BARTON GULLY MASTERPLAN

FEBRUARY 2021

CITY OF HOLDFAST BAY

Acknowledgement of Country

The City of Holdfast Bay acknowledges the Kaurna People as the traditional owners and custodians of the land. We respect the spiritual relationship with Country that has developed over thousands of years, and the cultural heritage and beliefs that remain important to the Kaurna People today.

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SUMMARY

Barton Gully is one of four designated natural areas in our city. It is a natural space for the community to enjoy, and provides habitat for local wildlife.

Barton Gully is located in Kingston Park between Barton Avenue, Forrest Avenue and Burnham Road (see Figure 1). A small portion of the southern edge of Barton Gully is within the City of Marion. The gully has an area of approximately 1.3 hectares. Managing the gully to ensure sustainable use into the future is a priority for the City of Holdfast Bay. This masterplan has been developed to provide objectives and strategies to manage Barton Gully for the community.

The masterplan for Barton Gully has involved an assessment of opportunities and constraints, together with reviews of the environment, landscape and infrastructure. The recommendations that have been developed from the masterplan process will protect and enhance the local biodiversity, improve access and safety for the community, and improve the amenity and beauty of Barton Gully.

Barton Gully follows an ancient watercourse, providing linkages between the coastal reserve and the beach. The area was significant to the Kaurna People, who would camp in the region, particularly during summer months. After European settlement, the gully has had some native vegetation cleared, but there are still areas with native species, such as the rare groundcover, native soursob, and one area with a small but important patch of remnant vegetation. Efforts by the local community and Council have helped to revegetate the gully, but there is still the opportunity to improve the local biodiversity by removing weeds and planting appropriate local native species.

The gully has some informal and formal trails throughout. This includes a set of stairs in the steeper portion of the gully leading to Burnham Road and the coast enabling access from Barton Avenue to the sea. There is the opportunity to continue to improve some of these trails, linking them to the existing path network and improve access points to the area for the community. This will assist with reducing erosion, improving revegetation efforts, and enhance the visitor experience.

Stormwater harvesting and re-use opportunities have been considered for Barton Gully, however the implementation of any re-use scheme is unlikely to be viable. The recommendations from the masterplan focus on reducing erosion and improving water quality, through appropriate revegetation, bank stability and trail improvements, and some stormwater infrastructure upgrades.

Implementing the masterplan recommendations will increase the appeal of the area and contribute to enhancing the enjoyment that residents and others gain from the gully. This masterplan provides the direction to ensure the sustainable use of Barton Gully for future generations.

ABOUT THE MASTERPLAN

PURPOSE

This document is a high-level plan that sets the objectives and strategies to manage Barton Gully for the community of the City of Holdfast Bay.

VISION

Our vision for Barton Gully is to:

- Protect and enhance local biodiversity
- Provide a natural space for the community to enjoy
- Improve amenity and enhance beauty
- Connect people with nature in different settings
- Encourage appropriate use of the natural space
- Manage stormwater sustainably

MASTERPLAN PROCESS

The masterplan for Barton Gully has involved the assessment of the opportunities and constraints of the area, as well as reviews of the existing environment, landscape, and infrastructure. Recommendations for stormwater management, landscape and vegetation have been developed, and are outlined in this document.

INTEGRATION WITH OTHER STRATEGIES AND PLANS

This masterplan has been considered in conjunction with a number of Council's existing strategies and plans, including:

- Environment Strategy 2020
- Open Space and Public Realm Strategy 2018 - 2030
- Masterplans for Pine Gully and Gilbertson Gully.

Figure 1. Location of Barton Gully.

ABOUT BARTON GULLY

Barton Gully is located on Barton Avenue in Kingston Park. It is a significant natural open space that follows an ancient seasonal watercourse.

The gully is currently used for low-key, unstructured passive recreation, such as walking, and provides an important connection between the urban area and the coast.

Barton Gully is owned by the City of Holdfast Bay.

HISTORY

Prior to European settlement, Barton Gully was a place where the Kaurna People of the Adelaide Plains would frequent and camp during the summer months. The gully would have supported local native wildlife and vegetation that would have provided important food and shelter resources. After Europeans settled in South Australia, clearing of some of the native vegetation occurred. Following a natural watercourse, the gully has been prone to erosion during rainfall, particularly with the removal of native vegetation.

ACTIVITIES UNDERTAKEN

Informal tracks have steadily been replaced by Council with more formal trails and steps in steep areas to encourage appropriate use and reduce erosion. An example of this is the composite fibre and recycled plastic staircase and boardwalk installed by Council in 2012. The boardwalk and staircase have an expected life of over 40 years and will require little maintenance. In addition, two log benches have been installed in the eastern and southern areas of the gully.

The local community has undertaken a significant amount of environmental restoration works in the gully, and several beds of indigenous plants have been established.

Additional revegetation is planned by Council for the gully consistent with this masterplan's recommendations.

Council has undertaken an on-site consultation with the Kaurna Nation and received advice about the proposed works.

Figure 2. Composite fibre and recycled plastic staircase.

Figure 3. Log bench.

Figure 4. Barton Gully revegetation.

OPPORTUNITIES AND CONSTRAINTS

Figure 5. Opportunities and constraints.

KEY

1. Small erosion head progressing upstream of larger bed drop near the stairs. Area covered in kikuyu and difficult to see. Minor erosion protection works required
2. Stormwater outlet from the road. Poor scour protection with some undercutting. Stabilise outlet with rock armouring to tie in with remediation of erosion head
3. Small flow path from pipe outlet. Crosses walking track with a small pipe. Upgrade the culvert beneath the track to reduce flow frequency across the track
4. Small gully but no identified inflow point. Substantial rock armour with minimal vegetation. Rock armouring unnecessary and could be removed and used locally within the reserve
5. Rock-armoured channel. Excessive rock extent with most flows likely to be along the soil/rock interface. Barren sight line up gully with minimal revegetation within channel or adjacent banks. Rock weirs present but poorly formed and would be outflanked if flows high enough to flow across rock surface. Recommend to reprofile the rock-armoured section to retain more stormwater and improve vegetation cover
6. Sediment removal around stormwater outlet. Increase grade directly at outlet to avoid ongoing accumulation that may block pipe opening
7. Gully water retention
8. Existing gully trail link to foreshore. Limited access with current trail width and steep embankments
9. Unstable steep grades. Increase stabilisation through revegetation

The various opportunities and constraints presented by the site have been evaluated in terms of stormwater management, landscape and vegetation. A summary of the evaluation is provided below, with the locations of the opportunities and constraints shown in the attached plan (refer to Figure 5). It is also important, given the cultural significance of the site, that any proposed works carried out in the area be planned in consultation with Kaurna representatives. A review of Barton Gully was undertaken with Kaurna representatives in September 2019.

STORMWATER MANAGEMENT

Barton Gully is quite steep in places and therefore when it rains, water flows quickly through the gully, causing erosion and carrying sediment out of the gully.

Figure 6. Erosion caused by stormwater flows.

Significant rock-lining of watercourses has been completed and, whilst preventing erosion, it is considered excessive, leading to reduced revegetation of the watercourses (refer Figure 7). This rock lining can be improved to reduce the visual extent of the rock work, and allow planting in between rocks to improve water quality, assist in slowing the water and reduce the heat load created by the rocks. In addition, the rock weirs can be improved to create local ephemeral ponds (temporary ponds that slow the water down) for vegetation and to capture silt.

Figure 7. Excessive watercourse rock lining.

There is the opportunity to improve the management of stormwater within the steeper section of the gully by implementing measures that slow the speed of water flow, reduce erosion, and improve the quality of the water before it leaves the gully. These measures include: stopping the scouring that is active; revegetation of eroded sections of the watercourse with native species and; reshaping of the bed and banks to provide increased bank stability.

Refer to Appendix A for further information on the identified stormwater improvements.

The viability of harvesting stormwater from Barton Gully for re-use (such as irrigation) was evaluated – refer to Appendix B for details. The evaluation determined that the opportunity for stormwater harvesting and re-use is limited due to factors such as the steepness of the gully and lack of suitable areas for stormwater capture and storage.

LANDSCAPE

The steep nature of the lower gully restricts access in some areas, and erosion along the watercourse has also occurred. Plants suitable for the sloping site will help to maintain the integrity of the soil and mitigate further erosion. Maintaining ground cover while revegetating will also be important, to ensure that additional erosion does not occur before new plantings are established.

There is the opportunity to further formalise existing sections of the trail network within the gully, including a bridge over the creek. Council has already installed access steps and a boardwalk in the steepest section of the gully.

Paths are proposed to be low-key unsealed trails constructed from materials such as cement-treated sand or cement-treated rubble. The paths would be typically 1.0 to 1.5 m wide. Where possible the paths will be designed so that they are accessible for all ambulant users.

The existing educational signage could be continued throughout the site to coincide with the restoration and revegetation works.

Figure 8. Existing signage at Burnham Road entry.

Additional interpretative signage could include information about:

- Weed control
- Native grasses
- Water management and treatment
- The role of volunteers, providing the contact number to call to get involved.

The gully has been assessed for recreational use by BMX and mountain bikes and found that it is not an appropriate location for either of these uses. It is also not suitable as a thoroughfare for bicycles due to the boardwalk and steps to the coast.

VEGETATION

The site has one patch of remnant native vegetation, and areas where native plants have been re-established. The sloping site does present challenges for revegetation because of restricted access in some areas. Some of the replantings used species that are not local or suitable to the gully environment and these should be gradually replaced with appropriate species. This is especially the case with some of the larger trees that line the narrow path to the coast.

Figure 9. Steeply sloped section of the gully.

A significant patch of native soursob (*Oxalis perennans*) was previously identified as present in the south-western corner of the site, near an existing stormwater discharge point. The native soursob requires an environment that provides periods of wetting and drying (such as is currently provided by the stormwater discharge point). There are also other areas within the gully that would be suitable for establishing additional native soursob beds.

Control of weeds and establishment of new, appropriate vegetation can be challenging due to the steep site and restricted access in some areas. A biodiversity management plan, including weed control and management recommendations, will be prepared and implemented, to protect the revegetated areas and reduce re-infestation by unwanted plants.

The opportunity to improve the existing biodiversity within the gully by continuing to revegetate areas and remove unwanted plant species will also increase the bank stability. In addition, this will enhance the natural beauty of the area and encourage native animal species. Revegetation activities are planned progressively in the future.

VEGETATION ZONES

Figure 10. Vegetation zones.

KEY

ZONE A – REVEGETATION AREA

- Control of grassy weeds and soursob
- Remove non-indigenous shrub plantings
- Consider further plantings of native sedge species in the moist drainage line in the northern section

ZONE B – NORTH-FACING SLOPE ON SOUTHERN SIDE OF GULLY

- Over time remove non-native plantings and replace with scattered *Eucalyptus porosa* and *Allocasuarina verticillata*
- Consider widely spaced plantings of *Pittosporum angustifolium* and *Acacia acinacea*
- Sensitive weed control to promote recruitment of native understorey species already present in the area

ZONE C – GULLY DRAINAGE LINE

- Establish natural logs across the slope (away from walking trails)
- Revegetation of lilies, forbs and low and medium shrubs in open areas
- Assess potential for native sedges (e.g. *Cyperus spp., Juncus spp.*) along edges of drainage line.
- Control *Melaleuca nesophila*

ZONE D – LOWER WATERCOURSE

- Control of high threat woody weeds
- Control of weeds along creekline with concurrent revegetation
- Removal of some of the native non-indigenous species that have a propensity to spread
- Control of grassy weeds and soursob
- Revegetation on steep slopes to help manage erosion, trial use of *Myoporum parvifolium* in these areas

ZONE E – OPEN GRASSLAND AREA

- Careful revegetation (avoid disturbing native grasses) to create a very open woodland habitat
- Encourage grassland species by periodic brush cutting

ZONE F – OPEN GRASSLAND AREA

- Monitor survival of current revegetation, and infill as necessary (avoiding disturbing native grasses) to create an open woodland habitat
- Encourage grassland species by periodic brush cutting

Barton Gully has been divided into six distinct vegetation zones, based on the existing vegetation and landscape features. These vegetation zones will be used to assist with revegetation and weed control, which will be guided by a detailed biodiversity action plan. The following vegetation zones are shown in Figure 10:

- Zone A: Revegetation area
- Zone B: North-facing slope on southern side of gully
- Zone C: Gully drainage line
- Zone D: Lower watercourse
- Zone E: Open space area
- Zone F: Open grassland area

The gully has been planted with a range of non-local species, some of which have become weeds and others are nearing the end of their useful lives. A description of each zone and proposed management actions for each of the zones are provided in Appendix C. The list of plant species to be removed or controlled is provided in Appendix D and plants to be used for revegetation are provided in Appendix E.

MASTERPLAN RECOMMENDATIONS

Figure 11. Barton Gully masterplan recommendations.

KEY

1. Existing trail linking foreshore with gully
2. Open grassed area
3. Potential water retention opportunity and Oxalis perennans propagation site
4. Existing trail widened and benched into embankment to improve access
5. Steep grades revegetated and stabilised
6. Existing signage
7. Stabilise embankments
8. Existing trail link
9. Limit tree planting to maintain residents views
10. Install new log seat at viewpoint at end of new path
11. Revegetation to slow water and mitigate erosion within channel

The masterplan for Barton Gully has been based on findings from assessments of the opportunities and constraints, existing environment, landscape, and infrastructure.

The recommendations outlined in this section provide direction to enhance the existing biodiversity and improve access for the community to enjoy the natural environment provided by Barton Gully. Figure 11 shows the location for each of the recommendations.

STORMWATER MANAGEMENT

Stormwater management within the gully will focus on stabilising embankments, reducing erosion, and improving water quality. Landscaping elements and vegetation will be used to assist with achieving these goals, in addition to the repair/remediation and installation of new stormwater infrastructure.

LANDSCAPE

Existing trails will be improved, and new trails will be installed to reduce erosion and improve establishment of revegetated areas. Additional interpretive signage will be installed to highlight the key features of the area such as the vegetation, water management, and local volunteer groups.

VEGETATION

A biodiversity management plan will be developed and implemented, including removal and treatment of priority weeds. Revegetation will continue in the identified vegetation zones with appropriate plant species as described in Appendix E.

CONCLUSION

Barton Gully is a natural space that is enjoyed by the local community. Implementing the masterplan recommendations will improve both the biodiversity and appeal of the area and contribute to enhancing the enjoyment that residents and others gain from using the gully. The masterplan provides direction to ensure the sustainable use of Barton Gully for future generations.

IMPLEMENTATION AND FUNDING

The proposed works are planned to be coordinated and funded by Council, and work completed by contractors with support from local volunteers. External grant funding would be actively sought as available.

Major works, such as path and bridge works, would be implemented initially, and other works undertaken in stages over a number of years.

It is expected that the capital works within Barton Gully would cost in the order of $250,000 - $300,000.

A draft implementation plan is included in Appendix F.

APPENDICES

Appendix A – Identified Stormwater Improvements

Appendix B – Stormwater Re-use Assessment

Appendix C – Vegetation Zones Management Actions

Appendix D – Vegetation for Removal or Control

Appendix E – Vegetation for Revegetation and Biodiversity Improvement

Appendix F – Draft Implementation Plan

APPENDIX A IDENTIFIED STORMWATER IMPROVEMENTS

UPSTREAM INLET

The inlet has recently been upgraded to minimise erosion. The placement of informal stepping stones across the riffle will improve the safety for people crossing at that location.

Figure 12. Barton Road stormwater discharge into Barton Gully.

GULLY DRAINAGE

The main drainage lines through the upstream gully have been rock-armoured and are in good condition. Some improvement to create check-dams and planting pockets is recommended. The downstream gully shows signs of erosion at several locations, and it is recommended that these areas be remediated, and erosion protection measures deployed to minimise any future or ongoing erosion. The following solutions will be considered for erosion protection, including:

- Rock lining along incised sections of the gully invert
- Rock "leaky" check-dams
- Turf reinforcement mat with vegetation.

Figure 13. Erosion in Barton Gully.

ERODED SLOPE

A steep section of the reserve adjacent to an existing house is badly eroded. Some remediation actions have previously been carried out, including the redirection of stormwater discharge downslope via a flexible pipe and scour matting. Further slope remediation and stabilisation options should be investigated as part of geotechnical investigation.

Stormwater discharge points from Seaview Avenue are also causing some scour, and this should be improved with a formal headwall and suitable scour protection.

APPENDIX B – STORMWATER RE-USE ASSESSMENT

CATCHMENT SIZE

Approximately 14 hectares.

CATCHMENT TYPE

- Three hectares rural, relatively steep with rainfall runoff discharging quickly once catchment is wet
- 11 hectares urban, relatively steep, with rainfall runoff discharging quickly.

POTENTIAL RUNOFF FOR CAPTURE

- 17ML total

PEAK FLOW

Location	5 Year ARI	100 Year ARI
Outlet	0.5 m^3/s	1.2 m^3/s
North Branch	0.2 m^3/s	0.3 m^3/s
South Branch	0.16 m^3/s	0.45 m^3/s

Implementing a viable stormwater harvesting and re-use scheme requires a balance between engineering feasibility and the economics of the scheme.

The determination of harvestable volumes of stormwater for re-use schemes includes an engineering assessment of a range of implementation and practicality factors, including:

- Total catchment runoff, and importantly, the flow profile (i.e. proportion of low base flows versus peak flows)
- Size and capacity of wetlands/retardation basins to capture and treat runoff (land availability considering site constraints)
- Diversion weir capacity
- Wetland abstraction rates (i.e. diversion from the wetland to either storage or directly to demand)
- Storage of the harvested volumes for a time when demand requires
- Overall demand.

Based on these factors of assessment of the Barton Gully site, a range of factors were identified that would limit the potential for stormwater harvesting including:

- Catchments are generally steep and responsive, meaning runoff will pass through the site quickly and over a short period, limiting opportunities for harvesting.
- Site constraints, such as topography and shape, and existing and desired aesthetic appeal of the site, including revegetation during community programs, mean that provision of retardation/storage of surface water and wetland treatment will be substantially constrained without wholesale landscape changes and/or increased risk of flooding impacts on adjacent properties.
- Geological profiles in these locations would mean any managed aquifer recharge (MAR) schemes to provide a longer-term storage would be in fractured rock, which traditionally, is less suited to MAR schemes. With the gully in an elevated position and so close to the coast, this substantially increases the likelihood that any stored water would dissipate to the coast and be lost. Furthermore, hydrogeological investigations would be costly relative to the fairly small volumes of water that could be captured. It is understood that several springs exist along this section of the coast, one of which has cultural significance, and a fractured rock MAR scheme may impact these springs.

SITE CONSTRAINTS AND OPPORTUNITIES

- Constrained site with existing community plantings and aesthetic appeal
- Limited space for storage and treatment of stormwater
- Minimal potential harvestable volume.

CONCLUSION

As the gully is currently not irrigated and revegetation is proposed with drought-tolerant native species, the conclusion from this high-level assessment is that, based on economics, aesthetics and water for irrigation, stormwater re-use within the gully is not feasible.

APPENDIX C – VEGETATION ZONES MANAGEMENT ACTIONS

ZONE A – REVEGETATION AREA

This is area has been revegetated – a good diversity of native species has been used, although some are not indigenous to the area. There is also spread into the site from non-indigenous shrub plantings. Grassy and herbaceous weeds impact on the native plant biomass. The northern section of this zone has gentle slopes associated with a drainage line and a principally Eucalyptus dominated overstorey. The moist nature of the drainage line supports some rushes and sedges, with *Carex spp.* and *Cyperus spp.* present. There is significant infestation of a creeping, probably *Fumaria sp.* Annual forb and grass weeds appeared likely to dominate this area understorey in spring.

Recommended management actions:

- Control of grassy weeds and soursob.
- Remove non-indigenous shrub plantings.
- Consider further plantings of native sedge species in the moist drainage line.

ZONE B – NORTH-FACING SLOPE ON SOUTHERN SIDE OF GULLY

This area is dry and includes a small patch of remnant vegetation. The zone has a moderate diversity of native species remaining, with native understorey plants such as spear grasses (*Austrostipa spp.*), black-anther flax-lily (*Dianella revoluta*), twinleaf (*Zygophyllum spp.*), yellow tails (*Ptilotus nobilis*), and soft tussock mat-rush (*Lomandra densiflora*) still present. The overstorey is mostly non-indigenous plantings. Some recent revegetation has been undertaken, principally shrubs and forbs.

Recommended management actions:

- Over time remove non-native plantings and replace with scattered *Eucalyptus porosa* and *Allocasuarina verticillata*.
- Consider widely spaced plantings of *Pittosporum angustifolium* and *Acacia acinacea*.
- Sensitive weed control to promote recruitment of native understorey species already present in the area.

ZONE C – GULLY DRAINAGE LINE

This is the northern section of the drainage line of the gully. *Melaleuca lanceolata* is the dominant overstorey, tending to *Melaleuca halmaturorum* heading northwards down the gully. There are scattered medium and low shrubs along with a moderate cover of native grass on the slopes, although there are extensive bare patches, especially on steeper slopes. There is a high biomass of introduced gasses and soursob. Revegetation has been noted as being relatively unsuccessful in these bare patches, and soil slippage and erosion are a potential ongoing issue. Provision of logs situated across the slope may allow for soil and moisture accumulation, which may increase viability if species are planted adjacent to the log on the upslope side.

Recommended management actions:

- Establish natural logs across the slope (away from walking trails).
- Revegetation of lilies, forbs and low and medium shrubs in open areas.
- Assess potential for native sedges (e.g. *Cyperus spp.*) along edges of drainage line.
- Control *Melaleuca nesophila*.

ZONE D – LOWER WATERCOURSE

This is the lower section of the watercourse, generally narrow with moderate to steep slopes. While there is a good diversity of native plants present, there is significant cover of woody, herbaceous and grassy weeds. There are also many planted non-indigenous native species such as *Eucalyptus platypus* and *E. gomhocephalus*. The slopes and creekline are heavily invaded by broadleaf weeds, especially soursobs and nasturtium. High priority woody weeds include olive, athel pine and boxthorn.

Recommended management actions:

- Control of high threat woody weeds.
- Control of weeds along creekline with concurrent revegetation.
- Removal of some of the native non-indigenous species that have a propensity to spread should be undertaken in a staged manner, with concurrent revegetation with appropriate indigenous shrubs and trees.
- Control of grassy weeds and soursob.
- Revegetation on steep slopes to help manage erosion. Trial the use of *Myoporum parvifolium* in these areas.
- A site-specific revegetation plan may be required for this zone.

ZONE E – OPEN GRASSLAND AREA

This is an area with significant native grass biomass including the regionally Vulnerable silky bluegrass (*Dicantheum sericeum*) but also with grassy and herbaceous weeds. Aim for a very open mid and upper storey in this zone.

Recommended management actions:

- Careful revegetation (avoid disturbing native grasses) to create a very open woodland habitat.
- Brush cutting regime to focus upon a late winter slash for annual grassy weeds and forbs, then no slashing again until after grasses (particularly *Dicantheum sericeum*) have set seed in summer.

ZONE F – OPEN GRASSLAND AREA

Similar to zone F, this area has significant native grass biomass with grassy and herbaceous weeds. Aim for a very open mid and upper storey in this zone.

Recommended management actions:

- Monitor survival of current revegetation, and infill as necessary (avoiding disturbing native grasses) to create an open woodland habitat.
- Brush cutting regime to focus upon a late winter slash for annual grassy weeds and forbs, then no slashing again until after grasses (particularly *Dicantheum sericeum*) have set seed in summer.

APPENDIX D – VEGETATION FOR REMOVAL OR CONTROL

The following trees and shrubs are invasive and/or non-native. They will be controlled or gradually replaced with more appropriate species (refer Appendix E).

COMMON NAME	BOTANICAL NAME	COMMENT	STATUS
Western coastal wattle	*Acacia cyclops*	Sleeper woody weed. Becomes dominant. Needs checking for seedlings.	
Galenia	*Aizoon (Galenia) pubescens*		
Giant reed	*Arundo donax*	Spreads by runners	SA declared weed
Bridal creeper/ bridal veil	*Asparagus asparagoides and A. declinatus*		WONS* and SA declared weed
Onion weed	*Asphodelus fistulosus*		
Swamp casuarina	*Casuarina cunninghamiana*	Spreads easily by seed in wet environs to become dominant	
Diosma	*Coleonema sp.*	Garden escape	
Field bindweed	*Convolvulus arvensis*		SA declared weed
Kapokbossie	*Eriocephalus africanus*	Garden escape	
Tuart gum	*Eucalyptus gomphocephalus*		
Platypus gum	*Eucalyptus platypus*	Little value, easily blows over	
Freesia	*Freesia sp.*	Spreads by seeds, corms and bulbils. Garden escape	
Gazania	*Gazania spp.*	Garden escape	SA declared weed
Melaleuca	*Melaleuca nesophila*	Non-native to this area	
Olive	*Olea europaea*		SA declared weed
Soursobs	*Oxalis pes-caprae*		
Kikuyu	*Pennisetum clandestinum*		
Date palm	*Phoenix dactylifera*		
Rice millet	*Piptatherum milliaceum*		
Buckthorn	*Rhamnus alaternus*	Sleeper woody weed and garden escape. Becomes dominant.	SA declared weed
Athel pine	*Tamarix aphylla*		WONS* and SA declared weed
Castor oil plant	*Ricinus communis*	Seeds poisonous to people	
Cockies tongue	*Templetonia retusa*		
Caltrop	*Tribulus terrestris*	Spreads by burrs	SA declared weed

APPENDIX E – VEGETATION FOR REVEGETATION AND BIODIVERSITY IMPROVEMENT

The following plant species present a mix of trees, shrubs and groundcovers that are suitable for use in revegetating Barton Gully.

TYPE	COMMON NAME	BOTANICAL NAME
Trees	Drooping she-oak	*Allocasuarina verticillata*
	Southern cypress pine	*Callitris gracilis*
	Mallee box	*Eucalyptus porosa*
	Dryland tea tree	*Melaleuca lanceolata*
	Native apricot	*Pittosporum angustifolium*
	Quandong	*Santalum acuminatum*
Large to medium shrubs	Wreath wattle	*Acacia acinacea*
	Coast umbrella bush	*Acacia cupularis*
	Umbrella wattle	*Acacia ligulata*
	Coast saltbush	*Atriplex cinerea*
	Christmas bush	*Bursaria spinosa*
	Common fringe-myrtle	*Calytrix tetragona*
	Clasping goodenia	*Goodenia amplexans*
	Common boobialla	*Myoporum insulare*
	Coast daisy bush	*Olearia axillaris*
	Twiggy daisy bush	*Olearia ramulosa*
Small shrubs	Prickly ground-berry	*Acrotriche patula*
	Ruby saltbush	*Enchylaena tomentosa*
	Mallee bush-pea	*Eutaxia microphylla*
	Rohrlach's bluebush	*Maireana rohrlachii*
	Seaberry saltbush	*Rhagodia candolleana ssp. candolleana*
	Coast twinleaf	*Zygophyllum billardierei*
	Forked twinleaf	*Zygophyllum confluens*
	Pale twinleaf	*Zygophyllum glaucum*

TYPE	COMMON NAME	BOTANICAL NAME
Ground covers/climbers/ sedges/grasses/forbs	Common vanilla-lily	*Arthropodium strictum*
	Berry saltbush	*Atriplex semibaccata*
	Feather spear-grass	*Austrostipa elegantissima*
	Rusty spear-grass	*Austrostipa eremophila*
	Tall spear-grass	*Austrostipa nodosa*
	Slender spear-grass	*Austrostipa scabra ssp. falcata*
	Bulbine-lily	*Bulbine bulbosa*
	Lemon beauty-heads	*Calocephalus citreus*
	Pink garland-lily	*Calostemma purpureum*
	Notched sedge	*Carex bichenoviana*
	Grassland everlasting	*Chrysocephalum semipapposum*
	Love creeper	*Comesperma volubile*
	Spiny flat-sedge	*Cyperus gymnocaulos*
	Stiff flat-sedge	*Cyperus vaginatus*
	Short-stem flax-lily	*Dianella brevicaulis*
	Black-anther flax-lily	*Dianella revoluta var. revoluta*
	Climbing saltbush	*Einadia nutans ssp. nutans*
	Knobby club-rush	*Ficinia nodosa*
	Black grass saw-sedge	*Gahnia lanigera*
	White goodenia	*Goodenia albiflora*
	Cut-leaf goodenia	*Goodenia pinnatifida*
	Native lilac	*Hardenbergia violacea*
	Pale rush	*Juncus pallidus*
	Running postman	*Kennedia prostrata*
	Native flax	*Linum marginale*
	Soft tussock mat-rush	*Lomandra densiflora*
	Scented mat-rush	*Lomandra effusa*
	Hard mat-rush	*Lomandra multiflora ssp. dura*
	Austral trefoil	*Lotus australis*
	Wingless fissure-plant	*Maireana enchylaenoides*
	Minnie daisy	*Minuria leptophylla*
	Coastal climbing lignum	*Muehlenbeckia gunnii*
	Creeping boobialla	*Myoporum parvifolium*
	Native soursob	*Oxalis perennans*
	Austral stork's-bill	*Pelargonium australe*
	Coast tussock-grass	*Poa poiformis*
	Yellow-tails	*Ptilotus angustifolius*
	Common wallaby grass	*Rytidosperma caespitosa*
	Kangaroo grass	*Themeda triandra*
	Twining fringe-lily	*Thysanotus patersonii*
	Tufted yellow rush-lily	*Tricoryne tenella*
	Narrow-leaf New Holland daisy	*Vittadinia blackii*
	Woolly New Holland daisy	*Vittadinia gracilis*

APPENDIX F – DRAFT IMPLEMENTATION PLAN

ITEM	SCOPE	PROGRAM	BUDGET ESTIMATE
Watercourse rehabilitation	*Scour protection at stormwater outlet, scour protection in lower portion of the gully, improve existing rock lining of the drains in the upper gully.*	2020/2021 and 2021/2022 FY	$50,000-$75,000
New pedestrian bridge and path upgrades	*Improve existing paths, install new paths and construct new bridge over the drainage channel.*	2020/2021 and ongoing	$75,000- $100,000
Interpretive signage	*Supply and install interpretative signage.*	2020/2021 and ongoing	$30,000
Revegetation and weed management	*Revegetation of the gully based on the zones.*	2020/2021 and ongoing	$75,000
Ongoing maintenance	*Weed management, revegetation.*	2022/2023 ongoing	Operational budget

Note:

- Budget is subject to annual Council approval and is a total budget exclusive of any grant or other external funding.
- The above costs are capital costs for new works. Existing assets will be renewed as part of Council's asset management planning.

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