

Field of Mars Reserve Draft Plan of Management

Management Issues and Action Plans

For Stage 2 Community Consultation (April 2021)

Introduction

This section outlines the actions required to effectively and efficiently manage Field of Mars Reserve (“the Reserve”) to implement the objectives set out above.

This Plan of Management expressly authorises those actions and initiatives with the Field of Mars Reserve Masterplan where such matters are not directly referenced in the below Action Plans.

Action Plan tables

The following Action Tables present a variety of management actions that will guide the management of Field of Mars Reserve over a ten year period from the adoption of this Plan of Management.

Management Actions are presented using the five key management directions discussed earlier in this Plan of Management, as listed below:

- Access, Recreational Use and Facilities
- Biodiversity / Environmental Sustainability
- Management and Maintenance
- Community Engagement and Involvement
- Leases and Licences

Within each of these broad management directions actions are then grouped by management issue, associated Objectives / target, relevant management action and performance measures.

Heading	Explanation
Management Issue	Broad management issue to be addressed
Objectives targets /	Objectives and targets of the Plan of Management in regard to the land (as per Clause 36 of the <i>Local Government Act, 1993</i>) in order to achieve the vision / direction and objectives for Field of Mars Reserve. Objectives are consistent with the core objectives for the relevant categories within the <i>Local Government Act, 1993</i> .
Action	Practical actions and tasks proposed to achieve the Plan’s objectives and performance targets (as per Clause 36 (3c) of the <i>Local Government Act, 1993</i>).
Performance measure	Statement of how Council will assess its performance in delivering against the Plan’s objectives and performance targets (as per Clause 36 (3d) of the <i>Local Government Act, 1993</i>).

<p>Priority</p>	<p>The priority assigned to each Action:</p> <p>High (H) - Essential to achievement of management objectives, or where there is potential for the public to be exposed to an unacceptable level of risk, or there is potential for a serious threat to Reserve values or the environment and warranting funding consideration until achieved. Typically implemented within 2-5 years from adoption of the Plan.</p> <p>Medium (M) - These actions are desirable to enhance achievement of management objectives, or to address issues that meet a significant community need, or to improve Reserve management outcomes and ideally should be implemented within the life of this Plan. Typically implemented within 4 – 7 years from adoption of the Plan.</p> <p>Low (L) - These actions are useful for the overall management of an area or address issues that have longer-term impacts (such as meeting less urgent community needs or improving inefficient services) and should be undertaken if resources permit. Implemented within 7 – 10 years from adoption of the Plan.</p> <p>Ongoing (O) - the action in question will apply or continue throughout the management of an area and/or the life of this Plan.</p> <p>Note however, that the priority assigned to actions should not mitigate against earlier implementation should the opportunity arise (for example, through specific funding grants / streams or as other opportunities arise.)</p>
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Access, Recreational Use and Facilities

Management Issue	Objectives / Targets	Actions	Performance Measure	Priority
Pedestrian Access	Provide safe pedestrian access to the Reserve.	Retain and strengthen all existing pedestrian entry points. Implement entry point improvements as per the Masterplan.	Entry points retained, strengthened and improved.	O
		Improve entry signage. Signs to be uniform, consistent style with Council's standard and located in a prominent position at each entry point that does not impede access.	New entry signage developed and installed.	H
		Entry point signs should look to include: <ul style="list-style-type: none"> ➤ Indigenous welcome and acknowledgement; ➤ visitor orientation and Reserve recreational use information; and ➤ outline permitted and prohibited activities. 		H
		Improve the visitor entry experience by upgrading entry point track heads with paving, steps and track improvements, as appropriate.	Visitor entry upgrades implemented and maintained as appropriate.	M
		Provide secure bicycle parking racks at entry points located near regional cycle routes.	Bicycle parking racks installed.	M
		Investigate opportunities to improve visitor safety and walking track connectivity at the following locations: <ul style="list-style-type: none"> ➤ Pittwater Road between Field of Mars Reserve and Buffalo Creek Reserve (managed by Hunters Hill Council) and linkages to Lane Cove River National Park; ➤ Cressy Road near entry 6 (Pidging Rd) and entry 7 (Wellington Rd) and linkages to Burrows Park and Ryde Park; and ➤ Cressy Road near entry 8 (old fire trail) and entry 9 (Cressy Rd). 	Improved safety and track connectivity.	M

Management Issue	Objectives / Targets	Actions	Performance Measure	Priority
Vehicle Access and Parking	Provision of car park for park users. Environmental protection of the Reserve via controlled vehicle access and movements into and within the Reserve.	Facilitate car parking for park users at the Reserve, via the main car park (entry 1 - Pittwater Rd) during day light hours. Overnight parking and camping onsite is prohibited.	Parking provided for park users in main car park. Car park gate locked daily at sunset and unlock for day light hours.	O
		Existing vehicle gate locations to be retained to restrict unauthorised vehicle entry into the Reserve. Review access control measures and formalise site access arrangements for authorised vehicles.	Vehicle gates locked. Vehicle access is managed appropriately.	O
		Facilitate safe vehicle movement of authorised vehicles into the Reserve as required (e.g. for maintenance and emergency purposes).	Vehicle access and operations is managed appropriately.	O
		Facilitate safe movement of buses and students for educational purposes (entry 1 - Pittwater Rd) for bus drop off/pick up and turning.	Bus access and operations is managed appropriately.	O
		Investigate the provision of an off-site bus layover area in proximity to the Reserve.		H
		Future internal access way upgrades to use a consistent finish, sensitively consider the adjoining ecological constraints and impacts; as well as accessibility and safety needs.	Internal access way upgraded and maintained appropriately.	M
		Improve maintenance access for authorised vehicles at entry 12 (Moncrieff Dr) and entry 14 (Buffalo Creek) as per the Masterplan. Upgrade the vehicle culvert crossing of Strangers Creek providing access to the western open space zone.	Maintenance access upgraded and maintained appropriately.	H
		Strengthen entry and connectivity to the Reserve from entries 2 – 14 to encourage pedestrian access to the site (without vehicles) and/or encourage the use of alternative parking options, rather than just than the main car park (entry 1 – Pittwater Rd).	Decreased reliance on the main car park and increased use of alternative site entries.	H
		Provide bicycle racks at entries near regional cycle routes to encourage the use of alternative transport to site. No bicycles permitted within the Reserve.	Decreased reliance on the main car park and increased use of alternative transport.	H

Management Issue	Objectives / Targets	Actions	Performance Measure	Priority
Accessibility	Facilitate access within the Reserve for people with specific and/or mobility needs	Provide accessible parking in main car park (entry 1 – Pittwater Rd).	Accessible parking provided.	O
		Provide accessible path connection between main car park, eastern open space zone, internal access way, Visitors Centre / Amenities Building, Education Centre, Boardwalk loop and western open space zone.	Accessible paths and connections implemented and maintained appropriately.	H
		Provide accessible design principles for picnic area and Visitors Centre / Amenities Building.	Accessible picnic area implemented, and upgrade Visitors Centre / Amenities Building to DDA compliance.	H
Reserve user / visitor experience	Enhanced Reserve user and visitor experience and recreational opportunities	<p>Improve the Reserve as per the Masterplan including:</p> <ul style="list-style-type: none"> ➤ Accessible parking; ➤ Provision of bicycle racks at entries near regional cycle routes; ➤ Improve the visitor arrival experience at the main site entry (entry 1 - Pittwater Road) by the use of definition endemic plantings and improved signage; ➤ Improve walking path / track network, as required; and ➤ Ensure Safety in Design principles are followed to ensure visitor safety. 	<p>Staged implementation of the Masterplan and maintained appropriately.</p> <p>Improved visitor experience as determined by observation and qualitative visitor surveys.</p>	H/O
Visitor Centre / Amenities Building	Provide community environmental education opportunities and provide access to public toilets onsite.	<p>Future review to give consideration to the condition of the building to ensure that it is fit for purpose and improved functionality of the building for increased community environmental education purposes. The review will consider:</p> <ul style="list-style-type: none"> ➤ measures to encourage increased visitor awareness and use of the building; ➤ internal layout and use; ➤ site / land stability; ➤ flood mitigation; ➤ building condition and maintenance; and ➤ Future environmental constraints and resilience in new builds (e.g. bushfire impacts). 	Review and improve functionality and use of building.	L

Management Issue	Objectives / Targets	Actions	Performance Measure	Priority
		Provide access to public toilet during day light hours.	Access provided, upgraded and managed appropriately.	O
		Provide DDA compliant access to Visitors Centre and public toilets.		H
Lighting	Restrict lighting and reduce lighting spill within the Reserve.	Reduce lighting in the Reserve. Implement measure to restrict lighting spill and the impacts on nocturnal wildlife, diurnal wildlife and fauna habitat.	Reduce lighting and manage appropriately.	O
		Lighting from current facilities and/or proposals for new or replacement lighting subject to environmental impact assessment.		O
Bush Walking Tracks	The location, design, standard of construction, and maintenance of walking tracks will minimise direct or indirect impact.	All formal bush walking tracks within the Reserve will be managed as Grade 2 or Grade 3 walking tracks as defined in the <i>Australian Walking Track Grading System</i> . (The primary differentiator between Grade 2 and Grade 3 is the prevailing slope rather than the standard or presence of built structures / track improvements.)	Upgrade bush walking tracks and manage appropriately.	O

Management Issue	Objectives / Targets	Actions	Performance Measure	Priority
		<p>Implement the Masterplan bushwalking track initiatives, including:</p> <ul style="list-style-type: none"> ➤ Provide path to accessible standard between car park, eastern open space zone and Boardwalk Loop. ➤ Upgrade the Boardwalk Loop to accessible standard; ➤ Provide connection between the Boardwalk Loop and the western open space zone to accessible standard; ➤ Provision of a new path linking entry 3 (Westminster Rd) to the Boardwalk Loop. ➤ Upgrade the walking track from entry point 4 (Monash Rd) to the Boardwalk Loop; ➤ Provision of access link supported by wayfinding signs between entry 3 (Westminster Rd), entry 4 (Monash Rd) and entry 5 (Higginbotham Rd) utilising the Asset Protection Zone to link to the broader waking track network. ➤ Close and rehabilitate / regenerate the short dead-end walking track from entry 6 (Pidding Rd) to Buffalo Creek; ➤ Provision of access link supported by wayfinding signs between entry 9 (Cressy Rd), entry 10 (Kellaway St) and entry 11 (Finch Ave 1) utilising the Asset Protection Zone to link to the broader waking track network; ➤ Formalise the existing informal track from entry 11 (Finch Ave 1) to Strangers Creek and the Warada Track; ➤ Upgrade the eastern section of the Warada track providing connection to the western open space zone. ➤ Provision of access link supported by wayfinding signs between entry 12 (Finch Ave 2) and entry 13 (Moncrieff Dr) utilising the Asset Protection Zone to link to the broader waking track network. 	<p>Walking Track initiatives progressively implemented as per the Masterplan and maintained appropriately.</p>	H/M

Management Issue	Objectives / Targets	Actions	Performance Measure	Priority
		Undertake an audit of the existing walking tracks in the Reserve to determine track condition, associated impacts and recommended track improvement works consistent with Grade 2 or 3 walking track standard. Incorporate audit findings on Council's Geographic Information System (GIS) and Asset Management System (AMS).	Audit completed by 2021 for future reference and uploaded to GIS and AMS.	H
		Monitor use of tracks, activities within the Reserve and obtain statistics on community use levels. Consider the use of track counters.	Usage monitored and statistics obtained.	O
		Based on outcomes of the audit, track maintenance, upgrades and improvements will be undertaken to achieve Grade 2 or 3 walking track standard.	Upgrade and improve tracks for safe and sustainable use.	H/M
		Walking tracks to be maintained through a programmed system of monitoring/inspections and maintenance, supported by responsive maintenance works as required. All maintenance, preventative and other works will be documented.	Authorised walking tracks are identified in SLA's and operational maintenance programs for regular inspections and maintenance for safe and sustainable use.	O
		Identify, monitor and close unauthorised / informal or newly formed tracks to ensure the possibility of further damage and fragmentation of the area is reduced and areas can rehabilitate.	Unauthorised tracks are identified, closed and active rehabilitation is developed.	O
		Promote bush walking as an opportunity for the local community to experience the natural environment as part of a healthy lifestyle.	Promotional information developed.	O
		Provide an environmental education and guided walks program for the local community that introduces visitors to the Reserve and promotes its natural values.	Number of educational activities and walks delivered.	O

Management Issue	Objectives / Targets	Actions	Performance Measure	Priority
		Dog walking (on leash or off leash), horse riding, cycling (including mountain bike riding), motor cycle riding, scooters and other motorised devices (e.g. drones and remote control cars/planes) are not permitted on walking tracks and is not permitted elsewhere within the Reserve .	Provide education on prohibited activities. Monitor the incidence of prohibited activities within the Reserve and implement compliance measures.	O
Other Recreational Facilities	Provide recreational facilities and structures (such as signage and shelter structures) that complement the Reserve's values and biodiversity conservation objectives and support public recreation.	Recreation facilities within the Reserve will provide opportunities for public enjoyment and appreciation and will not facilitate high impact, intrusive activities – for example, activities negatively impacting or scarring an area site, activities that modify the natural landscape and activities that destabilise or significantly increase potential for erosion impacts.	Impacts on the Reserve from recreation facilities are minimised.	O
		All site improvement works or major maintenance projects to be assessed to determine impact on conservation values of the Reserve, will be designed to minimise impacts on the Reserve and be subject to appropriate environmental planning and approval procedures.	Site improvement works and major maintenance projects assessed prior to works.	O

Management Issue	Objectives / Targets	Actions	Performance Measure	Priority
		Recreational facility detailed design must address the following matters: <ul style="list-style-type: none"> ➤ ecological sustainability of the site and reversibility; ➤ Impacts on habitat and habitat value / suitability for species use; ➤ the protection of identified values; ➤ does not contribute to fragmentation of bushland areas; ➤ demonstrate a clear connection with the Reserve natural setting; ➤ public accessibility and equity (where applicable); ➤ proposed construction materials and techniques; ➤ aesthetic impacts, both to and from the Reserve; ➤ site amenity and public and staff safety; ➤ pollution impacts and risks; ➤ impact amelioration and remediation measures; and ➤ compliance with Planning for Bushfire Protection standard through design. 	commencing and monitored during delivery.	
		Design and construct facilities that incorporate sustainable design and function and compliance with DDA, BCA, and applicable Australian Standards.	Ancillary structures consider and incorporate sustainable design, DDA, BCA and applicable Australian Standards.	O
		Active sporting facilities will not be provided in the Reserve.	No sporting facilities located in the Reserve.	O

Biodiversity / Environmental Sustainability

Management Issue	Objectives / Targets	Actions	Performance Measure	Priority
Conservation of Biodiversity	Ensure availability for connectivity for fauna and species protection long term is not compromised through development.	Look for opportunities to expand patch sizes, reduce edge effects, improve the quality of vegetation, protect existing bushland areas and the native animal populations they contain, and enhance connection to other bushland areas.	Number of areas providing supplementary planting that strengthen existing bushland and protection of fauna.	O
Native Vegetation Management	Protect vegetation communities and native flora species. Maintain and enhance natural systems, vegetation communities, biodiversity and habitats.	Manage the Reserve to protect and enhance the natural environment, habitats and biodiversity values as well as to contribute to aesthetic and scenic appeal.	No long-term reduction in, ecological condition of the Reserve – based on survey and monitoring.	O
		Protecting the existing extensive areas of native vegetation and minimising bushland disturbances (to the extent as consistent with other actions identified in this Plan) will be dominant “passive” management measures employed to maintain native flora, vegetation communities and habitat values across most of the Reserve.	Ecological condition of the Reserve is maintained or enhanced – based on survey, monitoring and observation.	O
		Bush regeneration, revegetation and weed control will continue to be the major “active” management measures used to maintain and enhance native flora, vegetation community and habitat values of the Reserve.		O
		Stormwater management, sediment-erosion control, fire management and neighbour education/awareness are supporting “active” management measures.		O
		Undertake targeted surveys to clarify the location and extent of known Threatened Ecological Communities, and threatened flora species within the Reserve, including an assessment of condition and threats.	The extent, occurrence and condition of Threatened Ecological Communities and	H

Management Issue	Objectives / Targets	Actions	Performance Measure	Priority
		Undertake special management measures as/where required to protect and conserve Threatened Ecological Communities other vegetation communities of conservation significance and threatened or significant native flora species – including relevant measures set out in any applicable Approved Recovery Plans.	listed threatened species is maintained or enhanced – based on survey, monitoring and observation.	H
		Undertake or facilitate periodic flora survey and monitoring within the Reserve, according to a systematic and structured programme to provide long-term and comparable data.	Increased knowledge of native vegetation communities, flora and habitats.	L
		Develop a policy to prevent/minimise the introduction of foreign pathogens, diseases and other material from entering the Reserve, e.g., mulch, soils and plant material. Minimise the risk of noxious weed spread/introduction, introduction of pathogens such as Phytophthora.	Develop policy and manage appropriately.	M
		Ensure grass mowing / slashing within the four Open Space Zones does not result in the incremental expansion of these areas into surrounding bushland (and if necessary, physically define, using low-key measures such as placed logs or posts, the limits of slashed / mown grass areas).	Delineation measures in place to restrict expansion into bushland.	O
		Ensure a consistent approach to management and construction activities by Council within the Reserve. Engage and educate staff, contractors and other agencies on environmentally sensitive areas and mitigation measures aimed at minimising loss or negative impact on environmentally sensitive areas.	Number of capital and non-capital works projects in or adjoining the Reserve that deliver positive environmental outcomes	O
Fauna management	To protect native fauna species and their habitats.	Protect / maintain habitat through protecting the existing areas of native vegetation and minimising bushland disturbances and fragmentation.	Diversity and abundance of native wildlife is maintained or enhanced– based on survey, monitoring and observation.	O

Management Issue	Objectives / Targets	Actions	Performance Measure	Priority
	To support an increase in the diversity, abundance and population resilience of native fauna.	Undertake special management measures, as / where required to protect and conserve threatened or significant native fauna species – including relevant measures set out in any applicable Approved Recovery Plans.	Native fauna species or populations listed as threatened, or of regional conservation significance, are maintained or enhanced – based on survey, monitoring and observation.	H
		Through site auditing and investigation, identify key threatening processes for priority sites and build a program to ensure protection of these e.g. hollows in areas of key habitat.	Retention of existing critical habitat	H
		Explore opportunities to enhance habitat for wildlife, by providing sufficient vegetation cover and niche habitats. This may also include the protection of nest trees, provision of nest boxes or other habitat “enhancements”, special fire management or protection measures, prioritising bush regeneration or revegetation efforts, and limitations on visitor access and use if warranted.	Habitat enhancement measures identified and implemented annually.	O
		Undertake or facilitate targeted surveys of threatened or significant native fauna species, as/when required, to support their conservation management.	Increased knowledge of native wildlife within the Reserve.	M
		Undertake or facilitate periodic fauna survey and monitoring within the Reserve, according to a systematic and structured programme to provide long-term and comparable data.		L
		Maintain the Reserve’s status as a designated Wildlife Refuge.	Wildlife Refuge designation in force.	O

Management Issue	Objectives / Targets	Actions	Performance Measure	Priority
Regeneration and restoration	<p>Protect, restore and regenerate bushland areas.</p> <p>Bushland regeneration efforts are based on a planned and monitored strategy to maximise conservation outcomes in the long term.</p>	<p>Expand the bush regeneration / restoration program for the Reserve. Continue the rolling programme of bush regeneration works within the Reserve, with adequate on-going commitments to follow-up works at sites (both existing sites and future sites) to ensure effectiveness. Priorities for regeneration and restoration efforts will include:</p> <ul style="list-style-type: none"> ➤ priority weeds, and environmental weeds with a high potential for spread; ➤ vegetation communities of high conservation significance; ➤ habitats/populations of native flora and fauna species of high conservation significance; ➤ disturbed sites and existing weed infestations; ➤ areas vulnerable to weed invasion/spread (such as creeklines, roadsides and tracksides); and ➤ Reserve boundaries. 	Bush regeneration programme in place and regularly reviewed.	H
		Review Council's bush regeneration program and associated contracts to reflect priorities determined in bushland and site Management strategies.	Reduction in the extent of degraded bushland – based on monitoring, observation and bush regeneration team reporting.	H
		Regeneration sites are regularly assessed to determine if aims, outcomes and regeneration techniques are appropriate, efficient and effective in delivering desired outcomes.		O
		Consider the habitat potential of weeds, especially for small birds, before undertaking any weed control / removal works.	Fauna habitat value of weed infestation is assessed prior to implementation of weed control measures.	O
		A monitoring programme will be prepared and implemented targeting areas vulnerable to the introduction and spread of weeds – including watercourses, boundaries and vehicle access trails and walking tracks.	Reduced incidence of new weed infestations / introductions within the Reserve – based on monitoring, observation and bush regeneration team reporting.	M

Management Issue	Objectives / Targets	Actions	Performance Measure	Priority
	Local provenance species used in regeneration projects.	Revegetation and supplementary bush regeneration plantings will prioritise the use of local-provenance endemic species, preferably grown from seeds or vegetative material sourced locally from the equivalent vegetation community.	Number of regeneration planting projects using local provenance endemic species.	O
	Increased community awareness of the value of flora and fauna preservation and habitat provision.	Continue to produce educational material to inform the community about flora and fauna preservation and habitat provision in the surrounding area.	Promotional material produced and distributed to community.	M
	Increased community awareness of the value of weed control.	Continue to produce educational material to inform the community about invasive weeds.	Promotional material produced and distributed to community.	M
Contamination Management	Mitigate risks associated with potential contamination and/or acid sulphate soils in the Reserve.	Consider and assess any potential onsite contamination and/or acid sulphate soils when planning and undertaking works onsite.	Implement mitigation measures as required and managed as appropriate.	O
		Ensure a consistent approach to management, construction and/or soil disturbance activities within the Reserve. Engage and educate staff, volunteers, contractors and other agencies on potential risks and mitigation measures.		O
Land Management	Expand the Reserve and increase Natural Areas.	Investigate opportunities to increase the size of the Reserve and achieve a net increase of Natural Areas in the City of Ryde.	Investigate opportunities and implement where feasible.	O
Boundary Management	Encroachments for private use of the Reserve will not be permitted.	Review, survey (where required) and identify encroachments on the Reserve boundaries with adjoining private landholdings.	Land title, land register and maps are reviewed and up to date.	L
		Maintain an inspection regime to identify, monitor and subsequently remove encroachments into the Reserve. Notify the landowner where encroachments occur that City of Ryde is aware of the encroachment and will take action for removal of same.	Encroachments / unauthorised access detected and removed.	O
		Continue community engagement / information on avoiding encroachments and reporting incidences of encroachment.	Encroachments included in Council community engagement mechanisms.	L
	Native vegetation in the Reserve is not impacted by neighbours.	All requests for tree pruning or removal on public land to be assessed by Council's Tree Management Officers and must be approved by and undertaken by Council.	Incidence of native vegetation damage at Field of	O

Management Issue	Objectives / Targets	Actions	Performance Measure	Priority
		When unauthorised actions occur to native trees, Council shall implement enforcement procedures, consistent with DCP 2014 Part 9.5 Tree Preservation.	Mars Reserve / residential boundary.	O
	Promotion of the General Biosecurity Duty of neighbouring property owners to manage the impacts of priority weeds in the Reserve.	The City of Ryde Local Priority Weed Management Plan is implemented, program of private property inspections and community education undertaken.	Reduction in the impact of priority weeds on Field of Mars Reserve.	O
Adjoining privately owned land	Management of adjoining lands complements Council's objectives for the Reserve.	Where development occurs to / within bushland adjoining the Reserve, investigate options for conditions of consent to ensure management practices do not compromise adjoining the Reserve (such as weed management programs, reporting to council to demonstrate management or mitigation measures or clauses within Leases/ Licensing).	Adjoining land owners and managers are informed of sensitivity of the Reserve and adequately manage areas.	H
Pest and domestic animal management	Control of pest animals (such as foxes, feral cats and rabbits) in the Reserve.	Participate in co-ordinated regional pest animal control programmes, as well as undertaking Council initiated control programmes. Foxes, feral cats and rabbits will be priority pest species for control efforts.	Long term reduction in pest species populations.	O
		Undertake periodic, and opportunistic, monitoring of pest animal populations to inform and target control efforts.	Observations of numbers of pest species recorded via complaints or Council programs / observations to be included in Feral Scan.	M
	Manage domestic animals and their impacts.	Domestic dogs are not permitted within the Reserve (on leash or off leash) at any time.	Reduction in number of dogs in the Reserve based on survey and observations. Reduced incidence of community complaints of dogs in the Reserve.	M

Management Issue	Objectives / Targets	Actions	Performance Measure	Priority
		Domestic cats are not permitted within the Reserve at any time.	Reduction in number of cats in the Reserve based on survey and observations. Reduced incidence of community complaints of cats in the Reserve.	M
		All other domestic animals/pets, including horses, are prohibited from the Reserve.	Reduction in number of domestic animals/pets in the Reserve based on survey and observations. Reduced incidence of community complaints of domestic animals/pets in the Reserve.	H
	Manage European Honey bees and their impacts.	Manage competition from European honey bees, <i>Apis mellifera</i> by preventing establishment of feral honey bees in the Reserve and not approving the placement of European honey bee hives on public land. Remove feral honey bee hives from tree hollows and nesting boxes where they compete with native wildlife for habitat.	Prevention of the establishment of European honey bee populations in the Reserve.	O
Fire Management	Manage risks and impacts of bushfire on life, property and the environment.	Implement the actions within the endorsed Bush Fire Risk Management Plan (BFRMP and subsequent updates) incorporating Hunters Hill, Lane Cove, Parramatta and Ryde Local Government Areas. Co-operate with other agencies, such as NSW Rural Fire Service and Fire and Rescue NSW in the management and control of fire within the Reserve – including through hazard reduction burns, clearing / maintaining asset protection zones, and neighbour education / preparedness.	Bush Fire Risk Management Plan (BFRMP) is the principal document guiding fire management in the Reserve.	H
		City of Ryde will participate in reviews and updates of the Bush Fire Risk Management Plan by the Bush Fire Management Committee.	BFRMP reviewed and updated as necessary.	O
		Undertake Asset Protection Zone (APZ) maintenance and hazard reduction as required to minimising fuel loads especially in adjoining residential areas, as identified in the BFRMP.	Annual lineal metres of APZ managed by Council in the Reserve.	H/O

Management Issue	Objectives / Targets	Actions	Performance Measure	Priority
		Monitor fuel loads in the Reserve and action accordingly. Fuel reduction will be achieved through approved hazard reduction burns in consultation with other agencies, such as NSW Rural Fire Service and Fire and Rescue NSW, and manual fuel removal. The removal of weeds, garden refuse and exotic plant material during bush regeneration works will complement fuel reduction efforts.	Number of fuel reduction activities per annum, as per relevant SLA.	H
		Increase neighbour awareness for on-site property fuel load reduction strategies through educational programs to manage risk to the Reserve and support holistic fuel load minimisation activities.	Number of neighbouring residential dwellings participating in resilience programs addressing fire mitigation.	O
		During Total Fire Ban days consider the closure of the Reserve and cessation of management activities.	The Reserve appropriately managed on TFB days.	M
		Investigate what knowledge exists on Aboriginal traditional fire management practices and where and how this knowledge / information may be best applied.	Consultation with cultural burn practitioners.	M
	Undertake fire management practices that are beneficial to maintaining age, structure and species diversity of native vegetation communities.	Appropriate fire thresholds for native vegetation communities will be established in prescribed burn planning. Where feasible monitor prescribed burn sites to: <ul style="list-style-type: none"> ➤ Identify the fire history record for the Reserve and map prescribed burn extents. ➤ Establish photographic monitoring points for long term comparison of the site in a representative sample of vegetation communities within the Reserve. ➤ Undertake pre burn flora species list using quadrats or transects to determine species and densities. Post burn species lists to be done at statistically and ecologically valid intervals (e.g. 6 months and 1, 2, 3, 5, and 10 years post the fire event). 	Implement appropriate fire management practices in accordance with BFRMP that minimises negative impacts on the Reserve.	M
		Identify watercourse / riparian zone buffers and Threatened Species populations / habitats prior to undertaking prescribed burns and incorporate into burn planning.		H

Management Issue	Objectives / Targets	Actions	Performance Measure	Priority
Management of riparian areas	Protect riparian vegetation to enhance ecological function, reduce erosion and improve water quality.	Ensure works carried out along riparian areas comply with environmental approvals and provisions to ensure sensitive areas are protected and adequately planned for.	Riparian zone ecological condition is maintained or enhanced – based on survey, monitoring and observation.	H
		Manage and enhance riparian zones widths for Buffalo Creek (20m each side) and Strangers Creek (10m each side) through weed control/removal, supplementary planting of endemic species and/or bank stabilisation.		O
Management of endangered estuarine saltmarsh communities	Protect estuarine saltmarsh and enhance ecological function, reduce erosion and improve water quality.	Estuarine Saltmarsh communities in the Reserve will be included in Council's Saltmarsh Management Plan to identify all existing communities, provide recommendations for management and opportunities for expansion.	Saltmarsh Management Plan completed in 2021. Estuarine Saltmarsh is protected and enhanced.	H
		Protect existing endangered saltmarsh communities, identify opportunities to expand saltmarsh and undertake regeneration works to restore saltmarsh.		O
		Utilise protective measures such as delineation to minimise the risk of damage (vehicular or through human recreation) to ensure Council delivers legislative protection outcomes.		H
Stormwater Runoff and Water Quality	Reduction in gross pollutants, and sediment rich stormwater entering the Reserve.	Planning of water quality improvement works will be undertaken at a sub-catchment scale, taking account of known high discharge sites in the catchment of Buffalo Creek and Strangers Creek.	Sub-catchment planning of works.	O
		Discourage where feasible, new stormwater outlets draining into natural areas where alternate storage, reuse and diffuse source options are available.	Number of new development applications actively incorporating WSUD features into stormwater management plans	O
		Investigate and integrate Water Sensitive Urban Design (WSUD) measures, e.g. bioswales in the Asset Protection Zone between the Field of Mars Cemetery and the Reserve to reduce external nutrient impacts on the Reserve.	Reduction in gross pollutants and sediment in receiving watercourses – based on monitoring and observation.	H

Management Issue	Objectives / Targets	Actions	Performance Measure	Priority
		Maintain existing and explore new opportunities to improve water quality through WSUD and gross pollutant capture where possible in the lower and upper catchments impacting the Reserve and aquatic habitat. Investigate WSUD options in Council Coastal Management and Riparian Plans for contributing to improved water quality outcomes for the Reserve.		H
		Maintain gross pollutant traps, trash racks, bioretention basins and sediment ponds within the Reserve in order to retain maximum effectiveness.		H
		Reduce opportunity for stormwater to enter waterways from neighbouring properties through encouragement of on-site retention and reuse in order to minimise flow impacts in creeklines and reduce pollutant loads.	Number of neighbouring projects or development applications actively incorporating WSUD into stormwater management plans.	O
		Establish a neighbour education / promotional programme targeted at minimising diffuse pollutants such as increased seepage from overuse of fertilisers on lawns / gardens and over watering and run off from hard surfaces (such as pools, tennis courts, courtyards etc).		L
		Continue community awareness campaigns for waterway litter and development pollutant impacts from upper catchment through programs such as 'Get the Site Right' private development sediment and erosion campaign and others.	Reduction in gross pollutants and sediment in receiving watercourses – based on monitoring and observation.	O
		Ensure prompt removal of illegally dumped rubbish at the Reserve boundaries and in proximity to Buffalo Creek and Strangers Creek.	Reduction in gross pollutants and sediment in receiving watercourses – based on monitoring and observation.	O
	Protect natural landforms from hazards and high flow events	Monitor existing landforms, natural drainage lines, riparian zones and watercourses to ensure protection and remediation in increasing high flow events leading to potential landslip or bank modification issues.	Buffalo Creek and Strangers Creek are monitored through council waterway programs and active restoration works provided to provide long term stability.	O

Management Issue	Objectives / Targets	Actions	Performance Measure	Priority
	Water Quality Monitoring	Continue to deliver Council's Water Quality Monitoring Program within Buffalo Creek in order to assess water quality change and riparian bank condition.	Ongoing evaluation of water quality data in Buffalo Creek to inform future management programs.	O
		Use the findings of Water Quality Monitoring to identify long term trends in water quality in Buffalo Creek and prepare remedial actions as necessary.		O
	A reduction in residential seepage / run off into the Reserve.	Establish an education / promotional programme targeted at residents adjoining the Reserve aimed at minimising diffuse pollutants such as increased seepage from overuse of fertilisers on lawns / gardens and over watering and run off from pools, tennis courts and other hard surface.	Reduction in seepage and weed infestations adjacent to residential areas.	L
Climate Change / Resilience Planning	Climate change measures and resilience planning in the Reserve.	Investigate opportunities to integrate climate change measures and resilience planning to mitigate future risks in the Reserve.	Investigate, implement future management strategies and integrate in future upgrades if/as appropriate.	O
		Monitor impacts on estuarine habitats from increased stormwater and sea level rise.	Monitor to investigate change in levels, habitat impacts for intervention programs.	O
		Monitor Reserve species (flora and fauna) change through surveying to consider degradation from climate related impacts such as heat stress, lack of fire, stormwater nutrient concentrations for adaptation planning and intervention works.	Record changes to plan for replanting, planning of fire as required to prevent further species loss.	O
		Review fire regimes against fuel loads to work with fire agencies for necessary burns as required to ensure minimisation of permanent species loss or degradation from habitat decline as related to climate change or exposure impacts.	increase burns to reduce fuel loads, stimulate seed banks within species and regenerate diverse species for fauna.	O

Management and Maintenance

Management Issue	Objectives / Targets	Actions	Performance Measure	Priority
Management and maintenance activities	To provide effective and efficient management of the Reserve.	Undertake maintenance and improvements within the Reserve in accordance with this Plan of Management and Masterplan, City of Ryde Service Level Agreements and the adopted Ryde Biodiversity Plan.	SLA KPIs are delivered and works program adhered to as reviewed annually.	O
		Expand Council's Asset Management System to include the Reserve's built assets such as roads/internal access, carpark, Visitor Centre/Amenities Building, picnic shelters, walking tracks, signs, other recreational facilities, water quality infrastructure etc.	Asset Management System incorporates the Reserve's assets.	H
		All user facilities and infrastructure within the Park will be maintained in a safe, serviceable and presentable condition through a programmed system of monitoring, maintenance and replacement – supported by responsive and opportunistic maintenance works, as required.	Facilities safe, available, fit for purpose and presentable.	O
		Develop a risk assessment methodology for the Reserve assets, undertake regular risk assessment of assets and implement actions to mitigate identified critical risks.	Risk management applied to the Reserve's assets.	H
		Continue the formal forum for regular engagement with the Field of Mars Environmental Education Centre (FOMEED) and Ryde Hunters Hill Flora and Fauna Preservation Society (RHHFFPS) to ensure organisational alignment on the conduct and management of their activities and their interface with the Reserve.	Open communication with FOMEED and RHHFFPS, including regular meetings. .	O
		Council encourages the use of the FOMEED is restricted to daylight hours only.	Hours of operation of the FOMEED during daylight hours.	O
		Continue the formal forum for regular engagement with the Field of Mars Cemetery (lands not owned or operated by Council) to ensure organisational alignment on managing cross boundary impacts of the Cemetery's operation.	Reduced impacts on the Reserve from Field of Mars Cemetery.	O
		Install regulatory signage and enforce.	New signage installed.	O

Management Issue	Objectives / Targets	Actions	Performance Measure	Priority
Management of restricted and prohibited activities	Restrict prohibited activities within the Reserve (consistent with the Reserve's designation as a Wildlife Refuge).	Restricted activities within the Reserve include, but is not limited to, dog walking (on leash and off leash), horse riding, cycling (including mountain bike riding), motor cycle riding, scooters and other motorised devices (e.g. drones and remote control cars/planes), overnight parking, camping, use of BBQs or burners and the use of fire arms is strictly prohibited.	Provide education on prohibited activities. Compliance monitored, tracked and compliance measures implemented. Community feedback and reduced annual number of complaints.	O
Areas of cultural significance	Retain and enhance the cultural significance of the area (namely its Aboriginal, aesthetic, archaeological, historical, technical or research or social significance) for past, present or future generations by the active use of conservation methods.	Identify, retain and conserve significant surviving isolated relics and landscape features.	Identify, protect, report and manage areas of cultural and heritage significance appropriately.	O
		Establish protection guidelines for the preservation of identified archaeological relics. This should take into account surrounding bush regeneration works.		O
		Continue to identify any Aboriginal sites found on the Reserve and consult with the Metropolitan Aboriginal Land Council and the National Parks and Wildlife Services. Include in archaeological survey any Aboriginal historic cultural sites and establish protection criteria to prevent their disturbance.		O
		Identify, retain and conserve local heritage items.		O
Waste dumping / Litter	Reduce number of waste dumping and littering incidents.	Monitor the location and frequency of unauthorised activities such as illegal rubbish dumping. A range of adaptive management measures will be implemented according to ongoing and / or escalating illegal rubbish dumping, in order of increasing effort, as follows: <ul style="list-style-type: none"> ➤ Education programs to promote intrinsic values of the Reserve and discourage rubbish dumping. ➤ Installation of prohibition signage at known dumping hot spots. ➤ Increased presence of Council Rangers and/or surveillance activities in hot spot areas. ➤ Prosecution of offenders and publication / promotion of outcomes. 	Reduced number of illegal dumping incidents over time, as recorded by Waste / Compliance Team.	H
		Continue to record dumping locations on Council's GIS.	Understanding of hot spots for dumping.	O

Management Issue	Objectives / Targets	Actions	Performance Measure	Priority
		Provide adequate waste and recycling facilities onsite as appropriate.	Provision and maintenance of waste and recycling bins in select locations in the Reserve..	M
		Clean up litter and rubbish dumping promptly to discourage further incidents.	Community feedback and reduced annual number of complaints.	O
		Implement litter reduction strategies (e.g. filtered water station), encourage low/no waste activities and discourage single use plastics in the Reserve.	Reduced waste and litter in the Reserve.	O
		Continue community engagement / information on litter and illegal dumping of waste and reporting incidences of waste dumping.	Illegal waste dumping included in Council community engagement mechanisms.	L
Funding	Maximise funding for the management and maintenance of the Reserve.	Ensure that within available Council budgets, Council's delivery programs provide and maintain the Reserve to improved standards over time and meet community expectation.	Delivery programs and associated budget prepared annually.	O
		Identify management programs and actions with potential for external grant funding from third parties.	Funds raised from grant applications per annum	O
		Apply for relevant State and Commonwealth grants for the Reserve management and maintenance as grant opportunities allow.		O

Community Engagement and Involvement

Management Issue	Objectives / Targets	Actions	Performance Measure	Priority
Education School	- Provide school environmental education opportunities in the Reserve.	Education facilities within the Reserve will provide school opportunities for enjoyment, learning and appreciation and will not facilitate high impact, intrusive activities – for example, activities negatively impacting or scarring an area site, activities that modify the natural landscape and activities that destabilise or significantly increase potential for erosion impacts.	School environmental education opportunities provided and impacts minimised.	O
		Provide nature exploration opportunities, ensuring these are located outside the extent of the Estuarine Swamp Oak Forest, Saltmarsh and Mangrove Vegetation Communities.		O
		Provision of educational habitat plantings, natural exploration area and facilities made of natural materials for active play, informal seating and teaching circles adjacent to the Environmental Education Centre.		O
Education Community	- Provide community environmental education opportunities in the Reserve	Education facilities within the Reserve will provide community opportunities for public enjoyment, learning and appreciation and will not facilitate high impact, intrusive activities – for example, activities negatively impacting or scarring an area site, activities that modify the natural landscape and activities that destabilise or significantly increase potential for erosion impacts.	Community environmental education opportunities provided and impacts minimised.	O
Information Provision and Interpretation	Increase community awareness of the Reserve's values, permissible recreational uses and management.	Upgrade and standardise orientation and wayfinding signage throughout the Reserve.	New orientation and wayfinding signs installed throughout the Reserve.	H
		Conduct community environmental education programs (e.g. guided bushwalks, bird watching and activities) to enhance community understanding and appreciation of the Reserve and the range of management issues, challenges and Council's management.	Number of education programs conducted.	O

Management Issue	Objectives / Targets	Actions	Performance Measure	Priority
		Upgrade and standardise interpretive signs in the Reserve. Use a consistent style and construction material for new interpretive signs. Potential interpretive themes include: <ul style="list-style-type: none"> ➤ The Reserve's designation as a Wildlife Refuge; ➤ Biodiversity values of the Reserve and its role in the broader bushland network in City of Ryde and surrounds; ➤ Endangered Ecological Communities and their significance; ➤ Natural ecosystems and functions; ➤ Aboriginal and historic heritage values specific to the Reserve; ➤ Human impacts on urban bushland areas; and ➤ Neighbour and visitor responsibilities and recreational use restrictions. 	Interpretive signs within the Reserve upgraded and maintained.	H
		Prepare and update maps as required indicating the location of facilities and opportunities within the Reserve.	Maps prepared and available.	O
		Prepare a community education information and distribute to residents adjoining the Reserve. The community education will incorporate information relating to the value of the Reserve and management approaches including but not limited to encroachments, residential seepage and run off, weeds, domestic animals and fire management.	Prepare community education information and distribute to adjoining residents.	M
		Provide walking track map for the Reserve to encourage and ensure access is defined at established entry points.	Maps prepared and available.	M
Participation in Bushcare	Bushcare volunteers provide effective assistance with management of bushland in the Reserve.	Actively promote Bushcare at public events and through identified Council media and information programs.	Increased participation in Bushcare	O
		Undertake regular reviews of the Bushcare Program to ensure sufficient planning, support, resources, training and supervision is provided in order to adequately undertake activities.	Bushcare program adequately resourced.	H
		Bushcare program activities support biodiversity management priorities this Plan of Management and Masterplan.	Bushcare work programs support biodiversity management priorities.	O

Management Issue	Objectives / Targets	Actions	Performance Measure	Priority
		Provide training to volunteers to ensure skills, knowledge and individual capabilities are appropriate for the Bushcare work program. Ensure training also addresses Work, Health and Safety aspects of Bushcare program activities.	Volunteers receive training.	O
		Conduct regular surveys of Bushcare volunteers or engagement activities to gauge satisfaction with participation in the program and receive suggestions for an enhanced volunteering experience. Use the results to enhance /improve the Bushcare program experience.	Survey leads to enhanced volunteering experience.	M
Advisory Committees	Transparency in the management of the Reserve.	Consult and update the Bushland and Environment Advisory Committee (BEAC) on the Reserve's management programs and priorities, and key initiatives.	Attendance at quarterly BEAC meetings as required and follow up communication as necessary.	O
Planning and design of facilities	Undertake planning and design improvements in consultation with residents and the broader community.	Engage with known users, the community and internal Council stakeholders during the planning, and design of new facilities.	Community feedback on planned new facilities or improvements.	O
	Ecological function is not diminished or reduced through built activities / facilities.	When existing built assets reach life expectancy, review the 'fit for purpose' position of the asset and any need to relocate the asset out of environmentally sensitive areas and/or incorporate resilience and climate change measures as required.	Built asset replacement considers potential relocation out of environmentally sensitive areas and/or incorporate resilience and climate change measures as required.	O
		The Field of Mars Environmental Education Centre will continue to operate as the key mechanism to reach schools and provide information on the Reserve's values, use, management and the broader environmental application.	Number of schools engaged.	o
		Encourage and accommodate the use of the Reserve as an asset for environmental, outdoor and other educational uses – including community-based environmental education projects.	Number of community-based environmental education projects conducted.	O
		Support research activities in relation to the Reserve and its management, with results of research available to Council.	Number of research activities conducted, and results used to better understand the site.	O

Management Issue	Objectives / Targets	Actions	Performance Measure	Priority
		Only educational uses and / or scientific research that do not significantly impact on the Reserve will be permitted. Monitor areas used by educational / research activities to ensure impacts are acceptable.	Number of educational / research projects approved and conducted.	O

Leases and Licences

Management Issue	Objectives / Targets	Actions	Performance Measure	Priority
Leases and Use Agreements	<p>Ensure that use agreements meet legislative requirements, (including biodiversity protection), adhere to planning environmental protection controls, cater for community needs, and are consistent with Council's objectives.</p> <p>Grant leases, licences and other estates in accordance with the <i>Local Government Act 1993</i>, <i>Crown Land Management Act 2016</i> and this Plan of Management.</p>	Expressly authorise Council to enter into leases, licences, permits and other estates for use of the Reserve by the community, individuals, schools and commercial organisations as well as individuals providing facilities and services for public use. .	All licences and use agreements comply with legislation and Council policy.	O
		<p>Assess and grant applications for leases, licences, permits and other estates with consideration to:</p> <ul style="list-style-type: none"> ➤ the core objectives for the relevant Reserve community land category; ➤ designation as a Wildlife Refuge status, ➤ the public interest; ➤ impacts to the land and adjoining land use; ➤ ecological considerations on species from use; and ➤ Council's planning and regulatory requirements. 		O
		<p>This plan expressly authorises the granting of – licences for periods of up to 3 years, temporary licences (up to 12 months duration), and once-off or set (short) duration activity or event permits, and other estates/approvals (excluding leases) – for educational, scientific, community, social, recreational or park management activities (such as fire management or seed collection).</p> <p>Licences and permits will not be granted for activities that:</p> <ul style="list-style-type: none"> ➤ may have a negative impact on bushland areas, endangered ecological communities, threatened species or ecological considerations on species; or ➤ have potential to threaten a species ability to exist or expand within the area proposed for use; or ➤ are inconsistent with, or have unacceptable effects on an area's values; or ➤ exclude or unduly disadvantage other users, or are likely to impair an area's reasonable enjoyment by others; or ➤ place excessive demands on Park management. 		O

Management Issue	Objectives / Targets	Actions	Performance Measure	Priority
		Licences and permits will only be granted for activities that are consistent with the management intent, objectives and authorised uses of the Reserve.		O
		Licences will only be issued for commercial activities where these are: <ul style="list-style-type: none"> ➤ consistent with, or ancillary to, the Community Land categorisation of the proposed location (and any additional reservation purpose); and ➤ do not involve the erection of any building or other substantial structure, or permanent advertising that detracts from the visual qualities of the area. 		O
		Licences and permits will not be granted for activities that are purely commodity or product marketing oriented.		O
		Formalise arrangements with Ryde Hunters Hill Flora and Fauna Preservation Society for non-exclusive use of the Visitors Centre. This agreement will give due consideration to RHHFFPS' long association with the Reserve and the value of the environmental information and education service offered.	Use agreement developed and implemented with RHHFFPS.	H
		Investigate potential establish a memorandum of understanding between Council and the Department of Education for educational opportunities within the Reserve.	Review opportunities and establish feasibility for MOU.	L
	Ensure that leases and use agreements are monitored regularly for compliance with conditions.	Monitor terms and compliance of licences and use agreements.	Compliance with terms and conditions.	O
		Review terms and conditions of licence and use agreements and renew as necessary.	Reviews completed.	O
External Services, Utilities and Easements	Manage the impacts of easements and utilities on the Reserve	Maintain existing and new easements to ensure impacts to ecological values are minimised or mitigated.	Access to easements is retained for utility operators.	O
		Oppose the creation of any additional services or utility installations, or easements, through the Reserve – unless there is an advantage for the Reserve and its management, or an overriding community benefit.	No new utilities or services installation or easements.	L
		Monitor power pole/s and associated vegetation pruning in the Reserve.	Vegetation monitored and pruned as appropriate beneath the power pole/s.	O

Management Issue	Objectives / Targets	Actions	Performance Measure	Priority
		Develop effective and on-going communication protocols with utility providers operating easements through the Reserve, regarding their management requirements / operations and measures to reduce impacts on ecological values – especially in relation to service access, track maintenance, unauthorised or undesirable access, soil erosion, ecological sensitive areas, vegetation clearing, visual impacts and visitor safety. Negotiate access, maintenance and remediation agreements, standards or protocols where possible.	Effective communication protocols in place between utility providers and Council. Reduced impacts arising from easement presence / management.	L