

## **APPENDIX B – WORKING GROUP - MEETING DATES, LIST OF ATTENDEES & RESOLUTIONS**

In late 2013 the Land Development Agency [LDA] identified the need to bring together a working group to examine the outstanding issues relating to the bushfire risk to the north-western edge of Molonglo 3; Denman Prospect and the Molonglo River Corridor.

The brief of the Working Group was to bring together all Government Agencies involved in the development of the Molonglo East precinct to enable examination of previous studies, undertake site inspections and consider all options available so as to develop a report that establishes the principles, processes and funding required to address the bushfire risk.

Representatives of Government Agencies included:

- ❖ Dave Richardson [LDA];
- ❖ Kerry Browning [LDA];
- ❖ Adam Carmody [LDA];
- ❖ Dylan Kendall [TaMS];
- ❖ Adam Leavesley [TaMS];
- ❖ Nick Lhuede [ESA];
- ❖ Greg Potts [ACT RFS];
- ❖ Conrad Barr [Acting Chief Officer] ACT Fire & Rescue;
- ❖ Andrew Starke – Commissioner ACT Rural Fire Service;
- ❖ Ros Ransome [TaMS];
- ❖ Steven Gianakis;
- ❖ Daniel Iglesias;
- ❖ Tony Corrigan;
- ❖ Stuart McKenzie

Two external companies were commissioned to provide assistance to the Working Group, Umwelt to undertake a peer review of the previous ecological studies and additional ecological investigations and ABPP to provide advice on bushfire risk, fire protection strategies and the preparation of a Bushfire Mitigation Strategy Report.

These companies were represented by;

- ❖ Peter Cowper Armstrong [Umwelt];
- ❖ Rob Armstrong [Umwelt]; and
- ❖ Graham Swain [ABPP].

Initially the Working Group consisted of representatives of LDA, ABPP and Umwelt.

A workshop was held on the 28<sup>th</sup> May 2014 with the aim to establish initial understanding of ecological values and management requirements and development of feasible options to manage bushfire risk. Attendees were:

- ❖ Dave Richardson [LDA];
- ❖ Kerry Browning [LDA];
- ❖ Adam Carmody [LDA];
- ❖ Dylan Kendall [TaMS];
- ❖ Peter Cowper Armstrong [Umwelt];
- ❖ Rob Armstrong [Umwelt]; and
- ❖ Graham Swain [ABPP].

Umwelt were commissioned to review the existing reports/studies and undertake field surveys and investigation into the vegetation and ecological values in Kama.

The results of this study are contained in the separate document attached as **Attachment A**.

Initial findings on the extent of the ecological value of the vegetation within Kama varied from the previous studies.

A second workshop was held on the 29<sup>th</sup> July 2014 with the aim to undertake a wider consultation with key fire planners within TaMS and ESA; establish a broader understanding of ecological values and management requirements and further development of feasible options to manage fire risk. Attendees were:

- ❖ Dave Richardson [LDA];
- ❖ Daniel Santosuosso [LDA];
- ❖ Adam Carmody [LDA];
- ❖ Dylan Kendall [TaMS];
- ❖ Adam Leavesley [TaMS];
- ❖ Nick Lhuede [ESA],
- ❖ Greg Potts [ACT RFS];
- ❖ Conrad Barr [Acting Chief Officer] ACT Fire & Rescue;
- ❖ Peter Cowper [Umwelt];
- ❖ Rob Armstrong [Umwelt]; and
- ❖ Graham Swain [ABPP].

Various options were considered in the methods of providing protection to the north-western edge of Molonglo 3 including support for the provision of an Asset Protection Zone within Molonglo 3 with the vegetation within Kama managed as a Strategic Fire Advantage Zone [SFAZ], provided that adequate on-going funding was available to support the management works in perpetuity.

Following discussions on the protection measures for Denman Prospect, Umwelt were commissioned to review the existing reports/studies and undertake field surveys and investigation into the vegetation and ecological values of the vegetation within the north-western portion of Denman Prospect and the adjoining land to the northwest.

A third workshop was held on the 21<sup>st</sup> October 2014 with the aim of confirming the proposed management of the north-western edge of Molonglo 3 and examining options for fire management of the western edge to Denman Prospect and the Molonglo River Corridor.

Attendees were:

- ❖ Dave Richardson [LDA];
- ❖ Daniel Santosuosso [LDA];
- ❖ Adam Carmody [LDA];
- ❖ Adam Leavesley [TaMS];
- ❖ Greg Potts [ACT RFS] & Conrad Barr [Acting Chief Officer ACT Fire & Rescue];
- ❖ Peter Cowper & Rob Armstrong [Umwelt];
- ❖ Ros Ransome [TaMS]; and
- ❖ Graham Swain [ABPP].

At this meeting it was agreed that to the north-western edge of Molonglo 3 the proposed fire management zones would consist of:

1. A 60 metre wide Inner Asset Protection Zone, located inside the western edge to the Molonglo Stage 3 precinct;
2. A Fire Trail would be constructed along the boundary with Kama – inside the Molonglo Stage 3 precinct;
3. A managed fire break would be provided in Kama, adjacent to the boundary with Molonglo Stage 3;
4. That the vegetation within Kama would be managed in a series of Strategic Fire Advantage Zones, in accordance with the prescriptions provided by the *Strategic Bushfire Management Plan for the ACT – 2009* – refer to Appendix C – Plan of proposed Bushfire Management Strategies – Kama/Molonglo 3 Western Edge.

Existing access trails would be maintained and managed to provide edges to the Strategic Fire Advantage Zones – refer to Appendix C – Plan of proposed Bushfire Management Strategies – Kama/Molonglo 3 western edge.

5. The proposed management strategies were supported by ESA provided adequate on-going funding was available to support the works in perpetuity.

The meeting also resolved to examine the fire management options for Denman Prospect provided by ABPP and resolved to assess these options in the field.

It was also agreed to inspect the line of the Asset Protection Zone to the north of the river corridor, as determined with [TaMS]. This meeting was attended by Dave Richardson; Nick Lhuede; Adam Leavesley and Daniel Santosuosso and agreement reached that a 60 metre wide Inner Asset Protection Zone [IAPZ] be provided to the full length of the river corridor, measured from the outside of the existing Sewer Access Track.

Where stormwater management ponds occurred, the IAPZ will include these facilities.

The acceptance by ESA of the 60 metre wide IAPZ was predicated on the vegetation within the river corridor being managed as a Strategic Fire Advantage Zone which is to be maintained to the standards prescribed by the *Strategic Bushfire Management Plan for the ACT – 2014 – Version 3*.

An inspection of the western edge of Denman Prospect and adjoining land to the northwest was undertaken on the 28<sup>th</sup> November 2014. Attendees were:

- ❖ Dave Richardson [LDA];
- ❖ Daniel Santosuosso [LDA];
- ❖ Adam Leavesley [TaMS];
- ❖ Nick Lhuede [ESA],
- ❖ Greg Potts [ACT RFS];
- ❖ Conrad Barr [ESA][Acting Chief Officer ACT Fire & Rescue],
- ❖ Andrew Starke – Commissioner ACT Rural Fire Service;
- ❖ Rob Armstrong [Umwelt]; and
- ❖ Graham Swain [ABPP].

General consensus was reached on the location of the proposed fire protection measures which include the provision of a 60 metre wide IAPZ to the full length of the urban edge; management of a varying width Outer Asset Protection Zone [OAPZ] between the IAPZ and the retained forest vegetation and the management of the Territory Land to the northwest and west of the fire protection zones as a Strategic Fire Advantage Zone/s.

Whilst this consensus was broadly spread across the group concern was raised by ESA over the Strategic Fire Advantage Zone extending beyond the boundary of the Denman Prospect precinct and that this issue needed to be addressed before the final support of ESA would be considered.

Another matter raised by ESA related to the environmental consequences of the management of the proposed Outer Asset Protection Zones SFAZs and the cost of the ongoing management and the long term funding of the management program.

To address the matter of possible environmental consequences of the management of the proposed SFAZs, Umwelt were commissioned to undertake further studies to determine the location of vegetation communities, threatened species and the viability of management of the vegetation to achieve the fuel loads required in a SFAZ.

The results of the study are contained in the Umwelt Report attached as Attachment B.

The Umwelt report identifies an increase in the extent of Box Woodland, confirms the location of Pink Tailed Worm Lizard habitat and also confirms that the management of the SFAZs by hazard reduction burning is ecologically sustainable.

The Umwelt report has been reviewed by Adam Leavesley [TaMS].

An inspection of the southern side of the Molonglo River corridor was undertaken on the 19<sup>th</sup> March 2015. Attendees were:

- ❖ Dave Richardson [LDA];
- ❖ Daniel Santosuosso [LDA];
- ❖ Adam Leavesley [TaMS];
- ❖ Rob Armstrong [Umwelt]; and
- ❖ Graham Swain [ABPP].

This inspection examined the bushfire risk to the western edge of the Molonglo River Park and the fire paths/vegetation along the river corridor to the bend in the river, east of the Group Centre precinct.

Consensus was reached that the fire protection principle developed for the northern edge of the corridor [60 metre wide IAPZ within the urban development and management of the river corridor as a SFAZ] would be applied along the southern edge of river corridor.

**APPENDIX C – FIRE PROTECTION ZONES –  
NORTH-WESTERN EDGE OF MOLONGLO STAGE 3**

## **APPENDIX D – FIRE PROTECTION ZONES – NORTH-WESTERN/WESTERN EDGE OF DENMAN PROSPECT**

## **APPENDIX E – FIRE PROTECTION ZONES – MOLONGLO RIVER PARK**

**APPENDIX F – FIRE PROTECTION ZONES –**

**MOLONGLO STAGE 3 –**

**Northern & Eastern Edge**

## **ATTACHMENT A – BRIEFING NOTE**

**UMWELT – 15<sup>th</sup> October 2013.**

**ATTACHMENT B – ANALYSIS OF VEGETATION STRUCTURE AND  
FIRE RISK – WEST DENMAN PROSPECT**

**UMWELT – April 2015.**



**BUSHFIRE RISK ASSESSMENT**

**MOLONGLO STAGE 3;**

**DENMAN PROSPECT &**

**THE MOLONGLO RIVER CORRIDOR**

**AUSTRALIAN CAPITAL TERRITORY**

**PREPARED FOR THE**

**LAND DEVELOPMENT AGENCY**

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**BUSHFIRE RISK ASSESSMENT**

**MOLONGLO STAGE 3;**

**DENMAN PROSPECT &**

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## SECTION 1

### INTRODUCTION

#### 1.1 Background.

*Australian Bushfire Protection Planners Pty Limited* has been commissioned by the Land Development Agency [LDA] to undertake a Bushfire Study for Molonglo Stage 2, Stage 3 and the Molonglo River Corridor.

The objective of the brief is to guide the development of the Land Development Agency Masterplan for the Molonglo Stage 3 study area, review the bushfire protection measures to Molonglo Stage 2 [Denman Prospect] and the Molonglo River Corridor and prepare a report on the findings of the study detailing the recommended bushfire protection measures identified by the study group.

Scope of Work – Molonglo Stage 2/3 and Molonglo River Corridor Study:

1. Review existing literature/reports & studies;
2. Review the study undertaken by Umwelt to determine the ecological constraints and opportunities for fuel hazard reduction management;
3. Attend pre-workshop site familiarisation;
4. Attend and participate in a workshop between LDA, Umwelt, TaMS fire management officers and ESSD to discuss all issues related to the protection of the north-western edge of Molonglo Stage 2 & 3; the western edge of Molonglo Stage 2 and the Molonglo River corridor;
5. Examine the results of the workshop, liaise with LDA & Umwelt and others [as required] to identify the measures which are required to be implemented to mitigate the potential bushfire risk;
6. Attend and participate in a follow-up workshop between LDA, Umwelt, TaMS fire management officers, ESSD, ESA, ACTRFS, Fire & Rescue ACT and other selected Stakeholders to present the findings/results of the initial workshop and the recommendations determined in the review of these findings/results;
7. Review the results of the follow-up workshop, liaise with LDA & Umwelt and others as required, to finalise the measures which are required to be implemented to mitigate the potential bushfire risk;
8. Prepare, in co-operation with Umwelt, a report which details the findings of the studies undertaken, the results of the workshops and the final recommendations on those measures required to be implemented to mitigate the bushfire risk to the western, north-eastern urban edge and the Molonglo River corridor;

9. Attend and participate in a final workshop between LDA, Umwelt, TaMS fire management officers, ESSD, ESA, ACTRFS, Fire & Rescue ACT and other selected Stakeholders to present the final report;
10. Generally, liaise with LDA, Umwelt, TaMS, ESA, ACTRFS, Fire & Rescue ACT and other ACT Government Departments as required.

## **1.2 Information Reviewed.**

The following report/studies were reviewed as part of the scope of works:

- The Molonglo River Park – Concept Plan prepared by Hassell – September 2011;
- The Molonglo Valley Plan for the Protection of Matters of National Environmental Significance [NES Plan] September 2011;
- Molonglo Vegetation Survey – Baseline Condition Assessment prepared by Ecological Australia – July 2013;
- Molonglo Stage 3 Slope Analysis – LDA;
- Bushfire Risk Assessment Report – Molonglo Structure Plan – prepared for ACTPLA, 19.7.2005;
- Updated Bushfire Risk Assessment Report – Molonglo Structure Plan – prepared for ACTPLA – 26.4.2006;
- Bushfire Risk Assessment Report – Molonglo Stage 2 Group Centre prepared for Indesco 23.8.2012;
- Territory Plan - ACTMAPi;
- Molonglo Stage 2 Vegetation Conservation Assessment prepared by Openlines, February 2014;
- Indicative Fire Management Strategy – Urban Area – TaMS – 2015;
- Indicative Fire Management Strategy – Molonglo Valley – TaMS – 2015;
- Analysis of Vegetation Structure and Fire Risk – Umwelt – April 2015;
- Molonglo River Reserve [Kama] Operational Plan 2014 – 2017 – TaMS;
- ACT Strategic Bushfire Management Plan – Version 3 – 2014;
- ACT Bushfire Management Standards – Strategic Bushfire Management Plan – Version 3 – 2014;

- Briefing Note on the Ecological Values of the Kama Nature Reserve – Molonglo Stage 3 Outer Asset Protection Zone – Umwelt – October 2013;
- Bushfire Risk Assessment for the north-western edge of Denman Prospect [Aurecon Australia Pty Ltd – 25.2.2014].

### 1.3 Review of Documents.

Appendix A provides a summary of the findings/recommendations of the following documents reviewed:

1. Bushfire Risk Assessment Reports prepared by Australian Bushfire Protection Planners Pty Ltd [ABPP] for the Molonglo Structure Plan [August 2005 & April 2006];
2. The Molonglo River Park Concept Plan;
3. The NES Plan;
4. The Indicative Fire Management Strategy – Urban Area – TaMS – 2015; and
5. The Indicative Fire Management Strategy – Molonglo Valley – TaMS – 2015.

### 1.4 Summary of the review of Reports.

The following is a summary of the findings/recommendations of the documents reviewed:

#### 1. **Bushfire Risk Assessment Reports prepared by ABPP – 2005 & 2006:**

The Bushfire Risk Assessment Report 2005 prepared by ABPP states:

*“The long exposure of the north-western edge of the precinct to uphill burning fires, influenced by hot, dry, strong north-westerly winds, will result in significant fire impact either directly or indirectly from ember attack, depending on the level of protection provided by active management of the fuels within the river corridor.*

*Similar impacts may also occur to the western / south western edge from westerly and south-westerly wind-driven fires and the influence of wind turbulence in the Mount Stromlo area.*

*The northern edge will be impacted by fires burning within the habitat corridor, north of William Hovell Drive.*

*Due to the level of risk and to address the potential impacts of future bushfires to the exposed urban edge and the concerns over the long-term viability of minimising fuel loads within the abatement zone, a Critical Management Zone should be provided to a minimum width of 300 metres.*

*The objective of land uses within the Critical Management Zone should be to provide permanent management of the hazardous fuels to levels which prevent the spread of fire into the urban edge.*

*The Molonglo River Corridor will separate the eastern development node from the western development node and therefore provide a direct fire path into the suburbs adjoining the corridor and to the International Arboretum to the south east.*

*The river corridor separating the north-eastern and south-western nodes of the East Precinct should be activity managed as a recreation reserve/public park to mitigate the effects of fire runs along the river”.*

The Bushfire Risk Assessment Report 2006 prepared by ABPP retains the recommendation for the provision of a Critical Management Zone to the north-western edge of Molonglo and notes that the Draft Structure Plan had introduced ‘Lake Molonglo’ with the construction of a new dam on the Molonglo River.

For the Critical Management Zone [CMZ] the report states:

- **Purpose.**

*To provide a permanently managed fuel reduced zone, wide enough to mitigate the impact of radiant heat and ember transfer to the urban edge during major bushfire events.*

- **Location.**

*The Critical Management Zone shall be located beyond the edge of the Inner Asset Protection Zone on the north-western and northern edge of the western “node” and the south-western edge of the East Molonglo precinct; the northern, north-western, western and south-western edge of the Central Molonglo.*

- **Depth.**

*A minimum width of 300 metres shall be provided. (Minimum 100 metres width provided to the north-western edge of the East Molonglo precinct).*

- **Establishment & Maintenance.**

*The Critical Management Zone shall be established on the hazard side of the Inner Asset Protection Zone and shall extend to the widths nominated.*

*The zone may contain agricultural pursuits which permanently minimise combustible fuel ground litter, (vineyards, orchards); or land uses that utilize irrigation supply drawn from grey water recycling, or irrigation from the new lake created by the damming of the Molonglo River. Such land uses may include the cultivation of summer crops/Lucerne.*

*The Critical Management Zone may also include recreation and open space facilities such as Golf Courses, Sports Fields, Carparks etc.*

*Where these land uses are not utilized to provide the Critical Management Zone and the zone consists of Habitat Corridors/Rural Land, a stock proof fence with access gates shall be provided on the outer edge of the zone. A 30 metre wide wind break shall be established by planting smooth barked trees on the outer edge of the zone. A second wind break shall be established to a width of 10 metres, 10 metres from the Inner Asset Protection Zone/Critical Management Zone boundary.*

*A four (4) metre wide fire trail shall be established on the centre line of the Critical Management Zone, with link roads provided to the edge road at approximately 500 metre intervals.*

*Management of the combustible fuels within the CMZ shall be undertaken to maintain a Low – Moderate Overall Fuel Hazard, in accordance with the methodology provided by the NRE Overall Fuel Hazard Guide. Management shall be implemented by regular stocking of the zone, or by a combination of mechanical slashing/stocking/hazard reduction burning. A Fuel Management Plan shall be prepared for the maintenance of the Critical Management Zone, irrespective of land use”.*

The final Structure Plan for Molonglo removes the damming of the Molonglo River, primarily due to the results of ecological studies, and replaces the lake with the Molonglo River Park [Nature Reserve] and establishes the Kama Nature Reserve to the northwest of Molonglo Stage 3.

These changes to the Draft Structure Plan – i.e. establishment of a Nature Reserve to the northwest of Molonglo Stage 3 and within the Molonglo River corridor, increase the bushfire risk to future development located adjacent to the north-western edge and to both sides of the river corridor.

The examination of the mitigation measures required to provide a reduction of this risk forms the core objective of the Working Group established by the Land Development Agency.

## **2. Molonglo River Park Concept Plan – Hassell – 2011**

The Molonglo River Park Concept Plan prepared by Hassell supports the recommendation of the provision of the 300 metre wide ‘Critical Management Zone’ to the north-western edge.

However, the Concept Plan recommends that the river corridor should be managed for ecological values with the corridor being broken into precincts to prevent the ‘wick’ effect and in particular the management of the western entrance to the river park and the area around the sludge ponds to mitigate the passage of fire along the river.

## **3. The NES Plan – 2011:**

The NES Plan provides, under Section 2.3 – Bushfire Management Framework a ‘motherhood’ statement about bushfire management which reads:

*“Within the strategic assessment area fire management will be aimed at protection of both built assets and MNES values. This will be achieved through the identification of appropriate asset protection zones and application of hazard reduction techniques that will both:*

- *Ensure that the standards for fuel loads in the SBMP are met; and*
- *Protection MNES values through the use of sympathetic management techniques”.*

The aim of this document does not address the recommendation that the vegetation in the river corridor or on the land to the west of Molonglo 3 [Kama] and Denman Prospect is managed to mitigate the impact of fire on the north-western edge of the future urban development and from a fire spreading along the river corridor.

The document does not address the potential bushfire risk to the future development adjacent to the north-western edge or the river corridor.

#### **4. Indicative Fire Management Strategy – TaMS 2015:**

TaMS have prepared a draft Indicative Fire Management Strategy – Urban Area and the Indicative Fire Management Strategy – Molonglo Valley. The review of these documents has found that few of the recommended bushfire management strategies contained within the Molonglo River Concept Plan have been incorporated into the management strategies proposed by Tams.

The recommendation provided in the Australian Bushfire Protection Planners reports and the Molonglo River Concept Plan that a ‘Critical Management Zone [CMZ] be provided to the northwest of the urban development [and river park] has been ignored in favour of ecological and habitat values.

Similarly, the Molonglo River Concept Plan’s recommendation that the river corridor be broken into precincts to prevent the ‘wick’ effect and in particular the management of the western entrance to the river park and the area around the sludge ponds to mitigate the passage of fire along the river has been ignored. These items are critical to the prevention of fire spread along the river corridor and should be reinstated or at least given some consideration.

### **1.5 Working Group.**

In late 2013 the Land Development Agency [LDA] identified the need to establish a working group to examine the outstanding issues relating to the bushfire risk to the north-western edge of Molonglo 3; Molonglo Stage 2 [Denman Prospect] and the Molonglo River Corridor.

The brief of the Working Group was to bring together all Government Agencies involved in the development of the Molonglo East precinct to enable examination of previous studies, undertake site inspections and consider all options available so as to develop a report that establishes the principles, processes and funding required that address the bushfire risk.

Representatives of Government Agencies included:

- ❖ Dave Richardson [LDA];
- ❖ Kerry Browning [LDA];
- ❖ Adam Carmody [LDA];
- ❖ Dylan Kendall [TaMS];
- ❖ Adam Leavesley [TaMS];
- ❖ Nick Lhuede [ESA];
- ❖ Greg Potts [ACT RFS];
- ❖ Conrad Barr [Acting Chief Officer] ACT Fire & Rescue;
- ❖ Andrew Starke – Commissioner ACT Rural Fire Service;
- ❖ Ros Ransome [TaMS];
- ❖ Steven Gianakis;
- ❖ Daniel Iglesias;
- ❖ Tony Corrigan;
- ❖ Stuart McKenzie

Two external companies were commissioned to provide assistance to the Working Group, Umwelt to undertake a peer review of the previous ecological studies and additional ecological investigations and ABPP to provide advice on bushfire risk, fire protection strategies and the preparation of a Bushfire Report.

These companies were represented by;

- ❖ Peter Cowper Armstrong [Umwelt];
- ❖ Rob Armstrong [Umwelt]; and
- ❖ Graham Swain [ABPP].

Appendix B provides details on the Working Group, including meeting and site inspection dates, attendees and decisions/resolutions determined.

## **1.6 Studies Undertaken by Umwelt.**

Stemming from the second meeting of the Working Group the Land Development Agency [LDA] commissioned Umwelt to undertake study into the ecological values of the Kama Nature Reserve – Molonglo Stage 3 Outer Asset Protection Zone.

A copy of the Briefing Note prepared by Umwelt [15<sup>th</sup> October 2013] is attached as Attachment A.

The purpose of the study was to provide LDA with a comparison of the ecological values of the Outer Asset Protection Zone for the interface between Kama Nature Reserve and the Molonglo Stage 3 development.

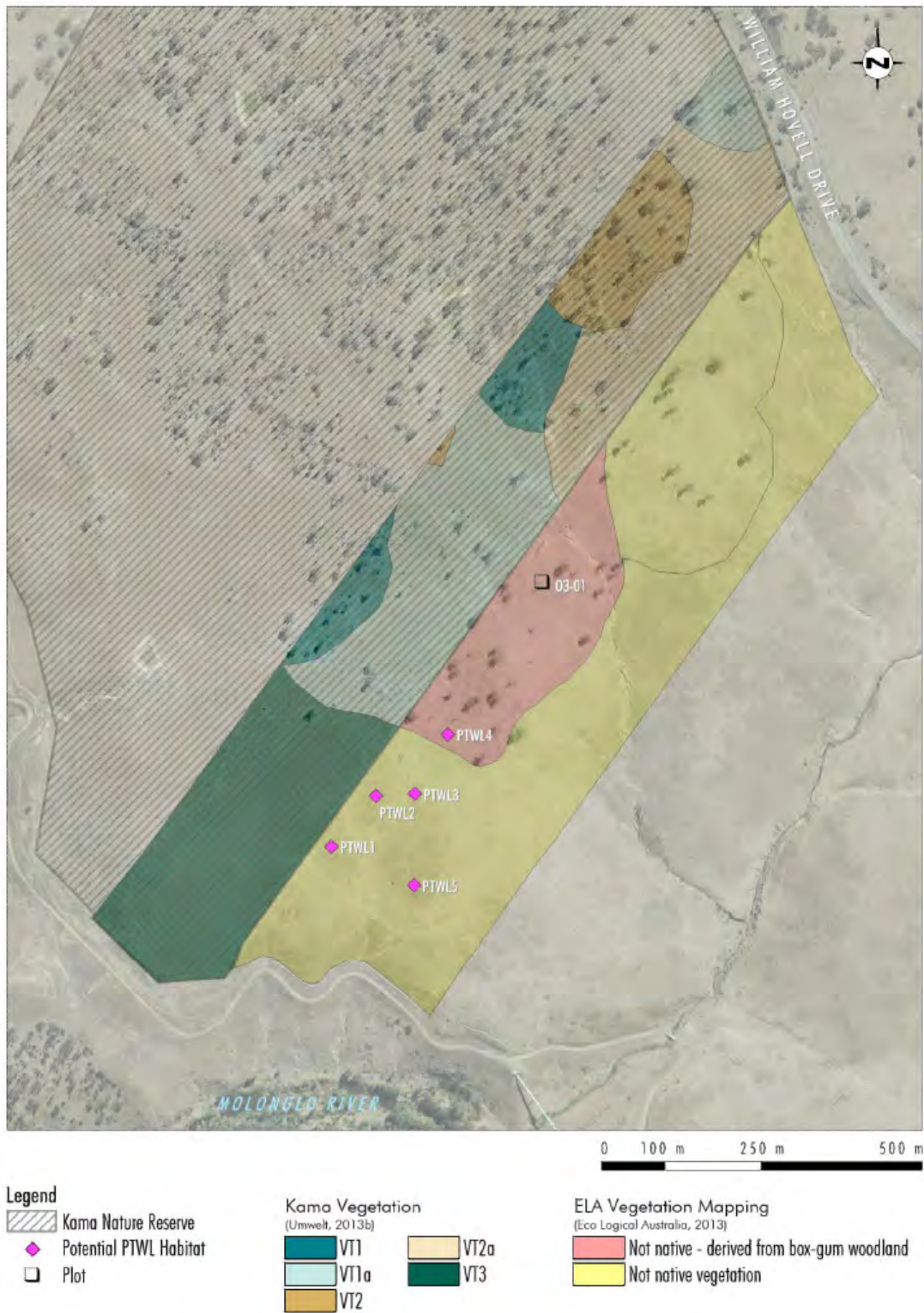
The findings of the study identified that the condition of the 200 metre wide area inside the eastern boundary of Kama Nature Reserve is variable, comprised of a mosaic of high condition box-gum woodland, low condition natural temperate grassland and low condition Scribbly Gum woodland.

The ecological condition of the 300 metre wide area of the western boundary of Molonglo Stage 3 [adjoining Kama Nature Reserve] is generally low, consisting of degraded exotic pasture, and an area containing scattered Blakely's red gum with an exotic understorey.

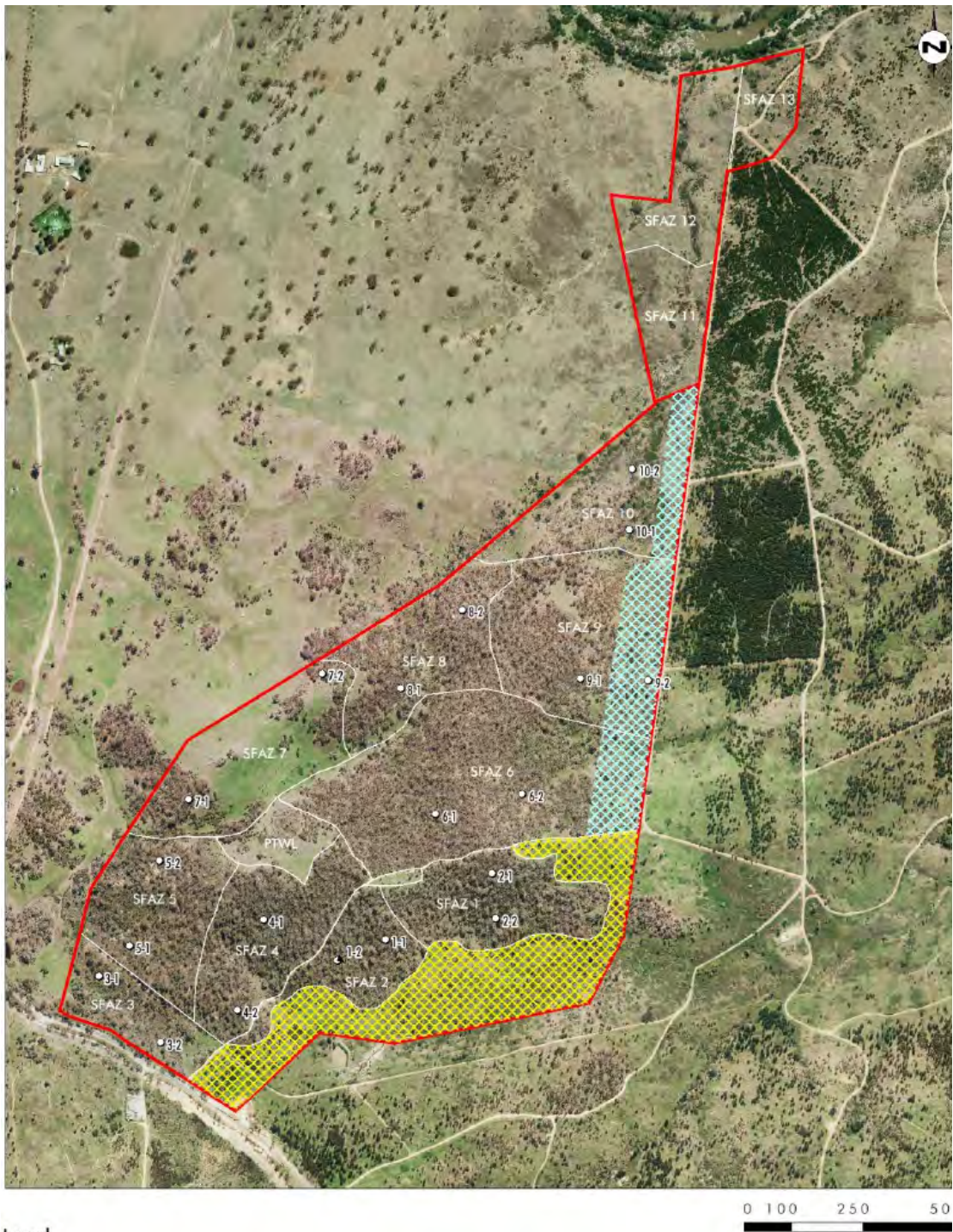
The report confirms that the area is dominated by exotic pasture grasses and the only feature of ecological significance is the presence of five potential pink-tailed worm lizard habitat areas. One of these [location PTWL1] is within a patch of diverse native grasses, whereas the others are of moderate to low value due to a higher abundance of Phalaris and wild oats. These areas are appraised as moderate habitat quality by Osborne & Wong [2010].

Refer to Figure 1 on Page 12 – Ecological Assets of the Outer Asset Protection Zone including potential Pink-tailed Worm Lizard habitat.

**Figure 1 - Ecological Assets of the Outer Asset Protection Zone including potential Pink-tailed Worm Lizard habitat – Umwelt Briefing Note 15<sup>th</sup> October 2013**



**Figure 3.1 - Ecological assets of the outer asset protection zone including potential pink-tailed worm lizard habitat.**



**Legend**

- Project Area
- Outer Asset Protection Zone
- Interface

The ACT Land Development Agency [LDA] commissioned Umwelt to undertake an analysis of vegetation values in areas west of Denman Prospect and identify practical solutions to meet joint objectives of fuel hazard management and biodiversity conservation.

A copy of the final report dated April 2015 is attached as Attachment B.

The key messages of the report include:

1. Much of the vegetation within the Project Area is in a regenerating thicket state from the 2003 wildfires;
2. Vegetation in a regenerating thicket state will benefit from active management to promote restoration of the remnant to a state which accelerates the provision of structural diversity important for both fauna and flora diversity. This is demonstrated through discussion of the state and transition model concept;
3. Active management of regenerating thicket vegetation will provide greater opportunity for fire management and suppression, reducing the likelihood of a major fire event compromising biodiversity values in the future;
4. Research outlined in the report suggests that reducing the density of smaller stems that compete strongly for resources leads to greater structural and floristic diversity and subsequent greater conservation values. The use of hazard reduction burning as a tool to achieve this is unlikely to reduce understory vegetation diversity provided burn intervals are set at the lower limits by maturity of smaller plants and non-breeding periods of poorly dispersed or rare birds, and at the upper limits by the longevity of plants which usually required fire as part of the reproductive cycle;
5. Hazard reduction burns in Red Stringybark Dry Sclerophyll Forest within the project area should be initially undertaken in a mosaic every five to ten years. For Box-Gum Woodland burns should not occur in periods of less than 10 years and longer should fuel levels remain naturally low or other fuel management techniques be used.

Practical implementation of this measure should be done in consultation with ACT Government Conservation Planning and Research officers to determine the most appropriate interval between burns, particularly to each Strategic Fire Advantage Zone [SFAZ];

6. Management should be undertaken with adaptive management principles in mind. This will ensure an iterative process of robust decision making in the face of uncertainty, with uncertainty reduced over time as determined by monitoring;

7. Hazard reduction burning should be avoided in areas of known Pink-tailed Worm Lizard habitat; if hazard reduction burning occurs this should happen between late winter and mid spring [preferable August to September].

Section 6 – ‘Conclusion’ of the Umwelt report provides recommendations for the management of the Strategic Fire Advantage Zones, including by hazard reduction burning; Silvicultural Thinning; combined approach and the management of areas known to contain Pink-tailed Worm Lizards.

Section 6 also provides recommendations on the management of the Outer Asset Protection Zone, including hazard reduction burning and Silviculture within the ‘Box-Gum Woodland’ along the eastern boundary.

Section 6.3 covers the management of the ‘Urban Interface’ along the eastern edge of the project area [to the western edge of Denman Prospect]. This zone consists of a 100 metre wide corridor adjacent to the urban interface and is considered to be a primary fire threat to the proposed Denman Prospect development and also contains natural assets including ‘Box-Gum Woodland’ in a advanced regeneration state. This vegetation is likely to regenerate into an open forest structure without management.

The report states:

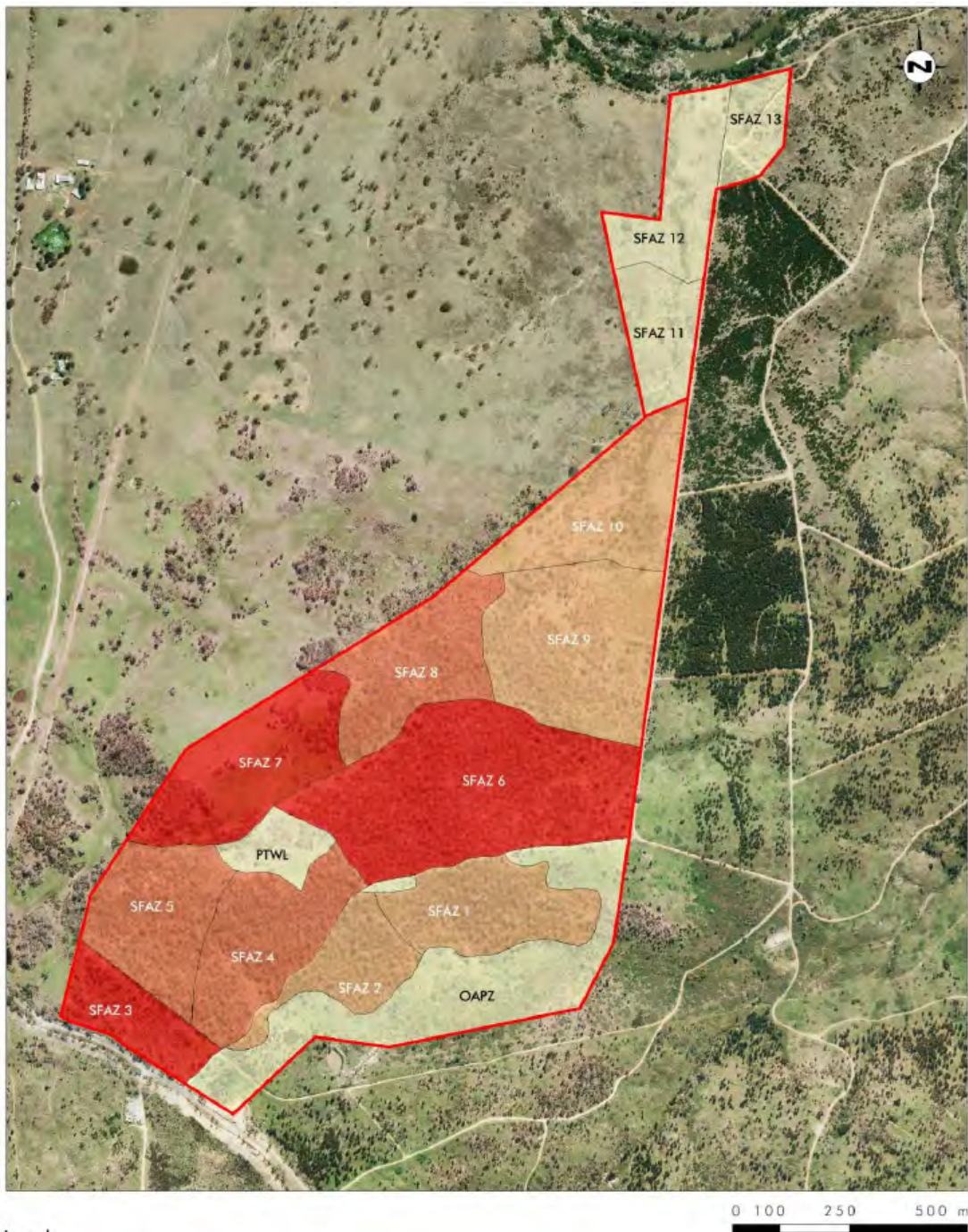
*“In order to protect important values within the ‘Box-Gum Woodland’ area and to mitigate bushfire risk to the adjacent urban development, it is recommended to use silviculture thinning to accelerate an open woodland structure as a primary management tool in this area. This treatment is only required for SFAZ6 and SFAZ 7.*

*Ongoing management of grassy sward fuel may be required in the event of grassland fire hazard exceeds 35 when grass curing is > 70% [refer to Table 21.5 and Table 21.8 in the ACT Strategic Fire Management Plan – 2014 – Version 3’.*

Refer to Figure 2 – Maximum ‘Overall Fuel Hazard Assessment’ ratings for each SFAZ on Page 16.

Refer to Figure 3 – Distribution of Box-Gum Woodland within the Project Area on Page 17.

**Figure 2 - Maximum 'Overall Fuel Hazard Assessment' ratings for each Strategic Fire Advantage Zone – Umwelt April 2015**

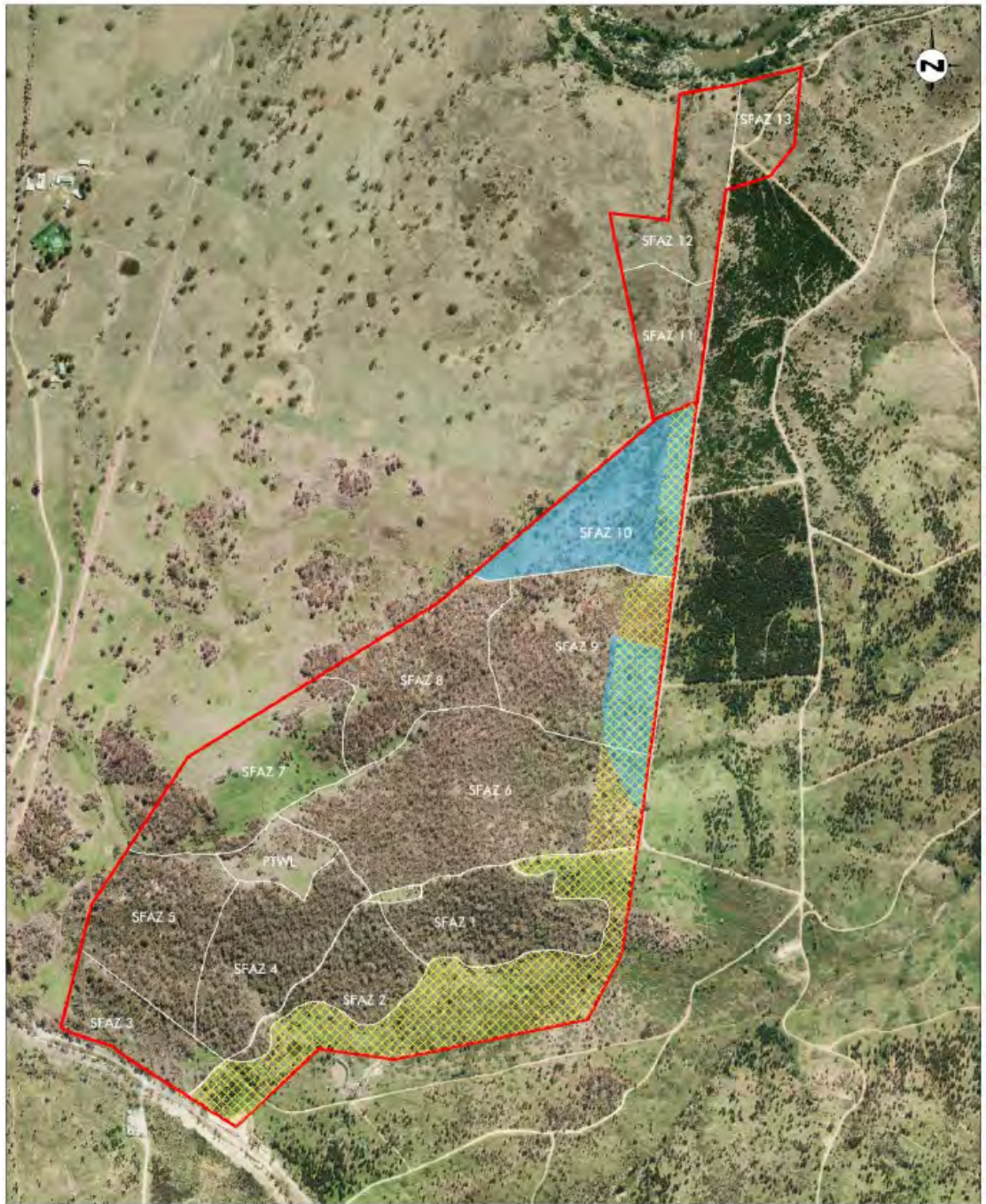


**Legend**

- Project Area
- Overall Fuel Hazard**
- Very High
- High
- Medium
- Not Assessed

Note: due to subjectivity in the assessment method, areas with a 'Medium' hazard may in fact be 'High', or tending to 'High' in the near future as stringybark bark matures, stem charring is reduced and leaf litter accumulates.

**Figure 3 - Distribution of Box-Gum Woodland within the Project Area – Umwelt April 2015**



**Legend**

-  Project Area
-  Outer Asset Protection Zone
-  Box Gum Woodland

0 100 250 500 m

## **SECTION 2**

### **BUSHFIRE RISK ASSESSMENT**

#### **2.1 Introduction.**

The Australian Standard AS/NZS ISO 31000:2009, the ACT Government Enterprise-wide risk management framework and the Emergency Management Australia (EMA) emergency risk management process provide the framework for establishing the context, analysis, evaluation, treatment, monitoring and communication of risk.

Risk has two elements: Likelihood, the chances of a bushfire occurring and consequence, the impact of a bushfire when it occurs.

Bushfire risk is defined as the chance of a bushfire occurring that will have harmful consequences to human communities and the environment. Bushfire risk is usually assessed through consideration of the likelihood of ignition and consequences of a bushfire occurring. Risk reduction can be achieved by reducing the likelihood of a bushfire, the opportunity for a bushfire to spread or the consequence of a bushfire (on natural and built assets).

Bushfire management should have a clear objective to reduce both the likelihood of bushfires and reduce the negative impacts of bushfires. It should also consider the costs, inconvenience and dangers of measures taken to reduce the risk of bushfires.

The consequences of bushfire management activities and the failure to implement programs also need to be considered. A range of factors influence bushfire risk – these include:

- The likelihood of human and natural fire ignitions, as influenced by time, space and demographics;
- The potential spread and severity of a bushfire, as determined by fuel, topography and weather conditions;
- The proximity of assets vulnerable to bushfire fuels, and likely bushfire paths; and
- The vulnerability of assets including natural assets, or their capacity to cope with, and recover from bushfire.

An assessment of bushfire risk must firstly define the problem. This involves the identification of the nature and scope of issues to be addressed and defining the possible boundaries for the assessment (*Emergency Risk Management – Applications Guide*. (EMA Echo Press, 2000), and AS/NZS ISO 31000:2009).

For the purpose of analysing fire risks that might emerge in the ACT, a dangerous and damaging fire has the potential to occur when the following conditions prevail:

- Continuous available fuel – fuel at moisture content sufficiently low to enable rapid combustion, arising from drought effects or the maturing and drying, of grasslands;
- Exposure of vulnerable assets. The ‘catchment’ for such fires may be within several hundred metres or many (60-70) kilometres from the asset/s;
- A combination of weather conditions that generate a forest or grass fire danger index of Very High (24) or greater. Typically in the ACT, prevailing adverse fire weather will have a strong northerly, through south-westerly wind influence;
- Fire in the landscape not effectively suppressed.

## **2.2 Risk Assessment.**

Australian Bushfire Protection Planners Pty Limited prepared a Bushfire Risk Assessment Report in 2005 for the Molonglo Structure Plan.

The findings of this report, in respect to the bushfire risk, fire paths and potential fire scenarios are applicable for the Molonglo Stage 3, Denman Prospect and the Molonglo River Corridor – refer to Attachment A.

An extract from this report states under ‘Summary of Bushfire Risk’:

*“Major bushfires have occurred in the Molonglo Valley in 1926, 1939, 1952, 1991, 1994, 2001 and 2003.*

*The topography and landform of the valley predisposes the valley to impacts of fires burning under north-westerly and westerly wind influences and to a slightly lesser extent, south-westerly wind influences.*

*The slope of the valley to the north-west and the ridgelines/ gullies will influence the spread of fire from the northwest, west and south west and result in sporadic fire runs.*

*Fuel loads within the retained Habitat Corridors and Parklands, Nature Reserves and Lease Holdings, unless managed, will promulgate future bushfires up to the urban edge and into the vegetated corridors within the urban precinct.*

*Whilst the Overall Fuel Hazard for the vegetation within the valley is Very High there is, due to the fire history, topography, aspect, wind influence and climatic conditions within the valley, an extreme risk of damaging bushfires impacting the north western edge of the East Precinct [Molonglo Stage 3 and Denman Prospect].*

The 'Conclusion' of the 2005 Bushfire Risk Assessment Report states:

*"The orientation of the Molonglo Valley and the ability for northwest, west and south-west wind-driven fires to impact the proposed development edge will continue the extreme level of risk to any development proposed in the valley with the potential to cause major damage to buildings and infrastructure.*

Subsequent to the preparation of the original Bushfire Risk Assessment Report [19.7.2005] an updated report was prepared by ABPP, dated 26.4.2006. The Executive Summary of this report states:

*The Molonglo Stage 2 Bushfire Risk Assessment quantifies the current level of risk to future development within the Molonglo Valley, prior to the implementation of mitigation measures as **Extreme**.*

*Mitigation measures which have been identified within the report as necessary to reduce the level of potential risk to future development include the creation and permanent management of a Critical Management Zone to the north-western edge of the East Molonglo Precinct and to the western and south-western edge of the Central Molonglo Precinct.*

*The provision of the Critical Management Zone (CMZ) replaces the Outer Asset Protection Zone, as defined in the Strategic Bushfire Management Plan for the ACT and the management of this zone, in accordance with the performance standards defined in this report, are considered to be a mandatory requirement in the reduction of the bushfire risk to the future development within the Molonglo Valley.*

*In addition to the provision of a Critical Management Zone to the north-western edge of East Molonglo Precinct, this report recommends, due to the risk of fire over-run along the Molonglo River corridor and into the future suburb, the damming of the Molonglo River below Coppins Crossing and the creation of Lake Molonglo".*

This recommendation was not adopted in the final Molonglo Structure Plan.

## **SECTION 3**

# **PROTECTION MEASURES TO BE IMPLEMENTED TO REDUCE THE BUSHFIRE RISK TO THE NORTH-WESTERN EDGE OF MOLONGLO STAGE 3 & DENMAN PROSPECT AND THE MOLONGLO RIVER CORRIDOR.**

### **3.1 Introduction.**

The ACT Land Development Agency established in late 2013 a Working Group whose primary purpose was to establish solutions to the problem of providing bushfire protection measures to the north-western edge of Molonglo Stage 3 and Denman Prospect and to the Molonglo River Corridor which would not only mitigate the bushfire risk but also be acceptable to ACT Government Agencies.

The solutions also had to be achievable, ecologically and economically sustainable and able to be funded in the long term – in perpetuity.

Consideration was also given to the ‘alternate solutions’ provided by the updated ACT Strategic Bushfire Management Plan – Version 3, particularly in respect to the ability to increase the width of the Inner Asset Protection Zone so as to remove the need to provide and manage an Outer Asset Protection Zone on ecologically sensitive land.

Having considered the total removal of the Outer Asset Protection Zone and the potential for catastrophic bushfire events to impact the north-western edge of Molonglo Stage 3 and Denman Prospect and development adjacent to the Molonglo River corridor the Working Group has adopted a policy of implementing a bushfire protection zone to future development that contains an Inner Asset Protection Zone supported on the outside by a Strategic Fire Advantage Zone [SFAZ] – within Kama to the northwest of Molonglo Stage 3; within the land to the northwest and west of Denman Prospect and broadly within the Molonglo River Park.

The study undertaken by Umwelt, in concert with TaMS [Adam Leavesley] has formed the basis upon which the decision has been taken to implement the establishment of a SFAZ within Kama Nature Reserve. It is noted that consensus has been reached that the performance criteria of a SFAZ, as required by the ACT Strategic Bushfire Management Plan – 2014 – Version 3 can be achieved whilst maintaining the ecological biodiversity of the reserve.

Similarly, the study undertaken by Umwelt, in concert with TaMS [Adam Leavesley] has formed the basis upon which the decision has been taken to implement the establishment of a SFAZ on the land to the northwest and west of Denman Prospect – refer to Attachment B – Analysis of Vegetation Structure and Fire Risk.

Discussions with TaMS [Adam Leavesley] and the need to manage the vegetation within the Molonglo River corridor to mitigate the spread of fire have also formed the basis upon which the establishment of the SFAZ has been recommended within the Molonglo River Park.

This report also recommends the inclusion of the community facility located at the former Sludge Ponds and the western end of the River Park as detailed in the Molonglo River Park Concept Plan prepared by Hassell.

For completeness, this report also provides recommendations on the bushfire protection zones to the northern and eastern edge of Molonglo Stage 3.

The following section details the Working Groups recommendations.

### **3.2.1 North-western edge to Molonglo Stage 3 – Refer to Appendix C:**

- 1) There shall be established and maintained a minimum 60.0 metre wide Inner Asset Protection Zone to the north-western edge of the urban development, managed to the prescriptions as detailed in the ACT Strategic Fire Management Plan 2014 – Version 3. This zone shall contain an edge road and also a gravel fire trail located adjacent to the eastern boundary of Kama, stormwater treatment ponds and shall also include cycleway/pedestrian access as required.
- 2) There shall be established and maintained, over the whole of Kama Nature Reserve, a Strategic Fire Advantage Zone, cyclically managed to the prescriptions as detailed in the ACT Strategic Fire Management Plan 2014 – Version 3;
- 3) There shall be established and maintained a six [6] metre wide fire break located inside the eastern boundary of Kama Nature Reserve;
- 4) The existing access/fire trails within Kama Nature Reserve shall be upgraded and maintained to provide access for management works and fire-fighting operations.

### **3.2.2 North-western/Western edge to Denman Prospect – Refer to Appendix D:**

- 1) There shall be established and maintained a minimum 60.0 metre wide Inner Asset Protection Zone to the north-western and western edge of the urban development within Denman Prospect, managed to the prescriptions as detailed in the ACT Strategic Fire Management Plan 2014 – Version 3. This zone shall include an edge road and where provided, stormwater treatment ponds and shall also include cycleway/pedestrian access as required.

- 2) There shall be established and maintained, to the location as shown on the plan attached as Appendix D, an Outer Asset Protection Zone of varying widths, managed to the prescriptions as detailed in the ACT Strategic Fire Management Plan 2014 – Version 3;
- 3) There shall be established and maintained, to the area as shown on the plan attached as Appendix D, a Strategic Fire Advantage Zone, cyclically managed to the prescriptions as detailed in the ACT Strategic Fire Management Plan 2014 – Version 3;
- 4) There shall be established a series of Fire Trails, generally as located as shown on the plan attached as Appendix D. These trails shall be maintained to provide access for management works and fire-fighting operations.

### **3.2.3 Molonglo River Park – Refer to Appendix E:**

- 1) There shall be established and maintained a minimum 60.0 metre wide Inner Asset Protection Zone to the north and south of the Molonglo River Park, to the extent detailed on the plan provided in Appendix E, managed to the prescriptions as detailed in the ACT Strategic Fire Management Plan 2014 – Version 3. This zone shall include an edge road and where provided, the managed easement for services [sewer/water/electricity], stormwater treatment ponds and shall also include cycleway/pedestrian access as required;
- 2) There shall be established and maintained, to the area as shown on the plan attached as Appendix E, a Strategic Fire Advantage Zone, cyclically managed to the prescriptions as detailed in the ACT Strategic Fire Management Plan 2014 – Version 3;
- 3) There shall be provided, to the locations as shown on the plan attached as Appendix E, a Landscape Fire Management Zone of varying width to each side of the Molonglo River. Fuel management standards shall not apply to this zone;
- 4) The existing fire trail/access roads within the river corridor shall be maintained to provide access for management works and fire-fighting operations.
- 5) There shall be established and maintained access for management works and fire-fighting operations within the Group Centre precinct.
- 6) The recommendations provided in the Molonglo River Concept Plan report prepared by Hassell in respect to the establishment of a community facility in the location of the Sludge Ponds and the western end of the Park shall be included in the Park Management Plan.

### **3.2.4 Molonglo Stage 3 – Northern and Eastern Edges – Refer to Appendix F:**

- 1) To the northern edge of the Molonglo Stage 3 precinct the full width of the William Hovell Drive carriageway shall be maintained as an Inner Asset Protection Zone, managed to the prescriptions as detailed in the ACT Strategic Fire Management Plan 2014 – Version 3;
- 2) To the eastern edge of the Molonglo Stage 3 precinct, adjacent to the National Arboretum there shall be provided an Inner Asset Protection Zone having a minimum width of 40 metres, managed to the prescriptions as detailed in the ACT Strategic Fire Management Plan 2014 – Version 3. This zone shall include an edge road and where provided, the managed easement for services [sewer/water/electricity], stormwater treatment ponds and shall also include cycleway/pedestrian access as required.

### **3.3 Bushfire Construction Standards to Buildings.**

Except for the future buildings within Denman Prospect, all buildings located within 100 metres of a bushfire prone area shall be constructed to comply with the standards required by Australian Standard A.S. 3959 – 2009 – ‘*Construction of Buildings in Bushfire Prone Areas*’. The minimum level of construction shall be BAL 12.5.

For the buildings within Denman Prospect all buildings shall be constructed to comply with the standards required by Australian Standard A.S. 3959 – 2009 – ‘*Construction of Buildings in Bushfire Prone Areas*’ with the minimum level of construction [BAL 12.5] extending to include a zone of 400 metres from the forest/woodland vegetation on the land to the northwest and west of Denman Prospect.

### **3.4 Support Infrastructure.**

#### **3.4.1 Access for fire-fighting Operations:**

Edge roads shall be designed to comply with the access code for heavy rigid and articulated vehicles.

#### **3.4.2 Water Supplies for Fire Fighting Operations:**

A fire-fighting water supply shall be installed to comply with F4 and the standards agreed by ACTEW and ACT Fire & Rescue.

Type F5 standard 45 l/s single hydrants at 60 metre intervals shall be installed within the Edge Road.

## SECTION 4

### CONCLUSION

The bushfire protection measures detailed in Section 3 of this report have been determined by the Working Group with the aim of mitigating the potential bushfire risk to the future development within Molonglo Stage 3, Denman Prospect and the development precincts which adjoin the Molonglo River Park.

However, a level of residual risk will remain as not all of the bushfire threat can be completely removed – only managed to reduce fuel loads.

Another matter that will influence the level of risk reduction, and therefore residual risk, is the commitment for ongoing management of the recommended bushfire protection zones and funding of these works in perpetuity.

Bushfire Operations Plans [BOPs] will be required to be prepared annually, by TaMS, for the works and there will be an expectation that Government will meet the funding requirements to enable the BOPs to be undertaken.



Graham Swain  
Managing Director  
***Australian Bushfire Protection Planners Pty Limited.***

## REFERENCES

ACT Government 2012, (online) Territory Plan

ACT Planning & Land Authority 2004, The Canberra Spatial Plan, ACTPLA.

ACT Planning and Land Authority 2006, Planning for Bushfire Risk Mitigation for new development and redevelopment, ACTPLA, Canberra.

ACT Planning and Land Authority 2009, Planning for Bushfire Risk Mitigation for new development and redevelopment – update, ACTPLA, Canberra.

Emergency Management Australia 2000, Emergency Risk Management – Applications Guide, Second Edition. EMA .

Emergency Services Agency 2014, Strategic Bushfire Management Plan for the ACT – Version 3, ESA.

## **Aloisi, Angelina**

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**From:** ABPP <abpp@bigpond.net.au>  
**Sent:** Tuesday, 19 May 2015 12:42 PM  
**To:** Richardson, Dave; Santosuosso, Daniel  
**Subject:** Molonglo  
**Attachments:** B132154 - A - Molonglo Stage 3; Denman Prospect & Molonglo River Corridor ACT  
- LDA - 19.5.2015 - Section C.pdf

Fourth email – I hope the 10MB third email made it!

Regards

**Graham**

**Australian Bushfire Protection Planners Pty Limited**

RMB 3411 Dog Trap Road, SOMERSBY, NSW, 2250

Mob: 0427 622204 Ph: (02) 43622112 Fax: (02) 43622204

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The recommendation contained within the latter report that damming of the Molonglo River below Coppins Crossing should occur to remove the bushfire risk along the river corridor was originally implemented in the Strategic Planning process, however is now not included in the Territory Plan.

The comments about the level of risk to the north-western edge and the risk posed by the retention of vegetation within the river corridor therefore defaults back to the original Bushfire Risk Assessment [19.7.2005] [refer to Figure 4 on Page 10] which recommended the implementation and management of a Critical Management Zone of at least 300 metres to the north-western edge of the new suburb and that the “Molonglo River Corridor through the East Precinct should be actively managed as a Village Park to prevent fire extension into the precinct”.

### ***Molonglo Valley Plan for Protection of Matters of National Environmental Significance – NES Plan:***

A review of the Molonglo Valley Plan for Protection of Matters of National Environmental Significance – NES Plan – September 2011 prepared by ACT Planning & Land Authority has identified that the aim of this document is to enhance the areas of Box Gum Woodland not only within the Molonglo River corridor but also within the Kama Nature Reserve and pockets of retained vegetation within the Molonglo Stage 3 precinct.

The document provides, under Section 2.3 – Bushfire Management Framework a ‘motherhood’ statement about bushfire management which reads:

*“Within the strategic assessment area fire management will be aimed at protection of both built assets and MNES values. This will be achieved through the identification of appropriate asset protection zones and application of hazard reduction techniques that will both:*

- *Ensure that the standards for fuel loads in the SBMP are met; and*
- *Protection MNES values through the use of sympathetic management techniques”.*

The aim of this document does not address the recommendation that the river corridor is managed as a ‘Village Park’ or the land to the west of Molonglo 3 and Denman Prospect is managed to mitigate the impact of fire on the north-western edge of the future urban development and from a fire spreading along the river corridor.

The NES Plan recommends that the following reports be prepared:

1. 'Molonglo River Park Concept Plan';
2. Kama Management Plan;
3. Management Plan for Patch GG; and
4. Management Plans for High and Moderate PTWL habitat.

### ***Molonglo River Park – Concept Plan prepared by Hassall [September 2011]:***

This document was prepared by Hassell in 2011 and states that one of the primary objectives of the plan is to manage bushfire risk and details the need to provide Inner and Outer Asset Protection Zones as required by the *Strategic Bushfire Management Plan for the ACT 2009* with the Inner Asset Protection Zone located within the urban envelope and the Outer Asset Protection Zone and Strategic Fire Advantage Zone [SFAZ] located within the park.

Section 3 – Investigation Summary of the Concept Plan states:

“Risk assessments completed for Coombs and Stage 2 urban development areas identified a high to extreme bushfire risk for future urban areas. The most significant risk is that of a fire moving from the west or northwest, from which it would not only threaten the peripheral urban development in these areas but also potentially penetrate deeper onto the development area by moving up the Molonglo River corridor”.

Under ‘Additional Strategies’ the report suggests that relevant group(s) further investigate the establishment of a 300 metre wide ‘Critical Management Zone’ to the northwest of the site – extending in a downstream direction from the north west limit of the park.

The table on Page 14 is an extract from the Concept Plan identifying the Fire Management Objectives and Strategies.

Figure 1 shows the Molonglo River Park Illustrative Concept Plan prepared by Hassell.

Figure 2 shows the Molonglo River Park Illustrative Landscape setting Plan prepared by Hassell.

Figure 3 shows the Molonglo River Park Fire Management Plan concept prepared by Hassell.

### Objectives and strategies

Objectives of fire management	Strategies
Mitigate bush fire hazard.	Active management of fuels associated with vegetation within the park.
Mitigate the potential for the riparian area to have a 'wicking' effect that could carry a fire deep into the urban area.	Creation of a mosaic landscape in which the potential for long runs of fire fuels are minimised.
Afford the occupants of the urban areas adjacent to the park protection from exposure to a bushfire.	Development and maintenance of an outer APZ that complies with ACT Emergency Services Agency (ESA) standards. (ACT SBMP)
Provide defensible space and adequate separation to minimise the chance of direct flame contact and material ignition, for any assets that could be vulnerable to a fire, which would be located within the park lands.	
Provide for the ongoing maintenance of fuel loads and vegetation continuity within the outer APZ and parklands.	
Ensure that emergency service personnel and parkland users have access to adequate access and egress in the event of a bush fire.	Development and maintenance of a network of roads and fire trails that meet emergency services access requirements.
Ensure that utility services, particularly water supplies, are adequate to meet the needs of fire fighters.	Provide water supplies suitable for use during fire and fuel management exercises.

The Molonglo River Park Concept Plan Report's focus of the 'Fire Management Theme' is on strategies for the control of vegetative fuels within the following specific areas:

- Critical Management Zone [CMZ] to the west of the park;
- Strategic discontinuity zones within the riparian corridor which aim to reduce the ability of a fire to move continuously up the corridor and into the urban areas, and provide access for defence and fuel management;
- Outer APZ adjacent to the urban interface [Inner APZ within the statutory urban area, not in the riparian parkland].

The Molonglo River Park Concept Plan Report states that the Critical Management Zone forms a key component of the overall strategy to reduce the potential for a fire to move up the riparian parkland and into the urban areas.

"The Critical Management Zone is a 300 metre wide zone extending from the western boundary of the proposed urban areas and the riparian parkland, in a downstream direction. This area would be managed to provide a strategic fire break or control line to reduce the impact of a fire moving from the west/northwest, towards the urban areas".

The report continues with advice on the strategic discontinuity zones and states that these zones “would be located at intervals within the parkland to reduce the potential for a fire to move continuously along the riparian corridor and potentially fuel an intense fire that could have catastrophic effects on the adjacent urban areas”.

“The development of strategic discontinuities within the riparian parkland responds to the significant hazard potentially affecting this area, which is located on the north-west fringe of Canberra and is therefore directly exposed to extreme fire weather and the potential fire hazard associated”.

“This strategy also responds to the potential of the riparian corridor itself to act as a ‘wick’, funnelling a fire, driven by hot, dry, north-westerly winds, onto the heart of the urban area. This risk is a function of the physical location and the orientation of the river corridor itself”.

“The discontinuity areas would be located:

- At the northwest extreme of the riparian area;
- Around, and to the west of Coppins Crossing, from the proposed sewer line crossing to the proposed extension of John Gordon Drive crossing the river;
- At Misery Point.

These areas would be characterised by more concentrated vehicle access and intense location of recreational facilities such as playing fields, parking areas, irrigated gardens and picnic areas. Alternatively, they would comprise open woodland/grassland habitat”.

“Vegetation in the recreation areas would have the following characteristics:

- Large areas of groomed grassland maintained to a height of less than 100mm;
- Scattered tree planting;
- Formal parks and gardens with irrigated plantings.

“Generally fuels in these areas would be maintained by mechanical mowing/slashing. Where areas of PTWL habitat occur, fuels would be managed in accordance with the TAMS *Pinked Tail Worm Lizard Fuel & Fire Suppression Guidelines [TAMS 2011]*”.

“Outer Asset Protection Zones would be developed in accordance with ESA standards and the following OAPZ are required: Primary asset interface classification – 100m; Secondary asset interface classification – 0 metres.

All vegetation within the riparian zone would be maintained as grassland or open woodland.

**Figure 1 – Molonglo River Park Illustrative Concept Plan – Hassell.**

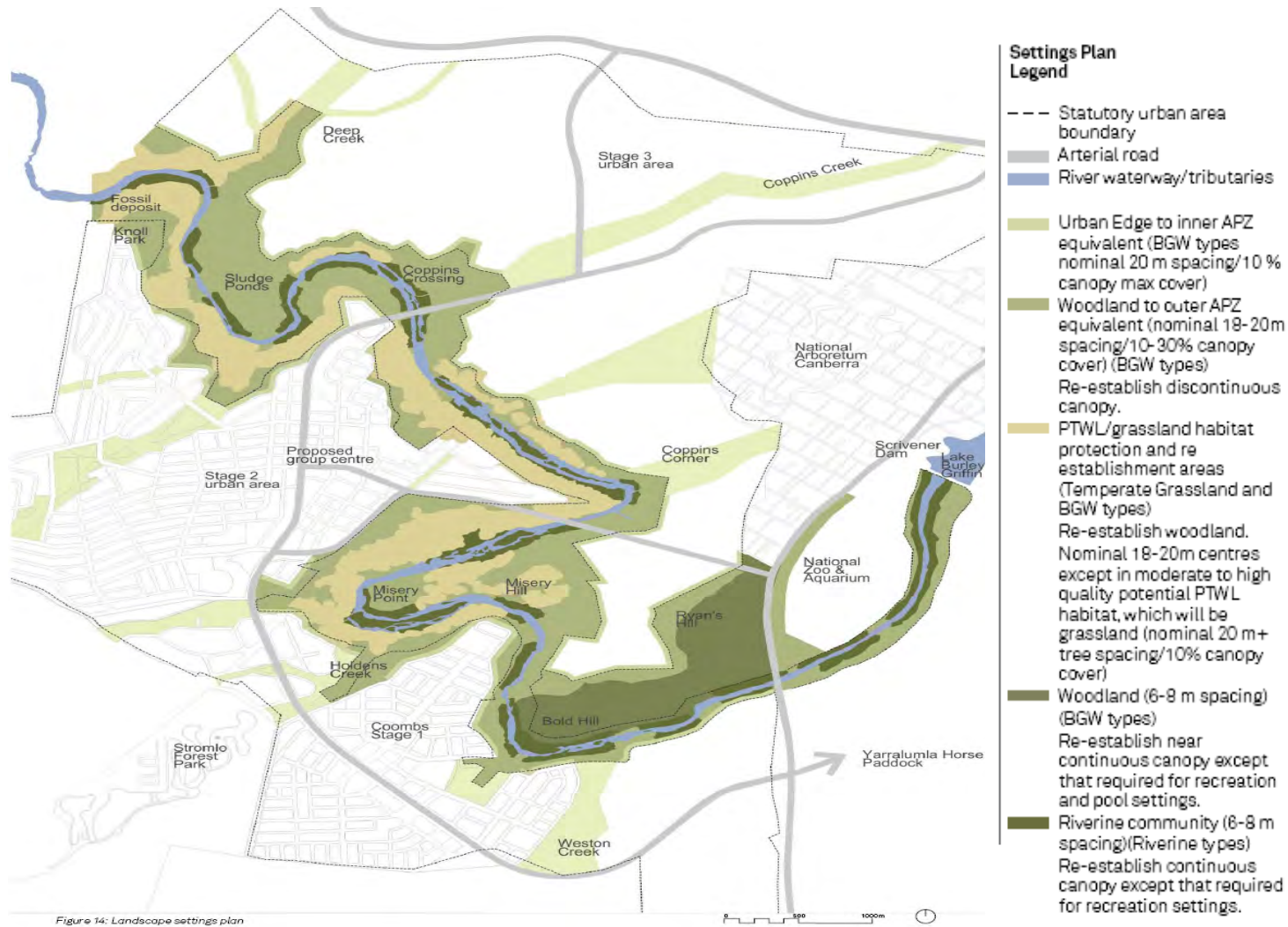


Figure 13: Illustrative concept plan

**Settings Plan  
Legend**

- Statutory urban area boundary
- Arterial road
- River waterway/tributaries
- Urban Edge to inner APZ equivalent (BGW types nominal 20 m spacing/10 % canopy max cover)
- Woodland to outer APZ equivalent (nominal 18-20m spacing/10-30% canopy cover) (BGW types)  
Re-establish discontinuous canopy.
- PTWL/grassland habitat protection and re establishment areas (Temperate Grassland and BGW types)  
Re-establish woodland.  
Nominal 18-20m centres except in moderate to high quality potential PTWL habitat, which will be grassland (nominal 20 m+ tree spacing/10% canopy cover)
- Woodland (6-8 m spacing) (BGW types)  
Re-establish near continuous canopy except that required for recreation and pool settings.
- Riverine community (6-8 m spacing)(Riverine types)  
Re-establish continuous canopy except that required for recreation settings.

Figure 2 – Molonglo River Park Illustrative Landscape settings Plan – Hassell.



**Figure 3 – Molonglo River Park Fire Management Plan Concept – Hassell.**

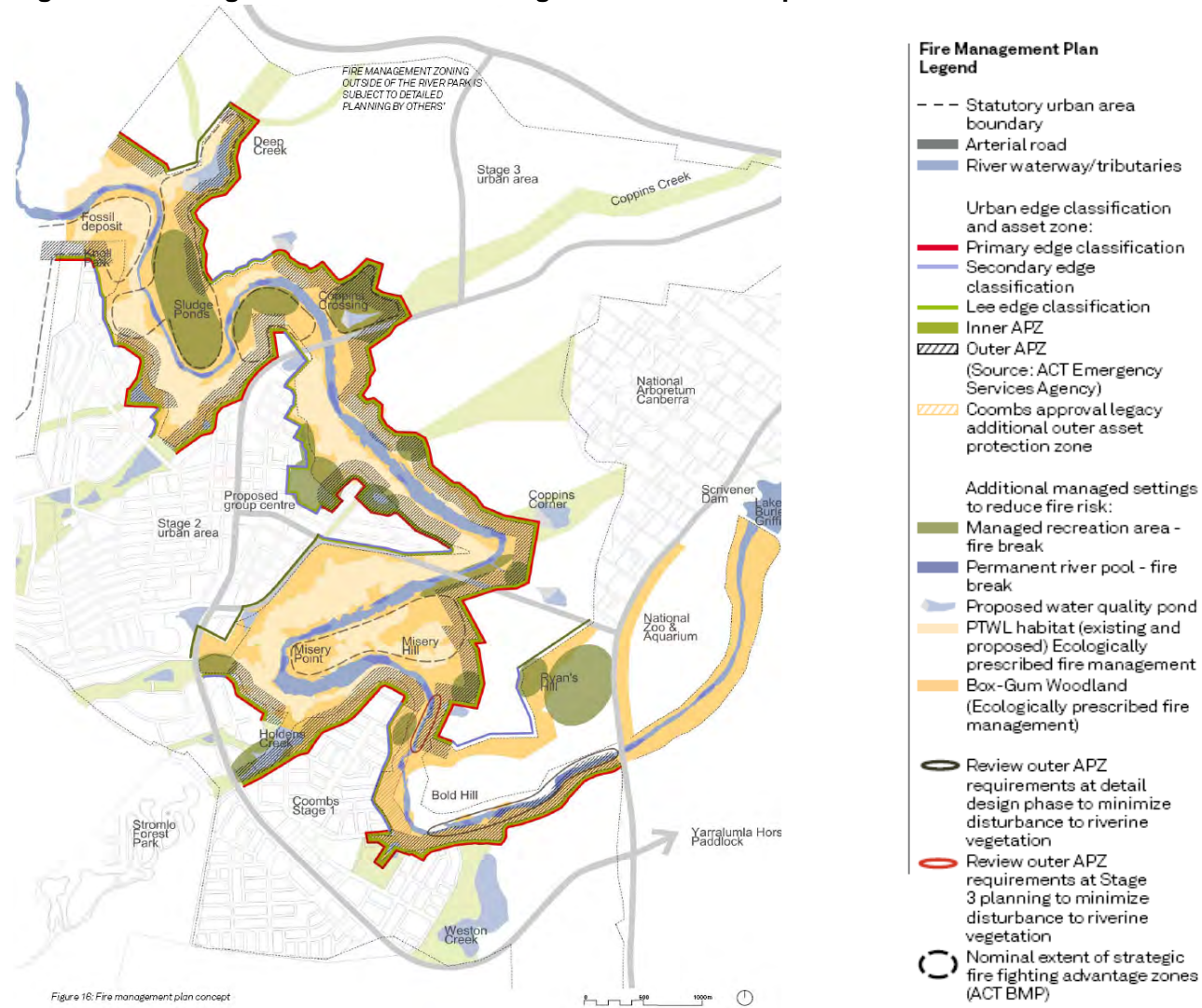


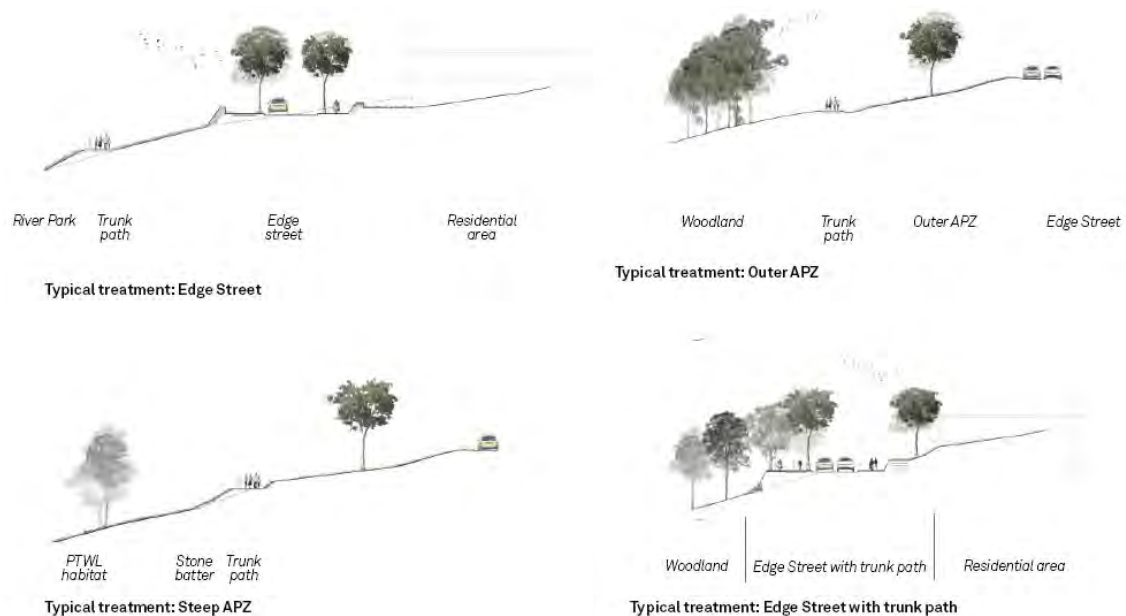
Figure 16: Fire management plan concept

Section 7 of the Concept Plan also provides recommendations on the provision of access and egress and states:

‘In addition to recreational access, where required within the park area, access and egress would be provided for emergency purposes and the maintenance of fire protection infrastructure. Road and trail standards would be designed in consultation with local emergency services to enable the traffic of emergency service vehicles and their access to adjacent, more natural areas of vegetation’.

Figure 4 below provides sectional details of the location of Trunk Paths/Emergency Service access.

**Figure 4 – Molonglo River Park – access – Hassell.**



Section 7 – Concept Plan – Fire Management Theme states:

“Under the ACT Strategic Bushfire Management Plan, a Fire Management Plan would be developed for the Molonglo Valley in accordance with Emergency Services Agency [ESA] standards. The plan would take into account consideration of the recommendations of the existing bushfire hazard assessments for the proposed adjacent urban areas. The Molonglo Valley Fire Management Plan would provide the basis for the development of an overarching Plan of Management for the riparian area and annual Operations Plan [BOP]”.

## Fire Management Plan – Molonglo River Corridor – TaMS – 2015

Figure 1, below, is a copy of the 'Indicative Fire Management Strategy – Urban Area prepared by TaMS.

**Figure 1 – Indicative Fire Management Strategy – Urban Area [TaMS 2015]**

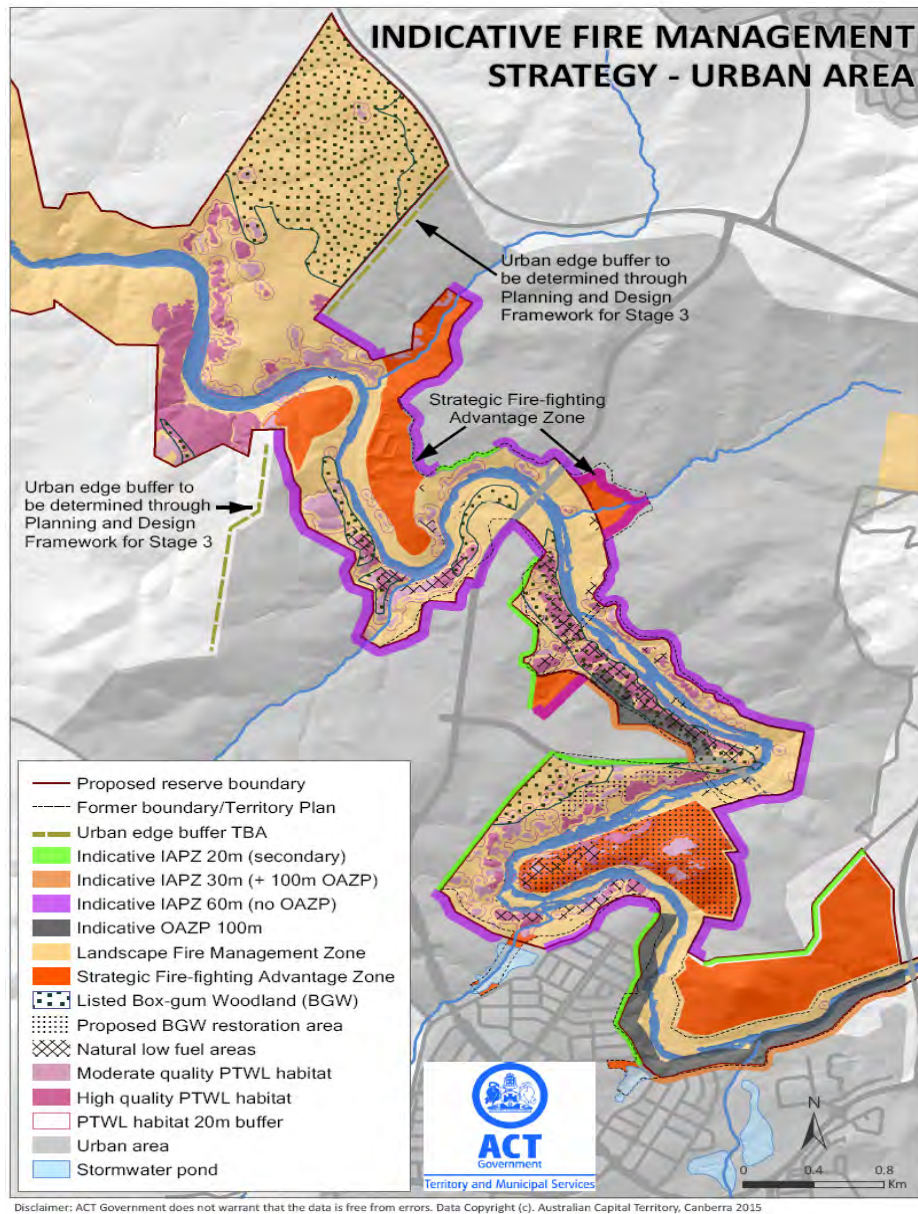
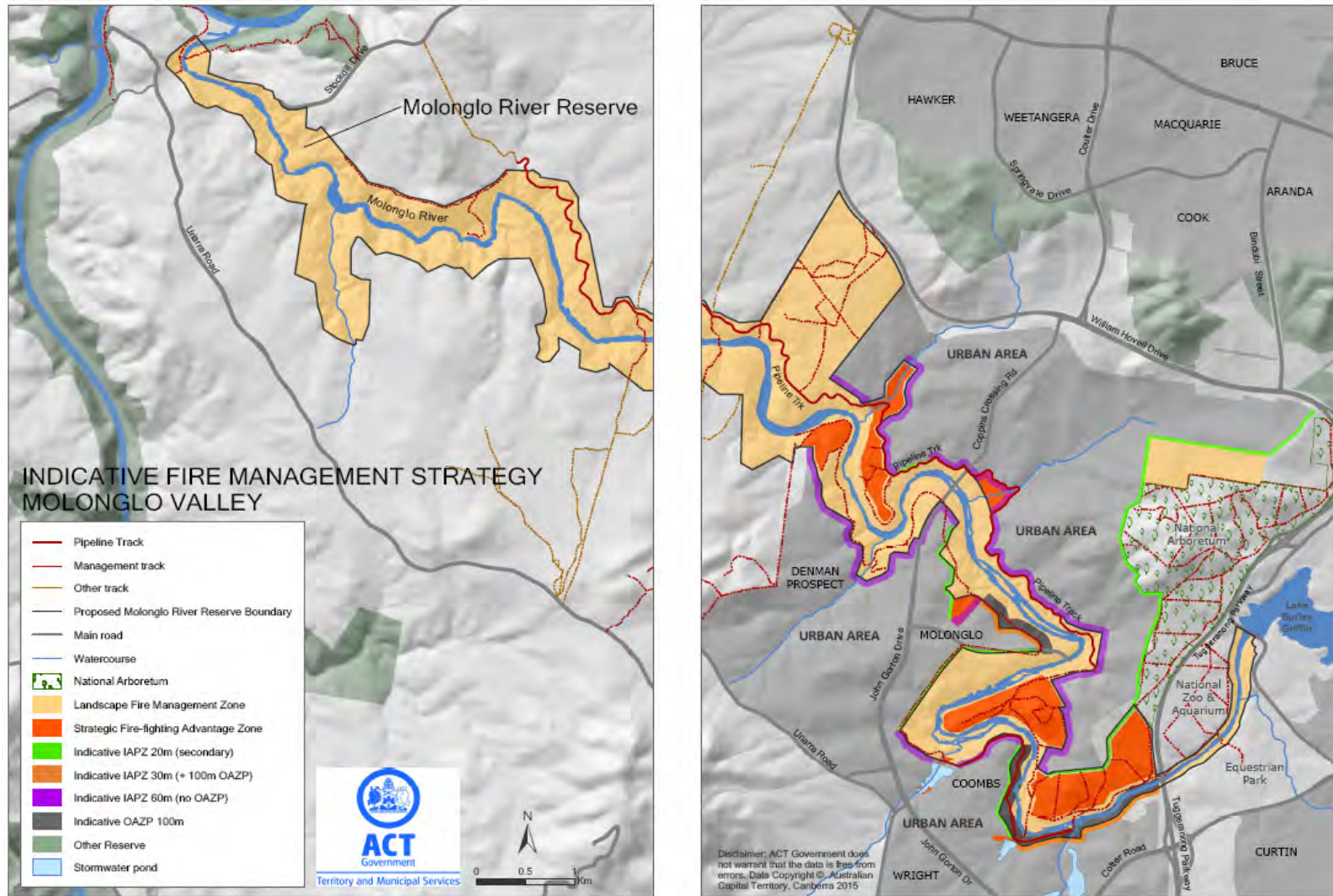


Figure 2 provides a copy of the Indicative Fire Management Strategy – Molonglo Valley prepared by TaMS.

Figure 2 – Indicative Fire Management Strategy – Molonglo Valley [TaMS 2015]



## Aloisi, Angelina

---

**From:** Lhuede, Nick  
**Sent:** Friday, 5 June 2015 8:37 AM  
**To:** Leavesley, Adam  
**Cc:** Richardson, Dave  
**Subject:** RE: FYI Molonglo BOP

Thanks Adam

When this is all over (if ever!) we seriously need to have a long, long lunch (within bandwidth hours of course)

That assuming I remain sane

Please let me know how the meeting goes with Ros and Daniel next week

---

**From:** Leavesley, Adam  
**Sent:** Thursday, 4 June 2015 3:42 PM  
**To:** Lhuede, Nick; Richardson, Dave  
**Cc:** Santosuosso, Daniel  
**Subject:** RE: FYI Molonglo BOP

I agree with you Nick.

I believe that Ros is overstating the restrictions set out in the NES plan.

Irrespective of what you have unearthed, (which is excellent), we have deliberately planned to minimise the imposition of fuel management on ecological values and I think we have a good outcome.

Cheers, Adam

---

**From:** Lhuede, Nick  
**Sent:** Wednesday, 3 June 2015 5:48 PM  
**To:** Richardson, Dave; Leavesley, Adam  
**Cc:** Santosuosso, Daniel  
**Subject:** RE: FYI Molonglo BOP

Thanks Dave.

Please find attached a fact sheet from the Cmwth. A few thoughts for discussion:

If we were **exempt** (as per the extract below), would the relevant clauses NES Plan for Molonglo still apply

*Not all activities that have the potential to have a significant impact on nationally protected matters are regulated by national environment law. Activities that are exempt include:*

*continued lawful land uses that were occurring before July 2000. This includes activities that have continued in the same location without enlargement, expansion or intensification, including activities done cyclically over long periods of time such as works to reduce the fire risk. The types of activities that might fall within this category include:*

- maintaining access tracks and fire breaks*
- maintaining existing fire infrastructure, services and utilities*
- roadside weed control*
- doing routine controlled burns of the type that have occurred in the past*

Alternatively if our activities **are not significant** (as per the extract below) would the relevant clauses MNES Plan for Molonglo still apply :

National environment law is not about regulating day-to-day land management. Fire prevention activities that are unlikely to require approval by the federal government may include:

- routine fuel reduction burns, including roadside burns, done in accordance with state or territory law requirements

Below are extracts from The ACT guidelines for ecological management for the relevant vegetation community, prepared by Conservation research:

Sub formation	Draft ACT Vegetation Community	Fire threshold (Min - Max fire interval in years)	Fire threshold - guidelines
Woodland	Eucalyptus melliodora–Eucalyptus blakelyi Tableland Woodland	10 – 40 (possibly longer)	A decline in biodiversity is likely if: 1 inter-fire intervals of < 10 years, and occur within 40-50 years.

I would argue our own guidelines provide scope to undertake fire management in the reserve, contrary to the requirements of the NES plan - its on this basis the commonwealth may be approached

nick

---

**From:** Richardson, Dave  
**Sent:** Wednesday, 3 June 2015 4:51 PM  
**To:** Lhuede, Nick; Leavesley, Adam  
**Cc:** Santosuosso, Daniel  
**Subject:** FW: FYI Molonglo BOP

Hi Nick and Adam,

We found this map on ACTMapi which shows Kama nature reserve and other areas such as west of Denman Prospect being managed as an SFAZ – Agricultural. FYI.

Regards

Dave

---

**From:** Santosuosso, Daniel  
**Sent:** Monday, 1 June 2015 12:09 PM  
**To:** Richardson, Dave  
**Subject:** FYI Molonglo BOP

**Daniel Santosuosso | Senior Project Manager**  
**Land Development Agency**

Level 7 TransACT House, 470 Northbourne Avenue, Dickson ACT 2602  
Phone: 02 6207 7212 | Fax: 02 62076110 | Web: [www.lda.gov.au](http://www.lda.gov.au)

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## Aloisi, Angelina

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**From:** Richardson, Dave  
**Sent:** Tuesday, 23 June 2015 12:06 PM  
**To:** Matesic, Ivo; Gordon, Tom; Watts, Michaela  
**Cc:** Santosuosso, Daniel; Browning, Kerry  
**Subject:** FW: Bushfire Risk Strategy - Molonglo 3, Denman Prospect and the Molonglo River Corridor - Working Draft - CONFIDENTIAL  
**Attachments:** B132154 - A3 - Molonglo Stage 3; Denman Prospect & Molonglo River Corridor ACT - Bushfire Risk Assessment - LDA - 29.5.docx; P00971-Molonglo Valley Bushfire Plan V2-M3\_BFMP.PDF

Ivo, Tom and Michaela,

Attached is a copy of the working draft of the Bushfire risk assessment covering M2, M3 and the river corridor together with a copy of the plans at the moment. As you can see below, there is the loose end of funding that I'm trying to finish off before the doc could be considered near complete. Please see my comment about air photo etc.

On the funding, we have engaged Steve Coleman to provide an assessment of capital cost plus recurrent cost for the implementation of the 60m IAPZ and the SFAZ's over the fence. He will be liaising with Adam Leavesley from the TaMS Fire Management Unit to complete the task. Steve is expecting to get a report to us within 3 weeks.

Had some conversation with Nick and Adam but still waiting on comments back (especially after the last PoM steering group meeting!). Will follow this up today.

Regards

Dave

---

**From:** Richardson, Dave  
**Sent:** Monday, 1 June 2015 12:51 PM  
**To:** Lhuede, Nick; Leavesley, Adam; 'Rob Armstrong'  
**Cc:** Santosuosso, Daniel  
**Subject:** Bushfire Risk Strategy - Molonglo 3, Denman Prospect and the Molonglo River Corridor - Working Draft - CONFIDENTIAL

Hi Nick, Adam and Rob,

As promised this morning Nick, attached is the latest working draft report that I'm now happy to send to you, Adam and Rob for comment. I do apologise for the delay in getting this to you all.

Also attached is the draft set of plans as a separate file (even though they are included in the report) so you have a better idea of the detail. Suggest printing them out at A3 for best results.

There are changes that I intend our GIS guys to make to the plans including correcting the legend and adding probably an air photo/cadastral overlay which will make it easier to understand and locate things.

Mentioned I had some work to do on the funding section adding in the 'capital' cost to set the mitigation measures up (expected to be an LDA cost) and TaMS recurrent cost. Both of these will be estimates only but will add some certainty on what is needed and overall costs largely for Treasury's benefit. I'm work with Adam and our guys on that this week and will forward that over as soon as its reasonable.

Happy to discuss any aspects with you.

I'll send a copy to Tom Gordon and Ivo's area in the LDA and Office of Coordinator-General in EDD (Michaela) at this stage. Will take on board comments and amend if necessary before sending to others including TaMS etc.

Please treat this material as **CONFIDENTIAL** until I'm convinced we have the content right.

Regards

Dave



**BUSHFIRE RISK STRATEGY**

**MOLONGLO STAGE 3;**

**DENMAN PROSPECT &**

**THE MOLONGLO RIVER CORRIDOR**

**AUSTRALIAN CAPITAL TERRITORY**

**PREPARED FOR THE**

**LAND DEVELOPMENT AGENCY**

***Australian Bushfire Protection Planners Pty Limited***

**Bushfire Consultants**

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SOMERSBY 2250 NSW

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**BUSHFIRE RISK STRATEGY**

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**LAND DEVELOPMENT AGENCY**

<b>Assessment Number</b>	<b>Document</b>	<b>Preparation Date</b>	<b>Issue Date</b>	<b>Directors Approval</b>
B132154 – A3	Final Draft	15.5.2015	31.5.2015	<i>G.L.Swain</i>

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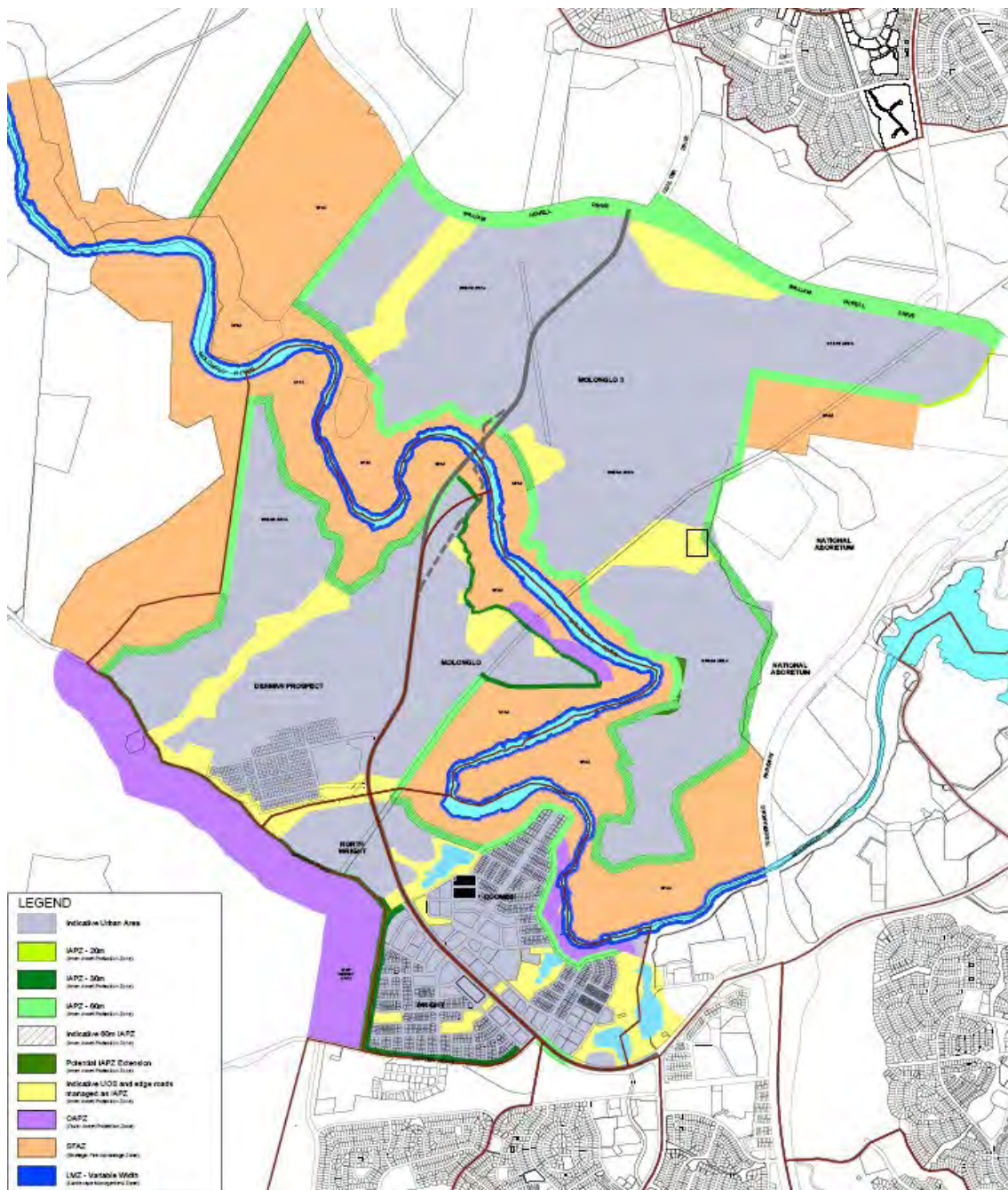
# SECTION 1

## INTRODUCTION

### 1.1 Background.

Australian Bushfire Protection Planners Pty Limited has been commissioned by the Land Development Agency [LDA] to undertake a Bushfire Study for Molonglo Stage 2, Stage 3 and the Molonglo River Corridor. Figure 1 shows the study area.

Figure 1 – Plan of Study Area.



The objective of the brief is to guide the development of the Land Development Agency Masterplan for the Molonglo Stage 3 study area, review the bushfire protection measures to Molonglo Stage 2 [Denman Prospect] and the Molonglo River Corridor and prepare a report on the findings of the study detailing the recommended bushfire protection measures identified by the study group.

#### Scope of Work – Molonglo Stage 2/3 and Molonglo River Corridor Study:

1. Review existing literature/reports & studies;
2. Review the study undertaken by Umwelt to determine the ecological constraints and opportunities for fuel hazard reduction management;
3. Attend pre-workshop site familiarisation;
4. Attend and participate in a workshop between LDA, Umwelt, TaMS Fire Management Unit and EPD to discuss all issues related to the protection of the north-western edge of Molonglo Stage 3; the western edge of Molonglo Stage 2 and the Molonglo River corridor;
5. Examine the results of the workshop, liaise with LDA & Umwelt and others [as required] to identify the measures which are required to be implemented to mitigate the potential bushfire risk;
6. Attend and participate in a follow-up workshop between LDA, Umwelt, TaMS Fire Management Unit, EPD, ESA, ACTRFS, Fire & Rescue ACT and other selected Stakeholders to present the findings/results of the initial workshop and the recommendations determined in the review of these findings/results;
7. Review the results of the follow-up workshop, liaise with LDA & Umwelt and others as required, to finalise the measures which are required to be implemented to mitigate the potential bushfire risk;
8. Prepare, in co-operation with Umwelt, a report which details the findings of the studies undertaken, the results of the workshops and the final recommendations on those measures required to be implemented to mitigate the bushfire risk to the western, north-eastern urban edge and the Molonglo River corridor;
9. Attend and participate in a final workshop between LDA, Umwelt, TaMS Fire Management Unit, EPD, ESA, ACTRFS, Fire & Rescue ACT and other selected Stakeholders to present the final report;
10. Generally, liaise with LDA, Umwelt, TaMS, ESA, ACTRFS, Fire & Rescue ACT and other ACT Government Departments as required.

## 1.2 Information Reviewed.

The following report/studies were reviewed as part of the scope of works:

- The Molonglo River Park – Concept Plan prepared by Hassell – September 2011;
- The Molonglo Valley Plan for the Protection of Matters of National Environmental Significance [NES Plan] September 2011;
- Molonglo Vegetation Survey – Baseline Condition Assessment prepared by Ecological Australia – July 2013;
- Molonglo Stage 3 Slope Analysis – LDA;
- Bushfire Risk Assessment Report – Molonglo Structure Plan – prepared for ACTPLA, 19.7.2005;
- Updated Bushfire Risk Assessment Report – Molonglo Structure Plan – prepared for ACTPLA – 26.4.2006;
- Bushfire Risk Assessment Report – Molonglo Stage 2 Group Centre prepared for Indesco 23.8.2012;
- Territory Plan - ACTMAPi;
- Molonglo Stage 2 Vegetation Conservation Assessment prepared by Openlines, February 2014;
- Indicative Fire Management Strategy – Urban Area – TaMS – 2015;
- Indicative Fire Management Strategy – Molonglo Valley – TaMS – 2015;
- Analysis of Vegetation Structure and Fire Risk – Umwelt – April 2015;
- Molonglo River Reserve [Kama] Operational Plan 2014 – 2017 – TaMS;
- ACT Strategic Bushfire Management Plan – Version 3 – 2014;
- ACT Bushfire Management Standards – Strategic Bushfire Management Plan – Version 3 – 2014;
- Briefing Note on the Ecological Values of the Kama Nature Reserve – Molonglo Stage 3 Outer Asset Protection Zone – Umwelt – October 2013;
- Bushfire Risk Assessment for the north-western edge of Denman Prospect [Aurecon Australia Pty Ltd – 25.2.2014] - Incomplete.

### 1.3 Review of Documents.

Appendix A provides a summary of the findings/recommendations of the following documents reviewed:

1. Bushfire Risk Assessment Reports prepared by Australian Bushfire Protection Planners Pty Ltd [ABPP] for the Molonglo Structure Plan [August 2005 & April 2006];
2. The Molonglo River Park Concept Plan;
3. The NES Plan;
4. The Indicative Fire Management Strategy – Urban Area – TaMS – 2015; and
5. The Indicative Fire Management Strategy – Molonglo Valley – TaMS – 2015.

### 1.4 Summary of the review of Reports.

The following is a summary of the findings/recommendations of the documents reviewed:

#### 1. **Bushfire Risk Assessment Reports prepared by ABPP – 2005 & 2006:**

The Bushfire Risk Assessment Report 2005 prepared by ABPP stated:

*“The long exposure of the north-western edge of the precinct to uphill burning fires, influenced by hot, dry, strong north-westerly winds, will result in significant fire impact either directly or indirectly from ember attack, depending on the level of protection provided by active management of the fuels within the river corridor.*

*Similar impacts may also occur to the western / south western edge from westerly and south-westerly wind-driven fires and the influence of wind turbulence in the Mount Stromlo area.*

*The northern edge will be impacted by fires burning within the habitat corridor, north of William Hovell Drive.*

*Due to the level of risk and to address the potential impacts of future bushfires to the exposed urban edge and the concerns over the long-term viability of minimising fuel loads within the abatement zone, a Critical Management Zone should be provided to a minimum width of 300 metres.*

*The objective of land uses within the Critical Management Zone should be to provide permanent management of the hazardous fuels to levels which prevent the spread of fire into the urban edge.*

*The Molonglo River Corridor will separate the eastern development node from the western development node and therefore provide a direct fire path into the suburbs adjoining the corridor and to the International Arboretum to the south east.*

*The river corridor separating the north-eastern and south-western nodes of the East Precinct should be activity managed as a recreation reserve/public park to mitigate the effects of fire runs along the river”.*

The Bushfire Risk Assessment Report 2006 prepared by ABPP retained the recommendation for the provision of a Critical Management Zone to the north-western edge of Molonglo and notes that the Draft Structure Plan had introduced ‘Lake Molonglo’ with the construction of a new dam on the Molonglo River.

For the Critical Management Zone [CMZ] the report states:

- **Purpose.**

*To provide a permanently managed fuel reduced zone, wide enough to mitigate the impact of radiant heat and ember transfer to the urban edge during major bushfire events.*

- **Location.**

*The Critical Management Zone shall be located beyond the edge of the Inner Asset Protection Zone on the north-western and northern edge of the western “node” and the south-western edge of the East Molonglo precinct; the northern, north-western, western and south-western edge of the Central Molonglo.*

- **Depth.**

*A minimum width of 300 metres shall be provided. (Minimum 100 metres width provided to the north-western edge of the East Molonglo precinct).*

- **Establishment & Maintenance.**

*The Critical Management Zone shall be established on the hazard side of the Inner Asset Protection Zone and shall extend to the widths nominated.*

*The zone may contain agricultural pursuits which permanently minimise combustible fuel ground litter, (vineyards, orchards); or land uses that utilize irrigation supply drawn from grey water recycling, or irrigation from the new lake created by the damming of the Molonglo River. Such land uses may include the cultivation of summer crops/Lucerne.*

*The Critical Management Zone may also include recreation and open space facilities such as Golf Courses, Sports Fields, Carparks etc.*

*Where these land uses are not utilized to provide the Critical Management Zone and the zone consists of Habitat Corridors/Rural Land, a stock proof fence with access gates shall be provided on the outer edge of the zone. A 30 metre wide wind break shall be established by planting smooth barked trees on the outer edge of the zone. A second wind break shall be established to a width of 10 metres, 10 metres from the Inner Asset Protection Zone/Critical Management Zone boundary.*

*A four (4) metre wide fire trail shall be established on the centre line of the Critical Management Zone, with link roads provided to the edge road at approximately 500 metre intervals.*

*Management of the combustible fuels within the CMZ shall be undertaken to maintain a Low – Moderate Overall Fuel Hazard, in accordance with the methodology provided by the NRE Overall Fuel Hazard Guide. Management shall be implemented by regular stocking of the zone, or by a combination of mechanical slashing/stocking/hazard reduction burning. A Fuel Management Plan shall be prepared for the maintenance of the Critical Management Zone, irrespective of land use”.*

The final Structure Plan for Molonglo removed the damming of the Molonglo River, primarily due to the results of ecological studies, and replaced the lake with the Molonglo River Park [Nature Reserve] and established the Kama Nature Reserve to the northwest of Molonglo Stage 3.

These changes to the Draft Structure Plan – i.e. establishment of a Nature Reserve to the northwest of Molonglo Stage 3 and within the Molonglo River corridor, increase the bushfire risk to future development located adjacent to the north-western edge and to both sides of the river corridor.

The examination of the mitigation measures required to provide a reduction of this risk forms the core objective of the Working Group established by the Land Development Agency.

## **2. Molonglo River Park Concept Plan – Hassell – 2011**

The Molonglo River Park Concept Plan prepared by Hassell supports the recommendation of the provision of the 300 metre wide ‘Critical Management Zone’ to the north-western edge.

The Concept Plan also recommended that the river corridor should be managed for ecological values with the corridor being broken into precincts to prevent the ‘wick’ effect and in particular the management of the western entrance to the river park and the area around the sludge ponds to mitigate the passage of fire along the river.

## **3. The NES Plan – 2011:**

The NES Plan provided, under Section 2.3 – Bushfire Management Framework a ‘motherhood’ statement about bushfire management which reads:

*“Within the strategic assessment area fire management will be aimed at protection of both built assets and MNES values. This will be achieved through the identification of appropriate asset protection zones and application of hazard reduction techniques that will both:*

- *Ensure that the standards for fuel loads in the SBMP are met; and*
- *Protect MNES values through the use of sympathetic management techniques”.*

The aim of this document does not address the recommendation that the vegetation in the river corridor or on the land to the west of Molonglo 3 [Kama] and Denman Prospect be managed to mitigate the impact of fire on the north-western edge of the future urban development and from a fire spreading along the river corridor.

The document does not address the potential bushfire risk to the future development adjacent to the north-western edge or the river corridor.

#### **4. Indicative Fire Management Strategy – TaMS 2015:**

TaMS have prepared a draft Indicative Fire Management Strategy – Urban Area and the Indicative Fire Management Strategy – Molonglo Valley. The review of these documents has found that few of the recommended bushfire management strategies contained within the Molonglo River Concept Plan have been incorporated into the management strategies proposed by TaMS.

The recommendation provided in the Australian Bushfire Protection Planners reports and the Molonglo River Concept Plan that a ‘Critical Management Zone [CMZ] be provided to the northwest of the urban development [and river park] was not adopted in favour of ecological and habitat values.

Similarly, the Molonglo River Concept Plans’ recommendation that the river corridor be broken into precincts to prevent the ‘wick’ effect and in particular the management of the western entrance to the river park and the area around the sludge ponds to mitigate the passage of fire along the river was not adopted.

These items are critical to the prevention of fire spread along the river corridor and should be reinstated or at least given proper consideration.

#### **1.5 Working Group.**

In late 2013 the LDA identified the need to establish a working group to examine the outstanding issues relating to the bushfire risk to the north-western edge of Molonglo 3; Molonglo Stage 2 [Denman Prospect] and the Molonglo River Corridor.

The brief of the Working Group was to bring together all Government Agencies involved in the development of the Molonglo East precinct to enable examination of previous studies, undertake site inspections and consider all options available so as to develop a report that establishes the principles, processes and funding required to address the bushfire risk.

Representatives of Government Agencies included:

- Dave Richardson [LDA];
- Kerry Browning [LDA];
- Adam Carmody [LDA];
- Dylan Kendall [TaMS];
- Adam Leavesley [TaMS];
- Nick Lhuede [ESA];
- Greg Potts [ACT RFS];
- Conrad Barr [Acting Chief Officer] ACT Fire & Rescue;
- Andrew Starke – Commissioner ACT Rural Fire Service;
- Ros Ransome [TaMS];
- Steven Gianakis [EPD];
- Daniel Iglesias [TaMS];
- Tony Corrigan [TaMS]; and
- Stuart McKenzie [EPD]

Two external companies were commissioned to provide assistance to the Working Group, Umwelt to undertake a peer review of the previous ecological studies and additional ecological investigations and ABPP to provide advice on bushfire risk, fire protection strategies and the preparation of a Bushfire Report.

These companies were represented by;

- Peter Cowper Armstrong [Umwelt];
- Rob Armstrong [Umwelt]; and
- Graham Swain [ABPP].

Appendix B provides details on the Working Group, including meeting and site inspection dates, attendees and decisions/resolutions determined.

## **1.6 Studies Undertaken by Umwelt.**

Stemming from the second meeting of the Working Group the LDA commissioned Umwelt to undertake a study into the ecological values of the Kama Nature Reserve – Molonglo Stage 3 Outer Asset Protection Zone.

A copy of the Briefing Note prepared by Umwelt [15<sup>th</sup> October 2013] is attached as Attachment A.

The purpose of the study was to provide LDA with a comparison of the ecological values of the 200 metre zone either side of the interface between Kama Nature Reserve and the Molonglo Stage 3 development.

The findings of the study identified that the condition of the 200 metre wide area inside the eastern boundary of Kama Nature Reserve is variable, comprised of a mosaic of high condition box-gum woodland, low condition natural temperate grassland and low condition Scribbly Gum woodland.

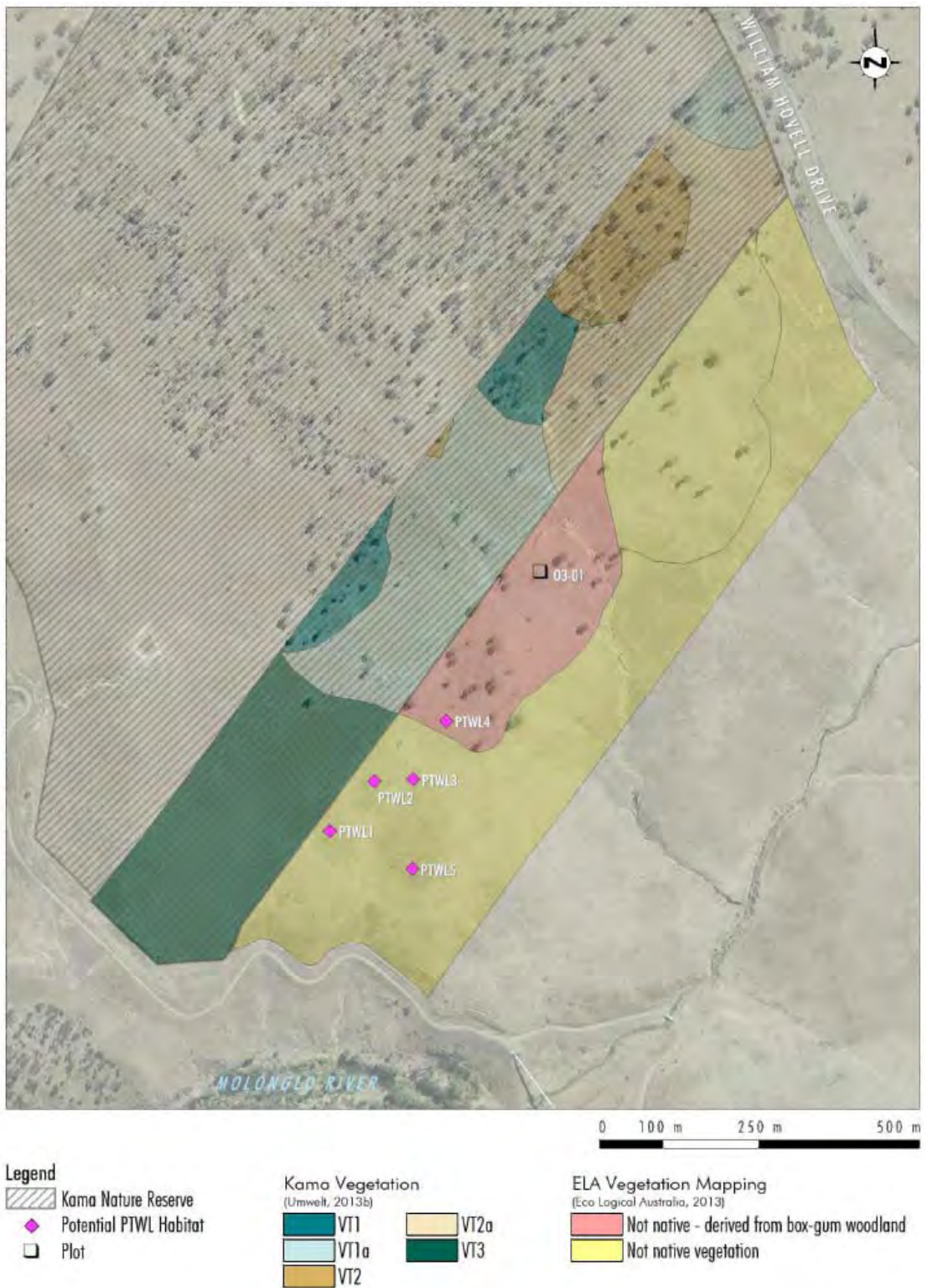
The ecological condition of the 300 metre wide area of the western boundary of Molonglo Stage 3 [adjoining Kama Nature Reserve] is generally low, consisting of degraded exotic pasture, and an area containing scattered Blakely's red gum with an exotic understorey and is not the Box-gum Woodland community.

The report confirms that the area is dominated by exotic pasture grasses and the only feature of ecological significance is the presence of five potential pink-tailed worm lizard habitat areas. One of these [location PTWL1] is within a patch of diverse native grasses, whereas the others are of moderate to low value due to a higher abundance of Phalaris and wild oats. These areas are mapped as moderate habitat quality by Osborne & Wong [2010].

Refer to Figure 2 on Page 13 – Ecological Assets of the Outer Asset Protection Zone including potential Pink-tailed Worm Lizard habitat.

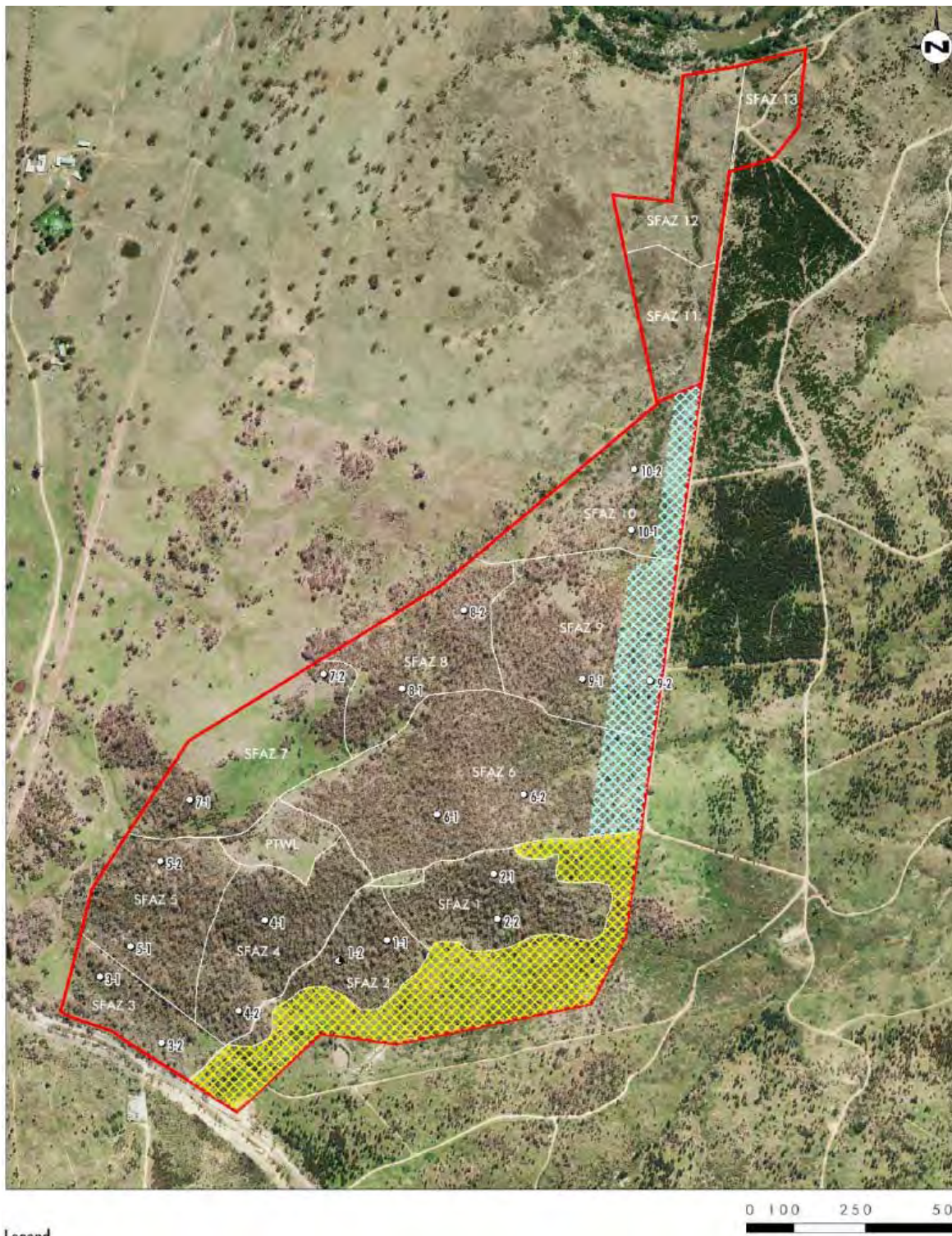
Figure 3 on Page 14 provides a copy of the project area studied by Umwelt, the location of the Outer Asset Protection Zone to the north of Denman Prospect; the Strategic Fire Advantage Zones and the 'Interface Zone' to the west of Denman Prospect.

**Figure 2 - Ecological Assets of the Outer Asset Protection Zone including potential Pink-tailed Worm Lizard habitat – Umwelt Briefing Note 15<sup>th</sup> October 2013 – Kama and Molonglo 3.**



**Figure 3.1 - Ecological assets of the outer asset protection zone including potential pink-tailed worm lizard habitat.**

**Figure 3 – Plan showing the study area, the location of the Outer Asset Protection Zone; Strategic Fire Advantage Zones and Interface Zone – Denman Prospect, prepared by Umwelt April 2015**



**Legend**

- Project Area
- Outer Asset Protection Zone
- Interface

The LDA commissioned Umwelt to undertake an analysis of vegetation values in areas west of Denman Prospect and identify practical solutions to meet joint objectives of fuel hazard management and biodiversity conservation.

A copy of the final report dated April 2015 is attached as Attachment B.

The key messages of the report include:

1. Much of the vegetation within the Project Area is in a regenerating thicket state from the 2003 wildfires;
2. Vegetation in a regenerating thicket state will benefit from active management to promote restoration of the remnant to a state which accelerates the provision of structural diversity important for both fauna and flora diversity. This is demonstrated through discussion of the state and transition model concept;
3. Active management of regenerating thicket vegetation will provide greater opportunity for fire management and suppression, reducing the likelihood of a major fire event compromising biodiversity values in the future;
4. Research outlined in the report suggests that reducing the density of smaller stems that compete strongly for resources leads to greater structural and floristic diversity and subsequent greater conservation values. The use of hazard reduction burning as a tool to achieve this is unlikely to reduce understory vegetation diversity provided burn intervals are set at the lower limits by maturity of smaller plants and non-breeding periods of poorly dispersed or rare birds, and at the upper limits by the longevity of plants which usually required fire as part of the reproductive cycle;
5. Hazard reduction burns in Red Stringybark Dry Sclerophyll Forest within the project area should be initially undertaken in a mosaic every five to ten years. For Box-Gum Woodland burns should not occur in periods of less than 10 years and longer should fuel levels remain naturally low or other fuel management techniques be used.

Practical implementation of this measure should be done in consultation with ACT Government Conservation Planning and Research officers to determine the most appropriate interval between burns, particularly to each Strategic Fire Advantage Zone [SFAZ];

6. Management should be undertaken with adaptive management principles in mind. This will ensure an iterative process of robust decision making in the face of uncertainty, with uncertainty reduced over time as determined by monitoring;
7. Hazard reduction burning should be avoided in areas of known Pink-tailed Worm Lizard habitat; if hazard reduction burning occurs this should happen between late winter and mid spring [preferably in August to September].

Section 6 – ‘Conclusion’ of the Umwelt report provides recommendations for the management of the Strategic Fire Advantage Zones, including by hazard reduction burning; Silvicultural Thinning; combined approach and the management of areas known to contain Pink-tailed Worm Lizards.

Section 6 also provided recommendations on the management of the Outer Asset Protection Zone, including hazard reduction burning and Silviculture within the ‘Box-Gum Woodland’ along the eastern boundary.

Section 6.3 covers the management of the ‘Urban Interface’ along the eastern edge of the project area [to the western edge of Denman Prospect]. This zone consists of a 100 metre wide corridor adjacent to the urban interface and is considered to be a primary fire threat to the proposed Denman Prospect development. It also contains natural assets including ‘Box-Gum Woodland’ in an advanced regeneration state. This vegetation is likely to regenerate into an open forest structure without management.

The report states:

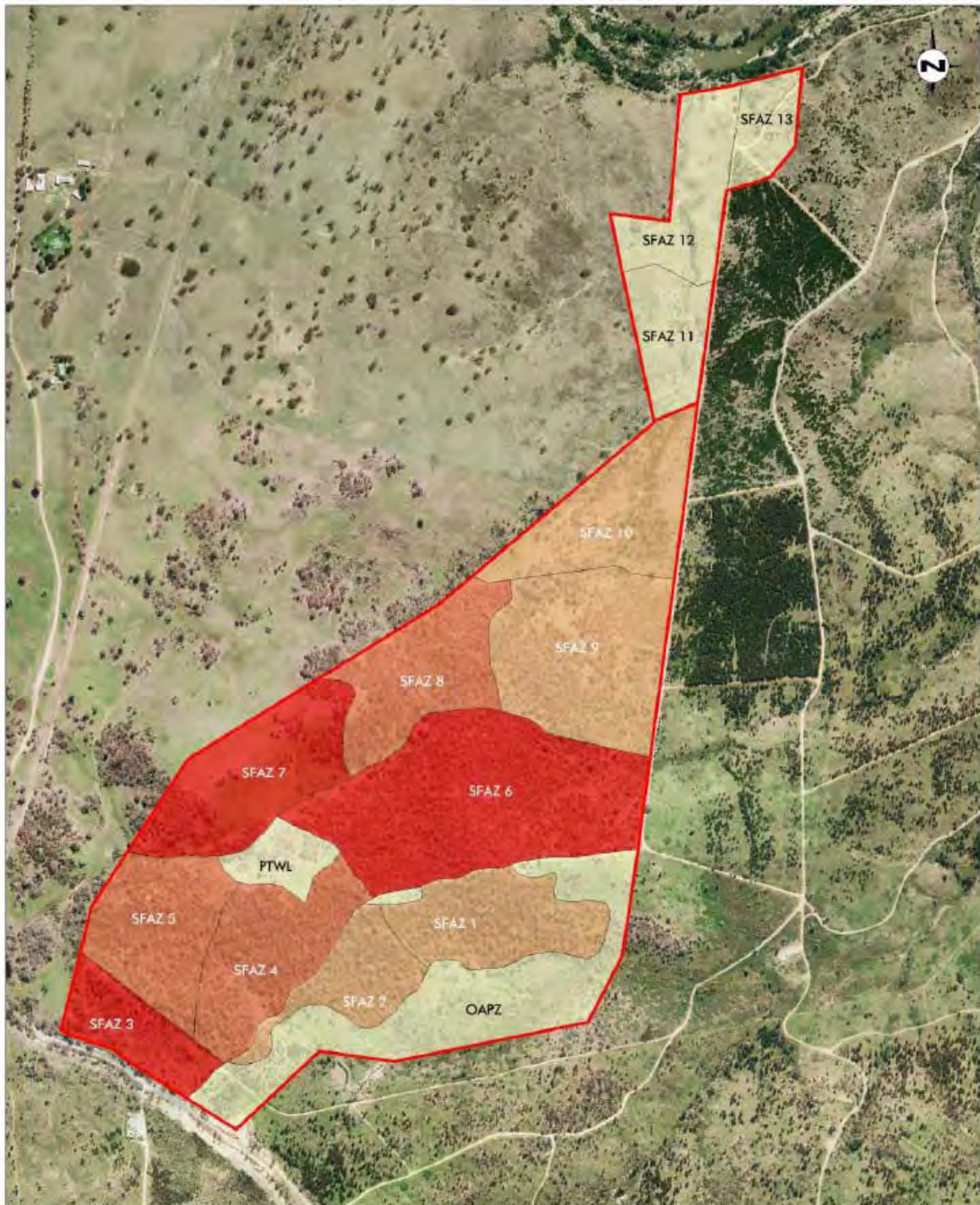
*“In order to protect important values within the ‘Box-Gum Woodland’ area and to mitigate bushfire risk to the adjacent urban development, it is recommended to use silviculture thinning to accelerate an open woodland structure as a primary management tool in this area. This treatment is only required for SFAZ6 and SFAZ 7.*

*Ongoing management of grassy sward fuel may be required in the event of grassland fire hazard exceeds 35 when grass curing is > 70% [refer to Table 21.5 and Table 21.8 in the ACT Strategic Fire Management Plan – 2014 – Version 3’.*

Refer to Figure 4 – Maximum ‘Overall Fuel Hazard Assessment’ ratings for each SFAZ on Page 17.

Refer to Figure 5 – Distribution of Box-Gum Woodland within the Project Area on Page 18.

**Figure 4 – Denman Prospect maximum ‘Overall Fuel Hazard Assessment’ ratings for each Strategic Fire Advantage Zone – Umwelt April 2015**

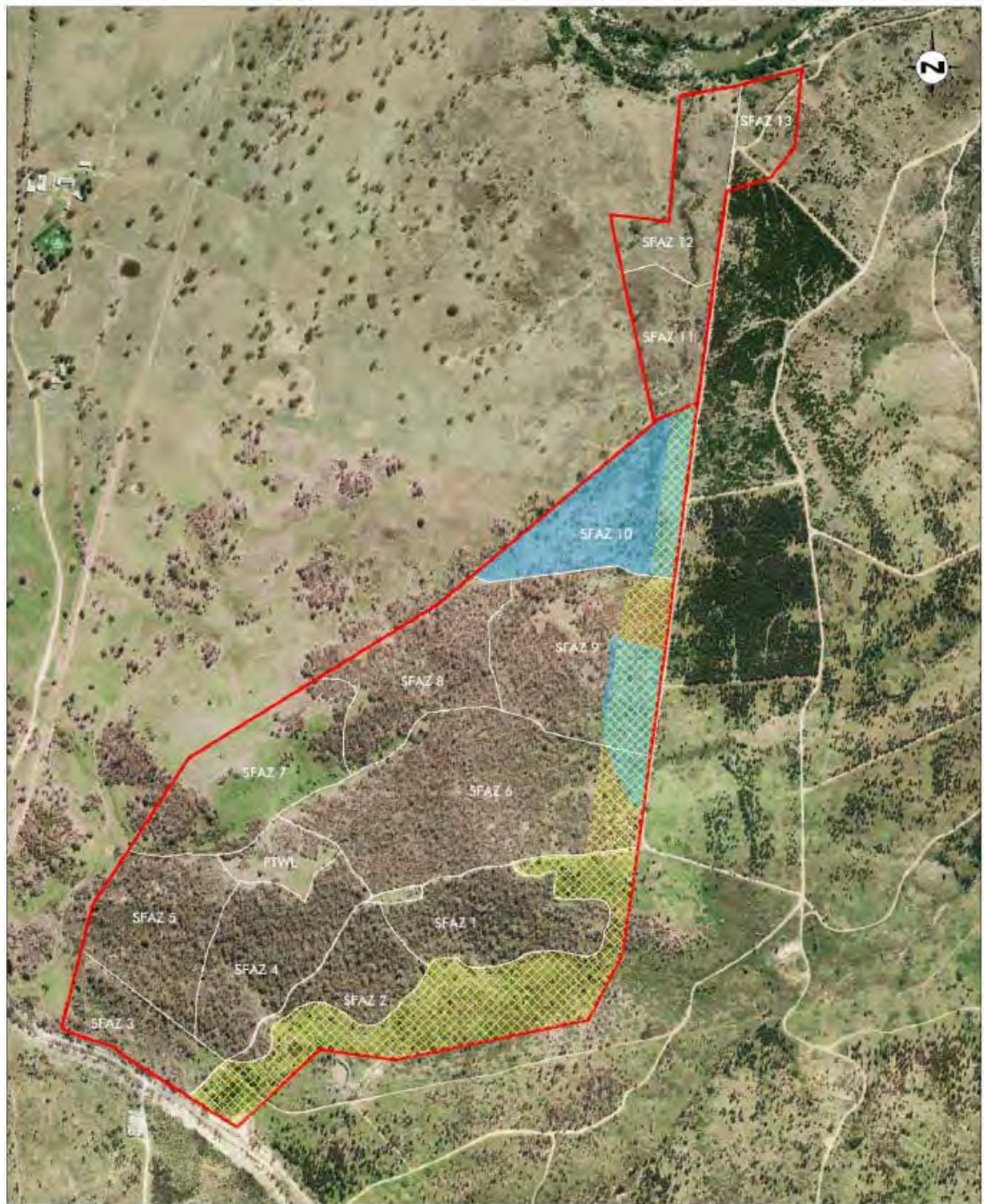


**Legend**

Project Area	Overall Fuel Hazard	
	Very High	Medium
	High	Not Assessed

Note: due to subjectivity in the assessment method, areas with a 'Medium' hazard may in fact be 'High', or tending to 'High' in the near future as stringybark bark matures, stem charring is reduced and leaf litter accumulates.

**Figure 5 – Denman Prospect distribution of Box-Gum Woodland within the Project Area – Umwelt April 2015**



**Legend**

- Project Area
- Outer Asset Protection Zone
- Box Gum Woodland

0 100 250 500 m

## SECTION 2

### BUSHFIRE RISK ASSESSMENT

#### 2.1 Introduction.

The Australian Standard AS/NZS ISO 31000:2009, the ACT Government Enterprise-wide risk management framework and the Emergency Management Australia (EMA) emergency risk management process provide the framework for establishing the context, analysis, evaluation, treatment, monitoring and communication of risk.

Risk has two elements: Likelihood, the chances of a bushfire occurring and consequence, the impact of a bushfire when it occurs.

Bushfire risk is defined as the chance of a bushfire occurring that will have harmful consequences to human communities and the environment. Bushfire risk is usually assessed through consideration of the likelihood of ignition and consequences of a bushfire occurring. Risk reduction can be achieved by reducing the likelihood of a bushfire, the opportunity for a bushfire to spread or the consequence of a bushfire (on natural and built assets).

Bushfire management should have a clear objective to reduce both the likelihood of bushfires and reduce the negative impacts of bushfires. It should also consider the costs, inconvenience and dangers of measures taken to reduce the risk of bushfires.

The consequences of bushfire management activities and the failure to implement programs also need to be considered. A range of factors influence bushfire risk – these include:

- The likelihood of human and natural fire ignitions, as influenced by time, space and demographics;
- The potential spread and severity of a bushfire, as determined by fuel, topography and weather conditions;
- The proximity of assets vulnerable to bushfire fuels, and likely bushfire paths; and
- The vulnerability of assets including natural assets, or their capacity to cope with, and recover from bushfire.

An assessment of bushfire risk must firstly define the problem. This involves the identification of the nature and scope of issues to be addressed and defining the possible boundaries for the assessment (*Emergency Risk Management – Applications Guide*. (EMA Echo Press, 2000), and AS/NZS ISO 31000:2009).

For the purpose of analysing fire risks that might emerge in the ACT, a dangerous and damaging fire has the potential to occur when the following conditions prevail:

- Continuous available fuel – fuel at moisture content sufficiently low to enable rapid combustion, arising from drought effects or the maturing and drying, of grasslands;
- Exposure of vulnerable assets. The ‘catchment’ for such fires may be within several hundred metres or many (60-70) kilometres from the asset/s;
- A combination of weather conditions that generate a forest or grass fire danger index of Very High (24) or greater. Typically in the ACT, prevailing adverse fire weather will have a strong northerly, through south-westerly wind influence;
- Fire in the landscape not effectively suppressed.

## **2.2 Risk Assessment.**

Australian Bushfire Protection Planners Pty Limited prepared a Bushfire Risk Assessment Report in 2005 for the Molonglo Structure Plan.

The findings of this report, in respect to the bushfire risk, fire paths and potential fire scenarios are applicable for the Molonglo Stage 3, Denman Prospect and the Molonglo River Corridor – refer to Attachment A.

An extract from this report states under ‘Summary of Bushfire Risk’:

*“Major bushfires have occurred in the Molonglo Valley in 1926, 1939, 1952, 1991, 1994, 2001 and 2003.*

*The topography and landform of the valley predisposes the valley to impacts of fires burning under north-westerly and westerly wind influences and to a slightly lesser extent, south-westerly wind influences.*

*The slope of the valley to the north-west and the ridgelines/ gullies will influence the spread of fire from the northwest, west and south west and result in sporadic fire runs.*

*Fuel loads within the retained Habitat Corridors and Parklands, Nature Reserves and Lease Holdings, unless managed, will promulgate future bushfires up to the urban edge and into the vegetated corridors within the urban precinct.*

*Whilst the Overall Fuel Hazard for the vegetation within the valley is Very High there is, due to the fire history, topography, aspect, wind influence and climatic conditions within the valley, an extreme risk of damaging bushfires impacting the north western edge of the East Precinct [Molonglo Stage 3 and Denman Prospect].*

The 'Conclusion' of the 2005 Bushfire Risk Assessment Report stated:

*"The orientation of the Molonglo Valley and the ability for northwest, west and south-west wind-driven fires to impact the proposed development edge will continue the extreme level of risk to any development proposed in the valley with the potential to cause major damage to buildings and infrastructure.*

Subsequent to the preparation of the original Bushfire Risk Assessment Report [19.7.2005] an updated report was prepared by ABPP, dated 26.4.2006. The Executive Summary of this report stated:

*The Molonglo Stage 2 Bushfire Risk Assessment quantifies the current level of risk to future development within the Molonglo Valley, prior to the implementation of mitigation measures as **Extreme**.*

*Mitigation measures which have been identified within the report as necessary to reduce the level of potential risk to future development include the creation and permanent management of a Critical Management Zone to the north-western edge of the East Molonglo Precinct and to the western and south-western edge of the Central Molonglo Precinct.*

*The provision of the Critical Management Zone (CMZ) replaces the Outer Asset Protection Zone, as defined in the Strategic Bushfire Management Plan for the ACT and the management of this zone, in accordance with the performance standards defined in this report, are considered to be a mandatory requirement in the reduction of the bushfire risk to the future development within the Molonglo Valley.*

*In addition to the provision of a Critical Management Zone to the north-western edge of East Molonglo Precinct, this report recommends, due to the risk of fire over-run along the Molonglo River corridor and into the future suburb, the damming of the Molonglo River below Coppins Crossing and the creation of Lake Molonglo".*

This recommendation was not adopted in the final Molonglo Structure Plan.

## **SECTION 3**

### **PROTECTION MEASURES TO BE IMPLEMENTED TO REDUCE THE BUSHFIRE RISK TO THE NORTH-WESTERN EDGE OF MOLONGLO STAGE 3 & DENMAN PROSPECT AND THE MOLONGLO RIVER CORRIDOR.**

#### **3.1 Introduction.**

The LDA established in late 2013 a Working Group whose primary purpose was to establish solutions to the problem of providing bushfire protection measures to the north-western edge of Molonglo Stage 3 and Denman Prospect and to the Molonglo River Corridor which would not only mitigate the bushfire risk but also be acceptable to ACT Government Agencies.

The solutions also had to be achievable, ecologically and economically sustainable and able to be funded in the long term – in perpetuity.

Consideration was also given to the ‘alternate solutions’ provided by the updated ACT Strategic Bushfire Management Plan – Version 3, particularly in respect to the ability to increase the width of the Inner Asset Protection Zone so as to remove the need to provide and manage an Outer Asset Protection Zone on ecologically sensitive land.

Having considered the total removal of the Outer Asset Protection Zone and the potential for catastrophic bushfire events to impact the north-western edge of Molonglo Stage 3 and Denman Prospect and development adjacent to the Molonglo River corridor the Working Group has adopted a policy of implementing a bushfire protection zone to future development that contains an Inner Asset Protection Zone supported on the outside by a Strategic Fire Advantage Zone [SFAZ] – within Kama to the northwest of Molonglo Stage 3; within the land to the northwest and west of Denman Prospect and broadly within the Molonglo River Park.

The study undertaken by Umwelt, in concert with TaMS [Adam Leavesley] has formed the basis upon which the decision has been taken to implement the establishment of a SFAZ within Kama Nature Reserve. It is noted that consensus has been reached that the performance criteria of a SFAZ, as required by the ACT Strategic Bushfire Management Plan – 2014 – Version 3 can be achieved whilst maintaining the ecological biodiversity of the reserve.

Similarly, the study undertaken by Umwelt, in concert with TaMS [Adam Leavesley] has formed the basis upon which the decision has been taken to implement the establishment of a SFAZ on the land to the northwest and west of Denman Prospect – refer to Attachment B – Analysis of Vegetation Structure and Fire Risk.

Discussions with TaMS [Adam Leavesley] and the need to manage the vegetation within the Molonglo River corridor to mitigate the spread of fire have also formed the basis upon which the establishment of the SFAZ has been recommended within the Molonglo River Park.

This report also recommends the inclusion of the community facility located at the former Sludge Ponds and the western end of the River Park as detailed in the Molonglo River Park Concept Plan prepared by Hassell.

For completeness, this report also provides recommendations on the bushfire protection zones to the northern and eastern edge of Molonglo Stage 3.

The following section details the Working Groups' recommendations.

### **3.2. North-western edge to Molonglo Stage 3:**

- 1) There shall be established and maintained a minimum 60.0 metre wide Inner Asset Protection Zone to the north-western edge of the urban development, managed to the prescriptions as detailed in the ACT Strategic Fire Management Plan 2014 – Version 3. This zone shall contain an edge road and also a gravel fire trail located adjacent to the eastern boundary of Kama and shall include stormwater treatment ponds, cycleway/pedestrian access and electrical power lines, as required.
- 2) There shall be established and maintained, over the whole of Kama Nature Reserve, a Strategic Fire Advantage Zone, cyclically managed to the prescriptions as detailed in the ACT Strategic Fire Management Plan 2014 – Version 3;
- 3) There shall be established and maintained a six [6] metre wide fire break located inside the eastern boundary of Kama Nature Reserve;
- 4) The existing access/fire trails within Kama Nature Reserve shall be upgraded and maintained to provide access for management works and fire-fighting operations.

Refer to Figure 6 – Fire Protection Strategies – North-western edge to Molonglo Stage 3 on Page 24.

**Figure 6 – Fire Protection Strategies – North-western edge to Molonglo Stage 3**

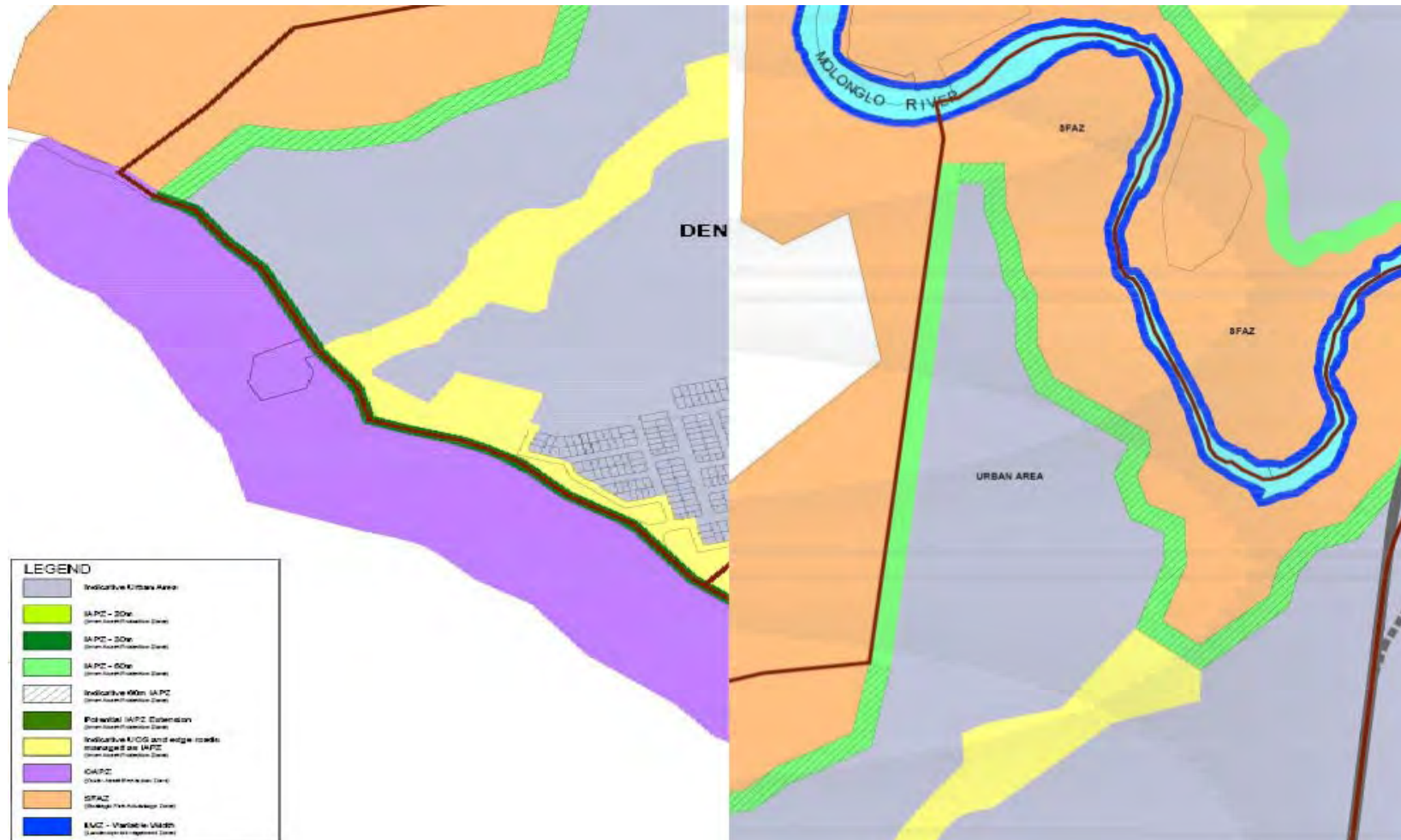


### 3.3 North-western/Western edge to Denman Prospect:

- 1) There shall be established and maintained a minimum 60.0 metre wide Inner Asset Protection Zone to the north-western and western edge of the urban development within Denman Prospect, managed to the prescriptions as detailed in the ACT Strategic Fire Management Plan 2014 – Version 3. This zone shall include an edge road and where provided, stormwater treatment ponds and shall also include cycleway/ pedestrian access as required – refer to Denman Prospect Figure 7 on Page 25.
- 2) There shall be established and maintained, to the location as shown on the Denman Prospect Figure 7 on Page 25, an Outer Asset Protection Zone of varying widths, managed to the prescriptions as detailed in the ACT Strategic Fire Management Plan 2014 – Version 3;
- 3) There shall be established and maintained, to the area as shown on Denman Prospect Figure 7 on Page 25, a series of Strategic Fire Advantage Zones, cyclically managed to the prescriptions as detailed in the ACT Strategic Fire Management Plan 2014 – Version 3 and in accordance with the recommendations contained in the *Analysis of Vegetation Structure and Fire Risk* report prepared by Umwelt - 2015;
- 4) There shall be established a series of Fire Trails, generally as located as shown on Figure 5 on Page 18 – also refer to the *Analysis of Vegetation Structure and Fire Risk* report prepared by Umwelt - 2015. These trails shall be maintained to provide access for management works and fire-fighting operations.

Refer to Figure 7 – Fire Protection Strategies – North-western/Western edge to Denman Prospect on Page 26.

**Figure 7 – Fire Protection Strategies – North-western/Western edge to Denman Prospect**



### 3.4 Molonglo River Park:

- 1) There shall be established and maintained a minimum 60.0 metre wide Inner Asset Protection Zone to the north and south of the Molonglo River Park, to the extent detailed on Figure 8 on Page 27, managed to the prescriptions as detailed in the ACT Strategic Fire Management Plan 2014 – Version 3. This zone shall include an edge road and where provided the managed easement for services [sewer / water / electricity], stormwater treatment ponds and shall also include cycleway/pedestrian access as required;
- 2) There shall be established and maintained, to the area as shown on Figure 8 on Page 27, a series of Strategic Fire Advantage Zones, cyclically managed to the prescriptions as detailed in the ACT Strategic Fire Management Plan 2014 – Version 3;
- 3) There shall be provided, to the locations as shown on Figure 8 on Page 27, a Landscape Fire Management Zone of varying width to each side of the Molonglo River.

Fuel management standards shall not apply to this zone:

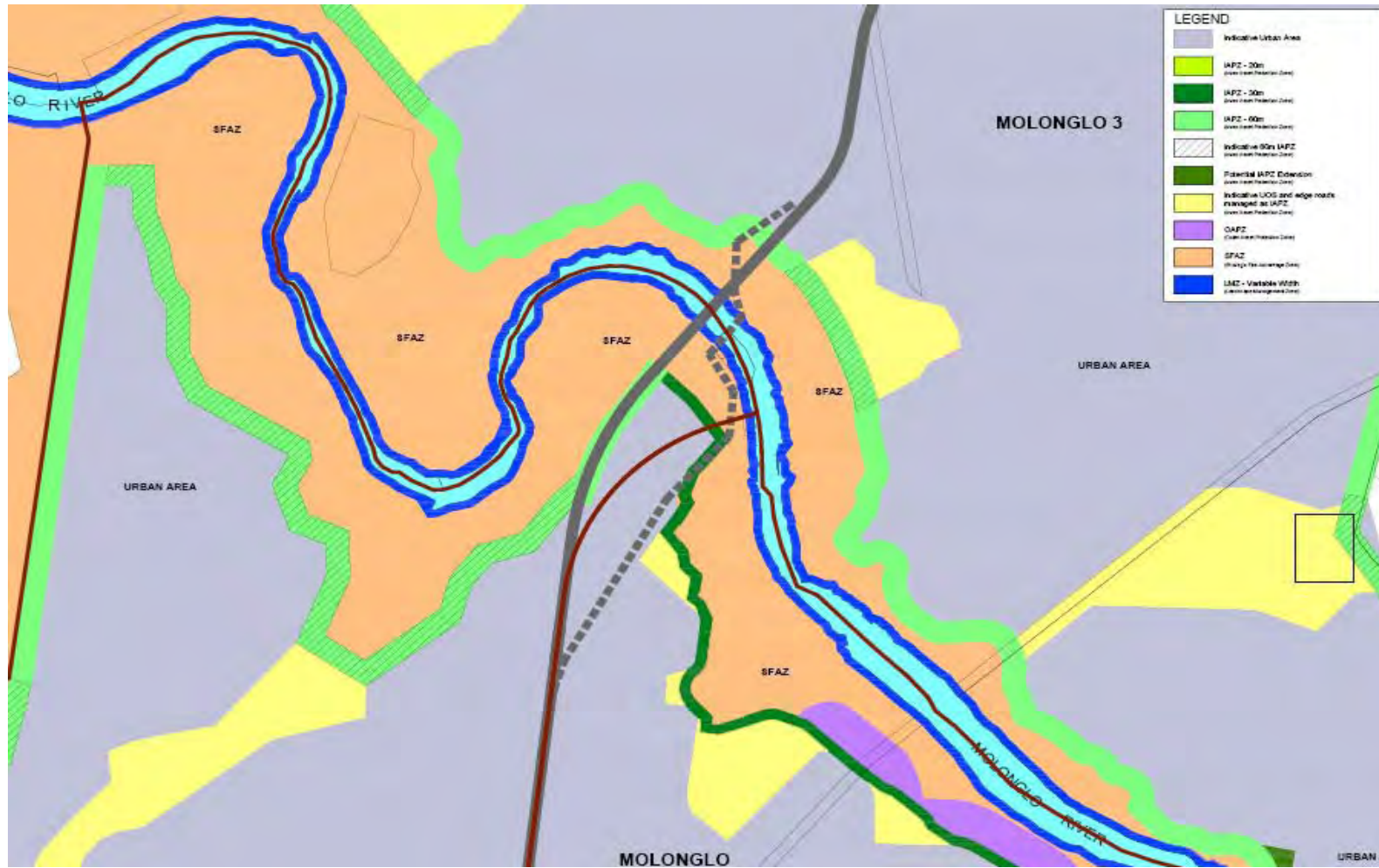
- 4) The existing fire trail/access roads within the river corridor shall be maintained to provide access for management works and fire-fighting operations.
- 5) There shall be established and maintained access for management works and fire-fighting operations within the Group Centre precinct.
- 6) The recommendations provided in the Molonglo River Concept Plan report prepared by Hassell, in respect to the establishment of a community facility in the location of the Sludge Ponds and the western end of the Molonglo River Park shall be included in the Park Management Plan.

Refer to Figure 8 – Fire Protection Strategies – Molonglo River Corridor – West on Page 28.

Refer to Figure 9 – Fire Protection Strategies – Molonglo River Corridor – East and Molonglo Stage 3 – East on Page 29.

Refer to Figure 10 – Fire Protection Strategies – Molonglo River Corridor – Southeast and Molonglo Stage 3 Southeast on Page 30.

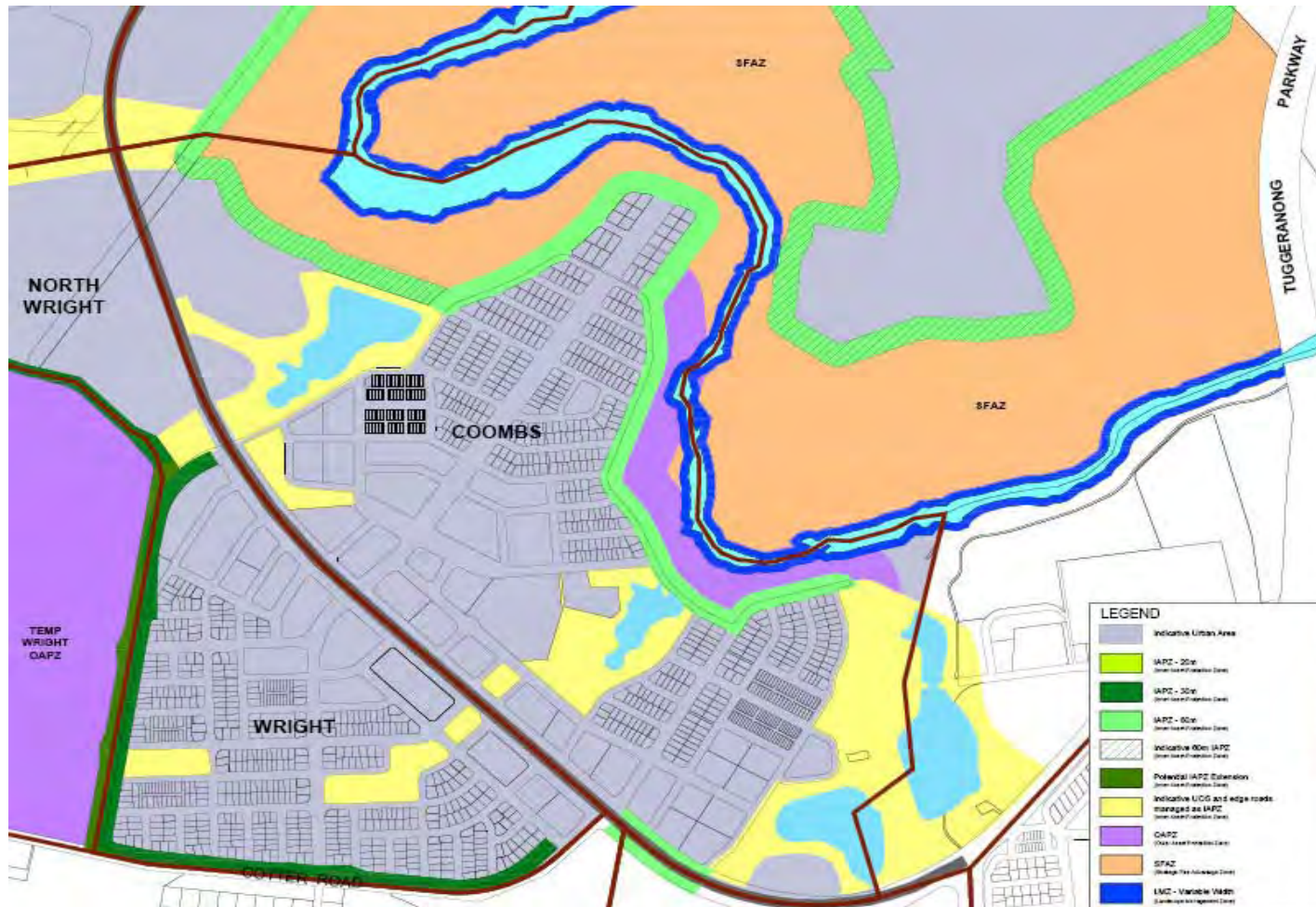
**Figure 8 – Fire Protection Strategies – Molonglo River Corridor - West**



**Figure 9 – Fire Protection Strategies – Molonglo River Corridor – East & Molonglo Stage 3 - East**



**Figure 10 – Fire Protection Strategies – Molonglo River Corridor – Southeast & Molonglo Stage 3 - Southeast**



### **3.5 Molonglo Stage 3 – Northern and Eastern Edges:**

- 1) To the northern edge of the Molonglo Stage 3 precinct the full width of the William Hovell Drive carriageway shall be maintained as an Inner Asset Protection Zone, managed to the prescriptions as detailed in the ACT Strategic Fire Management Plan 2014 – Version 3;
- 2) To the eastern edge of the Molonglo Stage 3 precinct, adjacent to the National Arboretum, there shall be provided an Inner Asset Protection Zone having a minimum width of 40 metres, managed to the prescriptions as detailed in the ACT Strategic Fire Management Plan 2014 – Version 3. This zone shall include an edge road and where provided, the managed easement for services [sewer/water/electricity], stormwater treatment ponds and shall also include cycleway/pedestrian access as required.

Refer to Figure 11 – Fire Protection Strategies – Molonglo Stage 3 – Northern & North-eastern Edges on Page 32.

**Figure 11 – Fire Protection Strategies – Molonglo Stage 3 – Northern and North-eastern Edge**



### **3.6 Bushfire Construction Standards to Buildings.**

Except for the future buildings within Denman Prospect, all buildings located within 100 metres of land that is subject to, or likely to be subject to, bushfire attack [bushfire prone land] shall be constructed to comply with the standards required by Australian Standard A.S. 3959 – 2009 – ‘*Construction of Buildings in Bushfire Prone Areas*’.

*Note: Refer to the ACT Strategic Bushfire Management Plan for the location of Bushfire Prone Land.*

The minimum level of construction for buildings located adjacent to the Inner Asset Protection Zone shall be BAL 29. The minimum construction standard of all other buildings located within 100 metres of bushfire prone land shall be BAL 12.5.

For Denman Prospect, all buildings located within 400 metres of the forest/woodland vegetation on the land to the northwest and west of Denman Prospect shall be constructed to comply with the standards required by Australian Standard A.S. 3959 – 2009 – ‘*Construction of Buildings in Bushfire Prone Areas*’. The minimum level of construction for buildings located adjacent to the Inner Asset Protection Zone shall be BAL 29. The minimum construction standard of all other buildings located within 400 metres of bushfire prone land shall be BAL 12.5.

### **3.7 Support Infrastructure.**

#### **3.7.1 Access for fire-fighting Operations:**

Edge roads shall be designed to comply with the access code for heavy rigid and articulated vehicles.

#### **3.7.2 Water Supplies for Fire Fighting Operations:**

A fire-fighting water supply shall be installed to comply with F4 and the standards agreed by ACTEW and ACT Fire & Rescue.

Type F5 standard 45 l/s single hydrants at 60 metre intervals shall be installed within the Edge Road.

## SECTION 4

### FUNDING FOR BUSHFIRE MANAGEMENT WORKS

Residential and infrastructure development in the Molonglo Valley is proceeding in accordance with the Government's Indicative Land Release Programs and associated budget appropriations for capital works funding to support land release.

Subdivision construction is continuing in Molonglo Stage 1 (Coombs) over the life of the Program with the first releases in Molonglo Stage 2 (Denman Prospect) to commence in 2014-15. Molonglo Stage 3 on the north side of the Molonglo River is programmed to commence in 2017-18.

The LDA/EDD are undertaking due diligence assessment investigations based on the approved Molonglo Valley Structure Plan and other documentation across a range of significant issues in Molonglo Stage 2 and Stage 3 including but not limited to ecological, contamination, infrastructure provision, UXO and bushfire risk. These assessments, especially bushfire in conjunction with TaMS, can materially influence the location of land use boundaries due to impacts and responsibilities for cost efficient land management.

Multiple directorates/agencies are involved with overseeing different parts of the puzzle sometimes giving little regard for the overall outcome. It could be argued that this has led to less than adequate decision-making and a lack of understanding of past and present processes and Government expectations.

This in turn leads to developing less than a whole-of-Government position to achieve the perceived outcomes. Other directorates however may have other parameters to meet while including the need to implement Government policies.

TaMS has a management parameter to manage all the Government's assets. This includes managing the ever increasing asset base such as new roads, urban open space with Greenfield development.

Bushfire risk and the associated mitigation measures can have a significant impact on ecological, economic and social parameters. Since the 2003 Canberra bushfire, there has been a significant shift in the increase of the awareness and delivery of bushfire mitigation measures across Government. This commenced immediately after the bushfire with changes to subdivision design and the introduction of edge roads and specific controls within asset protection zones both within the urban area and outside it.

This in turn has led to revisions of standards, guidelines, expectations and responsibilities both public and private.

It has also increased the responsibility of TaMS to manage a large proportion of the asset protection zones possibly to higher standards than was necessary before the bushfire.

### **Typical Cross Section of Zones at the Urban/Non-urban Interface:**

A typical cross section at the urban/non-urban interface today would include:

- House asset protection zone – extending from the front of the residential block boundary into the suburb for distances up to 100m or more depending on risk and mitigating against ember attack. This requires housing design and construction (and landscaping) to meet specific Bushfire Attack Levels (BALs) under the Australian Standard. Management of this area lies partly with TaMS (public open space and roads including verges) and individual block owners.
- Inner asset protection zone – extends from the front of the residential block boundary to the edge of the urban/non-urban interface. Distances vary depending on risk and management requirements. A usual width would be a minimum of 30 to 40m and include significant infrastructure such as subdivision edge road, fire trail, stock proof fencing at the urban/non-urban interface, stormwater cut-off drains, hydraulic services for fire fighting, and street trees on the block side of the edge road. Management includes control of fuel loads by slashing. Management of this area lies with TaMS.
- Outer asset protection zone or Strategic fire fighting advantage zone – extends into the non-urban area for some distance depending on risk and management requirements. These could be 100m to around 300m in width and contain fire trails to aid management. Management methods depend on fuel loads and may include thinning of existing inappropriate vegetation, weed management, grazing or other ecological controls that ensures fuel loads are not exceeded during the fire season. Management of this area lies with TaMS and may be on a private lease.

### **Current Process of Conversion of Rural Land to Urban Land:**

The development/management process that transforms rural land to urban land is typically set out below:

- Rural land and Canberra Nature Parks including Nature Reserves are managed by TaMS as the land custodian.

- LDA/EDD undertakes due diligence assessments to gain necessary approvals to clear the way to proceed to preparation of individual Estate Development Plans (EDPs) and gain budget approvals for the delivery of infrastructure associated with land delivery.
- LDA/EDD prepares EDP and capital works program. Note capital works may have started ahead of the EDP preparation by as much as a couple of years but may not be required to deliver some items for years after land development and block occupation is complete - i.e. staged infrastructure.
- Land custodianship transferred from TaMS to LDA usually prior to lodging EDP for approval.
- EDP lodged for final circulation and approval as a DA. Note EDP usually contains site specific Bushfire risk assessment. Note however that in the case of Molonglo Stages 2 and 3, the western edge and river corridor bushfire risk assessment is designed to cover the whole of the remaining development. In the meantime detailed design has commenced and readied for submitting to TaMS for design approval.
- DA approved by EPD followed by design approval by TaMS.
- Construction commences and includes the provision of bushfire mitigation measures.
- Blocks sold by the LDA but settlement is delayed until after consolidation is complete.
- Construction finishes and consolidation period commences.
- Consolidation period ends.
- Blocks in private ownership after settlement.
- Other areas handed back to Government (usually TaMS) for continuation of approved management including bushfire risk mitigation measures and management of public open space, roads and other land.
- TaMS prepares budget bids to maintain management on a year-by-year basis within the constraints of the ACT Government budget parameters.

### **Issues with the Current Process:**

There are a significant number of issues with the current process. In the case of development in the Molonglo Valley, these include:

- Lack of whole-of-Government approach to the expected outcomes for Molonglo Stages 2 and 3.

- Earlier, the NES Plan and Adaptive Management Strategy, while agreed with the Commonwealth, was not “road tested” to prove data or feasibility of implementation ahead of gaining approval from the Commonwealth.
- There is a need for a whole-of-Government outcome for the delivery of Molonglo 2 and 3 and the Molonglo River Corridor.
- Competing budget bids delaying or diluting funding for management of assets including bushfire mitigation obligations including the provision of resources.
- Diversion of budget funding to other competing priorities at both Treasury and TaMS levels.
- A partial solution could be that initial funding be provided by the LDA or a private developer for a period associated with construction timing for the implementation of management regimes but with a sunset clause on when TaMS would be required to take over responsibility including funding.

For example, LDA or a private developer could construct and implement bushfire mitigation management regimes while land development is proceeding generally adjacent to the non-urban edge. The issue is how long a time period would LDA or a private developer be practically required to fund and manage such an arrangement and when TaMS would be expected to take over. While this could be a set period of time, there is an issue when or if there is a slowdown in the private sector development or there is a reduction in the demand for new housing. This could mean that the LDA or a private developer would need to be involved for a longer period of time.

- Remember the issue of requiring bushfire mitigation management measures is not restricted to the Molonglo Valley – it encompasses on-going management at the edges of all development areas at the interface with the rural land use zone in Canberra. As the urban area expands, so too does the bushfire mitigation management issue requiring increases in funding.

### **Funding Options:**

A number of funding options were discussed in the preparation of this assessment. However, it was agreed the existing arrangements met the overall strategies and objectives of Government.

A difficulty with this funding method is that it leaves Treasury in final control of management funding of bushfire mitigation measures. Funding is therefore dependent on dividing up the budget and competing against other bids on a year by year basis.

It does not allow the guarantee of prioritising critical management to protect residents and assets from bushfire risk on a season by season basis.

Even when yearly funding is made available to directorates with management responsibilities, there is no guarantee in return to Treasury that all the available funding will be used against bushfire mitigation purposes.

Where the allocated guaranteed funding is not all used (because perhaps a lessening of bushfire risk did not require as much management work to be undertaken) any excess would be expected to be returned to Treasury.

However, there is a distinct risk that the subsequent year or years may require extra funding which would have to be guaranteed by Treasury regardless.

As part of the guarantee mentioned above, a solution is suggested that Treasury may require, at a minimum, an agreed rolling bushfire mitigation management document for say a 5 year period to plan ahead for Budget predictions. This may allow for expenditure variations such as changing seasonal needs and the reaction to catastrophic events. This could be “signed off” by the responsible directorate after agreement at Directors-General level and Treasury.

Public land management agencies are continuously pressed and express public concern that they are expected to do more with fewer resources.

A funding framework, or tweaking of the existing funding arrangements, may be needed that ensures ongoing protection to the public given that Government agencies may be reluctant to shoulder the ongoing cost responsibility.

The ubiquitous and often-stated challenge is securing funding for the long-term, ‘in perpetuity’ costs to maintain and in some cases enhance the biodiversity values for which the asset was originally protected.

After consultation with other members of the Working Group, it was agreed that the existing funding arrangements based on annual budget bids to Treasury would continue to be the method to fund recurrent bushfire risk mitigation work.

These arrangements do not stop the possibility of adding the ‘flexibility’ mentioned above to the existing funding methodology.

## SECTION 5

### CONCLUSION

The bushfire protection measures detailed in Section 3 of this report have been determined by the Working Group with the aim of mitigating the potential bushfire risk to the future development within Molonglo Stage 3, Denman Prospect and the development precincts which adjoin the Molonglo River Park.

However, a level of residual risk will remain as not all of the bushfire threat can be completely removed – only managed to reduce fuel loads.

Another matter that will influence the level of risk reduction, and therefore residual risk, is the commitment for ongoing management of the recommended bushfire protection zones and funding of these works in perpetuity.

Bushfire Operations Plans [BOPs] will be required to be prepared annually, by TaMS, for the works and there will be an expectation that Government will meet the funding requirements to enable the BOPs to be undertaken.

For Molonglo 3, Denman Prospect and the Molonglo River corridor, the initial establishment of the recommended fire protection measures shall be funded by the developer of the land – i.e. LDA or private developer or joint venture partners with LDA.

The initial funding shall be made available for the construction and maintenance of fire trails and fire breaks, the provision of fencing and access gates and initial clearing and establishment of the Asset Protection Zones.

LDA, or the private developer, shall provide initial seed funding to TaMS for hazard reduction and land management activities such as the establishment of the Strategic Fire Advantage Zones.



Graham Swain  
Managing Director  
***Australian Bushfire Protection Planners Pty Limited.***  
29.5.2015

## REFERENCES

ACT Government 2012 Territory Plan.

ACT Planning & Land Authority 2004, The Canberra Spatial Plan, ACTPLA.

ACT Planning and Land Authority 2006, Planning for Bushfire Risk Mitigation for new development and redevelopment, ACTPLA, Canberra.

ACT Planning and Land Authority 2009, Planning for Bushfire Risk Mitigation for new development and redevelopment – update, ACTPLA, Canberra.

Emergency Management Australia 2000, Emergency Risk Management – Applications Guide, Second Edition. EMA .

Emergency Services Agency 2014, Strategic Bushfire Management Plan for the ACT – Version 3, ESA.

## APPENDIX A – PRECISE OF REPORTS REVIEWED

### ***Bushfire Risk Assessments prepared by ABPP [2005 & 2006]:***

*Australian Bushfire Protection Planners Pty Limited* was commissioned to undertake a study of bushfire risk for the preparation of the Molonglo Structure Plan and produced a Bushfire Risk Assessment, dated 19.07.2005, for the ACT Planning Authority [ACTPLA].

An extract from this report states under 'Summary of Bushfire Risk' – [Page 28]:

*“Major bushfires have occurred in the Molonglo Valley in 1926, 1939, 1952, 1991, 1994, 2001 and 2003.*

*The topography and landform of the valley predisposes the valley to impacts of fires burning under north-westerly and westerly wind influences and to a slightly lesser extent, south-westerly wind influences.*

*The slope of the valley to the north-west and the ridgelines/ gullies will influence the spread of fire from the northwest, west and south west and result in sporadic fire runs.*

*Fuel loads within the retained Habitat Corridors and Parklands, Nature Reserves and Lease Holdings, unless managed, will promulgate future bushfires up to the urban edge and into the vegetated corridors within the urban precinct.*

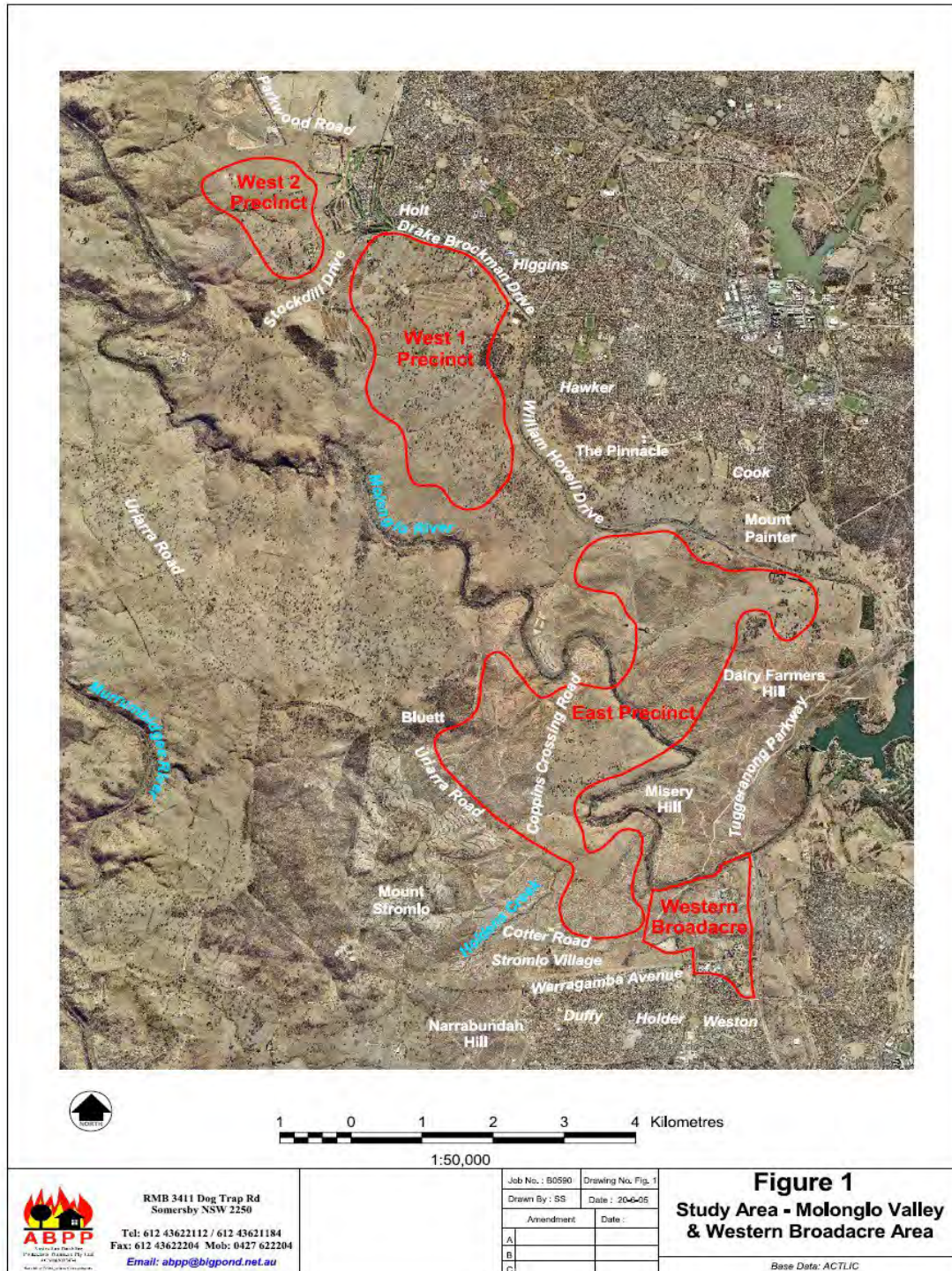
*Whilst the Overall Fuel Hazard for the vegetation within the valley is Very High there is, due to the fire history, topography, aspect, wind influence and climatic conditions within the valley, an extreme risk of damaging bushfires impacting the north western, western and south western edges of the West 1 and West 2 Precincts, the north western edge of the East Precinct and a high risk of damaging bushfires impacting the south western edge of the East Precinct”.*

Figure 12 on Page 42 provides an extract from the Molonglo Concept Plan Bushfire Risk Assessment Report 2005 identifying the Study Area;

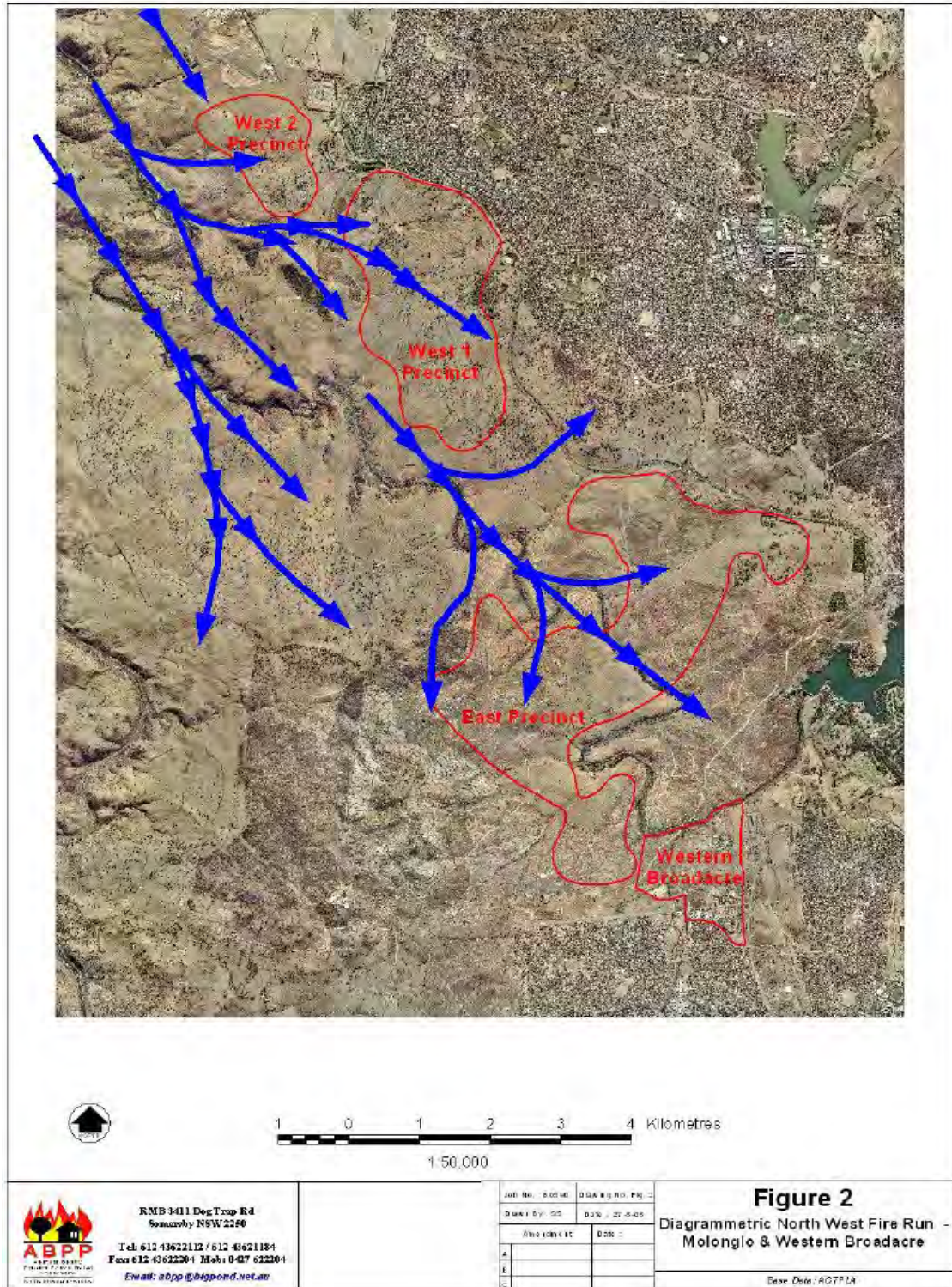
Figure 13 on Page 43 provides an extract from the Molonglo Concept Plan Bushfire Risk Assessment Report 2005 identifying the potential north-westerly fire path;

Figure 14 on Page 44 provides an extract from the Molonglo Concept Plan Bushfire Risk Assessment Report 2005 identifying the potential westerly fire path; and

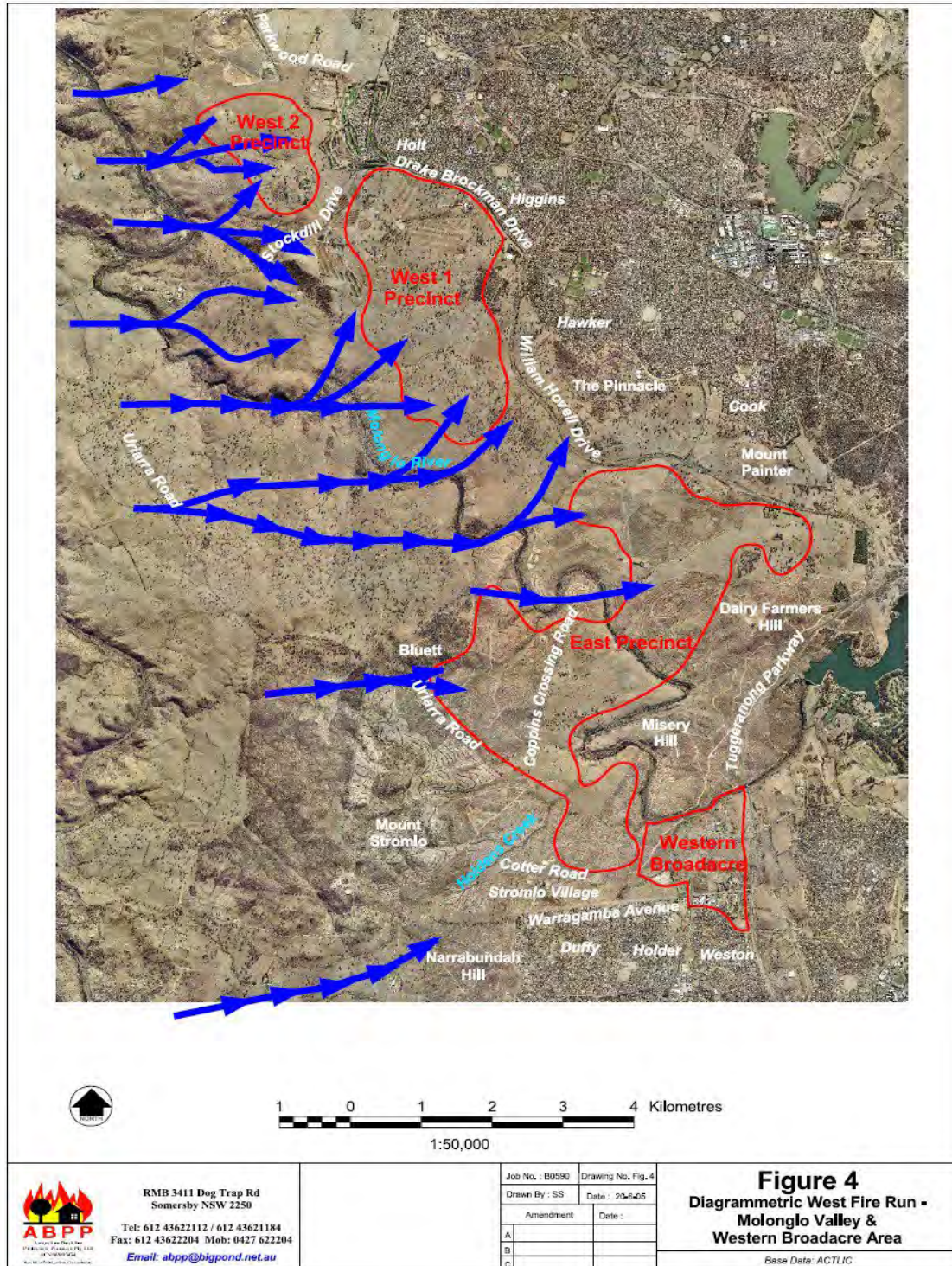
**Figure 12 – Extract from the Molonglo River Structure Plan Bushfire Risk Assessment Report 2005 showing the study areas**



**Figure 13 – Extract from the Molonglo River Structure Plan Bushfire Risk Assessment Report 2005 showing the Diagrammatic Northwest fire run**



**Figure 14 – Extract from the Molonglo River Structure Plan Bushfire Risk Assessment Report 2005 showing the Diagrammatic West fire run**



Under Section 6.1 Management of the Vegetation beyond the Urban Interface the ABPP report states:

“The Strategic Bushfire Management Plan for the ACT (Version1) states:

*“Under the Emergencies Act 2004 the ESA has declared an area of the ACT to be a Bushfire Abatement Zone. The purpose of the Bushfire Abatement Zone is to reduce the impact of bushfires on the built up areas within the ACT.*

*Bushfire preparation within the BAZ requires collaborative development of fuel management guidelines and the provision of advice to land managers consistent with land use. Guidelines for bushfire management must achieve a reasonable balance between the increasing community demands on ACT lands for recreation and existing use for farming, forestry and conservation”.*

*“Bushfire fuel hazard is the only factor of bushfire behaviour that can be influenced by land managers and residents. However, fuel management alone is not the panacea for bushfire protection and it **will not eliminate future severe bushfires.***

*“The use of fire in land management requires land managers to make decisions about complex balances and trade-offs between bushfire protection and often-divergent social, environmental and economic requirements”.*

*Heavy emphasis has been placed on the effectiveness of hazard reduction burning as the most cost effective means of management within the Abatement – Zone, however the Strategic Bushfire Management Plan states :*

**“The opportunity to schedule and implement prescribed burning within a desirable window of favourable conditions is relatively limited”.**

**“Land managers and owners must take into account the potentially limited number of days and the possible interaction with air quality guidelines in the development, costing and implementation of prescribed burning programs”.**

***Therefore the viability of maintaining the urban edge protection by hazard reduction burning and / or mechanical means needs to be established to guarantee the integrity of the Molonglo and Western Broadacre urban edge against damaging fire impact.***

Under 6.2 – Shape of the Development Precincts [Page 32] the ABPP reports states:

### **East Precinct.**

*“The long exposure of the north-western edge of the precinct to uphill burning fires, influenced by hot, dry, strong north-westerly winds, will result in significant fire impact either directly or indirectly from ember attack, depending on the level of protection provided by active management of the fuels within the river corridor.*

*Similar impacts may also occur to the western / south western edge from westerly and south-westerly wind-driven fires and the influence of wind turbulence in the Mount Stromlo area.*

*The northern edge will be impacted by fires burning within the habitat corridor, north of William Hovell Drive.*

*The Molonglo River Corridor will separate the eastern development node from the western development node and therefore provide a direct fire path into the suburbs adjoining the corridor and to the International Arboretum to the south east”.*

Under Section 6.4 – Habitat Corridors – Gazetted Nature Parks the ABPP report states:

*“The Landscape and Environmental Analysis Plan in the Molonglo Valley Suitability Study identifies habitat connectivity for wildlife movement corridors from The Pinnacle to the north-west and alternate and /or additional Habitat Corridors between the three development precincts.*

*If the Habitat Corridor identified extending to the north-west of The Pinnacle remains it will allow fire to enter the West 1 Precinct and expose the adjoining urban development to fire impact.*

*The alternative Habitat Corridors will allow fires to penetrate between the development precincts. Management of these corridors for Habitat Protection and ecological protection will conflict with the need to provide active management of fuel hazards within the abatement zones to the perimeters of the urban precincts.*

*The Lower Molonglo River Nature Reserve will provide a direct northwest fire path for future bushfires to impact the central portion of the north western edge of the East Precinct and the return edges to the north east and south west of the Reserve”.*

Section 10.1 – Conclusion – Molonglo Valley [Page 43] of the ABPP report states:

*“The orientation of the Molonglo Valley and the ability for northwest, west and south-west wind-driven fires to impact the proposed development edge will continue the extreme level of risk to any development proposed in the valley with the potential to cause major damage to buildings and infrastructure.*

*Whilst the McLeod Report recommendation was for implementation of an Abatement Zone to the west and south-west of the City, the extent of the zone and the management abilities of those responsible for the fuel maintenance measures recommended, may not provide a level of defence which will remove the risk of devastating fires impacting to the north-western edge of the Molonglo East Precinct and the north-western, western and south-western edge of the Molonglo West 1 and West 2 Precincts”.*

*It is therefore recommended that for development to proceed, the primary protection against the impact of fires to the north-western edge of Molonglo East and the north-western, western and south-western edge of Molonglo West 1 should be provided by the provision of a land use that creates a Critical Management Zone which is permanently fuel-managed by the nature of the land use. (i.e. vineyards / sporting grounds).*

*“The Molonglo River Corridor through the East Precinct should be actively managed as a Village Park to prevent fire extension into the precinct”.*

Figure 15 on Page 47 provides an extract from the Molonglo Concept Plan Bushfire Risk Assessment Report 2005 identifying the recommended bushfire protection measures.

Subsequent to the preparation of the original Bushfire Risk Assessment Report [19.7.2005] an updated report was prepared by ABPP, dated 26.4.2006. The Executive Summary of this report states:

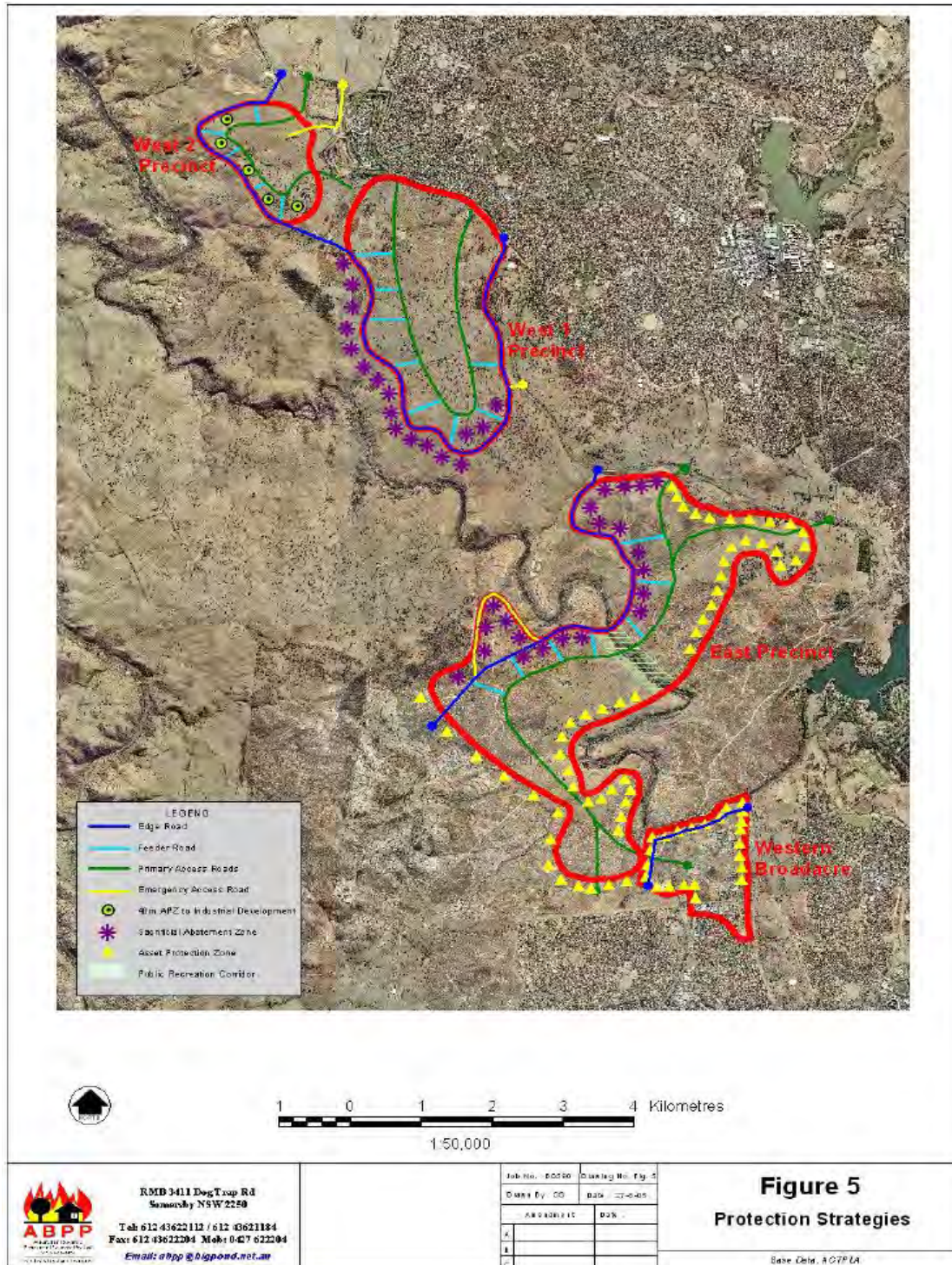
*The Molonglo Stage 2 Bushfire Risk Assessment quantifies the current level of risk to future development within the Molonglo Valley, prior to the implementation of mitigation measures as **Extreme**.*

*Mitigation measures which have been identified within the report as necessary to reduce the level of potential risk to future development include the creation and permanent management of a Critical Management Zone to the north-western edge of the East Molonglo Precinct and to the western and south-western edge of the Central Molonglo Precinct.*

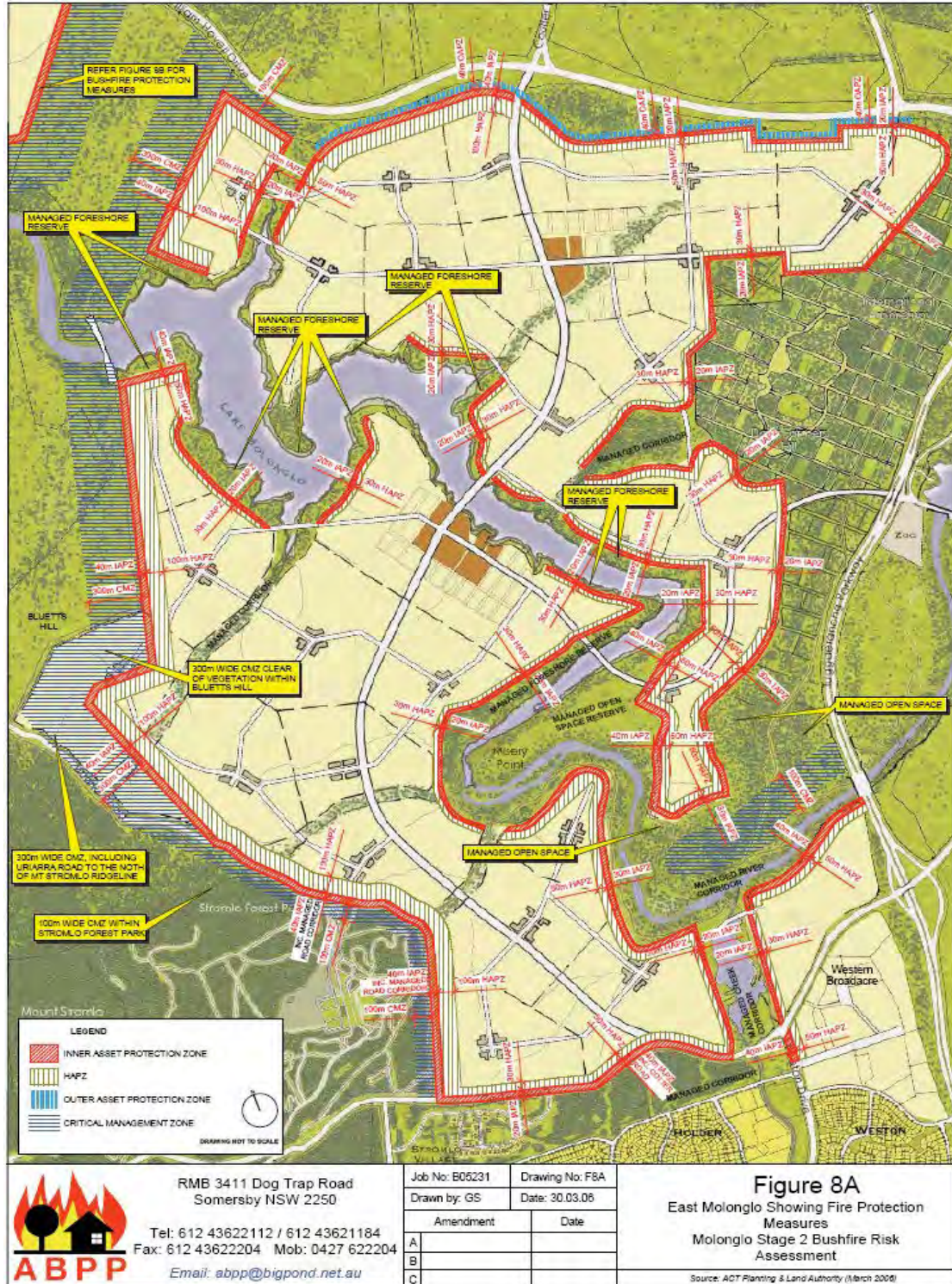
*The provision of the Critical Management Zone (CMZ) replaces the Outer Asset Protection Zone, as defined in the Strategic Bushfire Management Plan for the ACT and the management of this zone, in accordance with the performance standards defined in this report, are considered to be a mandatory requirement in the reduction of the bushfire risk to the future development within the Molonglo Valley.*

*In addition to the provision of a Critical Management Zone to the north-western edge of East Molonglo Precinct, this report recommends, due to the risk of fire over-run along the Molonglo River corridor and into the future suburb, the damming of the Molonglo River below Coppins Crossing and the creation of Lake Molonglo”.*

**Figure 15 – Extract from the Molonglo River Structure Plan Bushfire Risk Assessment Report 2005 showing the recommended Bushfire Protection Strategies.**



**Figure 16 – Extract from the Molonglo River Structure Plan Bushfire Risk Assessment Report Stage 2 - 2006 showing the recommended Bushfire Protection Strategies**



The recommendation contained within the latter report that damming of the Molonglo River below Coppins Crossing should occur to remove the bushfire risk along the river corridor was originally implemented in the Strategic Planning process, however is now not included in the Territory Plan.

The comments about the level of risk to the north-western edge and the risk posed by the retention of vegetation within the river corridor therefore defaults back to the original Bushfire Risk Assessment [19.7.2005] [refer to Figure 4 on Page 10] which recommended the implementation and management of a Critical Management Zone of at least 300 metres to the north-western edge of the new suburb and that the “Molonglo River Corridor through the East Precinct should be actively managed as a Village Park to prevent fire extension into the precinct”.

### ***Molonglo Valley Plan for Protection of Matters of National Environmental Significance – NES Plan:***

A review of the Molonglo Valley Plan for Protection of Matters of National Environmental Significance – NES Plan – September 2011 prepared by ACT Planning & Land Authority has identified that the aim of this document is to enhance the areas of Box Gum Woodland not only within the Molonglo River corridor but also within the Kama Nature Reserve and pockets of retained vegetation within the Molonglo Stage 3 precinct.

The document provides, under Section 2.3 – Bushfire Management Framework a ‘motherhood’ statement about bushfire management which reads:

*“Within the strategic assessment area fire management will be aimed at protection of both built assets and MNES values. This will be achieved through the identification of appropriate asset protection zones and application of hazard reduction techniques that will both:*

- *Ensure that the standards for fuel loads in the SBMP are met; and*
- *Protection MNES values through the use of sympathetic management techniques”.*

The aim of this document does not address the recommendation that the river corridor is managed as a ‘Village Park’ or the land to the west of Molonglo 3 and Denman Prospect is managed to mitigate the impact of fire on the north-western edge of the future urban development and from a fire spreading along the river corridor.

The NES Plan recommends that the following reports be prepared:

1. 'Molonglo River Park Concept Plan';
2. Kama Management Plan;
3. Management Plan for Patch GG; and
4. Management Plans for High and Moderate PTWL habitat.

### ***Molonglo River Park – Concept Plan prepared by Hassall [September 2011]:***

This document was prepared by Hassell in 2011 and states that one of the primary objectives of the plan is to manage bushfire risk and details the need to provide Inner and Outer Asset Protection Zones as required by the *Strategic Bushfire Management Plan for the ACT 2009* with the Inner Asset Protection Zone located within the urban envelope and the Outer Asset Protection Zone and Strategic Fire Advantage Zone [SFAZ] located within the park.

Section 3 – Investigation Summary of the Concept Plan states:

“Risk assessments completed for Coombs and Stage 2 urban development areas identified a high to extreme bushfire risk for future urban areas. The most significant risk is that of a fire moving from the west or northwest, from which it would not only threaten the peripheral urban development in these areas but also potentially penetrate deeper onto the development area by moving up the Molonglo River corridor”.

Under 'Additional Strategies' the report suggests that relevant group(s) further investigate the establishment of a 300 metre wide 'Critical Management Zone' to the northwest of the site – extending in a downstream direction from the north west limit of the park.

The table on Page 52 is an extract from the Concept Plan identifying the Fire Management Objectives and Strategies.

Figure 17 on Page 54 shows the Molonglo River Park Illustrative Concept Plan prepared by Hassell.

Figure 18 on Page 55 shows the Molonglo River Park Illustrative Landscape setting Plan prepared by Hassell.

Figure 19 on Page 56 shows the Molonglo River Park Fire Management Plan concept prepared by Hassell.

### Objectives and strategies

Objectives of fire management	Strategies
Mitigate bush fire hazard.	Active management of fuels associated with vegetation within the park.
Mitigate the potential for the riparian area to have a 'wicking' effect that could carry a fire deep into the urban area.	Creation of a mosaic landscape in which the potential for long runs of fire fuels are minimised.
Afford the occupants of the urban areas adjacent to the park protection from exposure to a bushfire.	Development and maintenance of an outer APZ that complies with ACT Emergency Services Agency (ESA) standards. (ACT SBMP)
Provide defensible space and adequate separation to minimise the chance of direct flame contact and material ignition, for any assets that could be vulnerable to a fire, which would be located within the park lands.	
Provide for the ongoing maintenance of fuel loads and vegetation continuity within the outer APZ and parklands.	
Ensure that emergency service personnel and parkland users have access to adequate access and egress in the event of a bush fire.	Development and maintenance of a network of roads and fire trails that meet emergency services access requirements.
Ensure that utility services, particularly water supplies, are adequate to meet the needs of fire fighters.	Provide water supplies suitable for use during fire and fuel management exercises.

The Molonglo River Park Concept Plan Report's focus of the 'Fire Management Theme' is on strategies for the control of vegetative fuels within the following specific areas:

- Critical Management Zone [CMZ] to the west of the park;
- Strategic discontinuity zones within the riparian corridor which aim to reduce the ability of a fire to move continuously up the corridor and into the urban areas, and provide access for defence and fuel management;
- Outer APZ adjacent to the urban interface [Inner APZ within the statutory urban area, not in the riparian parkland].

The Molonglo River Park Concept Plan Report states that the Critical Management Zone forms a key component of the overall strategy to reduce the potential for a fire to move up the riparian parkland and into the urban areas.

"The Critical Management Zone is a 300 metre wide zone extending from the western boundary of the proposed urban areas and the riparian parkland, in a downstream direction. This area would be managed to provide a strategic fire break or control line to reduce the impact of a fire moving from the west/northwest, towards the urban areas".

The report continues with advice on the strategic discontinuity zones and states that these zones “would be located at intervals within the parkland to reduce the potential for a fire to move continuously along the riparian corridor and potentially fuel an intense fire that could have catastrophic effects on the adjacent urban areas”.

“The development of strategic discontinuities within the riparian parkland responds to the significant hazard potentially affecting this area, which is located on the north-west fringe of Canberra and is therefore directly exposed to extreme fire weather and the potential fire hazard associated”.

“This strategy also responds to the potential of the riparian corridor itself to act as a ‘wick’, funnelling a fire, driven by hot, dry, north-westerly winds, onto the heart of the urban area. This risk is a function of the physical location and the orientation of the river corridor itself”.

“The discontinuity areas would be located:

- At the northwest extreme of the riparian area;
- Around, and to the west of Coppins Crossing, from the proposed sewer line crossing to the proposed extension of John Gordon Drive crossing the river;
- At Misery Point.

These areas would be characterised by more concentrated vehicle access and intense location of recreational facilities such as playing fields, parking areas, irrigated gardens and picnic areas. Alternatively, they would comprise open woodland/grassland habitat”.

“Vegetation in the recreation areas would have the following characteristics:

- Large areas of groomed grassland maintained to a height of less than 100mm;
- Scattered tree planting;
- Formal parks and gardens with irrigated plantings.

“Generally fuels in these areas would be maintained by mechanical mowing/slashing. Where areas of PTWL habitat occur, fuels would be managed in accordance with the TAMS *Pinked Tail Worm Lizard Fuel & Fire Suppression Guidelines [TAMS 2011]*”.

“Outer Asset Protection Zones would be developed in accordance with ESA standards and the following OAPZ are required: Primary asset interface classification – 100m; Secondary asset interface classification – 0 metres.

All vegetation within the riparian zone would be maintained as grassland or open woodland.

Figure 17 – Molonglo River Park Illustrative Concept Plan – Hassell.



Figure 13: Illustrative concept plan

**Settings Plan  
Legend**

- Statutory urban area boundary
- Arterial road
- River waterway/tributaries
- Urban Edge to inner APZ equivalent (BGW types nominal 20 m spacing/10 % canopy max cover)
- Woodland to outer APZ equivalent (nominal 18-20m spacing/10-30% canopy cover) (BGW types)  
Re-establish discontinuous canopy.
- PTWL/grassland habitat protection and re establishment areas (Temperate Grassland and BGW types)  
Re-establish woodland. Nominal 18-20m centres except in moderate to high quality potential PTWL habitat, which will be grassland (nominal 20 m+ tree spacing/10% canopy cover)
- Woodland (6-8 m spacing) (BGW types)  
Re-establish near continuous canopy except that required for recreation and pool settings.
- Riverine community (6-8 m spacing)(Riverine types)  
Re-establish continuous canopy except that required for recreation settings.

Figure 18 – Molonglo River Park Illustrative Landscape settings Plan – Hassell.



**Figure 19 – Molonglo River Park Fire Management Plan Concept – Hassell.**

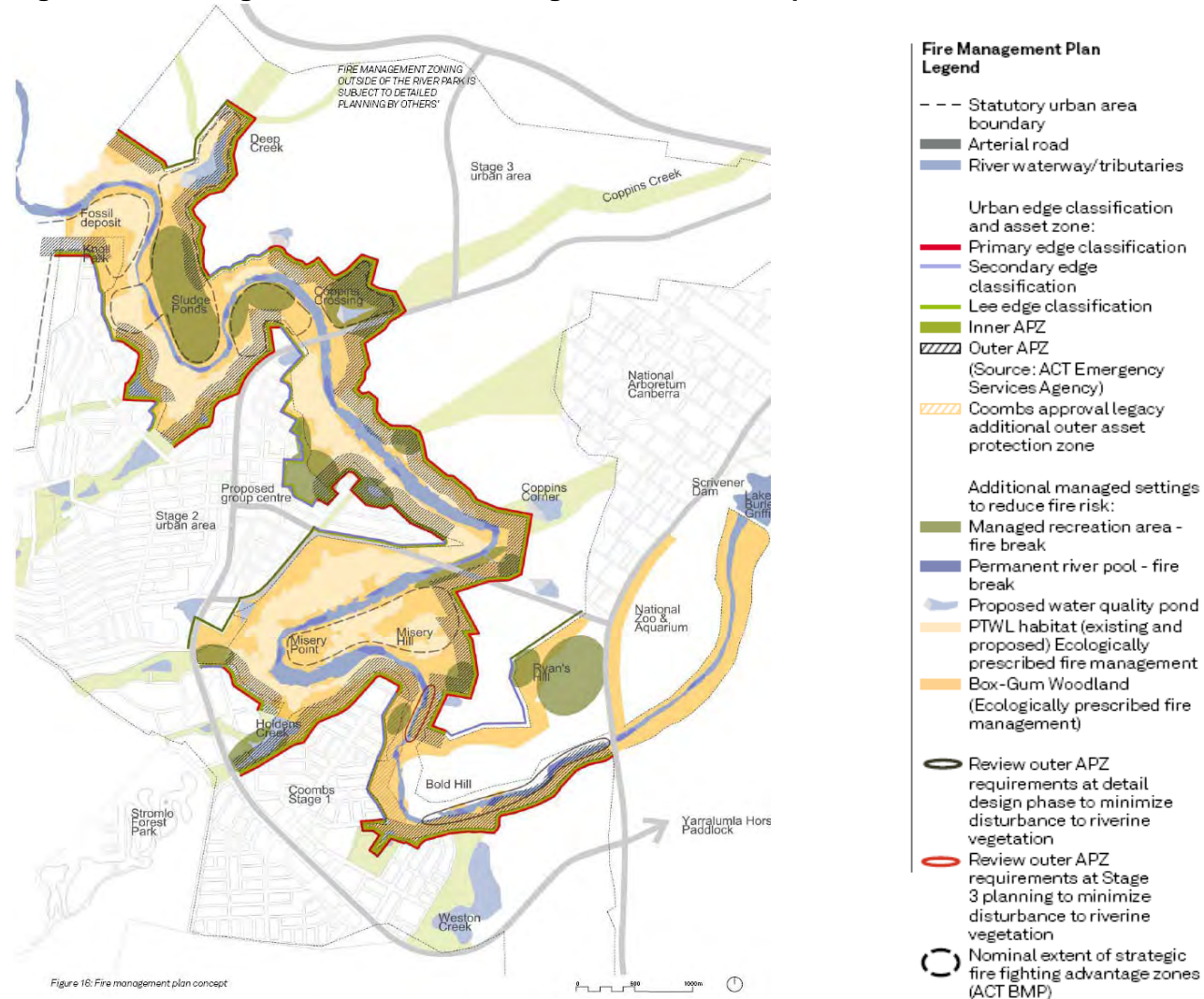


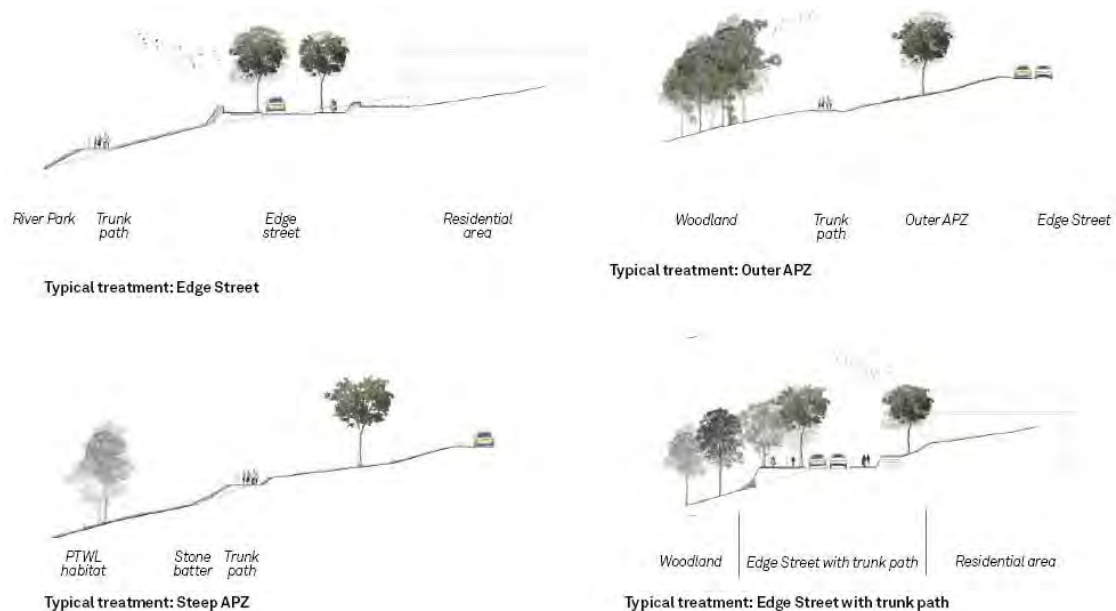
Figure 16: Fire management plan concept

Section 7 of the Concept Plan also provides recommendations on the provision of access and egress and states:

‘In addition to recreational access, where required within the park area, access and egress would be provided for emergency purposes and the maintenance of fire protection infrastructure. Road and trail standards would be designed in consultation with local emergency services to enable the traffic of emergency service vehicles and their access to adjacent, more natural areas of vegetation’.

Figure 20 below provides sectional details of the location of Trunk Paths/Emergency Service access.

**Figure 20 – Molonglo River Park – access – Hassell.**



Section 7 – Concept Plan – Fire Management Theme states:

“Under the ACT Strategic Bushfire Management Plan, a Fire Management Plan would be developed for the Molonglo Valley in accordance with Emergency Services Agency [ESA] standards. The plan would take into account consideration of the recommendations of the existing bushfire hazard assessments for the proposed adjacent urban areas. The Molonglo Valley Fire Management Plan would provide the basis for the development of an overarching Plan of Management for the riparian area and annual Operations Plan [BOP]”.

## Fire Management Plan – Molonglo River Corridor – TaMS – 2015

Figure 21, below, is a copy of the 'Indicative Fire Management Strategy – Urban Area prepared by TaMS.

Figure 21 – Indicative Fire Management Strategy – Urban Area [TaMS 2015]

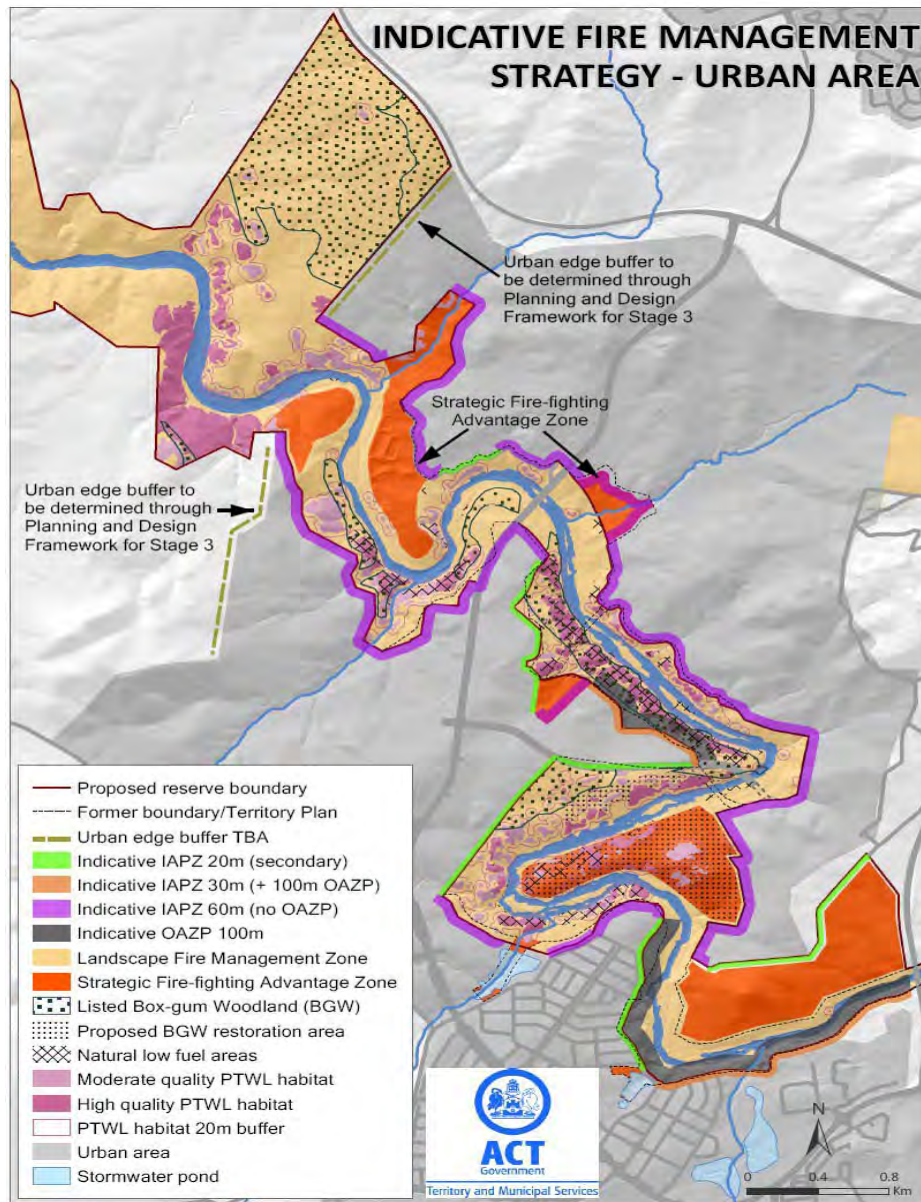
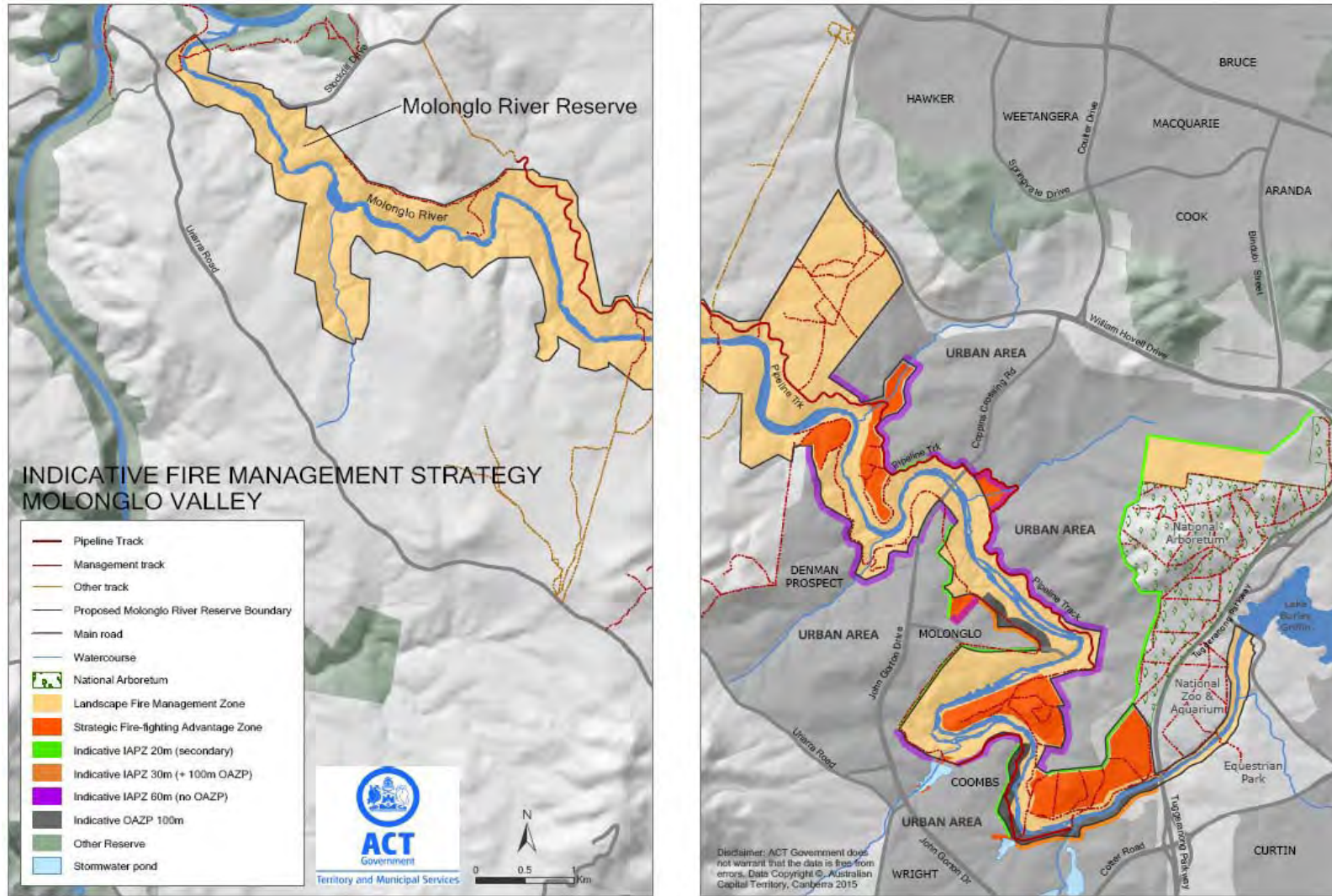


Figure 22 provides a copy of the Indicative Fire Management Strategy – Molonglo Valley prepared by TaMS.

Figure 22 – Indicative Fire Management Strategy – Molonglo Valley [TaMS 2015]



## **APPENDIX B – WORKING GROUP - MEETING DATES, LIST OF ATTENDEES & RESOLUTIONS**

In late 2013 the Land Development Agency [LDA] identified the need to bring together a working group to examine the outstanding issues relating to the bushfire risk to the north-western edge of Molonglo 3; Denman Prospect and the Molonglo River Corridor.

The brief of the Working Group was to bring together all Government Agencies involved in the development of the Molonglo East precinct to enable examination of previous studies, undertake site inspections and consider all options available so as to develop a report that establishes the principles, processes and funding required to address the bushfire risk.

Representatives of Government Agencies included:

- Dave Richardson [LDA];
- Kerry Browning [LDA];
- Adam Carmody [LDA];
- Dylan Kendall [TaMS];
- Adam Leavesley [TaMS];
- Nick Lhuede [ESA];
- Greg Potts [ACT RFS];
- Conrad Barr [Acting Chief Officer] ACT Fire & Rescue;
- Andrew Starke – Commissioner ACT Rural Fire Service;
- Ros Ransome [TaMS];
- Steven Gianakis [EPD];
- Daniel Iglesias [TaMS];
- Tony Corrigan [TaMS]; and
- Stuart McKenzie [EPD]

Two external companies were commissioned to provide assistance to the Working Group, Umwelt to undertake a peer review of the previous ecological studies and additional ecological investigations and ABPP to provide advice on bushfire risk, fire protection strategies and the preparation of a Bushfire Mitigation Strategy Report.

These companies were represented by;

- Peter Cowper Armstrong [Umwelt];
- Rob Armstrong [Umwelt]; and
- Graham Swain [ABPP].

Initially the Working Group consisted of representatives of LDA, ABPP and Umwelt.

A workshop was held on the 28<sup>th</sup> May 2014 with the aim to establish initial understanding of ecological values and management requirements and development of feasible options to manage bushfire risk. Attendees were:

- Dave Richardson [LDA];
- Kerry Browning [LDA];
- Adam Carmody [LDA];
- Dylan Kendall [TaMS];
- Peter Cowper Armstrong [Umwelt];
- Rob Armstrong [Umwelt]; and
- Graham Swain [ABPP].

Umwelt were commissioned to review the existing reports/studies and undertake field surveys and investigation into the vegetation and ecological values in Kama.

The results of this study are contained in the separate document attached as Attachment A.

Initial findings on the extent of the ecological value of the vegetation within Kama varied from the previous studies.

A second workshop was held on the 29<sup>th</sup> July 2014 with the aim to undertake a wider consultation with key fire planners within TaMS and ESA; establish a broader understanding of ecological values and management requirements and further development of feasible options to manage fire risk. Attendees were:

- Dave Richardson [LDA];
- Daniel Santosuosso [LDA];
- Adam Carmody [LDA];
- Dylan Kendall [TaMS];
- Adam Leavesley [TaMS];
- Nick Lhuede [ESA],
- Greg Potts [ACT RFS];
- Conrad Barr [Acting Chief Officer] ACT Fire & Rescue;
- Peter Cowper [Umwelt];
- Rob Armstrong [Umwelt]; and
- Graham Swain [ABPP].

Various options were considered in the methods of providing protection to the north-western edge of Molonglo 3 including support for the provision of an Asset Protection Zone within Molonglo 3 with the vegetation within Kama managed as a Strategic Fire Advantage Zone [SFAZ], provided that adequate on-going funding was available to support the management works in perpetuity.

Following discussions on the protection measures for Denman Prospect, Umwelt were commissioned to review the existing reports/studies and undertake field surveys and investigation into the vegetation and ecological values of the vegetation within the north-western portion of Denman Prospect and the adjoining land to the northwest.

A third workshop was held on the 21<sup>st</sup> October 2014 with the aim of confirming the proposed management of the north-western edge of Molonglo 3 and examining options for fire management of the western edge to Denman Prospect and the Molonglo River Corridor.

Attendees were:

- Dave Richardson [LDA];
- Daniel Santosuosso [LDA];
- Adam Carmody [LDA];
- Adam Leavesley [TaMS];
- Greg Potts [ACT RFS] & Conrad Barr [Acting Chief Officer ACT Fire & Rescue];
- Peter Cowper & Rob Armstrong [Umwelt];
- Ros Ransome [TaMS]; and
- Graham Swain [ABPP].

At this meeting it was agreed that to the north-western edge of Molonglo 3 the proposed fire management zones would consist of:

1. A 60 metre wide Inner Asset Protection Zone, located inside the western edge to the Molonglo Stage 3 precinct;
2. A Fire Trail would be constructed along the boundary with Kama – inside the Molonglo Stage 3 precinct;
3. A managed fire break would be provided in Kama, adjacent to the boundary with Molonglo Stage 3;
4. That the vegetation within Kama would be managed in a series of Strategic Fire Advantage Zones, in accordance with the prescriptions provided by the *Strategic Bushfire Management Plan for the ACT – 2009* – refer to Appendix C – Plan of proposed Bushfire Management Strategies – Kama/Molonglo 3 Western Edge.

Existing access trails would be maintained and managed to provide edges to the Strategic Fire Advantage Zones – refer to Appendix C – Plan of proposed Bushfire Management Strategies – Kama/Molonglo 3 western edge.

5. The proposed management strategies were supported by ESA provided adequate on-going funding was available to support the works in perpetuity.

The meeting also resolved to examine the fire management options for Denman Prospect provided by ABPP and resolved to assess these options in the field.

It was also agreed to inspect the line of the Asset Protection Zone to the north of the river corridor, as determined with [TaMS]. This meeting was attended by Dave Richardson; Nick Lhuede; Adam Leavesley and Daniel Santosuosso and agreement reached that a 60 metre wide Inner Asset Protection Zone [IAPZ] be provided to the full length of the river corridor, measured from the outside of the existing Sewer Access Track.

Where stormwater management ponds occurred, the IAPZ will include these facilities.

The acceptance by ESA of the 60 metre wide IAPZ was predicated on the vegetation within the river corridor being managed as a Strategic Fire Advantage Zone which is to be maintained to the standards prescribed by the *Strategic Bushfire Management Plan for the ACT – 2014 – Version 3*.

An inspection of the western edge of Denman Prospect and adjoining land to the northwest was undertaken on the 28<sup>th</sup> November 2014. Attendees were:

- Dave Richardson [LDA];
- Daniel Santosuosso [LDA];
- Adam Leavesley [TaMS];
- Nick Lhuede [ESA],
- Greg Potts [ACT RFS];
- Conrad Barr [ESA][Acting Chief Officer ACT Fire & Rescue],
- Andrew Starke – Commissioner ACT Rural Fire Service;
- Rob Armstrong [Umwelt]; and
- Graham Swain [ABPP].

General consensus was reached on the location of the proposed fire protection measures which include the provision of a 60 metre wide IAPZ to the full length of the urban edge; management of a varying width Outer Asset Protection Zone [OAPZ] between the IAPZ and the retained forest vegetation and the management of the Territory Land to the northwest and west of the fire protection zones as a Strategic Fire Advantage Zone/s.

Whilst this consensus was broadly spread across the group concern was raised by ESA over the Strategic Fire Advantage Zone extending beyond the boundary of the Denman Prospect precinct and that this issue needed to be addressed before the final support of ESA would be considered.

Another matter raised by ESA related to the environmental consequences of the management of the proposed Outer Asset Protection Zones SFAZs and the cost of the ongoing management and the long term funding of the management program.

To address the matter of possible environmental consequences of the management of the proposed SFAZs, Umwelt were commissioned to undertake further studies to determine the location of vegetation communities, threatened species and the viability of management of the vegetation to achieve the fuel loads required in a SFAZ.

The results of the study are contained in the Umwelt Report attached as Attachment B.

The Umwelt report identifies an increase in the extent of Box Woodland, confirms the location of Pink Tailed Worm Lizard habitat and also confirms that the management of the SFAZs by hazard reduction burning is ecologically sustainable.

The Umwelt report has been reviewed by Adam Leavesley [TaMS].

An inspection of the southern side of the Molonglo River corridor was undertaken on the 19<sup>th</sup> March 2015.

Attendees were:

- Dave Richardson [LDA];
- Daniel Santosuosso [LDA];
- Adam Leavesley [TaMS];
- Rob Armstrong [Umwelt]; and
- Graham Swain [ABPP].

This inspection examined the bushfire risk to the western edge of the Molonglo River Park and the fire paths/vegetation along the river corridor to the bend in the river, east of the Group Centre precinct.

Consensus was reached that the fire protection principle developed for the northern edge of the corridor [60 metre wide IAPZ within the urban development and management of the river corridor as a SFAZ] would be applied along the southern edge of river corridor.

## **ATTACHMENT A – BRIEFING NOTE**

**UMWELT – 15<sup>th</sup> October 2013.**



Inspired People.  
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Quality Outcomes.

## Briefing Note

**To:** Daniel Santosuosso, ACT Land Development Agency  
**cc:** Dave Richardson, ACT Land Development Agency  
**From:** Peter Cowper, Umwelt (Australia) Pty. Limited  
**Author:** Rob Armstrong, Umwelt (Australia) Pty. Limited  
**Date:** 15<sup>th</sup> October 2013  
**Subject:** Ecological values of the Kama Nature Reserve – Molonglo Stage 3 outer asset protection zone

### Purpose

The purpose of this briefing note is to inform the ACT land development agency of the ecological values of the outer asset protection zone for the interface between Kama Nature Reserve and the Molonglo Stage 3 development.

### Contents

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3.2	Area within the Molonglo stage 3 development	4
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5.0	Site Photographs	7
6.0	References	9

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## 1.0 Site location

Based on advice from the ACT Land development Agency, the areas which may be managed as part of the outer asset protection zone may include an area of 200 metres either side of the eastern boundary of Kama Nature Reserve. The location of this area is shown in **Figure 3.1**.

## 2.0 Methods

While undertaking a broader ecological assessment of Kama Nature Reserve and the Molonglo stage 3 development area on 24 September 2013 as part of the review of the draft Environmental Offsets Calculator (Umwelt 2013)<sup>1</sup>, Umwelt ecologists undertook a meandering search to verify the ecological assessment undertaken as part of the Molonglo NES plan. Meandering searches considered general condition, the presence of a native understorey, the potential presence and condition of threatened ecological communities and potential habitat for threatened species.

Additionally, one 20x20 full-floristic quadrat which was assessed as part of subsequent condition assessment undertaken by Eco Logical Australia (2013)<sup>2</sup> was surveyed in order to validate findings of this report.

### Vegetation survey

**Meandering search:** Unsystematic wandering across the entire block to supplement floristic information from plot assessment, gain an understanding of species distribution, characterise vegetation communities and determine habitat values.

**Full-floristic quadrat sampling:** Plot survey to recording cover and abundance of each plant within a defined area. To ensure assessment is in line with ACT Government (2013)<sup>3</sup>, a 20x20 metre (0.04 hectare) plot size was chosen to collect species richness data, with habitat variables and cover variables assessed within a 20x50 metre plot and along a 50 metre line-intersect transect respectively.

## 3.0 Findings

### 3.1 Area within Kama Nature Reserve

The ecological condition of the 200 metre area inside the eastern boundary of Kama Nature Reserve is variable, comprised of a mosaic of high condition box-gum woodland, low condition natural temperate grassland and low condition scribbly gum woodland. The ecological condition of each vegetation type is outlined in **Table 3.1** and shown in **Figure 3.1**.

**Table 3.1 – Ecological condition of vegetation within the eastern 200 metre strip of Kama Nature Reserve**

Vegetation zone	Ecological condition
Natural temperate grassland (VT3)	<p>The natural temperate grassland area is characterised by a high cover of kangaroo grass (<i>Themeda triandra</i>) and tall speargrass (<i>Aurolotipa bigeniculata</i>), with few inter-tussock spaces and a low diversity of native forbs. There are few uncommon native species and some disturbance tolerant species in addition to a high cover of the invasive St John's wort (<i>*Hypericum perforatum</i>). The area has been subjected to moderate alteration through historic grazing management.</p> <p>The area was assessed in line with the Botanical Significance Rating (BSR) for natural temperate grassland as defined by the ACT lowland native grassland conservation strategy (ACT Government 2005)<sup>4</sup>. At present, the area is considered to be a mosaic of moderate (BSR 3) and low (BSR 4) condition. With an appropriate level of active</p>

<sup>1</sup> Umwelt (2013a) Review of ACT Environmental Offsets Calculator. Stage 2. Draft July 2013. Prepared by Umwelt (Australia) Pty Limited on behalf of ACT Land Development Agency.

<sup>2</sup> Eco Logical Australia (2013) Molonglo valley vegetation survey: baseline condition assessment. Prepared for Design & Development, Territory & Municipal Services Directorate (ACT Government), 1 July 2013.

<sup>3</sup> ACT Government (2013) Environmental Offsets Calculator Operational Manual. ACT Environment and Sustainable Development Directorate. Version 20130301.

<sup>4</sup> ACT Government (2005) A vision splendid of the grassy plains extended: ACT lowland native grassland conservation strategy. Action Plan No. 28 (Arts, Heritage and Environment, Canberra).

	<p>management to reduce biomass and maintain inter-tussock spaces, the area is likely to be of moderate (BSR 3) value.</p> <p>The area is considered to be part of the 'natural temperate grassland of the Southern Tablelands of NSW and the Australian Capital Territory' endangered ecological community under the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>, and 'natural temperate grassland' endangered ecological community under the ACT <i>Nature Conservation Act 1980</i>.</p> <p>Using condition criteria of ACT Government (2013), this area is in 'moderate/good' condition on the basis that if vegetation is not typified by the presence of paddock trees or native pasture (low condition) then it is in moderate to good condition.</p>
<p>Blakely's red gum - yellow box grassy woodland (box-gum) (partially cleared) (VT1a)</p>	<p>The partially cleared box-gum woodland area is characterised by an open woodland overstorey of Blakely's red gum (<i>Eucalyptus blakelyi</i>) which is likely to be have been historically thinned for grazing or other agricultural and land management purposes. The understorey is a mosaic of a moderate to high cover of tussock grasses as per the natural temperate grassland, with approximately 30-40% of the area dominated by exotic pasture patches including wild oats (<i>Avena</i> spp.), barley grass (<i>Hordeum</i> spp.) and rat's-tail fescue (<i>Vulpia myuros</i>), as well as St John's wort and sweet briar (<i>Rosa rubiginosa</i>). In native areas there are species which indicate high condition such as blue devil (<i>Eryngium ovinum</i>) and early nancy (<i>Wurmbea dioica</i> subsp. <i>dioica</i>). However, the understorey is not as diverse as box-gum remnants in the central and western portions of Kama Nature Reserve.</p> <p>The area was assessed in line with condition categories in the ACT lowland woodland conservation strategy (ACT Government 2004)<sup>5</sup>. The area is considered to be 'moderately modified lowland woodland'.</p> <p>The area is considered to be part of the 'white box-yellow box-Blakely's red gum grassy woodland and derived native grassland' critically endangered ecological community under the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>, and 'yellow box – red gum grassy woodland' endangered ecological community under the ACT <i>Nature Conservation Act 1980</i>.</p> <p>Using condition criteria of ACT Government (2013), this area is in 'paddock trees' condition. Native over-storey percent foliage cover is less than 25% of the lower value of the overstorey percent foliage cover benchmark for the relevant vegetation type and less than 50% of ground cover perennial vegetation is indigenous species.</p>
<p>Blakely's red gum - yellow box grassy woodland (box-gum) (VT1)</p>	<p>The box-gum woodland area is characterised by a woodland overstorey of Blakely's red gum and yellow box (<i>E. melliodora</i>). The understorey is considered to be in high condition, with a suite of native grasses such as kangaroo grass (<i>Themeda triandra</i>), wallaby grasses (<i>Rytidosperma</i> spp.) weeping grass (<i>Microlaena stipoides</i> var. <i>stipoides</i>) and <i>Aristida vagans</i>, and forbs including blue devil, early nancy, common sunray (<i>Triptilodiscus pygmaeus</i>), scaly buttons (<i>Leptorhynchos squamatus</i>), and the native small St John's wort (<i>Hypericum gramineum</i>).</p> <p>The area was assessed in line with condition categories in the ACT lowland woodland conservation strategy (ACT Government 2004). The area is considered to be 'partially modified lowland woodland'.</p> <p>As a result of the ground layer vegetation diversity and floristic composition, the area is considered to be relatively good quality example of the 'white box-yellow box-Blakely's red gum grassy woodland and derived native grassland' critically endangered ecological community under the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>, and 'yellow box – red gum grassy woodland' endangered ecological community under the ACT <i>Nature Conservation Act 1980</i>.</p> <p>Using condition criteria of ACT Government (2013), this area is in 'moderate/good'</p>

<sup>5</sup> ACT Government (2004) Woodlands for wildlife: ACT lowland woodland conservation strategy. Action Plan No. 27 (Environment ACT, Canberra).

	condition. If vegetation is not in low condition on the basis that if vegetation is not typified by the presence of paddock trees or native pasture (low condition) then it is in moderate to good condition.
Scribbly gum grassy open forest (partially cleared) (VT2a)	<p>The scribbly gum grassy open forest area is characterised by isolated scribbly gum (<i>Eucalyptus rossii</i>) and less frequently, red stringybark (<i>E. macrorhyncha</i>), broad-leaved peppermint (<i>E. dives</i>) and Blakely's red gum. Like VT2 below, the dominance of scribbly gum is possibly due to reduced fertility and soil depth associated with areas at higher elevations within the reserve. The understorey is highly degraded, and dominated by wild oats (<i>Avena</i> spp.), brome (<i>Bromus</i> spp.) and ryegrass (<i>Lolium</i> spp.). Some patches are dominated by native grasses including tall speargrass, wallaby grasses (<i>Rytidosperma</i> spp.) and red-leg grass (<i>Bothriochloa macra</i>). Exotic forbs such as Paterson's curse (<i>Echium plantagineum</i>) and St John's wort are common.</p> <p>The area was assessed in line with condition categories in the ACT lowland woodland conservation strategy (ACT Government 2004). The area is considered to be 'substantially modified lowland woodland'.</p> <p>Using condition criteria of ACT Government (2013), this area is in 'paddock trees' condition. Native over-storey percent foliage cover is less than 25% of the lower value of the overstorey percent foliage cover benchmark for the relevant vegetation type and less than 50% of ground cover perennial vegetation is indigenous species</p>
Scribbly gum grassy open forest (VT2)	<p>The scribbly gum grassy open forest area is characterised by scribbly gum (<i>Eucalyptus rossii</i>) and occasional Blakely's red gum. The dominance of scribbly gum is possibly due to reduced fertility and soil depth associated with areas at higher elevations within the reserve. The understorey is in reasonable condition and is floristically similar to VT1. Dominant species include rough speargrass (<i>Austrostipa scabra</i> subsp. <i>falcata</i>), short wallaby grass (<i>Rytidosperma carphoides</i>), ringed wallaby grass (<i>R. caespitosum</i>), kangaroo grass and a range of forbs including scaly buttons, stinking pennywort (<i>Hydrocotyle laxiflora</i>), spoon cudweed (<i>Stuartina muelleri</i>), wood sorrel (<i>Oxalis perennans</i>) and Austral stonecrop (<i>Crassula sieberiana</i>).</p> <p>The area was assessed in line with condition categories in the ACT lowland woodland conservation strategy (ACT Government 2004). The area is considered to be 'partially modified lowland woodland'.</p> <p>Using condition criteria of ACT Government (2013), this area is in 'moderate/good' condition. If vegetation is not in low condition (paddock trees or native pasture) then it is in moderate to good condition.</p>

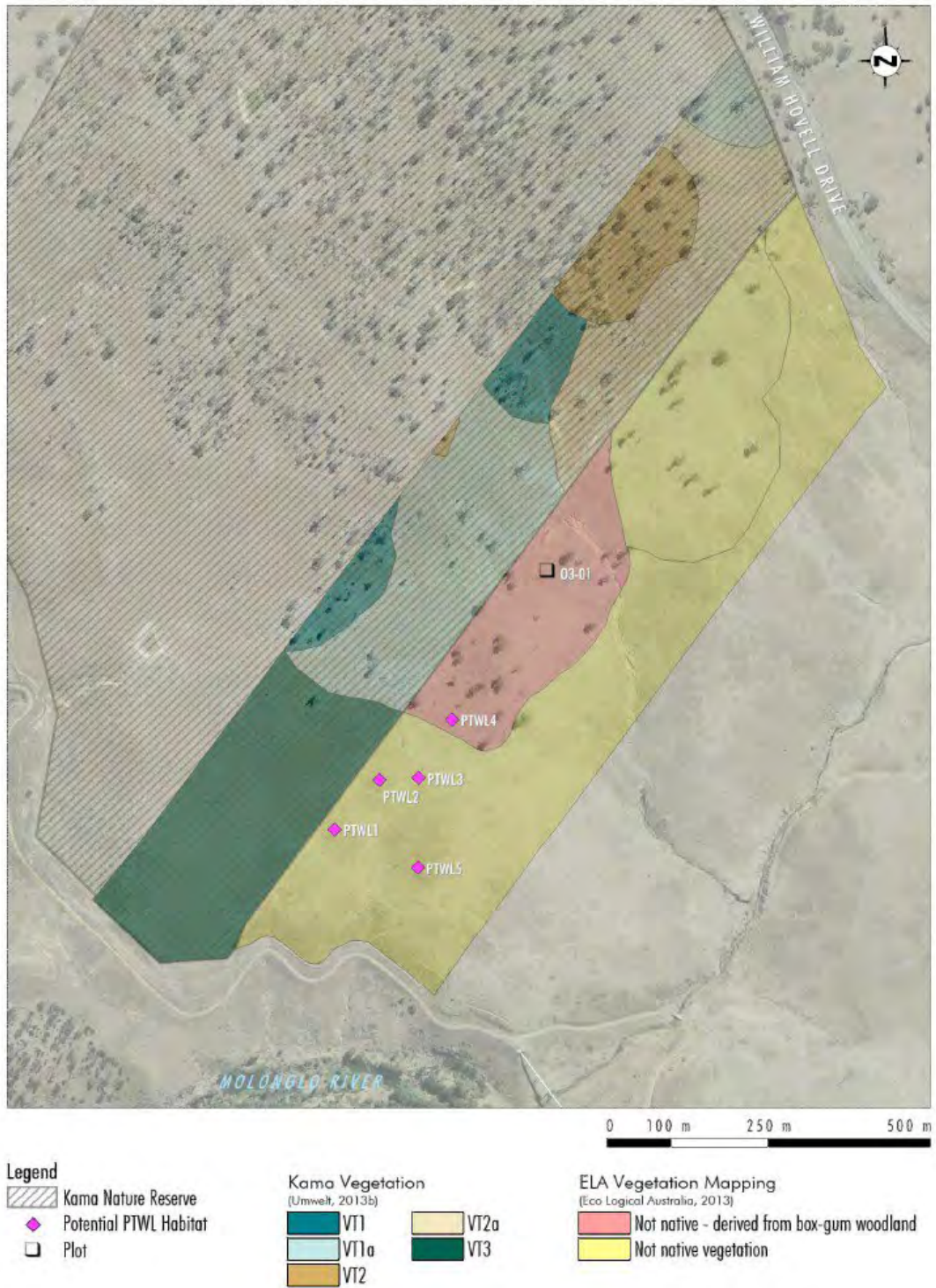
### 3.2 Area within the Molonglo stage 3 development

The ecological condition of the 300 metre area of the western boundary of Molonglo stage 3 development (adjoining Kama Nature Reserve) is generally low, consisting of degraded exotic pastures, and an area containing scattered Blakely's red gum with an exotic understorey. Vegetation type and condition mapping undertaken by ELA (2013) provides a fair representation of ecological values. As requested in project brief, a full-floristic plot surveyed by ELA (2013) (plot O3-01) was surveyed, confirming that the area is dominated by exotic pasture grasses.

The only feature of ecological significance is the presence of five potential pink-tailed worm lizard (*Aprasia parapulchella*) habitat areas. One of these (location PTWL1) is within a patch of diverse native grasses, whereas the others are of moderate to low value due to a higher abundance of Phalaris (*Phalaris aquatica*) and wild oats (*Avena* spp.) These areas are mapped as moderate habitat quality by Osborne & Wong (2010)<sup>6</sup>.

<sup>6</sup> Osborne W & Wong D (2010) Extent of potential pink-tailed worm-lizard (*Aprasia parapulchella*) habitat in the Stage 2 Investigation Area – East Molonglo downstream of Coppins Crossing. Report commissioned by ACTPLA.

The location of these potential areas is shown in **Figure 3.1**.



**Figure 3.1 - Ecological assets of the outer asset protection zone including potential pink-tailed worm lizard habitat.**

Vegetation types within Kama Nature Reserve are as follows (Umwelt 2013b)<sup>7</sup>:

VT1:	Blakely's red gum - yellow box grassy woodland
VT1a:	Derived mixed exotic and native grassland (derived from VT1)
VT2:	Scribbly gum grassy open forest
VT2a:	Scribbly gum grassy open forest (partially cleared)
VT3:	Natural temperate grassland

#### 4.0 Conclusions & Recommendations

- The ecological condition of the eastern 200 metres of Kama Nature Reserve are generally moderate to high within areas of 'box-gum' woodland and natural temperate grassland. While there are patches dominated by exotic flora which are likely to be improved with some active management. Specifically, the natural temperate grassland and box-gum areas could benefit from active St John's wort control both in areas adjacent to the Molonglo stage 3 development, and broadly across the reserve.
- The ecological condition of the scribbly gum woodland is generally low due to a dominance of exotic perennial grasses. It may be difficult to restore these areas to their former value, although supplementary tree planting may assist in a move towards this by reducing the available sunlight to the exotic grasses.
- There are at least five potential pink-tailed worm lizard habitat areas within areas identified as the Molonglo stage 3 outer asset protection zone; there may be additional based on findings by Osborne & Wong (2010). It is recommended that these be considered in the context of the Molonglo Valley NES Plan and associated implications for development in meeting obligations under the approved strategic assessment.

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<sup>7</sup> Umwelt (2013b) Briefing note: vegetation mapping for Kama Nature Reserve, Molonglo. Prepared by Umwelt Pty Limited for Daniel Santosuosso, ACT Land Development Agency. 11 October 2013.

## 5.0 Site Photographs

**Photo 1:** Natural temperate grassland in the south-eastern corner of Kama Nature Reserve, with considerable cover of exotic St John's Wort.



**Photo 2:** Blakely's red gum - yellow box grassy woodland (box-gum) (partially cleared) (VT1a), inside Kama Nature Reserve.



**Photo 3:** Scribbly gum grassy open forest (partially cleared), with a mosaic of native and perennial exotic grass understorey, inside Kama Nature Reserve.

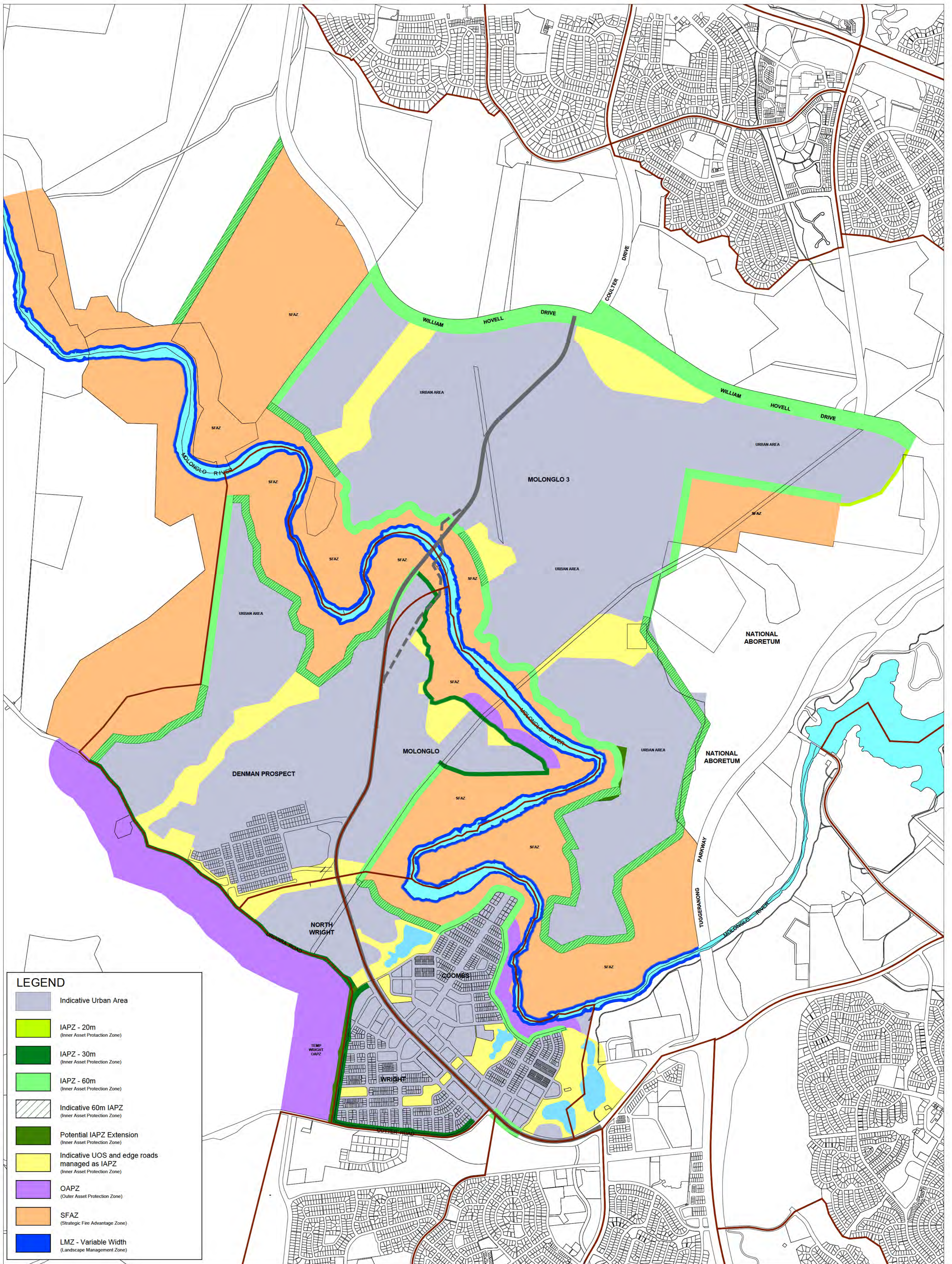


**Photo 4:** Exotic Phalaris and wild oats dominated pastures, inside the Molonglo stage 3 development area.



**ATTACHMENT B – ANALYSIS OF VEGETATION STRUCTURE AND  
FIRE RISK – WEST DENMAN PROSPECT**

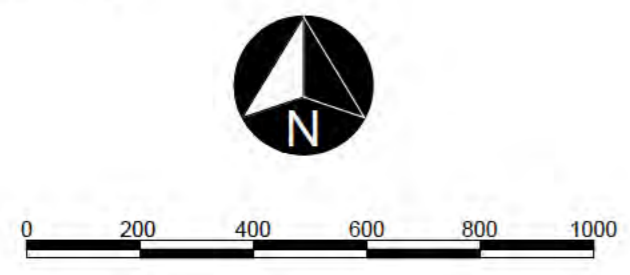
**UMWELT – April 2015.**



**LEGEND**

- Indicative Urban Area
- IAPZ - 20m  
(Inner Asset Protection Zone)
- IAPZ - 30m  
(Inner Asset Protection Zone)
- IAPZ - 60m  
(Inner Asset Protection Zone)
- Indicative 60m IAPZ  
(Inner Asset Protection Zone)
- Potential IAPZ Extension  
(Inner Asset Protection Zone)
- Indicative UOS and edge roads  
managed as IAPZ  
(Inner Asset Protection Zone)
- OAPZ  
(Outer Asset Protection Zone)
- SFAZ  
(Strategic Fire Advantage Zone)
- LMZ - Variable Width  
(Landscape Management Zone)

SCALE/NORTHPOINT



DIRECTORATE/DEPARTMENT



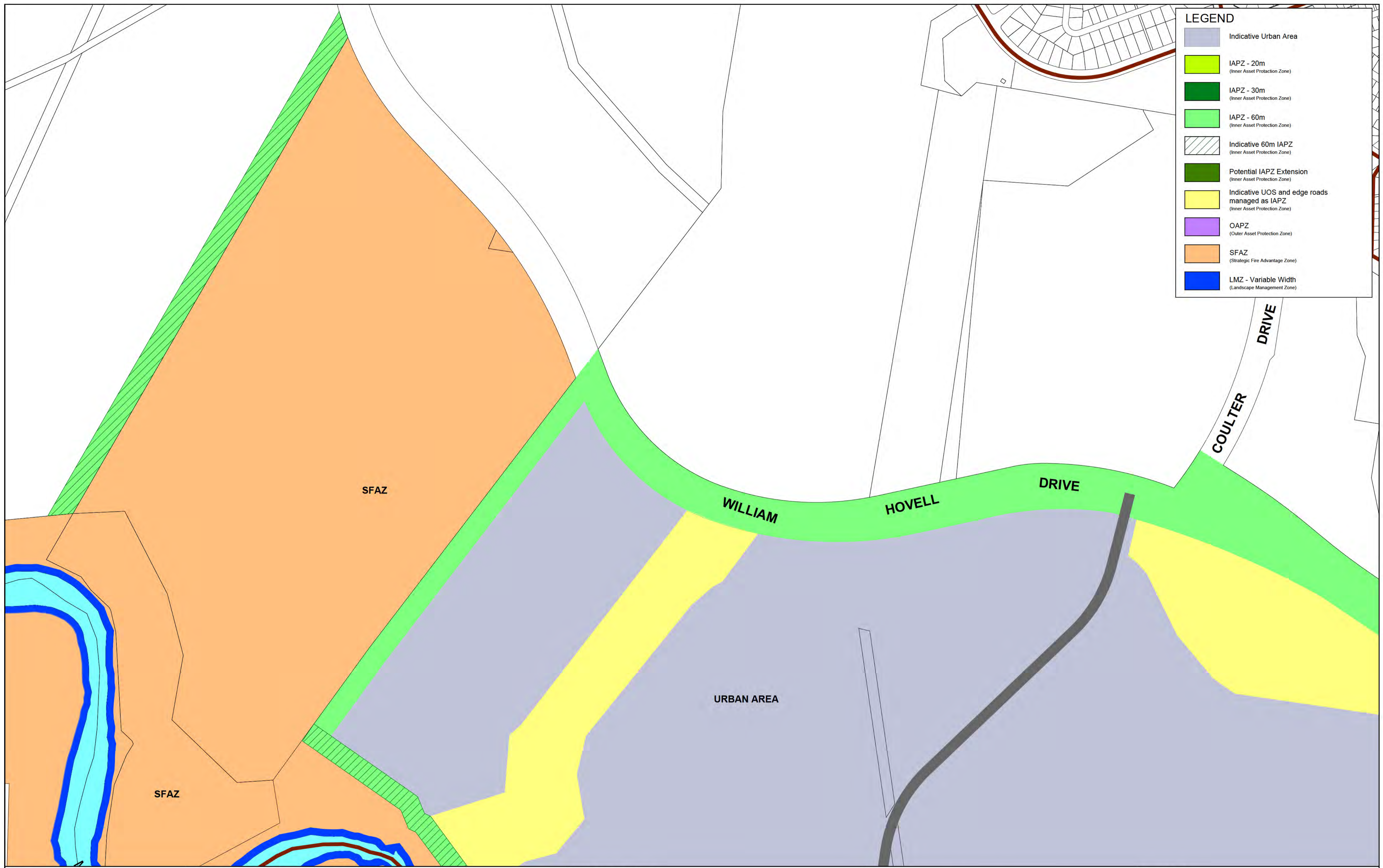
PROJECT

Molonglo Valley

DRAWING TITLE

Bushfire Management Plan

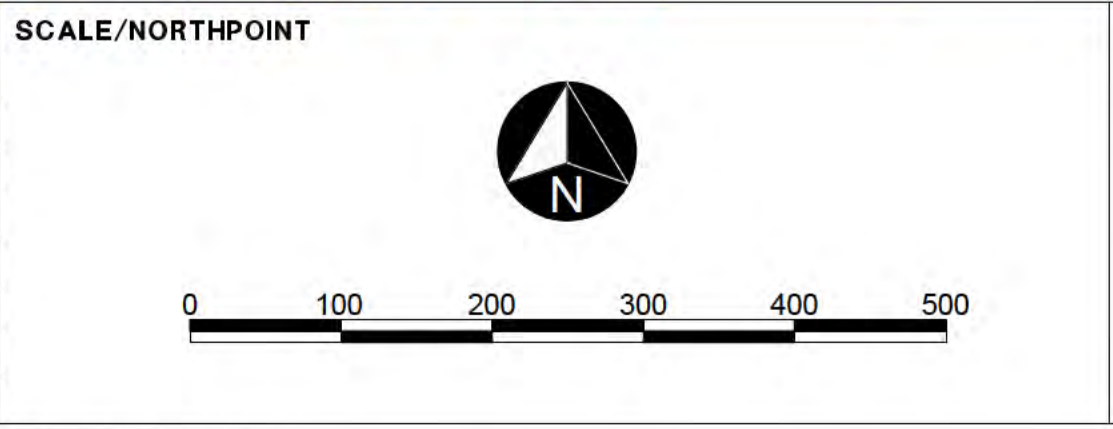
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DATE ISSUED:		Plot Time/Date: 18 May 2015 12:21:26 PM



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(Inner Asset Protection Zone)
- IAPZ - 30m  
(Inner Asset Protection Zone)
- IAPZ - 60m  
(Inner Asset Protection Zone)
- Indicative 60m IAPZ  
(Inner Asset Protection Zone)
- Potential IAPZ Extension  
(Inner Asset Protection Zone)
- Indicative UOS and edge roads managed as IAPZ  
(Inner Asset Protection Zone)
- OAPZ  
(Outer Asset Protection Zone)
- SFAZ  
(Strategic Fire Advantage Zone)
- LMZ - Variable Width  
(Landscape Management Zone)

No.	REVISION DESCRIPTION	APPROVED BY	DATE	REVISED BY	SCALE/NORTHPOINT



DIRECTORATE/DEPARTMENT

Land Development Agency  
CANBERRA FIRST

PROJECT

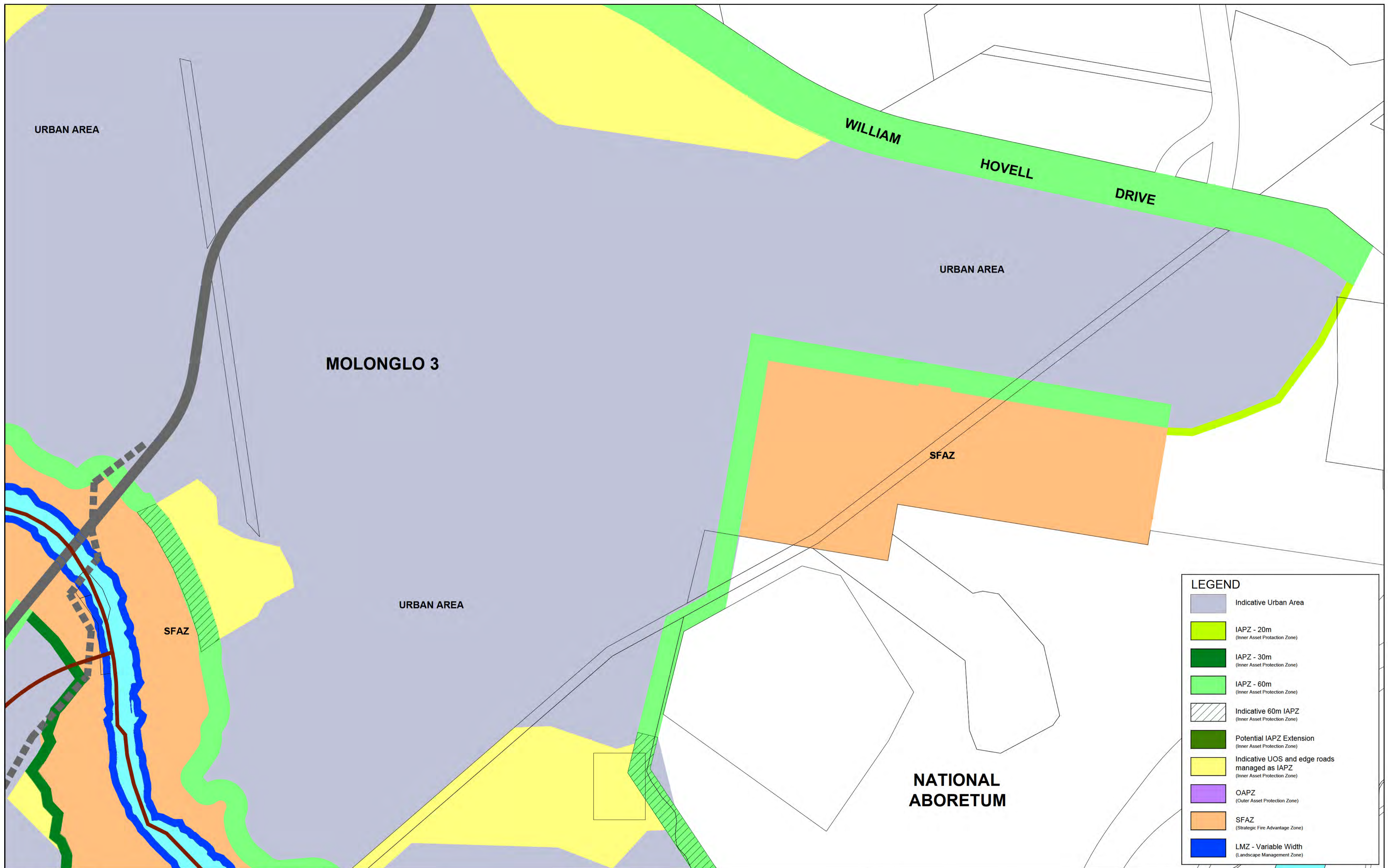
## Molonglo Valley

DRAWING TITLE

### Bushfire Management Plan

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LEGEND	
	Indicative Urban Area
	IAPZ - 20m (Inner Asset Protection Zone)
	IAPZ - 30m (Inner Asset Protection Zone)
	IAPZ - 60m (Inner Asset Protection Zone)
	Indicative 60m IAPZ (Inner Asset Protection Zone)
	Potential IAPZ Extension (Inner Asset Protection Zone)
	Indicative UOS and edge roads managed as IAPZ (Inner Asset Protection Zone)
	OAPZ (Outer Asset Protection Zone)
	SFAZ (Strategic Fire Advantage Zone)
	LMZ - Variable Width (Landscape Management Zone)

No.	REVISION DESCRIPTION	APPROVED BY	DATE	REVISED BY

SCALE/NORTHPOINT

DIRECTORATE/DEPARTMENT

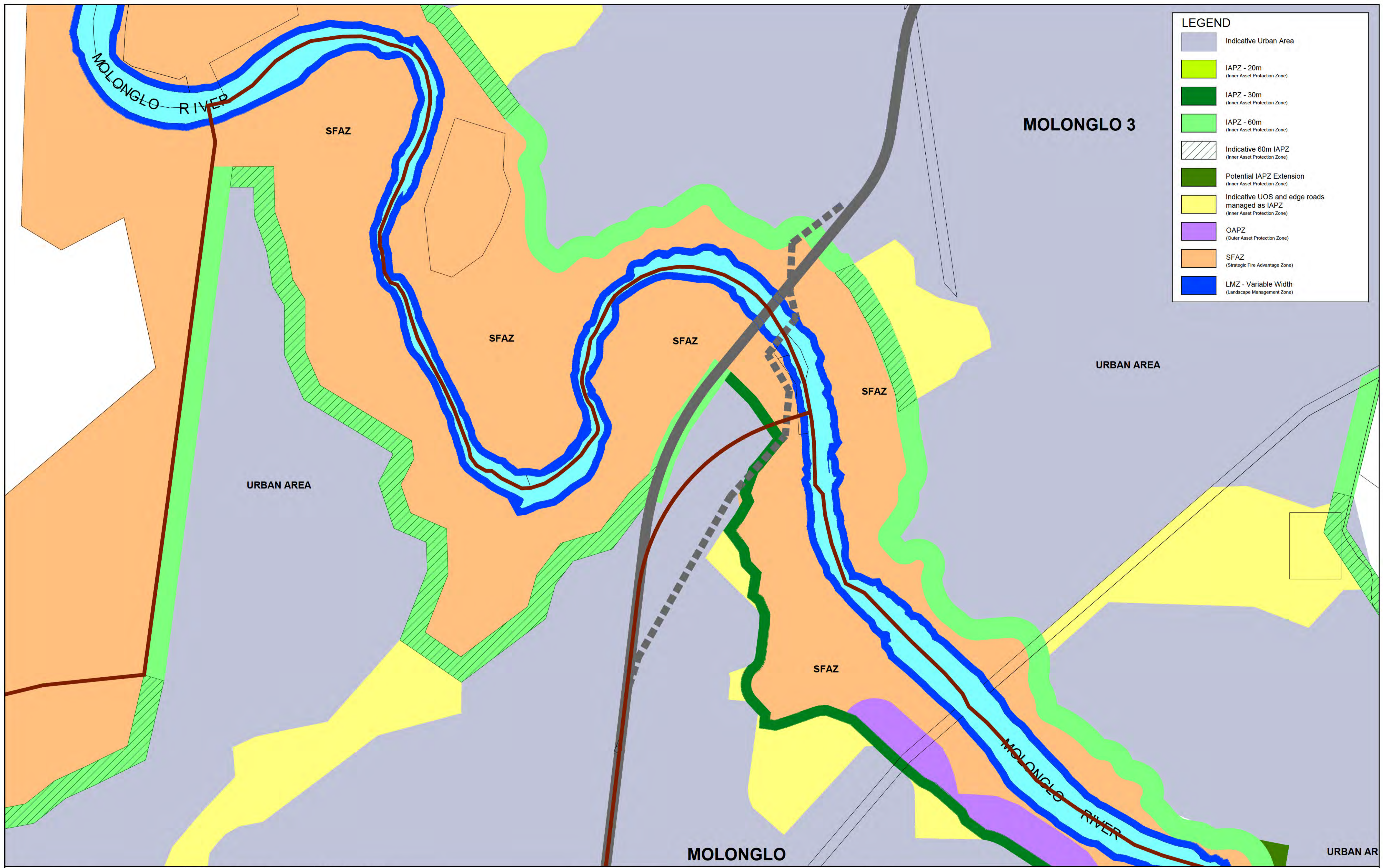
PROJECT

**Molonglo Valley**

DRAWING TITLE

**Bushfire Management Plan**



PROJECT NUMBER P00971	DRAWING NUMBER 2	AMENDMENT A
DATE ISSUED:		Plot Time/Date: 18 May 2015 12:21:31 PM



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	IAPZ - 60m (Inner Asset Protection Zone)
	Indicative 60m IAPZ (Inner Asset Protection Zone)
	Potential IAPZ Extension (Inner Asset Protection Zone)
	Indicative UOS and edge roads managed as IAPZ (Inner Asset Protection Zone)
	OAPZ (Outer Asset Protection Zone)
	SFAZ (Strategic Fire Advantage Zone)
	LMZ - Variable Width (Landscape Management Zone)

No.	REVISION DESCRIPTION	APPROVED BY	DATE	REVISED BY

SCALE/NORTHPOINT

DIRECTORATE/DEPARTMENT




PROJECT

**Molonglo Valley**

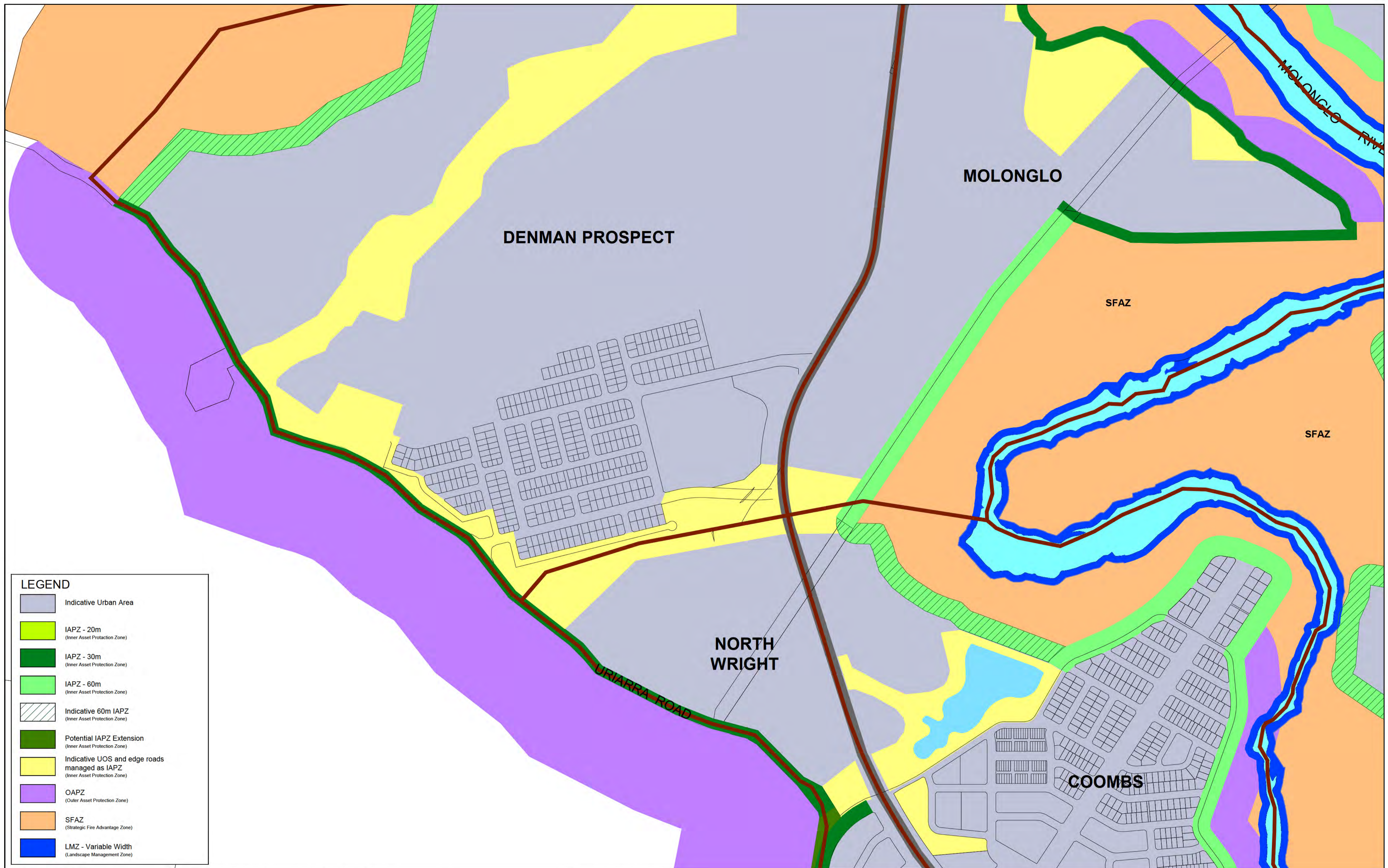
DRAWING TITLE

**Bushfire Management Plan**

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DATE ISSUED:		Plot Time/Date: 18 May 2015 12:21:33 PM

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**LEGEND**

- Indicative Urban Area
- IAPZ - 20m  
(Inner Asset Protection Zone)
- IAPZ - 30m  
(Inner Asset Protection Zone)
- IAPZ - 60m  
(Inner Asset Protection Zone)
- Indicative 60m IAPZ  
(Inner Asset Protection Zone)
- Potential IAPZ Extension  
(Inner Asset Protection Zone)
- Indicative UOS and edge roads  
managed as IAPZ  
(Inner Asset Protection Zone)
- OAPZ  
(Outer Asset Protection Zone)
- SFAZ  
(Strategic Fire Advantage Zone)
- LMZ - Variable Width  
(Landscape Management Zone)

No.	REVISION DESCRIPTION	APPROVED BY	DATE	REVISED BY

SCALE/NORTHPOINT
 

DIRECTORATE/DEPARTMENT

CANBERRA FIRST

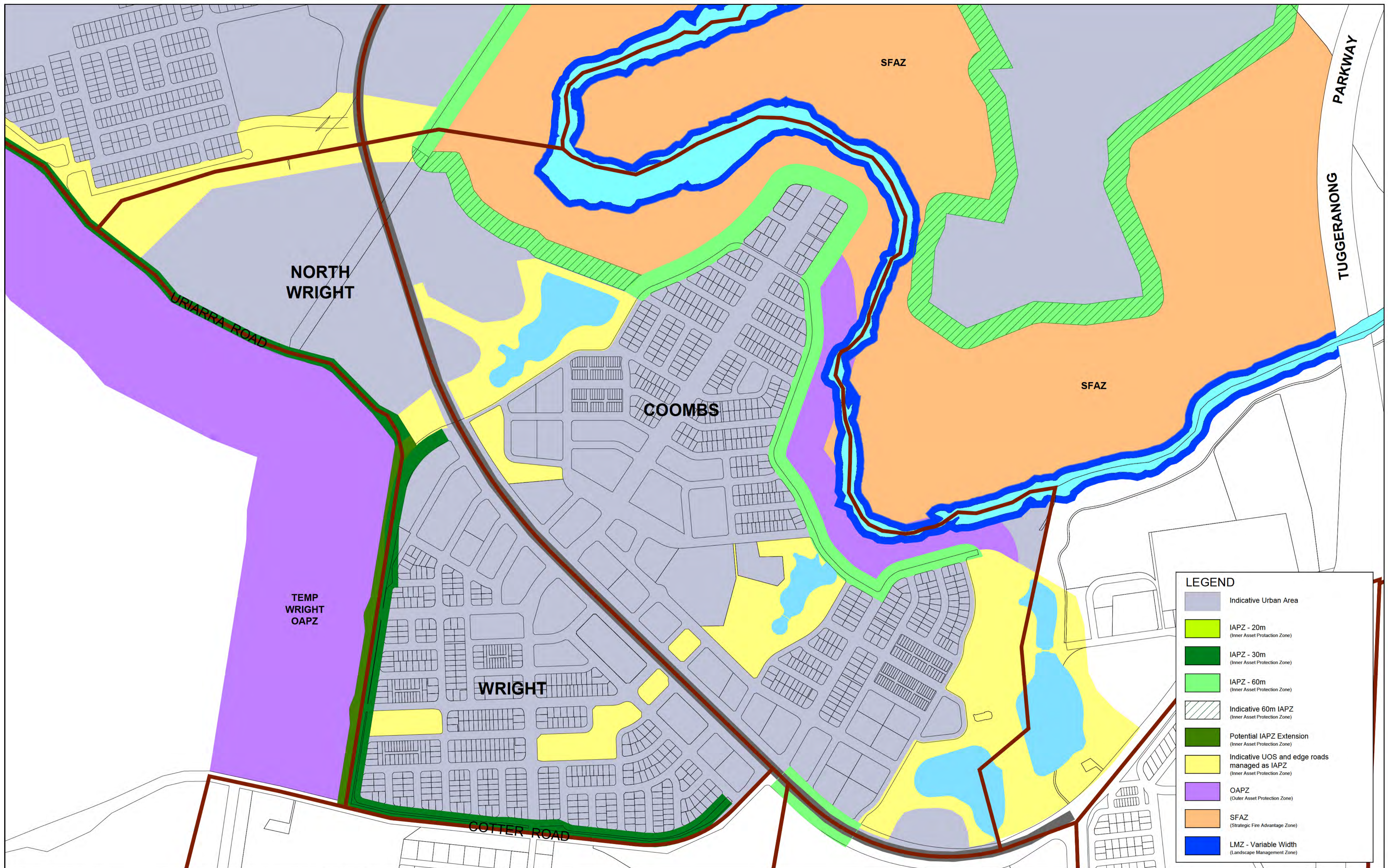
PROJECT

## Molonglo Valley

DRAWING TITLE

### Bushfire Management Plan

PROJECT NUMBER P00971	DRAWING NUMBER 5	AMENDMENT A
DATE ISSUED:		Plot Time/Date: 18 May 2015 12:21:38 PM



**LEGEND**

- Indicative Urban Area
- IAPZ - 20m  
(Inner Asset Protection Zone)
- IAPZ - 30m  
(Inner Asset Protection Zone)
- IAPZ - 60m  
(Inner Asset Protection Zone)
- Indicative 60m IAPZ  
(Inner Asset Protection Zone)
- Potential IAPZ Extension  
(Inner Asset Protection Zone)
- Indicative UOS and edge roads managed as IAPZ  
(Inner Asset Protection Zone)
- OAPZ  
(Outer Asset Protection Zone)
- SFAZ  
(Strategic Fire Advantage Zone)
- LMZ - Variable Width  
(Landscape Management Zone)

<b>No.</b>	<b>REVISION DESCRIPTION</b>	<b>APPROVED BY</b>	<b>DATE</b>	<b>REVISED BY</b>	<b>SCALE/NORTHPOINT</b>	<b>DIRECTORATE/DEPARTMENT</b>	<b>PROJECT</b>	<b>DRAWING TITLE</b>	
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								PROJECT NUMBER P00971	DRAWING NUMBER 6
								DATE ISSUED:	Plot Time/Date: 18 May 2015 12:21:42 PM
									AMENDMENT A

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## Aloisi, Angelina

---

**From:** Richardson, Dave  
**Sent:** Thursday, 2 July 2015 3:14 PM  
**To:** Lhuede, Nick; Leavesley, Adam  
**Cc:** Watts, Michaela; Santosuosso, Daniel  
**Subject:** Molonglo 2 and 3 including the River Corridor Bushfire Risk Assessment - Update  
**Attachments:** 8075\_R01\_V3\_Compiled.pdf

Hi Nick and Adam,

Have been cc'd into the work that Michaela has been doing and support that approach. Thought it would be appropriate to provide a quick update on finalising the BRA that I sent to you both back in early June.

I've attached the "missing" Umwelt report for the Denman Prospect edge for starters. This was not included in the early draft I circulated to you both.

Early next week should have an early draft of the cost paper for putting the 60m IAPZ and the SFAZs in place up front from Steve Coleman.

Adam, I will get Steve to liaise with you regarding your "start up" or capital set up costs for the SFAZs and also an idea of a recurrent cost estimate to keep all to the agreed management requirements in place on an annual basis.

Then it will be a quick edit and the need for comments from you both before releasing more widely (others in TaMS and EPD). We will then take any constructive comments on board, finish the document and submit to the ESA for agreement and support.

Hope that helps,

If you need to discuss, please give me a ring.

Regards

Dave

## Aloisi, Angelina

---

**From:** Leavesley, Adam  
**Sent:** Friday, 3 July 2015 2:30 PM  
**To:** [REDACTED]@coleng.com.au  
**Cc:** Richardson, Dave; Cooper, Neil  
**Subject:** RE: Recurrent Cost for SFAZ in Denman Prospect.  
**Attachments:** Molonglo Development Fire Management Strategy\_V3.pdf

Hi [REDACTED]

As promised, please find attached version 3 of the draft Molonglo fire management plan including some costings. It illustrates the method that we have been using.

Costs are based on:

- 1) Type of treatment
- 2) Area
- 3) Frequency

The plan particularly looks at possibilities for capital improvements for various options and how that may impact recurrent.

I also have some calculations for adjustments relating to changes associated with SBMP V3 and I think that will be helpful.

See you on Thursday (I'll send an invite). Please call if you have any questions.

Cheers, Adam

Adam Leavesley  
Fire Management Officer  
ACT Parks and Conservation Service  
Parks and City Services Division  
Territory and Municipal Services  
Telephone: (02) 6207 0512  
Mobile: [REDACTED]  
Fax: (02) 6207 2544  
Email: adam.leavesley@act.gov.au

*Exemplar, actor et quodammodo elit*



---

**From:** [REDACTED]@coleng.com.au]  
**Sent:** Friday, 3 July 2015 12:15 PM

**To:** Leavesley, Adam  
**Cc:** Richardson, Dave  
**Subject:** Recurrent Cost for SFAZ in Denman Prospect.

**COLEMAN**  
Engineering Services



9 Orange Thorn Cres.  
Eastern Valley Rise  
BANKS, ACT 2609

---

*Good afternoon Adam,*

CES have been engaged by Dave Richardson of the LDA to review the capital and ongoing costs of SAPZ's in relation to proposed residential developments in the Molonglo valley.

I would like to organise a time to come and have meeting with you to discuss. I am flexible so if you can organise a time and place I will ensure I can accommodate.

Thanks you for your time in advance.

Regards

*Steve Coleman*

Senior Design Manager  
for Coleman Engineering Services Pty Ltd  
Phone:02 6294 9159 Mobile [REDACTED]

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