

Landscape Management Plan

EMIRATES LUXURY RESORT, WOLGAN VALLEY

Ref No. 05544 LMP 01

October 2006

context

CONTENTS

1.0	Introduction	1
1.1	Landscape Management Plan Objectives	1
1.2	Document Framework.....	1
2.0	Site Location and Existing Conditions	2
2.1	Site Location and General Description	2
2.2	Flora	3
2.3	Fauna Habitats	4
2.4	Fauna	5
2.5	Proposed Development Activities	5
3.0	Landscape Precincts	6
3.1	Precinct 1 Development Precinct.....	6
3.2	Precinct 2 Riparian Corridor Precinct.....	8
3.3	Precinct 3 Access Corridor Precinct	9
3.4	Precinct 4 Managed Pasture Precinct.....	10
3.5	Precinct 5 Nature Conservancy Precinct	10
4.0	Short, Medium and Long Term Measures	11
4.1	Short Term Measures	11
4.2	Medium Term Measures	12
4.3	Long Term Measures	12
5.0	Completion Criteria.....	12
5.1	Development Precinct.....	12
5.2	Remainder of Site	12
6.0	Treatment Measures	13
6.1	Protective Measures	13
6.2	Weed Control	14
6.3	Revegetation	15
6.4	Fauna Impacts	17
6.5	Creek Rehabilitation.....	19
6.6	Visual Impact Mitigation	19
6.7	Bushfire Management.....	20
6.8	Aboriginal Cultural Heritage Mitigation.....	22
7.0	Monitoring.....	22
7.1	Maintenance Strategies	22
7.2	Inspection and Checklists during Site Works.....	22
7.3	Responsibilities	23

APPENDIX A Drawings

APPENDIX B Plant Species

Rev	Issue	Signature	Date
	Draft Issue	J. Finlayson	

1.0 Introduction

Context Landscape Design, in conjunction with Trevor Evans, AMBS Consulting, Kelleher Nightingale Consulting and UrbisJHD, has been commissioned by Emirates Resorts and Hotels Australia to prepare a Landscape Management Plan for the Emirates Luxury Resort at Wolgan Valley.

The Emirates Resort will form part of the project to transform a strategically located block of farmland in the Wolgan Valley into a native wildlife reserve of significant local conservation value. The Wolgan Valley site, surrounded by World Heritage National Park, will be de-stocked using exclusion fencing. Weeds, rabbits and foxes will be systematically removed from inside the fence area. Extensive re-vegetation of verges between woodland and cleared land will be undertaken using local bush/understorey species as well as patchwork re-vegetation of cleared paddocks and watercourse re-vegetation. These actions will result in a gradual and sustained increase in native biodiversity within the area.

1.1 Landscape Management Plan Objectives

The objectives of the Landscape Management Plan (LMP) are to provide recommendations and strategies to achieve the following:

- Protect and enhance existing ecological communities within the Wolgan Valley site;
- Protect and provide habitat linkages between areas of ecological communities throughout the Wolgan Valley site;
- Provide strategies for the revegetation and sustainable management of ecological communities within the Wolgan Valley site;
- Reinstatement of much of the natural ecology, hydrology and stream morphology of the site;
- Create a sanctuary for locally endemic threatened plants and animals;
- Create a buffer between the Greater Blue Mountains World Heritage Area and adjacent agricultural uses;
- Create a world class tourist destination that will enhance the international reputation of the Blue Mountains and the State of NSW;
- Recognise the important aboriginal and European heritage values of the valley.

1.2 Document Framework

The principle aim of the LMP is to provide a strategy for the on-going protection of the fauna and flora within the site and to satisfy Concept Plan Approval Condition 13. In approving the Concept Plan for the Emirates Resort, the Minister for Planning placed a number of Conditions on the site to:

- *Prevent, minimise, and/or offset adverse environmental impacts;*
- *Set standards and performance measures for acceptable performance;*
- *Set requirements for future project applications; provide for the ongoing environmental management of the site.*

Approval Condition 13 is as follows:

Prior to carrying out any construction on the site, the Proponent shall prepare (and following approval implement) a Landscape Management Plan for the site, in consultation with the DEC, DNR and council, and to the satisfaction of the Director-General. This plan must include detailed landscape management plans for each of the 5 precincts in the approved concept plan, that includes:

- a) *an outline of the landscaping objectives for each project;*
- b) *a description of the short, medium and long term measures that would be implemented to landscape each precinct*
- c) *detailed completion criteria for landscaping each precinct*
- d) *a detailed description of the measures that would be implemented over the next 5 years to landscape the site, including procedures to be implemented for:*
 - *revegetating the site;*
 - *managing the impacts on fauna;*
 - *rehabilitating the creeks on site;*
 - *landscaping the site to minimise the visual impacts of the development of Wolgan Road and the adjoining national parks;*
 - *conserving and reusing topsoil*
 - *collecting and propagating seed for rehabilitation and revegetation works;*
 - *controlling weeds and feral pests; controlling access;*
 - *bushfire management*
 - *managing any potential conflicts between the landscape plan and Aboriginal cultural heritage*
- e) *a detailed description of how the performance of the landscaping plan would be monitored over time; and*
- f) *detailed description of who would be responsible for monitoring, reviewing and implementing the plan*

2.0 Site Location and Existing Conditions

2.1 Site Location and General Description

The site is located approximately 190km, or 3 hours drive north-west of Sydney airport and CBD, within the Lithgow Local Government Area. It lies within a valley to the western escarpment of the Blue Mountains plateau, within the Greater Blue Mountains World Heritage Area.

The site is contained in the Wolgan Valley which is approximate 13,750ha in size and up to 28km long and 6km wide, extending from Newnes in the north-east to Wolgan Gap in the south-west. The site is surrounded by spectacular rock outcrops and sheer cliff faces. The site is currently largely cleared, with some scattered Eucalyptus species, and used for grazing.

The site is located on the Wolgan Road, 35 kilometres north of Lithgow, and 3 kilometres south of Newnes. It sits between Gardens of Stone National Park to the north and south and Wollemi National Park to the east; both part of The Greater Blue Mountains World Heritage Area. Wolgan State Forest is located further to the west and Newnes State Forest further to the south. Glow Worm Tunnel, Newnes Industrial Ruins, Deep Pass, Blackfellows Hand Rock and Baal Bone Gap are located within the vicinity of the site.

The site is separated from the rest of the Wolgan Valley by Donkey Mountain, but extends to Wolgan Road in the north and an adjoining rural zoned property to the south west.

Refer Drawing LSK 05544-124 Site Location in Appendix A.

2.2 Flora

2.2.1 Native Plant Species

A total of 191 native plant species have been recorded in the study area. Most of the native plant species recorded in the study area are associated with the woodland on the lower slopes fringing the study area and along the Wolgan River and Carnes Creek. Some wetland plant species occur along the creek lines and around farm dams.

2.2.2 Introduced Species

43 introduced plant species were recorded in the study area. Eight plant species listed as noxious weeds in the Lithgow Local Government Area under the NSW Noxious Weeds Act 1993 were recorded in the study area, as described below.

- *Eragrostis curvula* (W3) was recorded in the valley and on the site for servants' quarters, but is not common.
- *Rubus fruticosus* species aggregate (W3) occurs throughout the site, although there is evidence of past control of larger patches. This species mainly occurs as small, isolated plants along vegetation margins, apart from the extensive, dense stands in the drainage line within the area maintained by AES.
- *Carduus nutans* ssp. *nutans* (W3) and *Onopordum acanthium* subsp. *acanthium* (W3). These species were recorded as a few isolated occurrences in the valley. All individuals were dead, although it could not be confirmed whether they had been sprayed, or had reached the end of their life cycle.
- *Rosa rubiginosa* (W3) occurs throughout the site, mainly near forest edges.
- *Raphanus raphanistrum* (W2) occurs in some paddocks, although not in large numbers.
- *Salix fragilis* and *S. babylonica* (W4g) occur along some sections of the banks of Carne Creek, and also along the far wetland.
- One additional noxious species, *Nassella trichotoma* (W3), was not recorded in the study area during the field investigations, but is considered a potential invader.

2.2.3 Vegetation Types Recorded

Five vegetation types were identified in the study area:

- Talus-slope woodland: occurs along most sections of lower slopes;
- Talus-slope open-forest: occurs on some sections of upper slopes;
- Montane gully forest: is not well-defined but generally occurs as a gradient with Talus Slope Openforest;
- Cox's River swamps (sedgeland), occurs along the main drainage lines in the south-west of the study area;
- Tablelands Grassy Woodlands Complex: occurs as remnant stands on low rises within the valley, and on the river banks, especially at the northern end of the valley as well as on both sides of the road to Newnes.
- Modified open grassland of exotic and native grasses with scattered trees occurs throughout the valley floor.

Modified open grassland of exotic and native grasses with scattered trees occurs throughout the valley floor.

All of the native vegetation within the study area, including the vegetated lower slopes, sedge wetlands and riparian vegetation, has been substantially modified as a result of clearing and grazing of livestock and weed invasion. Riparian vegetation along the Wolgan River and Carnes Creek occurs in disjunct linear stands and sections of the River at the northern end of the valley have undermined banks and trees with exposed roots.

Nine noxious weed species and a variety of introduced grass species occur within the study area. Many of these species, in particular introduced grasses, are currently being kept in check by grazing and there is evidence of active control of some species in some areas.

Refer Drawing Vegetation Communities (Source: AMBS) in Appendix A

2.2.4 Threatened Species and Endangered Ecological Communities

No threatened plant species listed under the TSC Act or EPBC Act or rare or threatened Australian plant species listed by Briggs & Leigh (1996) were recorded in the study area during the targeted threatened plant surveys carried out in August 2005.

Sixteen threatened plant species are listed on the NPWS Wildlife Atlas as occurring within the locality of the study area. It is possible that some of these species occur within vegetated stands on escarpment slopes and have either been overlooked, or were not visible because of grazing. Once cattle and horses are excluded from all foothills and escarpment vegetation, it is likely that a larger number of additional native plant species will become evident.

One species, *Eucalyptus cannonii*, is noted on the NPWS Wildlife Atlas as having previously been recorded in the study area. Stringybarks are uncommon on the valley floor, where development may take place and no specimens of *Eucalyptus cannonii* were recorded despite the inspection of all Stringybarks surveyed for the "...angular buds and larger fruits....with short pedicels..." which distinguishes this species from *E. macrorhyncha*. (NSW NPWS 2000)

None of the vegetation types recorded in the study area are listed as endangered ecological communities under the TSC Act or as threatened ecological communities listed under the EPBC Act. The native vegetation types present are extensively distributed in the locality and region and are well represented in the surrounding National Parks.

2.3 Fauna Habitats

The plant communities within the study area and on surrounding lands provide habitat for a wide range of fauna species, including those reliant on woodland/forest, riparian/wetland and open grassland habitats. The large and continuous tracts of open forest vegetation fringing the study area provide habitat for a large variety of fauna species, including those species which require high structural and floristic diversity and old growth elements (eg. tree-hollows). The vegetation is contiguous with that within the Gardens of Stone and Wollemi NPs which contribute to extensive tracts of vegetation and fauna habitat within the Blue Mountains World Heritage area.

The open grassland/pasture consisting of introduced and native grasses and the ecotone formed with the fringing wooded slopes provides foraging habitat for ground foraging species and edge specialists, including macropods, wombats, and some bird and reptile species.

Scattered canopy trees within the open grassland area provide foraging, nesting and perching habitat for larger bird species.

Riparian habitats and low-lying wetlands, despite their modified and degraded nature, also provide habitat for a range of fauna, including frogs, birds and mammals (notably wombats). Small farm dams have been heavily impacted by grazing stock but provide some limited aquatic habitat in the study area.

2.4 Fauna

2.4.1 Fauna Species

A total of 120 vertebrate fauna species, comprising 20 mammals (including 8 introduced species and excluding microbats), 96 birds (including 2 introduced species), one reptile and three frogs have been recorded in the study area. three microchiropteran bat species have been confirmed to occur on site and it is likely that several other microchiropteran bats previously located in the locality also occur given the habitats present.

AMBS TO CONFIRM

2.4.2 Threatened Species

Seven threatened vertebrate fauna species listed under the Schedules of the NSW Threatened Species Conservation Act 1995 (TSC Act), including one arboreal mammal and six bird species and have been recorded within the study area or in immediately adjoining habitats during the fauna investigations. The Gang Gang Cockatoo, which is under Preliminary determination for listing as a vulnerable species, was also recorded.

It is possible that a number of additional threatened fauna species previously recorded within the locality (within 10km) may also potentially occur in the study area on occasion given the habitats present.

No threatened fish species of state or national conservation significance have been previously recorded in the locality and none are likely to occur given known distributions and the habitats in the study area.

No bird species listed under International Migratory Bird Agreements were recorded in the study area. The study area is not considered to provide critical habitat for these species or for other 'migratory' species listed under the EPBC Act given the nature of the habitats present.

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2.5 Proposed Development Activities

The project is a tourist resort comprising 40 luxurious hotel villas and associated facilities, including a restaurant and day spa facilities. The resort itself will be located on the eastern central part of the site, adjacent to Carnes Creek. Separate manager's accommodation will be located further to the north on the eastern bank of Wolgan River, with ancillary staff accommodation and maintenance plant. The vast majority of the site will be used for passive recreation and environmental rehabilitation.

The project comprises:

- 40 detached luxury villas
- Main reception building
- Spa building
- Manager's Accommodation
- Staff Accommodation and Maintenance Facilities
- Helipad
- Ancillary road, utility and on-site sewage treatment and disposal works
- Landscape works
- Environmental conservation works
- Retention of the existing slab house and wattle and daub hut

3.0 Landscape Precincts

The site has been divided into five landscape precincts based on the landscape character, use and environment of each precinct.

Refer Drawing LSK 05544-125 Landscape Precinct Diagram in Appendix A

3.1 Precinct 1 Development Precinct

The Development Precinct consists of:

- 40 individual guest villas connected by a series of pathways, located to the east of Carnes Creek.
- Main Building and Spa Complex
- Staff accommodation, plant and maintenance facilities located within easy access to the resort site in a discrete pocket to the north.

Objectives

- Create a peaceful and idyllic resort atmosphere characterised by engagement with nature, Carnes Creek and the spirit of the valley.
- Maintain an open, pasture landscape with views from the precinct to surrounding escarpments.
- Provide privacy screening between villas and facilities.
- Encourage native fauna to inhabit the resort precinct.
- Minimise bushfire hazard, including the provision of bushfire Asset Protection Zones and bushfire fighting measures.
- Recognise the location of the slab house as the focus of original activity on the site.
- Minimise the visual impact of the buildings on the landscape.

Description – Resort Landscape

To provide bushfire management zones and maintain views to the surrounding valleys and escarpment, the landscape within the Resort Precinct has been created as ribbons of landscape, surrounded by open pasture.

The entry road crosses Carnes Creek, passes a re-constructed farm dam water feature, before curving up the hillside to the Main Building. A series of low walls and planting, as well as a gateway feature of existing tree groups, provide interest and filter views of the building. A large turning circle and porte cochere with water feature and adjacent gabion wall create an appropriate entry to the building. A large lawn draws views to the sandstone escarpments

beyond, as well as creating a potential entertainment and marquee area. Mounding, planting and tree planting filters views of the building from below, whilst maintaining views to the valley and surrounding escarpments.

Gully-style planting such as Wollemi Pines, Macrozamia, ferns and cycads create texture and interest to the embankments behind the pool building and Spa, connecting the two areas. A bushfood and herb garden in front of the Spa reception provides colour, scent and texture. Private gardens are created to each treatment room, with gravel paving and sculptural landscape objects.

The villas are located along discrete buggy paths, lined with rock-lined drainage swales. Each villa is provided with a timber deck and grassed area, creating a private garden. Swathes of low to medium shrub planting are located between villas to provide privacy. Trees have been strategically located to create privacy, allow views, and minimize bushfire potential.

Existing drainage swales within the resort precinct will be maintained and enhanced with additional sandstone boulders, occasional tree planting, and native grass planting.

Description – Staff and Maintenance Facility

The landscape works around the Staff and Maintenance Facility have been designed to provide amenity for the staff, integrate the structures into the hillside, and screen the facility from the entry road. The works include:

- Small paved area, tree planting and a grassed area have been provided adjacent the Staff Amenity buildings, providing outdoor amenity and recreation area.
- Swathes of planting between the staff accommodation buildings provide screening and privacy
- Tree planting adjacent the riparian corridor provide screening of the facility from the entry road.

Bushfire Management Requirements

Planting within the Resort area and Staff and Maintenance Facility will follow the following bushfire management requirements:

- Trees to be located so canopy will not touch roof structure.
- No more than 3 trees to be located with touching canopies.
- Tree groups to be located minimum 10 metres apart
- No trees to be planted within 6 metres of the Entry Road edge
- Gravel mulch to be located around buildings, minimum 1m width
- Planting within 2 metres of adjacent buildings and structures to be minimised.
- Planting to be maximum height 900mm where planting occurs within 2 metres of buildings and structures.

Refer to the following drawings in Appendix A:

LSK 05544-100	Landscape Principles Plan
LSK 05544-101	Resort Landscape Concept
LSK 05544-102	Staff and Maintenance Facility
LSK 05544-103	Main Building and Spa Landscape Plan
LSK 05544-104	Typical One Bedroom Villa Landscape Plan
LSK 05544-105	Typical Two Bedroom Villa Landscape Plan
LSK 05544-107	Owner Villa Landscape Plan

LSK 05544-108	Main Building Elevations
LSK 05544-109	Two Bedroom Villa & Spa Elevation
LSK 05544-110	One Bedroom Villa Sections
LSK 05544-111	Landscape Principles Images
LSK 05544-112	Main Building Images
LSK 05544-113	Spa Images
LSK 05544-114	Spa Images
LSK 05544-115	Spa Images
LSK 05544-116	Villa Images
L-V01	Finishes and Planting Principles Plan – Typical One Bedroom Villa
L-V11	Finishes and Planting Principles Plan – Typical Two Bedroom Villa
L-V21	Finishes and Planting Principles Plan – Owner Bedroom Villa

3.2 Precinct 2 Riparian Corridor Precinct

This will be all parts of the site within 50 metres of each bank of any watercourse on the site. The main watercourses are Wolgan River and Carnes Creek, both of which are experiencing significant erosion due to the clearing of vegetation and grazing by cattle.

The creekline ecology of Wolgan River and Carnes Creek will be improved through creek stabilisation measures to control erosion and the re-establishment of endemic riparian vegetation.

The riparian zones will create continuous wildlife corridors through the site. Access across the riparian zones will be limited to key locations to provide maintenance and fire access around the site and guest access around the Resort Precinct.

Objectives

- Restore stream beds, creek banks, water quality, water flow and ecology of the creeks and river.
- Control and manage creekbank erosion
- Preserve and restore habitat areas through the creation of wildlife corridors along the watercourses
- Permit only low impact, passive recreational access.
- Provide a minimum number of structured vehicular crossings that minimise impacts upon riparian morphology and ecology.

Description

The main watercourses within the study area are both currently experiencing substantial erosion as a result of cattle grazing, clearing of vegetation and flooding events. Proposed management of the creek lines includes terracing to stabilise the creek banks and re-establishment of riparian vegetation to a minimum width of 40 metres from the top of the bank on either side to provide habitat resources and wildlife corridors. Only low impact, passive recreational access will be permitted in these areas to limit disturbance to ecological communities and native fauna.

Refer Section 6.5 Creek Rehabilitation for more information on the creek rehabilitation works.

3.3 Precinct 3 Access Corridor Precinct

This is the narrow valley/corridor between the main resort complex and Wolgan Road, adjacent a significant length of Riparian Corridor Precinct (Wolgan River).

The main entry road will provide vehicle access to the main building and the resort precinct generally. An entry road experience will be created by responding to the site's topography and views by creating an open corridor with an enclosed landscape. An enclosed landscape experience is created as the road follows the Wolgan River riparian zone, with dense vegetation on either side. The vegetation is reduced as the road reaches the resort site, and views to the Wolgan Pinnacle are achieved.

The main entry road will provide safe access during potential bushfire emergencies and will be maintained to the standards required by the Rural Fire Service. The vegetation adjacent to the road will be managed to reduce the build-up of fuel.

Objectives

- Create a memorable entry experience through sensitive response to the site's topography and vegetation patterns to open views to the surrounding sandstone escarpments.
- Create an intimate, enclosed woodland access corridor adjacent the riparian corridor prior to the entry to the resort.
- Actively manage bushfire hazard along this ingress/egress corridor.
- Locate resort ancillary facilities in a discreet, well screened pocket along the corridor.

Description

The planting works to the Access Corridor Precinct will emphasise the existing vegetation structure, creating an opening and closing landscape experience where views will appear and disappear as the guest moves through the landscape.

Tree planting near the entry gate and feral fence will create a subtle entry experience and filter views of the feral fence. Where the feral fence runs along the entry road, native grasses will provide a grassy edge to the road experience.

All cut batters of the entry road will be spray seeded with a native seed mix consisting of indigenous low shrubs and groundcovers. All embankments will be either seeded with the native seed mix or pasture grass seeding mix. All other landscape works to the entry road will be tree planting.

Where existing fencelines cross the entry road, the fence panels will be removed to allow free movement of animals around the site, leaving the fence posts to become a memory of the previous farming practices that occurred on the site.

Planting around the Gatehouse and Stables will integrate the buildings into the landscape.

Where the entry road crosses the creek, stabilising planting and erosion control works will be undertaken to protect and improve the creek banks.

Refer Drawing 100 Site Master Plan (Source: Turner and Associates) in Appendix A.

3.4 Precinct 4 Managed Pasture Precinct

This is generally the eastern half of the main valley floor, excluding Precincts 1, 2 and 3. It will recognise the site's former use as an agricultural landscape, whilst managing bushfire risk and maintaining views to the surrounding escarpments. The existing pasture landscape will be retained and managed to act as asset protection zone, encourage wildlife grazing and maintain view corridors to key site features.

The pasture landscape with its existing, remnant, scattered trees will be supplemented with clumps of new tree planting around the site. The pasture landscape will be managed by mechanical slashing to maintain reduced fuel loads and limit continuous tree canopies for bushfire protection.

Objectives

- Maintain the existing rural pasture landscape that characterises grazing properties within the Wolgan Valley.
- Create a substantial bushfire fuel-reduced precinct.
- Accommodate outdoor recreation uses.
- Maintain escarpment views from within the valley floor.

Description

Works to the Managed Pasture Precinct include:

- Removal of all internal farm fencing, recycling star posts and wooden posts for resort features.
- De-stocking of all cattle from the site to aid in the recovery and natural regeneration of the native vegetation.
- Deep ripping around root stock will occur to identified habitat trees such as Yellow Box and Iron Bark to promote sucker growth. These species have been identified as habitat for the endangered Regent Honeyeater and Swift Parrots.
- Re-contouring and re-shaping of farm dams to create habitat for native species. Native sedges and reeds will be introduced to encourage biodiversity.
- Monitoring and control of noxious weeds, broad-leaf introduced weeds and several other less-invasive weeds.
- Periodic slashing of the pasture grasses to maintain bushfire protection.

3.5 Precinct 5 Nature Conservancy Precinct

This is generally the western half of the site and most of the land on the eastern side of Carnes Creek and the Wolgan River. The precinct identifies the existing and proposed 'wilderness' portion of the site. It includes the foothills of the site and significant wetland areas.

Objectives

- Create a nature conservancy that protects/reintroduces endemic vegetation communities and habitats.
- Rehabilitate hydrological and ecological processes.
- Incorporate trails for bushfire fighting and fuel load management.
- Permit only minimal impact recreation/interpretation access.

Description

The foothills of the escarpments will be revegetated to:

- Reinststate the Low Open Forest endemic vegetation communities;
- Soften the fenceline clearing that has occurred; and
- Improve habitat provision for wildlife.

The slope revegetation will transition from the Low Open Forest vegetation into the cleared, managed pasture of the valley floor through the planting of scattered clumps of trees to create a natural, soft edge.

Works to the Nature Conservancy Precinct include:

- Removal of all internal farm fencing to create one reserve area to allow the planning and rehabilitation of the site to occur as one entity, without the old paddock structures.
- The Open Forest and neighbouring Closed Forest areas to the edges of the site are in a reasonable condition and require only an ongoing weed eradication program.
- Endemic understorey and overstorey species will be planted adjacent existing vegetation areas to soften the visual impact of past clearing practices.
- Areas of vegetation disturbance (eg old mining area) will be planted out with hardy endemic species that can tolerate bad soil conditions, such as Black Thorn Bush.
- Construction of the proposed dam to create a water supply on site. The permanent water supply will supply the revegetation works that will be undertaken over the next 5 - 10 years.
- Removal of all stock from the property to allow natural regrowth. This has been one of the greatly underestimated successes of the revegetation process and has worked very well on the neighbouring properties.

Revegetation and rehabilitation works to Wolgan Valley will remove the visual impact of the land-clearing and farming that has occurred within the site for the last 50 years. It will increase the biodiversity on the site and create an improved, working ecosystem with a variety of appropriate habitats, free of introduced predators, to be used by native wildlife. The site will be a model for education in conservation.

4.0 Short, Medium and Long Term Measures**4.1 Short Term Measures**

Works to be undertaken within the first two years include:

- Construction of all landscape works within the Resort Precinct and Entry Road Precinct.
- Identification and planning of stabilisation of the erosion areas along the Wolgan River.
- Stabilisation and revegetation of riparian areas of high risk erosion (Eg. riparian zone at the boundary of the Stammer/Webb properties)
- construction and vegetation of large proposed wetlands along Wolgan River
- Construction of the proposed dam to create a water supply on site.
- Removal of all internal fencing.
- Removal of all stock from the property to allow natural regrowth.
- Construction of the feral fence and implementation of bait areas
- Weed control

4.2 Medium Term Measures

Works to be undertaken within five years include:

- On-going stabilising and revegetating of Wolgan River
- Potential re-design of some access roads around the property to best suit the topography
- Creation of wildlife corridors
- Re-structuring of existing dams and dam walls so they become wild-life friendly and not just stock watering points with steep sides.
- Review of the vegetation patterning that has occurred through land clearing for paddock boundaries planting at paddock boundaries to soften the transition from open forest to grassland, especially along old fence lines
- Planting of understorey species for grassland nesting birds
- Provide appropriate habitat for small macropods moving from one area to another.
- On-going weed control as required

4.3 Long Term Measures

Works to be undertaken within ten to twenty years and beyond include:

- On-going stabilising and revegetating of Wolgan River and Carne Creek
- On-going revegetation of the slopes and valley floor, dependent on fire management requirements
- On-going provision of fauna habitat
- On-going weed control if required

5.0 Completion Criteria

5.1 Development Precinct

The vegetating of the Resort Precinct will be considered complete when:

- All exposed areas are covered in grass or planting.
- No soil erosion occurring within Resort Area and around creek crossings.
- Successful establishment of suitable screen planting around the Villas.
- Successful establishment of feature planting around the Main Building, Spa Building and Pool Building.
- Suitable filtering of views to the Staff and Maintenance Facility.
- Drainage swales rock-lined and vegetated as landscape features as well as successfully performing drainage requirements.
- Weed control

5.2 Remainder of Site

The vegetation management, revegetation and rehabilitation of the site will be an ongoing process into the future. It will be a constantly evolving process as the vegetation patterns change across the site.

The vegetation management across the site will develop as the site conditions change from an over-grazed farming property to a nature conservation zone. Management techniques will include vegetation management, fire risk, and, in the future as the native species numbers increase, the carrying capacity of the site to prevent over-grazing. Native species management will be monitored closely with research in conjunction with Masters Students.

6.0 Treatment Measures

6.1 Protective Measures

6.1.1 Protection of Existing Vegetation

Existing vegetation and newly planted areas need protection during construction and establishment.

During construction and establishment, temporary fencing will be placed at the extent of area to be protected, preferably beyond the dripline of the trees to be protected. The fencing methods will include flagging tape, stakes and temporary fencing. It will clearly identify the area to be protected and restrict access to the protected zone. Following completion of construction (including establishment), all temporary works will be removed when they are no longer required.

6.1.2 Erosion, Contamination and Sedimentation Control

During construction, all precautions necessary will be undertaken to prevent erosion, contamination, and sedimentation of the site, surrounding areas and drainage systems, including but not limited to the following:

- Progressive restoration of disturbed areas
- Construction of temporary drains and catch drains
- Diversion and dispersal of concentrated flows to points where the water can pass through the site without damage
- Spreader banks: or other structures to disperse concentrated silt traps
- Construction and maintenance of silt traps to prevent discharge of scoured material to downstream areas
- Collection and direction of stormwater run-off from potentially contaminated sites to sedimentation ponds. In particular, run-off will be directed away from retained native vegetation;
- Stabilisation of exposed soil surfaces (eg. through sterile grass seeding, erosion control meshing, or mulching using vegetative material removed from the study area);
- Use of erosion and sediment control measures to collect sediment and to reduce flow velocities; and
- construction of temporary fencing
- Regular monitoring and maintenance of all erosion and sediment control structures throughout the construction and operational phases of the development to ensure their effective function.

Following completion of construction (including establishment), all temporary works will be removed when they are no longer required.

Refer to the Soil and Water Management Plan for more information on erosion, contamination and sedimentation control.

6.1.3 Disposal of Vegetation and Materials on Site

Any hollow trees removed for construction works will be retained whole or in sections, and placed on the ground in the riparian corridor to provide habitat for native fauna. All other native vegetation that is identified for removal will be chipped for use within revegetation areas as mulch. All weed material will be separated and removed from the cleared material prior to chipping. The mulch will be stockpiled at approved locations around the site and shall be used in locations from where it was derived to ensure any seed stock located within the mulch will be located in appropriate site conditions.

Any vegetation, topsoil or other materials not identified for re-use shall be either disposed of off-site or in an area where the material will not wash into existing vegetation, creeklines or drainage corridors.

6.2 Weed Control

6.2.1 Target species

Five noxious weed species have been identified in Wolgan Valley, including Patterson's Curse, Blackberry, St Johns Wort, Serrated Tussock and Thistle.

6.2.2 Methods

Contractors for weed removal within the Wolgan Valley site will have regard to the following, to minimise impacts upon existing vegetation and habitats:

- the main principles of the Bradley Method of bush regeneration, ie not over-clearing (remove only targeted species), employment of minimal disturbance techniques to avoid soil and surrounding vegetation disturbance, and replacement of disturbed mulch/leaf-litter;
- removal of fruiting/seeding parts of weeds carefully, to minimise spread of plant propagules;
- use of chemicals and sprays only during suitable weather conditions (ie not during wet or windy conditions), and only during appropriate seasons (ie during active growing seasons of weeds – mainly spring and summer);
- proximity to watercourses and swampy areas;
- presence of native fauna or nesting/breeding sites.

Weed control will be undertaken as described in Table 1. Weeding will be undertaken on an on-going basis.

Table 1 Weed Control Methods

TIME OF YEAR Subject to Seasonal Conditions. Eg. Droughts, Late Frosts etc.	WEEDS TARGETED	WEED GROWTH STAGE	CHEMICALS USED	EQUIPMENT USED & PERSONELL
Early Spring	Thistle, Paterson's Curse and Dandelion	Apply at rosette stage	MCPA 500 (Active Constituent: 500g/L MCPA present as the Dimethylamine Salt) OR Cutlass M (MCPA Dicamba)	Quad bike with boom 2 persons
Spring	Purple Top (<i>Verbena Bonaniensis</i>)	Young plant before flowering	Cutlass M (MCPA Dicamba)	Quad bike with boom / 4WD with Quikspray unit for spot spraying 2 persons
Early Summer	St John's wort	During flowering to early seed set.	Grazon DS (Active Constituents: 300 g/L Triclopyr, 100g/L Picloram)	Quad bike with boom / 4WD with Quikspray unit for spot spraying 2 persons
Late spring to autumn. (Personal preference not before Summer to ensure all the canes have surfaced)	Blackberry Hawthorn Sweet briar	While plants have foliage Less than 2 m tall Up to 1.5 m tall	Grazon DS (Active Constituents: 300 g/L Triclopyr, 100g/L Picloram)	4WD with Quikspray unit May need 2 persons for some areas
Anytime. Best before August to stop seed head production	Serrated Tussock	Any stage	Taskforce (Active Constituent: Sodium 2,2,3,3 tetrafluoropropanate)	4WD with Quikspray unit / knapsack for small patches 1 person

6.3 Revegetation

6.3.1 Seed Collection and Propagation

Indigenous plant species suitable for revegetation within Wolgan Valley are generally those known to occur on the site as listed in Appendix B.

Final species selection will be based upon availability of seed material, exclusion of plants likely to naturally regenerate on the site, and previous experience with species re-vegetation performance.

Only tubestock specifically grown for the project from seeds of local provenance will be used. All seed will be collected from within a 10km radius of the site.

Provenance of seed is important for maintenance of local biodiversity values, and for vegetation character and appearance. All revegetation works within the site will use seed collected from within Wolgan Valley by the Lithgow Community Nursery. Seed collection on the neighboring property has already occurred and a large collection of seed is currently stored at the Lithgow Community Native Nursery (a not for profit volunteer organization) for use within Wolgan Valley.

Lithgow Community Native Nursery undertake seed collection and tree propagation works and can produce up to 100,000 trees a year if required. Plant propagation will be undertaken at the

Nursery site, by their professional horticulturalist following recognized horticultural practices. They have supplied plants for many large revegetation projects, including rehabilitation of mining areas, large scale dam and waterway developments, and have serviced both private and government projects for many years.

All plants will be suitably disease and pest-free, hardened off, and well-watered at the time of planting.

6.3.2 Site Preparation and Topsoil

Five soil landscapes are present over most of the site and these are characterised by soils that are typically of very low or low fertility and high to extreme erosion hazard.

Prior to earthworks, topsoil identified for re-use shall be stripped and stockpiled on site following screening and sorting to remove all contaminated soil and stumps, roots, clay lumps or stones. The topsoil shall be re-used in areas near to where it was stripped to ensure the seed bank within the soil is located in appropriate site conditions.

Areas of disturbed or recently graded ground shall be left with a scarified surface to encourage water infiltration, and assist with keying in of any replacement topsoil. Replacement topsoil will be spread evenly leaving a rough finished lightly compacted surface that is graded to drain freely. Replacement topsoil will be based on the existing nature of soils found on the site and will contain organic matter, and be free from unwanted matter such as stones over 25mm diameter.

In the native conservancy precinct and the managed pasture precinct, the tree planting areas will be deep tyne and ripping around their outer root to 6-10 metres to promote sucker growth, especially on species such as Kurrajong trees. The riparian zone precinct will not require any ripping as the open sandstone based soils are too delicate and less disturbance is preferred. The fragile open soils of the Wolgan Valley, (unless a previously heavily grazed area), do not require any sort of ripping to open up and aerate.

Appropriate sediment and erosion control measures will be implemented where necessary to prevent excessive soil loss and sediment run-off. Sediment and erosion control measures will remain in place until the revegetation has established.

6.3.3 Planting Methods

Planting Procedure

The following procedure will be followed for planting within revegetation areas:

- only healthy, actively growing plant stock to be used, well watered before and after planting;
- each hole to be dug at least twice the size of the pot to be planted
- straw mulch, recycled from the slashing within the Pasture Precinct, will be used within revegetation areas
- tree guard and tree guard supports, to be supplied to all planting
- no fertiliser or soil additives required

Planting Densities and Arrangement

Areas to be revegetated will be planted at a density that mimics immediately surrounding native vegetation, ie where planting is required to fill in a gap in dense shrubby swamp areas, the focus should be on dense shrub plantings, where planting is required due to understorey disturbance and weed removal in grassy woodland areas, the focus should be on native grasses and occasional shrubs.

Trees and other larger upperstorey species will be planted at 3-4m centres in a random grid pattern. Understorey species will be used as infill every metre.

Arrangement of native plants will be random, and unevenly distributed.

Pot Sizes

Understorey species will be planted as tubestocks. It is preferred that over-storey species be advanced trees (established trees of 1-2m in height if possible), but if these are not available, previous rehabilitation of the Wolgan River has shown that overstorey species from tube stock reach 3 metres in 3 years.

6.3.4 Seeding

Seeding of locally grown pasture grass species will be used to control erosion during creek rehabilitation works. After contouring of the creek banks and placement of erosion control matting, a spray seeding cover of the locally known "pasture mix" consisting of grasses which are currently distributed on the area of the Webb property will be used.

6.4 Fauna Impacts

Of the threatened fauna recorded, only the Brown Treecreeper, Diamond Firetail and Speckled Warbler are likely to occur or were seen in the proposed development precincts. These species rely on the ecotone environment between forest and grassland, preferring open understoreys to forage. The Diamond Firetail was observed in open paddocks foraging on grass seed with other species of Finch. While the other threatened fauna recorded, including the large Forest owls, Yellow-bellied Glider and Glossy Black Cockatoo rely on the more structured treed environs with suitable mature senescent trees with hollows for roosting. The Powerful Owl may also use larger caves to roost in, which were present along the cliff lines of the escarpment.

Some of these species are highly mobile and occupy large home ranges (eg Powerful Owl, Glossy Black Cockatoo and Yellow-bellied Glider) and are likely to forage widely in areas of suitable habitat throughout the locality where resources exist. For the Yellow-bellied Glider, mature forest with flowering or sap producing Eucalypts and Acacias are required and for the Cockatoos mature heavy fruiting trees are required from which seed can be foraged. These elements are only present in the surrounding woodland and forest and not in the open cleared areas of the site. It is unlikely that the proposed development will remove the forest/woodland elements that these species require.

The proposed stabilisation works are likely to have an adverse impact on individual wombats that currently utilise active burrows along Carnes Creek. However, Wombats appear to utilise the entire study area, as evidenced by the extensive distribution of active burrows, and disturbance to burrows in this location is unlikely to have a substantial impact on the local population.

There is also the potential for proposed river crossings to impact on the creeklines and riparian habitats and to obstruct fish passage if constructed inappropriately. To reduce the potential for adverse impacts on the creekline ecology, river crossings have been carefully located to reduce riparian vegetation clearance and constructed in accordance with NSW Fisheries Fish Passage Requirements for Waterways (NSW Fisheries 2003) to have minimal disturbance and to facilitate fish passage. Disturbed areas surrounding bridge construction sites will be revegetated to ensure bank stabilisation, enhance connectivity and wildlife corridors and provide supplementary habitat for native fauna.

AMBS TO CONFIRM / PROVIDE ADDITIONAL

6.4.1 Feral Fence

A Feral Fence will be installed along Wolgan Road and into the adjacent escarpment to create a feral animal free reserve around the Resort site and adjacent lease area to allow the region's endangered species to be conserved. Australia's small mammals species are greatly affected by introduced feral predators, with over 50 recorded extinctions. The feral-proof fence is currently the best methodology to save the last of our endangered small mammals by creating a conservation area where endangered species can flourish in safety. Creating large islands of feral-proof appropriate habitat is currently the best option of wildlife conservation until a proven biological control is developed for introduced predators.

The Feral Fence is designed to keep out foxes and cats. The 2.4 metre height, with its floppy top located to the outside, stops introduced predators from climbing the fence and entering the protected conservation reserve. The fence allows Australian native fauna to climb out of the sanctuary if they wish. This allows the internal area to be managed with minimum numbers of foxes, cats and wild dogs, providing the opportunity for our native fauna to live in safety.

The Feral Fence is to be installed along the Emirates site boundary along the Wolgan Road to encompass the greatest quantity of unique and pristine habitat within the reserve. Each end of the fence finishes at the Emirates' property boundary, with bait zones continuing into the National Park to the cliff line. The cliff line creates a natural barrier to the south of the site, excluding introduced predators entering the site from the adjacent National Park. Refer Feral Fence Location Plan.

The Feral Fence is constructed from steel pipe, high tensile wire support, concrete in places, 32mm rabbit proof galvanised mesh and has access gates every kilometre or so. Refer Feral Fence Details

Maintenance of the Feral Fence is critical to ensure that no introduced predators have access Wolgan Valley. The entire fence will be inspected by vehicle every morning, 7 days a week, to identify any damage that might have occurred either from fallen tree limbs or other damage. The bait zones must be maintained every month with inspections of baits taken and possible new baits installed due to possible removal from non-target species ie ants, crows etc.

Refer to drawings LSK 05544-117 to 119 Feral Fence Details and LSK 05544-120 Feral Fence Location Plan in Appendix A.

6.5 Creek Rehabilitation

The riparian zone rehabilitation will be undertaken in consultation with the local Catchment Management Authority (CMA). Their local representative Trevor Flavin has already been onsite to assess the worst erosion sites.

Wolgan River and Carne Creek will be assessed, planned and managed in 500 metre sections, based on the state of that section of river. Preliminary assessments have identified that some sections of the creeklines require extensive rehabilitation, whilst other areas, like most of Carne Creek, are in very good natural condition with only weed control required. A billabong system of side ponds will be re-created along the Wolgan River to bring back the biodiversity of habitat that was there prior to farming.

The assessment, rehabilitation and management will be an ongoing process within a 5 year plan, working from the most up stream point on the property. Based on the area to be rehabilitated, its topography and financial availability, a minimum of 100 metres either side of the creek will be rehabilitated each year.

Three identified Riparian Rehabilitation processes have been identified for Wolgan River:

1. Where some canopy exists, rehabilitation works will consist of the retention and enhancement of the existing canopy with some understorey planting and bank stabilizing using matting.
2. Where limited existing vegetation exists, rehabilitation works will consist of the retention and enhancement of the existing canopy with extensive understorey planting and bank stabilizing using matting.
3. Where extensive erosion has occurred, rehabilitation works will consist of bank recontouring, stone lined slit traps and mesh stabilisation (matting & spray seeding of grass species) will be undertaken along with the complete revegetation of canopy and understorey species.

The plant species for the revegetation of the creeklines are identified in Appendix B. All plants will be propagated from a seed bank collected from the Wolgan Valley by the Lithgow Community Nursery.

6.6 Visual Impact Mitigation

With the majority of the site being an enclosed valley surrounded by sandstone escarpments, views into the site are limited to the area adjacent to Wolgan Road and a small part of the narrow entry gorge.

The views from Wolgan Road adjacent the site are limited by the foothills of Donkey Mountain to the south and the Wollemi National Park sandstone escarpment to the west of the site. The existing riparian vegetation along Wolgan River also limits views into the site.

The resort layout has ensured that the only element to be seen from Wolgan Road will be the feral fence. All buildings and other structures have been located within the valley or within the entry gorge beyond the limit of view from Wolgan Road.

The feral fence will be located 50 to 80 metres away from Wolgan Road, with a typical farm fence located on the property boundary. The feral fence will be located on site to ensure its view from Wolgan Road is minimised. Existing scattered trees, supplemented with new tree planting where required, will filter the view of the fence.

6.7 Bushfire Management

The lower slopes of the surrounding escarpments are vegetated in Low Open Forest, which has been identified as bushfire prone land.

Natural fires have long been part of the landscape within the valley and adjoining areas of National Park. A combination of inherently flammable vegetation, dry summers, periodic drought and lightning ignitions, have resulted in fires of small and large size, of high and low intensity impacting the native and introduced vegetation within the Wolgan Valley and within the native vegetation on the higher landforms above the valley. Many of the native species are fire-adapted ecosystems with recurrent bushfires having shaped the condition of the existing plant communities.

The fire season in the area corresponds with the summer months' high temperatures and low rainfall, and can occur from September to April with a proclaimed bushfire danger period from October to March. There is significant variability from year to year. Fire seasons may be serious in three out of every 15 years, but this can vary considerably.

The proposed development falls under the NSW Rural Fire Service jurisdiction for fire fighting operations.

The City of Lithgow has a Bush fire risk management plan as required by the Rural Fires Act. The Bush Fire Risk Management Plan for Lithgow identifies the level of bush fire risk across the City and establishes strategies, which the responsible land managers (including private land owners) will implement to manage the bush fire risks identified. The implementation of the Bushfire plan is the responsibility of the owners or occupiers of the land which the bush fire risk is situated.

The Rural Fire Service (RFS) considers the site to have significant bush fire issues and has been identified as bush fire prone land. The RFS advises that the proposed development must meet the requirements of Planning for Bush Fire Protection 2001 (PBP), specifically standards regarding setbacks (for special protection development), provision of water supply, access, supply of services, fuel management on the site, relocation/ evacuation planning for the occupants.

Water supplies for fire fighting operations

The development shall be provided with a 1,050,000litre combined fire services and potable water storage tank. The tank will provide 100% water requirements for both building hydrant and fire sprinkler protection as nominated is AS2419.1 and AS2118.1 (450,000 litres). The allowance for fire fighting is as follows:

- Hydrants – 20 litres/second for 4hours.
- Fire Sprinklers – 25 litres/second for 60minutes.

The main building pool shall have a minimum capacity of 400,000 litres and shall be capable of providing water for bush fire fighting purposes. The new dam at the southern end of the site and other dams around the site will also be available for fire fighting purposes. The new dam has a capacity of 116 mega-litres.

The reticulation system from the storage tank to the buildings shall comprise of the following:

- Central triplex booster pump system including dual electric variable speed constant pressure pumps to pressurise the main reticulation system on a day to day basis. A single

diesel booster shall be provided on the event of a power failure and failure of the gas generators.

- **Main Reticulation System** - The main reticulation system shall extend throughout the development site to form supply system similar to that of an Authority reticulation main.
- **Secondary Reticulation System** – The secondary reticulation system shall comprise of separate potable water, fire hydrant and fire sprinkler system extending from the main reticulation system. The components of the secondary system are as follows:
 - The potable water system shall extend to the villas and connect to the rainwater storage tanks provide to each building. Building dual booster pump sets shall be provided on the outlet of each rainwater tank to pressurise each building.
 - The fire hydrant reticulation shall extend throughout the development to connecting to external hydrant valves located in accordance with AS2419.1.
 - The fire sprinkler supply shall extend to the main resort and staff buildings, for connection of the fire sprinkler system.

Additional Strategies

Other strategies for managing potential bushfire risk are as follows:

- **Asset Protection Zones** - Provision of asset protection zones relevant to the various development precinct zones.
- **Fuel management** - Fuel (hazard) management addressed at each development precinct area, including: provision of managed parkland to the resort area containing the villas, main building and spa; and provision of managed access corridor to main entry road.
- **Access provisions** – construction of the property access roads will comply with Planning for Bushfire Protection 2001.
- **Building construction standards** (Design and Materials) – Class 1 buildings to be constructed to reduce the risk of ignition from bushfire front passes.
- **Evacuation management** – An evacuation plan will be prepared to ensure the safe and proper evacuation of guests, staff and visitors from the site during major fire events. This will be developed by Emirates Hotels and presented to LCC Authorities as part of the Bushfire Management Plan. In principle, the evacuation procedure will concentrate on the safety of the guests and staff as a priority. Emirates will inform the authorities if and when a fire occurs on the property.
- **Fire Fighting resources** – Include structural fire fighting clothing, radios including hand held portable radios and three slip-on fire fighting units with the capacity to carry 800 litres of water each, mounted on resort maintenance vehicles. Members of the Maintenance Department, Wildlife Ranger Department and Conservation Management Department will have received basic fire fighting skills and will undertake initial fire fighting activities during the event of a fire.
- **Helicopter facilities** - National Park & Wildlife Service and private helicopters will have the capacity to use the Resort helipad during fire fighting activities.
- **Liaison with the National Parks and Wildlife Service** for joint fire management /fire operations - a memorandum of understanding between the Resort and NP&WS will be established. Co-operation agreement has been reached.
- **Fire breaks** - Strategic Fire Breaks will be provided to the perimeters of the site (where practicable). Service standards shall be established within the fire breaks.
- **Strategic fire advantage zones** - SFAZ shall be established within the Nature Conservancy Precinct to provide fuel management compartments.
- **Biodiversity conservation** - Fuel management/hazard reduction burning within Nature Conservancy Precinct and the retained vegetation corridors within the site will be planned to minimise the negative impact of fire on biodiversity and the natural ecosystems.

- **Liaison with local emergency services** - The Resort Management shall establish a protocol with the Local Emergency Management Committee (LEMC) and the Lithgow Bushfire Fire Management Committee (LBFMC) to foster cooperative emergency management/fire management within the site.

6.8 Aboriginal Cultural Heritage Mitigation

AMBS TO PROVIDE

7.0 Monitoring

7.1 Maintenance Strategies

Establishment maintenance of revegetation works will include the following activities:

- hand-removal of weed-growth inside tree-guards, and spraying around the outside of guards where necessary;
- spraying of weeds in grassed areas of the drainage channel, using an appropriately selective herbicide;
- re-positioning or replacement of tree-guards as necessary;
- watering during plant establishment;
- replacement of failed plants;
- re-seeding of 'bare' or poorly developed grass areas within the drainage channel;
- spraying for the control of insects or damage.
- designated fire breaks will be slashed in Spring (August, September, October), including some regrowth of under-storey species. As the numbers of macropod increase on the property to its optimum carrying capacity, slashing will be less frequent.
- guard repair

Maintenance of the Feral Fence is critical to ensure that no introduced predators have access to Wolgan Valley. The entire fence will be inspected by vehicle every morning, 7 days a week, to identify any damage that might have occurred either from fallen tree limbs or other damage. The bait zones will be maintained every month with inspections of baits taken and possible new baits installed due to possible removal from non-target species (ie ants, crows etc).

Maintenance of the rehabilitated areas will occur until such time as the works are established.

Slashing of the Pasture Precinct will occur as part of the planned work schedule for August, September and October each year.

7.2 Inspection and Checklists during Site Works

Inspections during the site works are to be undertaken by the Site Manager to ensure the on-going protection of all existing vegetation and new revegetation works during construction. The inspections will review all protective measures such as erosion, contamination and sedimentation control devices and treatments, vehicle and public access barriers, and the correct disposal of vegetation and materials as well as monitoring of the health and well-being of existing and new vegetation.

The inspections shall occur weekly or after high rainfall events and will be documented in a logbook. An inspection checklist shall be prepared and filled out during each inspection.

7.3 Responsibilities

The General Manager of the Resort will hold the first level of responsibility for the implementation of the Landscape Management Plan. The on-going, day-to-day implementation, monitoring and reviewing of the LMP will be undertaken by the Facilities Manager and Conservation Manager.

The Emirates Wolgan Valley Resort will have the following staff for undertaking resort and landscape management and maintenance:

- Maintenance Department of around 10 fulltime staff
- Conservation Department of around 5 staff
- Wildlife Ranger Department of around 8 staff

All staff will be available for management and maintenance within the site.

APPENDIX A Drawings

Dwg No.	Dwg Title	Source
LSK 05544-124	Site Location	Context
	Vegetation Communities	AMBS
LSK 05544-125	Landscape Precinct Diagram	Context
LSK 05544-100	Landscape Principles Plan	Context
LSK 05544-101	Resort Landscape Concept	Context
LSK 05544-102	Staff and Maintenance Facility	Context
LSK 05544-103	Main Building and Spa Landscape Plan	Context
LSK 05544-104	Typical One Bedroom Villa Landscape Plan	Context
LSK 05544-105	Typical Two Bedroom Villa Landscape Plan	Context
LSK 05544-107	Owner Villa Landscape Plan	Context
LSK 05544-108	Main Building Elevations	Context
LSK 05544-109	Two Bedroom Villa & Spa Elevation	Context
LSK 05544-110	One Bedroom Villa Sections	Context
LSK 05544-111	Landscape Principles Images	Context
LSK 05544-112	Main Building Images	Context
LSK 05544-113	Spa Images	Context
LSK 05544-114	Spa Images	Context
LSK 05544-115	Spa Images	Context
LSK 05544-116	Villa Images	Context
L-V01	Finishes and Planting Principles Plan – Typical One Bedroom Villa	Context
L-V11	Finishes and Planting Principles Plan – Typical Two Bedroom Villa	Context
L-V21	Finishes and Planting Principles Plan – Owner Bedroom Villa	Context
100	Site Master Plan	Turner and Associates
LSK 05544-117	Feral Fence Details	Trevor Evans
LSK 05544-118	Feral Fence Details	Trevor Evans
LSK 05544-119	Feral Fence Details	Trevor Evans
LSK 05544-120	Feral Fence Location Plan	Trevor Evans

APPENDIX B Plant Species