ground. Fieldwork to ground-truth possible errors was done in September and October 2019. The sites mentioned below were walked with a GPS to map out the changes for the vegetation map. Adjustments to the boundaries of vegetation type polygons were made based on in-depth field work.	

SECTION B: Description of review process

B1: To be completed by the Proposer

Name of person/s proposing edit	Rebecca Dames
Organisation and role	Research Botanist and Sustainability Officer, Grootbos Foundation
Nature of evidence provided to justify change	☒Site visits ☒ Desktop delineation ☐ Published technical report ☐ Peer Reviewed Article ☒ GIS spatial data
Change criteria cited in the motivation	☒MN1 ☐ MN2 ☐ MN3 ☐ MN4 ☐ MN5 ☐MN6 ☐ MJ1 ☐ MJ2 ☒ MJ3 *refer to appendix

B2: To be completed by the Reviewer/s

Name of 1st reviewer	Tony rebelo
Organisation and role	SANBI VegMapCom
Member or associate of the National Vegetation Map Committee	☒Yes ☐No
Does the proposal meet the criteria cited for the proposed change?	☒Yes ☐No
Approved for incorporation in a version of the National Vegetation Map?	☒Yes ☐No ☐Provisional acceptance, pending changes to proposal
Recommendations for strengthening proposal (optional) These are all minor changes reflecting on ground boundary shifts. They are in effect changes where the boundaries on the ground do not follow the boundaries chosen by geologists (sometimes arbitrarily: esp. so in the case of ferricrete/silcrete which is present under all sands,	

but only exposed and manifested in communities where it is “close enough” to the surface.). These changes thus reinterpret the map according to the plants rather than the geologists, which is highly desirable for VegMap purposes.

There are issues with the incoherent explanations on the figures captions. I have suggested edits based on what I understood the maps to depict. Please check that I have understood them correctly.

There are no issues with accepting these. I endorse them.

It would be nice (although not a condition at all) if the patches of Elim Fynbos could be delimited to communities based on dominance, and if local dominant communities could be enumerated. I do not know how practical such a decision could be, and I do not see an easy way to extrapolate these to destroyed veld, but it would contribute considerably to any decisions as to whether some communities within the type deserve special attention. At this stage we don’t know at all if there are some superspecial communities, versus “transitional’ or depauperate communities. But I would regard Ld modestum veld as not so important as Ld elimense veld, and Ld laxum veld as nearly as important as Ld elimense, etc. But without an idea of other communities, and the extent of these different communities it is hard to conceptualize how the different components of EF are distributed across the landscape and threatened.

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
	Minor Change				
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.	• Motivation, • GIS shapefiles and data • Must be complete (not stop at cadastral boundaries)	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.	• Motivation • GIS shapefiles and data or description of units (polygon #) • Publication in peer review/fine-scale biodiversity plan, Environmental Management Framework or Strategic Environmental Assessment	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. Rûens to Ruens	Small mismatches with previous versions of the NVM will arise when comparing database tables.	• The proposed new name and motivation must be submitted. • Must meet criteria for name changes. See Handbook.	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.	• Motivation, • GIS shapefiles and data	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	• Requires a strong motivation, • GIS geodatabase files or description of units (polygon #), • Publication in peer review/Formal technical report such as a fine-scale biodiversity plan	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				
	Major Change				
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	• Requires a strong motivation, • GIS geodatabase files or description of units (polygon #), • Publication in peer reviewed journal	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,	• Requires a strong motivation, • GIS geodatabase files or description of units (polygon #), • Publication in peer reviewed journal	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	• Motivation • GIS shapefiles and data or description of units (polygon #) • Publication in peer reviewed journal • Fine-scale biodiversity plans, Environmental Management Framework or Strategic Environmental Assessments can be submitted	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 NVMC 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.