

MOLINO STEWART
ENVIRONMENT & NATURAL HAZARDS

Georges River Council



Oatley Aged Care Facility

*Integrated Response To Rezoning
Proposal*



Oatley Aged Care Facility

INTEGRATED RESPONSE TO REZONING PROPOSAL

for

Georges River Council

by

Molino Stewart Pty Ltd

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EXECUTIVE SUMMARY

Georges River Council (Council) has prepared a planning proposal for use of the former Bowls Club site at River Road, Oatley for seniors living and community land. Council placed this proposal on public exhibition in November, 2016.

The integrated response provided below has been prepared to provide additional information regarding the bushfire constraints, access arrangements and potential impacts on the biodiversity within the adjacent Myles Dunphy Reserve (MDR). The key findings of this integrated response are:

Ecology

- The development of a seniors housing facility is unlikely to result in a loss of habitat as the site is substantially modified by past land uses. No hollow-bearing trees were recorded in the survey and the existing vegetation is mainly exotic grasses, shrubs or ornamental trees, disconnected from MDR by the car parking areas and access road for the former Bowls Club site.
- No vegetation within MDR shall be cleared for the development of the former Bowls Club site and hence there would not be an impact on the biodiversity within MDR.
- Potential loss of habitat may occur if vegetation within the existing road reserve of River Road is managed to provide additional bushfire protection measures, in particular, the upgrade of River Road. Any such an upgrade would only potentially impact trees located within the existing road reserve. No trees within MDR would be removed.
- The most significant impact from the proposed upgrade of River Road will be a loss of existing canopy vegetation. No threatened flora or fauna species were observed within the area of impact of the upgrade works. However, the proposed road upgrade could impact on an area of identified Sydney Ironbark Turpentine Forest (STIF) Endangered Ecological Community (EEC).
- There are also a number of opportunities for biodiversity offsets or measures to compensate for the loss of potential habitat for any fauna from the upgrade works. Such opportunities would focus on habitat improvement within MDR.

Bushfire management and evacuation for a seniors housing facility

- The area designated for the seniors housing in the planning proposal for the former Bowls Club site is suitable for Special Fire Protection Purpose (SFPP) development and would comply with the performance criteria in the document *Planning for Bushfire Protection* (PBP).
- Access to the proposed seniors housing site is via a single public road (River Road) from Mulga Road. The existing road reserve will allow an access road to be constructed in accordance with the requirements in PBP. River Road is less than 200m in length and, although not a through road, it still meets the performance criteria in PBP of public road access. There is no requirement to consider a secondary access road.
- The access arrangement from an upgrade to River Road and then Mulga Road will allow safe access or evacuation of occupants and emergency services personnel during a bushfire situation. The evacuation route along River Road and then Mulga Road is adequate for emergency evacuation if necessary.
- Any bushfire risks from the development of the former Oatley Bowls Club site can be mitigated by emergency planning, building design and construction.

Access

- There is sufficient scope/area within the boundary of River Road so that proposed access upgrades can be undertaken to meet requirements associated with bushfire and accessibility including gradients.
- Design features can be incorporated into any road upgrade such that the biodiversity impacts would be contained wholly within the existing road reserve and minimised by an elevated boardwalk along the western verge of the road.

The recommendations presented in the report will ensure the planning proposal for a seniors housing development meets the performance criteria for SFPP developments. No habitat loss shall occur within the boundary of the MDR and hence there would be no potential impact on the reserve's biodiversity. Any impacts on existing habitat within the road reserve for River Road adjacent to the boundary of the reserve are manageable and can be compensated through positive measures to enhance the ecological values of MDR. These measures should be complemented by the landscaping within the community lands part of the planning proposal.

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1 INTRODUCTION

Georges River Council (Council) is preparing a Planning Proposal (PP) for the rezoning and reclassification of council land under the Hurstville Local Environmental Plan at River Road, Oatley for the purposes of seniors housing and community facilities. The property is the former Oatley Bowls Club site.

At a Council Meeting on 7 November 2016, Georges River Council resolved:

- That Council not proceed with the 2014 resolution of the former Hurstville City Council to rezone the site to residential to facilitate a seven-to-nine-storey, mixed use residential and seniors housing development.
- That it be noted that if the Planning Proposal proceeds to Gateway determination, any plan making (re-zoning and reclassification) is unlikely to occur before December 2017, and would require the prior approval of the Council elected in September 2017.
- That the Planning Proposal to reclassify the site from 'community' land to 'operational' and to rezone the site to SP2 Infrastructure with the designated land use of seniors housing (nursing home) and community facilities be amended to apply only to that part of the site which would accommodate the seniors housing (aged care component) and ancillary support requirements, i.e. approximately 50% of the site.
- That extensive public consultation commence immediately and a report be submitted to Council in March 2017 detailing the outcomes of the public consultation (including any proposed amendments to the Planning Proposal arising from such consultation) prior to any Gateway submission to the NSW Department of Planning and Environment.
- That an independent peer review of the community consultation results be undertaken.
- That the Planning Proposal be assessed by an independent expert who will make recommendations to the Independent Hearing and Assessment Panel for endorsement or otherwise prior to any Gateway determination.

- That if the Planning Proposal proceeds, i.e. after independent assessment, approval by IHAP and Department of Planning and Environment, the reclassification Public Hearing be undertaken by a former Judge of the NSW Land and Environment Court or a person with equivalent standing and experience, and that a post Gateway exhibition report be prepared by an independent consultant for consideration by the Independent Hearing and Assessment Panel and the newly elected Council panel prior to forwarding to the Department of Planning.

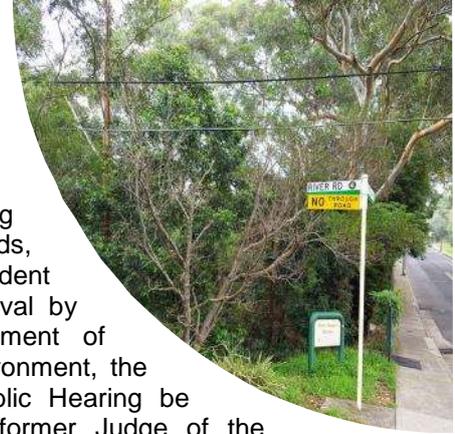
During the extensive public consultation undertaken as part of the process for the PP, a number of concerns were raised regarding the ecological and bushfire constraints and the suitability of this site for the intended use as seniors housing. This report presents additional commentary in response to these public concerns and to clarify the information presented in the expert reports prepared for the PP.

1.1 BACKGROUND

The PP (TPG, 2016) was submitted to Georges River Council and placed on public exhibition in November, 2016. The rezoning of council land only applies to the former Oatley Bowls Club site and does not include the Myles Dunphy Reserve (MDR) to the west.

All building structures on the site associated with the former bowling club have been demolished other than the disused bowling greens which are constructed with fill, stone retaining walls and a small metal shed. Road access to the site is via the partially constructed River Road. Utility services such as water, sewer and power are also available at the site.

The site is currently zoned RE1 Public Recreation under the Hurstville LEP 2012, and is classified 'community land' under the *Local Government Act 1993*.



1.1.1 Special Fire Protection Purpose development

Seniors housing is defined in the Rural Fires Act as Special Fire Protection Purpose (SFPP) development. For a SFPP development to receive concurrence, the proposed development must demonstrate compliance with the specific bushfire protection measures that are outlined in the document *Planning for Bushfire Protection* (PBP).

The underlying principle in PBP for determining development applications is that a range of bushfire protection measures are required to be used in combination to reduce the bushfire risks to buildings and occupants. For SFPP developments, there is a greater reliance on requiring space around the buildings as defensible space and asset protection zones for fuel load control and less reliance on construction standards.

Specific objectives of SFPP development outlined in Section 4.2 of PBP are to:

- Provide for the special characteristics and needs of occupants. Unlike residential subdivisions, which can be built to a construction standard to withstand the fire event, enabling occupants and fire fighters to provide property protection after the passage of fire, occupants of SFPP developments may not be able to assist in property protection. They are also more likely to be adversely affected by smoke or heat while being evacuated; and
- Provide for safe emergency evacuation procedures. SFPP developments are dependent on suitable emergency evacuation arrangements, which require greater separation from bushfire threats. During emergencies, the risk to fire fighters and other emergency services personnel can be high through prolonged exposure, where door to door warnings are being given and exposure to the bushfire is imminent.

1.1.2 Travers assessment

Travers Bushfire and Ecology (TBE) completed a preliminary assessment of the bushfire constraints affecting rezoning and reclassification of the former Oatley Bowls

Club site for seniors housing. Molino Stewart has been provided with the TBE assessments, comprising advice letters dated 5 Feb 2014, 23 April 2014 and bushfire constraints maps included as Schedule 1 and 2. The TBE assessment indicates that an area of approximately 0.2Ha in the north eastern part of the former Bowls Club site is being suitable for SFPP developments. This area is based on the required asset protection zones from existing forest or rainforest vegetation within MDR.

Access to the former Bowls Club site is restricted to a single access point via River Road. The TBE assessment indicated that this access adjoined bushland vegetation to the west and that safe evacuation would require careful consideration. Two options were presented to provide safe access and egress to the proposed seniors housing facility.

1. Upgrade the existing River Road to an eight metre carriageway and maintain the full 20m width of the road reserve and an additional 10m of vegetation within MDR as an asset protection zone.
2. Council to consider creating a secondary access road within the railway corridor to the east to provide emergency egress during a bushfire emergency.

Both these options also outlined the need for a bushfire evacuation plan to be prepared and part of the emergency management of any seniors housing facility.

1.1.3 Ecological constraints

The PP requires the provision of bushfire protection measures for the seniors housing facility. There is the potential of impacts on the ecology from incorporating bushfire protection measures into the rezoning proposal.

a) Loss of Habitat

Existing vegetation within the former Bowls Club site includes exotic planted trees around the perimeter of the car parking area, a couple



of native trees retained within the car parking area and exotic and native shrubs that were used in the landscaping at the entrance to the bowling greens. The development of this site was assessed in the ecological constraints report (Molino Stewart, 2016) as not having a significant impact on the biodiversity within MDR. In particular, there was not likely to be any loss of habitat within the former Bowls Club site.

b) STIF EEC

Vegetation consistent with the determination for Sydney Ironbark Turpentine Forest (STIF) endangered ecological community (EEC) occurs within MDR to the west and south of the former Bowls Club site. This community is listed in the schedule of the Threatened Species Conservation Act and also as a critically endangered community under the Commonwealth Environmental Protection and Biodiversity conservation Act.

Clearing of vegetation within this reserve may have an impact on the local distribution of the STIF EEC and will require additional approvals.

c) Drainage Corridor

The drainage channel immediately to the west of the former Bowls Club site is identified in the TBE assessment as a first order stream. Approximately 100m south of the limit of the site, the drainage channel joins with a tributary stream entering from the east and it becomes a second order stream. DPI Water requirements for first order stream in include a 10 metre wide vegetated riparian zone either side of the drainage channel, measured from the top of the natural stream bank.

Any encroachment into this VRZ for the construction of the access road under the PP should be compensated by measures to improve the biodiversity within the MDR.

d) Grey-headed flying-fox colony

The MDR Plan of Management describes a temporary or informal roosting / foraging colony having been observed within the reserve since 2007, with its location within MDR changing each year. The colony has

ranged from 50 to 6,000 individuals and generally in close proximity to Georges River whilst exploiting the season foraging resources (nectar, pollen) before dispersing during winter.

The colony is not listed on the National flying-fox monitoring viewer but could be associated with large camps located at Kareela and Wooli Creek.

The fieldwork for the ecological constraints assessment (Molino Stewart, 2016) was completed in February and no Grey-headed flying-fox colony was observed within 500m of the former Bowls Club site. However, these bats could be heard within MDR closer towards Georges River.

1.1.4 Issues raised during community consultation

During the public consultation period a number of issues were raised regarding the suitability of the former Bowls club site for use as seniors housing. These are outlined below (Stuckey, *pers comm*):

a) Access

1. A single access along River Road will not comply with the intent of measures outlined in PBP for SFPP. In particular, the existing road traverses beside bushfire prone vegetation that may expose emergency personnel and occupants to high radiant heat loads during evacuation.
2. The gradient of the existing footpath will restrict the use of many of the occupants of the seniors housing facility.

b) Impacts on Myles Dunphy Reserve

1. Any management of the vegetation to the west of River Road to provide additional asset protection from a bushfire as outlined in Option 1 in the TBE assessment would impact on significant vegetation within MDR. This would be in conflict with the objectives of the Plan of Management for this reserve.

2. This vegetation is considered representative of STIF EEC and is protected under the *NSW Threatened Species Conservation Act*. Clearing of any vegetation within this reserve would require Office of Environment and Heritage (OEH) approval.
3. This clearing would encroach within the minimum 10m wide riparian corridor of a first order stream in the bushfire assessment (TBE, 2014) and may require additional approvals from DPI Water.

c) Appropriateness of site for seniors housing

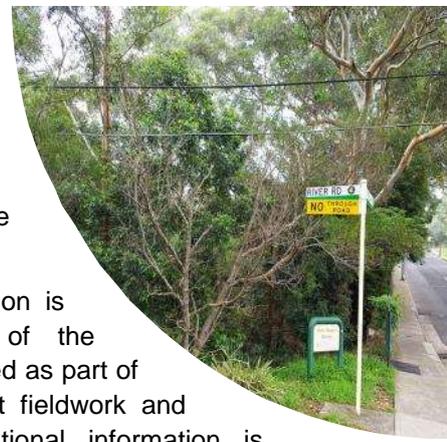
1. The PP for seniors housing places the facility at the north eastern part of the site, surrounded to the west and south by extensive forested vegetation. The MDR is bushfire prone land and hence positioning a housing facility that requires considerable assistance in emergency management within close proximity to a bushfire hazard may be inappropriate and place the occupants at greater risk than other locations in the area.
2. This risk is compounded by a single access road that traverses along bushfire prone vegetation.
3. Pedestrian access to the site is difficult and may not be suitable for the proposed occupants to access the commercial facilities at Oatley Village across the railway line.

1.2 PURPOSE OF REPORT

The report is prepared to address some of the community concerns regarding the appropriateness of the former Bowls Club site for seniors housing as outlined in the PP, in particular, issues regarding bushfire risk, access and impacts on the MDR have been raised. The bushfire issues are addressed in Section 2. The impacts to MDR including loss of existing habitat along River Road, encroachment on an existing drainage channel

and the Grey-headed flying-fox camp are considered in Section 3.

This additional information is based on a review of the specialist reports released as part of the PP and subsequent fieldwork and assessment. This additional information is provided to assist the local community in determining the merits of the PP for the former Bowls Club site.



2 BUSHFIRE REVIEW

2.1 BUSHFIRE BEHAVIOUR MODEL

The bushfire assessment undertaken by TBE applied the simplified method outlined in Appendix B of AS 3959-2009 (Standards Australia, 2009) to assess the bushfire attack level. This relates the dominant vegetation type and slope beneath the vegetation for a particular fire weather district, as measured over a 100m distance. This allows a range of separation distances to be determined for which the radiant heat impacting on a building does not exceed pre-defined classes (negligible, 12.5kW/m², 19kW/m², 29kW/m², 40kW/m² and extreme).

The method applied assumes that a bushfire approaching a building has reached an equilibrium rate of spread and fire intensity given the two input variables of slope and vegetation type. There is little flexibility within the bushfire assessment methodology to consider complex situations with changing vegetation types or in undulating terrain with short slope facets.

2.1.1 Planning for Bushfire Protection

PBP adopts a similar approach relating slope and vegetation for a fire weather district to radiant heat. Measurements are made over a 140m distance from the site and the worst-case situation is applied in determining the required separation distance. However, for SFPP developments, the separation distances must also address the objective for SFPP in PBP that no building is exposed to a radiant heat load of 10kW/m². Furthermore, the separation distances listed in Table A2.6 of PBP are also adjusted for a higher flame temperature applied in SFPP developments and provide an additional level of safety for fire-fighters and other emergency personnel that may be exposed during a bushfire emergency.

The procedure outlined for bushfire assessments for SFPP developments in PBP

does not include a mechanism to refine the input variables based on site-specific measurements. There is no opportunity to consider the distance that a bushfire must travel before reaching the maximum rate of spread for a given slope and vegetation classification. There is no flexibility to adjust the bushfire model to account for the radiant heat released from a bushfire that has a shorter burn path than the default distance in PBP. Similarly, there is no opportunity to consider the direction from which a bushfire is likely to approach during extreme weather.

2.2 APPLICATION TO THE BOWLS CLUB SITE

2.2.1 Short Fire Run

The bushfire models applied in AS3959-2009 and PBP use a default bushfire path of at least 100m in determining the intensity.

On the Bowls Club site, remnant vegetation to the west of the site is mainly a riparian community that occurs along the drainage channel. This vegetation is less than 50m in width measured in the direction towards the proposed senior living site. The narrow strip of vegetation is bordered by a perimeter road and residential dwellings with managed gardens to the west.

The assessment methodology in PBP allows for the downgrading of the vegetation type from 'Forest' to that being equivalent to 'Rainforest' for this narrow strip of riparian vegetation along the drainage channel. However, the Rainforest vegetation classification may still over-estimate the fire intensity and radiant heat load given the site-specific parameters of short, changing slope facets, narrow belt of existing vegetation with an understorey of exposed sandstone ledges, leaf litter and few shrubs or groundcover plants.

A bushfire originating within the western part of this remnant vegetation would have a rate of spread that would be decelerating as it burned towards the drainage channel and then accelerate from the drainage channel towards the senior housing site. However, given the

length of either slope facet, any bushfire is not likely to reach equilibrium with maximum rate of spread and fire intensity over this short distance. Consequently, the radiant heat exposure obtained from modelling even Rainforest vegetation and slope using either AS3959-2009 or PBP would over estimate the true level of radiant heat exposure.

For SFPP, there is no opportunity to further lower the radiant heat released when considering a short fire run and hence the separation requirements outlined in PBP (Table A2.6) must be achieved for development approval. However, the risks from a bushfire with a short fire run directly towards the site is significantly less than for a bushfire burning through a large patch of vegetation.

In determining the appropriateness of the site for a seniors housing facility, the risk of bushfires should be assessed. This is a combination of the likelihood of occurrence of a bushfire in the surrounding MDR and the consequences of such an event. The fire history for the MDR is considered below.

2.2.2 Bushfire History within Myles Dunphy Reserve

The vegetation along Georges Rivers is a known fire path through the Georges River Local Government Areas (LGA). Bushfires have occurred within MDR in 2001, 2005 and 2009 due to accidental ignitions, arson or lightning strikes. The Bankstown / Hurstville Bushfire Risk Management Plan (BFRMP) lists MDR as having a very high bushfire risk that has the potential to significantly impact adjoining residential areas. The vegetation along Georges River is a potential pathway for bushfires and in certain conditions spot fires may occur on the opposite bank.

MDR is included in the treatment register for hazard reduction burns, localised pile burns, manual removal of woody debris and community education as part of procedures to lower the bushfire risk to adjoining properties (B/H BFMC, 2012).

2.3 SFPP DEVELOPMENT

2.3.1 Objectives of development

The specific objectives for SFPP developments are to:

- Provide for the special characteristics and needs of occupants. Unlike residential subdivisions, which can be built to a construction standard to withstand the fire event, enabling occupants and firefighters to provide property protection after the passage of fire, occupants of SFPP developments may not be able to assist in property protection. They are also more likely to be adversely affected by smoke or heat while being evacuated; and
- Provide for safe emergency evacuation procedures. SFPP developments are dependent on suitable emergency evacuation arrangements, which require greater separation from bush fire threats.

The objectives and intended outcomes of the PP are framed in consideration of the SFPP objectives and as described by TPG (2016) are to:

- amend the Hurstville LEP 2012 to rezone and permit the development of the site for the purposes of 'seniors housing' and a 'community facility' with Council consent;
- reclassify the land from 'community' to 'operational' under the *Local Government Act 1993* to enable the land to be developed for the purpose of 'seniors housing';
- provide seniors housing to meet identified community need for seniors housing in accordance with the Georges River Council's Community Strategic Plan 2025 and associated Delivery Program and Operational Plan;
- provide for a 'community facility' as public recreation space inclusive of a community garden in accordance with the resolution of Council dated 22 September 2010 (Minute No. 303 CCL186-10); and
- ensure the zoning enables a 'community facility' on areas of the site where seniors housing cannot be achieved due to



bushfire constraints and ensure the permissibility of such community uses are not incidental to the 'seniors housing' use.

2.3.2 Location constraints

The former Bowls Club site is located immediately to the east of unmanaged vegetation (MDR). The vegetation within MDR is assessed as category 2 bushfire prone vegetation by Georges River Council. A 30 metre buffer to bushfire prone vegetation covers most of the western portion of the former Bowls Club site.

The categories represented on the bushfire prone land map are an indication of the level of bushfire risk for those affected properties. For the former Bowls Club site, it is an indication that MDR is an isolated patch of vegetation, surrounded by residential development or Georges River foreshore. The vegetation is disconnected from other areas of intact vegetation and hence the level of bushfire risk is less than that where vegetation is contiguous.

PBP imposes a requirement for any properties within 100m of this vegetation to include bushfire protection measures for the protection of the existing structures, any proposed additions, and for the safety of occupants and emergency personnel.

The residential properties surrounding the Bowls Club site to the north and east of the Illawarra Railway line and those to the west of MDR have, to an extent already adopted some bushfire protection measures. In particular, perimeter roads with maintained verges contribute to ignition management, with the managed gardens, lawns and outdoor recreation areas for each property providing asset protection zones surrounding the dwellings. A bushfire within MDR is unlikely to spread into the urban interface. Properties surrounding the former Bowls Club site compliment the bushfire protection for the proposed seniors housing site.

Access to the proposed seniors housing site is via a single public road from Mulga Road. The existing road reserve will allow an access road to be constructed in accordance with the requirements in PBP. Moreover, this existing

road is less than 200m in length and, although not a through road, it still meets the performance criteria in PBP of public road access. There is no requirement to consider a secondary access road.

2.3.3 Risks

The Hurstville / Bankstown BFRMP indicated that MDR has a very high bushfire risk. Bushfires commonly occur along the foreshores of Georges Rivers and spread upslope along drainage channels. The risk rating adopted for MDR is based on a likely occurrence of a bushfire and the consequence of such an event would have. The BFRMP acknowledges this risk and provides a strategic fire advantage zone (SFAZ) along the eastern side of the drainage channel to protect existing residential buildings to the southeast of MDR. Within this zone specific treatments including hazard reduction by manual removal, slashing or prescribed burning on an annual basis as well as implementing community education programs are implemented.

These treatments and preparation are deemed adequate by the Hurstville / Bankstown Bushfire Management Committee to lower the bushfire risk for existing residential development surrounding MDR to a manageable level.

The PP proposes locating seniors housing in the northeast part of the former Bowls Club site. The separation distance from vegetation within MDR to the south and southwest exceeds that required in PBP. The asset protection zone would be managed as public open space and landscaped to incorporate planting of non-flammable vegetation and:

- Limit the maximum radiant heat load on any building to less than 10kW/m²;
- Prevent spread of a bushfire from MDR to the buildings;
- Provide a defendable space and safe retreat areas for fire fighting personnel; and
- Contribute to ember protection for the buildings.

The bushfire risks to occupants or emergency services personnel are adequately considered by the bushfire protection measures developed

in compliance with the performance criteria for SFPP listed in PBP.

For a bushfire originating within MDR and burning through the remnant vegetation along the drainage channel to the west of the site, the risks to the proposed seniors housing facility are significantly less than the worst case situation considered in PBP, given the slope, vegetation type and separation distance. The narrow strip of vegetation; limited surface fuels with large areas of exposed sandstone rock ledges; short fire run and changing slope characteristics as a potential bushfire directly approaches the proposed seniors housing would indicate that any bushfire in this vegetation should not reach the equilibrium rate of spread and fire intensity as modelled in PBP. Hence the applied separation distance used in the PP is adequate to reduce the bushfire risks to building, occupants or emergency services personnel.

When considering the use of River Road by occupants and emergency services personnel in the event of a bushfire it is relevant to note that as discussed above, the intensity of any bushfire within the remnant vegetation along the drainage channel in MDR to the west of River Road is likely to be far lower than considered in PBP. Moreover, this bushfire risk can be mitigated through emergency evacuation planning that is a key requirement for SFPP developments. A bushfire evacuation plan, as recommended in the TBE assessment, would be required for this facility. This plan would detail the responsibilities of staff, the trigger points for evacuation and procedures for evacuation of elderly occupants prior to the onset of any bushfire emergency to ensure the bushfire does not pose an unmanageable risk

2.4 BUSHFIRE PROTECTION MEASURES

2.4.1 Asset protection zone

Schedule 2 prepared as part of the TBE bushfire assessment (provided as Appendix 1) proposed asset protection zones for the proposed seniors housing development of:

- 100m from Forest vegetation with a 10 - < 15° downslope which occurs to the south of the PP boundary and
- 50m from remnant vegetation with 5 - < 10° down slope which occurs to the west of the PP site.

These asset protection zones comply with Table A2.6 of PBP. No part of any building shall be exposed to a radiant heat level exceeding 10kW/m².

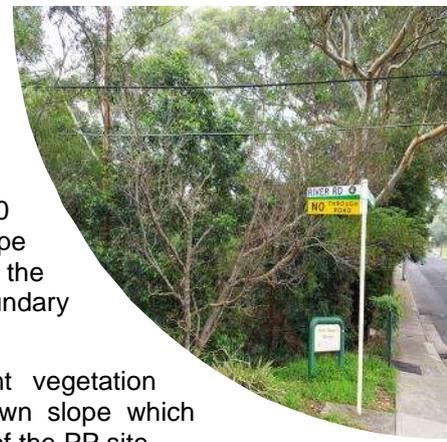
The PP indicates that the required asset protection zones for the potential seniors housing development would be used as public open space, including access roads, landscaping, playgrounds and picnic areas. These uses are permissible within an asset protection zone and do not increase the level of bushfire risk to the potential seniors housing development.

2.4.2 Access

Access to the proposed seniors housing development is via River Road. This road shall be upgraded to comply with the performance criteria outlined in PBP and include an eight metre wide carriageway to allow traffic to pass in both directions with a two metre wide pedestrian pathway either side. Where necessary, the pedestrian pathway along the side of River Road closest to MDR will include an elevated boardwalk to minimise any impact on the existing vegetation from construction of a hard-surface pavement.

River Road is a short cul-de-sac that is less than 200 metres in length. Secondary access is not required to meet the performance criteria for SFPP in PBP. The proposed access arrangements therefore comply with the planning requirements for SFPP developments.

The upgraded River Road will allow fire fighting operations to access MDR using existing tracks. Access to the bushland interface will also be provided by the landscaping and pathways within the community lands as part of the PP.



2.4.3 Water gas and Electricity

The former Bowls Club site is serviced by underground water. Existing electricity connections to properties along River Road is above ground, with regular management of the existing vegetation to maintain the easement. This trimming occurs within the existing STIF EEC, encouraging the development of a shrub and low tree community along the western verge of River Road.

2.4.4 Building design and construction

The proposed seniors housing facility would meet the standards for construction of buildings in bushfire prone areas. At a minimum this would include design features to limit potential for ember entrapment in the roof and façades exposed to the bushfire hazard, non-combustible mesh screens to glazing elements, use of non-combustible materials for the external cladding and ember protection to external doors.

The minimum level of construction of buildings in bushfire prone land is for radiant heat exposure of 12.5kW/m². This will exceed the level of exposure due when addressing the objectives for SFPP (limit of 10kW/m²). The buildings would have a safety margin incorporated into the construction.

2.4.5 Emergency Management

The TBE bushfire assessment recommended the need for an emergency evacuation plan to be prepared as part of the emergency management of the facility. The key objective of SFPP developments is for a greater reliance on emergency management due to the nature of the potential occupants. This planning would consider the benefits of early evacuation or shelter in place as potential responses to a bushfire emergency to mitigate any bushfire risks that occur from the development of the former Bowls Club site. An emergency evacuation plan would be prepared in conjunction with future detailed design of a seniors housing facility.

2.5 SUMMARY OF ISSUES

The proposed seniors housing facility is located to the west of bushfire prone vegetation within MDR. The Hurstville / Bankstown BFRMP determined that a bushfire within the vegetation along Georges River as likely, spreading along the tributary streams. Based on this assessment, the proposed seniors housing facility being adjacent to MDR was considered as a high bushfire risk and may be impacted by direct flame contact, elevated radiant heat and burning embers.

The bushfire risk is manageable through the location and construction of the facility, the access provisions and proper emergency planning.

The separation distance provided for the proposed seniors housing facility fully complies with the requirements for SFPP in PBP. As such, the potential for direct flame contact is reduced and radiant heat exposure is limited to 10kW/m².

Access to the facility is via River Road. This road is proposed to be upgraded to comply with the performance criteria in PBP, which will reduce the level of radiant heat exposure. Consideration of the fire behaviour indicates that the intensity of any bushfire within the remnant vegetation along the drainage channel in MDR to the west of River Road is likely to be far lower than considered in PBP.

The existing road is less than 200m in length and, although not a through road, it still meets the performance criteria in PBP of public road access. There is no requirement to consider a secondary access road.

Moreover, detailed emergency planning would be required for any proposed facility and this would further reduce the risks to occupants during a bushfire. Additional access roads are not necessary for the safety of the occupants, staff or emergency services personnel.

a) Suitability of site

Given consideration of the bushfire hazards, the protection measures outlined in the PP and the requirements for SFPP in PBP, the former Bowls Club should not be excluded as a potential SFPP development site. All bushfire

risks for this site are manageable and could be addressed in the final design for any seniors housing facility.



3 BIODIVERSITY ASSESSMENT

3.1 INTRODUCTION

Potential loss of habitat may occur if vegetation within the existing road reserve of River Road is managed to provide additional bushfire protection measures. In particular, the upgrade of River Road and construction of pedestrian footpaths could result in the clearing of several large canopy trees and several smaller mid-storey trees and shrubs from within MDR. The potential impacts of this are addressed in this supplementary assessment.

3.2 SITE ASSESSMENT

Detailed tree assessments were undertaken for the mature trees recorded on the survey plan for River Road (TPG, 2016: Appendix M). This included those trees currently within the road reserve and a couple of mature trees along the drainage corridor to the west that fall within the MDR boundary. This survey was undertaken on 29th March 2017 and involved only daylight assessments; no spotlighting or habitat surveys were undertaken.

The vegetation adjacent to River Road consists of mature canopy trees (*Syncarpia glomulifera*, *Angophora costata*, *Eucalyptus pilularis*, *Corymbia gumifera*) with an understorey of mid-level trees (*Glochidion ferdinandi*, *Pittosporum undulatum*, *Acmena smithii*, *Omalanthus populifolius*, *Cyathea australis*) and groundcover of exposed sandstone ledges, leaf litter, sedges and ferns (Figure 1).

The mature *Angophora costata* trees adjacent to River Road have an open canopy with abundant tree hollows which would provide habitat for small birds and mammals. The two large *Eucalyptus pilularis* trees are also considered habitat trees. The *Syncarpia glomulifera* trees are generally mid-storey with a tight canopy and have not developed tree hollows. These trees and the regrowth *Glochidion ferdinandi* and *Pittosporum undulatum* are unlikely to provide habitat for

fauna but may provide a seasonal food resource during flowering and fruiting.

Figure 1 Riparian vegetation to west of River Road showing open groundcover



A summary of the habitat value of the vegetation to the west of River Road between the PP site and Mulga Road is included in Table 1.

3.2.1 Access road upgrade

To comply with the performance criteria in PBP for internal access roads, River Road would be required to be upgraded to an eight metre wide carriageway. This will allow two way traffic and aid in fire fighting operations. The PP also includes a pedestrian path, suitable for elderly, to be provided either side of River Road.

The upgrade of the existing road will require landform modifications, drainage realignment and vegetation clearing within the STIF EEC.

3.2.2 Drainage corridor

A first order stream flows through a culvert beneath Mulga Road towards Georges River (Figure 2). This stream becomes a second order stream after the confluence of another tributary to the south of the former Bowls Club site.



Figure 2 Existing culvert complex beneath Mulga Road

Table 1 Summary of tree assessment for vegetation along River Road

Tree number	Species	Common Name	Trunk Diameter ¹	Height	Habitat value
1	<i>Syncarpia glomulifera</i>	Turpentine	50	20m	Closed canopy, low value
2	<i>Angophora costata</i>	Sydney Red Gum	60	12m	Open canopy, tree hollows, medium value, no evidence of recent arboreal activity
3	<i>Angophora costata</i>	Sydney Red Gum	80	30m	Open canopy, tree hollows, medium value, no evidence of recent arboreal activity
4	<i>Eucalyptus pilularis</i>	Blackbutt	60	20	Open canopy, hollows, medium value
5	<i>Glochidion ferdinandi</i>	Cheesetree	30	6m	Low value regrowth midstorey tree
6	<i>Eucalyptus pilularis</i>	Blackbutt	80	25	High value habitat, tree hollows
7	<i>Angophora costata</i>	Sydney Red Gum	2 x 30	8	Two trunks, regrowth, low value
8	<i>Eucalyptus pilularis</i>	Blackbutt	50	12	Small tree, no hollows, low value habitat, close to Mulga Road.

¹ Diameter is measured in cm at breast height over bark

3.2.3 Grey-headed flying-fox colony

A Grey-headed Flying-fox colony was observed in vegetation to the east of the central drainage channel and south of a small tributary, approximately 150m from the former Bowls Club site (Figure 3). This colony has been described as a temporary camp in the MDR Plan of Management. The colony was not observed at this location during the field work undertaken for the constraints assessment in February, 2016. The Grey-headed Flying-fox colony was detected during fieldwork undertaken in March, 2017.



Figure 3 Location of temporary Grey-headed Flying-fox camp observed in March, 2017 to south of former BOWLS Club site

The bats were vocal during daylight hours and likely to be within the mating period. The camp is likely to relocate as seasonal food resources become available to support offspring later in the year.

This camp was not extensive and was dispersed over a distance of approximately 200m along the eastern side of the drainage channel.

3.3 IMPACT ASSESSMENT

3.3.1 Clearing of existing vegetation

Clearing of existing vegetation would be required for an upgrade of River Road to meet PBP requirements. The potential impacts of this are discussed below. A conceptual alignment of the road upgrade is shown in Figure 4, and this forms the basis of this assessment. It should be noted that this is a concept design only and would be subject to more detailed investigation and analysis should any upgrade works proceed.

a) Habitat Loss

The upgrade to River Road would remove six trees (numbered 4 – 8 in Table 1) with potential impact to the root zone for Tree # 3. This will result in a loss of habitat for arboreal mammals and birds. Any clearing required would be limited to within the existing road reserve for River Road.

A search of the trunks to these trees did not detect any scratch marks to indicate recent fauna activity. Tree hollows were present only in the Sydney Red Gum (Tree # 3). A total of approximately 94m² of potential habitat will be impacted by the upgrade works. The extent of the road upgrade works and potential impact of existing habitat is shown in Figure 4.

The habitat value of the vegetation to be removed is limited by its proximity to a busy road (Mulga Road), frequent vehicle parking along River Road for residents and train passengers, noise and lighting affects from residents and visitors to MDR, and regular vegetation management of the power line

easement that is also within the road reserve. Biodiversity enhancing measures within MDR should be considered to compensate for the loss of habitat within the road reserve.

b) STIF EEC

The vegetation to be removed would result in a loss of a small area of STIF EEC from the road reserve. This vegetation is significantly impacted by existing road and stormwater management, vegetation management of the power line easement, noise, street lighting and pollution impacts and weed regrowth downstream of the Mulga Road culvert. Any loss of STIF EEC for the upgrade to River Road can be offset by compensatory measures to improve existing habitat within MDR.

The potential loss of STIF EEC would be minimised through the provision of an elevated boardwalk to provide pedestrian access along the western side of River Road from Mulga Road until the natural ground surface is reached. This will limit any impact to the root system of retained canopy trees from construction of a hard pavement surface. The extent of this boardwalk is shown in the Figure 4.

c) Threatened Species

No threatened flora occurs within the area of impact of the conceptual upgrade design. The STIF EEC will be impacted through loss of six trees. These trees are not likely to provide habitat for threatened fauna such that the removal of these trees would place any fauna a risk of extinction in the local area.

3.3.2 Drainage corridor

Under the Water Management Act 2000 (WM Act) an approval is required to undertake controlled activities on waterfront land, unless that activity is otherwise exempt.

Controlled activities include the carrying out of building work, such as erecting buildings and other structures, and the installation of infrastructure. They also include excavating or depositing material.

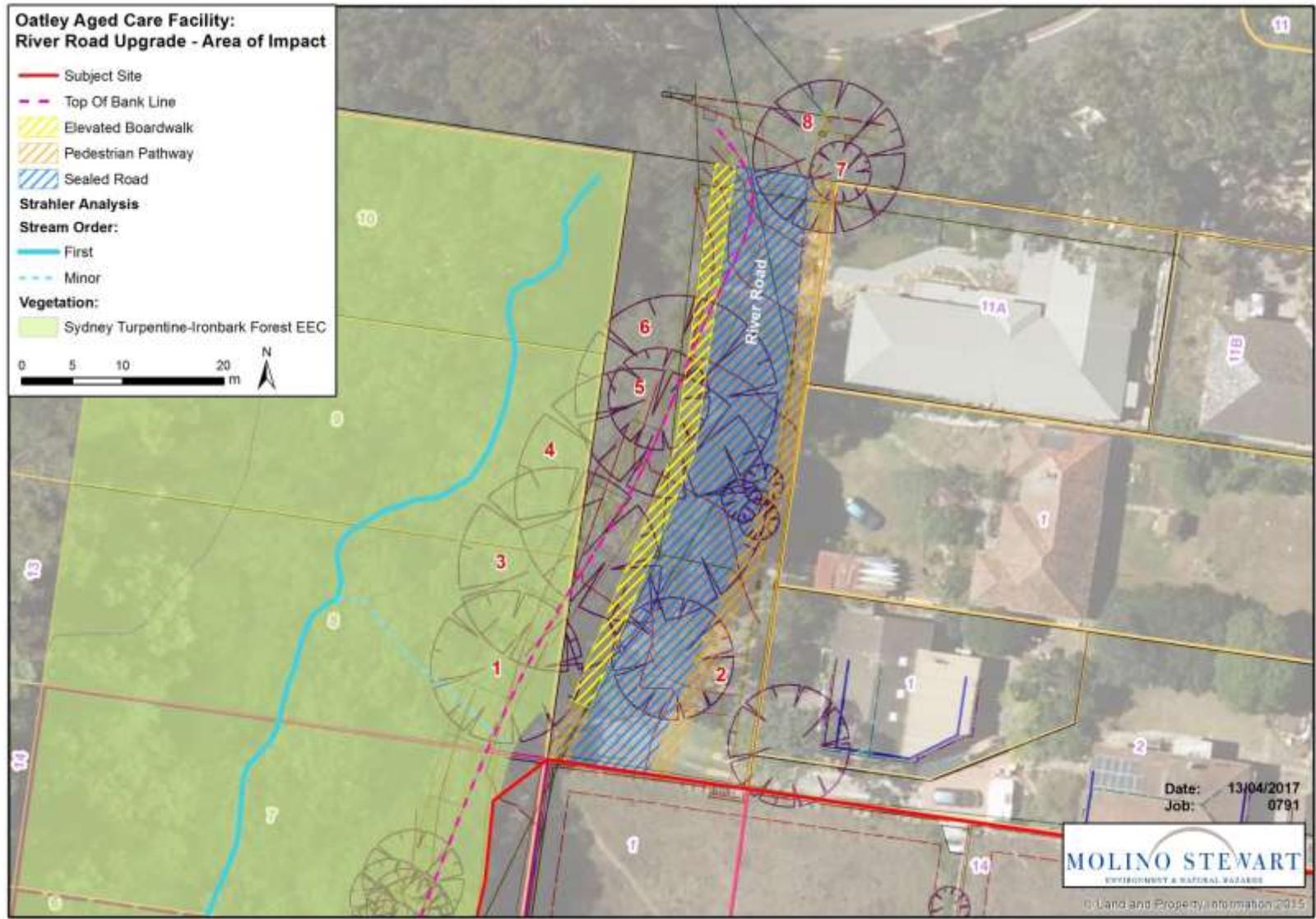


Figure 4 Conceptual plan for upgrade to River Road and potential loss of existing vegetation within road reserve

Waterfront land is the bed of any river, lake or estuary and any land within 40 metres of the highest bank of the river, the lake shore or the mean high water mark of the estuary.

A public authority or an organisation undertaking work on behalf of a public authority, as would normally be the case for public road upgrade works, does not need to obtain a controlled activity approval for any controlled activities that it carries out in, on or under waterfront land. The WM Act definition of a public authority includes a council within the meaning of the Local Government Act 1993. Nevertheless, best practice guidelines in relation to the management of riparian corridors should still be applied.

DPI Water riparian policy indicates for a first order stream that a 10 metre wide vegetation riparian zone (VRZ) should be provided either side of this stream. The 10 metres is measured from the top of the existing stream bank. The proposed upgrade works would require encroachment into this VRZ. It is however noted that just upstream of River Road, this drainage line passes under Mulga Road and as such there are existing culverts which significantly modifies this waterway.

To manage any proposed road upgrade, the following options could be considered:

- Provide an offset to compensate for the encroachment into the VRZ; or
- Modify the existing drainage channel by diverting stormwater into a pipe beneath the upgraded road for the distance necessary before the stormwater integrates with the existing drainage channel.

3.3.3 Grey-headed Flying-fox colony

In the March 2017 field inspection, the Grey-headed Flying-fox camp was located within MDR adjacent to the central drainage channel. The bats were mainly adults and vocal during the day. It is likely that this camp was established to exploit seasonal food resources within MDR.

The current separation between the PP site and this colony is greater than that to existing

residential areas to southeast of MDR. Additional separation would be provided by the proposed community land within the asset protection zone for any seniors housing development. As such the development is not likely to have a significant impact on the Grey-headed Flying-fox colony. The camp is able to relocate to alternative areas within MDR or form with the larger colonies at Kareela or Wolli Creek.

3.4 OPPORTUNITIES FOR BIODIVERSITY OFFSETS

Parts of MDR are significantly impacted by exotic flora, especially Privet and Lantana. Regular removal of these weed species by Council, RFS and community groups occurs throughout MDR. There is considerable opportunity for weed management and habitat enhancement within MDR to be used as compensation for the impacts associated with the River Road upgrade.

There is an opportunity for revegetation to occur within existing STIF EEC vegetation to the west of the central drainage channel in areas that have been impacted by residential development. No revegetation should occur to the east of the central drainage channel within the Strategic Fire Advantage Zone, as this would increase the bushfire risk to properties to the south of the former Bowls Club site.

The existing power line along River Road could be placed underground as part of the road upgrade works. This would avoid subsequent vegetation trimming to maintain supply to the residences and seniors housing.

3.5 SUMMARY OF ISSUES

The original assessment by Molino Stewart found that the development of the former Bowling Club would not result in any loss of habitat. This site does not contain any hollow-bearing trees. The existing vegetation is mainly exotic grassed, shrubs and ornamental trees and is disconnected from MDR by the car parking and access road for the former Bowls Club site.

No vegetation shall be cleared within MDR and hence the development will not have an impact on the biodiversity.

Potential loss of habitat may occur if vegetation within the existing road reserve of River Road is managed to provide additional bushfire protection measures, in particular, the upgrade of River Road.

The most significant impact from the proposed upgrade of River Road will be a loss of existing canopy vegetation. This is unlikely to significantly impact any potential fauna that would place any species at risk of local extinction.

No threatened flora or fauna species were observed within the area of impact of the upgrade works. However, the proposed road upgrade would impact on an area of identified STIF EEC. Such an upgrade would only potentially impact trees located within the existing road reserve. None of the trees that would potentially be removed are located within MDR.

There are a number of opportunities for biodiversity offsets or measures to compensate for the loss of potential habitat for any fauna from the upgrade works.

The bushfire protection measures required within the boundary of the proposed seniors housing site will not impact on any flora or fauna. The landscaping of the community lands may have a positive impact on the biodiversity within MDR.



4 CONCLUSION AND RECOMMENDATIONS

The area designated for the seniors housing in the PP for the former Bowls Club site is suitable for SFPP development and would comply with the performance criteria in PBP.

The development of the former Bowls Club would not have a significant impact on the biodiversity within MDR and there is unlikely to be any loss of habitat within the former Bowls Club site. This site does not contain any hollow-bearing trees. The existing vegetation is mainly exotic grassed, shrubs and ornamental trees and is disconnected from MDR by the car parking and access road for the former Bowls Club site.

Potential loss of habitat may occur if vegetation within the existing road reserve of River Road is managed to provide additional bushfire protection measures, in particular, the upgrade of River Road.

The most significant impact from the proposed upgrade of River Road will be a loss of existing canopy vegetation. No threatened flora or fauna species were observed within the area of impact of the upgrade works. However, the proposed road upgrade would impact on an area of identified STIF EEC. Such an upgrade would only potentially impact trees located within the existing road reserve. None of the trees that would potentially be removed are located within MDR.

Design features can be incorporated into any road upgrade such that the biodiversity impacts would be minimised. There are also a number of opportunities for biodiversity offsets or measures to compensate for the loss of potential habitat for any fauna from the upgrade works.

The following recommendations are made for the proposed seniors housing PP.

- The area designated for the seniors housing in the PP for the former Bowls Club site is suitable for SFPP development and would comply with the performance criteria in PBP.
- The asset protection zone recommended for the proposed seniors housing shall

comply with Table A2.6 of PBP and would be entirely located within the boundaries of the PP. No impact would occur within MDR.

- River Road should be upgraded to an eight metre carriageway with two metre pedestrian walkway located either side, in accordance with PBP.
- The pedestrian walkway along the western side of River Road should be an elevated boardwalk from Mulga Road until the natural ground surface is reached. This would limit any impact on the drainage channel or structural root zones for retained trees from the construction of a hard pavement surface.
- The existing stormwater drainage from the culvert beneath Mulga Road should be modified to accommodate the increase in width of River Road. These modifications can include concrete pipes beneath River Road or retaining wall and batters within the drainage channel.
- Areal extent of loss of existing vegetation due to the upgrade works should be compensated by weed management and revegetation works within MDR.

5 REFERENCES

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