Streamlining Native Vegetation Management in Victoria with the Native Vegetation Regulation (NVR) Map

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Locate25
THE NATIONAL GEOSPATIAL CONFERENCE
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Nova Systems

Acknowledgement of Country

Nova Systems respectfully acknowledges the Traditional Custodians of the land and waters in which we live and work, and we pay our respects to Elders past, present and emerging.

Nova Systems also acknowledges the service of the Aboriginal and Torres Strait Islander peoples who have contributed to defending Australia and its national interests.

Nova Systems

Background

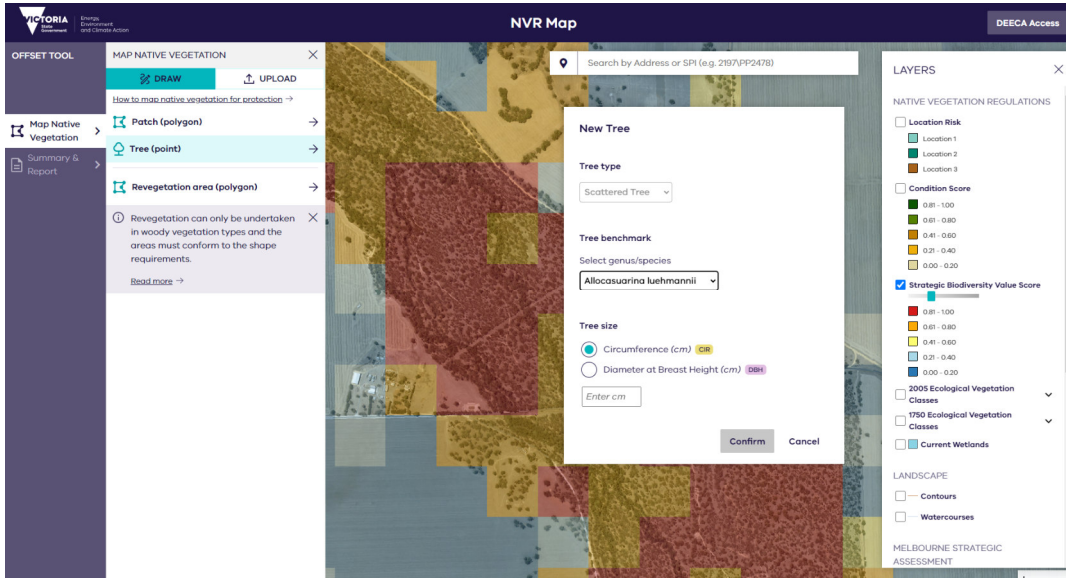
- ~ 54% of native vegetation lost
- Objective: No net loss to biodiversity
  - Approval is required for native vegetation removal
  - Losses are offset
- Offset calculations are complex
- Native Vegetation Removal Reports (NVRRs) and Native Vegetation Offset Reports (NVORs)

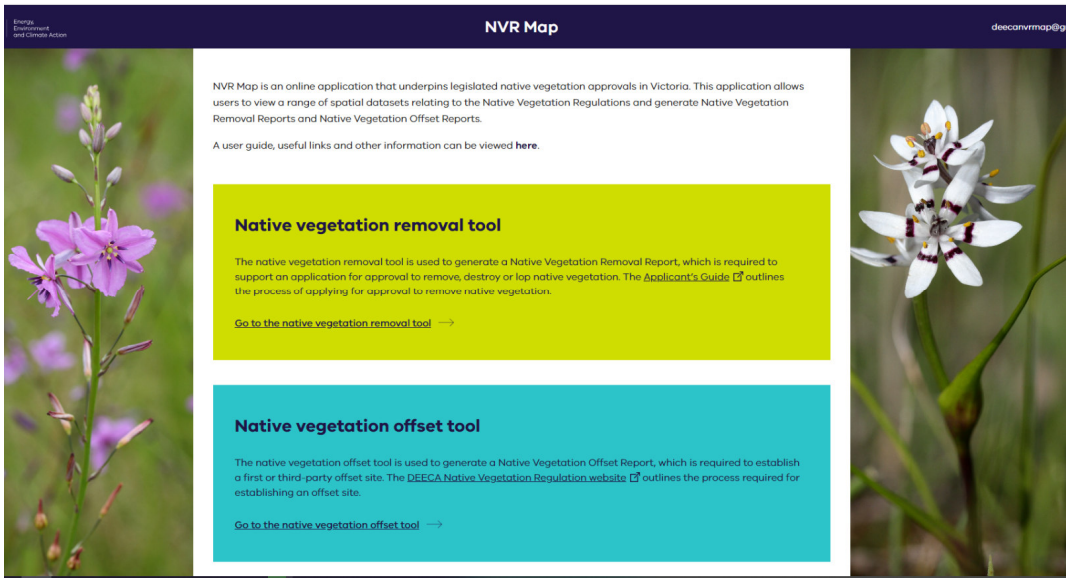
Before NVR Map

- Two separate legacy applications (NVIM, EnSym)
- Manual quality assurance and data management
- Delays in generating reports
- Reliance on GIS expertise
- Inadequate impact avoidance/minimisation
- Resource burden

The Solution

- One-stop, user friendly solution
- Reports generated in minutes rather than days
- Modern and cheaper to support

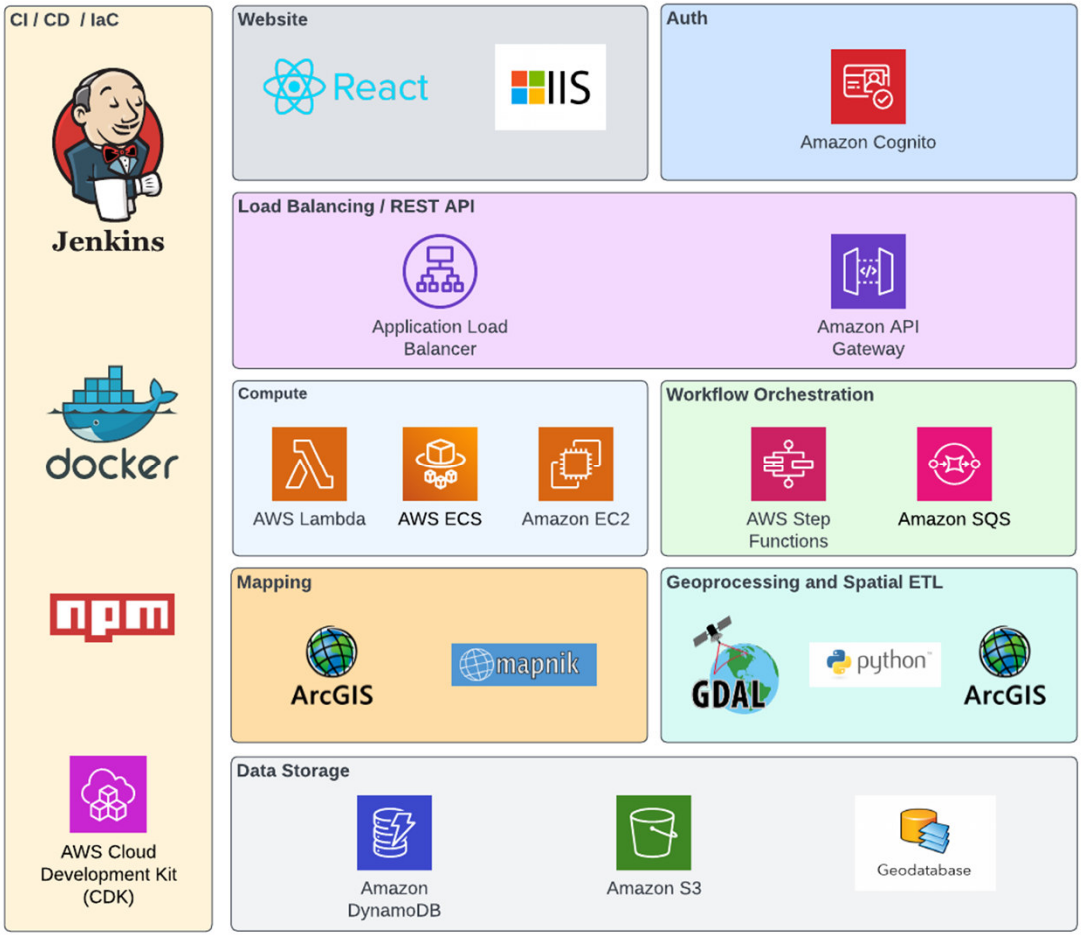




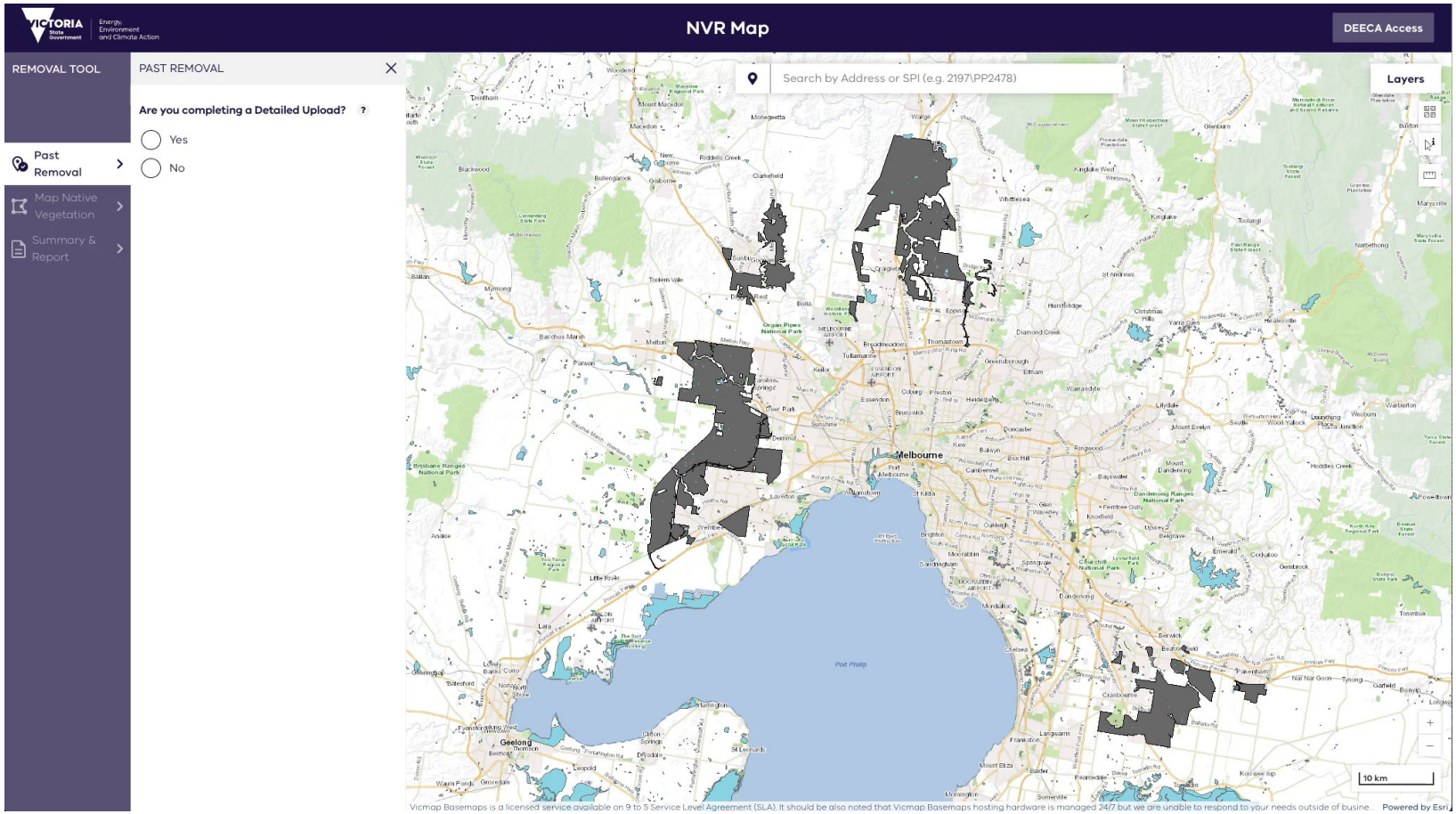
The Technical Solution

- Scalable Cloud Based Solution
- Hybrid ESRI and Open-Source Technologies
- Core components:
  - Web Application
  - Report Generator
  - Map Services
  - Geoprocessing Services

Technology Overview



Web Application



Report Generator

Native Vegetation Removal Report

NVRR ID: 348_20240507_GE4

This report provides information to support an application to remove, destroy or lop native vegetation in accordance with the *Guidelines for the removal, destruction or lopping of native vegetation* (the Guidelines). This report **is not an assessment by DEECA** of the proposed native vegetation removal. Offset requirements have been calculated using modelled condition scores.

Report details

Date created: 07/05/2024

Local Government Area: MONASH CITY

Registered Aboriginal Party: Wurundjeri

Coordinates: 145.10628, -37.87373

Address: 50 RAILWAY PARADE S CHADSTONE 3148

Summary of native vegetation to be removed

Assessment pathway	**Basic Assessment Pathway**		
Location category	**Location 1** The native vegetation extent map indicates that this area is not typically characterised as supporting native vegetation. It does not meet the criteria to be classified as Location Category 2 or 3. The removal of less than 0.5 hectares of native vegetation in this area will not require a Species Offset.		
Total extent including past and proposed removal (ha) *Includes endangered EVCs (ha): 0*	**0.004**	*Extent of past removal (ha)*	*0*
		Extent of proposed removal - Patches (ha)	*0.004*
		Extent of proposed removal - Scattered Trees (ha)	*0.000*
No. Large Trees proposed to be removed	**0**	*No. Large Patch Trees*	*0*
		No. Large Scattered Trees	*0*
No. Small Scattered Trees	0		

Native Vegetation Offset Report - First Party General Offset

NVOR ID: 365_20240131_XNJ

This report provides information about the amount of potential gain available at a **first party general offset site.** Maintenance, improvement, prior management and security gain scores have been calculated using modelled condition scores. **This report cannot be used for a third party offset site.**

This report **is not** an assessment by the Department of Energy, Environment and Climate Action (DEECA). The responsible authority must confirm the offset is acceptable and meets eligibility criteria defined in the *Guidelines for the removal, destruction or lopping of native vegetation* (the Guidelines). **Page 1 and Appendix 1 of this report must be appended to the offset agreement.**

Report details

Date created: 31/01/2024

Local Government Area: SURF COAST SHIRE

Registered Aboriginal Party: Wadawurrung

Coordinates: 144.00728, -38.21041

Address: 255 INVERLEIGH-WINCHELSEA ROAD WINCHELSEA 3241

Regulator Notes

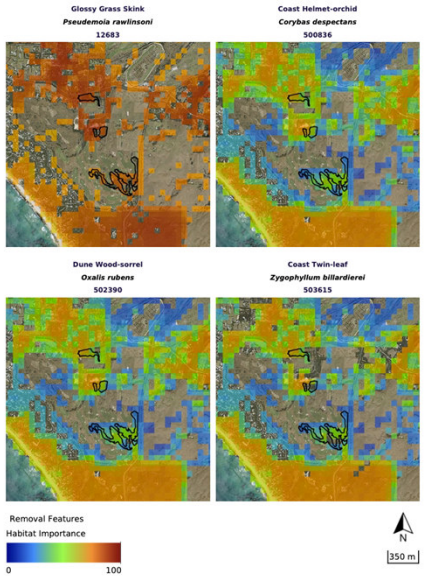
Offset polygons are located:
- Across multiple properties and/or within six metres of a property boundary

Summary of offset site

Extent	
Total Extent (ha)	**0.4798**
Patches (ha)	0.4798
Scattered Trees (ha)	0.0000
Revegetation (ha)	0.0000
Habitat units of gain for the proposed offset site	
General Habitat Units	**0.033** Corangamite CMA or SURF COAST SHIRE LGA
No. Large Trees	0
Strategic Biodiversity Value Score	0.420

NB: values within tables in this document may not add to the totals shown above due to rounding

7. Habitat Importance maps



Appendix 1: Habitat units of gain per zone

This table provides the habitat units of gain per zone of the offset site. The trading and allocation of units within the Native Vegetation Credit Register (NVCR) takes place at the zone level.

The Species-General Offset Test is applied to determine which species the proposed offset site provides habitat for. The threshold is set at 0.0025 per cent of the mapped habitat value for a species. When the threshold is met or exceeded, Species Habitat Units are generated. If required, the 0.0025% threshold can be turned off, provided this is requested from DEECA prior to the offset site being established. Multiple species units will be generated if the threshold is exceeded for multiple species.

The Species Habitat Units for each species in a zone are calculated by the following equation in accordance with the Guidelines:
Species Habitat Units = extent x gain score x species landscape factor, where the species landscape factor = 0.5 + (habitat importance score/2)

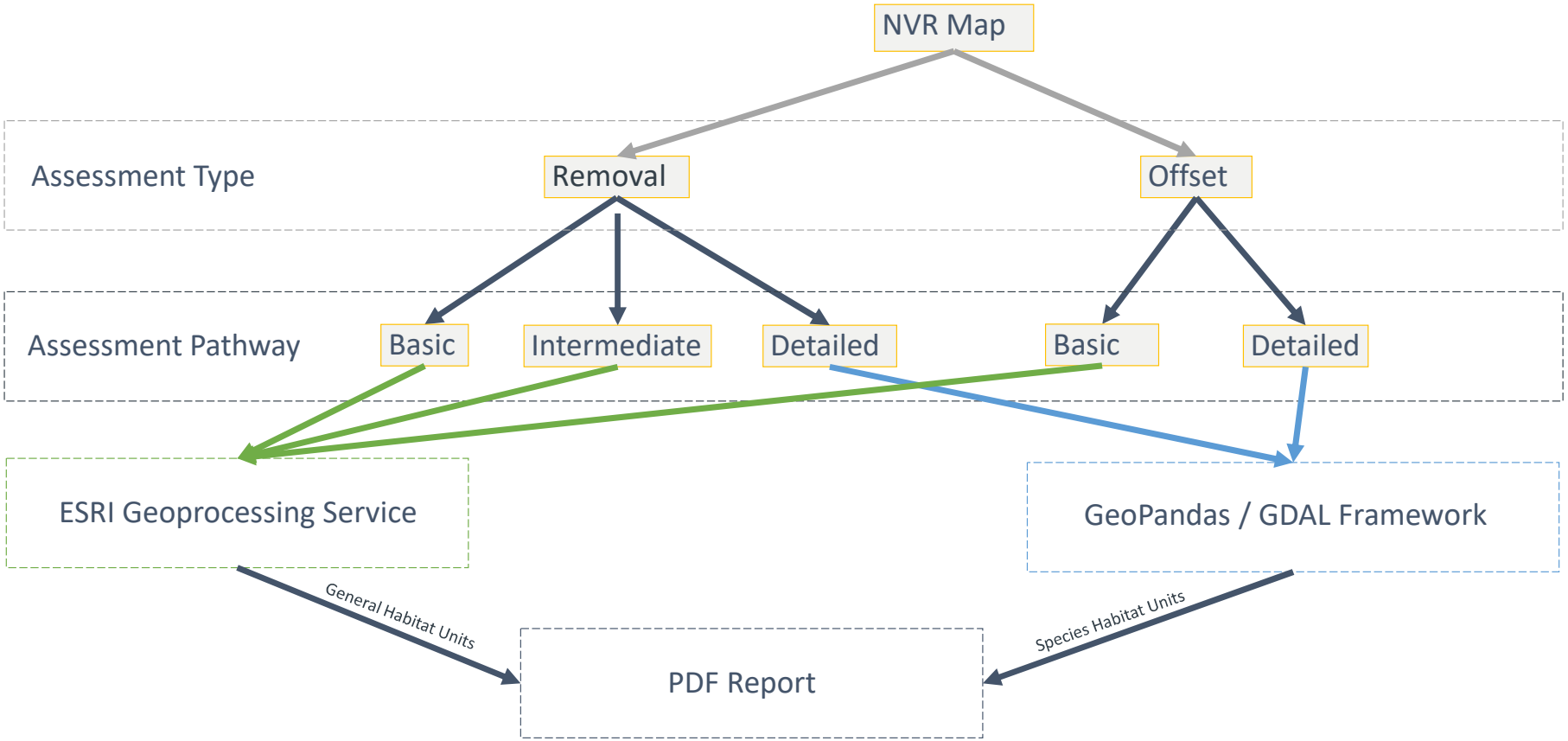
The General Habitat Units in a zone are calculated by the following equation in accordance with the Guidelines:
General Habitat Units = extent x gain score x general landscape factor, where the general landscape factor = 0.5 + (strategic biodiversity value score/2)

Species and General Habitat Units are alternates and the use or sale of one type of unit will affect the number of other types of units remaining.

Information provided by or on behalf of the applicant							Information calculated by NVR Map						
Zone	Type	DBH (cm)	EVC code	Bioregional conservation status	Gain score	Condition Score	Large Tree(s)	Polygon extent (ha)	Extent without overlap	SBV score	HI Score	General Habitat Units	Species Habitat Units
1-A	Patch	-	GipP085B	Vulnerable	0.234	0.560	-	1.9897	1.9897	0.944	-	0.452	-
1-A	Patch	-	GipP085B	Vulnerable	0.234	0.560	-	1.9897	1.9897	0.944	0.909	-	0.444 - Glossy Grass Skink Pseudemoia rawlinsoni (12683)
1-A	Patch	-	GipP085B	Vulnerable	0.234	0.560	-	1.9897	1.9897	0.944	0.595	-	0.371 - Coast Helmet-orchid Corybas despectans (500836)

Information provided by or on behalf of the applicant							Information calculated by NVR Map						
Zone	Type	DBH (cm)	EVC code	Bioregional conservation status	Gain score	Condition Score	Large Tree(s)	Polygon extent (ha)	Extent without overlap	SBV score	HI Score	General Habitat Units	Species Habitat Units
1-A	Patch	-	GipP085B	Vulnerable	0.234	0.560	-	1.9897	1.9897	0.944	0.595	-	0.371 - Dune Wood-sorrel Oxalis rubens (502390)
1-A	Patch	-	GipP085B	Vulnerable	0.234	0.560	-	1.9897	1.9897	0.944	0.595	-	0.371 - Coast Twin-leaf Zygophyllum billardierei (503615)
1-A	Patch	-	GipP085B	Vulnerable	0.234	0.560	-	1.9897	1.9897	0.944	0.595	-	0.371 - Coast Wirilda Acacia uncifolia (504210)
1-A	Patch	-	GipP085B	Vulnerable	0.234	0.560	-	1.9897	1.9897	0.944	0.595	-	0.371 - Dense Leek-orchid Prasophyllum spicatum (504506)
1-A	Patch	-	GipP085B	Vulnerable	0.234	0.560	-	1.9897	1.9897	0.944	0.595	-	0.371 - Coast Bitter-bush Adriana quadripartita (504755)
1-A	Patch	-	GipP085B	Vulnerable	0.234	0.560	-	1.9897	1.9897	0.944	0.595	-	0.371 - Veined Spear-grass Austrostipa rudis subsp. australis (504940)
1-A	Patch	-	GipP085B	Vulnerable	0.234	0.560	-	1.9897	1.9897	0.944	0.595	-	0.371 - Leafy Greenhood Pterostylis cucullata subsp. cucullata (505911)
2-A	Patch	-	GipP085B	Vulnerable	0.311	0.620	-	1.3375	1.3375	0.823	-	0.379	-
2-A	Patch	-	GipP085B	Vulnerable	0.311	0.620	-	1.3375	1.3375	0.823	0.884	-	0.392 - Glossy Grass Skink Pseudemoia rawlinsoni (12683)

Geospatial Processing



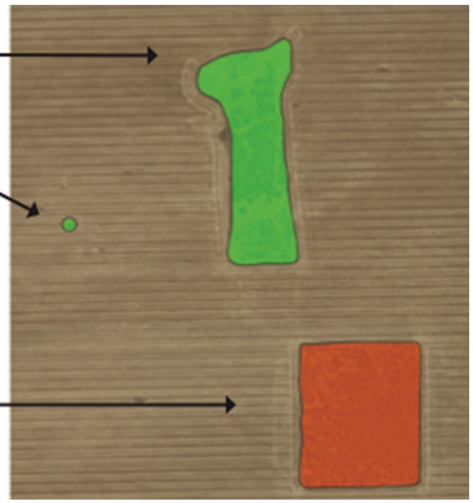
Removal Assessment (Detailed)

To be retained

To be removed

Extent = 8ha

Quality = 0.3



Extent = 7ha

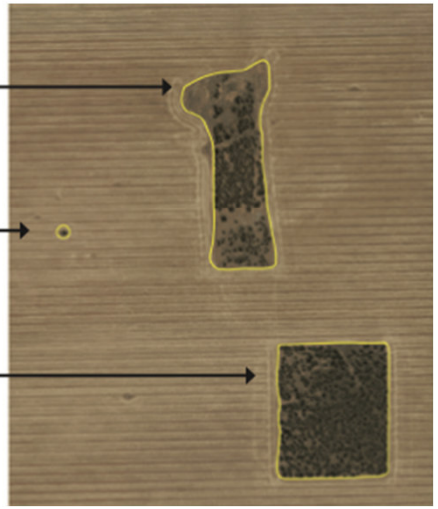
Quality = 0.4 (out of 1.0)

Extent = 0.07ha

Quality = 0.2 (out of 1.0)

Extent = 8ha

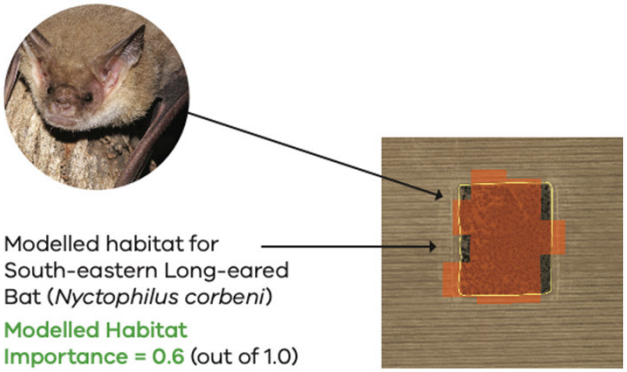
Quality = 0.3 (out of 1.0)



Removal Assessment (Detailed)

1. ArcGIS Geoprocessing Service
- Checks data quality of uploaded shapefile
- Calculates general habitat importance and offset requirements

2. If detailed pathway, continues to Open-Source parallel processing
- Review habitat importance modelling for over 1,700 species
- Checks for significant impact
- Calculates offset requirements:



Extent of native vegetation	Location category		
	Location 1	Location 3	Location 3
< 0.5 hectares and no large trees	Basic	Intermediate	Detailed
< 0.5 hectares including large trees	Intermediate	Intermediate	Detailed
≥ 0.5 hectares	Detailed	Detailed	Detailed

$$Area * Quality * \left(0.5 + \frac{Modelled\ Habitat\ Importance}{2}\right) * 2$$

$= 8 * 0.3 * \left(0.5 + \frac{0.6}{2}\right) * 2 = \ \ldots \ = 3.840$ Species Habitat Units for South-Eastern Long-eared Bat

Offset Assessment (Detailed)

Existing patch

Extent = 19ha

Quality = 0.5 (out of 1.0)

Revegetation

Extent = 13ha

Quality = 0 (out of 1.0)

Existing patch

Gain Score = 0.3

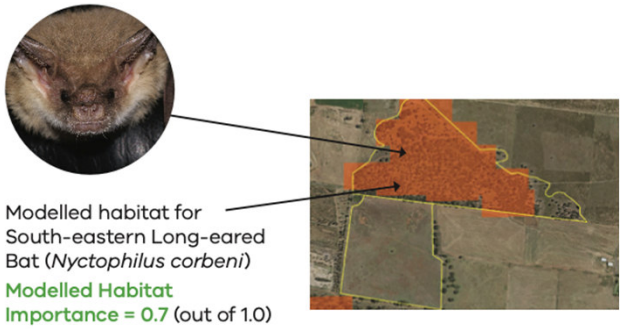
Revegetation

Gain Score = 0.4

Offset Assessment (Detailed)

1. ArcGIS Geoprocessing Service
- Checks data quality of uploaded shapefile
- Calculates general offset

2. If detailed pathway, continues to Open-Source parallel processing
- Review habitat importance modelling for over 1,700 species
- Checks for significant impact
- Calculates offset requirements:



$$Area * Gain\ Score * \left(0.5 + \frac{Modelled\ Habitat\ Importance}{2}\right)$$

$= 19 * 0.3 * \left(0.5 + \frac{0.7}{2}\right) * 2 =$ … = 4.845 Species Habitat Units for South-Eastern Long-eared Bat

Key Takeaways

- NVR Map has successfully replaced two legacy systems (NVIM and EnSym)
- Reduced ongoing maintenance and support costs
- Improved report generation timeframes from days to minutes
- Hybrid technology stack with both COTS and Open-Source geospatial software and modern cloud development processes for the win!
- Collaboration and engagement drives success

The most relevant SDGs related to the presentation

FOSS4G in Auckland

17-23 November 2025

2025.foss4g.org

NVR Map

https://mapshare.vic.gov.au/nvr

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