KU-RING-GAI COUNCIL

METHODOLOGY FOR BUSHLAND PRIORITISATION MATRIX

Council has developed a bushland prioritisation matrix to guide investment in Council's bushland management program. Ku-ring-gai's 122 bushland reserves have been rated based on:

- the significance of the vegetation community / species within the reserve;
- the resilience of the reserve; and
- the site impacts (or threats) occurring within the reserve.

Two of these reserves, Ku-ring-gai Wildflower Gardens and Cowan Creek Reserve, have been divided into two sites which were each assessed separately. These splits reflect a distinction in site characteristics and management requirements.

Those reserves that received the highest ranking (highest value / lowest threats) have been prioritised for funding, within the budget available. The matrix provides an improved understanding of the values of each reserve and the extent of site impacts / pressures that need to be addressed in order to maintain those values.

A review of the ratings will be conducted biannually, to help inform management success and to assist in the identification and management of new values or threats.

A summary table of changes made to the Methodology for Bushland Prioritisation Matrix document can be found in Appendix 3.

Rating criteria and their weightings

Significance	30%
Resilience	50%
Threats	20%

Summary of ratings

2nd priority for Levy and recurrent funds and external grant funding, priority for works to address external threats (eg WSUD projects)	←	**High Value – High Threat**	**Low Value – High Threat**	→	No funding
1st priority for Levy and recurrent funds and external grant funding	←	**High Value – Low Threat**	**Low Value – Low Threat**	→	No funding

Rating assessment

MATRIX CRITERIA	ASSESSMENT	SCORE
SIGNIFICANCE		
LEVEL OF FEDERAL SIGNIFICANCE: Relates to the categorisation of the vegetation community and relevant legislation protecting it. *Note-no vulnerable ecological communities are currently listed within the LGA but may change in the future?	CEEC (Federally listed Critically Endangered Ecological Community)	4
	EEC (Federally listed Endangered Ecological Community)	2
	Not a recognised federally listed vegetation community.	0
LEVEL OF STATE SIGNIFICANCE: Relates to the categorisation of the vegetation community and relevant legislation protecting it. *Note-no vulnerable ecological communities are currently listed within the LGA but may change in the future	CEEC (State listed Critically Endangered Ecological Community)	10
	EEC (State listed Endangered Ecological Community)	5
	Not a recognised state listed vegetation community	0
PRESENCE OF INDIVIDUALLY THREATENED SPECIES: Relates to the presence of, or potential for the location to support, individually threatened species of flora or fauna (under both Federal and State legislation and includes species listed as species presumed extinct, critically endangered, endangered, vulnerable or as endangered populations)	Threatened species recorded currently at location	10
	Threatened species previously recorded at location or location contains habitat or food source for migratory threatened species	7
	Regeneration work will improve potential for return of threatened species to location	3
	No threatened species recorded and little potential to create future habitat for threatened species	0

Cont.

PRESENCE OF ROTAP, LOCALLY SIGNIFICANT FAUNA AND FLORA SPECIES AND / OR FAUNA POULATIONS AND VEGETATION COMMUNITIES: Relates to the presence of, or potential for the location to support, individually significant species of flora, fauna or vegetation type.	Presence of a high faunal diversity and existence of ROTAP/Regionally Significant/ Locally Uncommon species recorded currently at location, previously recorded at location or significant vegetation (i.e. uncommon / poorly represented) community present and site has high potential to contain species within the seed bank	6
	Presence of an individual or low to moderate level of faunal diversity and existence of ROTAP/Regionally Significant/ Locally Uncommon species recorded currently at location, previously recorded at location or significant vegetation (i.e. uncommon / poorly represented) community present and site has high potential to contain species within the seed bank	3
	No ROTAP/Regionally Significant/ Locally Uncommon species recorded	0
TOTAL WEIGHTING		**30**
RESILIENCE		
Relates to the overall resilience of the location	Excellent resilience	50
	Very good resilience	40
	Good resilience	30
	Fair resilience	20
	Poor resilience	10
	No resilience	0
TOTAL WEIGHTING		**50**

Cont.

THREATS		
Relates to site impacts occurring on site	Low level of site impacts	20
	Low-medium level of site impacts	15
	Medium level of site impacts	10
	Medium-high level of site impacts	5
	High level of site impacts	0
TOTAL WEIGHTING		**20**

A summary of the criteria used to determine the resilience ranking is included as Appendix 1.

A summary of the criteria used to determine the threats ranking is included as Appendix 2.

APPENDIX 1

METHODOLOGY FOR THE ASSESSMENT OF BUSHLAND SITE RESILIENCE

Criteria used to assess resilience

An assessment of each of the criteria below within each reserve facilitates the resilience ranking for each reserve (0, 12.5, 25, 37.5 or 50).

	Excellent resilience		**No resilience**
Criteria	**50** ⟷		**0**
"Natural" disturbance types	Match historical disturbance regimes.	Moderate alteration from historical disturbance regimes	Altered from historical disturbance regimes.
New disturbances	Compatible with the ecology of all/most of the original species (rarely the case, e.g. hand weeding).	Incompatible with the ecology of 40 – 60% of the original species present (e.g. major soil disturbance, changed fire regime, weeds, feral animals, changed soil moisture).	Incompatible with the ecology of many/most of the original species present (e.g. major soil disturbance, changed fire regime, weeds, feral animals, changed soil moisture).
Position in landscape [S8,S9]	High in catchment.	Mid catchment – some impact from upper catchment present.	Low in catchment. Heavily impacted from upper catchment.
Size of Reserve	Large.	Medium	Small.
Shape of Reserve	Circular (low edge to area ratio).	Patchy – Some core area undisturbed by edge effect.	Long and thin (high edge to area ratio). Most area influenced by edge effect.
Proximity to / Connectivity with other areas of bushland	Close / well connected. All structural layers connected on all sides	Close / well connected. Most structural layers connected some sides	Isolated / not well connected.
Native fauna populations	All / most fauna species still present in similar numbers.	40 – 60% of fauna species still present	Many / most fauna species no longer present and/or reduced in number.

Guidelines to assist in the assessment of resilience

Evidence of resilience – natural regeneration

Seedlings	Relevant to species which regenerate via seed. Consider what proportion of species is germinating, compared with the full range of species which might be present in an intact patch of the same ecological community. Consider whether the seedlings represent: • Only a sub-set, coming up from the canopy & soil seedbanks (in situ resilience)? A few species continue to / are favoured by new disturbance regimes, while most may be being inhibited. • Species coming from off-site (migratory resilience)?
Seedlings of native species which need more or less original soils to germinate	Differs from above point in that the presence of these species indicates an original soil is present, hence a seedbank (containing propagules of more species) may also be present. Recognising such species takes some experience.
Stolons spreading across the ground	Relevant to stoloniferous species.
New shoots from under-ground parts	Relevant to species which regenerate via resprouting from underground parts (rhizomes, bulbs, tubers, corms, lignotubers), eg. *Lepidosperma spp., Hypolaena fastigiata.*
New shoots from above ground stems	This is called epicormic growth. New shoots often come out from buds under bark after fire in eg. Eucalypts.

NB: Natural regeneration after soil disturbance may be slow. It may be appropriate to wait 2 or more years after a disturbance (e.g. weed clearing, fire) before determining site resilience in order to make an informed decision regarding the sites management requirements such as applying revegetation techniques, e.g. planting.

Signs of resilience

Signs of potential resilience – including if no native vegetation is present:

- Original landform
- Original soil profile
- Rock outcrops
- Steep slopes

Flowering	must occur for seeds (i.e. next generation) to be produced. BUT pollination must also happen. This may not occur if the relevant pollinator is absent.
Fruiting	means pollination has occurred BUT little or no seed may be produced.
Seed set	means seed is being produced, BUT the seed must also be viable. This may not be the case for very small populations of certain species.
Species spreading slowly by rhizome (rarely germinating from seed)	e.g. many Restionaceae and Cyperaceae. Their presence (assuming they haven't been planted) indicates that the soil level around the plant is likely to be original, hence the soil seedbank may still be present. If the soil had been highly or frequently disturbed, these species are likely to have been lost.
Species which don't disperse their seed very far	e.g. many Proteaceae species. The plants are present because they were originally here (assuming they haven't been planted), hence the soil seedbank may still be present. BEWARE: More and more local native species have been grown and planted in / near bushland – distinguishing between remnant and planted is becoming increasingly difficult.
Vegetation structure	If the different vegetation layers of the bushland resemble what might be seen in a pristine patch of the same ecological community, then this indicates that natural processes have continued. Layers may include: canopy trees, mid-storey shrubs, groundcover herbs and grasses. Consider the density of, and number of species in, each layer.
Species diversity	If the richness (No. of species) and abundance (No. of individuals of each species) is more or less what might be seen in a pristine patch of the same ecological community, then this indicates natural regeneration is / has still been occurring.
Age diversity	If the individuals of each native species present have a range of ages, this indicates natural regeneration is / has still been occurring.
Remnant canopy	The soil level, at least around the base of the canopy plant, is likely to be original, hence the soil seedbank may still be present.

APPENDIX 2

METHODOLOGY FOR THE ASSESSMENT OF THREATS TO BUSHLAND

Each site has been assessed for internal and external threats, or site impacts. Addressing the symptoms of sites with a high level of threats is less economic than maintaining the integrity of areas with low level threats. Areas with *high value* and *high threat* should be identified for works that address external issues such as Council's Water Sensitive Urban Design projects (which have a separate funding stream).

An assessment of each of the identified threats below within each reserve facilitates the threat ranking for each reserve (20,15, 10, 5, 0)

THREATS / SITE IMPACTS		Low	Medium	High
		20 ◆——————————◆ 0		
External threats	Catchment / stormwater impacts	primarily conservation	mixed: open space / urban	highly urbanised / intensive land use
	External water management	not needed	managed	unmanaged
	Neighbouring land use	conservation	park / low density urban	high density urban / industrial
	Encroachment / dumping	none	minimal impact	serious issue
	Informal tracks	None	Few existing and stabilised	Many, new tracks being created
Internal threats	Reserve management priorities	conservation	conservation and recreation	Recreation / other
	Existing easements	None	Covering a small area of the reserve	Covering a significant area of the reserve
	Incompatible land use (e.g. active recreation, dogs, horse riding)	none	minimum impact can be resolved	ongoing use causing management problems
	Weed seriousness	low impact species	invasive	noxious
	Weed cover	<10%	10- 50%	>60%
	Predator Index	Evidence of 0 - 1 introduced species	Evidence of moderate - 2 to 3 introduced species	Evidence of all introduced predators (cats, dogs, foxes, introduced rats, rabbits)

APPENDIX 3

VERSION CHANGES: UPDATES FROM PREVIOUS METHODOLOGIES

Overall, mainly minor descriptive and formatting changes have been made to the introductory summary of the document. ***As of V1.3, none of the mentioned changes would alter or impact the assessment scoring of the matrix.***

VERSION	DATE / TRIM	CHANGES
V1.1	**July 2015 to June 2017** 2015/220114	**Overview:** Original Document.
V1.2	**July 2017 to June 2019** 2017/123325	**Overview:** There are only minor formatting and wording changes made to the Introductory summary of the methodology. The Bushland Reserves PoM purpose and process background brief was removed (pages 1-2). Only two minor alterations to the specific methodology section are noted: Formatting of the Summary Ratings Table; and the Removal of mention of vulnerable ecological communities within the Rating Assessment Table. ***None of the mentioned changes would alter or impact the scoring of the matrix.*** **Changes:** **1. Introduction:** 1.1 - **Removed;** Entire background brief on the Bushland Reserves Plan of Management describing the process & purpose of the PoM (pages 1-2). 1.2 - Minor structural & formatting Changes to Introductory Summary. 1.3 - **Removed;** number (previously *'119'* in Version 1.1) of Bushland Reserves that have been rated. 1.4 - **Removed;** *"Specific management areas within 5 of Council's bushland reserves (Ku-ring-gai Creek, Cowan Creek, Old She Oak, Lovers Jump Creek and Blackbutt Creek) were assessed due to variations between values and management."* **2. Summary of Ratings Table:** 2.1 - Formatting of Table. Inversion of rows ('High Value – Low Threat' now on top row) given 1st Priority. 2.2 - Formatting "Priority For" sections altered to combine 1st & 2nd Priority cell rows into a single table cell, where there is now no defined difference between 1st & 2nd Priority descriptors. **3. Rating Assessment Table – Matrix Criteria:** 3.1 - Level of Federal Significance: **Removed** *"*Note-no vulnerable ecological communities are currently listed within the LGA but may change in the future?"* 3.2 - Level of State Significance: **Removed** *"*Note-no vulnerable ecological communities are currently listed within the LGA but may change in the future?"*

Version 1.3: 2019/313923

V1.3	**July 2019 to June 2021** 2019/313923	**Overview:** There are only minor formatting and wording changes made to the Introductory summary of the methodology, largely reverting to the structure and format of the 2015-2017 document (Version 1.1). Only two minor alterations (reverted to Version 1.1) to the specific methodology section are noted: Formatting of the Summary Ratings Table; and the addition of mention of vulnerable ecological communities within the Rating Assessment Table. A Version Changes table (Appendix 3) was added to track document update history. ***None of the mentioned changes would alter or impact the scoring of the matrix.*** **Changes:** **1. Introduction:** 1.1 - Minor structural & formatting Changes to Introductory Summary. 1.2 - **Added;** number *('122')* of Bushland Reserves have been rated. As per structure of 2015-2017 document (Version 1.1). *1.3* - **Added;** *"Two of these reserves, Ku-ring-gai Wildflower Gardens and Cowan Creek Reserve, have been divided into two sites which were each assessed separately. These splits reflect a distinction in site characteristics and management requirements."* **2. Summary of Ratings Table: *Reverted to Version 1.1*** 2.1 - Formatting of Table. Inversion of rows reverted back to original formatting and structure of 2015-2017 document (Version 1.1). ('High Value – High Threat' now on top row) adjoins "2nd Priority". 2.2 - Formatting "Priority For" sections reverted back to original formatting and structure of 2015-2017 document (Version 1.1) altered to separate 1st & 2nd Priority cell into two cell rows, where there is now a defined difference between 1st & 2nd Priority descriptors. **3. Rating Assessment Table – Matrix Criteria: *Reverted to Version 1.1*** 3.1 - Level of Federal Significance: **Added** *"*Note-no vulnerable ecological communities are currently listed within the LGA but may change in the future?"* As per 2015-2017 document (Version 1.1). 3.2 - Level of State Significance: **Added** *"*Note-no vulnerable ecological communities are currently listed within the LGA but may change in the future?"* As per 2015-2017 document (Version 1.1). **4. Added: /updated to uniform heading for document across all versions.** 4.1 - Includes Updated heading to Version 1.1, 1.2, & 1.3. *Cont***.**

		5. Added: Version Changes table to the appendix (Appendix 3). 5.1 - Document version history table added to track document changes (including previous version 1.1, & 1.2). 5.2 - **Added**; Footnote to documents (including previous version 1.1, & 1.2) linking version number & Document Link (Content Manager/TRIM). 5.3 - **Added**; Reference to Appendix 3 (Document Version History) included at end of introductory summary (including previous version 1.1, & 1.2).