

LLOYD HUGHES PARK

Bushland Management Plan





CONTENTS

EXECUTIVE SUMMARY	1
1 INTRODUCTION AND BACKGROUND.....	4
1.1 CITY OF ARMADALE APPROACH TO BUSHLAND RESERVE MANAGEMENT	4
1.2 VALUES OF LLOYD HUGHES PARK.....	5
1.3 MANAGEMENT HISTORY	6
1.4 PARKS OF DARLING RANGE/ BANYOWLA REGIONAL PARK MANAGEMENT PLAN	6
2 ENVIRONMENT AND PARK USAGE	7
2.1 TENURE, SURROUNDING LAND USE AND EASEMENTS	7
2.2 GEOLOGY AND SOILS.....	7
2.3 TOPOGRAPHY, HYDROLOGY AND EROSION.....	8
2.4 BIODIVERSITY VALUES	9
2.4.1 <i>Vegetation Types and Condition</i>	9
2.4.2 <i>Flora and Fungi</i>	10
2.4.3 <i>Native Fauna</i>	10
2.4.4 <i>Linkages</i>	11
2.5 VISUAL RESOURCES.....	11
2.6 HISTORY AND HERITAGE.....	12
2.7 RECREATIONAL USE	12
3 DISCUSSION OF MANAGEMENT ISSUES AND RECOMMENDATIONS.....	13
3.1 VEGETATION MANAGEMENT	13
3.1.1 <i>Revegetation</i>	14
3.1.2 <i>Weeds</i>	15
3.1.3 <i>Dieback</i>	19
3.2 FAUNA	21
3.2.1 <i>Alien Fauna</i>	21
3.3 FIRE.....	23
3.4 STORMWATER.....	24
3.5 EROSION	25
3.6 WATER CORPORATION INFRASTRUCTURE.....	26
3.7 RECREATIONAL USE AND SERVICE VEHICLE ACCESS.....	26
3.7.1 <i>Tenure</i>	26
3.7.2 <i>Infrastructure</i>	27
3.7.3 <i>Management Vehicle Access</i>	27
3.7.4 <i>Illegal Vehicle Access</i>	28
3.8 LITTER AND REFUSE	30
3.9 VANDALISM	30
3.10 COMMUNITY INVOLVEMENT AND EDUCATION.....	31
4 IMPLEMENTATION, COSTING AND FUNDING.....	33
4.1 COMMUNITY CONSULTATION.....	33
4.2 MONITORING AND REVIEW	33
4.3 IMPLEMENTATION PLAN	34
5 REFERENCES	40
6 FIGURES	42
FIGURE 1 – LOCALITY PLAN.....	43
FIGURE 2 – ENVIRONMENTAL GEOLOGY.....	44
FIGURE 3 – TOPOGRAPHY, HYDROLOGY AND DRAINAGE	45
FIGURE 4 – VEGETATION COMMUNITY TYPES.....	46
FIGURE 5 – VEGETATION CONDITION MAP 2008	47
FIGURE 6 – INFRASTRUCTURE AND TRACKS	48
FIGURE 7 – DIEBACK OCCURRENCE.....	49
FIGURE 8 – FIRE MANAGEMENT.....	50

7	APPENDICES.....	51
	APPENDIX A – Review of Management Plan 2000 – 2005 Implementation Plan.....	51
	APPENDIX B – Flora and Avifauna Species Lists	54
	APPENDIX C – Weed Occurance Mapping from 2008	58
	APPENDIX D – Summary of Submissions	62

EXECUTIVE SUMMARY

Lloyd Hughes Park (the Park) is a 17.7 hectare “A” Class reserve (Reserve No 6468) located in Kelmscott in the City of Armadale. The Park has significant conservation value arising from its diverse vegetation and geology, its location on the Darling Scarp, and its potential as a corridor linkage between the Canning River and bushland to the north and east. The Park is of regional significance, being part of the Banyowla Regional Park.

The Park sits on or near the boundary between the Ridge Hill Shelf and Darling Scarp landform soil types. The Park's topography ranges from a peak of 100m above sea level, generally sloping down to 25-30m in the south-west. A seasonally dry creek runs along the southern portion of the reserve parallel to Canning Mills Road. The creek leaves the Park through a stormwater drainage pipe and flows into the Canning River. Piped stormwater enters the Park at four locations, and stormwater pipes take water from the Park at two locations.

Three main vegetation associations have been identified within the Park, these are: Flooded Gum Woodland over *Viminaria juncea* High Open Shrub land over Open Grassland over Closed Sedgeland; Marri Woodland over Low Shrubland over Open Grassland; and Herbland and Wandoo Low Open Woodland over *Acacia lateriticola* Shrubland over Low Shrubland. Vegetation mapping indicates that 60% of the total area of the reserve is Very Good to Excellent condition. Limited flora, fauna, and fungi studies have been undertaken in the Park. Surveys that have been undertaken indicate that there are 78 species of native flora, and 66 species of birds present in the Park.

The Park has a strong European heritage, and is listed on the City of Armadale Municipal Heritage Inventory. In the past, the area was mined for gold and slate. Present day popular activities include walking dogs, bush walking and bird watching. No aboriginal heritage sites have been recorded in the Park.

There are a number of key threats to the environmental values of the Park that are addressed in this Management Plan.

While the majority of the vegetation within the Park is considered to be in Good or better condition, there are sections where the vegetation condition can be improved through rehabilitation projects. Following the February 2011 fire, it is recommended that the vegetation is monitored during the recovery process to determine what native species are returning to the Park and whether a rehabilitation program is required.

The spread of weeds within bushland areas can pose serious problems, such as increasing fire hazards, competing for space, light and nutrients with native species, and promoting further weed invasion. Weed mapping of all of the City’s bushland reserves occurs every three years. From this information, an annual weed spray program is prioritised. It is recommended that ongoing weed control is undertaken for all high priority weeds found in the Park.

The protection of life and property is the number one priority for fire management within the Park, closely followed by the protection of conservation values. Fire prevention strategies considered for the Park include fuel reduction through weed management, strategic placement of firebreaks and fire access tracks, mosaic hazard reduction burning, and public education.

Dieback is known to occur in 48% of the Park. An ongoing treatment program has been occurring in the Park, with the focus on reducing the further spread of the disease and treatment of the dieback front. The dieback front was last treated with phosphite in 2010. Illegal access by vehicles is a high risk to the spread of dieback in the Park. Access control is a high priority for management.

Vandalism and access by off road vehicles are the main human impacts on the values of the Park. Off road vehicle use poses a significant risk to other park users, can result in water erosion, widening of tracks, and can contribute to the spread of dieback. Access points into the Park can be controlled using fencing and gates to reduce the impact of this activity. Vandalism is costly and time consuming to repair. It is recommended that signage is kept to a minimum in the Park, and that monitoring by residents can help ease this activity.

Erosion is evident on a number of the tracks throughout the Park. This can pose a threat to the safety of park users. It is recommended that tracks showing signs of erosion should have cross fall banks installed to try to stop this erosion.

This Management Plan has identified a number of strategic directions and recommendations to address the key threats and opportunities for the management of the Park, which are reproduced below. Individual management recommendations can be found in Section 4 - Implementation, Costing and Funding.

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| Strategic Direction 1: | <i>Keep the good bushland good, improve vegetation condition along the watercourse, and rehabilitate priority areas.</i> |
| Strategic Direction 2: | <i>Within the constraints resulting from low impact weeds, the existing and autonomous spread of dieback and climate change, maintain vegetation in as natural a condition as practicable.</i> |
| Strategic Direction 3: | <i>Constrain the spread of dieback at Lloyd Hughes Park.</i> |
| Strategic Direction 4: | <i>Provide for native fauna through appropriate vegetation management strategies.</i> |
| Strategic Direction 5: | <i>Participate in measures to control alien fauna undertaken by the Department of Environment and Conservation for the Banyowla Regional Park.</i> |
| Strategic Direction 6: | <i>Undertake fire management to protect life and property of adjacent residents as the primary priority and protection of conservation values as second priority.</i> |

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| Strategic Direction 7: | <i>Maintain the stormwater system in and around Lloyd Hughes Park to maintain the values of the Park.</i> |
| Strategic Direction 8: | <i>Maintain the structure of the soils within Lloyd Hughes Park.</i> |
| Strategic Direction 9: | <i>Meet visitor expectations, minimise risks to visitor safety and maintain the Parks biodiversity values.</i> |
| Strategic Direction 10: | <i>Keep Lloyd Hughes Park free from rubbish.</i> |
| Strategic Direction 11: | <i>Reduce the occurrence of vandalism through careful facility design.</i> |
| Strategic Direction 12: | <i>Foster community awareness and involvement on the management of Lloyd Hughes Park.</i> |

2 INTRODUCTION AND BACKGROUND

2.1 City of Armadale Approach to Bushland Reserve Management

The City of Armadale has developed a comprehensive highly targeted approach to managing its natural areas, which has been developed within the current resource constraints.

This approach is based on a policy of directing resources to “*keep the good bushland good*”, whilst also providing assistance to Friends Groups and Reserve Custodians interested in undertaking rehabilitation or other bushland management activities on City managed lands.

The management approach also targets resources to the highest conservation value areas first by developing a reserve priority list. The reserve priority list uses a system derived from the *Local Government Biodiversity Planning Guidelines* (Del Marco, et.al, 2004) to give scores for a range of ecological and human use criteria that when added up provide an indication of the reserve’s conservation value relative to other City reserves. The reserve priority list identifies Lloyd Hughes Park as being one of the highest conservation value reserves in the City. The methodology to develop the reserve priority list has been agreed to by the City’s Bushcare and Environmental Working Group.

The key threats to “*keeping the good bushland good*” have been identified as weeds, Phytophthora dieback, and human use impacts.

In order to manage the weed threat, bushland condition and weed mapping of good condition bushland areas is undertaken every three years to develop a weed management program. The City has developed an efficient weed and bushland condition mapping system using a hand held GPS unit which then enables easy manipulation of the data to prioritise and detail works to be undertaken by weed contractors.

In order to manage Dieback, all reserves with over 1ha of bushland have been mapped for the presence of Dieback over a number of years, and dieback treatment has been prioritised using a combination of areas that can be protected by treatment and the reserve priority list. The City endeavours to re-treat Dieback fronts every three years. At this time the Dieback fronts are also re-mapped. Council has adopted Policy *ENG 9 - Managing Phytophthora Dieback*, which includes management practices to ensure that Dieback is not spread when works are undertaken in and adjacent to the City’s reserves.

When the bushland condition mapping is undertaken, capital works necessary to address other threats (eg damage to vegetation by vehicles, or trampling that can be remedied by fencing) are identified. The capital works are implemented over time, reserve by reserve, starting with the highest priority reserves from the reserve priority list as budgets allow.

Given the approach above, it is considered that only the largest and most significant bushland reserves warrant preparation of documents specific to the reserve.

This Management Plan identifies strategic directions that encapsulate the ultimate outcomes sought by Council for Lloyd Hughes Park, and has under each strategic direction the management actions likely to be able to be achieved by the City during the life of the Management Plan. This approach allows for opportunities to be taken up should funds become available and provides a basis to apply for grants. Many of the proposed actions reflect the outcomes of the City's approach to bushland management described above. This Management Plan is effective for five (5) years and will be reviewed in 2018.

2.2 Values of Lloyd Hughes Park

Lloyd Hughes Park ('the Park') has significant conservation value arising from its diverse vegetation and geology, its location on the Darling Scarp, and its potential as part of a corridor linkage between the Canning River and bushland to the north and east. **Figure 1** shows the location of the Park in a regional context.

The Park is of regional significance, and as such, part of the Banyowla Regional Park (Ministry for Planning, 1995). As the Park is outside of the study area for Bush Forever the recommendations of the Environmental Protection Authority's System 6 Report (Environmental Protection Authority, 1983) apply. The System 6 report identified the Park as important for conservation as part of recommendation M80.

The Park is a 17.7 hectare, 'A' Class Reserve vested in the City of Armadale since 1899. In 2010 the City of Armadale initiated the process as a direct recommendation of the management plan of 2000 to change the purpose of the reserve from "Parklands" to "Conservation and Recreation".

Recognition of the values and ecology of the foothills of the Darling Scarp is essential for the Park's management and preservation. The values of the Park include:

NATURAL WILDLIFE and RESOURCES

- Habitat for the Quenda or Southern-Brown Bandicoot *Isodon obesulus fusciventer* that is listed as a Priority 5 species by the Department of Environment and Conservation. It also provides habitat (breeding, feeding and refuge) for a variety of birds, reptiles, amphibians, mammals and invertebrates.
- The presence of at least three vegetation associations characteristic of the alluvial soils on foothills of the Darling Scarp in Very Good - Excellent condition.
- Importance as a source of seeds for nearby bush land in case of fire or disease.
- The stream zone vegetation traps nutrients and acts as filter, reducing pollution loads to the Canning River.

STUDY and EDUCATION

The geological and biological diversity provides excellent study opportunities for bird watchers, nature enthusiasts, students and researchers.

RECREATION

The Park offers opportunities for passive recreation such as walking, photography, sightseeing and bird watching.

AESTHETICS

The Park provides scenic and landscape features of regional significance, a link with the original bush landscape and contributes to the natural heritage and lifestyle of the region.

2.3 Management History

The City of Armadale adopted the *Lloyd Hughes Reserve (sic) Bushland Management Plan 2000-2005* in February 2000 (the management plan of 2000). This Management Plan draws on information and recommendations included in the previous management plan. An assessment of the implementation of the February 2000 plan appears in **Appendix A**.

A Friends Group was active at Lloyd Hughes Park from 1997 for about five years, and undertook management work in line with the management plan of 2000.

2.4 Parks of Darling Range/ Banyowla Regional Park Management Plan

It was anticipated in the management plan of 2000 that the Conservation Commission, through the Department of Environment and Conservation (DEC), will have commenced the preparation of the Parks of Darling Range Management Plan in 1999/2000. For reasons external to the City, this has not yet happened.

The DEC does not have a timeline for commencement of regional park management planning for this area. Should the DEC prepare an overarching plan that covers Lloyd Hughes Park during the lifetime of this plan, implementation of this plan will only continue where it is consistent with the overarching plan.

The City's Environmental Officer is a representative on the Parks of Darling Range Community Advisory Committee which involves stakeholders concerned with the management of all Reserves within the Parks of Darling Range. This is the main forum of communication between stakeholders regarding the management of these reserves.

3 ENVIRONMENT AND PARK USAGE

3.1 Tenure, Surrounding Land Use and Easements

The Park is an “A” Class reserve (Reserve No 6468) vested in the City of Armadale since 1899. The Park is zoned as “Parks and Recreation” under the Metropolitan Region Scheme and “Parks and Recreation Regional” under the Town Planning Scheme No. 4.

A recommendation of the management plan of 2000 was to change the purpose of the Park from “Parklands” to “Conservation and Recreation” to recognise and protect the significant values of the reserve. The documents to amend the reserve purpose and issue a new management order to the City of Armadale were lodged in May 2010.

A 15m wide Water Corporation easement, the Canning Trunk Main, runs diagonally across the Park in a south easterly direction from the corner of Martin Street and Marmion Street. Two large diameter steel water pipes pass underground through the easement that carries water from Canning Dam. When the second pipe was constructed in 2007, the Water Corporation rehabilitated the easement to provide stairs down a steep portion of the easement that was proposed to be closed in the Management Plan of 2000 due to erosion.

The Water Corporation requires access to each of the maintenance points along the pipe, but not necessarily along the length of the pipe. The Water Corporation occasionally fells large trees growing along this easement in order to protect the pipeline from root damage.

The Park is surrounded by urban development on all sides except for a portion on the northern boundary between the rear of lots along Ashley Drive and Canning Mills Road. Martin Street road reserve lies between the Park and land owned freehold by the Western Australian Planning Commission, which also forms part of the Darling Range Regional Park (See **Figure 1**).

3.2 Geology and Soils

The Park sits on or near the boundary between the Ridge Hill Shelf and Darling Scarp landform soil types (Heddle et al., 1980).

The Ridge Hill Shelf landform and soil type is described as "*Laterised foothills of the Darling Scarp dominated by gravelly and sandy soils*". The Darling Scarp landform and soil type is described as "*Very steep slopes with shallow red and yellow earths and much rock outcrop*". A vegetation survey by Keighery and Trudgen (1992) included the Park in the Ridge Hill Shelf landform and soil type.

Environmental Geology mapping at 1:50,000 scale reveals a complex geology with eight different units occurring within the park (see **Figure 2**). The Environmental Geology mapping at a 1:100,000 scale shows the Park being wholly mapped as Colluvial Slope (Jordan, 1986). Unfortunately, there is no consistency between authors for the boundaries and geological terms used in large and small scale geological mapping for the Ridge Hill Shelf (Markey, 1997).

3.3 Topography, Hydrology and Erosion

The Park's topography ranges from a peak of 100m above sea level, generally sloping down to 25-30m in the south-west (see **Figure 3**).

Erosion and water drainage into the Park are major problems and need to be addressed to prevent further damage to the landscape and vegetation.

A creek runs along the southern portion of the reserve parallel to Canning Mills Road. It is suggested that the upper area of the creek originates from a spring (Keighery and Trudgen, 1992). The creek rarely exceeds 0.5-1m at its deepest point and during the drier months of the year the creek is mostly dry. Drainage is poor near the creek but good on the heights. The creek leaves the Park through a stormwater drainage pipe and flows into the Canning River. The creekline does not show signs of erosion.

Piped stormwater enters the Park at four locations (**Figure 3** - Drains 1, 3, 4 and 5), and stormwater pipes take water from the Park at two locations (**Figure 3** - Drains 2 and 6). Water from Drain 3 travels through the Park in a gully, up to 1.2m deep, that appears to have been created through a combination of earthworks and erosion.

A water diversion bank collects water from a large area behind houses that face Ashley Drive. Water from the diversion bank flows along tracks located on or near the boundary of the Park and Martin Street, joins water from stormwater Drain 5 and exits the area through Drain 6.

Water from Drains 4 and 5 flows into bushland and disperses. Evidence of gully erosion up to 1m deep occurs about 15m downhill of Drain outlet 5.

Erosion is occurring on many of the existing tracks in the Park, and some tracks have gully erosion reaching 0.5m deep. Erosion of the track that runs north-east across the middle of the Park has deposited sediment into the creek. **Figure 3** highlights track condition including the extent of erosion. Several tracks are too steep, too straight, or too wide, and have no erosion control mechanisms for water flow. Sheet erosion is also occurring where pedestrian traffic is heavy.

3.4 Biodiversity Values

3.4.1 Vegetation Types and Condition

Three main vegetation associations have been identified within the Park (Keighery and Trudgen, 1992) (**Figure 4**). This mapping was updated in 2006/2007 while the City was conducting Natural Area Initial Assessments of the City's bushland reserves. The main vegetation associations occurring in the Park are:

1. Flooded Gum Woodland over *Viminaria juncea* High Open Shrubland over Open Grassland over Closed Sedgeland. This vegetation occurs along the creek.
2. Marri Woodland over Low Shrubland over Open Grassland and Hermland. This vegetation occurs on the slopes higher up from the creek and on the higher flats.
3. Wandoor Low Open Woodland over *Acacia lateriticola* Shrubland over Low Shrubland. This vegetation occurs on the higher flats.

Vegetation condition mapping was undertaken in Spring 2002, 2005 and 2008. The vegetation condition has remained relatively stable during this time, however the south-eastern edge has degraded over time. **Figure 5** shows the Spring 2008 vegetation condition mapping. This mapping was not the result of a detailed mapping exercise, it should not be used as a basis for monitoring the success or otherwise of management measures. Vegetation condition mapping that was intended to be undertaken in 2011 which was not able to be done due to the February 2011 fire is recommended to be undertaken in Spring 2012/2013.

In general, the area north of the creekline is in Very Good – Excellent condition (based on the Kaesehagen condition scale), except near the Park boundaries and along some tracks. It appears that the old quarry sites have revegetated successfully with local species and are in Very Good – Excellent condition.

The understorey vegetation on the southern edge and south of the creekline is dominated by grass and weed species. The overstorey is in good condition.

Most of the creekline is in Good – Excellent condition, however, there is a large patch of Watsonia along part of the creekline.

3.4.2 Flora and Fungi

The flora of the Park has not been re-surveyed since the work of Keighery and Trudgen (1992), when 94 species of flora were recorded, of which 16 were weeds. A list of the flora recorded appears in **Appendix B**. Twenty two species are confined to the Scarp and eastern side of the Swan Coastal Plain, and five of these were outside recorded range (Keighery and Trudgen, 1992). Weed species are further considered in Section 3.2.2.

No survey of fungi has been undertaken in Lloyd Hughes Park. Fungi play an important role in helping plants to grow, decomposing dead material and providing food for fauna.

3.4.3 Native Fauna

No systematic survey of native fauna has been undertaken within the Park, and it is arguable whether survey data from 1994 and 2000 detailed in the management plan of 2000 continue to have validity. This data is recorded in **Appendix B**.

Native fauna play important roles in the functioning of the Park's ecosystem by maintaining the soil, pollinating plants, dispersing seed and recycling nutrients.

Resources such as dead trees, fallen logs, rocks and other non living material provide important habitats for a diverse range of animals in the Park. Dead trees provide hollows for birds to use for breeding and shelter. Many native parrots and cockatoos, such as the Galah, vigorously defend the same hollow for many years. Different species of birds use different types of hollows of varying height, size and preference of tree species, so the need to ensure diversity among the habitat trees is equally important. Logs, branches and leaf litter provide reptiles and invertebrates with shelter and protection. The creek is a haven for frogs, as can be heard from the sounds around the creek.

Quenda or Southern Brown bandicoot (*Isoodon obesulus fusciventer*) has been observed by officers and local residents, and diggings in the soil characteristic of burrowing during feeding can be seen in the Park. Under the *Wildlife Conservation Act*, Quenda are listed as a Priority 5 Species which are “Taxa in need of monitoring (conservation dependent)”, this rank is used for species which are not considered threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years.

Grey Kangaroos *Memopus fuliginosus* that come from the bushland to the north and Brush-tailed Possums (*Trichosurus vulpecula*) have been seen well into the Park.

Reptiles found in the Park include the Bobtail Lizard (*Tiliqua rugosa rugosa*), Fence Skink (*Cryptoblepharus plagioccephalus*), Dugite (*Pseudonaja affinis*) and Gould's Monitor (*Varenus gouldii*) (Ecoscape, 2002).

Sixty six species of birds were recorded in the Park during surveys undertaken by T Kirkby between 1996 and 1999, five of which are introduced species (City of Armadale, 2000).

Observations undertaken during the review of the Plan included Galah (*Cacatua roseicapilla*) and Australian Ringneck (*Barnardius zonarius*) nests within the Park. There are nest hollows in the Park which could possibly support species such as Baudin's Cockatoo (*Calyptorhynchus baudinii*), Carnaby's Cockatoo (*Calyptorhynchus latirostris*) or Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*). These species have been observed flying over the Park and feeding within the Park. These species are listed as Endangered under the *Wildlife Conservation Act*.

Under the *Environmental Protection and Biodiversity Conservation Act* the Carnaby's Cockatoo is listed as Endangered, while Baudin's and the Red-tailed Black Cockatoo are listed as Vulnerable.

3.4.4 Linkages

The Park links directly with Banyowla Regional Park to the north east providing an adequate area for larger fauna to move between.

The creekline that flows through the Park connects with the Canning River, which may provide a permanent water source for some species living in the Park.

The City of Armadale Local Biodiversity Strategy (City of Armadale, 2009) identifies the ecological significance of linkages and connectivity between natural areas and provides for a number of targets relating to linkages. Under the City's Town Planning Scheme No 4, the Special Control Area Map 1 identifies a 'green link' of remnant vegetation along private property and the road reserve of Orlando Street and Canning Mills Road between the Park and the Canning River.

3.5 Visual Resources

The Darling Range Regional Park and Landscape Study classified the area using a Visual Resource Analysis technique as "*Landscape Management Zone A. Highest Priority Visual Quality Objective: Maximum Retention*" (Department of Planning and Urban Development, 1993). It was also recommended that maintenance should be of the highest priority and should involve proper site planning, construction controls and rehabilitation.

The Park offers visual relief from the surrounding built up areas, and is an important aesthetic value for the identity of the 'hills' area of Kelmscott.

Spectacular views across the coastal plain can be gained from within the Park.

3.6 History and Heritage

The Park was named after a local accountant, Mr Lloyd Hughes (deceased). Mr Hughes was the founding Secretary of the Byford Agriculture Society (1926), joint Secretary of the Kelmscott Agriculture Society, Secretary of the brick works, and the Hospital Board Secretary. Mr Hughes was also an outstanding sportsman, playing league football for Claremont-Cottesloe, tennis, and captaining A-grade cricket.

The Park is listed on the City of Armadale Municipal Heritage Inventory 2008. The area was mined for gold from 1846 to 1848, and has also been mined for slate. It was noted by the Government Resident at Kelmscott, Captain Ellis, that slate was of high quality and abundant in the area (City of Armadale, 2008). It has been speculated that steam shovels were used to undertake mining operations because large piles of ash occur in some parts of the Park.

The heritage of the Park has been recognised with a heritage plaque placed at the entrance to the Park off Martin Street, as recommended in the Heritage Inventory.

In December 2008 the Department of Indigenous Affairs web-based Aboriginal Sites Inquiry System did not have any aboriginal heritage sites recorded in the Park.

3.7 Recreational Use

Popular activities in the Park include walking dogs, bush walking and bird watching. A network of small and large walk trails have been formed, mostly around the higher areas from many years of pedestrians exploring the area (**Figure 6**).

Trail bikes and four wheel drive vehicle access is a problem both for the Park and nearby residents. The use of unauthorised vehicles in the Park is illegal, and occurs more frequently on weekends than weekdays. The noise annoys nearby residents and their presence can be dangerous to other Park users. This access also damages the Park by creating new trails and loosening the soil facilitating water erosion and widening of tracks. Mountain bike use along trails also loosens the soil. All of these activities have the potential to spread dieback.

4 DISCUSSION OF MANAGEMENT ISSUES AND RECOMMENDATIONS

4.1 Vegetation Management

There are three key strategic directions that apply in respect to vegetation management within the Park and these are discussed below.

Strategic Direction 1: Keep the good bushland good, improve vegetation condition along the watercourse, and rehabilitate priority areas.

This strategic direction statement recognises:

- The City's existing approach to bushland management;
- Vegetation along watercourses (riparian vegetation) has high conservation value;
- Revegetation of watercourses is part of the Council's long term objective as recognised by Council's support of the Streamcare Project and the Armadale Gosnells Landcare Group; and
- The desire to minimise fragmentation of bushland by multiple tracks, and so reduce the extent of "edge effects" (ie weed invasion that often occurs next to tracks).

Strategic Direction 2: Within the constraints resulting from low impact weeds, the existing and autonomous spread of dieback and climate change, maintain vegetation in as natural a condition as practicable.

This strategic direction statement recognises that:

- Some weeds such as *Briza maxima* and *Plantago lanceolata* are considered to have a relatively minor impact on vegetation structure and are effectively naturalised in this area. Effort to remove these weeds would probably be futile and could do more harm than good;
- Where dieback infestation has occurred, it is not possible to remove the pathogen. Even with phosphite treatment, a slow extension of the area infested by dieback is likely; and
- Climate change is likely to affect vegetation. At Lloyd Hughes Park reduced rainfall may reduce the extent of the rW (Flooded Gum Woodland) vegetation association, which may be replaced by the mW (Marri Woodland) vegetation association.

Strategic Direction 3: Minimise the spread of dieback at Lloyd Hughes Park.

As noted above, dieback is already present in parts of the Park, it cannot be eradicated, but through management actions, the spread of dieback can be slowed.

4.1.1 Revegetation

While the majority of the vegetation within the Park is considered to be in Good or better condition, there are sections where the condition can be improved through rehabilitation projects. It is recommended that opportunities for funding revegetation projects through external grant projects be investigated.

It is preferable that seed collected from the Park be used to grow the plants for revegetation projects. The flora species list found in **Appendix B** can be used as a guide for species selection. Within Dieback Infested areas, it is also recommended that Dieback resistant species are used for revegetation.

The City will also endeavour to engage the surrounding local residents to undertake the planting for any revegetation projects. These projects can be used to foster community ownership in the reserve.

Water Corporation infrastructure works in 2007 to upgrade the Canning Trunk Main traversing the Park required the removal of a number of saplings on the corner of Martin and Marmion Street. Ongoing weed control in this area has produced a cleared area suitable for revegetation. Revegetation activities should be mindful of access requirements of the Water Corporation.

During February 2011 an intense fire occurred through the entire area of the Park. The native vegetation has made a good recovery post fire with first succession species such as *Acacia pulchella* and *Kennedia prostrata* in abundance. Ongoing weed control following the fire will ensure the management of invasive weed species in the Park and will allow for greater success of rehabilitation programs. It is recommended that the reserve is monitored to determine whether a more extensive rehabilitation program is required. In December 2011, an application to the State NRM Program Community Grants 2011/2012 for weed control and revegetation had been successfully approved for \$17,500. The application aimed to reduce the weed soil seed bank that had emerged since the fire and to rehabilitate the more degraded areas that may not have recovered following the fire. The project commenced with a summer weed spray of the reserve. Weed control was also undertaken in spring and in winter prior to the revegetation program.

Vegetation condition mapping was not able to be undertaken during spring 2011 as scheduled due to the February 2011 fire that went through the Park. It is recommended that a vegetation condition survey be undertaken in 2013/2014 instead.

Recommendations:

- 1. Monitor vegetation recovery following fires.***
- 2. Implement the post fire rehabilitation program following the February 2011 fire in areas without the capacity to regenerate naturally.***
- 3. Investigate funding opportunities to revegetate degraded areas of Lloyd Hughes Park with local native seedlings sourced from local seed stock.***
- 4. Participate in flora and fungi research as opportunities arise.***
- 5. Undertake a vegetation condition survey in 2013/2014.***

4.1.2 Weeds

Strategic Directions 1 and 2 relate to weeds in the Park.

Problems caused by weeds establishing themselves in the Park include:

- Threatening native flora by interfering with the natural processes of succession, competing for space, nutrients and sunlight, and their ability to inhibit the establishment of native species due to their aggressive colonising, propagating ability and potential to spread throughout the Park;
- Disrupting fauna communities by denying them suitable habitats and food sources normally supplied by native flora;
- Increasing fire hazards;
- A reduction in the aesthetic quality of the bushland; and
- Promotion of an environment encouraging other potentially harmful weeds and feral animals.

The Environmental Weed Strategy for Western Australia (Department of Conservation and Land Management, 1999) provides a direction and management approach to tackling the weed problem in Western Australia. Each weed species known to occur in Western Australia was assessed and ranked according to their environmental impact. The following characteristics of each weed species were considered:

Invasiveness – the ability to invade bushland in good to excellent condition or ability to invade waterways.

Distribution – current or potential distribution, including consideration of known history of widespread distribution elsewhere in the world.

Environmental impacts – ability to change the structure, composition and function of an ecosystem, and in particular ability to form a monoculture in a vegetation community.

Each weed was rated using the following scoring system and the criteria above:

- High – yes for all three criteria. This weed would be prioritised for weed control and/or research.
- Moderate – yes for two of the above criteria. Control or research should be directed towards this weed if funds are available.
- Mild – yes for one of the above criteria. Monitoring and control of this weed where appropriate; and
- Low – no for all three criteria. This species would require low level of monitoring.

Following from this study, the DEC have recently reassessed the weeds on a state wide basis to provide a regional specific assessment of environmental weeds (Bettink and Keighery, 2008).

The Western Australian State of the Environment Report 2007 (Government of Western Australia, 2007) lists Watsonia, Bridal creeper, Perennial Veldt Grass and Freesia on the top five worst terrestrial environmental weeds in the South West.

A fire in February 2011 burnt the entire Park. A comprehensive weed spray program was developed as a result with the hope to reduce the weed burden within the Park and provide a better chance of native species regeneration. This included undertaking a full spray of the reserve to control all of the opportunistic emergent weed species from the soil seed bank in winter 2011 and spring 2011, with further sprays being in summer 2011/2012 and winter 2012.

The three yearly weed mapping for all of the City bushland reserves took place during spring 2011. Due to the February 2011 fire, comprehensive mapping of the Park was not undertaken and will be carried out in during spring 2013 to ensure all of the emergent weed species following the fire are recorded.

Table 1 below lists the weeds found in the Park during the 2008 mapping, ranked using the assessment by Bettink and Keighery (2008) and CALM (1999), and listing under relevant environmental policy. A full copy of the weed occurrence mapping undertaken in 2008 within the Park can be found in **Appendix C**.

Weed mapping updated in 2008 found that a number of high priority weed species occur in the Park. These include *Fressia sp.* (Freesia), *Feria crispa* (Black Flag), *Hyparrhenia hirta* (Tambookie), *Tribolium uniolae* and *Asparagus asparagoides* (Bridal Creeper).

Table 1:
Weed species found in Lloyd Hughes Park during weed mapping in 2008.

Species	Common Name	Ranking		Listing*
		Bettink and Keighery (2008)	CALM (1999)	
<i>Asparagus asparagoides</i>	Bridal Creeper	Very High	High	(a) (b)
<i>Moraea flaccida</i>	One-leaved Cape Tulip	Very High	High	(a)
<i>Fressia hybrid</i>	Fressia	Very High	High	
<i>Watsonia meriana</i>	Watsonia	Very High	High	
<i>Ferraria crispa</i>	Black Flag	Very High		
<i>Ehrharta calycina</i>	Veldt Grass	High	High	
<i>Hyparrhenia hirta</i>	Tambookie	High	High	
<i>Tribolium uniolae</i>		High	Moderate	
<i>Acacia podalyriifolia</i>	Queensland Silver Wattle	High	Low	
<i>Acacia baileyana</i>	Cootamundra Wattle	High	Low	
<i>Vinca major</i>	Blue Periwinkle	High	Low	
<i>Cortaderia selloana</i>	Pampus Grass		High	
<i>Eragrostis curvula</i>	African Love Grass		High	
<i>Euphorbia sp.</i>			High	
<i>Lupinus cosentinii</i>	Blue Lupin		High	
<i>Romulea rosea</i>	Guildford Grass		High	
<i>Briza maxima</i>	Blowfly Grass		Moderate	
<i>Solanum nigrum</i>	Black nightshade		Moderate	
<i>Trifolium sp</i>			Moderate	
<i>Vicia sativa</i>	Vetch		Moderate	
<i>Chamaecytisus palmensis</i>	Tree Lucerne, Tagasaste		Mild	
<i>Oxalis pes-carpa</i>	Soursob		Mild	
<i>Oxalis glabra</i>			Mild	
<i>Pennisetum setaceum</i>	Fountain Grass		Mild	
<i>Iris germanica</i>	Tall Bearded Iris		Low	
<i>Lathyrus tingitanus</i>	Tangier Pea		Low	
<i>Plantago lanceolata</i>	Ribwort Plantain		Low	
<i>Podalyria sericea</i>			Low	

- *(a) Declared as P1 under the *Department of Agriculture and Related Resources Protection Act 1976*. (Department of Agriculture and Food Western Australia, 2007).
 (b) Weeds of National Significance.

As noted in the introduction, weeds in the Park will be managed in accordance with the weed management plans developed every three years across the City. Over the past four years effort was directed at *Watsonia*, *Fressia*, *Ehrharta calycina* (Veldt Grass), *Eragrotis curvula* (Love Grass), reducing the impact of woody weeds and tackling small infestations of high risk weeds.

Most of the weeds occurring in the Park are confined to the edges of the reserve, adjacent to tracks and along the watercourse. Small patches and individuals of *Freesia*, *Watsonia*, and *Ehrharta calycina* (Veldt Grass) have been mapped within the Very Good – Excellent condition vegetation. These are a priority to control in order to stop the further invasion into the bushland. In general, weeds should be removed from the least infested areas which are generally in the centre of the Park.

In 2000 a large infestation of *Cortaderia selloana* (Pampus Grass) was mapped along the creek line. Ongoing treatment of this species has ensured the weed has almost entirely been eradicated from the Reserve.

Bridal Creeper (*Asparagus asparagoides*) is listed as Declared under the State legislation, *Department of Agriculture and Related Resources Protection Act* and is regarded as a Weed of National Significance by the Australian Government. This weed is confined to an area in the Park within the Poor vegetation condition area. This weed has not been actively managed in the Park as it has been observed to be infected by *Puccinia myrsiphylli* (Bridal Creeper Rust Fungus) which appears to be controlling the spread. It is recommended that this weed species is monitored to ensure the Rust Fungus is successfully controlling its spread.

Watsonia occurs throughout the Park but mainly on the lower, wetter and poorly drained areas and on the southern side of the creek where it dominates the vegetation in areas on the lower slopes. It is also present in smaller infestations scattered throughout other areas. *Watsonia* is propagated by seeds and corms, with water being a major vector and disturbance of the corms easily spreading the plant. In 2007 funding was received from the Perth Biodiversity Project to undertake *Watsonia* control. This management program was continued in September 2008, 2009 and 2010. Due to this treatment regime, the size of the infestation has been dramatically reduced. It is recommended that the treatment of *Watsonia* is continued by spot spraying herbicide such as Metsulfuron at flowering until it is eradicated from the Park.

Freesia is an invasive garden escapee spread by seed and cormels into bushland. Within the Park *Freesias* are mainly confined to the tracks, however there are two known patches occurring within the Very-Good to Excellent condition bushland. These infestations are a priority for control. Follow up control is important to ensure any plants set from seed are controlled in following years. Spot spraying with Metsulfuron on flowering (July to October) is recommended.

Woody weeds such as *Acacia podalyriifolia* (Queensland Silver Wattle), *A. baileyana* (Cootamundra Wattle) and *Chamaecytisus palmensis* (Tagasaste) were controlled in 2008. Infestations of these plants were mainly confined to the edges along Martin Street and Marmion Street. It is recommended that the occurrences of these species are monitored until such time as the soil seed bank has been exhausted and no plants remain in the Park. There is also potential for these species to enter the park from neighbouring properties.

Since 2007 the DEC have been undertaking a *Tribolium uniolae* control program at key sites, including within the Park. This species has been controlled by contractors for three years by spot spraying using glyphosate (2% glyphosate + wetting agent in 2007 and 2008, and 1% glyphosate in 2009 as recommended by the DEC). Monitoring and follow-up spraying of this species is recommended to ensure eradication within the Park.

Further weed invasion in the Park can be limited by keeping disturbance to a minimum, modifying stormwater outlet drains and management of fertiliser/nutrient application by residents so nutrients do not reach the Park. Isolated outbreaks of all listed weeds and new weeds in the reserve should be a priority to control in order to stop their spread into the Park.

Recommendations:

6. *Undertake weed mapping in 2013, and review and reprioritise weed control efforts annually.*
7. *Continue a comprehensive weed management program following the February 2011 fire.*
8. *Undertake annual herbicide treatment of all high priority weed species as determined by the three yearly weed mapping.*
9. *Control isolated outbreaks of all listed weeds and new species found in the Park as a priority.*
10. *Continue the weed spray program for Watsonia, Freesia, Tribolium uniolae and Cortaderia selloana.*
11. *Fell, basal bark if appropriate, and remove woody weeds such as Acacia baileyana, A. podalyriifolia, Chamaecytisus palmensis and Podalyria sericea. Monitor recruitment of all woody weed species.*
12. *Monitor Asparagus asparagooides for the Rust Fungus.*

4.1.3 Dieback

Native honey fungus (*Amillaria*) and other *Phytophthora* species, such as *P. citricola*, *P. cryptogea* and *P. nicotianae*, also have the potential to impact on the Park. *Armillaria* sp. is responsible for “white rot” root disease which is highly destructive, surviving on dead plant material. Little is known about the impact of these plant diseases in the Darling Range environment.

Dieback (*Phytophthora cinnamomi*) is a soil borne water mould that can result in the death of many species of native plants. Up to 40% of native Western Australian plant species are susceptible to dieback including many common long lived slow growing plants such as *Xanthorrhoea preissii* (Grass Trees).

When an area is first infested with dieback many susceptible plants die. After the first wave of plant deaths regeneration of many susceptible species (particularly those that have a large seed bank in the soil) often occurs. Warm moist conditions are favourable for growth of dieback spores and during these times a further wave of plant deaths occurs. This continues over many years until ultimately all susceptible species die out and are replaced by species not susceptible to dieback.

Due to the difficulty in identification, detection and assessment of areas for the presence of dieback needs to be undertaken by specialist contractors. Currently there is no way to eradicate dieback from bushland after it is introduced. Increased plant resistance can be achieved through stem injection or leaf absorption of the chemical phosphite. This treatment needs to be ongoing as concentrations of phosphite in the plant reduce over time due to plant growth and leaf loss. If dieback reaches an area that has been treated with phosphite, plant survival rates are much higher, and the spread of dieback between plant roots appears to be slowed.

An assessment of dieback was undertaken in the Park in 1999 and found (Glenvan Consultancy Services, 1999):

“Dieback disease has spread through some areas of the park, mostly on the south eastern half. The disease has most likely been introduced to the park from Canning Mills Road, with all areas for the road to the creek infested. The dieback is slowly moving upslope the other side of the creek. The rate of spread on the north western side of the creek is slower as the infestation is moving upslope. In this area there are fewer dieback susceptible species with long lateral root systems (ie Banksia) that will drag the disease upslope.”

Figure 7 shows the distribution of *Phytophthora cinnamomi* dieback in 2010.

The primary management objective for dieback is to reduce the further spread of the disease. In the Park this is achieved using a number of mechanisms which are detailed below.

To minimise the risk of further dieback spread during the undertaking of management activities in and adjacent to the Park, all City staff and contractors should comply with City of Armadale Policy *ENG9 — Managing Phytophthora Dieback*. Policy ENG 9 should also be applied to Friends Groups seeking to undertake works in the Park.

An ongoing treatment and remapping program has been occurring in the Park which was last treated for dieback in 2013 and is scheduled for treatment again in 2016. Ongoing treatment with phosphite has ensured the dieback front has not moved substantially from the distribution in April 1999. Illegal access by vehicles during this time has had a high potential to have spread dieback and it is important to ensure the treatment program is successful.

In 2007 the City received Department of Local Government and Regional Development Outer Metropolitan Community Funding to help minimise the risk of further spread of dieback and increase dieback education through the installation of dieback risk area signage and boot cleaning stations. Boot cleaning stations were installed in strategic locations where tracks intersect dieback free areas. Observations indicate that the boot cleaning stations are used by recreational park users. Location of this infrastructure is shown in **Figure 7**.

Access control is a high priority to reduce the further spread of dieback. Options for rationalising tracks and ensuring they are well drained within the Reserve is documented in Section 3.8 - Recreational Use and Service Vehicle Access. No new tracks are to be constructed that will pass from infested to the uninfected sections of the Reserve, unless deemed necessary in an emergency situation, see Section 3.3 Fire for more information.

The discharge of drainage water into the Park should be avoided. If water must be discharged into the Park, it should be confined to formal drains, and not allowed to spread throughout the Park.

In 2007, the Water Corporation committed to ensuring their activities in the Park would be of minimal impact. The following commitments were made:

“The Water Corporation will ensure that its activities (and those of its subcontractors) - for both maintenance and any future construction work in the park are in accordance with the Dieback Management and Hygiene recommendations in the Management Plan. To achieve this for the Corporation's maintenance activities on the DN 1370mm water main traversing the park, Asset Development and Management Section in the Corporation, which has asset management responsibility for the main, will in conjunction with the Corporations' Environmental Management Branch and the City of Armadale develop a dieback management plan for these activities. A dieback management and rehabilitation plan will be a contractual requirement for any future construction works through the park.”

Recommendations:

- 13. Ensure compliance with Council Policy ENG 9 - Managing Phytophthora Dieback.***
- 14. Continue the dieback treatment and remapping program of the dieback fronts in the Reserve in 2013 and 2016.***
- 15. Ensure the Water Corporation continues implementing their dieback management commitments while undertaking works in the Park.***

4.2 Fauna

Strategic Direction 4: Provide for native fauna through appropriate vegetation management strategies.

Recommendations:

- 16. Participate in fauna research within the Park as opportunities arise.***

4.2.1 Alien Fauna

Alien fauna can damage native plants by grazing, digging, trampling, or interfering with plant ecology (eg pollination or seed ecology), can compete with native fauna for food resources or feed on native fauna. Control programs for a range of alien fauna, including the introduced honeybee, are detailed in Hussey and Wallace (1993).

It is notable that no agency has developed control programs for introduced species considered 'naturalised' or too difficult to control. For example, the introduced Laughing Kookaburra eats reptiles and small birds and has influenced the populations of a range of species.

It has been suggested by some ecologists that attempts to control introduced fauna in urban areas is not necessary because the remaining fauna have survived these influences for many years and will probably continue to do so. It can also be argued that we should attempt to undertake actions that favour native fauna over alien fauna.

Actions to reduce numbers of alien fauna should be undertaken strategically and from an ecological viewpoint. For example, controlling rabbits alone could lead foxes to rely more on native animals or domestic stock for their food source (Hussey and Wallace, 1993).

Other than not permitting apiarists to locate apiaries within the Park, honeybee control is difficult and rarely practical (Hussey and Wallace, 1993). European Honey Bees have been found within the Park. Bees have the potential to displace and compete with native birds for nesting hollows.

Hussey and Wallace (1993) suggest a range of control measures for cats and foxes. However, in an urban environment many of the methods such as shooting or poisoning are inappropriate. Other methods suggested include exclusion fencing, fumigation or implosion of fox dens, and trapping. Exclusion fencing is expensive and can result in the creation of non viable fauna populations if the area fenced is too small to maintain genetic diversity within a population, it would probably not be accepted by surrounding residents. Fumigation or implosion of fox dens is considered an appropriate method of control, but even with trapping it will only reduce the populations of introduced species and not eradicate them (Hussey and Wallace, 1993).

Under the City of Armadale's current Local Laws, dogs can be exercised in the Park, but must be kept under control by the owner. When dogs are off a leash and out of control they can chase, frighten and intimidate fauna, not only by their activities but also by their scent. The existing situation appears to be considered acceptable by the community.

Recommendations:

- 17. When opportunities arise, undertake further research into the population dynamics and threats of alien fauna on the conservation values in Lloyd Hughes Reserve.***
- 18. Implement alien fauna management measures as deemed necessary, consistent with the Department of Environment and Conservations Pest and Problem Animal Control Plan for Perth Regional Parks.***
- 19. Develop mechanisms to educate landowners nearby to Lloyd Hughes Park on responsible cat and dog ownership.***

4.3 Fire

Strategic Direction 6: Undertake fire management to protect life and property of adjacent residents as the primary priority and protection of conservation values as second priority.

There is limited recorded fire history records for the Park, however known fires in the reserve are mapped in **Figure 8**. It is recommended that all known fires are recorded in the central City of Armadale record system. The last fire which covered the entire area of the Park was in February 2011.

The protection of life and property is the number one priority for fire management in the Park. Protection of the conservation values of the reserve is considered the second priority.

Fire prevention strategies that could be considered for the Park include the following:

- Fuel reduction through weed management;
- Public education and involvement;
- Strategic placement of firebreaks and fire access tracks; and
- Mosaic hazard reduction burning.

The City of Armadale Ranger Services Department regularly undertakes fuel load assessments within City vested reserves, and it is recommended that this occur on an annual basis within the Park. Where fuel loads are deemed in excess of safe levels, a cool control burn in a mosaic pattern should be undertaken. A number of fuel load lines should be assessed in order to implement a mosaic burning pattern based on priority areas. Priorities for fuel load reduction measures should be considered on an annual basis.

It is important to also consider that aspects of the fire regime such as fire frequency, time of the year, intensity of the fire, and the distribution of the fire, can alter the effect of fire on plant communities.

There are a number of management tracks throughout the Park that are at a standard to service emergency service vehicles (shown in **Figure 8**). The existing management tracks within the Park can also be used to section the reserve off into mosaic burn cells to implement mosaic burns. The fire access tracks and firebreaks should be maintained to the required standard to enable access by emergency service and management vehicles. Within the Metropolitan Regional Fire District, Fire and Emergency Services Authority (FESA) is the hazard management authority.

Grasses such as *Erharta calycina*, *Briza maxima* and *Avena barbata* are highly flammable and increase the fire risk and fuel loading in the reserve. Annual weed control programs to reduce the incidence of grassy weeds in bushland areas, should be undertaken to keep the fuel risk to a minimum. All incidences of fire within the Park should be followed by intensive weed control in order to reduce the potential weed load created by the fire conditions. Weed control is further detailed in Section 3.1.2.

Table 2: Fire management recommendations.

Access	Fire access tracks and fire breaks (as illustrated in Figure 8) should be maintained to a condition that provides access for fire fighting units to directly attack a fire. Fire access tracks and fire breaks should be annually inspected by the City of Armadale prior to summer. Any tracks that require upgrading should be upgraded by the City of Armadale or contractors employed by the City of Armadale directly.
	Works are to be consistent with the biodiversity conservation priorities identified in this Management Plan and consistent with City of Armadale Policy ENG 9 – Managing Phytophthora Dieback.
	No new firebreaks should be installed unless deemed necessary in an emergency situation or during the annual assessment of the fire management in the reserve. Where possible, fire suppression should be carried out from existing tracks.
Fuel Load Levels	Annually undertake a fuel loading assessment and assess fuel load reduction measures. Where fuel loads are deemed in excess of safe levels, the implementation of cool burns in a mosaic pattern should be undertaken.
Weed Management	Grass weed control should be undertaken annually to minimise fuel accumulation (see Section 3.2.2 Weeds).
	All fire events should be followed up with weed control (see Section 3.2.2 Weeds).
Record Management	Incidences of unplanned fires should be recorded on the City of Armadale central file system. Records should show a map of the area burnt and any further information regarding the fire event.

Recommendations:

20–26 Undertake fire management in line with the management recommendations in Table 2.

4.4 Stormwater

Strategic Direction 7: Maintain the stormwater system in and around Lloyd Hughes Park to maintain the values of the Park.

Storm water drains discharging into the Park pose serious problems because of high peak flows and by transporting sediments, nutrients, weed seeds, fungal spores, and litter into the Park.

High peak water flows cause erosion that then provides ideal conditions for weed seeds brought in to germinate and establish in a flow zone of relatively nutrient rich water. The high density of weeds around stormwater outlets supports this contention. Erosion can also become a hazard to recreational users of the Park.

Assessments undertaken of the stormwater system by the Technical Services Department for the management plan of 2000 provided for a number of recommendations to improve the system. The assessment indicated that:

- Outlet 1 - Does not appear to be causing erosion and weeds are not establishing around the outlet.
- Inlet 2 - No problem.
- Outlets 3 and 4 - Evidence of siltation and weed infestation near the outlet and erosion just down from Drain 2.
- Outlet 5 and Inlet 6 - Water exits Drain 4, travels along edge of the Park depositing silt half way between stormwater Drain Inlet 5. Siltation at Drain Inlet 5 has caused water to erode behind kerb. To be addressed separately to this management plan.

As a result of this assessment, Outlets 3 and 4 were modified with a silt trap and water spreading bank to prevent erosion. The runoff from the diversion bank behind Ashley Drive was also diverted so it does not enter the Park.

The drainage line between Outlet 5 and Inlet 6 (**Figure 3**) is heavily eroded. This should be monitored and measures implemented to reduce erosion as deemed necessary by the Technical Services Department.

Recommendations:

27. ***Monitor erosion of drainage line between Outlet 5 and Inlet 6. Undertake erosion prevention works if deemed necessary.***

4.5 Erosion

Strategic Direction 8: Maintain the structure of the soils within Lloyd Hughes Park.

Erosion is evident on existing tracks (See **Figure 3**), including tracks that are to be retained or improved for fire management or recreation. All tracks currently showing signs of erosion should have cross fall banks installed. The cost of erosion repair works has been estimated by the City's Technical Services Department.

Investigations into the extent of erosion at the reserve following the 2011 bush fires have been undertaken, and the estimated cost to carry out erosion control is significant. Funding for these works will be requested as an additional item to the Technical Services Budget in 2014/2015. Further details can be found at Section 4.4.

Recommendations:

28. *Undertake erosion repair works on all tracks.*

4.6 Water Corporation Infrastructure

The Water Corporation maintains access to a 15m wide water main easement running through the Park. In 2007, work was undertaken to upgrade fittings within the easement to increase the flexibility in transferring drinking water within the Perth Integrated Water Supply Scheme.

Remediation works during this upgrade included installing bollards to reduce illegal vehicle access, backfilling trenches, and terracing of a section of the easement to allow pedestrian access.

The Water Corporation requires access to maintenance points along the easement for maintenance works for the water pipe. To protect this infrastructure, no vegetation is to be planted over the easement. Before any planting or construction of any kind can take place within or near the easement, the Asset Management Perth Region and Procurement and Property Branch of the Water Corporation should be contacted.

Figure 3 shows the Water Corporation easement and Canning Trunk Main.

4.7 Recreational Use and Service Vehicle Access

Strategic Direction 9: Meet visitor expectations, minimise risks to visitor safety and maintain the Parks biodiversity values.

4.7.1 Tenure

The management plan of 2000 recommended to close the portion of Martin Street Road Reserve between the rear of lots along Ashley Drive and Canning Mills Road and add this to the Park. While this action was not implemented it is still considered important to the management of the Park and should be implemented during the life of this management plan.

Recommendations:

- 29. *Close the portion of Martin Street Road Reserve between the rear of lots along Ashley Drive and Canning Mills Road, and add to the Park.***

4.7.2 Infrastructure

The location of current infrastructure in the Park can be found in **Figure 6**.

The Park is highly used by recreational users. Three bench seats have been installed at strategic points in the Park to allow for rest areas. A large cleared area towards the middle of the Park may be a good location for additional tables or picnic areas. However, this should only be considered if there is a community need for such facilities due to the high of incidences of vandalism in the Park (see Section 3.10 Vandalism).

Signage exists at the entry points to the Park which identify acceptable and unacceptable behaviours, and provides information about the Park. Dieback signage, including boot cleaning stations exist at strategic points on dieback fronts and at entrances to the Park to encourage proper dieback hygiene practises by visitors.

Vandalism is a problem and is costly and time consuming to repair. It is recommended that signage be kept to a minimum.

An A-frame has been installed at the entrance on the corner of Martin Street and Marmion Street which can be used to provide additional information about Park values and features and opportunities for the community to be involved in the management of the Park.

Signage should be generally consistent with Department of Environment and Conservation regional park signage standards, and carry the City of Armadale's logo.

Recommendations:

- 30. *Repair vandalised signage and remove old and out dated signage on an as needs basis.***
- 31. *Upgrade and install relevant signage as required.***

4.7.3 Management Vehicle Access

It is proposed that the existing network of tracks in the Park be retained as shown in **Figure 6**.

This pattern of trails provides access for fire fighting vehicles, vehicles servicing and maintaining the Water Corporation pipeline, and Council management vehicles. Clearing of regrowth and pruning of trees may be necessary to ensure the correct width of 3m and a height of 4m for emergency vehicle access. This will be undertaken in a manner sympathetic to the environmental values of the Park, and inline with the *Environmental Protection Act*. Where the natural soil cannot support vehicles, a suitable surfacing material should be laid. Recommendations to prevent the spread of dieback need to be implemented.

Tracks which are not required for emergency service access should be maintained to a width of 1m to allow recreational access.

No new tracks are recommended.

Recommendations:

- 32. *Maintain emergency vehicle access tracks to a width of 3m, with a 4m height clearance. Tracks not necessary for emergency service access should be maintained to a width of 1m.***

4.7.4 Illegal Vehicle Access

Vehicles, other than management vehicles, are prohibited in the Park under City of Armadale Local Laws. However, both four wheel drive cars and two and four wheel off road motorbikes are still used illegally in the Park and in the wider Banyowla Regional Park. Offenders may be prosecuted under the *Off Road Vehicle Act*.

Illegal vehicles loosen and move soil, which can result in water erosion, widening of tracks, the spread of dieback, and the spread of weeds. These activities also pose a significant threat to other park users.

There are a number of signs at strategic locations advising off road vehicles are not permitted in the Park. There is evidence that these signs are largely ignored and that the Park is accessed illegally by both off road motor bikes and four wheel drive vehicles, which use the Park as a thoroughfare to the adjacent State managed land.

Through the use of fencing and gates, opportunities for off road vehicle access into the Park have been minimised. However a cohesive approach to the management is required to ensure all access points into the Park are controlled from illegal vehicular access. It is important to note however, while it is a possible deterrent for some potential off road vehicle users, the installation of gates and fencing is not effective in eliminating all illegal use of vehicles within the Park.

There are a number of entry points identified as access points into the Park from the surrounding residential land by illegal vehicle, with these being a priority for management. Recommendations to restrict this access include:

- Placement of bollards or large rocks next to the access gate at the end of Marmion Street;
- Placement of bollards or large rocks at the track entrance opposite Merilee Terrace; and
- Install gates and fencing to restrict access to management vehicles only in the area opposite Ashley Drive.

Access into the Park was opened up due to the February 2011 fire and the lack of vegetation acting as a barrier. Over time, the vegetation will return and access opportunities will reduce to the areas above only. Until this time, it is recommended that the following actions be undertaken:

- Replace the bollards at the corner of Martin Street and Marmion Street; and
- Install bollards along Martin Street.

City of Armadale Rangers, the DEC Rangers and Police, have previously undertaken joint effort ‘stings’ in the regional park. Feedback from the DEC Rangers suggests, if undertaken on a regular basis, that these ‘stings’ are effective in reducing off road vehicle use in the regional park.

Damaged gates and fences are repaired and upgraded on an ongoing basis, and all reports of off road vehicle use in the reserve should be followed up by City of Armadale rangers. Surrounding residents play an important role in notifying the City of vandalism and illegal access. These people should be encouraged to act as reserve custodians for the Park and to report any illegal activities to the appropriate authority.

Recommendations:

33. ***Repair damaged gates and fences as soon as possible.***
34. ***Control access through the use of gates and large rocks in areas identified in this Plan, and any new access openings created.***
35. ***Maintain ‘off road vehicle prohibited signs’ at strategic locations at Lloyd Hughes Park.***
36. ***Where resources permit, contribute to the undertaking of joint agency off road vehicle ‘stings’ in the Parks of Darling Range.***
37. ***Provide copies of the “Off Road Vehicles in the City of Armadale” brochure to locals and Park users and neighbours, encouraging them to report illegal off road vehicles when observed.***

4.8 Litter and Refuse

Strategic Direction 10: Keep Lloyd Hughes Park free from rubbish.

Litter is ugly, encourages further littering, creates a fire hazard, and can be a hazard to flora and fauna. Dumping of vegetation and grass clippings has the potential to introduce weeds into the Park, and a number of the weeds already found in the Park are referred to as ‘garden escapees’.

Litter and rubbish has consistently been a problem in the Park, particularly along Canning Mills Road and Martin Street and internal tracks. The reserve is accessible from all edges of the Park, providing many opportunities to dump rubbish. Occurrences of concrete, bricks and old plant material such as grass clippings have been dumped within the Park in recent years. Storm water drains discharging into the Park also bring in litter and rubbish. Implementing adequate access control will also go a long way to stopping the incident of rubbish dumping in the Park (see Section 3.8.3 - Illegal vehicle use). Any observations of illegal littering should be directed to the City’s Ranger Services Department who have powers under the *Litter Act* to prosecute litter offenders

Recommendations:

- 38. Remove rubbish found dumped within the Park as a priority.***

4.9 Vandalism

Strategic Direction 11: Reduce the occurrence of vandalism through careful facility design.

The vandalism of structures and facilities is an ongoing and costly problem in the Park. Reported incidences of vandalism are repaired by the City. Monitoring by reserve custodians and Friends Group members can help reduce the incidence of vandalism and help notify the City of problems.

All future structures and facilities installed in the Park should be robust to vandalism threats. The number of interpretative signs located in the Park should be kept to a minimum to reduce the potential for vandalism.

Recommendations:

- 39. Repair vandalism and remove graffiti as it occurs as a priority.***
- 40. Ensure all future facilities installed into Lloyd Hughes Park are robust to vandalism threats.***

41. Ensure that Park users are provided with information at Park entrances which includes:

- *areas in which they are/are not encouraged to recreate in the Park;*
- *appropriate conduct in the Park;*
- *how to report illegal activities; and*
- *Park safety information.*

4.10 Community Involvement and Education

Strategic Direction 12: Foster community awareness and involvement on the management of Lloyd Hughes Park.

Participation by the community has many benefits. Socially it creates stronger community identification, increases recreational opportunities and decreases vandalism, whilst environmentally it can benefit the maintenance of the Park through volunteer projects, and with a greater appreciation and care for the Park the community can give economic benefits (eg reduced rate needs to achieve better management). This highlights the necessity for much greater public awareness, knowledge and participation in matters of remnant bushland management.

In the past, areas of the Park have been subject to vandalism such as damaging the concrete access outlets, trail bike damage, and pushing over small trees. Friends groups and reserve custodians play an important role in the protection and care of the bushland. It is important to foster a sense of pride and ownership of bushland by the community who can provide a pool of volunteer labour with various skills. Friends of Lloyd Hughes Park had been inactive for a number of years as members have withdrawn from the group. Interest in reforming the group has been shown from one resident. It is recommended that the City support all interested residents in their efforts to encourage the surrounding community to participate in the Friends Group or to become a reserve custodian. Community interest in the management of the Park can be fostered through encouraging people in participating in activities such as weeding and planting days.

A sense of pride and ownership may also be encouraged by providing information about the Park. A brochure could be prepared outlining the values of the Park and measures being taken to protect those values such as dieback management.

In 2007 the City of Armadale received a grant from the Western Australian Local Government Association's Perth Biodiversity Project to undertake the Local Nature Spot Project on a number of the City's important bushland reserves. The project aimed to increase community involvement and support for the management of local natural areas, and to change behaviours that threaten urban bushland. During a twelve month period a Local Nature Spot Officer trialled various community based social marketing strategies to encourage behavioural change within the community surrounding Lloyd Hughes Park, Kendal Court, and Bob Blackburn Reserve. A benchmarking survey was undertaken prior to the project in June 2007, and a follow up survey was undertaken in April/May 2008 to evaluate how opinions and behaviours changed.

Responses documented in *Local Nature Spot Project Behaviour Change for Natural Diversity Community Survey Results* (Catalyse, 2008) indicated that people did value the Park, with 95% of people indicating that the Park was of high importance to them. While people were satisfied with the Park, the number of people delighted with the Park decreased from 69% in 2007 to 54% in 2008. In the follow up survey, only 25% of people indicated they use the reserve daily or weekly, a significant decline, from 50% in 2007. The most popular activities for people using the Park were walking, exercising pets, and nature watching. Respondents also felt that the Park was inviting, relaxing, attractive, a good place for wildlife, and increased the value of their property. Less people thought that the Park was unsafe or untidy. After undertaking the community marketing strategies of the project, opinion of the reserve improved by 8%.

Results also showed that people believe that the City has the most responsibility for looking after the Park, while only 68% of people indicated that it was the people in the community's responsibility.

Responses indicated that for Lloyd Hughes Park, access by off road vehicles, rubbish dumping, vandalism, and the loss of native plants and animals, were prominent issues and threats for the Park.

Recommendations:

- 42. Encourage more reserve custodians.**
- 43. Encourage and support the development of the Friends of Lloyd Hughes Park.**
- 44. Support the preparation and distribution of brochures about Lloyd Hughes Park.**

5 IMPLEMENTATION, COSTING AND FUNDING

5.1 Community Consultation

The Draft Lloyd Hughes Park Bushland Management Plan was advertised in the Comment News for a period of eight weeks from November 2012 until January 2013. Invitations for submissions were invited, of which three were received. A summary of submissions can be found at **Appendix D**.

5.2 Monitoring and Review

During the term of the Management Plan, progress will be reviewed on an annual basis by the City of Armadale. The review should precede, but be a part of, the budget cycle. It will be at this stage that strategies are altered or improved and be documented as an appendix to the Management Plan.

This plan is for a term of five (5) years.

Recommendations:

- 45. *Review progress in implementing the Management Plan in June each year, and review the Management Plan in 2018.***

5.3 Implementation Plan

Recommendation	Start Date	Estimated Cost	Responsibility	Funding
VEGETATION MANAGEMENT				
1 Monitor vegetation recovery following fires.	On going	Staff resources	Environment	N/A
2 Implement the post fire rehabilitation program following February 2011 fire in areas without the capacity to regenerate naturally.	2012 (Now Complete)	\$7,500 has been received through the State NRM Grants Program ² .	Environment	Grant funding.
3 Investigate funding opportunities to revegetate degraded areas of Lloyd Hughes Park with local native seedlings sourced from local seed stock.	Annually	Seed collection cost: \$2,000 Plant propagation and installation cost (5000 plants): \$4,500	Environment	Anticipated to be funded through budget allocation 2013/2014.
4 Participate in flora and fungi research as opportunities arise.	As Opportunities Arise	Cost Dependant on Extent of Survey	Environment	Grant funding or support through existing programs.
5 Undertake a vegetation condition survey in 2012/2013.	2013/2014	Staff Resources	Environment	N/A
6 Undertake weed mapping in Spring 2013, and review and reprioritise weed control efforts annually.	2013/2014	Staff Resources	Environment	N/A
7 Continue a comprehensive weed management program following the February 2011 fire.	2011 and 2012 (Now Complete)	\$10,000 received through the State NRM Grants Program.	Environment	Grant funding.
8 Undertake annual herbicide treatment of all high priority weed species as determined by the three yearly weed mapping.	Ongoing	To be confirmed – estimated at \$1,500.	Environment	Anticipated to be funded through budget allocation 2013/2014.
9 Control isolated outbreaks of all listed weeds and new species found in the Park as a priority.	As Necessary	Cost Dependant on Area	Environment	Anticipated to be funded through environmental weed control budget
10 Continue the weed spray program for <i>Watsonia</i> , <i>Freesia</i> , <i>Tribolium uniolae</i> and Pampas grass.	Ongoing	To be Confirmed – Estimated at \$1300	Environment	Anticipated to be funded through budget allocation 2013/2014.

Recommendation	Start Date	Estimated Cost	Responsibility	Funding
11 Fell, basal bark if appropriate, and remove woody weeds such as <i>Acacia baileyana</i> , <i>A. podalyriifolia</i> , <i>Chamaecytisus palmensis</i> and <i>Podalyria sericea</i> in order of priority as funding is available. Monitor recruitment of all woody weed species.	Ongoing	Treated 2009, follow up maybe required. Estimated Cost: \$400	Environment	Anticipated to be funded through budget allocation 2013/2014.
12 Monitor <i>Asparagus asparagoides</i> for the Rust Fungus.	Annually July to September	Staff Resources	Environment	No budget requirement.
13 Ensure compliance with Council Policy ENG 9 - Managing Phytophthora Dieback.	Ongoing	No Budget Requirement	Environment	No budget requirement.
14 Continue the dieback treatment and remapping program of the dieback fronts in the Reserve in 2016.	2016	\$6000	Environment	Anticipated to be funded through budget allocation 2015/2016.
15 Ensure the Water Corporation continues implementing their dieback management commitments while undertaking works in the Park.	Ongoing	No Budget Requirement	Environment	No budget requirement.

FAUNA

16 Participate in fauna research within the Park as opportunities arise.	As Opportunities Arise	Cost dependant on extent of survey	Environment	Seek grant funding or support through existing programs.
17 When opportunities arise, undertake further research into the population dynamics and threats of alien fauna on the conservation values in Lloyd Hughes Park.	As Opportunities Arise	Cost dependant on extent of survey	Environment	Seek grant funding or support through existing programs.
18 Implement alien fauna management measures as deemed necessary, consistent with the Department of Environment and Conservations Pest and Problem Animal Control Plan for Perth Regional Parks.	Ongoing, As Necessary	Cost dependant on management measures required. Estimated annual budget of \$500.	Environment	Anticipated to be funded through budget allocation 2013/2014.
19 Develop mechanisms to educate landowners nearby to Lloyd Hughes Park on responsible cat and dog ownership.	Ongoing	Covered under Rec 44	Environment	Covered under Recommendation No 44

Recommendation	Start Date	Estimated Cost	Responsibility	Funding
<i>FIRE</i>				
20 Fire access tracks and fire breaks should be annually inspected by the City of Armadale prior to summer and maintained to a condition that provides access for fire fighting units to directly attack a fire.	Annually	\$1,500	Ranger Services Parks and Reserves	To be met through existing Parks Budget.
21 No new firebreaks should be installed unless deemed necessary in an emergency situation or during the annual assessment of the fire management in the reserve. Where possible, fire suppression should be carried out from existing tracks.	Ongoing	N/A	Ranger Services	No funding required.
22 Annually undertake a fuel loading assessment and assess fuel load reduction measures.	Annually	Staff Resources	Ranger Services	No funding required.
23 Where fuel loads are deemed in excess of safe levels, the implementation of cool burns in a mosaic pattern should be undertaken.	As required	\$1,500/annum	Ranger Services Parks and Reserves	Met through existing Technical Services Budget.
24 Grass weed control should be undertaken annually to minimise fuel accumulation (see Section 3.2.2 Weeds).	Annually	Covered Under Recommendation Nos 8 - 11	Environment	To be met through existing Technical Services Budget.
25 All fire events should be followed up with weed control (see Section 3.2.2 Weeds).	As Required	Cost Dependent on Extent of Area	Environment	Anticipated to be funded through budget allocation 2013/2014.
26 Incidences of unplanned fires should be recorded on the City of Armadale central file system. Records should show a map of the area burnt and any further information regarding the fire event.	Ongoing	Staff Resources	Ranger Services	N/A
<i>STORMWATER</i>				
27 Monitor erosion of drainage line between outlet 5 and inlet 6. Undertake erosion prevention works if deemed necessary.	Ongoing	Staff Resources	Civil Works	N/A

Recommendation	Start Date	Estimated Cost	Responsibility	Funding
<i>EROSION</i>				
28 Post fire erosion control.	2014/2015	\$15,000	Parks	Anticipated to be funded through additional Technical Services Budget allocation 2014/2015.
<i>RECREATIONAL USE AND SERVICE VEHICLE USE</i>				
29 Close the portion of Martin Street Road Reserve between the rear of lots along Ashley Drive and Canning Mills Road and add to the Park.	2014	Staff Resources	Environment	No budget requirement.
30 Repair vandalised signage and remove old and out dated signage on an as needs basis.	As Necessary	Cost Depended on Extent of Damage	Parks	From existing Technical Services Budget as funding permits.
31 Upgrade and install relevant signage as required.	As Funding Permits	Estimated Cost Per Sign = \$1,500	Parks	As funding permits.
32 Maintain emergency vehicle access tracks to a width of 3m, with a 4 m height clearance. Tracks not necessary for emergency service access should be maintained to a width of 1m.	As Necessary	Cost per m ² to spray and trim branches.	Parks	Anticipated to be met through existing Technical Services Budget.
33 Repair damaged gates and fences as soon as possible.	As Necessary	Cost Depended on Extent of Damage	Parks	Anticipated to be met from existing Technical Services Budget.
34 Control access through the use of gates and large rocks in areas identified in this Plan and any new access openings created.	2014	\$6,000	Parks	Anticipated to be funded through budget allocation 2013/2014.
35 Maintain 'off road vehicle prohibited signs' at strategic locations at Lloyd Hughes Park.	As Necessary	Estimated Cost Per Sign = \$1,500	Parks	Anticipated to be met through existing Technical Services Budget.
36 Where resources permit, contribute to the undertaking of	As Funding	Cost Dependant on	Ranger Services	Anticipated to be met

Recommendation		Start Date	Estimated Cost	Responsibility	Funding
	joint agency off road vehicle stings in the Darling Range Regional Park.	Permits	Extent of Project		from existing Technical Services Budget in conjunction with external agencies involved.
37	Provide copies of the “Off Road Vehicles in the City of Armadale” brochure to locals and park users and neighbours encouraging them to report illegal off road vehicles when observed.	2014	Brochures have been developed and printed. Cost to send out to residents within 200m @\$0.55 each for postage = \$148.50.	Environment	Met through existing Environmental Budgets.
LITTER AND REFUSE					
38	Remove rubbish found dumped within the Park as a priority.	Ongoing	Cost Depended on Extent of Damage	Parks	Anticipated to be met through existing Technical Services Budget.
VANDALISM					
39	Repair vandalism and remove graffiti as it occurs as a priority.	Ongoing	Cost Depended on Extent of Damage	Parks	Anticipated to be met from existing Technical Services Budget.
40	Ensure all future facilities installed into Lloyd Hughes Park are robust to vandalism threats.	Ongoing	No Budget Requirement	Parks	No budget requirement.
41	Ensure that Park users are provided information at Park entrances which includes: <ul style="list-style-type: none"> • areas in which they are/ are not encouraged to recreate in the Park; • appropriate conduct in the Park; • how to report illegal activities; and • Park safety information. 	Ongoing	Met Through Other Recommendations	Environment	No budget requirement.

Recommendation	Start Date	Estimated Cost	Responsibility	Funding
<i>COMMUNITY INVOLVEMENT AND EDUCATION</i>				
42 Encourage more reserve custodians.	Ongoing	No Budget Requirement	Environment	No budget requirement.
43 Encourage and support the development of the Friends of Lloyd Hughes Park.	Ongoing	No Budget Requirement	Environment	No budget requirement.
Support the preparation and distribution of brochures about Lloyd Hughes Park.	Ongoing	Able to be printed internally – no budget allocation.	Environment	No budget required or could be sourced through grants.
<i>MONITORING AND REVIEW</i>				
45 Review progress in implementing the Management Plan in June each year and review the Management Plan in 2017.	2017	Staff Resources	Environment	No budget requirement.

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7 FIGURES

Figure 1: Locality Plan.

Figure 2: Environmental Geology.

Figure 3: Topography, hydrology and drainage.

Figure 4: Vegetation community types.

Figure 5: Vegetation condition mapping 2008.

Figure 6: Infrastructure and tracks.

Figure 7: Dieback occurrence.

Figure 8: Fire management.

FIGURE 1 – LOCALITY PLAN

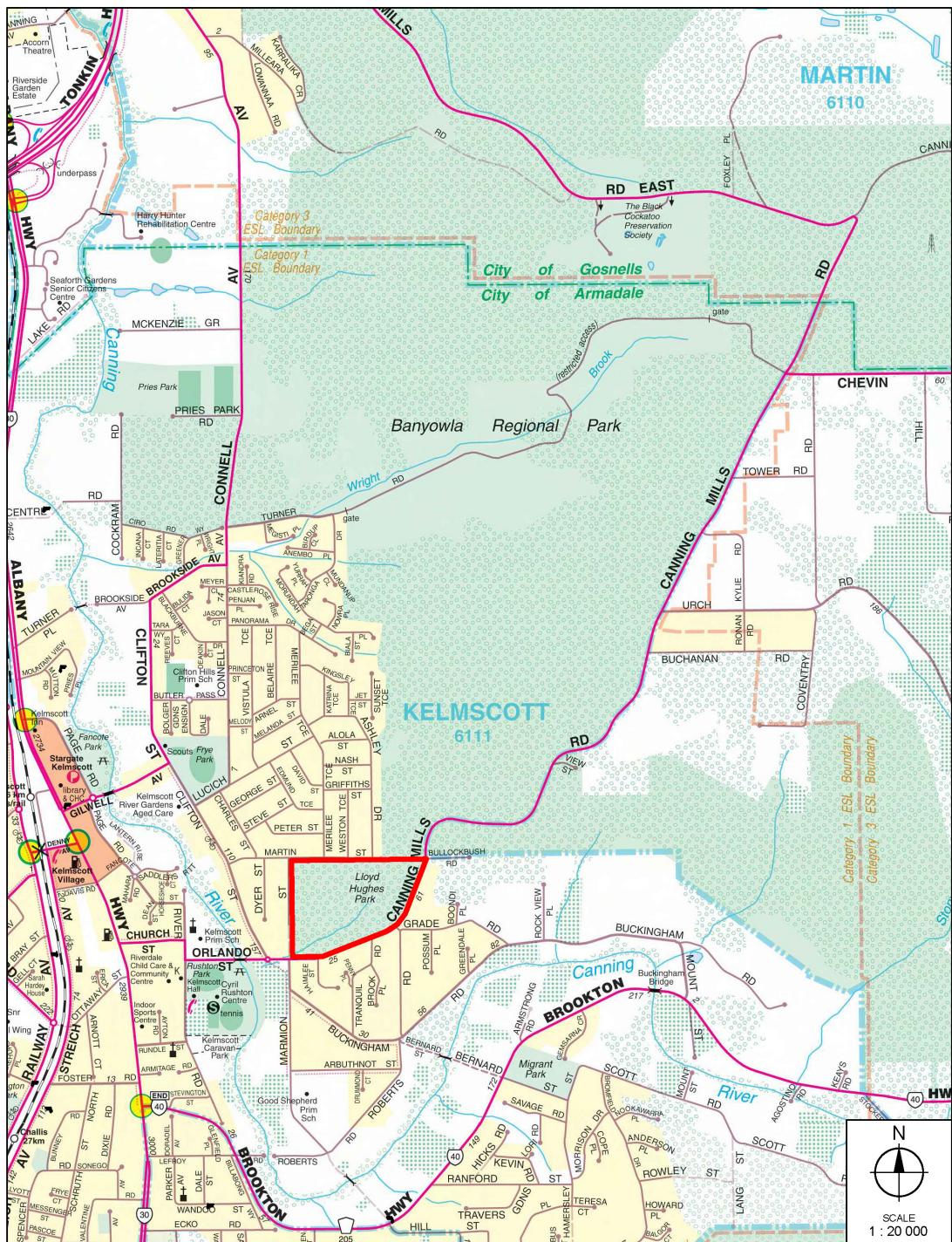


FIGURE 1
LOCALITY PLAN

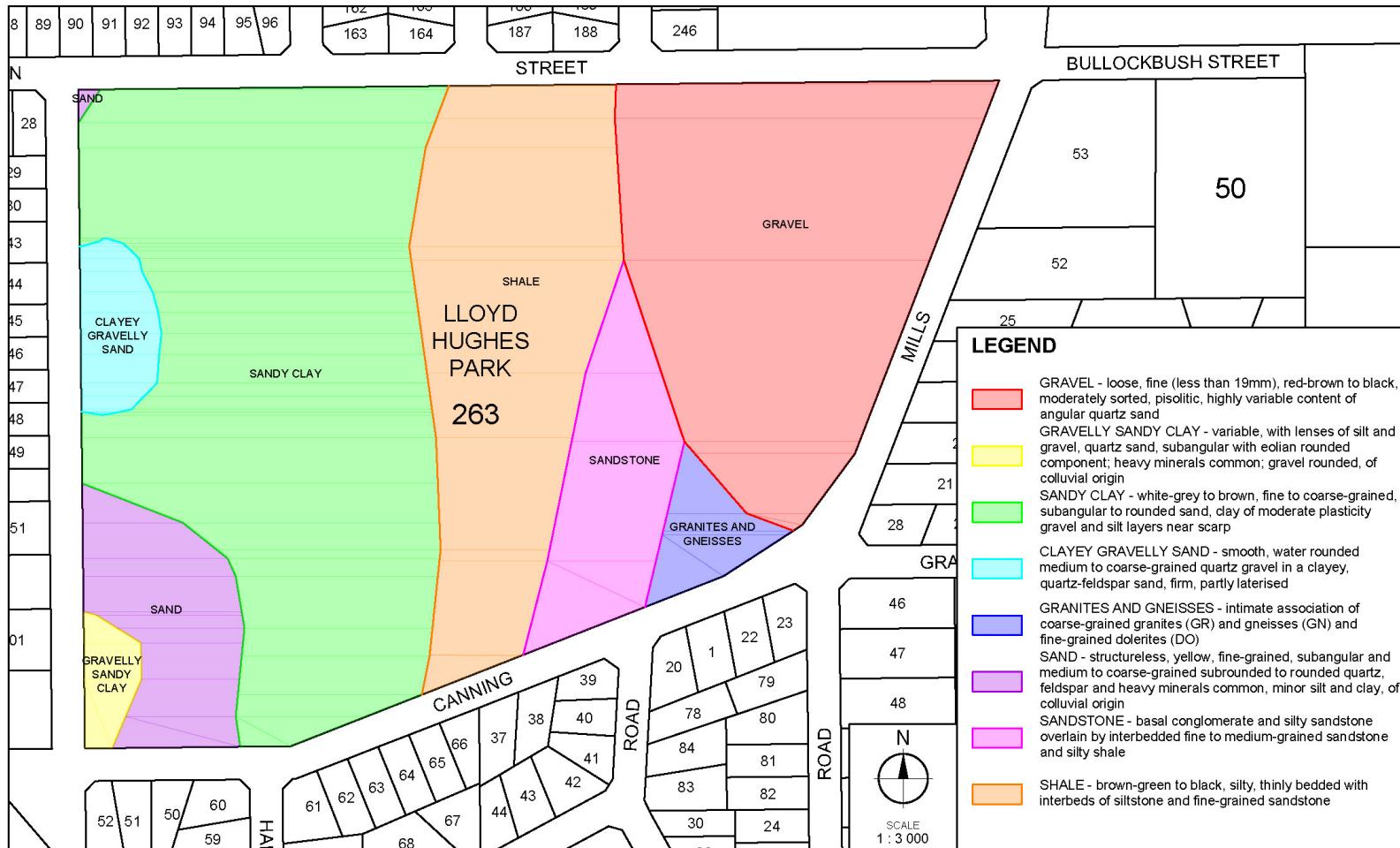
FIGURE 2 – ENVIRONMENTAL GEOLOGY

FIGURE 2
ENVIRONMENTAL GEOLOGY

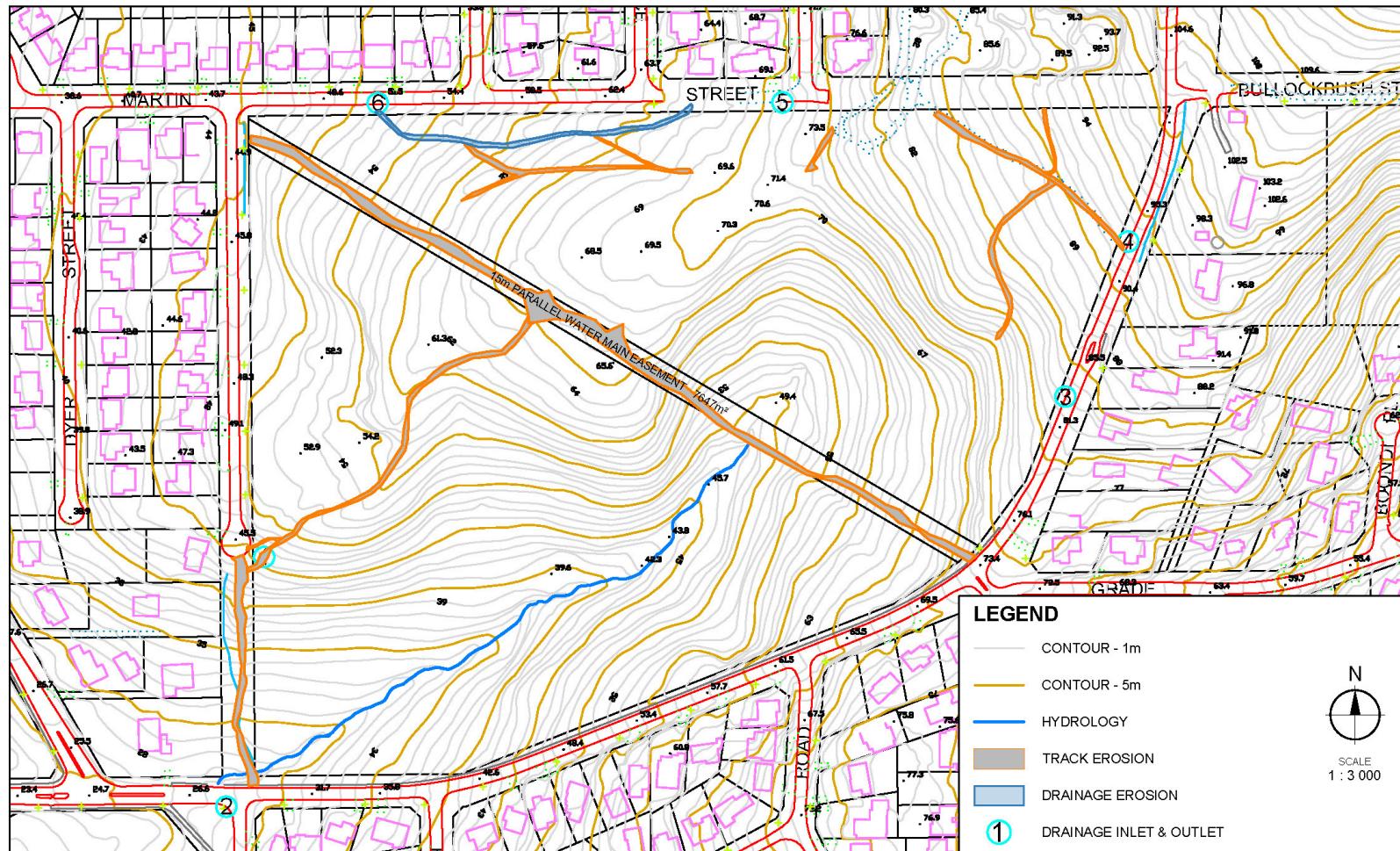
FIGURE 3 – TOPOGRAPHY, HYDROLOGY AND DRAINAGE

FIGURE 3
TOPOGRAPHY, HYDROLOGY AND DRAINAGE

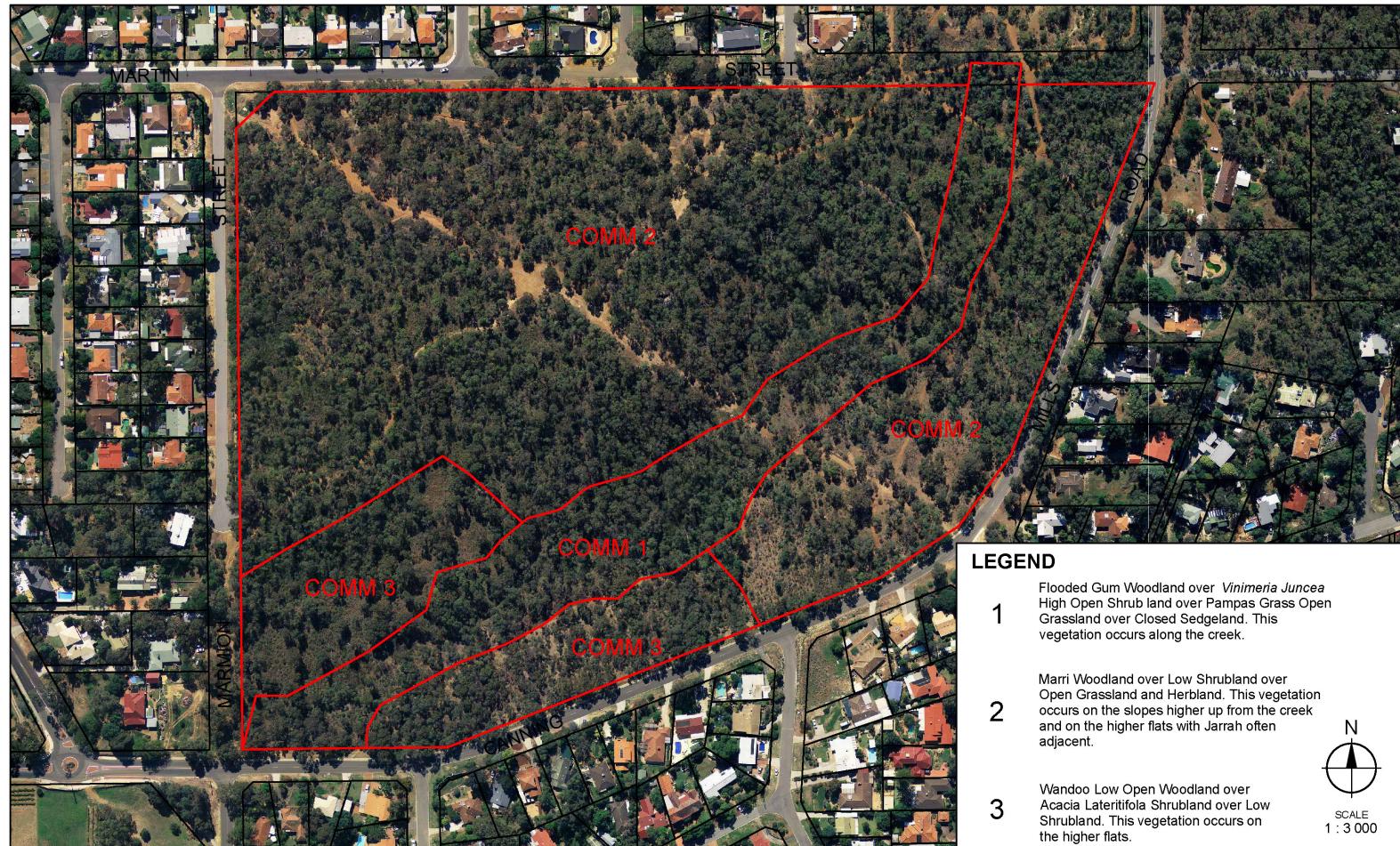
FIGURE 4 – VEGETATION COMMUNITY TYPES

FIGURE 4
VEGETATION COMMUNITY TYPES

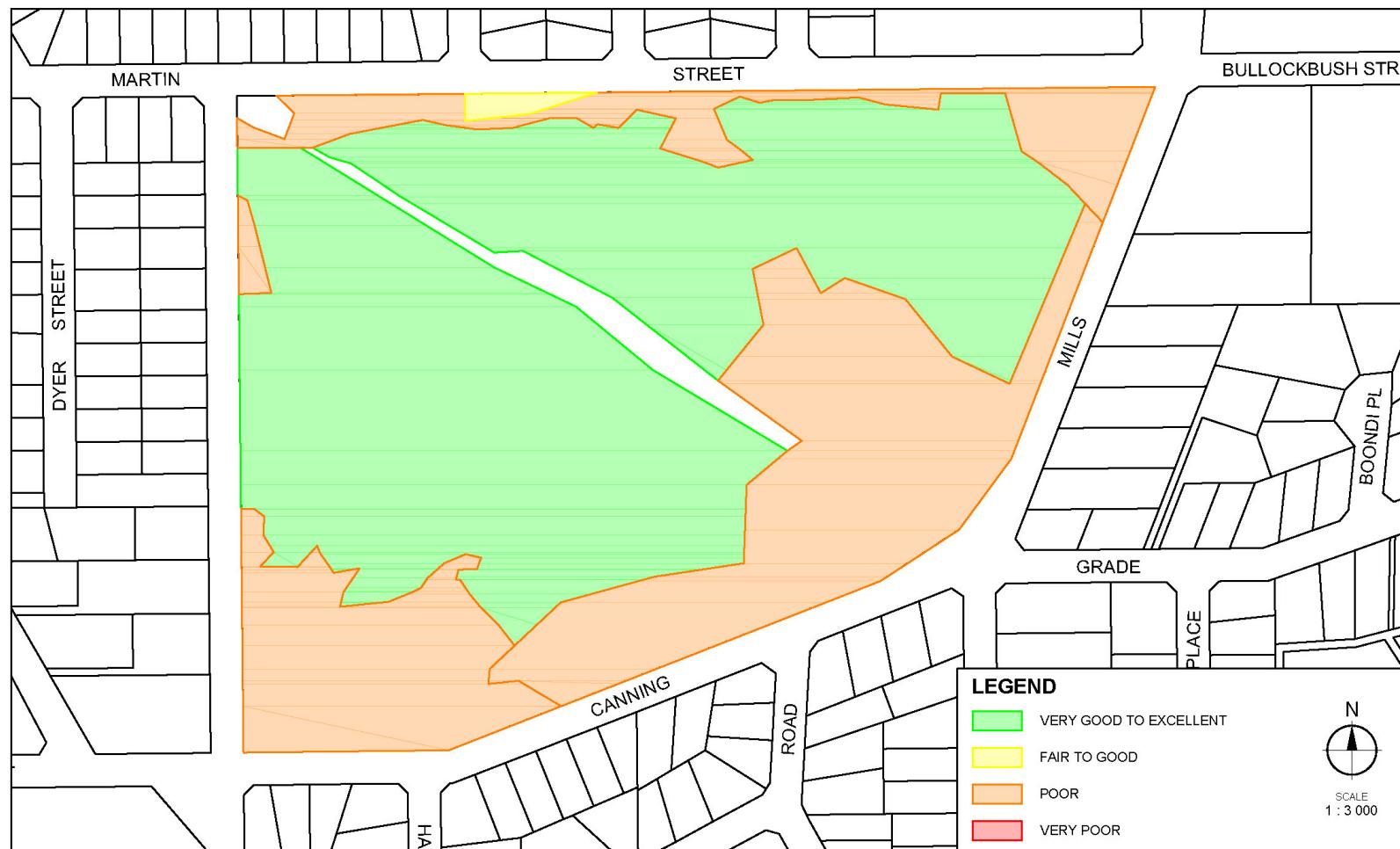
FIGURE 5 – VEGETATION CONDITION MAP 2008

FIGURE 5
VEGETATION CONDITION MAPPING 2008

FIGURE 6 – INFRASTRUCTURE AND TRACKS

FIGURE 6
INFRASTRUCTURE AND TRACKS

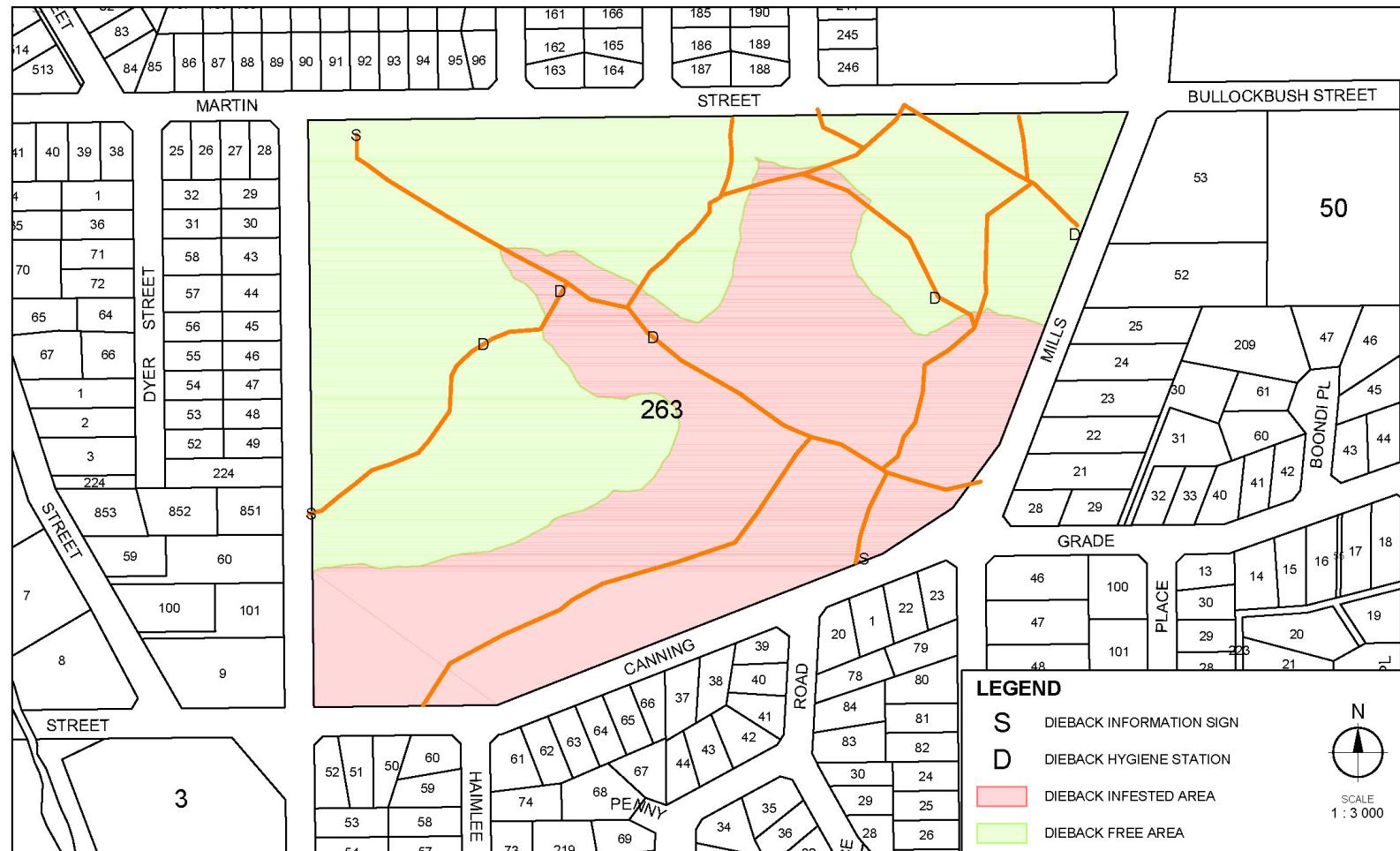
FIGURE 7 – DIEBACK OCCURRENCE

FIGURE 7
DIEBACK OCCURANCE JUNE 2010

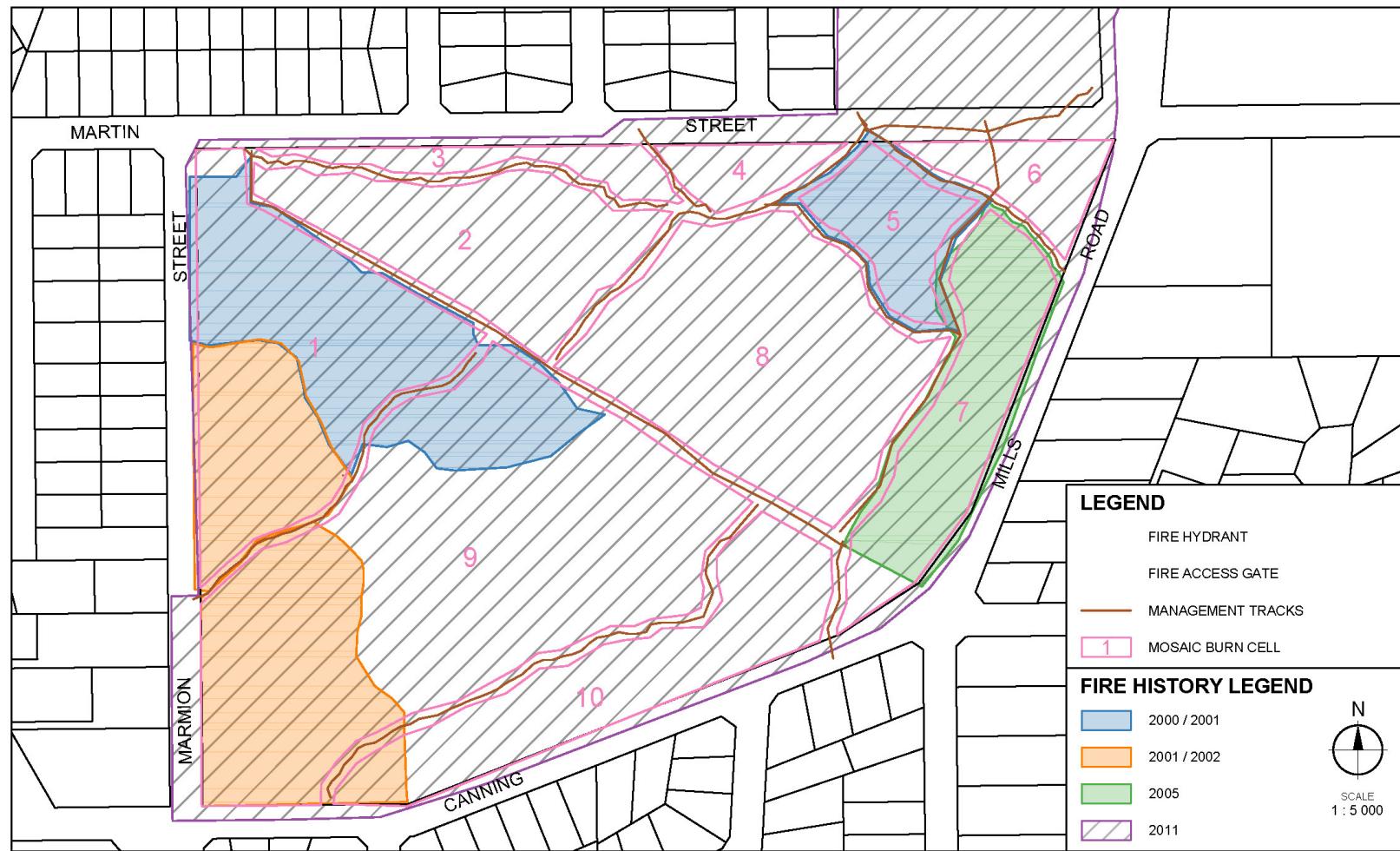
FIGURE 8 – FIRE MANAGEMENT

FIGURE 8
FIRE MANAGEMENT

8 APPENDICES

APPENDIX A – Review of Management Plan 2000 – 2005 Implementation Plan

	Recommendation	Timeline	Implementation Status
1.	Weed removal occur according to the priorities detailed in Table 4.2 and using methods detailed in Scheltema and Harris (1995).	Ongoing	Ongoing – weed control program undertaken by the City 2000-2013
2.	Implement the management recommendations from the Dieback report, namely:		Complete
2.1	No soil/gravel/mulch/plants to be brought into the uninfested parts of Lloyd Hughes Park. If these materials must be introduced, they must be <i>P. cinnamomi</i> free.	1999/2000	Complete - management activities undertaken consistent with ENG9 policy
2.2	Maintenance activities (such as fencing, track maintenance etc) to occur in dry soil conditions, when possible/practical.	1999/2000	Complete - management activities undertaken consistent with ENG9 policy
2.3	A program of phosphite treatment to be implemented and <i>P. cinnamomi</i> infestation to be monitored.	1999/2000	Complete – City undertook treatment in 2006.
2.4	The City of Armadale, Friends Groups and others undertaking on-ground works, to implement hygiene measures.	1999/2000	Complete - management activities undertaken consistent with ENG9 policy
3.	There should be no controlled burning of Lloyd Hughes Park for the term of this Implementation Management Plan.		Complete - Urban Fire Management Plan was prepared in 2002 which replaced the fire management section of the management plan and has since guided fire management in the Park. The recommendation of no controlled burning for the life of the management plan was revoked on the adoption of the 2002 urban fire management plan.
4.	Encourage more Reserve Custodians.	2000/2001	Complete - Undertaken through the City's Bushcare and Environmental Working Group and Friends Group Manual.
5.	Commence an education program which:		Complete – Participated in the Local Nature Spot program in conjunction with the Perth Biodiversity Program. This project aimed to increase participation in the management of the reserve and to address factors threatening the bushland.
5.1	Informs the community around Lloyd Hughes Park about the adverse impacts of pets on native fauna; and		
5.2	Notifies the community when feral animal control programs are being undertaken.		
6.	Monitor and when necessary control the population of foxes by a combination of trapping and methods that destroy fox dens.		Outstanding - No fox baiting program has been undertaken. This would need to be run in conjunction with DEC which has not as yet initiated such a program.

	Recommendation	Timeline	Implementation Status
7.	Alter drain outlets 3 and 4 to trap silt and spread water to prevent erosion.	2000/2001	Complete
8.	Council address drainage management of waters flowing from the diversion bank behind houses in Ashley Drive and from Drain 5 so that water flows are contained or piped.		Complete
9.	Upgrade or close and rehabilitate tracks as shown in Figure 4.2 to minimise the chances of dieback spread and install seating at locations indicated in Figure 4.2.	2000/2001	Partially complete – A number of tracks are closed and have naturally regenerated. Seating complete.
10.	Install signage around the Park as follows:		Complete.
10.1	At the main entrance a sign providing an overview of the park, its values and management;	1999/2000 – Design 2000/2001 – Build and install	Complete – A-frame installed at the entrance at the corner of Martin St and Marmion St.
10.2	Along tracks small information signs about individual flora, fauna or sites of geological interest;	2000/2001 develop concept	Complete – Information provided at the main entrance to the Park. Signs within the Park are at high risk of vandalism and as such have not been considered appropriate.
10.3	Option B dieback management signage as recommended by the Dieback Working Group; and	2000/2001	Complete – Dieback information signage and boot cleaning stations installed at strategic locations.
10.4	At park entrance points signs highlighting acceptable and unacceptable activities.	2000/2001 develop concept	Complete – signage installed at strategic locations indicating unacceptable activities in the reserve.
11.	Undertake erosion repair works on all tracks.	2000/2001	Minor erosion works have been undertaken. Limestone has been installed on the main tracks. Water Corporation installed log steps down the pipe easement. Followup track erosion works are required.
12.	Revegetate tracks that are to be closed.	2000/2001	Complete – Closed tracks have naturally regenerated.
13.	Lloyd Hughes Park should be cleaned-up on each Clean-up Australia Day.	1999/2000	Incomplete – participation in Clean-up Australia Day sporadically until the disbandment of Friends of Lloyd Hughes Park.
14.	Remove road construction rubble from along Canning Mills Road.	1999/2000	Not competed.
15.	Support funding applications for volunteers to attend courses on leadership, bush rehabilitation, direct seeding and other related workshops.	2000/2001	Complete – Achieved through City's Friends Group Manual
16.	Support preparation of information brochures about Lloyd Hughes Park.	1999/2000	Complete – Information bulletin developed and distributed through the Local Nature Spot Program.

	Recommendation	Timeline	Implementation Status
17.	Close the portion of Martin Street Road Reserve between the rear of lots along Ashley Drive and Canning Mills Road and add to the Park.	2000/2001	Incomplete
18.	Change the purpose of Lloyd Hughes Park from "Parkland" to "Conservation and Recreation".	2000/2001	Complete.
19.	Review progress in implementing the Management Plan in February each year and review the Management Plan in 2004.		Complete.

APPENDIX B – Flora and Avifauna Species Lists

Flora Species *Introduced species	Common name
<i>Acacia ?lateriticola</i>	
<i>Acacia baileyana*</i>	
<i>Acacia diptera</i>	
<i>Acacia podalyriifolia*</i>	Queensland Silver Wattle
<i>Acacia pulchella</i>	Prickly Moses
<i>Acacia stenoptera</i>	
<i>Acentrocarpus cansiculatus</i>	
<i>Anagallis arvensis*</i>	Pimpernel (Blue or Scarlet)
<i>Anigozanthos manglesii</i>	
<i>Arthropodium capilipes</i>	
<i>Asparagus asparagoides*</i>	Bridal Creeper
<i>Avena fatua*</i>	Wild Oat
<i>Baumea sp.</i>	
<i>Beackea camphorosme</i>	
<i>Bossiaca ornata</i>	
<i>Briza maxima*</i>	Blowfly Grass
<i>Briza minor*</i>	Shivery Grass
<i>Burchardia multiflora</i>	
<i>Caesia micrantha</i>	
<i>Cassithya sp.</i>	
<i>Cassytha glabella</i>	
<i>Chamaecytisus palmensis*</i>	Tree Lucerne, Tagasaste
<i>Cheilanthes austroltenunfolia</i>	
<i>Chorizema dicksonii</i>	
<i>Cortaderia selloana*</i>	Pampus Grass
<i>Cytisus prolifer*</i>	Tree Lucerne
<i>Dayesia pectinate</i>	
<i>Deviesea horrids</i>	
<i>Drosera emhrorhiza</i>	
<i>Drosera menziesii</i>	
<i>Dryandra nivea</i>	
<i>Ehrharta calycina*</i>	Veldt Grass
<i>Eragrostis curvula*</i>	African Love Grass
<i>Eryngium dinnatifidum</i>	
<i>Eucalyptus calophylla</i>	Marri
<i>Eucalyptus marginata</i>	Jarrah
<i>Eucalyptus rudis</i>	Flooded Gum
<i>Eucalyptus wandoo</i>	Wandoo
<i>Euphorbia sp.*</i>	
<i>Ferraria crispa *</i>	Black Flag
<i>Fressia hybrid*</i>	Fressia
<i>Gastrolobium spinosum</i>	
<i>Gomphocarpus fruticosus *</i>	Cotton bush
<i>Gompholobium marginatum</i>	
<i>Gompholobium polymorphum</i>	
<i>Gonocarpus pithyoides</i>	
<i>Grasses</i>	
<i>Hakea lissocarpa</i>	
<i>Hakea trifurcata</i>	
<i>Hakea undulata</i>	
<i>Hakea unquiata</i>	
<i>Hibbertia commutata</i>	
<i>Hibbertia hypercoidea</i>	

Flora Species *Introduced species	Common name
<i>Hibbertia lasiopus</i>	
<i>Hyparrhenia hirta*</i>	Tambookie
<i>Iris germanica*</i>	Tall Bearded Iris
<i>Isopogon asper</i>	
<i>Kennedia coccinea</i>	
<i>Kennedia prostrata</i>	
<i>Lasiopetalum floribundum</i>	
<i>Lathyrus tingitanus*</i>	Tangier Pea
<i>Lechenaultia bibola</i>	
<i>Lepidosperma ?tenua</i>	
<i>Lepidosperma sp.</i>	
<i>Lobelia alata</i>	
<i>Lupinus cosentinii*</i>	Blue Lupin
<i>Macrozamia riedii</i>	Zamia Palm
<i>Microlaena stipoides</i>	
<i>Moraea flaccida*</i>	One-leaved Cape Tulip
<i>Olearia eiaeophila</i>	
<i>Opercularia vaginata</i>	
<i>Oxalis glabra*</i>	
<i>Oxalis pes-carpa*</i>	Sourso
<i>Oxalis sp.*</i>	
<i>Patersonia juncea</i>	
<i>Patersonia occidentalis</i>	
<i>Pennisetum clandestinum*</i>	Kikuyu
<i>Pennisetum setaceum*</i>	Fountain Grass
<i>Petrophile biloba</i>	
<i>Phylianthes calycinus</i>	
<i>Pimelea imbricata</i>	
<i>Pimelea sp</i>	
<i>Pinus radiata*</i>	Radiata Pine
<i>Piptatherum miliaceum*</i>	Rice Millet
<i>Plantago lanceolata*</i>	Ribwort Plantain
<i>Podalyria sericea*</i>	
<i>Pronaya sp.</i>	
<i>Ptilotus manglesii</i>	
<i>Ptilotus sp.</i>	
<i>Romulea rosea*</i>	Guildford Grass
<i>Scaevola sp.</i>	
<i>Solanum nigrum*</i>	Black nightshade
<i>Sphaerolobium medium</i>	
<i>Stipa camphlachne</i>	
<i>Stipa campylachne</i>	
<i>Stipa eaegantissima</i>	
<i>Stipa glauca</i>	
<i>Stylium affine</i>	
<i>Stylium bulbiferum</i>	
<i>Stypandra glauca</i>	
<i>Sylidium affine</i>	
<i>Tetrarrirena leavis</i>	
<i>Thesomelaena sp.</i>	
<i>Thysenotus multiflorus</i>	
<i>Tribolium uniolae*</i>	
<i>Trichocline spathulata</i>	
<i>Trifolium angustifolium*</i>	Narrow Leaf Clover
<i>Trifolium campestre*</i>	Hop Clover
<i>Trifolium sp*</i>	

Flora Species *Introduced species	Common name
<i>Typha ?domingensis</i>	
<i>Urospermum picroides*</i>	False Hawkbit
<i>Vicia sativa*</i>	
<i>Viminaria juncea</i>	
<i>Vinca major*</i>	Blue Periwinkle
<i>Watsonia meriana*</i>	Watsonia
<i>Xanthosia candida</i>	
<i>Xanthorrhoea preissii</i>	Grass Tree

Avifauna Species	Common name
<i>Acanthiza chrysorrhoa</i>	Yellow-rumped Thornbill
<i>Acanthiza inornata</i>	Western Thornbill
<i>Acanthiza pusilla</i>	Brown Thornbill
<i>Acanthorhynchus superciliosus</i>	Western Spinebill
<i>Accipiter fasciatus fasciatus</i>	Brown Goshawk
<i>Anas superciliosa</i>	Black Duck
<i>Anthochaera carunculata</i>	Red Wattlebird
<i>Anthochaera lunulata</i>	White Little Wattlebird
<i>Aquila audax</i>	Wedge-tailed Eagle
<i>Aquila morphnoides morphnoides</i>	Little Eagle
<i>Ardea novaehollandiae</i>	White-faced Heron
<i>Artamus cyanopterus</i>	Dusky Woodswallow
<i>Cacatua pastinator *</i>	Western Long-billed Corella
<i>Cacatua roseicapilla *</i>	Galah
<i>Cacatua sanguinea *</i>	Little Corella
<i>Cacatua tenuirostris *</i>	Eastern Long-billed Corella
<i>Cacomantis flabelliformis flabelliformis</i>	Fan-tailed Cuckoo
<i>Calyptorhynchus banksii naso</i>	Red-tailed Black Cockatoo
<i>Calyptorhynchus baudinii</i>	Baudin's Cockatoo
<i>Calyptorhynchus latirostris</i>	Carnaby's Cockatoo
<i>Chenonetta jubata</i>	Australian Wood Duck
<i>Chrysococcyx lucidus plagosus</i>	Shining Bronze Cuckoo
<i>Colluricinclla harmonica rufiventris</i>	Grey Shrike-thrush
<i>Columba livia *</i>	Pigeon
<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike
<i>Corvus coronoides perplexus</i>	Australian Raven
<i>Cracticus tibican doralis</i>	Australian Magpie
<i>Cracticus torquatus torquatus</i>	Grey Butcherbird
<i>Dacelo novaeguineae *</i>	Laughing Kookaburra
<i>Dicaeum hirundinaceum hirundinaceum</i>	Mistletoebird
<i>Elanus caeruleus axillaris</i>	Black-shouldered Kite
<i>Falco cenchroides cenchroides</i>	Australian Kestrel
<i>Falco longipennis</i>	Australian Hobby or Little Falcon
<i>Falco peregrinus</i>	Peregrine Falcon

Avifauna Species	Common name
<i>Gerygone fusca fusca</i>	Western Gerygone
<i>Grallina cyanolaauca</i>	Magpie Lark
<i>Hamirostra isura</i>	Square-tailed Kite
<i>Hirundo neoxena</i>	Welcome Sparrow
<i>Hirundo nigricans nigricans</i>	Tree Martin
<i>Lichenostomus virescens</i>	Singing Honeyeater
<i>Lichmera indistincta indistincta</i>	Brown Honeyeater
<i>Malurus elegans</i>	Red-winged Fairy-wren
<i>Malurus splendens splendens</i>	Splendid Fairy-wren
<i>Melithreptus chloropsis</i>	Western White-naped Honeyeater
<i>Merops ornatus</i>	Rainbow Bee-eater
<i>Neophema elegans</i>	Elegant Parrot
<i>Ninox novaeseelandiae boobook</i>	Boobook Owl
<i>Pachycephala pectoralis fuliginosa</i>	Golden Whistler
<i>Pachycephala rufiventris</i>	Rufous Whistler
<i>Pardalotus punctatus</i>	Spotted Pardalote
<i>Pardalotus striatus westraliensis</i>	Striated Pardalote
<i>Petroica multicolor campbelli</i>	Scarlet Robin
<i>Phaps chalcoptera</i>	Common Bronzewing
<i>Phylidonyris nigra gouldii</i>	White-cheeked Honeyeater
<i>Phylidonyris novaehollandiae</i>	New Holland Honeyeater
<i>Platycerus spurius</i>	Red-capped Parrot
<i>Platycerus zonarius</i>	Ringneck Parrot
<i>Podargus strigoides brachypterus</i>	Tawny Frogmouth
<i>Rhipidura fuliginosa preissi</i>	Grey Fantail
<i>Rhipidura leucophrys leucoprys</i>	Willie Wagtail
<i>Sericornis frontalis balstoni</i>	White-browed Scrubwren
<i>Smicrornis brevirostris</i>	Weebill
<i>Streptopelia chinensis *</i>	Spotted Turtle-dove
<i>Streptopelia senegalensis senegalensis *</i>	Laughing Turtle-dove
<i>Tadorna tadornoides</i>	Australian Shelduck
<i>Todiramphus sanctus sanctus</i>	Sacred Kingfisher
<i>Turnix varia varia</i>	Painted Button-quail
<i>Zosterops lateralis</i>	Silvereye

* = Introduced or Exotic Species

(Adapted from table in Lloyd Hughes Management Plan 2000-2005 (based on observations from 1996- 1999).)

APPENDIX C – Weed Occurrence Mapping from 2008

<i>Species</i>	No Stems	Stem Diameter	Square Metre	Density Primary	Priority	Date Mapped	ID
<i>Fressia hybrid</i>	4	0	1		Medium	Sep-08	302
<i>Watsonia meriana</i>	0	0	3		Medium	Sep-08	303
<i>Chamaecytisus palmensis</i>	20	0	0	60-70%	Medium	Sep-08	304
<i>Watsonia meriana</i>	0	0	0	10-20%	High	Sep-08	305
<i>Plantago lanceolata</i>	10	0	1.5		Low	Sep-08	306
<i>Oxalis pes-carpa, Plantago lanceolata, Vinca major</i>	0	0	0		Low	Sep-08	307
<i>Acacia podalyriifolia</i>	5	1	3		Low	Sep-08	308
<i>Watsonia meriana</i>	3	0	1		High	Sep-08	309
<i>Watsonia meriana</i>	15	0	6		High	Sep-08	310
<i>Fressia hybrid, Watsonia sp.</i>	0	0	0	0-10%	High	Sep-08	311
<i>Watsonia meriana</i>	3	0	2		High	Sep-08	312
<i>Fressia hybrid</i>	2	0	1		Medium	Sep-08	313
<i>Oxalis pes-carpa</i>	1	0	0.25		high	Sep-08	316
<i>Oxalis sp</i>	0	0	2		High	Sep-08	317
<i>Plantago lanceolata</i>	1	0	0		Low	Sep-08	318
<i>Oxalis sp, Trifolium sp</i>	0	0	1		Low	Sep-08	319
<i>Fressia hybrid</i>	0	0	0	0-10%	High	Sep-08	320
<i>Oxalis pes-carpa</i>	0	0	2		Medium	Sep-08	321
<i>Fressia hybrid</i>	1	0	0		High	Sep-08	322
<i>Fressia hybrid</i>	10	0	2		High	Sep-08	323
<i>Ehrharta calycina</i>	4	0	1		High	Sep-08	324
<i>Watsonia meriana</i>	6	0	2		High	Sep-08	325
<i>Lupinus cosentinii</i>	5	0	0.5		Low	Sep-08	326
<i>Chamaecytisus palmensis</i>	10	0	3		Medium	Sep-08	327
<i>Watsonia meriana</i>	4	0	1		High	Sep-08	328
<i>Ehrharta calycina, Oxalis sp., Romulea rosea</i>	0	0	0	0-10%	High	Sep-08	329
<i>Chamaecytisus palmensis</i>	3	1	2		Low	Sep-08	330
<i>Solanum nigrum</i>	1	0	0		High	Sep-08	331
<i>Euphorbia sp.</i>	1	0	0		High	Sep-08	332
<i>Solanum nigrum</i>	1	0	0		High	Sep-08	333
<i>Watsonia meriana</i>	3	0	0		Medium	Sep-08	334
<i>Watsonia meriana</i>	5	0	2		Medium	Sep-08	335
<i>Watsonia meriana</i>	5	0	2		Medium	Sep-08	336
<i>Chamaecytisus palmensis</i>	0	0	0	50-60%	Low	Sep-08	337
<i>Ehrharta calycina, Oxalis pes-carpa, Watsonia meriana</i>	0	0	0	60-70%	Medium	Sep-08	338
<i>Watsonia meriana</i>	2	0	1		High	Sep-08	339

<i>Species</i>	No <i>Stems</i>	Stem <i>Diameter</i>	Square <i>Metre</i>	Density <i>Primary</i>	Priority	Date <i>Mapped</i>	ID
<i>Ehrharta calycina</i>	0	0	3		High	Sep-08	340
<i>Watsonia meriana</i>	4	0	1		High	Sep-08	341
<i>Watsonia meriana</i>	5	0	1		High	Sep-08	342
<i>Ehrharta calycina</i>	0	0	3		High	Sep-08	343
<i>Fressia hybrid</i>	0	0	0	50-60%	Medium	Sep-08	344
<i>Ehrharta calycina</i>	0	0	3		High	Sep-08	345
<i>Lathyrus tingitanus</i>	0	0	2		Low	Sep-08	346
<i>Watsonia meriana</i>	15	0	5		Medium	Sep-08	348
<i>Watsonia meriana</i>	10	0	2		Medium	Sep-08	349
<i>Watsonia meriana</i>	5	0	2		Medium	Sep-08	350
<i>Watsonia meriana</i>	20	0	10		High	Sep-08	351
<i>Ferraria crispa</i>	0	0	2		High	Sep-08	352
<i>Chamaecytisus palmensis</i>	10	0	10		Low	Sep-08	353
<i>Watsonia meriana</i>	15	0	10		High	Sep-08	484
<i>Acacia podalyriifolia</i>	1	0	0.5		Low	Sep-08	485
<i>Watsonia meriana</i>	1	0	0		Medium	Sep-08	487
<i>Fressia hybrid</i>	50	0	20		Low	Sep-08	488
<i>Moraea flaccida</i>	10	0	2			Sep-08	489
<i>Acacia podalyriifolia</i>	4	1	10		Low	Sep-08	490
<i>Oxalis pes-carpa, Trifolium sp</i>	30	0	4		Low	Sep-08	492
<i>Trifolium sp</i>	2	0	1		Medium	Sep-08	493
<i>Oxalis pes-carpa, Tribolium sp</i>	0	0	2		Medium	Sep-08	494
<i>Podalyria sericea</i>	8	0	5		High	Sep-08	495
<i>Podalyria sericea</i>	30	0	10		High	Sep-08	496
<i>Watsonia sp.</i>	15	0	3		Low	Sep-08	497
<i>Fressia hybrid</i>	1	0	0		High	Sep-08	498
<i>Oxalis sp (edge of track), Trifolium sp</i>	1	0	5		Medium	Sep-08	499
<i>Fressia hybrid, Watsonia meriana</i>	10	0	4		High	Sep-08	500
<i>Watsonia meriana</i>	30	0	5		High	Sep-08	501
<i>Oxalis sp., Mixed grasses</i>	0	0	15		Medium	Sep-08	502
<i>Trifolium sp</i>	0	0	2		Medium	Sep-08	503
<i>Watsonia meriana</i>	4	0	4		Medium	Sep-08	507
<i>Watsonia meriana</i>	5	0	5		High	Sep-08	508
<i>Fressia hybrid</i>	30	0	10		High	Sep-08	509
<i>Watsonia meriana</i>	15	0	20		High	Sep-08	510
<i>Oxalis pes-carpa</i>	0	0	2		Medium	Sep-08	511
<i>Oxalis pes-carpa</i>	0	0	15		Low	Sep-08	512
<i>Ehrharta calycina</i>	3	0	1		Medium	Sep-08	513
<i>Watsonia meriana</i>	50	0	10		High	Sep-08	514
<i>Watsonia meriana</i>	100	0	5		High	Sep-08	517
<i>Watsonia meriana</i>	0	0	0	20-30%	High	Sep-08	518
<i>Oxalis pes-carpa</i>	0	0	1		High	Sep-08	519

CITY OF ARMADALE
Lloyd Hughes Park Bushland Management Plan 2013

<i>Species</i>	No Stems	Stem Diameter	Square Metre	Density Primary	Priority	Date Mapped	ID
<i>Oxalis pes-carpa,</i> <i>mixed grasses</i>	0	0	0		High	Sep-08	520
<i>Watsonia meriana</i>	0	0	0	70-80%	Low	Sep-08	521
<i>Briza maxima,</i> <i>Ehrharta curvula</i>	0	0	4		Low	Sep-08	522
<i>Watsonia meriana</i>	1	0	1		Medium	Sep-08	523
<i>Watsonia meriana</i>	4	0	1		High	Sep-08	524
<i>Watsonia meriana</i>	4	0	1		Medium	Sep-08	525
<i>Watsonia meriana</i>	5	0	4		Medium	Sep-08	526
<i>Watsonia meriana</i>	6	0	1		Medium	Sep-08	527
<i>Watsonia meriana</i>	13	0	5		Low	Sep-08	528
<i>Asparagus</i> <i>asparagooides</i>	5	0	15		High	Sep-08	529
<i>Oxalis sp., mixed</i> <i>grasses</i>	0	0	10		Medium	Sep-08	530
<i>Fressia hybrid,</i> <i>Homeria flaccida</i>	50	0	4		High	Sep-08	531
<i>Fressia hybrid</i>	2	0	0.5		High	Sep-08	532
<i>Ehrharta calycina,</i> <i>Fressia hybrid</i>	0	0	4		High	Sep-08	533
<i>Fressia hybrid</i>	15	0	1		High	Sep-08	534
<i>Trifolium sp</i>	0	0	1		Medium	Sep-08	535
<i>Fressia hybrid</i>	10	0	1		High	Sep-08	536
<i>Fressia hybrid, Vicia</i> <i>sativa</i>	3	0	1		High	Sep-08	537
<i>Acacia podalyriifolia</i>	1	0.5	0		Medium	Sep-08	538
<i>Ehrharta calycina</i>	3	0	1		High	Sep-08	539
<i>Watsonia meriana</i>	8	0	5		High	Sep-08	540
<i>Oxalis sp</i>	0	0	2		Medium	Sep-08	541
<i>Ehrharta calycina</i>	0	0	4		High	Sep-08	542
<i>Watsonia meriana</i>	30	0	2		Medium	Sep-08	543
<i>Watsonia meriana</i>	12	0	1		High	Sep-08	544
<i>Watsonia meriana</i>	0	0	0	0-10%	High	Sep-08	600
<i>Watsonia meriana</i>	0	0	0	80-90%	Low	Sep-08	601
<i>Watsonia meriana</i>	0	0	0	20-30%	High	Sep-08	602
<i>Ehrharta calycina,</i> <i>Oxalis sp., Trifolium</i> <i>sp.</i>	0	0	0	20-30%	High	Sep-08	603
<i>Fressia hybrid</i>	0	0	0	10-20%	Medium	Sep-08	604
<i>Watsonia meriana</i>	0	0	15		High	Sep-08	605
<i>Watsonia meriana</i>	0	0	10		High	Sep-08	606
<i>Watsonia meriana</i>	0	0	40		Low	Sep-08	607
<i>Watsonia meriana</i>	0	0	5		High	Sep-08	608
<i>Fressia hybrid,</i> <i>Watsonia meriana</i>	0	0	0	30-40%	Low	Sep-08	949
<i>Ehrharta calycina,</i> <i>Eragrostis curvula,</i> <i>Briza maxima</i>	0	0	0	80-90%	Low	Sep-08	950
<i>Cortaderia selloana</i>	1	0	1		High	Sep-08	0
<i>Eragrostis curvula,</i> <i>Pennisetum setaceum</i>				70-80%	High	Sep-08	0

CITY OF ARMADALE
Lloyd Hughes Park Bushland Management Plan 2013

Species	No Stems	Stem Diameter	Square Metre	Density Primary	Priority	Date Mapped	ID
<i>Hyparrhenia hirta</i>	1		2			Sep-08	0
<i>Hyparrhenia hirta</i>	1					Sep-08	0
<i>Tribolium uniolae</i>	0	0	0		High	Jun-08	0
<i>Triobrium uniolae</i>	0	0	0		High	Jun-08	0
<i>Tribolium uniolae</i>	0	0	0		High	Jun-08	0
<i>Tribolium uniolae</i>	0	0	0		High	Jun-08	0
<i>Tribolium uniolae</i>	0	0	0		High	Jun-08	0
<i>Tribolium uniolae</i>	0	0	0		High	Jun-08	0
<i>Tribolium uniolae</i>	0	0	0		High	Jun-08	0
<i>Tribolium uniolae</i>	0	0	0		High	Jun-08	0
<i>Tribolium uniolae</i>	0	0	0		High	Jun-08	0
<i>Tribolium uniolae</i>	0	0	0		High	Jun-08	0
<i>Tribolium uniolae</i>	0	0	0		High	Jun-08	0
<i>Tribolium uniolae</i>	21	0	400	0-1%	High	Jun-08	0
<i>Tribolium uniolae</i>	0	0	0		High	Jun-08	0
<i>Tribolium uniolae</i>	0	0	0		High	Jun-08	0
<i>Tribolium uniolae</i>	0	0	0		High	Jun-08	0
<i>Acacia baileyana</i>	1	2				Sep-08	
<i>Watsonia meriana</i>	6		2			Sep-08	
<i>Freesia hybrid</i>			3			Sep-08	

APPENDIX D – Summary of Submissions

Section of Management Plan	Comment Summary	Response	Change to the Plan
Water Corporation Infrastructure (Section 3.6)	The Canning Trunk Main traverses the subject land. Before any planting or construction occurs within or near the easement the Water Corporation should be contacted (Asset Management Peth Region and Procurement and Property Branch).	The Management Plan states that, <i>No vegetation is to be planted over the easement.</i> This will be amended to, <i>no vegetation or construction to take place over the easement. The Water Corporation is to be notified of any planned planting or construction on or near the easement.</i>	Section 3.6 amended to: To protect this infrastructure, <i>no vegetation or construction is to take place over the easement. The Water Corporation is to be notified of any planned planting or construction on or near the easement.</i>
Executive Summary	Reference should be made to the specific Regional Park, namely Banyowla Regional Park.	Agreed. Changes have been made to reflect this request in the Plan.	Executive summary amended to: The Park is of regional significance, being part of <i>Banyowla Regional Park</i> .
	Statement describing the 12 Strategic Directions as “laudable” and agreeing with the “3 key threats” to the Park.	Statement	No change to plan
Values of Lloyd Hughes Park(Section 1.2)	The Plan refers to “Darling Range Regional Park”, however, this name is incorrect and should be referred to as the Parks of Darling Range or Banyowla Regional Park.	Changes have been made to reflect this request in the Plan.	Section 1.2 amended to: <i>The Park is of regional significance, and as such, part of the Parks of Darling Range/Banyowla Regional Park (ministry for Planning, 1995).</i>
Darling Range/Banyowla Regional Park Management Plan (Section 1.4)	The Plan refers to “Darling Range Regional Park”, however, this name is incorrect and should be referred to as the Parks of Darling Range or Banyowla Regional Park.	Changes have been made to reflect this request in the Plan	Section 1.4 amended to: It was anticipated in the management plan of 2000 that the Conservation Commission, through the Department of Environment and Conservation (DEC), will have commenced the preparation of the <i>Parks of Darling Range</i> Management Plan in 1999/2000. The City’s Environmental Officer is a representative on the <i>Parks of Darling Range</i> Community Advisory Committee which involves stakeholders concerned with the management of all reserves within the <i>Parks of Darling Range</i> .

Section of Management Plan	Comment Summary	Response	Change to the Plan
Linkages (Section 2.4.4)	The Plan refers to “Darling Range Regional Park”, however, this name is incorrect and should be referred to as the Parks of Darling Range or Banyowla Regional Park.	Changes have been made to reflect this request throughout the Plan.	Section 2.4.4 amended to: The Park links directly with other lands in the <i>Parks of Darling Range</i> to the north east providing an adequate area for larger fauna to move between.
Recommendation 36 (Section 3.7.4)	The Plan refers to “Darling Range Regional Park”, however, this name is incorrect and should be referred to as the Parks of Darling Range or Banyowla Regional Park.	Changes have been made to reflect this request in the Plan.	Section 3.7.4 Recommendation 36 amended to: where resources permit, contribute to the undertaking of joint agency off road vehicle ‘stings’ in the <i>Parks of Darling Range</i> .
Weeds (Section 3.1.2)	DPAW recommends that another column is added to Table 1, page 14 to show the two listings of 2012 Department of Agriculture and Food and Weeds of National Significance or to detail any specific changes since 2008.	Table 1 provides a column entitled ‘Listing’ in which there are specific annotations to indicate if a weed is Declared under the <i>Department of Agriculture and Related Resources Protection Act 1976</i> (Department of Agriculture and Food Western Australia, 2007) and/or a Weed of National Significance. Weed mapping in 2011/2012 was inconsistent due to the 2011 fires. It is therefore difficult to detail specific changes in weed mapping because of this.	No change to Plan.
APPENDIX C – Weed Occurrence Mapping From 2008	Appendix C does not list <i>Gomphocarpus fruticosus</i> , however it is listed within Table 1 on page 14.	No occurrence of <i>Gomphocarpus fruticosus</i> was mapped in Lloyd Hughes Park in 2008.	Table 1 amended.
Figure 4	The legend for Figure 4 appears to be incorrectly labelled. The vegetation occurring along the creek is listed as Community 2 instead of Community 1.	Agreed	Figure 4 amended to reflect that the vegetation along the creek line is Community 1. Vegetation Community 2 corrected and changed on Figure 4.
Community Involvement and Education (Section 4.10)	A practical shortcoming in addressing the 3 key threats to LHP is the current lack of an active Friends Group.	Historically LHP has not had the continuous support of a Friends Group despite efforts to recruit interested locals. The Reserve did have an active custodian up until June 2013. The Custodian resigned in June 2013.	No change to plan.

Section of Management Plan	Comment Summary	Response	Change to the Plan
	I (submitter) contacted the City of Armadale Environmental Officer seeking to make contact with the LHP's current custodian, whose name I don't know. My request did not yield a response.	The Environmental Officer routinely passes on this and other such requests to Custodians and Friends Groups, however, the Officer is unable to give out the personal contact details of individuals. It is common practice for the Environmental Officer to take the contact details of those wishing to contact Reserve Custodians and pass on the request. It is then entirely the responsibility of the Custodian to respond.	No change to plan.
	The lack of an active Custodian or Friends Group at LHP is a shortcoming in addressing the key threats to the reserve. Matters such as fallen trees blocking fire access tracks are an example of issues that could be quickly resolved via communication from such individuals to the City.	The City regularly attempts to engage the community in assisting with the management of LHP Reserve. In 2012 flyers were delivered to residents in close vicinity to the Reserve inviting them to a community planting day. Two new residents attended the event. The City continues to encourage community members to take an active role in the management of LHP Reserve. Action numbers 42, 43 and 44 of the Plan identify the importance of engaging volunteers.	No change to plan.
	The lack of an active Custodian or Friends Group at LHP is a shortcoming in addressing the key threats to the reserve. An example of this is the unaddressed deterioration to signage and dieback hygiene stations.	The City appointed a Bush Care Supervisor and two Bushcare Officers in January 2013. The Bush Crew will enable the City to address these issues more efficiently having a greater on-ground presence.	No change to plan.
Native Fauna (Section 2.4.3)	Nesting boxes and hollow logs installed would replace those tree hollows and fallen logs lost in the 6 Feb 2011 fire, assisting rehabilitation by birds and animals.	Artificial nesting boxes for Black Cockatoo species were installed in the Reserve in March 2013. Consideration will be given to the installation of additional fauna nesting boxes as opportunities arise.	No change to plan.

Section of Management Plan	Comment Summary	Response	Change to the Plan
Illegal Vehicle Access (Section 3.7.4)	There is little impediment to access by off road motorbikes and four-wheel buggies.	Illegal vehicle access is a widespread and on-going problem throughout the City's reserves. Signage, bollards and gating are used to address the problem, however, vandalism to gates and the creation of new access points is an on-going problem. These matters are discussed further at section 3.7.4 of the Plan.	No change to plan.
Water Corporation Infrastructure (Section 3.6)	Water Corporation vehicles accessing the easement for upgrading the Canning Trunk Main last entered during wet weather, with resultant damage to footpaths, the Park and continued spread of dieback.	The City of Armadale has an Access Management Plan in place with the Water Corporation for Lloyd Hughes Park. The Access Management Plan provides guidelines for dieback hygiene procedures that should be followed to mitigate the spread of the disease. The Water Corporation only carries out maintenance on the Canning Trunk Main if necessary, if this occurs in wet weather vehicle access is kept to a minimum.	No change to plan.
Revegetation (Section 3.1.1)	Vegetation could be improved, especially along the watercourse, where pondage, matting and planting sedges would improve water quality at discharge into the Canning River.	In 2012 approximately 5,000 tubestock were installed in the reserve as part of State NRM grant funding. Future grant funding will be sought for revegetation and other works within the reserve. Action number 3 of the Plan recommends the investigation of future funding to carry out revegetation in the degraded areas of the reserve.	No change to plan.
Fire (Section 3.3)	Mosaic hazard reduction burning coupled with staged plantings would reduce the threat of arson while rehabilitating the Park systematically, given the few volunteers and the need for hand-watering of young seedlings during the first summer following plantings.	Regular fuel loading assessments are carried out at Lloyd Hughes Park and Hazard Reduction Burns are undertaken when necessary. These matters are discussed further at section 3.3 of the Plan.	No change to plan.

Section of Management Plan	Comment Summary	Response	Change to the Plan
Weeds (Section 3.1.2)	Targeted spraying of weeds such as Watsonia has proved effective, but there is still a range of pasture weeds persisting and re-seeding and ignored, such as along the lower Park verge of Canning Mills Road adjacent the Haimlee Street intersection.	The Environmental Weed Strategy for Western Australia (Department of Conservation and Land Management, 1999) provides a direction and management approach to tackling the weed problem in Western Australia. Each weed species known to occur in Western Australia was assessed and ranked according to their environmental impact. Three yearly mapping of all the City's bushland reserves is used to rank and prioritise all weeds according to the Environmental Weed Strategy for WA. High priority weeds in areas of the best condition bushland are targeted for weed control treatments. Most of the weeds occurring in the Park are confined to the edges of the reserve, adjacent to tracks and along the watercourse. Three annual weed control treatments are undertaken in the Park. Further explanation of the rationale of weed control can be found at 3.1.2 of the Plan.	No change to plan.
Alien Fauna (section 3.2.1)	Invasive bird and animal species such as the Laughing Kookaburra and rabbits require a stronger response than a watching brief by council or other agencies that is currently not halting the spread and depredation of these pests.	The Plan discusses a number of alien fauna that may be present in the Lloyd Hughes Park, including the Laughing Kookaburra. It is important to consider the total ecology of a natural system when attempting control of alien fauna. For example, control of a single alien species may facilitate an increase in another alien species. This is discussed in more depth in section 3.2.1 of the Plan.	No change to plan.

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Litter and Refuse (section 3.8)	Discharge of rubbish from cars or by individuals requires constant attention, both along street verges and within the Park.	Litter and rubbish have been a consistent problem in the reserve, as is the case with many of the City's bushland reserves. Any reported rubbish dumping in the Park is collected and removed. The appointment of the Bushcrew will ensure that the reserve is regularly checked for rubbish and removed accordingly.	No change to plan.
Community Involvement and Education (section 3.10)	A 'call to arms', such as by promoting a new, active Friends of Lloyd Hughes Park Group via a well-advertised local meeting of local residents chaired by a local resident, preferably our hard-working Deputy Mayor, Ruth Butterfield, might be the start of a new initiative.	Statement	No change to plan.