

Lot 4 Underwood Avenue, Shenton Park 2007 Development and Conservation Proposal

University of Western Australia

**Report and recommendations
of the Environmental Protection Authority**

**Environmental Protection Authority
Perth, Western Australia
Bulletin 1272
October 2007**

Environmental Impact Assessment Process Timelines

Date	Progress stages	Time (weeks)
11/11/02	Level of Assessment set (following any appeals upheld)	–
16/07/07	Proponent Document Released for Public Comment	–
13/08/07	Public Comment Period Closed	4
27/9/07	Final Proponent response to the issues raised	6.5
29/10/07	EPA report to the Minister for the Environment	4.5

Report Released: 29/10/07
Appeals Close: 12/11/07

Summary and recommendations

This report provides the Environmental Protection Authority's (EPA's) advice and recommendations to the Minister for the Environment on the outcome of its assessment of the proposal by the University of Western Australia (University) to develop and conserve areas of Lot 4 Underwood Avenue in Shenton Park. This report satisfies a direction given by the Minister for the Environment in accordance with section 43 of the *Environmental Protection Act 1986* (EP Act) for the EPA to consider the area of native vegetation that should be conserved on the site, and also to provide an update of the odour situation.

In making its assessment, the EPA required the University to prepare an Environmental Review document evaluating the proposal and for the Environmental Review to be made publicly available for a 4 week public review period, to ensure that the community was given the opportunity to comment and make submissions on this latest proposal.

Section 44 of the EP Act requires the EPA to report to the Minister for the Environment on the outcome of its assessment of a proposal. This report sets out:

- The key environmental factors identified in the course of the assessment; and
- The EPA's recommendations as to whether or not the proposal may be implemented, and, if the EPA recommends that implementation be allowed, the conditions and procedures to which implementation should be subject.

The EPA may include in the report any other advice and recommendations as it sees fit.

The EPA is also required to have regard for the principles set out in section 4A of the EP Act.

Key environmental factors and principles

The EPA decided that the following key environmental factors relevant to the proposal required detailed evaluation in the report:

- (a) Biodiversity values - regionally significant vegetation and its habitat value to support fauna; and
- (b) Odour.

The following principles were considered relevant by the EPA in relation to the proposal:

- (a) The precautionary principle;
- (b) The principle of intergenerational equity; and
- (c) The principle of the conservation of biological diversity and ecological integrity.

Conclusion

The EPA has considered the proposal by the University to develop and conserve areas of Lot 4 Underwood Avenue in Shenton Park. The proposal area is approximately 33.4 hectares (ha) within which the University intends to establish a conservation area (10 ha), Public Open Space (1.9 ha) and a development area (25 ha). The development area includes approximately 13 ha to be developed for residential purposes with the remainder of the area being set aside for “University purposes - future use and development”, as this latter area is currently affected by odour from the Subiaco Wastewater Treatment Plant (Subiaco WWTP).

In relation to the areas to be conserved, the EPA considers that the priority for protection of biodiversity values is to retain a consolidated area of native vegetation. The proposal presented retains a consolidated area of the best available habitat with a dense relatively diverse canopy of Jarrah Woodland over Banksia that has an intact understorey. The consolidated area will continue to provide habitat for a variety of fauna species including Carnaby’s Cockatoo (*Calyptorhynchus latirostris*) and the Graceful Sun Moth (*Synemon gratiosa*), an endangered species.

The Public Open Space identified for retention by the University contains the higher land and includes a number of Tuart trees and bushland. The EPA also supports the retention of this area as a priority. Retention of the smaller 1.9 ha conservation area contributes to biodiversity values but because of its relatively small size it will require a concerted management effort to maintain the biodiversity values in the long-term.

The EPA considers the issue of biodiversity values has been adequately addressed and the conservation areas which include the Public Open Space are sufficient to meet the EPA’s objectives for this factor. The EPA has also recommended a condition that provides for the continued rehabilitation and maintenance of the southern-most portion of the area affected by odour until the odour issues are resolved, to ensure that the biodiversity values are maximised, for as long as possible.

In relation to odour, the EPA notes that the Water Corporation has undertaken extensive upgrades of the Subiaco WWTP to further reduce residual odour emissions from fugitive sources.

An odour sampling, field monitoring and modeling programme has also been carried out to provide a basis for defining a measurable buffer around the Subiaco WWTP. This buffer around the Subiaco WWTP has been incorporated in the Water Corporation’s Licence for the Subiaco WWTP issued by the Department of Environment and Conservation under Part V of the EP Act.

The University’s proposal for the residential component reflects the above buffer identified for the Subiaco WWTP. The EPA accepts that there is sufficient confidence that odour is managed such that residential land uses can occur on the portion of the land identified by the University in its proposal as residential.

The University also proposes that land identified as part of its proposal for “University purposes - future use and development”, will remain vegetated pending the clarification of the development and land use potentials of this land with relevant planning authorities in accordance with Local Planning Scheme requirements.

The EPA supports the commitment by the University to retain the vegetation, at this time, so that it will continue to contribute to the overall biodiversity values of the area until the future land use is determined.

The EPA recognises that the future development of the land currently affected by odour will not be left entirely to the planning authorities to determine. Any subsequent change to the odour buffer for the Subiaco WWTP which affects the development of residential and other land uses sensitive to odour emissions will be subject to (i) the current and future bilateral agreement(s) between Water Corporation and the University and (ii) any change in the Licence Conditions for Water Corporation's Subiaco Waste Water Treatment Plant, as agreed with the Department of Environment and Conservation and approved by the Minister for the Environment.

Therefore, the EPA has recommended a condition which formalises the recognition of the above and the commitment by the University. The condition provides that clearing of vegetation will be deferred in the area designated by the University as "University purposes - future use and development" until such time as a Land Use Plan has been prepared which demonstrates that in any residential or odour sensitive land use development, people are not subjected to unacceptable levels of odour as defined by the prevailing standards at that time.

The EPA has concluded that it is unlikely that the EPA's objectives would be compromised provided there is satisfactory implementation by the proponent of the recommended conditions set out in Appendix 3 and summarised in Section 4.

Recommendations

The EPA submits the following recommendations to the Minister for the Environment:

1. That the Minister notes that the proposal being assessed is for the University of Western Australia to develop and conserve areas of Lot 4 Underwood Avenue in Shenton Park. The proposal area is approximately 33.4 ha of Lot 4 within which the University intends to establish a conservation area (10 ha), Public Open Space (1.9 ha) and a development area (25 ha). The development area includes approximately 13 ha to be developed for residential purposes with the remainder of the area for "University purposes - future use and development", as it is affected by odour from the Subiaco Wastewater Treatment Plant;
2. That the Minister considers the report on the key environmental factors and principles as set out in Section 3;
3. That the Minister notes that odour currently affects the area defined in the Department of Environment and Conservation Licence for the Subiaco Waste Water Treatment Plant and this constrains development and clearing of land for odour sensitive land uses in land identified in the proposal as "University purposes - future use and development". This is acknowledged by the University;
4. That the Minister notes that the EPA has concluded that it is unlikely that the EPA's objectives would be compromised, provided there is satisfactory implementation by the proponent of the recommended conditions set out in Appendix 3, and summarised in Section 4;

5. That the Minister imposes the conditions and procedures recommended in Appendix 3 of this report; and
6. That the Minister notes the EPA's Other Advice presented in Section 5 in relation to retaining vegetation in proximity to Lot 4 Underwood Ave to contribute to linkages for bird species, and that advice needs to be sought from the Department of Environment and Conservation by planning authorities if developments are proposed within the identified buffer of the Subiaco WWTP.

Conditions

Having considered the proponent's commitments and information provided in this report, the EPA has developed a set of conditions that the EPA recommends be imposed if the proposal by University to conserve and develop approximately 33.4 ha of Lot 4 is approved for implementation. These conditions are presented in Appendix 3 matters addressed in the conditions include the following:

- (a) Clearing of vegetation will only occur in the area designated by the University as "University purposes - future use and development" when and if a Land Use Plan has been prepared which demonstrates that in any residential or odour sensitive land use development, people are not subjected to unacceptable levels of odour as defined by the prevailing standards at that time. A Land Use Plan must take account of the Licence conditions on the Subiaco Waste Water Treatment Plant set by the Department of Environment and Conservation and decisions of the Minister for the Environment.
- (b) That the proponent shall prepare a Rehabilitation Plan to rehabilitate the southern –most portion of the land identified as "University purposes - future use and development" to maintain and enhance the biodiversity values, specifically native vegetation, until approval to develop this portion of the land is given through a Land Use Plan.

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Appendices

1. List of submitters
2. References
3. Consideration of Environmental Principles
4. Recommended Environmental Conditions
5. Summary of submissions and proponent’s response to submissions

1. Introduction and background

This report provides the advice and recommendations of the Environmental Protection Authority (EPA) to the Minister for the Environment for the proposal by the University of Western Australia (University) to develop and conserve part (approximately 33.4 hectares (ha)) of Lot 4 Underwood Avenue in Shenton Park.

History of proposals

Proposals for development of this area by the University have involved two previous assessments by the EPA (EPA Bulletins 1034 and 1099) and subsequent appeal determinations by the Minister for the Environment on each of the proposals. The EPA's Bulletins and Minister for the Environment's appeal determinations are on the public record. The EPA bulletins can be obtained from the EPA's website www.epa.wa.gov.au and the appeal determinations from the Appeals Convenor's website www.appealsconvenor.wa.gov.au.

The EPA assessed the first development proposal by the University and released its report and recommendations (Bulletin 1034) in November 2001. The EPA concluded that, in its current form, the proposed 8.5 ha identified for bushland conservation was inadequate to protect the core (highest conservation value) area/s of the then Bush Forever Site. The EPA was of the view that a larger area of the Bush Forever Site, but not substantially so, should be set aside for conservation.

The then Minister for the Environment considered appeals against Bulletin 1034 and made a direction in July 2002 under section 43 of the *Environmental Protection Act 1986* (EP Act) for the EPA to more fully consider the area of native vegetation that should be conserved on the site, and also to provide an update of the odour situation in its further report. This assessment was suspended on 26 November 2002 at the request of the University.

The University formulated a further proposal which included a 12 ha conservation area consisting of 9.4 ha rated as in Good, or Better than Good, condition in two parcels separated by a Completely Degraded area. The EPA considered that the conservation area did not provide adequate protection for the highest conservation values of the site and recommended an additional 2.6 ha be set aside equal to the Completely Degraded area, to be managed as a conservation area until the Completely Degraded area has been restored to at least Good condition.

Following consideration of appeals the then Minister for the Environment determined in July 2004 that the proposal was not environmentally acceptable in terms of biodiversity and conservation outcomes, and advised in August 2005 that the proposal may not be implemented.

In 2006 the University requested a reactivation of the assessment which was suspended in November 2002 and also sought the EPA's consent to change the proposal pursuant to section 43A of the EP Act which provides that the EPA can consider a change while the proposal is being assessed, if the EPA considers that the change is unlikely to significantly increase any impact on the environment. The University submitted a document (14 February 2007) comparing the proposal

assessed by the EPA in Bulletin 1034 with the changed proposal and included an evaluation of the environmental impacts. The EPA provided consent to the proposal being changed on 14 June 2007 after concluding that the change to the proposal was unlikely to significantly increase any impact that the proposal may have on the environment.

In making this determination the EPA informed the University of the EPA's requirement for the University to prepare an Environmental Review document evaluating the proposal and for the Environmental Review to be subject to a 4 week public review period, to ensure that the community was given the opportunity to comment and make submissions on this latest proposal.

The Environmental Review was released for public comment from 16 July to 13 August 2007 during which time 108 submissions were received by the EPA.

This report provides the EPA's advice to the Minister for the Environment on the outcome of its assessment of the changed proposal to satisfy the Minister's direction to fully consider the area of native vegetation that should be conserved on the site, and also to provide an update of the odour situation.

In satisfying the Minister's direction the EPA decided that the following key environmental factors relevant to the proposal required detailed evaluation in the report:

- (a) Biodiversity values - regionally significant vegetation and its habitat value to support fauna; and
- (b) Odour.

Further details of the proposal are presented in Section 2 of this report. Details on the key environmental factors and their assessment are contained in Sections 3.1 - 3.2. The description of each factor shows why it is relevant to the proposal and how it will be affected by the proposal. The assessment of each factor is where the EPA decides whether or not a proposal meets the environmental objective set for that factor. Section 4 is the Conditions recommended by the EPA, if the proposal is allowed to be implemented. Section 5 provides Other Advice by the EPA, Section 6 presents the EPA's conclusions and Section 7, the EPA's Recommendations.

Appendix 4 contains a summary of submissions and the proponent's response to submissions and is included as a matter of information only and does not form part of the EPA's report and recommendations. Issues arising from this process, and which have been taken into account by the EPA, appear in the report itself.

2. The proposal

The proposal area is approximately 33.4 ha of Lot 4 Underwood Ave in Shenton Park. Within this area the University intends to establish a conservation area (10 ha), Public Open Space (1.9 ha) and a development area (25 ha). The development area includes approximately 13 ha to be developed for residential purposes with the remainder of the area for "University purposes - future use and development", as it is affected by odour from the Subiaco Wastewater Treatment Plant (Subiaco WWTP). The

University proposes this area will remain vegetated pending the clarification of the development and land use potentials of this land with relevant planning authorities in accordance with Local Planning Scheme requirements. Figure 1 shows the location of Lot 4. The area of the proposal and, the conservation, Public Open Space and development areas are shown on Figure 2.

The main characteristics of the proposal are summarised in Table 1 below. A detailed description of the current proposal is provided in Section 2 of the Environmental Review (ATA Environmental, 2007).

Table 1: Summary of key proposal characteristics

Element	Description
Proposal	<ul style="list-style-type: none"> • 13 hectares residential subdivision creating single residential lots in addition to grouped housing sites. • 10 hectares for conservation. • 1.88 hectares for Public Open Space. • 8.5 hectares set aside for “University purposes - future use and development”.
Area (including Public Open Space and reserves)	The proposal area comprises approximately 33.4 hectares of Lot 4 Underwood Avenue, Shenton Park.
Area of disturbance	The proposal is to clear, subdivide and develop 13 hectares of the north-eastern portion of the subject land for residential development. A further 8.5 hectares for “University Purposes - future use and development” will remain vegetated pending the clarification of the development and land use potentials of this land.
Infrastructure	<ul style="list-style-type: none"> • Roads within the subdivision. • Footpaths on at least one side of all internal roads. • Installation of sewerage connections, soak wells and drainage swales.
Setbacks	5metre wide landscape buffer on Underwood Avenue.
Rehabilitation	Preparation and implementation of a Conservation Area Management Plan for the retained bushland areas including fencing, management of weeds, rehabilitation of degraded areas and community awareness programmes.

Since the Environmental Review was released, a number of modifications to the proposal have been made by the proponent. These include the retention of a small area of *Banksia prionotes* in the north-west corner of Lot 4, the removal of a portion of the road system and the removal of the University's intention to clear the vegetation, at this time, on the land identified as "University purposes – future use and development" which is affected by odour. The University's commitment is that this area would remain vegetated until land uses could be determined through the planning approvals processes without further assessment by the EPA.

2 Key environmental factors and principles

Section 44 of the EP Act requires the EPA to report to the Minister for the Environment on the environmental factors relevant to the proposal and the conditions and procedures, if any, to which the proposal should be subject. In addition, the EPA may make recommendations as it sees fit.

It is the EPA's opinion that the following key environmental factors for the proposal require detailed evaluation in this report:

- (a) Biodiversity values - regionally significant vegetation and its habitat value to support fauna; and
- (b) Odour.

The above key factors were identified from the EPA's consideration and review of all environmental factors generated from the Environmental Review document and the submissions received, in conjunction with the proposal characteristics.

Details on the key environmental factors and their assessment are contained in Sections 3.1 - 3.2. The description of each factor shows why it is relevant to the proposal and how it will be affected by the proposal. The assessment of each factor is where the EPA decides whether or not a proposal meets the environmental objective set for that factor.

The following principles were considered by the EPA in relation to the proposal:

- (a) The precautionary principle; and
- (b) The principle of intergenerational equity; and
- (c) The principle of the conservation of biological diversity and ecological integrity.

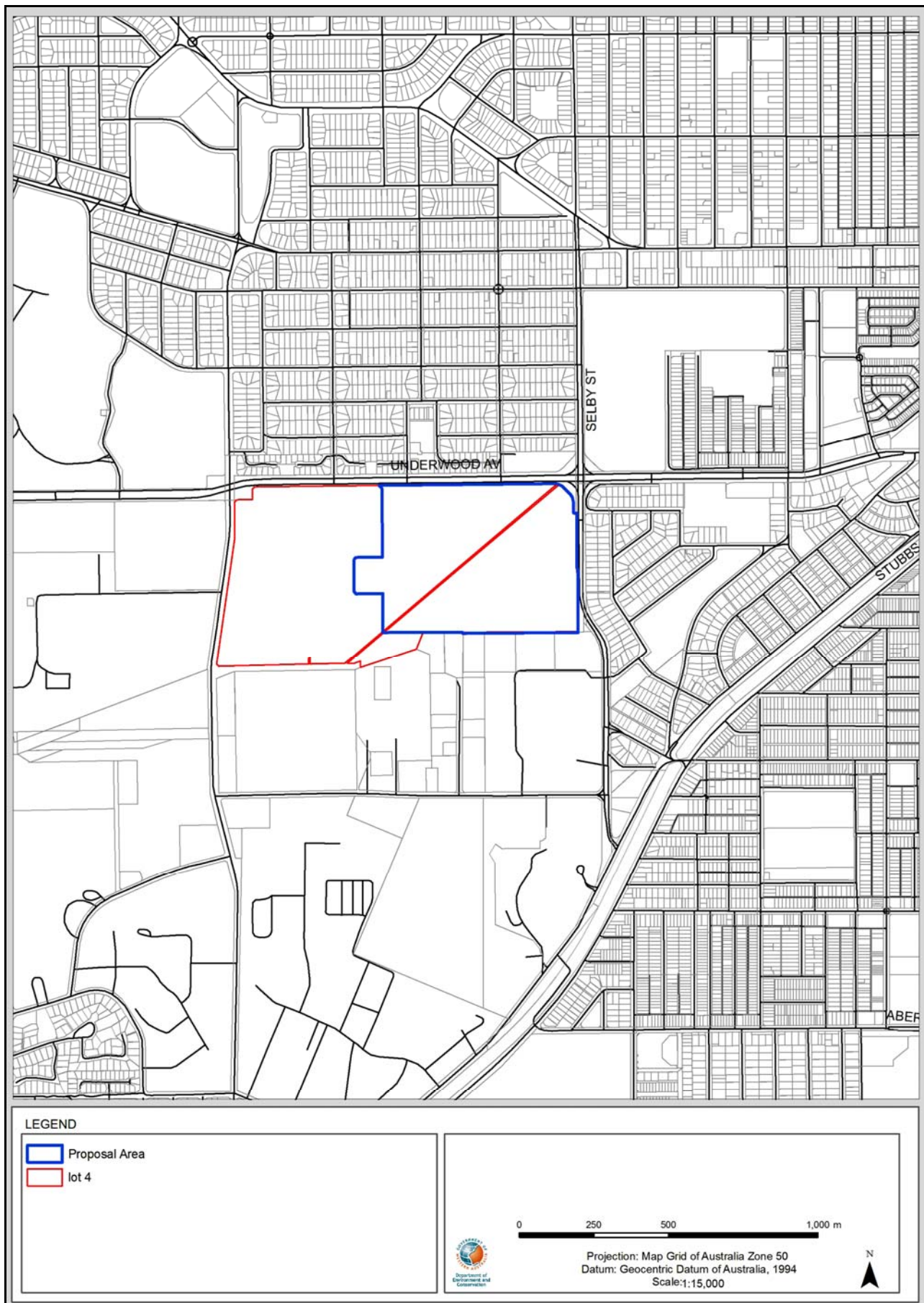


Figure 1: Location of Lot 4 and the proposal area

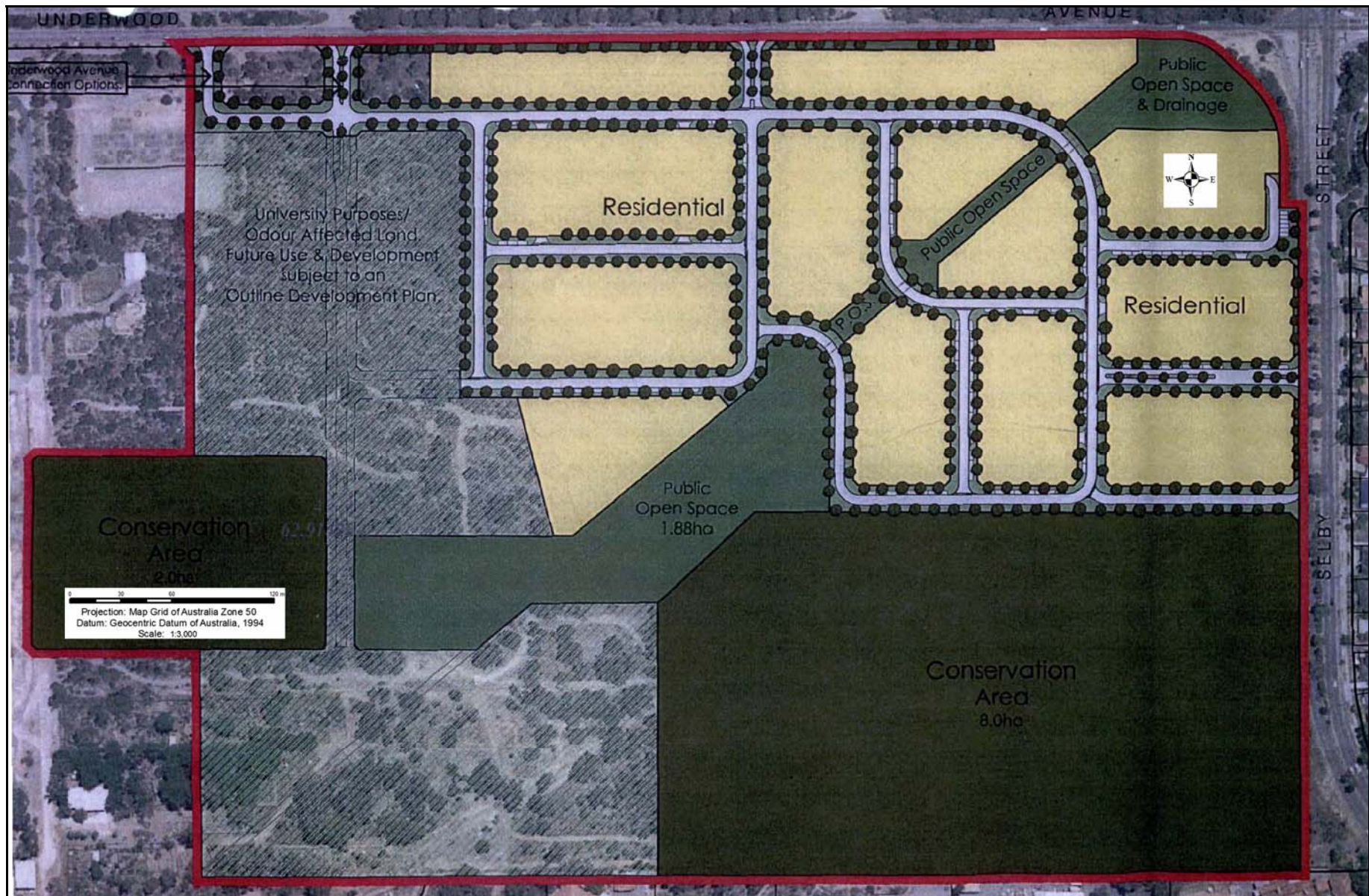


Figure 2: Area of proposal, conservation areas, public open space and development areas

2.1 Biodiversity values

Description

The proposal will result in the retention of 10 ha of vegetation in a conservation area, 1.9 ha of Public Open Space which will also be retained as native vegetation as well as providing for public use, and a 25 ha development area. The development area includes approximately 13 ha of vegetation to be cleared for residential purposes with the remaining 8.5 ha to remain vegetated pending the clarification of the development and land use potentials.

The vegetation complex is Karrakatta Central and South. A description of the vegetation associations, vegetation condition and locations of priority flora species found within the proposal area is provided in the Environmental Review (ATA Environmental, 2007).

The vegetation supports important fauna values. It is feeding habitat for a variety of bird species including nectar feeders, insectivores and seed eating species such as Carnaby's Cockatoo (*Calyptorhynchus latirostris*).

The bushland has been identified as potential habitat for the Graceful Sun Moth (*Synemon gratiosa*), an endangered species, which has been recorded in similar habitat at nearby Shenton Park Bushland. The sedge, *Lomandra hermaphrodita*, a recognised food plant of the larval stage of the Sun Moth is scattered through the bushland and the bushland is therefore likely to be a suitable habitat.

The area forms part of a stepping stone linkage from Kings Park to Bold Park via Shenton Park Bushland.

Submissions

The main issues raised in submissions included:

- the loss of a large area of regionally significant vegetation containing important biodiversity values;
- the viability of the areas that are to be conserved in the long-term including the additional pressures brought about by residential development;
- the bushland is feeding habitat for Carnaby's Cockatoo and the areas proposed for conservation do not include the main populations of *Banksia prionotes*, one of the species considered to be an important food source;
- the similarity of the vegetation to nearby Shenton Park Bushland which is known to support the Graceful Sun Moth; and
- the area is part of an important green link from Kings Park to Bold Park.

Assessment

The EPA's environmental objective for this factor is to maintain the abundance, diversity, geographic distribution and productivity of flora and fauna at species and ecosystem levels through the avoidance or management of adverse impacts and improvement in knowledge.

The EPA has considered the University's proposal and the submissions received.

It is the EPA's judgment that in considering the area of native vegetation to be retained the priority is to conserve a consolidated area of vegetation in the best condition.

The current proposal retains a consolidated area of the best available habitat with a dense relatively diverse canopy of Jarrah Woodland over Banksia that has an intact understorey. The vegetation retained will continue to provide habitat for a variety of fauna species including nectar feeding, insectivores and seed eating bird species.

The Public Open Space area to be retained contains the higher land and includes a number of Tuart trees and bushland. This is an important area to retain because of the Tuart trees and the important role of the higher land as line-of-sight habitat to support bird movement between Bold Park and Kings Park via Shenton Park Bushland.

Retention of the smaller 2 ha conservation area contributes to retention of biodiversity values, however its relatively small size will require a concerted management effort to maintain its biodiversity values in the long-term.

The vegetation on Lot 4 includes multiple Banksia species that are significant as feeding habitat for a variety of bird species including Carnaby's Cockatoo. Underwood Ave bushland is in close proximity to a major seasonal roosting site (Hollywood Hospital) for Carnaby's Cockatoo. The existence of several bushland reserves in close proximity to this roosting site is considered to be important in minimising foraging distance and optimising energy budget of the Cockatoos.

The proposal to clear areas containing *Banksia prionotes*, one of the species known to be an important food source for Carnaby's Cockatoo, is not ideal. However, as indicated above, the EPA considers the priority to protect biodiversity values is to retain a consolidated area of native vegetation. The consolidated area of vegetation to be retained will continue to provide feeding habitat for Carnaby's Cockatoo.

Similarly, in relation to the Graceful Sun Moth, the EPA accepts that the bushland is likely to be a suitable habitat given that the sedge, *Lomandra hermaphrodita*, a recognised food plant of the larval stage of the moth, is scattered through the bushland. The bushland to be retained by the University will continue to provide habitat for this species.

It is the EPA's view that there is no justification for the land within the identified odour buffer to be cleared while the odour impacts remain. The EPA supports the commitment of the University to retain the vegetation, at this time, so that it can continue to contribute to the overall biodiversity values of the area until a future land use is determined. Furthermore, the EPA recommends that the University should rehabilitate the southern-most portion of the area identified as "University purposes - future use and development" which is odour affected, until the odour issues are resolved. This is shown as Area 2 on Figure 3. This will maximize the biodiversity values of the area for as long as possible. The EPA has recommended a condition that requires a Rehabilitation Plan to be prepared for this southern-most area to provide for the maintenance and enhancement of the biodiversity values, specifically native

vegetation, until approval to develop this portion of the land is given through a Land Use Plan. This is discussed further in Section 3.2 below.

Summary

The EPA considers that the priority for protection of biodiversity values is to retain a consolidated area of native vegetation. The proposal presented in the Environmental Review retains a consolidated area of the best available habitat with a dense relatively diverse canopy of Jarrah Woodland over Banksia that has an intact understorey. The consolidated area will continue to provide habitat for a variety of fauna species including Carnaby's Cockatoo and the Graceful Sun Moth.

The Public Open Space area contains the higher land and includes a number of Tuart trees and bushland. The EPA also supports the retention of this area as a priority. Retention of the smaller 2 ha conservation area contributes to retention of biodiversity values but it will require a concerted management effort to maintain its biodiversity values in the long-term because of its relatively small size.

The EPA considers the issue of Biodiversity values has been adequately addressed and the conservation areas which include the Public Open Space are sufficient to meet the EPA's objectives for this factor. The EPA has recommended a condition that provides for the continued rehabilitation and maintenance of the southern-most portion of the area affected by odour until the odour issues are resolved, to ensure that the biodiversity values are maximised, for as long as possible.

2.2 Odour

Description

The area the subject of this proposal is adjacent to the Subiaco Wastewater Treatment Plant (Subiaco WWTP) and portions of the land are currently affected by odour emissions.

The EPA is aware that the Water Corporation has undertaken extensive upgrades of the Subiaco WWTP to further reduce residual odour emissions from fugitive sources.

An extensive odour sampling, field monitoring and odour modeling programme has also been carried out to provide a basis for defining a measurable buffer around the Subiaco WWTP. The Water Corporation has provided the EPA with a report showing the recommended buffer zone after the upgrade of the Subiaco WWTP (Consulting Environmental Engineers, August 2007). The buffer zone for the Subiaco WWTP is shown on Figure 4. This buffer identifies areas where residential development should not be permitted and careful consideration needs to be given to other proposed land uses, the acceptability or otherwise of such, to be determined through approvals processes.

The Department of Environment and Conservation has incorporated this buffer in the Water Corporation's Licence for the Subiaco WWTP which is issued under the provisions of Part V of the EP Act.

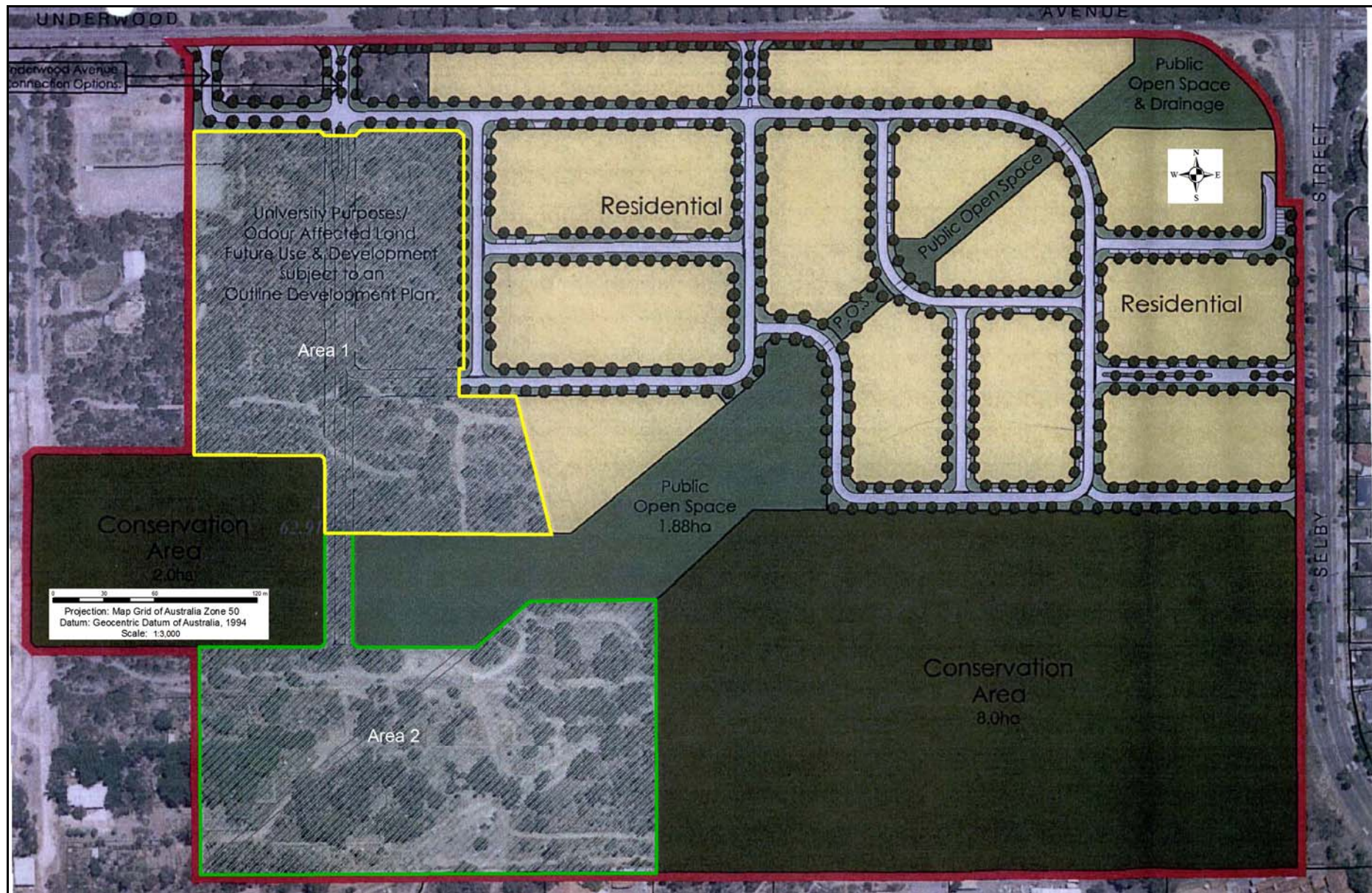


Figure 3: “University purposes - future use and development” which is odour affected land, requiring rehabilitation (Area 2) and a Land Use Plan (Area 1 and Area 2)

The University has advised the EPA that it has entered into a Deed of Agreement with the Water Corporation. The University's proposal reflects the buffer zone identified in Figure 4 proposing that the residential component of its proposal is outside the identified buffer. The University proposes that the area identified for "University purposes - future use and development", will remain vegetated pending the clarification of the development and land use potentials of this land with relevant planning authorities in accordance with Local Planning Scheme requirements.

Assessment

The EPA's environmental objective for this factor is to ensure that emissions do not adversely affect environment values or the health, welfare and amenity of people by meeting statutory requirements and acceptable standards.

The EPA accepts that odour is now sufficiently managed such that residential land uses can occur on the land that is not affected by odour. The residential component of the University's proposal is identified on Figure 2 and is outside the Water Corporation's buffer zone shown on Figure 4.

The EPA supports the commitment of the University to retain the vegetation, at this time, on the land identified for "University purposes - future use and development" (see Figure 2) so that it can continue to contribute to the overall biodiversity values of the area, until its future land is determined.

The EPA recognises that the future development of the land currently affected by odour will not be left entirely to the planning authorities to determine. Any subsequent change to the odour buffer for the Subiaco WWTP which affects the development of residential and other land uses sensitive to odour emissions will be subject to (i) the current and future bilateral agreement(s) between Water Corporation and the University; and (ii) any change in the Licence Conditions for Water Corporation's Subiaco Waste Water Treatment Plant, as agreed with the Department for Environment and Conservation and approved by the Minister for the Environment.

Therefore, the EPA has recommended a condition which formalises the recognition of the above and the commitment of the University. The condition provides that clearing of vegetation will be deferred in the area designated by the University as "University purposes - future use and development" until such time as a Land Use Plan has been prepared which demonstrates that in any residential or odour sensitive land use development, people are not subjected to unacceptable levels of odour as defined by the prevailing standards at that time.

The EPA has concluded that the proposal can be managed to meet the EPA's environmental objective for odour provided that the recommended condition is imposed requiring clearing of vegetation will be deferred in the area designated by the University as "University purposes - future use and development" until such time as a Land Use Plan has been prepared which demonstrates that in any residential or odour sensitive land use development, people are not subjected to unacceptable levels of odour as defined by the prevailing standards at that time.

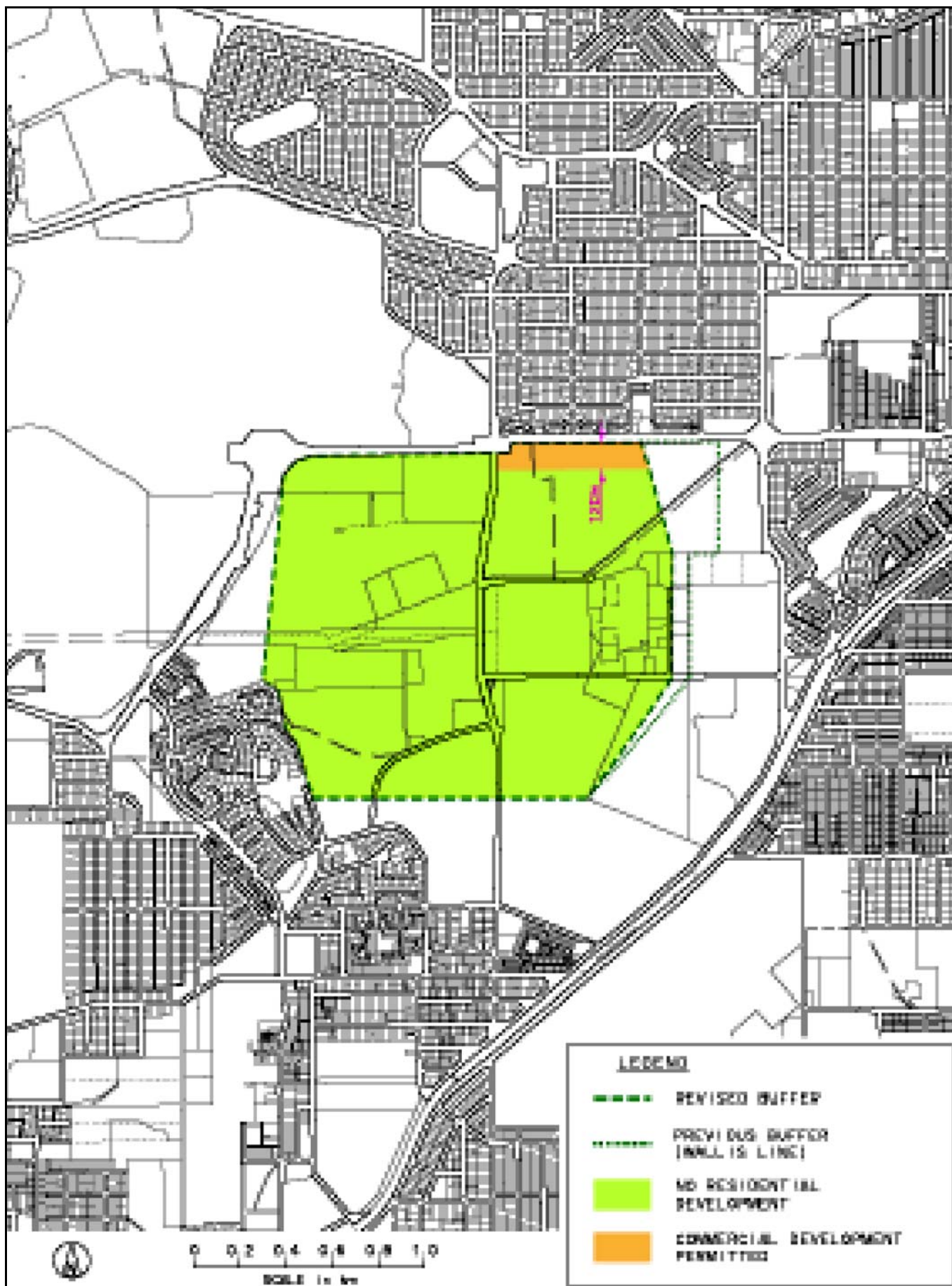


Figure 4: Buffer zone for Subiaco Waste Water Treatment Plant as currently shown in Department of Environment and Conservation Licence 4727/12

2.3 Environmental principles

In preparing this report and recommendations, the EPA has had regard for the object and principles contained in section 4A of the EP Act. Appendix 3 contains a summary of the EPA's consideration of the principles.

3. Conditions

Section 44 of the EP Act requires the EPA to report to the Minister for the Environment on the environmental factors relevant to the proposal and on the conditions and procedures to which the proposal should be subject, if implemented. In addition, the EPA may make recommendations as it sees fit.

The EPA has developed a set of conditions that the EPA recommends be imposed if the proposal by the University to conserve and develop a portion of Lot 4 Underwood Ave is approved for implementation.

These conditions are presented in Appendix 3. Matters addressed in the conditions include the following:

- (a) Clearing of vegetation will only occur in the area designated by the University as "University purposes - future use and development" when and if a Land Use Plan has been prepared which demonstrates that in any residential or odour sensitive land use development, people are not subjected to unacceptable levels of odour as defined by the prevailing standards at that time. A Land Use Plan must take account of the Licence conditions on the Subiaco Waste Water Treatment Plant set by the Department of Environment and Conservation and decisions of the Minister for the Environment.
- (b) That the proponent shall prepare a Rehabilitation Plan to rehabilitate the southern portion of the land identified as "University purposes - future use and development" to maintain and enhance the biodiversity values, specifically native vegetation, until approval to develop this portion of the land is given through a Land Use Plan.

4. Other Advice

Retention of roadside and other remaining bushland linking the Underwood Avenue bushland with other protected bushland areas will be important in maintaining viable populations of several poorly dispersing bird species that are declining on the Swan Coastal Plain. Potential future enhancement of tree canopy and large shrub vegetation is also important to facilitate movement, particularly for small bushland bird species. The EPA notes that the University retains land that can contribute to the maintenance and enhancement of the ecological linkages. In addition there is other land that forms part of the remaining ecological linkages and may be proposed for development in the future. The EPA encourages the retention and enhancement of vegetation to maintain these ecological linkages, to be considered as part of the development approvals processes.

The EPA also notes that development proposals may be proposed within the current identified buffer of the Subiaco WWTP. This buffer identifies areas where residential development should not be permitted and careful consideration needs to be given to other proposed land uses, the acceptability or otherwise of such, to be determined through approvals processes in the first instance. The City of Nedlands and the Department for Planning and Infrastructure should be aware of the constraints on development within the buffer identified and should seek the advice of the Department of Environment and Conservation about the compatibility of development proposed considering the existing odour situation.

5. Conclusions

The EPA has considered the proposal by the University to develop and conserve areas of Lot 4 Underwood Avenue in Shenton Park. The proposal area is approximately 33.4 hectares (ha) within which the University intends to establish a conservation area (10 ha), Public Open Space (1.9 ha) and a development area (25 ha). The development area includes approximately 13 ha to be developed for residential purposes with the remainder of the area being set aside for “University purposes - future use and development”, as this latter area is currently affected by odour from the Subiaco Wastewater Treatment Plant (Subiaco WWTP).

In relation to the areas to be conserved, the EPA considers that the priority for protection of biodiversity values is to retain a consolidated area of native vegetation. The proposal presented retains a consolidated area of the best available habitat with a dense relatively diverse canopy of Jarrah Woodland over Banksia that has an intact understorey. The consolidated area will continue to provide habitat for a variety of fauna species including Carnaby’s Cockatoo (*Calyptorhynchus latirostris*) and the Graceful Sun Moth (*Synemon gratiosa*), an endangered species.

The Public Open Space identified for retention by the University contains the higher land and includes a number of Tuart trees and bushland. The EPA also supports the retention of this area as a priority. Retention of the smaller 2 ha conservation area contributes to biodiversity values but because of its relatively small size it will require a concerted management effort to maintain the biodiversity values in the long-term.

The EPA considers the issue of biodiversity values has been adequately addressed and the conservation areas which include the Public Open Space are sufficient to meet the EPA’s objectives for this factor. The EPA has also recommended a condition that provides for the continued rehabilitation and maintenance of the southern-most portion of the area affected by odour until the odour issues are resolved, to ensure that the biodiversity values are maximised, for as long as possible.

In relation to odour, the EPA notes that the Water Corporation has undertaken extensive upgrades of the Subiaco WWTP to further reduce residual odour emissions from fugitive sources.

An odour sampling, field monitoring and modeling programme has also been carried out to provide a basis for defining a measurable buffer around the Subiaco WWTP. This buffer around the Subiaco WWTP has been incorporated in the Water

Corporation's Licence for the Subiaco WWTP issued by the Department of Environment and Conservation under Part V of the EP Act.

The University's proposal for the residential component reflects the above buffer identified for the Subiaco WWTP. The EPA accepts that there is sufficient confidence that odour is managed such that residential land uses can occur on the portion of the land identified by the University in its proposal as residential.

The University also proposes that land identified as part of its proposal for "University purposes - future use and development", will remain vegetated pending the clarification of the development and land use potentials of this land with relevant planning authorities in accordance with Local Planning Scheme requirements.

The EPA supports the commitment by the University to retain the vegetation, at this time, so that it will continue to contribute to the overall biodiversity values of the area until the future land use is determined.

The EPA recognises that the future development of the land currently affected by odour will not be left entirely to the planning authorities to determine. Any subsequent change to the odour buffer for the Subiaco WWTP which affects the development of residential and other land uses sensitive to odour emissions will be subject to (i) the current and future bilateral agreement(s) between Water Corporation and the University and (ii) any change in the Licence Conditions for Water Corporations' Subiaco Waste Water Treatment Plant, as agreed with the Department of Environment and Conservation and approved by the Minister for the Environment.

Therefore, the EPA has recommended a condition which formalises the recognition of the above and the commitment by the University. The condition provides that clearing of vegetation will be deferred in the area designated by the University as "University purposes - future use and development" until such time as a Land Use Plan has been prepared which demonstrates that in any residential or odour sensitive land use development, people are not subjected to unacceptable levels of odour as defined by the prevailing standards at that time.

The EPA has concluded that it is unlikely that the EPA's objectives would be compromised provided there is satisfactory implementation by the proponent of the recommended conditions set out in Appendix 3 and summarised in Section 4.

6. Recommendations

The EPA submits the following recommendations to the Minister for the Environment:

1. That the Minister notes that the proposal being assessed is for the University of Western Australia to develop and conserve areas of Lot 4 Underwood Avenue in Shenton Park. The proposal area is approximately 33.4 ha of Lot 4 within which the University intends to establish a conservation area (10 ha), Public Open Space (1.9 ha) and a development area (25 ha). The development area includes approximately 13 ha to be developed for residential purposes with the remainder of the area for "University purposes - future use and development", as it is affected by odour from the Subiaco Wastewater Treatment Plant;

2. That the Minister considers the report on the key environmental factors and principles as set out in Section 3;
3. That the Minister notes that odour currently affects the area defined in the Department of Environment and Conservation Licence for the Subiaco Waste Water Treatment Plant and this constrains development and clearing of land for odour sensitive land uses in land identified in the proposal as “University purposes - future use and development”. This is acknowledged by the University;
4. That the Minister notes that the EPA has concluded that it is unlikely that the EPA’s objectives would be compromised, provided there is satisfactory implementation by the proponent of the recommended conditions set out in Appendix 3, and summarised in Section 4;
5. That the Minister imposes the conditions and procedures recommended in Appendix 3 of this report; and
6. That the Minister notes the EPA’s Other Advice presented in Section 5 in relation to retaining vegetation in proximity to Lot 4 Underwood Ave to contribute to linkages for bird species, and that advice needs to be sought from the Department of Environment and Conservation by planning authorities if developments are proposed within the identified buffer of the Subiaco WWTP.

Appendix 1

List of submitters

Individuals:

Mr P Alcock
Ms F Amazon
Mr J Amos
Ms M Apthorpe
Mr P Berry
Mr D Bradshaw
Ms E Bull
MS K Carpenter
F Chambers
Dr R Collin
Ms D Corbyn
Mr A P Del Marco
T and R Drummond
Miss E and Miss N Edwards
Ms C Emerson
Ms H Fenbury
Mr I Foster
Dr R Gerritse
Ms C Graham-Taylor
Mr R Greenwood
Ms B Haddy
Ms J Hawkes
Mr B Heterick
Ms M Hillam
Mr M Hipkins
Ms J Holmes
Associate Professor G Jeffrey
& Dr D Jeffrey
Ms A Jones
Ms E Kiel
Mrs J Lucas
Ms J Marshall
Ms R Murphy
Mr J-P Orsini
R C Paterson
Mr B Perriam
Mr C Poustie
Ms R Reid
Ms I Rudd
Ms B Schultz
Ms L Segal
Ms M Silvester
Ms C Smithson
Ms J Tregonning
Ms B Tyson
Dr L van der Maesen
Ms J and Mr R Weller

Ms C Allbeury
Mr S Ambrose
Dr S Appleyard
Mr R Backhouse
Ms S Boulter
Ms M Brocx
Ms N Calcutt
Mr R Catomore
Ms Chin
Mr R Cooke
Ms S de Bueger
Mr G Dolva
Mr W Eddy
Ms D Elliot
Ms A Emmerson
Ms D Fischer
Mr J Frith
Mrs J Graham
S Gray
Mr M Gregson
Ms R Hart
Mr R Henderson
Mr R Hicks
Mrs A Hine & Family
Ms A Holmes
Ms D Hughes-Hallet
Ms B Jones
Ms Z Jones
Ms S Lake
Ms M Macpherson
Ms R McElroy
Mr M Norman
Mr G Owen
Ms D Perret
Ms L Perriam
Mrs S M Pye
Mr J Reilly
Ms A Scade
Mr J Seddon
Ms J Shepherd
Ms C Simpson
Mr P St Clair-Baker
Ms K Tullis
Mr A Tyson
Ms H Webb
Dr A Weston

Organisations:

Botanic Gardens and Parks Authority
Urban Bushland Council
Margaret River Environment Centre
Doctor's Reform Society of WA
Western Region Environment Network (WREN)
Peel Preservation Group
West Australian Naturalists Club
Friends of Underwood Avenue Bushland
Friends of Shenton Bushland
Wildflower Society
Birds Australia
Friends of Allen Park Bushland
WA Native Orchid & Conservation Group
Friends of Bold Park

State and Local Government Agencies

City of Nedlands
Department for Planning and Infrastructure

Appendix 2

References

ATA Environmental (2007) *Lot 4 Underwood Avenue, Shenton Park: 2007 Development and Conservation Proposal – Environmental Review Report (Report No 2006/263)*, Perth, Western Australia.

Consulting Environmental Engineers (2007) *Water Corporation, Subiaco Wastewater Treatment Plant – Recommended Buffer Zone After Odour Upgrade (August 2007)*, Richmond, Victoria, Australia.

Appendix 3

Consideration of Environmental Principles

PRINCIPLES		
Principle	Relevant Yes/No	If yes, Consideration
<p>1. The precautionary principle</p> <p>Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.</p> <p>In application of this precautionary principle, decisions should be guided by:</p> <p>(a) careful evaluation to avoid, where practicable, serious or irreversible damage to the environment; and</p> <p>(b) an assessment of the risk-weighted consequences of various options.</p>	Yes	<p>In considering this principle, the EPA notes that:</p> <ul style="list-style-type: none"> Implementation of the proposal will result in the clearing of 13 hectares of native vegetation. <p>The EPA considers that the consolidated area of native vegetation to be protected as part of this proposal will continue to provide habitat for a variety of fauna species and can meet the requirements of the precautionary principle.</p>
<p>2. The principle of intergenerational equity</p> <p>The present generation should ensure that the health, diversity and productivity of the environment is maintained and enhanced for the benefit of future generations.</p>	Yes	<p>In considering this principle, the EPA notes that:</p> <ul style="list-style-type: none"> Implementation of the proposal will result in the clearing of 13 hectares of native vegetation. <p>The EPA considers that the proposal can meet the requirements of this principle in that the health, diversity and productivity of the environment, in relation to the subject site is maintained in the consolidated area of native vegetation to be protected as part of this proposal, for the benefit of future generations if the proposal were to be implemented.</p>
<p>3. The principle of the conservation of biological diversity and ecological integrity</p> <p>Conservation of biological diversity and ecological integrity should be a fundamental consideration.</p>	Yes	<p>In considering this principle, the EPA notes that:</p> <ul style="list-style-type: none"> Implementation of the proposal will result in the clearing of 13 hectares of native vegetation. <p>The EPA considers that the proposal can meet the requirements of this principle in that conservation of biological diversity and ecological integrity is achieved in the consolidated area of native vegetation to be protected, if the proposal were to be implemented.</p>

PRINCIPLES		
Principle	Relevant Yes/No	If yes, Consideration
4. Principles relating to improved valuation, pricing and incentive mechanisms (1) Environmental factors should be included in the valuation of assets and services. (2) The polluter pays principles – those who generate pollution and waste should bear the cost of containment, avoidance and abatement. (3) The users of goods and services should pay prices based on the full life-cycle costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste. (4) Environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structure, including market mechanisms, which enable those best placed to maximize benefits and/or minimize costs to develop their own solution and responses to environmental problems.	No	

Appendix 4

Recommended Environmental Conditions and Proponent's Consolidated Commitments

RECOMMENDED ENVIRONMENTAL CONDITIONS

**STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED
(PURSUANT TO THE PROVISIONS OF THE
ENVIRONMENTAL PROTECTION ACT 1986)**

Development and Conservation Proposal Lot 4 Underwood Avenue, Shenton Park

Proposal: The proposal area is approximately 33.4 hectares of Lot 4 Underwood Ave in Shenton Park. Within this area the University intends to establish a conservation area (10 hectares), Public Open Space (1.9 hectares) and a development area (25 hectares). The development area includes approximately 13 hectares to be developed for residential purposes with the remainder of the area for “University purposes - future use and development”, as it is affected by odour from the Subiaco Wastewater Treatment Plant. This area will remain vegetated pending the clarification of the development and land use potentials of this land with relevant planning authorities in accordance with Local Planning Scheme requirements.

Proponent: University of Western Australia

Proponent Address: 39 Stirling Highway Crawley WA 6009

Assessment number: 1403

Report of the Environmental Protection Authority: Bulletin 1272

The proposal referred to in the above report of the Environmental Protection Authority may be implemented. The implementation of that proposal is subject to the following conditions and procedures:

1 Proposal Implementation

1-1 The proponent shall implement the proposal as documented and described in schedule 1 of this statement subject to the condition and procedures of this statement.

2 Proponent Nomination and Contact Details

2-1 The proponent for the time being nominated by the Minister for the Environment under sections 38(6) or 38(7) of the *Environmental Protection Act 1986* is responsible for the implementation of the proposal.

2-2 The proponent shall notify the Chief Executive Officer of the Department of Environment and Conservation (CEO) of any change of the name and address of the proponent for the serving of a notice or other correspondence within 30 days of such change.

3 Time Limit of Authorisation

- 3-1 The authorisation to implement the proposal provided for in this statement shall lapse and be void within five years after the date of this statement if the proposal to which this statement relates is not substantially commenced.
- 3-2 The proponent shall provide the CEO with written evidence which demonstrates that the proposal has substantially commenced on or before the expiration of five years from the date of this statement.

4 Compliance Reporting

- 4-1 The proponent shall submit to the CEO environmental compliance reports annually reporting on the previous twelve-month period, unless required by the CEO to report more frequently.
- 4-2 The environmental compliance reports shall address each element of an audit program approved by the CEO and shall be prepared and submitted in a format acceptable to the CEO.
- 4-3 The environmental compliance reports shall:
1. be endorsed by signature of the proponent's chief executive officer or a person, approved in writing by the CEOP, delegated to sign on behalf of the proponent's chief executive officer;
 2. state whether the proponent has complied with each condition and procedure contained in this statement;
 3. provide verifiable evidence of compliance with each condition and procedure contained in this statement;
 4. state whether the proponent has complied with each key action contained in any environmental management plan or program required by this statement;
 5. provide verifiable evidence of conformance with each key action contained in any environmental management plan or program required by this statement;
 6. identify all non-compliances and non-conformances and describe the corrective and preventative actions taken in relation to each non-compliance or non-conformance;
 7. provide an assessment of the effectiveness of all corrective and preventative actions taken; and
 8. describe the state of implementation of the proposal.
- 4-4 The proponent shall make the environmental compliance reports required by condition 4-1 publicly available in a manner approved by the CEO.

5 Odour Affected Land

5-1 Subject to condition 5-2 no clearing of native vegetation shall occur in the area designated “Area 1” or “Area 2” on Figure 1.

5-2 Where:

- (a) a Land Use Plan (“the Plan”) has been prepared by the proponent;
- (b) the Minister for the Environment on advice of the Department of Environment and Conservation is satisfied that implementation of the Plan will not subject people to unacceptable levels of odour; and
- (c) the proponent has received the prior written advice of the Minister for the Environment that clearing may occur in the whole of area designated “Area 1” or “Area 2 ” on Figure 1, or such part as is specified in the Minister’s advice,

then the clearing may occur in such part of the areas designated “Area 1” or “Area 2” on Figure 1 as is specified in the advice referred to in paragraph (c).

5-3 The Land Use Plan referred to in condition 5-2 shall be prepared to the requirements of the Minister for the Environment on advice of the Department of Environment and Conservation and shall include:

1. specification of the area within “Area 1” and “ Area 2” shown on Figure 1 to which the plan applies;
2. the intended land uses within the area of application;
3. an outline of the timing of proposed development including demonstrating that other necessary statutory approvals to develop land have been identified;
4. describe the sensitivity of land uses where a land use sensitive to odour emissions includes residential development, hospitals, hotels, motels, hostels, caravan parks, schools, nursing homes, childcare facilities, shopping centres, and some commercial or institutional uses which require high levels of amenity or are sensitive to particular emissions.

5-4 Any areas in the Land Use Plan identified as land uses sensitive to odour will need to meet either:

- the current criterion for acceptable levels of odour, which is that odour levels should be no greater than 5 Odour Units at 99.9 percentile frequency and 1 hour averaging; or
- future standards at the time of submission of the Plan, that are deemed acceptable by the Minister for the Environment.

6 Rehabilitation plan

- 6-1 Within six months following the formal authority issued to the decision-making authorities under section 45(7) of the *Environmental Protection Act 1986*, the proponent shall prepare a Rehabilitation Plan for the area identified as “Area 2” on Figure 1, to the requirements of the Minister for the Environment.

The objective of this Plan is to provide for rehabilitation of the existing degraded area of native vegetation and enhancement of its biodiversity values through planting of local native species of local provenance and weed control.

This Plan shall address the following:

1. planting and/or seeding of appropriate local native vegetation species;
 2. removal of weeds; and
 3. management to maintain and enhance bush values.
- 6-2 The Plan will be modified as necessary to exclude areas for which the proponent has received written advice from the Minister for the Environment under condition 5- 2.
- 6-3 The proponent shall implement the plan required by condition 6-1.

Notes

1. The Minister for the Environment will determine any dispute between the proponent and the Environmental Protection Authority or the Department of Environment and Conservation over the fulfilment of the requirements of the conditions.

Schedule 1

The Proposal (Assessment No. 1403)

General Description

The proposal area is approximately 33.4 hectares of Lot 4 Underwood Ave in Shenton Park. Within this area the University intends to establish a conservation area (10 hectares), Public Open Space (POS) (1.9 hectares) and a development area (25 hectares). The development area includes approximately 13 hectares to be developed for residential purposes with the remainder of the area for “University purposes - future use and development”, as it is affected by odour from the Subiaco Wastewater Treatment Plant. The University proposes this area will remain vegetated pending the clarification of the development and land use potentials of this land with relevant planning authorities in accordance with Local Planning Scheme requirements. Figure 1 shows Lot 4, the area of the proposal and, the conservation, Public Open Space and development areas.

The proposal is described in the following document: Section 2 of the Environmental Review, ATA Environmental, 2007.

Summary Description

A summary of the key proposal characteristics is presented in Table 1

Table 1 – Summary of Key Proposal Characteristics

Element	Description
Proposal	<ul style="list-style-type: none">• 13 hectares residential subdivision creating single residential lots in addition to grouped housing sites.• 10 hectares for conservation.• 1.88 hectares for Public Open Space.• 8.5 hectares set aside for “University purposes - future use and development”.
Area (including Public Open Space and reserves)	The proposal area comprises approximately 33.4 hectares of Lot 4 Underwood Avenue, Shenton Park.
Area of disturbance	The proposal is to clear, subdivide and develop 13 hectares of the north-eastern portion of the subject land for residential development. A further 8.5 hectares for “University Purposes - future use and development” will remain vegetated pending the clarification of the development and land use potentials of this land.

Element	Description
Infrastructure	<ul style="list-style-type: none"> • Roads within the subdivision. • Footpath on at least one side of all internal roads. • Installation of sewerage connections, soak wells and drainage swales.
Setbacks	5metre wide landscape buffer on Underwood Avenue.
Rehabilitation	Preparation and implementation of a Conservation Area Management Plan for the retained bushland areas including fencing, management of weeds, rehabilitation of degraded areas and community awareness programmes.

Figure

Figure 1: Lot 4 proposal including residential, conservation, public open space areas and land identified as “University purposes - future use and development” which is odour affected land, requiring rehabilitation (Area 2) and a Land Use Plan (Area 1 and Area 2). See Figure 3 above.

Appendix 5

Summary of Submissions and Proponent's Response to Submissions