BUSHFIRE PROTECTION ASSESSMENT

FOR THE

RIVERSTONE WEST PRECINCT,

NORTH-WEST GROWTH CENTRE.

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Report Document Preparation Issue Directors Approval
Number Date Date
EXECUTIVE SUMMARY

Australian Bushfire Protection Planners Pty Limited has been commissioned by the North West Transport Hub [NWTH], in order to meet the requirements of the Growth Centres Commission’s Riverstone West Precinct Working Group. The purpose of the assessment is to determine the bushfire constraints to the proposed industrial and commercial landuse within the precinct.

The Riverstone West Precinct occupies 273.7 hectares of the land and is located to the west of the Richmond Railway Line between Riverstone and Vineyard Railway Station. The boundaries follow Garfield Road West in the south and the Richmond Railway line that runs adjacent to Riverstone Parade to the east. The northern boundary follows Bandon Road and includes the Transgrid Substation site and Sydney Water Sewer Treatment Works whilst the western boundary follows a five kilometre section of Eastern Creek.

The northern half of the precinct consists of large open paddocks with improved pasture that is currently grazed by livestock. With the exception of a small shed and picnic area maintained by a Model Aero Club, a Sydney Water Sewer Pumping Station, Sewer Treatment Plant and Transgrid Substation, there are no buildings in the northern portion of the precinct. Service easements for Electricity Transmission Lines and the High Pressure Gas Main cross the northern portion of the precinct.

The southern portion of the precinct currently contains small holding paddocks that consist of improved pasture. The south-eastern corner of the precinct contains existing dwellings on Richards Road and a small Veterinary Clinic with additional dwellings located along Garfield Road, on the southern boundary of the precinct. The North West Transport Hub is located off Riverstone Parade, approximately 400 metres to the north of the Riverstone Railway Station.

The Draft Growth Centres Conservation Plan was certified on the 11th December 2007 and gave effect to conservation strategies including the identification of “Protected Lands” for the protection of biodiversity as a priority.

Presently, a large proportion of the precinct has been identified as “Protected Lands” within the Draft Growth Centres Conservation Plan and approximately 80% [188 hectares] is proposed as a recreation and conservation area [i.e. protected land] that approximately corresponds with the 1 in 100 year flood level for the current land profile. The northern, higher corner of the precinct and the central section which totals approximately 20% of the precinct [47 hectares], are not affected by the “protected lands” classification.
The Conservation Assessment undertaken by *Travers Environmental* states:

“There are no significant implications for the proposed development of Riverstone West Precinct as a result of the Biodiversity Certification. The Biodiversity Certification allows for the proposed clearing of Woodland on the north-eastern portion of the precinct and does not appear to provide any impediments to the restoration of the riparian corridor to offset the loss of watercourses throughout the Riverstone West Precinct.

The figure below has been extracted from the Travers Environmental Conservation Assessment and shows the proposed conservation strategy for the Riverstone West Precinct.
An indicative Layout Plan has been prepared for the precinct which provides for the re-vegetation of the riparian corridor to Eastern Creek, retention of the Alluvial Woodlands in the north-western corner of the precinct and the possible restoration of 3.4 hectares of Shale Sandstone Transition Forest along the north-eastern side of the Sydney Water Sewer Treatment Plant, in concert with the Conservation Strategy identified by Travers Environmental.

These vegetated areas, as shown on Figure 6 of the Travers Environmental report [above], will remain, or become, bushfire prone land.

The Growth Centres Commission may, upon receipt of the application for the Riverstone West Precinct, refer the application to the NSW Rural Fire Service.

If referred, the NSW Rural Fire Service will consider matters necessary to comply with the aim and objectives of *Planning for Bushfire Protection 2006* and to provide protection to the future development from the potential impacts that may arise from a bushfire occurrence within the bushfire prone vegetation, both within and adjoining the precinct.

The objectives of *Planning for Bushfire Protection 2006* are:

(i) Afford occupants of any building adequate protection from exposure to a bushfire;
(ii) Provide for a defendable space to be located around buildings;
(iii) Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition;
(iv) Ensure that safe operational access and egress for emergency service personnel and residents is available;
(v) Provide for ongoing management and maintenance of bushfire protection measures, including fuel loads in the asset protection zones; and
(vi) Ensure that utility services are adequate to meet the needs of firefighters and others assisting in bushfire fighting.

Matters considered necessary by the Rural Fire Service will include the provision of a “defendable space” [Asset Protection Zone] between the buildings and the bushfire hazard, to widths necessary to provide a safe working environment for firefighters and the protection of industrial type buildings; fuel management of the vegetation within the riparian corridor to Eastern Creek and the buffer zone to the Sewer Treatment Works. Access provisions for emergency services; construction standards to the future industrial/commercial buildings; water supplies for fire fighting operations and evacuation provisions will also be examined.
This Bushfire Protection Assessment undertakes an assessment of the bushfire protection measures required to address the bushfire risk to the future industrial development within the Riverstone West Precinct, consistent with the objectives of *Planning for Bushfire Protection 2006*, and provides a suite of site specific recommendations that address the outcome of the standards regarding setbacks [defendable space], provision of water supply, fuel management protocols and other matters considered necessary to mitigate the potential bushfire threat to persons, property and the environment.

The characteristics of the precinct as discussed in this report, together with the recommendations contained in this assessment, provide that the Riverstone West Precinct is suitable in terms of its intended industrial/commercial landuse.

Graham Swain
Managing Director,
*Australian Bushfire Protection Planners Pty Limited.*
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SECTION 1

INTRODUCTION

1.1 Development Proposal.

*Australian Bushfire Protection Planners Pty Limited* has been commissioned by the *North West Transport Hub [NWTH]* in order to meet the requirements of the Growth Centres Commission’s Riverstone West Working Group. The purpose of the assessment is to determine the bushfire constraints to the proposed industrial and commercial landuse within the precinct.

The Riverstone Precinct Working Group is investigating the following development possibilities:

- Establishment of a vegetated open space riparian corridor to Eastern Creek;
- An open space area in the north-western corridor of the precinct for the retention of Alluvial Woodlands vegetation and possibly the re-vegetation of a narrow corridor of open space along the north-eastern boundary of the Sydney Water Sewer Treatment Plant for the retention of Cumberland Plain Woodland vegetation. [Refer to Figure 6 of the Travers Environmental Conservation Assessment];
- Open Space located within the north-western corner of the precinct, south-east of the area of retained Alluvial Woodland vegetation, for the establishment of Football Fields;
- Light Industrial Development extending from Bandon Road, between the Richmond Railway line and the Sydney Water Sewer Treatment Plant with an additional small area of Light Industrial Development located to the northwest of the Transmission Line Easement and to the northeast of the Gas Pipeline;
- Industrial Development occupying the land to the south-east of the Transgrid Substation/Sewer Treatment Plant and Industrial Precinct, extending through the central north-eastern portion of the precinct;
- An Inter-model facility is located to the southwest of the Richmond Railway Line, to the southeast of the Transmission Line Easement;
- A new Electricity Sub-station is located in the south-eastern corner of the Industrial Precinct;
- A Business Park landuse occupying the south-eastern corner of the precinct with frontage to Garfield Road West and the Richmond Railway corridor.
Access to the Riverstone West Precinct is provided via a road constructed between Garfield Road West and Bandon Road, forming for the majority of its length, a perimeter road which separates the future development from the re-vegetated riparian corridor to Easter Creek. Link roads are provided from this access road to Riverside Parade with a secondary road access provided from the south-western terminus of Bandon Road to the proposed Private Open Space landuse in the north-western corner of the precinct.

*Figure 3 – Indicative Layout Plan.*
1.2 **Aims of this Assessment.**

The aims of this Bushfire Protection Assessment are to:

- Undertake a detailed site inspection;
- Undertake a visual bushfire hazard assessment of the Bushfire Prone Vegetation within and adjoining the Riverstone West Precinct;
- Determine the formation of the vegetation on and surrounding the Riverstone West Precinct in accordance with the vegetation classification system contained in *Planning for Bushfire Protection 2006*;
- Undertake an assessment to determine the effective slope of the land on and surrounding the Riverstone West Precinct;
- Undertake a Bushfire Protection Assessment to determine bushfire protection strategies for the future industrial/commercial development within the precinct that address the following matters:

  (i) The provision of building setbacks (Defendable Space) from vegetated areas and the siting of buildings to minimize the impact of radiant heat and direct flame contact;
  
  (ii) Fire fighting water supplies;
  
  (iii) Access requirements for customers/staff and emergency service vehicles;
  
  (iv) Construction standards to be used for the future industrial/commercial buildings within the precinct to minimize the vulnerability of the buildings to ignition from radiation and ember attack;
  
  (v) Land management responsibilities; and
  
  (vi) Evacuation management.

1.3 **Statutory Requirements.**

This assessment has been prepared having regard to the following planning requirements:

- *Planning for Bushfire Protection – 2006. [Rural Fire Service]*
  
  This document provides guidance on the planning and development control processes in relation to bushfire protection measures for rural residential and residential subdivision, “Special Fire Protection” and Commercial, Industrial and Public buildings in bushfire prone areas.
The document provides deemed-to-satisfy specifications on the provision of Asset Protection Zones to residential and "Special Fire Protection" developments; defendable space requirements to other developments and access/water supply provisions for developments in bushfire prone areas.

Provision for the assessment of construction standards to buildings and management /maintenance of the Asset Protection Zones/defendable space to buildings is also provided in the document.

1.4 Documentation Reviewed.

The following documents were reviewed in the preparation of this assessment:
- Aerial Photograph of the Riverstone West Precinct and adjoining lands;
- Indicative Layout Plan;
- Conservation Assessment – Riverstone West Precinct North-west Growth Centre prepared by Travers Environmental, dated May 2008
- Blacktown Council Certified Bushfire Prone Land Map;
- Planning for Bushfire Protection 2006 prepared by the NSW Rural Fire Service;

1.5 Site Inspection.

Graham Swain of Australian Bushfire Protection Planners Pty. Limited inspected the development property on the 27th May 2007 to assess the topography, slopes, vegetation classification and land use within and adjoining the Riverstone West Precinct. Visual assessment was undertaken to determine likely fire runs, influence of terrain on wind patterns within the bushfire prone vegetation and an assessment of access and egress to the Riverstone West Precinct. Adjoining properties were also inspected to determine the surrounding land use / land management.
SECTION 2
DESCRIPTION OF THE RIVERSTONE WEST PRECINCT.

2.1 Location & Description.

The Riverstone West Precinct occupies 273.7 hectares of the land and is located to the west of the Richmond Railway Line between Riverstone and Vineyard Railway Station. The boundaries follow Garfield Road West in the south and the Richmond Railway line that runs adjacent to Riverstone Parade to the east. The northern boundary follows Bandon Road and includes the land within the Transgrid Substation site and Sydney Water Sewer Treatment Plant whilst the western boundary follows a five kilometre section of Eastern Creek.

Access to the precinct is available off Garfield Road West, Bandon Road and Richards Ave [Private Road].

*Figure 4 – Aerial Photograph of Riverstone West Precinct*
2.2 Existing Landuse.

The northern half of the precinct consists of large open paddocks with improved pasture that is currently grazed by livestock. With the exception of a small shed and picnic area maintained by a Model Aero Club, a Sydney Water Sewer Pumping Station, Sewer Treatment Plant and Transgrid Substation, there are no buildings in the northern portion of the precinct. Service easements for Electricity Transmission Lines and the High Pressure Gas Main cross the northern portion of the precinct.

The southern portion of the precinct currently contains small holding paddocks that consist of improved pasture. The south-eastern corner of the precinct contains existing dwellings and a small Veterinary Clinic on Richards Road with additional dwellings located along Garfield Road, on the southern boundary of the precinct. The North West Transport Hub is located off Riverstone Parade, approximately 400 metres to the north of the Riverstone Railway Station.

2.3 Adjoining Land Use.

The land to the northwest of the precinct consists mainly of grazing land with rural residential landuse occupying the land to the northwest of the north-eastern corner of the precinct. Vacant land adjoins the north-eastern aspect of the northern portion of the precinct, beyond the Richmond Railway line and Riverstone Parade corridors.

Residential development extends to the northeast of the south-eastern portion of the precinct whilst residential development and Public Recreation Open Space landuse extends along the southern side of Garfield Road West.

The existing landuse to the southwest of Eastern Creek, opposite the south-western corner of the precinct, consists of rural residential development with grazing land forming the landuse to the remainder of the south-western boundary of the precinct. [Refer to Page 14 – Figure 4 Aerial Photograph of Riverstone West Precinct].

2.4 Topography.

Appendix 2 of Planning for Bushfire Protection 2006 states that slopes should be assessed, over a distance of at least 100m from a development site and that the gradient of the land should be determined which will most significantly influence the fire behaviour on the precinct.
2.4.1 Topography of the Land within the Riverstone West Precinct.
The topography of the land within the Riverstone West Precinct is characteristic of the gently sloping flood plain and rolling hills land formed by the creek catchments of the Cumberland Plain of Western Sydney. Gradients across the southern portion of the precinct are level, quickly rising at < 5 degrees to a low hill at the centre of the precinct.

The north-western portion of the precinct falls to the Eastern Creek corridor at < 5 degrees, rising to the northeast to form a higher ridgeline that runs northeast to southwest across the north-eastern corner of the precinct. This ridgeline falls to the south, southwest and northwest from its apex to the southeast of the Transgrid and Sydney Water land and displays a fall of < 5 degrees towards Bandon Road in the north-eastern corner of the precinct.

The future development of the Riverstone West Precinct will include the filling of the lower portions of the Precinct with a fill batter extending approximately 30 metres beyond the perimeter road carriageway with slopes of between 9 – 14 degrees. The fill batter will be re-vegetated however this vegetation will be maintained to provide a managed corridor along the perimeter road, forming a wide defendable space to the future development within the Precinct. The effective slope of the bushfire prone land is therefore those slopes contained within the re-vegetated riparian corridor to Eastern Creek.

2.4.2 Topography of the Land beyond the Riverstone West Precinct.
The land to the southeast of the Riverstone West Precinct, beyond the Garfield Road West, is level. The land to the southwest of the Eastern Creek corridor along the western boundary of the precinct rises gently to the southwest at < 5 degrees. The land to the northeast of Riverstone Parade, to the northeast of the precinct, rises to the northeast across the existing residential development and displays a generally level aspect to the northeast of the north-eastern corner of the precinct.

The topography of the land to the northwest of Bandon Road consists of undulating hills which slope to the northwest and west into the Eastern Creek corridor.
Vegetation is classified using Table A2.1 of Planning for Bushfire Protection 2006, which classifies vegetation types into the following groups:

(a) Forests [wet & dry Sclerophyll forests];
(b) Woodlands;
(c) Plantations – being pine plantations not native plantations;
(d) Forested Wetlands;
(e) Tall Heaths;
(f) Freshwater Heaths;
(g) Short Heaths;
(h) Alpine Complex;
(i) Semi – arid Woodlands;
(j) Arid Woodlands; and
(k) Rainforests.
2.5.1 Vegetation Communities within the Riverstone West Precinct.

The Conservation Assessment undertaken by Travers Environmental identified six [6] vegetation communities within the precinct. These are:

1. Riparian Woodland – \[Eucalyptus tereticornis\] – 2.18ha;
2. Alluvial Woodland – \[Melaleuca stypheloides & Casuarina glauca\] – 15.97ha;
3. Regrowth Woodland – \[E. moluccana, E. crebra & E. tereticornis\] – 4.37ha;
4. Woodland – \[Eucalyptus fibrosa & Melaleuca decora\] – 1.29ha;
5. Grassland with scattered trees and shrubs – 216.5ha;
6. Aquatic dams – 0.14ha.

Three [3] endangered ecological communities were observed within the precinct – Cumberland Plain Woodland, Shale/Gravel Transition Forest and River Flat Eucalypt Forest on Coastal Floodplains.

Figure 3 below is an extract from the Travers Environmental report showing the extent of the vegetation communities within the precinct.

The Draft Indicative Layout Plan, as shown on page 10 of this report, proposes the establishment of a riparian corridor to Eastern Creek and an open space corridor beneath and to the south of the Transmission Line Easement, including the tributary to Eastern Creek. This area will be re-vegetated with locally occurring woodland/forest species which will introduce a corridor of bushfire prone vegetation extending along the northern bank of Eastern Creek and into the area of open space.

This vegetation will present a future bushfire risk to the adjoining development.

The fill embankment along the road carriageway within the lower parts of the precinct will also be re-vegetated. However, this vegetation will be maintained as a managed verge to the perimeter road, therefore providing a wide defendable space/Asset Protection Zone between the unmanaged riparian corridor/open space vegetation and the adjoining development.

The management of the Transmission Line Easement as a mown corridor will provide a separation [Defendable Space] between the re-vegetated open space and the future development to the north of the Easement.
2.5.2 Vegetation Communities adjoining the Riverstone West Precinct.

The Riverstone West Precinct is adjoined to the northwest by grazed grassland to the northwest of Bandon Road with a short length of Woodland vegetation extending to the northwest from the north-eastern corner of the precinct.

The northeastern boundary of the precinct follows the Richmond Railway line which contains scattered trees and grassland. The vegetation on the vacant land to the northeast of Riverstone Parade consists of unmanaged Woodland with managed landscaped gardens on the industrial / residential development to the northeast of Riverstone Parade.

The Public Recreation land and residential development to the southeast of Garfield contains managed grassland / landscaped gardens. The existing residential development to the southwest of the southern portion of the precinct contains remnant Woodland vegetation whilst the paddocks to the southwest of the Eastern Creek corridor, along the south-western boundary of the precinct, contain grazed grassland.

2.6 Significant Environmental Features on the land within the Precinct.

The Riverstone West Precinct does not contain any significant environmental features such as SEPP 14 – Coastal Wetlands; SEPP 26 Littoral Rainforests; SEPP 44 – Koala Habitat; Areas of Geological interest; Steep Lands [>18 degrees]; Land slip areas or National Parks Estate. The Riverstone West Precinct does contain the riparian corridor to Eastern Creek and its tributaries. The Eastern Creek corridor is proposed to be retained and re-vegetated.

2.7 Known Threatened Species, Populations, Endangered Ecological Communities or Critical Habitat within the Riverstone West Precinct.

The Travers Environmental Conservation Assessment of the Riverstone West Precinct identifies three [3] endangered ecological communities within the precinct. These are Cumberland Plain Woodland, Shale/Gravel Transition Forest and River Flat Eucalypt Forest on Coastal Floodplains.

Figure 5 below has been extracted from the Travers Environmental Conservation Assessment and identifies the endangered ecological communities identified within the Riverstone West Precinct.
Figure 5 - Ecological Constraints

Legend
- Defined Water Channels
- Overland Drainage Path
- High Ecological Value
- Moderate Ecological Value
- Low Ecological Value

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Original plan produced in A3 colour

Shale Gravel Transition Forest - degraded remnant EEC with high percentage of native understorey & regeneration, but has been heavily cleared & grazed.

Cumberland Plain Woodland (regenerated) - degraded remnant EEC with high percentage of native understorey & regeneration.

Riparian Zones - Retention & suffering subject to detailed assessment and consideration of offsets.

Riverflat Eucalypt Forest on Coastal Floodplains - remnant EEC with Eucalypt forest on the Floodplain. Moderate to high weed coverage, zone is subject to clearing & grazing pressures. Vegetation connectivity & bank stability constraints need to be considered.

Degraded grasslands - highly disturbed cleared landscape with pasture improvement.

Riverflat Eucalypt Forest on Coastal Floodplains - remnant EEC with mature canopy. High degree of native understorey species in ground layer.
SECTION 3
FIRE MANAGEMENT RESPONSIBILITIES

Fire management within the Riverstone West Precinct is the responsibility of:

3.1 Blacktown Council.

The Blacktown Council has responsibility, under Section 66 of the *Rural Fires Act*, to issue a notice in writing requiring an owner / occupier of any land within the Local Government Area [LGA] to carry out bushfire hazard reduction works on that land. Section 100E of the *Rural Fires Act* requires Council to issue bushfire hazard reduction certificates for hazard reduction to be undertaken on private lands.

3.2 New South Wales Rural Fire Service.

The NSW Rural Fire Service (RFS) has the responsibility for undertaking fire suppression activities, hazard management activities and other functions relative to emergency management, within its areas of operation. *Section 73 of the Rural Fires Act 1997* enables the Commissioner to carry out bush fire hazard reduction works on any land as required by a bush fire risk management plan if the work has not been carried out satisfactorily. Incurred costs can be recovered as a debt owed to the Crown.

3.3 New South Wales Fire Brigade.

The NSW Fire Brigade has the responsibility for undertaking fire suppression activities, and other functions relative to emergency management, within its area of operation and through Mutual Aid Agreements, provide assistance to the NSW Rural Fire Service, particularly for structural fire operations within the NSW Rural Fire Brigade Districts. Hazmat management within New South Wales is the responsibility of the NSW Fire Brigade.

3.4 Blacktown Bush Fire Management Committees.

The Blacktown Bushfire Management Committee has the responsibility for planning for co-ordinated fire fighting activities / hazard management activities in their local government area. The Committees are not an operational organization, a fire fighting organization or a funding source for fire management activities.
3.5 Private Land Owners / Occupiers.

_The Rural Fires Act, 1997_ provides several legislative opportunities to require land owners and occupiers to manage hazardous fuels. These are listed below:

- **Section 63(2)** states that _'it is the duty of the owner or occupier of land to take the notified steps (if any) and any other practicable steps to prevent the occurrence of fires on, and to minimise the danger of the spread of fires on or from that land'_.

In this section; _'notified steps' means:_

(a) any steps that a bush fire risk management plan (or the Co-ordinating Committee) advises a person to take;

(b) that are included in a bush fire risk management plan applying to the land.

- **Section 87** allows the removal of hazards in the bush fire danger period by the provision of a permit system. The permits are valid for 21 days, excluding TOBAN days. Section 10 permits are not required to adhere to Part V provisions of the _EPA Act 1979_ in the assessment of impact, except for public authorities.

An owner/occupier of private land must obtain from the NSW Rural Fire Service, a bushfire hazard reduction certificate before undertaking hazard reduction works on that land (Section 100E of the _Rural Fires Act 1997_).
SECTION 4

BUSHFIRE PRONE LAND ASSESSMENT

4.1 Precinct Level Assessment of Bushfire Prone Vegetation.

Planning for Bushfire Protection 2006 provides the following procedure for assessing a development at a defined precinct level in order to determine whether the development is bushfire prone and if so, be the need to provide appropriate setbacks:

(a) Determine vegetation distance, type and class as follows:
Identify all vegetation in each direction from the precinct for a distance of 140 metres, and then consult Table A2.1 to determine the vegetation formation which predominates.

(b) Determine the average slope of the land between the predominant vegetation class and the development.

Table 1 summarises the information provided in Section 2 of this report to undertake a precinct level assessment to determine those aspects of the development deemed to be prone to bushfire threat and therefore subject to the provision of Defendable Spaces for Industrial & Commercial Development within the precinct.
### Table 1. Precinct Level Assessment - Riverstone West Precinct.

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Existing Land Use</th>
<th>Vegetation within 140 m of Development</th>
<th>Predominant formation class from Table A2.1, <em>PBFP 2006</em></th>
<th>Effective Slope of land to distance of 100m.</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northwest of Bandon Road</td>
<td>Agricultural land / rural residential</td>
<td>Grazed Grassland &amp; Woodland</td>
<td>Nil for grazed grassland. Woodland within the rural residential landuse</td>
<td>&lt; 5 degrees downslope to the west and northwest</td>
<td>The grassland vegetation is not bushfire prone. The unmanaged Woodland vegetation is bushfire prone.</td>
</tr>
<tr>
<td>Northeast of northern portion of precinct</td>
<td>Vacant land to the northeast of Railway Line &amp; Riverstone Parade</td>
<td>Woodland to the northeast of Riverstone Parade</td>
<td>Woodland</td>
<td>Level to &lt; 5 degrees upslope to the northeast</td>
<td>The vacant land to the northeast of Riverstone Parade is bushfire prone.</td>
</tr>
<tr>
<td>Northeast of the central and southern portion of precinct</td>
<td>Industrial &amp; residential development to the northeast of Riverstone Parade</td>
<td>Managed lands</td>
<td>Nil</td>
<td>&lt; 5 degrees upslope to the northeast</td>
<td>The industrial &amp; residential development to the northeast of Riverstone Parade does not contain bushfire prone vegetation</td>
</tr>
<tr>
<td>Southeast of Garfield Road</td>
<td>Public Recreation &amp; residential development</td>
<td>Managed lands</td>
<td>Nil</td>
<td>Level</td>
<td>The vegetation on the land to the southeast of Garfield Road is not deemed to be bushfire prone</td>
</tr>
<tr>
<td>West of the southern portion of the precinct</td>
<td>Rural residential land</td>
<td>Remnant Woodland</td>
<td>Woodland</td>
<td>&lt; 5 degrees upslope from Eastern Creek</td>
<td>The vegetation within the Eastern Creek corridor and the unmanaged Woodland vegetation within the existing rural residential development is deemed to be bushfire prone</td>
</tr>
<tr>
<td>Southwest of northern portion of the Eastern Creek boundary</td>
<td>Agricultural landuse</td>
<td>Grazed grassland</td>
<td>Nil</td>
<td>&lt; 5 degrees upslope from Eastern Creek</td>
<td>The grassland vegetation on the land to the southwest of Eastern Creek is not bushfire prone</td>
</tr>
</tbody>
</table>
The Blacktown Certified Bushfire Prone Land Map records that no bushfire prone vegetation is located within the Riverstone West Precinct.

The map does show that the buffer zone to bushfire prone vegetation adjoining the precinct does impact upon the land within the precinct, therefore the construction of Industrial and Commercial development within the precinct is triggered by the Bushfire Prone Land Map and is required to comply with the provisions of *Planning for Bushfire Protection 2006* in respect to setbacks [Defendable Spaces] from bushfire prone vegetation, access and water supplies for firefighting operations.

The extent of the Bushfire Prone Vegetation which is likely to be a risk to the future development on the Riverstone West Precinct will increase due to the recommended re-vegetation of the Eastern Creek corridor and the retention of the narrow corridor of Cumberland Plain Woodland within the eastern portion of the Sydney Water Sewer Treatment Plant on Bandon Road. Section 5 of this report examines the bushfire protection measures considered necessary to address this increased bushfire threat.
Figure 6 – Extract of Blacktown Bushfire Prone Land Map showing extent of Bushfire Prone Vegetation/Buffer Zone impacting the Riverstone West Precinct.
SECTION 5
BUSH FIRE PROTECTION ASSESSMENT

5.1 Introduction.

Chapter 1 of Planning for Bushfire Protection 2006 states that the aim of the document is to use the NSW development assessment system to provide for protection of human life [including firefighters] and to minimize impacts on property from the threat of bushfire, while having due regard to development potential, on-site amenity and protection of the environment.

The objectives of the document are:

- Afford occupants of any building adequate protection from exposure to the impacts of a bushfire;
- Provide for a defendable space to be located around buildings;
- Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition;
- Ensure that safe operational access/egress for emergency service personnel and occupants relocating is provided and/or available;
- Provide for ongoing management and maintenance of bushfire protection measures, including fuel loads within the Asset Protection Zone/s;
- Ensure that utility services are adequate to meet the needs of firefighters [and others assisting in bushfire fighting operations].

Chapter 1, Section 1.3 of Planning for Bushfire Protection 2006 states that the construction of Class 5 – 8 buildings on bushfire prone land, or land impacted by bushfire prone land, must meet the aim and objectives of the document.

Chapter 4, Section 4.3.6(f) discusses the bushfire protection to buildings of Class 5 to 8 and 10b of the Building Code of Australia and states:

“The BCA does not provide for any bushfire specific performance requirements and as such A.S.3959 – 1999 does not apply as a set of ‘deemed to satisfy provisions’. The general fire safety construction provisions for this class of building are taken as acceptable solutions, but the aim and objective of Planning for Bushfire Protection 2006 apply in relation to access and water supply for firefighting operations, emergency planning [evacuation] and landscaping / vegetation management”.
Planning for Bushfire Protection 2006 provides a methodology to determine the Asset Protection Zones [defendable space] and Bushfire Attack [Construction Standards] required for habitable buildings in development for residential purposes that are designated as bushfire prone. The document does not provide deemed-to-satisfy solutions for Class 5 – 8 buildings constructed in bushfire prone areas but states that where the aim and objectives of the document are not met, then the construction requirements for bushfire protection will need to be considered on a case by case basis.

5.2 Examination of Compliance with Objectives for the provision of Bushfire Protection Measures to Industrial/Commercial Development within the Riverstone West Precinct.

5.2.1 Provision of Defendable Space.
The main bushfire protection objective for industrial and commercial development located within a bushfire prone area and which may be subject to the threat of bushfire attack is to provide a “defendable space” rather than comply with the prescribed widths of Asset Protection Zones determined for residential development.

Whilst the NSW Rural Fire Service does not prescribe widths of the defendable space for Class 5 – 8 and 10 buildings, the minimum width accepted for buildings located adjacent to the bushfire hazard interface is 10.00 metres. This separation width is predicated on the building/s being constructed to address the fire source feature level of radiant heat as required by the Building Code of Australia [BCA].

In those cases where the building is to be constructed of lightweight materials [i.e. Colorbond Steel Cladding], the minimum setback width may need to be increased so as to reduce the potential damage from high levels of radiant heat on the building, or alternately the construction of the section of the building exposed to the bushfire hazard can be reviewed to include materials which have a higher fire rating [i.e. precast concrete].

A review of the Indicative Layout Plan for the Riverstone West Precinct confirms that the re-vegetated riparian restoration buffer to Eastern Creek and associated re-vegetated floodway and the re-vegetated/restored area of Cumberland Plain Woodland along the north-eastern aspect of the Sydney Water Sewer Treatment Plant will constitute future bushfire prone vegetation. This vegetation will provide a bushfire threat to the future development adjacent to this hazard.
However, the proposed access road link between Garfield Road West and Bandon Road will provide a 28 – 34 metre wide separation between the future Industrial development/Business Park and the re-vegetated fill batter on the outer edge of the road carriageway. The 30 metre wide fill batter will be managed to reduce/remove bushfire fuels between the road and the vegetation in the riparian corridor.

In addition to the managed fill batter and perimeter road width the future buildings will be located between 3 and 10 metres from the road alignment, thus providing a total Defendable Space/Asset Protection Zone width of more than 60 metres. This separation removes the potential for the buildings to be impacted by levels of radiant heat which require protection measures to be applied to the buildings, other than ember protection.

The perimeter road width of 28 – 34 metres also provides separation between the Cumberland Plain Woodland and future Light Industrial development adjacent to the Sydney Water Sewer Treatment Plant. This setback exceeds the minimum width of defendable space required by the NSW Rural Fire Service. This separation removes the potential for the buildings to be impacted by levels of radiant heat which requires protection measures to be applied to the buildings, other than ember protection.

A small area of the Business Park adjoins the Eastern Creek riparian corridor and will have a managed fill batter/perimeter road with a width of approximately > 60 metres between the future buildings and the unmanaged bushfire prone vegetation within the riparian corridor. Construction standards will be required to address the potential ember attack on these future buildings. These will be determined at the Development Application stage.

The proposed Private Open Space [Football Fields] land mitigates any bushfire risk to the future industrial development from a bushfire event in the riparian corridor to Eastern Creek or the Alluvial Woodland in the northwestern corner of the precinct. However, a short length of interface to the creek corridor exists between the Transmission Line Easement and the Playing Fields. This interface will require the provision of a minimum 10 – 20 metre wide defendable space to future industrial development located adjacent to this vegetation.

The management of the Sydney/Newcastle Gas Pipeline within this location will provide a satisfactory defendable space setback to the buildings adjoining this length of the riparian corridor however a review of the potential levels of radiant heat on the adjoining buildings will be necessary to determine any additional bushfire construction standards.
The managed grounds within the Transgrid Substation and Sewer Treatment Works to the northwest of the industrial development will remove the need for the provision of a defendable space to the adjoining Industrial Development.

The managed Transmission Line Easement crossing the precinct, to the southeast of the existing Sewerage Pumping Station, will provide a satisfactory defendable space between the re-vegetated floodway corridor and the future buildings located to the northwest of the Transmission Line Easement.

The north-western and north-eastern aspects of the Light Industrial development, which is to be located in the north-eastern corner of the Riverstone West Precinct, are located within the buffer zone to the bushfire prone vegetation to the northwest of Bandon Road and northeast of Riverstone Parade. The separation provided by Bandon Road, the Richmond Railway line corridor and Riverstone Parade, provide a satisfactory defendable space to the future buildings in this portion of the precinct.

The remainder of the north-eastern aspect and the south-eastern aspect of the precinct will not be subject to bushfire attack and therefore no bushfire protection measures are required to the future development within this portion of the precinct.

5.2.2 Access for Firefighting Operations.

The Indicative Layout Plan provides for an access link road between Garfield Road West and Bandon Street.

Except for a short length of the proposed Business Park precinct, this road provides a "perimeter road" [28 – 34 metre wide defendable space] between the future development within the precinct and the re-vegetated managed fill batter and re-vegetated riparian corridor along Eastern Creek and the floodway corridor along the south-eastern side of the Transmission Line Easement.

To satisfy the deemed-to-comply access provisions of Planning for Bushfire Protection 2006, the formed carriageway width of this road shall be no less than 8.0 metres with connection into the internal road network at intervals of no greater than 500 metres.

Due to the possibility of the edge road being impacted by a bushfire event, or closed by fire crews attending to a bushfire in the riparian corridor, the internal road network within that part of the precinct which adjoins the Eastern Creek riparian corridor shall provide alternate means of egress to Riverstone Parade or to the southeast, within the precinct, exiting onto Garfield Road West.
Internal access roads shall be designed to facilitate fire operational access for NSW Fire Brigade Appliances.

A 4.0 metre wide compacted gravel fire trail/service access track shall be constructed within the Transmission Line Easement, from the proposed perimeter road to the Gas Pipeline Easement, turning to the northwest to follow the Sydney – Newcastle Gas Pipeline Easement, linking to the proposed access road from Bandon Road. Locked gates shall be provided at the entry points to the trails.

5.2.3 Water Supplies for Firefighting Operations.

A reticulated water supply shall be provided to service the future industrial and commercial development in accordance with the specifications of Australian Standard A.S 2419.2. Hydrants shall have a flow rate of 10 litres / second.

Fire hydrants shall be accessible and located such that a fire appliance can park within a maximum distance of 20 metres from the hydrant and the building must be located such that a fire at the furthest extremity can be attacked by firefighters using two 30 metre hose lines and a 10 metre water jet. A clear unobstructed path between the hydrant and the most distant point of the building shall not exceed 90 metres.

Blue hydrant markers shall be provided to locate the positions of the hydrants. The markers shall be positioned on the hydrant side of the centre line of the road pavement.

The Industrial/Commercial buildings within the Riverstone West Precinct will be connected to this supply and will be fully compliant with the provisions of the Building Code of Australia, including the provision of hose reels/hydrants within the buildings and booster valves [where required] at the street entry point. It is recommended that a “layby” parking bay be provided at the booster assembly and that external “Millcock” valves [Landing Valve] Hydrants be provided in locations which will assist in the extinguishment of bushfires that occur in the Eastern Creek riparian corridor.

5.2.4 Construction Standards to Buildings.

Australian Standard A.S. 3959 -1999 is the enabling standard that addresses the performance requirements of both Parts 2.3.4 and Part GF5.1 of the Building Code of Australia for the construction of the Class 1, 2 and Class 3 buildings within a designated Bushfire Prone Area.
The Standard does not give advice on the bushfire construction standards required to Class 5 – 8 buildings and the NSW Rural Fire Service defers construction standards of industrial and commercial development to the Building Code of Australia [BCA].

The BCA recommends construction standards based on a “fixed fire source feature”, typically radiant heat and flame attack from a structure fire within an adjoining building. It does not identify construction requirements that are designed to withstand the rapid build up of radiant heat and flame attack from an advancing bushfire.

However Appendix A3.6 of Planning for Bushfire Protection 2006 provides the following procedure for determining bushfire attack at construction stage for a building within a designated bushfire prone area:

(a) Determine vegetation formation types and sub-formation types around the building;

(b) Determine the separation distance between each vegetation formation and the building;

(c) Determine the effective slope of the ground for each vegetation formation;

(d) Determine the relevant FDI for the Council Area;

(e) Match the relevant FDI, appropriate vegetation formation, separation distance and effective slope to determine the category of bushfire attack.

Five categories of Bushfire Attack are determined. They are:

- Low
  Minimal attack from radiant heat and flame due to the distance of the precinct from vegetation, although some attack by burning debris is possible. No construction standards apply;

- Medium - (Level 1 Construction AS3959-1999).
  Significant ember attack with radiation heat not greater than 12.5 KWm². Specific construction requirements for ember protection;

- High - (Level 2 Construction AS3959-1999).
  Significant ember attack and possible flame contact, radiation heat greater than 12.5 KWm² and no greater than 19 KWm² threatening some building elements; Specific construction requirements for ember protection and radiant heat;
- **Extreme - (Level 3 Construction AS3959-1999).**
Significant burning debris attack and possible flame contact, radiation heat greater than 19 KWm² and no greater than 29 KWm² may threaten building integrity. Specific construction requirements for ember and higher radiant heat levels;

- **Flame Zone**
Within the Flame Zone and / or greater than 29 KWm² (Construction outside scope of AS3959-1999 with radiant heat levels and flame contact likely to significantly threaten building integrity and result in significant risk to residents/firefighters).

Table 2 provides a summary of the Bushfire Attack Assessment and determines the level of potential radiant heat on the future Industrial/Commercial buildings adjoining the bushfire prone vegetation, within the precinct and on adjoining lands.

<table>
<thead>
<tr>
<th>Location</th>
<th>Vegetation within 140m of buildings</th>
<th>Predominant Vegetation Class [Table A2.1 PIBFP]</th>
<th>Effective Slope of Land</th>
<th>Minimum Width of Asset Protection Zone/ Defendable Space</th>
<th>Level of Bushfire Attack. Radiant Heat ratings on the Building</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial / Commercial buildings adjacent to the Eastern Creek riparian corridor [&gt; 100m wide]</td>
<td>Core of River-Flat Eucalypt Forest/outer zone of Cumberland Plain Woodland</td>
<td>Forest</td>
<td>&lt; 5 degrees down slope to the creek [across riparian zone]</td>
<td>&gt; 60 metres of defendable space provided by perimeter road &amp; managed fill batter</td>
<td>Radiant heat less than 12.5 kWm2, unlikely to threaten building elements however potential ember attack.</td>
</tr>
<tr>
<td>Business Park development adjacent to the Eastern Creek riparian corridor [&gt;100m wide]</td>
<td>Core of River-Flat Eucalypt Forest/outer zone of Cumberland Plain Woodland</td>
<td>Forest</td>
<td>&lt; 5 degrees down slope to the creek [across riparian zone]</td>
<td>&gt; 60 metres of defendable space provided by managed fill batter &amp; perimeter road</td>
<td>Radiant heat less than 12.5 kWm2, unlikely to threaten building elements however potential ember attack.</td>
</tr>
<tr>
<td>Tributary [Floodway] to Eastern Creek [&lt; 100 metres wide]</td>
<td>River-Flat Eucalypt Forest/ Cumberland Plain Woodland</td>
<td>Forest</td>
<td>&lt; 5 degrees down Slope [across vegetated area]</td>
<td>30 metres of defendable space provided by managed Transmission Line Easement</td>
<td>Radiant heat levels of up to 29 kWm2 threaten building integrity; significant ember attack</td>
</tr>
<tr>
<td>Corridor of Cumberland Plain Woodland to the northeast of the Sydney Water STP</td>
<td>Narrow Band of Cumberland Plain Woodland</td>
<td>Woodland – reclassified to “Rainforest” due width being less than 50m</td>
<td>&lt; 5 degrees down slope</td>
<td>28 - 34 metres of defendable space provided by link road between Garfield Road &amp; Bandon Road</td>
<td>Radiant heat less than 12.5 kWm2, unlikely to threaten building elements however potential ember attack.</td>
</tr>
<tr>
<td>Northwest of northern portion of precinct [Bandon Road]</td>
<td>Cumberland Plain Woodland within adjacent rural development</td>
<td>Woodland</td>
<td>&lt; 5 degrees down slope</td>
<td>&gt; 30 metres of defendable space provided by width of Bandon Road + building setback</td>
<td>Radiant heat less than 12.5 kWm2, unlikely to threaten building elements however potential ember attack.</td>
</tr>
<tr>
<td>Vegetation on vacant land to the northeast of Riverstone Parade</td>
<td>Cumberland Plain Woodland</td>
<td>Woodland</td>
<td>Level to &lt; 5 degrees upslope to the northeast</td>
<td>&gt; 60 metres of defendable space provided by width of Riverstone Parade &amp; Richmond Railway line</td>
<td>Radiant heat less than 12.5 kWm2, unlikely to threaten building elements however potential ember attack.</td>
</tr>
</tbody>
</table>
**Assessment Results:**
The level of radiant heat on Industrial/Commercial the buildings adjoining the Eastern Creek riparian corridor and the Open Space/Floodway corridor to the southeast of the Transmission Line Easement is mitigated by the width of the building line setback, the perimeter road and managed fill embankment.

The potential impact from bushfires burning across the riparian corridor vegetation towards the future industrial development will be ember attack. This can be addressed by screening to operable windows, external louvres and grilles.

The future buildings within the Business Park precinct, which are located adjacent to the perimeter road, may be impacted by ember attack. This can be addressed by screening to operable windows, external louvres and grilles.

The future industrial buildings to the north of the Transmission Line Easement and those that are not protected by the perimeter road from the vegetation within the riparian corridor to Eastern Creek are likely to be impacted by radiant heat levels of up to 29 kWm² which will require the imposition of Level 3 construction standards as defined by Australian Standard A.S. 3959 – 1999. Screening of external louvres and grilles will also be required to prevent ember entry into the buildings.

The buildings located adjacent to the narrow corridor of Cumberland Plain Woodland located along the north-eastern aspect of the Sydney Water STP provides an upslope fire run towards the adjoining Light Industrial development. Radiant heat levels are likely to be up to 12.5 kWm² which will require the imposition of Level 1 construction standards as defined by Australian Standard A.S. 3959 – 1999. Screening of external louvres and grilles will also be required to prevent ember entry into the buildings.

Future fires burning in the bushfire prone vegetation in the Eastern Creek riparian corridor have the potential to produce embers which may to attack the buildings on the bushfire hazard interface. The embers have the capacity to ignite garden beds and combustible building components and accumulated combustible materials in roof gutters.

Assessment and determination of construction standards to the future buildings within the Riverstone West Precinct will be addressed relevant Development Control Plan at Development Application stage.
5.2.5 Emergency Management for Fire Protection / Evacuation.
The management of evacuation of the Staff/Customers in the future industrial/commercial development in the Riverstone West Precinct will be addressed by the preparation of a site specific Evacuation Plan for each development in the precinct. The individual Evacuation Plans shall address the protocols for the timely relocation of Staff/Customers in the event that an emergency occurs, both within the Riverstone West Precinct or within the local area.

For those buildings located within 100 metres of the bushfire hazard interface, the site specific Evacuation Plan/s shall also address the potential for the need to implement evacuation of the development due to bushfire attack.

A copy of the Evacuation Plan will be provided to the Local Emergency Management Committee/Police, NSW Fire Brigade and NSW Rural Fire Service.


5.2.6 Bushfire Hazard Management.
The intention of bushfire hazard management is to prevent flame contact with a structure, reduce radiant heat to below the ignition thresholds for various elements of a building, to minimize the potential for wind driven embers to cause ignition and to reduce the effects of smoke on occupants and firefighters.

However, careful attention shall be given to species selection within the landscaping, their location relative to their flammability, avoidance of continuity of vegetation [separation horizontally and vertically] and ongoing maintenance to remove flammable fuels. Management of the landscaped areas within the development shall comply with the following:

- Maintain a clear area of low cut lawn or pavement adjacent to the building;
- Keep areas under shrubs and trees raked and clear of combustible fuels; and
- Utilise non-flammable materials such as concrete paths, Scoria, pebbles and recycled crushed bricks as ground cover to landscaped gardens in close proximity to the building.

The management of the fill batter between the perimeter road and the riparian corridor vegetation shall be undertaken so as to reduce the accumulation of dry combustible ground fuels. Landscape planting of this area shall not provide continuous vegetation between the riparian corridor and the perimeter road.
Trees shall be spaced to provide an open canopy separation of at least 5 metres with an open shrub/landscaped understorey. Grasses shall be maintained to a maximum height of 100mm during the Bushfire Danger Period [1st October – 31st March unless gazetted otherwise].

Maximum dry weight of combustible fuels [leaf litter/ twigs] shall be maintained to less than 8 tonnes/hectare.
SECTION 6
BUSHFIRE MANAGEMENT STRATEGIES – DCP PROVISIONS

The following strategies shall inform the preparation of the Development Control Plan for the Industrial and Commercial development within the Riverstone West Precinct:

6.1 Strategy 1 – Provision of Defendable Space to the Buildings.
The provision of defendable spaces to the future industrial & commercial buildings in the estate shall comply with Table 3.

Table 3. Defendable Space requirements to the future Industrial Development in the Estate.

<table>
<thead>
<tr>
<th>Location of Bushfire Threat</th>
<th>Width of Defendable Space recommended or provided</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Creek Riparian Corridor – Industrial Development / Business Park precinct with perimeter road</td>
<td>Minimum 60 metres defendable space where perimeter road is located. [Provided by perimeter road reserve, building setback &amp; managed fill embankment]. Defendable space to that part of the Business Park Precinct which directly adjoins the riparian corridor</td>
</tr>
<tr>
<td>Eastern Creek Riparian Corridor – Business Park</td>
<td>Minimum 60 metres defendable provided by managed fill batter and perimeter road</td>
</tr>
<tr>
<td>Tributary/Floodway to Eastern Creek [southeast of Transmission Line Easement]</td>
<td>Minimum 30 metres defendable space. [Provided by managed Transmission Line Easement]</td>
</tr>
<tr>
<td>Cumberland Plain Woodland to Sydney Water STP</td>
<td>Minimum 30 metres defendable space. [Provided by managed road reserve and building setback]</td>
</tr>
<tr>
<td>Cumberland Plain Woodland within rural development to the northwest of Bandon Road</td>
<td>Minimum 30 metres defendable space. [Provided by Bandon Road reserve and building setback]</td>
</tr>
<tr>
<td>Bushland on vacant land to the northeast of Riverstone Parade</td>
<td>Minimum 60m metre wide separation provided by Riverstone Parade carriageway and Railway Line.</td>
</tr>
</tbody>
</table>

6.2 Strategy 2 – Management of Defendable Space.
The landscaping within the boundary setbacks to the buildings adjoining the bushfire hazard interface shall be maintained as an Inner Protection Area, in accordance with Appendix A5.4 & Appendix A5.5 of Planning for Bushfire Protection 2006 and the Rural Fire Service “Standards for Asset Protection Zones”.

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6.3 Strategy 3 – Management of Fill Batter.
The fill batter between the perimeter road carriageway and the Eastern Creek Riparian Corridor shall be managed to minimise the accumulation of combustible bushfire fuels. The dry weight of litter shall be maintained at less than 8 tonnes/hectare and grassland vegetation shall be slashed to a maximum height of 100mm during the Bushfire Danger Period.

6.4 Strategy 4 – Construction Standards of Buildings located adjacent to the Bushfire Hazard.
The construction of the future buildings which will be exposed to the bushfire hazard interface shall address the provisions of Appendix 3 of *Planning for Bushfire Protection 2006* and Australian Standard A.S. 3959 – 1999 – “Construction of Buildings in Bushfire Prone Areas”.

A reticulated water supply shall be extended to service the future industrial / commercial development in accordance with the specifications of Australian Standard A.S 2419.2 - 2005. Hydrants shall have a flow rate of 10 litres / second.

Fire hydrants shall be accessible and located such that a fire appliance can park within a maximum distance of 20 metres from the hydrant and the habitable building must be located such that a fire at the furthest extremity can be attacked by fire-fighters using two 30 metre hose lines and a 10 metre water jet. A clear unobstructed path between the hydrant and the most distant point of the building cannot exceed 90 metres.

Blue hydrant markers shall be provided to locate the positions of the hydrants. The markers shall be positioned on the hydrant side of the centre line of the road pavement.

It is recommended that a “layby” parking bay be provided at the booster assembly [when installed] and that external “Millcock” valves [Landing Valves] be provided in locations which will assist in the extinguishment of bushfires that occur in the Eastern Creek riparian corridor.

The public road network within the Riverstone West Precinct and the private access roads to the proposed allotments shall comply, as minimum, with the deemed-to-satisfy provisions of Section 4.1.3(a) “Public Roads” and Section 4.1.3(b) “Private Roads” as defined by *Planning for Bushfire Protection 2006*. Internal access roads shall be designed to facilitate fire operational access for NSW Fire Brigade Appliances.
6.7 **Strategy 7 – Internal Road Layout.**
The internal road network within the southern Business Park and Industrial precinct shall provide alternate means of egress from the precinct.

6.8 **Strategy 8 – Fire Trail Access.**
A 4.0 metre width compacted gravel fire trail/service access shall be constructed within the Transmission Line Easement, from the perimeter road to the Gas Pipeline Easement, turning to the northwest linking with the proposed access road from Bandon Road. A compacted gravel fire trail shall be constructed between the Eastern Creek riparian corridor and the Business Park precinct. Locked gates shall be provided at the entry points to these trails.

6.9 **Strategy 9 – Evacuation Planning.**
A site specific Evacuation Plan shall be prepared for each of the future industrial and commercial developments that occupy the Riverstone West Precinct. The Evacuation Plans for each facility will include the protocols for the evacuation of the individual buildings during bushfire and other emergencies. The individual Evacuation Plans shall address the protocols for the timely relocation of Staff/Customers in the event that an emergency occurs, both within the Riverstone West Precinct or within the local area.

A copy of the Evacuation Plans shall be provided to the Local Emergency Management Committee/Police, NSW Fire Brigade and NSW Rural Fire Service. The Evacuation Plans shall comply with AS 3745 -2002 “Emergency Control Organisation and Procedures for Buildings, Structures and Workplaces”. 


SECTION 7

ILP CONSISTENCY

I have reviewed the Indicative Layout Plan [ILP] dated 18th November, prepared by Jackson Teece, and advise that the amended layout does not change in any way the assessment of bushfire risk on the future development within the precinct, nor do the amendments change the recommended bushfire management strategies contained in the 14.9.2008 report.

Due to the minor changes to the layout I have amended the 14.9.2008 report to reflect the Indicative Layout Plan the dated the 18th November 2008. A copy of the ILP assessed in the amended report is shown below.

*Figure 7 – Copy of amended ILP – dated 18th November 2008.*
SECTION 8

CONCLUSION

This report was commissioned by the North West Transport Hub in order to meet the requirements of the Growth Centres Commission’s Riverstone West Precinct Working Group and has been undertaken to inform the planning process on the bushfire protection measures required for the proposed industrial and commercial development within the Riverstone West Precinct.

An Indicative Layout Plan has been prepared for the precinct and includes the re-vegetation of a wide riparian corridor along the full length of Eastern Creek which forms the western boundary of the precinct. Areas of Open Space landuse will also be re-vegetated or the existing vegetation retained.

Whilst the precinct does not contain vegetation which has been recorded on the Certified Blacktown Bushfire Prone Land Map as Bushfire Prone Vegetation, the re-vegetated areas and retained vegetation will, when the present grazing practices are removed, return to fully structured vegetation communities which will form contiguous areas of bushfire prone vegetation located along the south-western edge of the future industrial/commercial development and within the north-western corner of the Riverstone West Precinct. A small area of retained / re-vegetated Cumberland Plain vegetation within the north-eastern boundary of the Sewer Treatment Plant will also be deemed to constitute bushfire prone vegetation under the provisions of Section 146 of the *Environmental Planning & Assessment Act 1979*.

This report has examined the likely bushfire threat from a fire which may occur in the future bushfire prone vegetation and recommends strategies that should be considered in the design of the industrial and commercial estate and the construction of the future buildings so as to address the provision of setbacks [defendable spaces] from the bushfire prone vegetation, commensurate with the level of threat and the type of development.

It also provides strategies that address access and water supply provisions for fire fighting operations and construction standards to the industrial/commercial buildings located adjacent to the bushfire hazard.

If these strategies are adopted in the planning of the industrial precinct, the future development will provide defendable spaces, access provisions, water supplies for fire-fighting operations and construction standards which address the aim and objectives and the deemed-to-satisfy provisions of *Planning for Bushfire Protection 2006* for commercial and industrial development.
The assessment of the bushfire protection requirements and potential levels of bushfire attack on the future buildings indicates that the development of the Riverstone West Precinct can be undertaken in a manner that balances development opportunities and the protection of life, property and the environment from the bushfire threat.

Graham Swain,
Managing Director,

*Australian Bushfire Protection Planners Pty Ltd*

REFERENCES:

- N.S.W Rural Fire Service – *Planning for Bushfire Protection 2006*;
- N.S.W Rural Fire Service – Draft Threatened Species Hazard Reduction List for the Bushfire Environmental Code (2003);
- *Environmental Planning & Assessment Act – 1979*;
- *Rural Fires Act – 1997*;
- *Rural Fires Regulation 2002*;
- NSW Rural Fire Service – *Guideline for Bushfire Prone Land Mapping 2002*;
- *Threatened Species Conservation Act 1995*;
- *Native Vegetation Act*;
- *Bushfire Environmental Assessment Code 2003*;
- Building Code of Australia;
- Travers Environmental Conservation Assessment – Riverstone West Precinct – North-West Growth Centre;
- *Blacktown Bushfire Prone Land Maps.*
SECTION 9 - ATTACHMENT A
Plan of Defendable Spaces to future Industrial & Commercial Development within the Riverstone West Precinct.