

BUSHFIRE HAZARD ASSESSMENT - MID



97 DUNDAS STREET WEST, ORMISTON

Document Control

RFA22-075

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Cover Photo: Corner of Delancey and Dundas Street Ormiston College signage in front of Koala Habitat Area



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1 INTRODUCTION

This Bushfire Hazard Assessment has been prepared for Ormiston College to inform the application for a Ministerial Infrastructure Designation (MID) of Ormiston College located at 97 Dundas Street West, Ormiston in relation to bushfire issues within and adjacent to the site.

Both the State Planning Policy and Local Government Planning Scheme map this area as potential bushfire hazard with the potential impact buffer area extending over a large portion of the property.

Ormiston College Campus as a school is considered a Vulnerable use under the Bushfire Resilient Communities Technical Reference guide for The SPP State Interest 'Natural Hazards Risk and Resilience – Bushfire' (Oct 2019) and is required as a vulnerable use to be set back from hazardous vegetation at a distance that achieves a Radiant Heat Flux of 10kW/m² or less as an acceptable or tolerable level of risk. The new development is entirely within the existing footprint of Ormiston College campus and consideration of the existing infrastructure and emergency plans in place are included in this report.

The results of this report support the campus development as largely outside of a bushfire hazard area with exception of occasional use sporting facilities that have risk mitigation plans in place to avoid use during fire danger weather. The new development can meet the criteria in Policies 6, 7 and 8 as required for a vulnerable use in a bushfire prone area.

Site inspections were undertaken on the 30 October 2020 and 11 & 16 November 2021 to inform this report.

2 PROPOSAL

The proposal is for development of additional education, early learning buildings and additional sporting facilities, including an aquatic centre within the existing Ormiston College Campus footprint.

The proposal is also responding to the existing koala habitat mapping - Core over part of the eastern portion of the College land by retaining much of that vegetation and in areas where impact will occur to the core koala habitat, offset planting will be undertaken on lands cleared or mostly clear of koala habitat.

2.1 GENERAL DESCRIPTION

Applicant name	Ormiston College
Site address	97 Dundas Street West, Ormiston
Real Property Description (RPD)	See below
Ward	Redland City Council
Zone and precinct	Community Uses
Lot	Area sqm
100 SP306734	86990
101 SP306734	30440
102 SP306734	25200
3 RP49638	66490
2 RP110831	45210
1RP110831	3349

Ormiston College is a private day school which contains a number of education levels from early learning, Junior School, Middle School and Senior School. A number of sporting facilities, and as part of recent development works, athletics track and athletics field for events are located in the western half of the campus; in the east are education facilities within the Ormiston College Campus.

The greater surrounding area to the south and east is residential properties interspersed with patches of vegetation and formal parklands. Directly to the north is Sturgeon Street, a paved dual carriage way with a narrow, vegetated road reserve with pathways and a creek. This vegetated corridor, associated with Hilliards Creek, extends to the south and north, abutting the western boundary of the subject site.

2.2 LANDFORM

The landform has a general slope of less than 1%, with a high point of 13m AHD to the south and a low point of 7m AHD to the north, as such the site is effectively flat. There is a permanent waterway, Hilliards Creek, passing through vegetation, approximately 20m from the northern boundary of the site at its closest point and extending parallel to the western boundary of the site. There are drainage lines from the college lands to the creek along the northern boundary. We also note the land adjacent the site has a slope of approximately 1% downslope, toward the waterway with a steep left bank in some locations. The Ormiston College site is

located on the right bank of Hilliards Creek. There are no other significant topographical features that have an effect on bushfire.

2.3 VEGETATION

The State's mapping within Queensland Globe Regulated Vegetation Management area mapping (Map 1) maps vegetation within and adjacent to the site as Category B, remnant vegetation containing of least concern and Category C, high value regrowth, containing of least concern and contains the following Regional Ecosystem:

RE12.3.6: *Melaleuca quinquenervia* +/- *Eucalyptus tereticornis*, *Lophostemon suaveolens*, *Corymbia intermedia* open forest to woodland with a grassy ground layer dominated by species such as *Imperata cylindrica*. *Eucalyptus tereticornis* may be present as an emergent layer. *Eucalyptus seeana* may also occur in this ecosystem to the south and east of Brisbane. Occurs on Quaternary floodplains and fringing drainage lines in coastal areas. (BVG1M: 22a)

The vegetation adjacent the site is part of a larger vegetation corridor that extends to the north to the coast and south into Scribbly Gum Conservation area. Old Cleveland Road East interrupts this vegetation corridor directly north of the subject site. Here the vegetation is maintained as recreational parkland with mature trees over lawn. To the south, the vegetation on the left bank of Hilliards Creek is also managed as open space parkland, where mature trees over mown lawn are interspersed with small areas of multilayered vegetation.

The width of vegetation including the creek at the closest point is approximately 30m from the boundary of the subject site. To the west vegetation corridor of the right bank only, abutting the western site boundary, widens to over 100m.

The Queensland Fire and Emergency Service (QFES), Redi Portal mapping (**Error! Reference source not found.**), maps Vegetation Hazard Classes in and around the Ormiston College Campus as:

VHC 22.1 *Melaleuca* open forests on seasonally inundated lowland coastal swamps

3 BUSHFIRE HAZARD MAPPING

3.1 LOCAL

Redland City Council (RCC) City Plan, Bushfire hazard mapping overlay maps two polygons of Very High potential bushfire hazard intensity in the vegetation to the immediate west of the site (Figure 1 & **Error! Reference source not found.**). The northern polygon maps the vegetation on the right bank¹ of Hilliards Creek, extending into the Ormiston College Campus land, over the northwest corner of the boundary line and into an area without vegetation. This polygon also maps Hilliards Creek and connected water holes as Very High Bushfire Hazard. A second polygon further south is mapped over the vegetation corridor, including Hilliards creek and the left bank of Hilliards Creek. Vegetation abutting the western boundary of the site, in between these two polygons is not mapped as a bushfire hazard.

A polygon of Medium bushfire hazard is mapped over vegetation within Lot 2 on RP110831, at the corner of Dundas and Delancey Streets, and is entirely within the Ormiston College campus.

A 100m potential impact buffer is mapped around all bushfire hazards and extends over the western half and the southeast corner of the campus.

¹ The right bank and left bank of a waterway is determined from the centreline of the waterway looking in the direction of flow. In a tidal area, looking in the direction of the mouth.

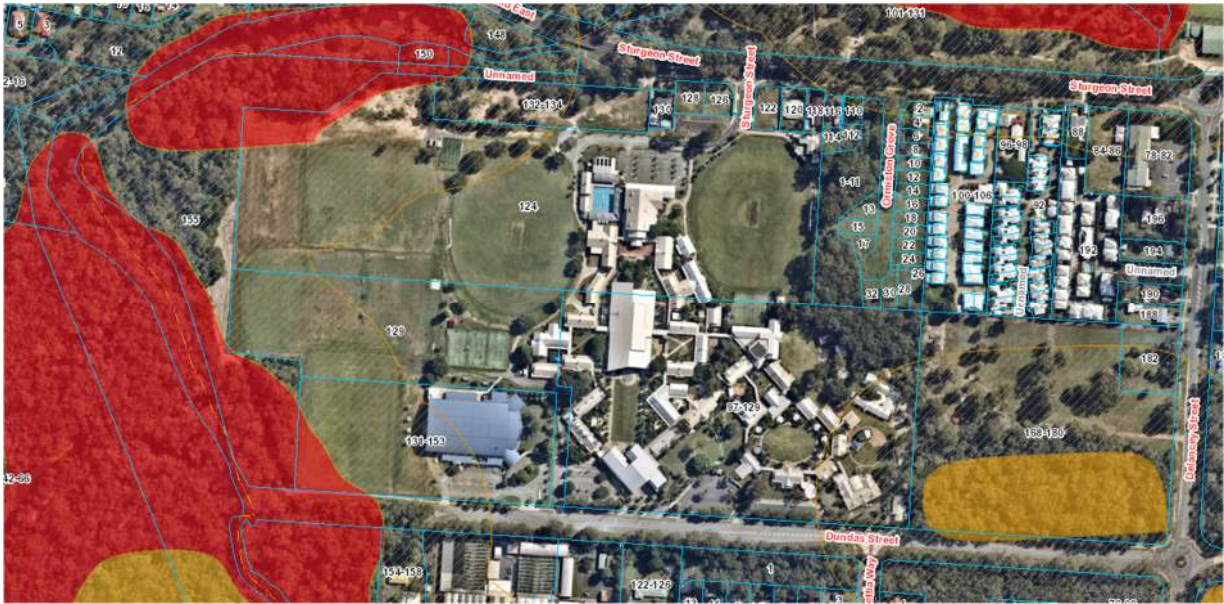


Figure 1 Extract of Redland City Plan Bushfire Hazard mapping over Ormiston College and surrounding lands.

3.2 STATE

The State Planning Policy (SPP) Natural Hazards Risk and Resilience Bushfire hazard map maps the vegetation corridor to the west of the site, inclusive of Hilliards Creek, as Very High Bushfire Hazard (Figure 2 & **Error! Reference source not found.**). There is a small polygon on the right bank of Hilliards Creek, west of the existing oval, that is not mapped as a Bushfire Hazard, however this area is likely affected by the mapping of surrounding vegetation.

A second polygon of very high bushfire hazard is mapped over vegetation in the southeast corner of Lot 2 on RP110831, at the corner of Dundas and Delancey Streets, extending to the north towards the centre of the school grounds. It is noted that part of this polygon covers existing buildings and other cleared and managed areas and as such the extent to which this area can be verified as hazardous vegetation needs to be ground truthed.

A 100m potential impact buffer is mapped around all bushfire hazards and extends over the western half and the southeast of the campus.



Figure 2 Extract of QFES Redi portal Bushfire prone area mapping over Ormiston College and surrounding lands.

4 METHODOLOGY

1. An assessment of the bushfire hazard was conducted as a desktop review using current and historic aerial imagery, and local and state government mapping.
2. A site inspection was undertaken to assess the status of vegetation within and around the site and the likelihood that this vegetation could pose a bushfire hazard.
3. The field data was used to inform the Minimum Distance calculator, an AS3959-2018 Method 2 based calculator which will determine the minimum distances required to achieve a range of different radiant heat levels.
4. Mapping of actual bushfire hazards and application of patch and corridor filtering through QGIS following *Leonard & Opie* (2017) was performed to produce bushfire prone area mapping outputs.
5. On site measurements and reviews of development plans were used to establish the acceptable or tolerable level of risk for vulnerable uses following the State Planning Policy Natural Hazards Risk and Resilience - bushfire guidance material.

5 RESULTS

5.1 VEGETATION

5.1.1 NORTH AND WEST

Area 3: Hilliards Creek Corridor vegetation to the north can be described as non-remnant Eucalypt woodland to 24m with a disturbed undergrowth dominated by Lantana and Guinea grass.

Species noted during the site inspection are emergent *Eucalyptus tereticornis*, *E. crebra*, *E. siderophloia* and *Corymbia intermedia*. A T1 canopy of small trees to 10m including *Acacia disparrima*, *Allocasuarina littoralis*, *Lophostemon suaveolens*, *Jagera pseudorhus*, *Melicope elleryana*, *Macaranga tanarius*, *Cupaniopsis anacardioides*, *Melaleuca linariifolia*, *M. quinquenervia*, *A. concurrens* and *Alphitonia excelsa*.

A ground cover dominated by *Megathyrsus maximus* and *Lantana camara* adjacent the north west corner, however to the east a more varied community emerges, which includes *Imperata cylindrica*, *Entolasia stricta*, *Oplismenus aemulus*, *Solanum mauritianum* (w), *Pteridium esculentum* and *Gahnia sieberiana*.

Within the vegetation there is a seasonal or ephemeral waterhole, draining into a permanent creek as well as a bicycle pathway (Figure 4). This pathway allows access to vegetation along the right bank of Hilliards Creek and passes under the roadway to the north.

Recent development within the college campus grounds was part of a land swap where land which was held by Ormiston College was swapped for land which was owned by Council. The land swap area was cleared and following the land swap, this cleared land has been subject to some revegetation activity.



Figure 3 Photograph of a pathway and representative woodland vegetation within the Hilliards Creek Corridor left bank.

Vegetation on the left bank, abutting Sturgeon Street and Old Cleveland Road is a parkland managed as a mown lawn with mature eucalypts and some native understory species along the water edge (Figure 5). This vegetation is not considered a bushfire hazard if maintained in its current condition long term. Based on our site assessment the Hilliards Creek Corridor, Doug Tiller Reserve and William Forsythe Park the vegetation is more analogous with a woodland in terms of height and canopy cover than an open forest.

The species composition and aerial imagery reflect that vegetation along the north boundary is not RE12.3.6 and as such, this area should be categorised as a non-remnant under the Queensland Government Regional Ecosystems.

The Qld Fire Department maps all of the Hilliards Creek corridor as the vegetation hazard class (VHC) 22.1 - *Melaleuca* open woodlands on depositional plains. Based on our site inspection the immediate bed and banks of Hilliards creek does contain *Melaleuca quinquenervia*, the upper stratum is dominated by *Eucalyptus tereticornis* along with *E. crebra*/*E. siderophloia* and *Corymbia intermedia* and shows signs of historic disturbance and as such significant areas are dominated by *Acacia disparrima* and *Allocasuarina littoralis* with a ground cover dominated by a mix of grass and herbaceous environmental weeds.

Therefore, over this entire Hilliards Creek corridor it is more analogous with the vegetation hazard class 16.2 - Eucalyptus dominated woodland on drainage lines and alluvial plains, which is attributed with a surface fuel load of 11.1t/ha and a total fuel load of 11.6t/ha.



Figure 4 Aerial imagery from January 10, 2010 indicating the location of the bicycle path (white) through vegetation north and west of the development site (blue polygon). Note that the lack of vegetation to the west indicates this area is non-remnant vegetation.



Figure 5 Photograph of the left bank of Hilliards Creek. Vegetation is a formal parkland of mature trees over a lawn and is a low bushfire hazard.

5.1.2 SOUTH

Area 2: Skinner Urban Habitat diagonally opposite the school on Dundas Street West, is a narrow area of Eucalypt woodland. Species noted in this area were a canopy to 22m of *Eucalyptus tereticornis*, *Corymbia intermedia* and *Lophostemon suaveolens*. A secondary stratum containing *Allocasuarina littoralis* and *Melaleuca*

quinquenervia. The groundcover is dominated by *Pteridium esculentum* and *Imperata cylindrica*.

This area represents an area of regrowth and as such should be potentially maps a Category C regulated vegetation instead of Category B regulated vegetation. The mapping of the vegetation hazard class 22.1 - Melaleuca open forests on seasonally inundated lowland coastal swamps should be reviewed and the area potentially better maps as the VHC 16.1 - Eucalyptus dominated forest on drainage lines and alluvial plains or 16.2 - Eucalyptus dominated woodland on drainage lines and alluvial plains based on the canopy height and foliage project cover.

However, irrespective of the vegetation hazard class the patch is too small to be considered to be an area of hazardous vegetation and while the existing SPP Natural Hazards, Risk and Resilience bushfire hazard mapping maps this patch as an area of high potential fireline intensity, the patch of both the Regional ecosystem and high bushfire hazard mapping cover an area which has been cleared of vegetation and as such this has left an corridor of vegetation along Dundas Street and Delancey Street of approximately 35 and 62 metres respectfully.

Therefore, this area can be eliminated as being a bushfire hazard area when assessing tis bushfire hazard level using the corridor analysis defined in Leonard and Opie (2017).

Area 3: Corner of Delancey and Dundas Street vegetation is mapped as a wetland area by Redland City Council is described as a Melaleuca open forest. The canopy contains *Eucalyptus tereticornis*, *Corymbia intermedia*, *Corymbia citriodora*, *E. racemosa*, *Corymbia torelliana* (w), and *Lophostemon suaveolens*. A secondary stratum to 12m contains *Allocasuarina littoralis*, *Acacia disparrima* and *Melaleuca quinquenervia*. The understory is partially invaded by garden escapee weeds but is largely *Imperata cylindrica*, *Digitaria didactyla* (w) and *Parsonsia sp.*

This area is mapped as Vegetation Hazard Class 22.1 - Melaleuca open forests on seasonally inundated lowland coastal swamps. However, while *Melaleuca quinquenervia* is dominant in a small portion of the area, overwhelmingly, the area would be better described as VHC9.1 - Moist to dry eucalypt woodland on coastal lowlands and ranges.

Area 4: Vegetation within 100m of the Ormiston Campus to the southeast

This area represents an area of regrowth and as such should be potentially maps a Category C regulated vegetation instead of Category B regulated vegetation. The mapping of the vegetation hazard class 22.1 - Melaleuca open forests on seasonally inundated lowland coastal swamps should be reviewed and the area potentially better maps as the VHC 16.1 - Eucalyptus dominated forest on drainage lines and alluvial plains or VHC 16.2 - Eucalyptus dominated woodland on drainage lines and alluvial plains based on the canopy height and foliage project cover.

However irrespective of the vegetation hazard class the patch is too small to be considered to be an area of hazardous vegetation and while the existing SPP Natural Hazards, Risk and Resilience bushfire hazard mapping maps this patch as an area of high potential fireline intensity, the patch of both the Regional ecosystem and high bushfire hazard mapping cover an area which has been cleared of vegetation and as such this has left an corridor of vegetation along Dundas St and Delancey Street of approximately 35 and 62 metres respectfully.

Therefore, this area can be eliminated as being a bushfire hazard area when assessing tis bushfire hazard level using the corridor analysis defined in *Leonard and Opie* (2017).

5.2 BUSHFIRE HAZARD ASSESSMENT

For the purpose for a bushfire hazard assessment, four areas of mapped bushfire hazards within 100 metres of the Ormiston College Campus have been identified. A 'fit for purpose' assessment of bushfire hazards, to reflect the current and future vegetation cover subsequent to local development is undertaken to reflect current bushfire hazards and disregard outdated and incorrect mapping available in the Redland City Plan (2014) and State Planning Policy (2017).

Using methodology available in *Leonard, Newnham, Opie, & Blanchi*, (2014) and *Leonard & Opie*, (2017) vegetated areas smaller than 1ha or less than 100m wide will not reach a fireline intensity greater than 4,000kW/m and will not be a significant threat to life or property. Where patches are between 0.5ha and 3.0ha the fireline intensity will not fully develop, with reductions in potential hazard downgraded according to size. Furthermore, where the vegetation is disrupted by non-flammable surfaces such as roadways, and low hazard or discontinuous fuel sources such as maintained grassland, the potential bushfire intensity is reduced.

Three areas of vegetation are identified as potentially hazardous in the area surrounding ormiston College Campus. We have undertaken Patch and crridor filtering following the state guidelines (*Leonard & Opie*, 2017; QFES, Oct 2019). Areas identified and mapping outouts area available in Section 11 Patch and Corridor Filtering outputs

- Area 1 Hilliards Creek Corridor
- Area 2 Skinners Urban Reserve
- Area 3 Dundas and Delancy Street Corner
- Area 4 within 100m of the Ormiston Campus to the southeast

Step 1: Remove small isolated patches

- Patch size is > 0.5ha – this step does not appy to vegetation surrounding the site

Step 2: Downgrade intensity of small patches

- Area 2
 - vegetation patch of VHC16.1 is 1.4ha - 66% reduction in fireline intensity.
 - Potential fireline intensity is determined to be 7,773kW/m (see Table 1 below) and as such a 66% reduction is 2,265kW/m and as such this area can be determined to be an area is not Bushfire Prone Area.
- Area 3
 - vegetation patch of VHC16.1 is 2.3ha - 50% reduction in fireline intensity. As the vegetation hazard class is the same as areas 2, VHC16.1 and the determination of the fireline intensity of 7,773kW/m (see Table 1 below), 50% of that is 3,886.5kW/m.
 - Therefore this area is not Bushfire Prone Area.
- Area 4 within 100m of the Ormiston Campus to the southeast
 - vegetation patch are two discrete corridors of vegetation with widths of less than 65 metres and as such these can be eliminated based on the corridor width (see step 3).

Step 2 removes all potential hazards except the Hilliards Creek Corridor to the west.

Step 3: Remove narrow corridors.

- Any vegetation patch remaining is less than 100m wide and can be discounted as potentially hazardous vegetation.
- Erosion and dilation function using QGIS Raster processing toolbox reduces and enlarges all patches in the 25m grid on edges of discontinuous fuel or non-flammable surfaces.
- We note this step removed Areas 2 and 4.

Step 4: Remove Small fragments.

- The final output determines that the remaining potentially hazardous vegetation is located in the Hilliards Creek Corridor to the west of the Ormiston College Campus.

Table 1 Fireline intensity calculation at a 66% fuel load reduction for patch sizes between 0.5 and 2 hectares (Leonard, Newnham, Opie, & Blanchi, 2014).

Area 2 - Minimum Distance Calculator - AS3959-2018 (Method 2) (Calculated March 19, 2025, 5:54 pm (MDc v.4.9))

Inputs			Outputs	
Fire Danger Index	53		Rate of spread	0.94 km/h
Vegetation Classification	Forest		Flame length	8.03 m
Understorey fuel load	13.8 t/ha		Flame angle	55 °, 65 °, 74 °, 79 °, 81 ° & 86 °
Total fuel load	16 t/ha		Elevation of receiver	3.17 m, 3.47 m, 3.62 m, 3.59 m, 3.54 m & 2.85 m
Vegetation height	n/a		Fire intensity	7,773 kW/m
Effective slope	1 °		Transmissivity	0.885, 0.873, 0.855, 0.833, 0.82 & 0.748
Site slope	1 °		Viewfactor	0.5855, 0.4329, 0.292, 0.197, 0.1596 & 0.0437
Flame width	100 m		Minimum distance to < 40 kW/m ²	6.7 m
Windspeed	n/a		Minimum distance to < 29 kW/m ²	9.1 m
Heat of combustion	18,600 kJ/kg		Minimum distance to < 19 kW/m ²	13.5 m
Flame temperature	1,090 K		Minimum distance to < 12.5 kW/m ²	19.9 m
			Minimum distance to < 10 kW/m ²	24.2 m

Rate of Spread - Mcarthur, 1973 & Noble et al., 1980

Flame length - NSW Rural Fire Service, 2001 & Noble et al., 1980

Elevation of receiver - Douglas & Tan, 2005

Flame angle - Douglas & Tan, 2005

Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005

5.3 DEVELOPMENT AND BUSHFIRE HAZARDS

The Bushfire Resilient Communities Guide (QFES, 2019) describes all corridors greater than 100 metres to be potential bushfire hazards and the level of bushfire hazard will be determined by the FFDI (Forest Fire Danger Index), the Vegetation Hazard Class and associated surface and total fuel loads and the slope under that vegetation.

Mitigation of bushfire risk to vulnerable use developments requires determination of the radiant heat flux and the minimum setback distance necessary to achieve an acceptable or tolerable level of risk, as defined under the State Governments, Bushfire Resilience Communities, Technical Reference Guide for the State Planning Policy (Oct 2019). Using the AS3959-2018 Method 2 Minimum Distance Calculator² with inputs listed in Table 2 below, following data from QFES (2019) the calculations for setbacks at a range of Radiant Heat Flux levels are detailed in Table 3.

The minimum distance calculations indicate that a structure located at **19.7 metres** from the closest edge of hazardous vegetation would achieve a Radiant Heat Flux of 10kW/m² and be located at an acceptable or tolerable risk.

Table 2 - Bushfire hazard assessment inputs for calculation of setback from hazardous vegetation

Location	FFDI	VHC	Surface Fuel Load	Total Fuel Load	Slope
Hilliards Creek	53	16.1 – Eucalypts dominated forest on drainage lines and alluvial plains	10 t/ha	16.0 t/ha	1°

FFDI: Forest Fire Danger Index

VHC: Vegetation Hazard Class

Table 3 Minimum Distance Calculator - AS3959-2018 (Method 2) Hilliards Creek Calculated January 20, 2023, 4:14 pm (MDc v.4.9)

Inputs		Outputs	
Fire Danger Index	53	Rate of spread	0.68 km/h
Vegetation classification	Forest	Flame length	6.34 m
Understorey fuel load	10 t/ha	Flame angle	55 °, 65 °, 74 °, 79 °, 81 ° & 86 °
Total fuel load	16 t/ha	Elevation of receiver	2.5 m, 2.74 m, 2.86 m, 2.83 m, 2.79 m & 2.17 m

² FPA Australia Flamesol (MDc v.4.9)

Inputs		Outputs	
Vegetation height	n/a	Fire intensity	5,633 kW/m
Effective slope	1 °	Transmissivity	0.889, 0.879, 0.863, 0.844, 0.833 & 0.759
Site slope	1 °	View factor	0.5829, 0.4316, 0.2888, 0.1942, 0.1574 & 0.0432
Flame width	100 m	Minimum distance to < 40 kW/m ²	5.3 m
Windspeed	n/a	Minimum distance to < 29 kW/m ²	7.2 m
Heat of combustion	18,600 kJ/kg	Minimum distance to < 19 kW/m ²	10.8 m
Flame temperature	1,090 K	Minimum distance to < 12.5 kW/m ²	16 m
		Minimum distance to < 10 kW/m²	19.7 m

Rate of Spread - McArthur, 1973 & Noble et al., 1980

Flame length - NSW Rural Fire Service, 2001 & Noble et al., 1980

Elevation of receiver - Douglas & Tan, 2005

Flame angle - Douglas & Tan, 2005

Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005

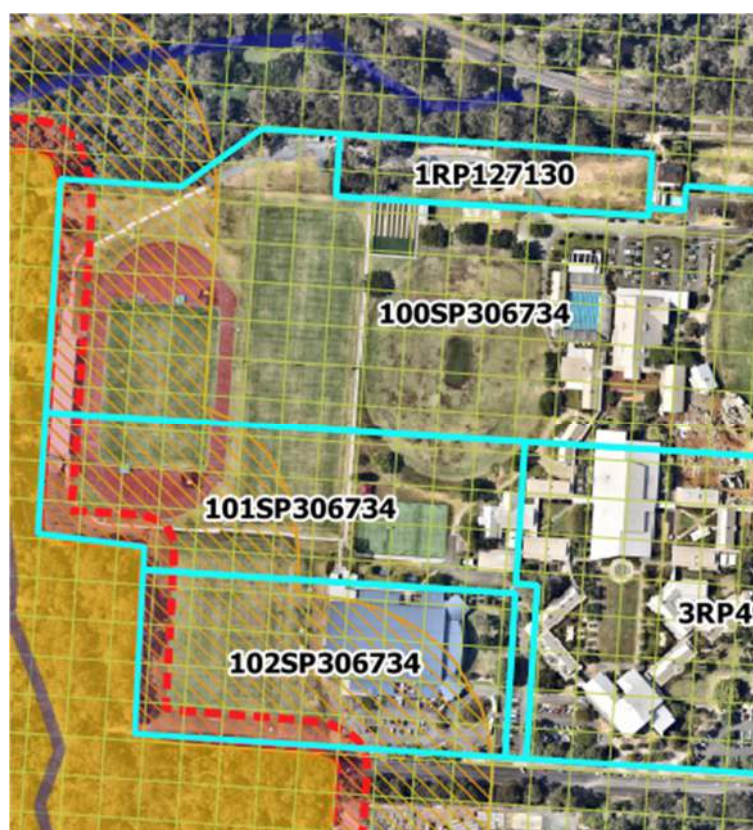


Figure 6 Potentially Hazardous vegetation output after patch and corridor filtering. Note the only hazardous vegetation remaining is in the Hilliards Creek Corridor. The area in red is the 10kW/m² RHF setback.

The vegetation on the right bank of Hilliards Creek is unlikely to become a complex vegetation community due to a lack of management in the area of invasive and deflection weed species resulting in a dominance of environmental weeds in the

shrub and groundcover and as such, it will retain a weed dominated understory variable in its flammability where the canopy will not be involved in a bushfire event. However, the connectivity of vegetation to the south, into the Scribbly Gum Conservation Area, should be considered hazardous (Figure 6), even with permanent water and seasonal inundation, there is potential for bushfire to impact vegetation within the corridor adjacent Ormiston College Campus.

6 DISCUSSION

The designation of a hazard area being mapped as a bushfire prone area is for the purposes of Section 7 of the *Qld Building Regulation 2021* (the Regulation). However, in Queensland, the Regulation where it relates to bushfire prone areas is only relevant to Class 1, 2, 3 and Class 10a structure where they are within 100 metres of bushfire prone land.

The footprint of the Ormiston College future development is largely unaffected by bushfire hazards, with the existing teaching buildings outside of the 100m potential impact buffer area. The impacted development is within 19.7m of the edge of hazardous vegetation in the Hilliards Creek Corridor only.

Further, recent changes to the draft NCC Vol 1, Part G5 – Construction in a bushfire prone area now includes Class 9b structures. Class 9b structures include (G5P1(c)(ii)) primary or secondary schools. For the purpose of building compliance, this only includes those structures that form part of the school that are occupied by students, teaches or administrative staff for the during while those persons are at the school. Our position is that a sporting field, a grandstand, a tennis court a storage shed where the storage of hazardous material is not being undertaken are not considered to be structures that should be considered to be Class 9b structures such as those identified in Figure 7 below.



Figure 7 *The existing structure is a grandstand, with constructed of ColorBond Steel.*

The Bushfire Resilient Communities technical reference manual (QFES, Oct 2019) defines vulnerable uses and mitigation of hazards. **Policy 3** outlines the terms for acceptable and tolerable levels of risk.

For the purpose of this proposal the “vulnerable use” is identified as:

1. School rooms where teaching activities occur (primary and secondary)
2. Teachers’ rooms
3. Assembly halls where it is enclosed
4. Administrative structures
5. Building associated with the early education activity

Vulnerable use structures do not include:

- Storage facilities
- Tennis courts, swimming pools and other sporting facilities
- Any temporary structure erected and used for a one off one day event

The definition of a tolerable risk is “low enough to allow exposure to a natural hazard to continue but high enough to require new treatments or actions to reduce that risk”, with two outcomes summarised as:

- Avoidance and
- reduced consequence.

Consideration of a tolerable level of risk where the Ormiston College Campus has historically been located within 100m of a potential bushfire hazard is required for the existing and proposed development. Prior to the release of the State guidelines for bushfire resilient communities in 2019 the school had in place emergency evacuation procedures that are regularly updated and can be incorporated into bushfire risk mitigation strategies. This would satisfy the existing tolerable risk definition where the accepted mapping currently available is the State Planning Policy and Redland City Plan bushfire prone area overlays.

Incorporating mitigation strategies previously recommended to Ormiston College Campus as

1. No use of buildings within 10Kw/m² of a bushfire hazard (as per Map 2) on extreme and catastrophic fire danger rated days (Figure 8).
2. Emergency procedures and evacuation plans are to include specific protocols for the event of a bushfire.
3. Shelter is available within the existing educational facilities, outside of a bushfire hazard area or potential impact buffer zone.
4. Fire hydrants / hoses are to be available and accessible to urban and rural firefighting appliances in the event of a bushfire.

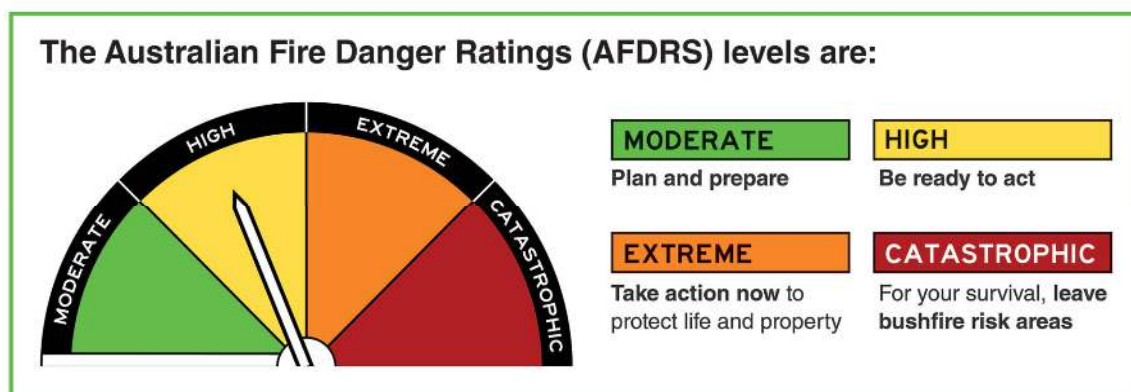


Figure 8 The national fire danger rating system introduced in 2022 by the Australian Government.

To reiterate, the bushfire hazard area and risk mitigation strategies only apply to the buildings located on the western most edge of the Ormiston College Campus, with the remaining educational facilities falling within the acceptable level of risk category greater than 100m from a bushfire hazard area.

Further details for the requirements of Asset Protection Zones for vulnerable uses in the Bushfire Resilient Communities guidelines detail provide benchmarks to be met in circumstances where vulnerable uses are located within 100 metres of a bushfire hazard.

Section 9.4 referring to asset protection zones for vulnerable uses..."Site planning will form part the risk mitigation approach where these developments are unavoidable in a Bushfire Prone Area, and conditions under Policies 6, 7 and 8 of this document are met."

This may include a development footprint plan that is separated from the closest edge to the adjacent mapped medium, high or very high potential bushfire intensity area by a distance (APZ width) that achieves a radiant heat flux level of 10 kW/m² or less at all development footprint boundaries. The potential impact buffer area is not considered a bushfire hazard under the SPP and can be measured from the closest edge of hazardous vegetation - in this case the western boundary of the Ormiston Campus lands is considered the edge of medium hazard vegetation.

Regarding a response to the conditions under Policies 6, 7 and 8:

Policy 6 – Vulnerable uses are not located in bushfire prone areas unless there is an overwhelming community need for the development of a new or expanded service, there is no suitable alternative location and site planning can appropriately mitigate the risk.

Our findings have determined that the existing Ormiston College campus falls outside of a bushfire hazard area and 100m potential impact buffer area, with the exception of sporting fields and a grandstand.

Regarding the new development only one structure will be located within the RHF 10kW/m² setback (Building D02 NEW MULTI USE BUILDING- EDUCATIONAL TEACHING SPACES AND STORAGE (2 STOREY)).

We would note the description of “use” and as such while this multi-use structure is located partly within the 10kW/m² setback, the teaching space or vulnerable use will be located outside of the 10kW/m² setback (Figure 9).

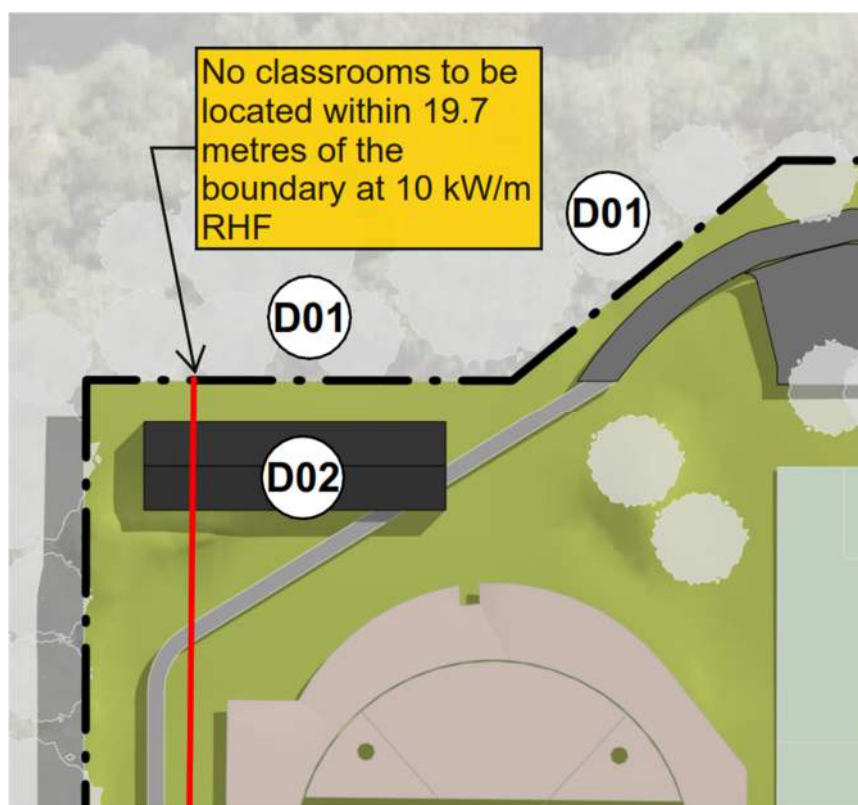


Figure 9 Extract from Rohrig development master plan for Ormiston College

While the campus is currently mapped as within a bushfire hazard area, there are disaster management capabilities in place to mitigate the risks to vulnerable members of the community.

6.1.1 SPECIFIC BUSHFIRE MITIGATION REQUIREMENTS

One of the proposed structures identified on the Ormiston College Masterplan is building J08 - New early learning centre and connected carpark (1 storey).

This structure is located adjacent to the retained Core Koala area and while the area to retained can be described as an are of Low bushfire hazard using *Leonard and Opie* (2017) due to its predominant width over the corridor being less than 100 metres, it could however be subject to a fire run off Delancey Street of approximately 179 metres.

Therefore, it is reasonable to ensure the building is not at an unacceptable of bushfire risk from a low intensity fire, that the understorey vegetation to the east and north of the building be managed for a distance of 20 metres from the eastern and northern walls of the structure.

We would note that all non-juvenile koala habitat trees within the groundcover mitigation buffer area, can be retained as the groundcover will be managed to a height of less than 100 mm for the 20-metre-wide groundcover mitigation buffer area

Policy 7 revegetation and rehabilitation avoids an increase in the exposure or severity of bushfire hazard – This is achieved by limiting the width of the koala corridor to less than 100 metres, and therefore being too narrow to support a bushfire with a fire line intensity of greater than 4000kW/m. Additionally landscaping within the school grounds consists of formal garden beds and trees over lawn or paved areas, with these treatments not considered bushfire hazard areas.

Policy 8 Development does not locate buildings or structures used for the storage or manufacture of materials that are hazardous in the context of a bushfire within a bushfire prone area unless there is no suitable alternative location. – There are no bulk hazardous materials stored in a bushfire prone area.

7 CONCLUSIONS

While the Ormiston College Campus including other structures that are used for education purposes and are occupied for the normal hours that a school operates or has the flexibility where student and teaches / carers may stay at the structure for a period before or after the normal operating hours of the school, is classified as a vulnerable use for the purpose of bushfire planning, the educational facilities are already established, and use of mitigation strategies are employed. For any new development within the campus, there is no increase in risk to the vulnerable community than that which was already present. Following the application for a Ministerial Infrastructure Designation an updated assessment of risk and management strategies has been undertaken. The bushfire hazard assessment finds that:

1. Vegetation hazard assessment is undertaken by an expert and informs that potential bushfire hazard of vegetation triggering an overlay on the Ormiston College campus.
2. Patch and corridor filtering are applied to vegetation hazards as per *Leonard & Opie* (2017)
3. The actual bushfire hazard and future bushfire hazard where are located to the west of Ormiston College Campus within the Hilliards Creek Corridor.
1. Bushfire Hazard is medium hazard area and is not inclusive of the buffer zone (QFES, (Oct 2019) Section 9.4)
2. The only structures that fall within the vulnerable uses 10kW/m² setback distance are occasional use buildings and within the existing Ormiston College Campus. Further, Vulnerable uses within that structure will be located outside of the setback to achieve a Radiant Heat Flux of 10kW/m² and an acceptable level of risk.
3. A fit for purpose Bushfire Protection Plan be undertaken for Ormiston College Campus. The management plan should be developed in accordance with the Public Safety Business Agency (PSBA) guideline entitled "Undertaking a Bushfire Protection Plan" under the advisement of QFES guidance material.
4. A mitigation understorey buffer area of 20 metres wide is to be established and managed to the east and north of Building J08, the proposed new early learning centre.
5. The vulnerable uses are located at an acceptable and tolerable level or risk demonstrated by a response to the conditions under Policies 6, 7 and 8 with consideration of the definitions for level of risk in Policy 3 under the Bushfire Resilient Communities guidelines.

8 REFERENCES

- Leonard, J., & Opie, K. (2017). *Estimating the potential bushfire hazard of vegetation patches and corridors*. CSIRO.
- Leonard, J., Newnham, G., Opie, K., & Blanchi, R. (2014). *A new methodology for state-wide mapping of bushfire prone areas in Queensland*. Australia: CSIRO.
- QFES. (Oct 2019). *Bushfire Resilient Communities Technical Reference Guide for the State Planning Policy State Interest 'Natural Hazards, Risk and Resilience - Bushfire'*. State of Queensland.
- Redland City Council. (2018). Redland Planning Scheme. *Redland City Plan 2018 Version 7*.
- Weir, I. (2018). AS 3959:2018: Construction of buildings in bushfire-prone areas (Fourth edition) Standards Australia. *AS3959:2018*. Standards Australia, Australia.

9 DEVELOPMENT PLAN

ADDRESS
97 Dundas Street West, Ormiston, QLD, 4160

REAL PROPERTY DESCRIPTION

Lot 1-5 on RP109238
Lot 1 on RP122772
Lot 1 on RP127130
Lot 100-102 on SP306734
Lot 1 & 2 on RP110831
Lot 3 on RP49638

- EXISTING BUILDINGS, STRUCTURES AND EMBELLISHMENTS
- NEW DEVELOPMENT WORKS
- DX

NEW GENERAL SCHOOL DEVELOPMENT
- JX

NEW JUNIOR SCHOOL DEVELOPMENT
- SX

NEW SECONDARY SCHOOL DEVELOPMENT
- EX

EXISTING BUILDINGS, STRUCTURES AND EMBELLISHMENTS

X	24-03-2025	ISSUE FOR INFORMATION	MS
W	24-02-2025	ISSUE FOR INFORMATION	MS
V	23-04-2024	ISSUE FOR INFORMATION	AS
U	13-03-2024	ISSUE FOR INFORMATION	MS
T	12-03-2024	ISSUE FOR INFORMATION	MS
S	08-03-2024	ISSUE FOR INFORMATION	MS
R	14-10-2022	REVISED PLAN	MS
Q	07-10-2022	REVISED PLAN	MS
P	28-09-2022	REVISED PLAN	MS
O	23-09-2022	REVISED PLAN	MS
N	21-03-2022	REVISED PLAN	MS
M	01-03-2022	REVISED PLAN	MS
L	03-12-2021	REVISED PLAN	CG
K	26-11-2021	JUNIOR SCHOOL & ELC REVISED	CG
J	16-11-2021	DELANCY ST PARKING REVISED	CG
I	10-11-2021	MASTER PLAN REVISED	CG
H	02-11-2021	MASTER PLAN REVISED	CG
G	22-10-2021	TENNIS COURTS REVISED	CG
#	DATE	REVISION	BY

rohrig

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CLIENT

ORMISTON COLLEGE

PROJECT

MASTERPLAN DEVELOPMENT

JOB No.

QC2120

TITLE

PROPOSED MASTER PLAN

DRAWN

APPROVED

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MS SS

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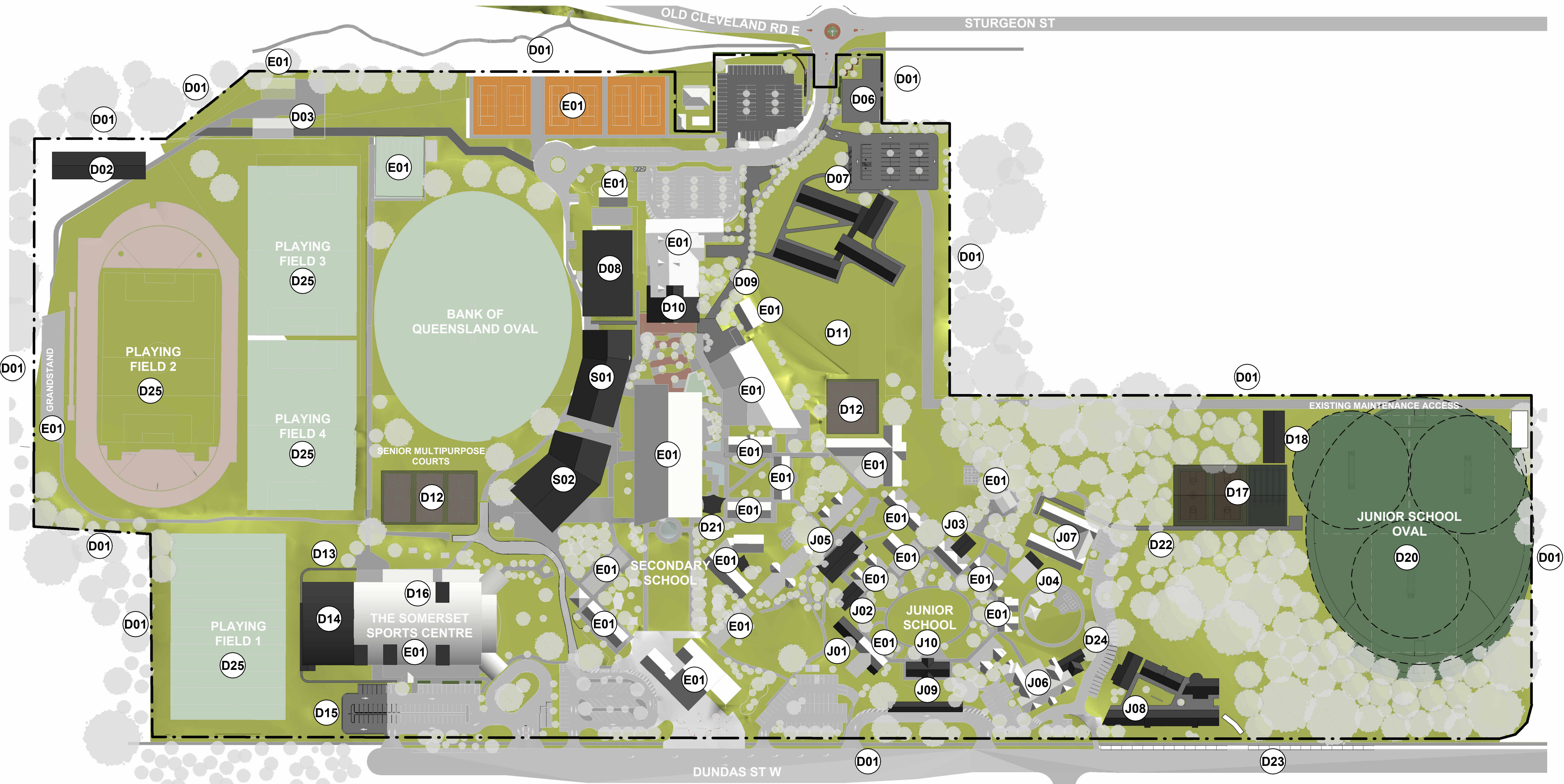
IN

DRAWING No.

A-01-0001

ISSUE

X



- D01 NEW FULL PERIMETER BOUNDARY SECURITY FENCE WITH AUTOMATIC VEHICULAR SLIDING GATES, PEDESTRIAN ACCESS GATES AND KOALA CROSSING AS REQUIRED
- D02 NEW MULTI USE BUILDING- EDUCATIONAL TEACHING SPACES AND STORAGE (2 STOREY)
- D03 NEW MULTI USE BUILDING- UTILITIES, MAINTENANCE AND ARCHIVE (2 STOREY)
- D06 NEW GROUNDS/GREEN KEEPERS' SHEDS
- D07 NEW BOARDING FACILITY (3 STOREY) AND ASSOCIATED CARPAKING/DROP OFF ZONE
- D08 NEW AQUATIC CENTRE (50m POOL) & MULTI-USE EDUCATIONAL BUILDING (2 STOREY)
- D09 NEW STURGEON STREET CONNECTION PATH AND LANDSCAPE
- D10 LINGO LIN PERFORMING ARTS THEATRE EXTENSION
- D11 NEW OUTDOOR PLAY AREA
- D12 COVERED AREA TO EXISTING MULTIPURPOSE COURTS
- D13 NEW CONCRETE CONNECTION PATHWAY
- D14 SPORTS COURT EXTENSION AND NEW GRANDSTAND (2 STOREY)
- D15 CARPARK EXTENSION TO DUNDAS ST W CARPARK
- D16 SOMERSET SPORTS CENTRE COVERED ENTRIES
- D17 NEW INDOOR MULTI PURPOSE COURTS WITH ENCLOSED CRICKET PITCH AND NETS
- D18 NEW STORAGE SHED INC NEW CHANGE ROOMS / AMENITIES (1 STOREY)
- D20 NEW JUNIOR SCHOOL SPORTS FIELDS WITH EXTERNAL SPORTS LIGHTING
- D21 NEW EXTERNAL SHADED SEATING
- D22 NEW CONCRETE COVERED CONNECTION PATHWAY FOR BRANCH FALL PROTECTION
- D23 NEW COUNCIL STREET PARALLEL PARKING
- D24 EXTENSION TO EXISTING CARPARK
- D25 NEW FIELD LIGHTING TO EXISTING FIELD
- J01 BUILDING EXTENSION- YEAR 4 (1 STOREY)
- J02 BUILDING EXTENSION- YEAR 5 (1 STOREY)

- J03 NEW CHANGEROOM/AMENITIES (1 STOREY)
- J04 EXTENSION TO AMENITIES (1 STOREY)
- J05 EXTENSION TO CHANGEROOM/AMENITIES (1 STOREY)
- J06 REPURPOSE AND EXTEND EXISTING PREP FOR GRADE 1 GLAS (1 STOREY)
- J07 REPURPOSE EXISTING ELC FOR PREP PRECINCT (1 STOREY)
- J08 NEW EARLY LEARNING CENTRE AND CONNECTED CARPARK (1 STOREY)
- J09 NEW COVERED JUNIOR SCHOOL DROP OFF ZONE
- J10 NEW ADMINISTRATION BUILDING (2 STOREY)
- S01 NEW BUSINESS STUDIES AND ARTS PRECINCT (3 STOREY)
- S02 NEW MULTI-USE BUILDING- EDUCATIONAL TEACHING SPACES WITH AMENITIES (2 STOREY)

- E01 EXISTING BUILDINGS, STRUCTURES AND EMBELLISHMENTS

EXISTING CARPARKING	
ADMINISTRATION CARPARKING	48
BUS STOP	1
EXISTING STREET PARKING	9
JUNIOR SCHOOL CARPARKING	51
LINGO LIN PERFORMING ARTS CENTRE CARPARKING	73
PREP SCHOOL CARPARKING	41
SPORTS CENTRE CARPARKING	43
STURGEON STREET CARPARKING	72
	338
NEW CARPARKING	
EARLY LEARNING CARPARKING (D24)	18
NEW CARPARKING (D07)	39
NEW COUNCIL STREET PARALLEL PARKING (D23)	24
SOMERSET SPORTS CENTRE ADDITIONAL CARPARKING (D15)	26
	107

10 MAPPING

Map 1 - Queensland Globe regulated vegetation management map with regional ecosystems for Ormiston College Campus and surrounds.

Regulated Vegetation Management

Regional Ecosystems

27°30'34"S 153°14'22"E

27°30'34"S 153°15'9"E

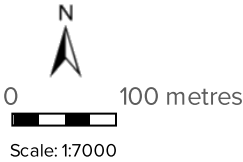


27°31'8"S 153°14'22"E

27°31'8"S 153°15'9"E



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Regulated Vegetation Management

Regional Ecosystems

Legend

Vegetation management regional ecosystem map labels

Category A or B area containing endangered



Category A or B area containing of concern



Category A or B area that is least concern



Category C or R area containing endangered



Category C or R area containing of concern



Category C or R area that is of least concern



Road crossing

Bridge

Tunnel

Road

Highway

Main

Local

Private

Railway



Cities and Towns



Attribution

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Map 2 - Redi Portal Bushfire Prone Area - vegetation hazard class map with regional ecosystems for Ormiston College Campus and surrounds.

153°14'30" 153°14'38" 153°14'45" 153°14'53" 153°15' 153°15'7"



Vegetation Hazard Class

- Legend**
- Contours
 - Index
 - Intermediate
 - Remnant Vegetation V10 (Regional Ecosystems)
 - Pre-clearing Vegetation V10 (Regional Ecosystems)
 - Broad Vegetation Hazard Class
 - BVG 1-7 Rainforest and scrubs
 - BVG 8 Wet eucalypt open forest
 - BVG 9-15 Eastern eucalypt woodlands to open forests
 - BVG 16 Eucalypt open forests to woodlands on floodplains
 - BVG 17-19 Eucalypt dry woodlands on inland depositional plains
 - BVG 20 Callitris woodlands to open forests
 - BVG 21-22 Melaleuca open woodlands on depositional plains
 - BVG 23 Acacia aneura (mulga) dominated open forests, woodlands and shrublands
 - BVG 24-26 Other acacia dominated open forests, woodlands and shrublands
 - BVG 27 Mixed species woodlands - open woodlands (inland bioregions) in wooded downs
 - BVG 28-29 Other coastal communities or heaths
 - BVG 30-32 Tussock grasslands, forblands
 - BVG 33 Hummock grasslands
 - BVG 34 Wetlands (swamps and lakes)
 - BVG 35 Mangroves and tidal saltmarshes
 - BVG 36 Exotic and hardwood plantation
 - BVG 37 Hoop plantations
 - BVG 38 Cropping and horticulture
 - BVG 39 Low to moderate tree cover in built-up areas
 - BVG 40 Low grass or tree cover in rural areas
 - BVG 41 Low grass or tree cover in built-up area
 - BVG 42 Nil to very low vegetation cover
 - BVG 43 Waterbodies
 - VHC
 - World Imagery
 - Low Resolution 15m Imagery
 - High Resolution 60cm Imagery
 - High Resolution 30cm Imagery
 - Citations

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Kilometres
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Map 3 - Redland City Council Bushfire hazard overlay map for Ormiston College Campus and surrounds.



Redland City Council

Legend

- Current Lot
- Suburb Boundary

Bushfire Hazard Overlay

- Very High Potential Bushfire Intensity
- High Potential Bushfire Intensity
- Medium Potential Bushfire Intensity
- Potential Impact Buffer

Redland City and Surrounds

- Redland City
- Adjoining LGA
- Moreton Bay

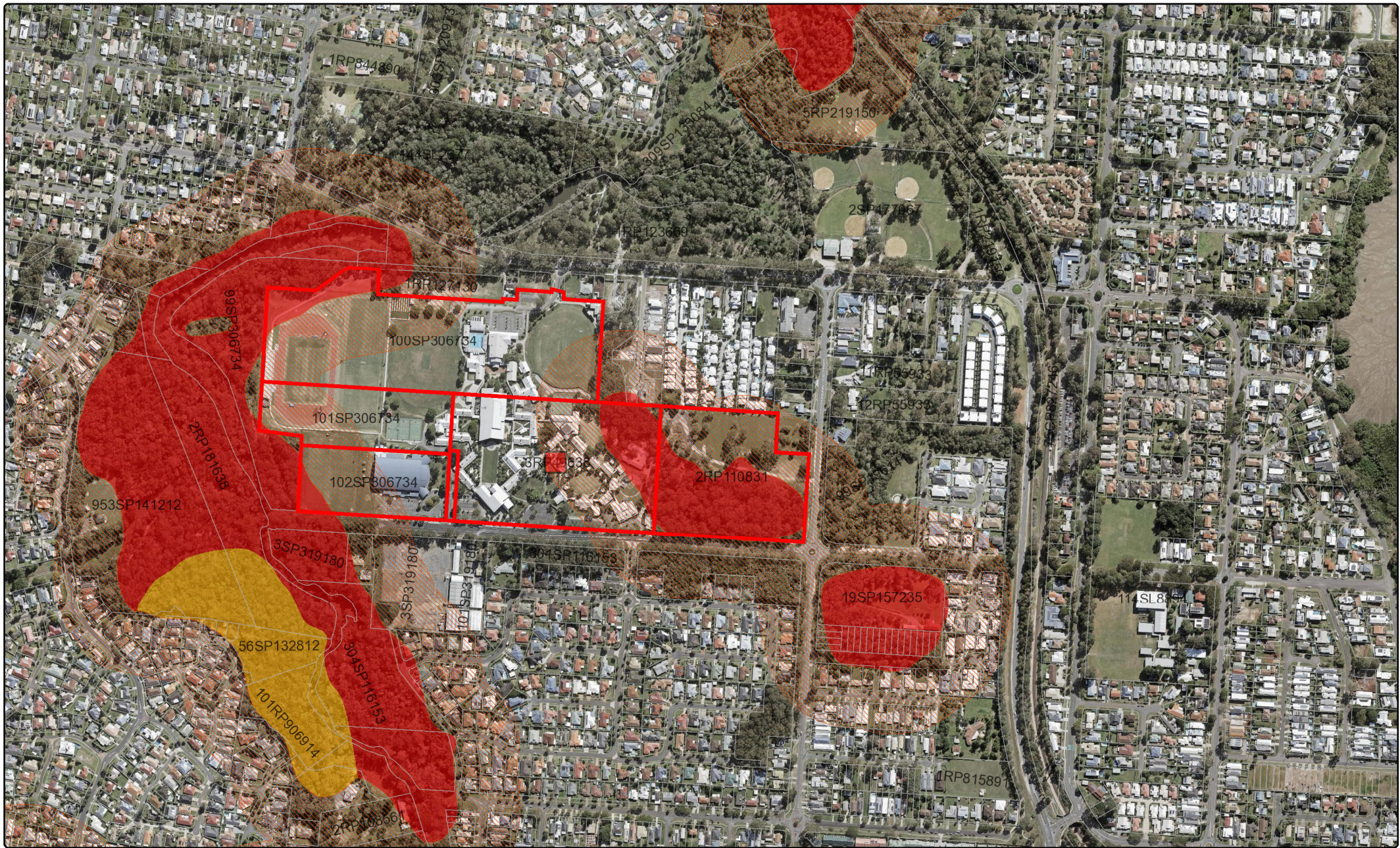
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Map 4 - State Planning Policy Natural Hazards Risk and Resilience bushfire hazard overlay map for Ormiston College Campus and surrounds.



State Planning Policy

Making or amending a local planning instrument
and designating land for community infrastructure

Date: 18/01/2023

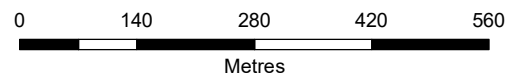
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Queensland Government

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Legend

Drawn Polygon Layer

Override 1

Cadastral (10k)



Cadastral (10k)

Bushfire prone area



Very High Potential Bushfire Intensity



High Potential Bushfire Intensity



Medium Potential Bushfire Intensity



Potential Impact Buffer



Queensland Government

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State Planning Policy

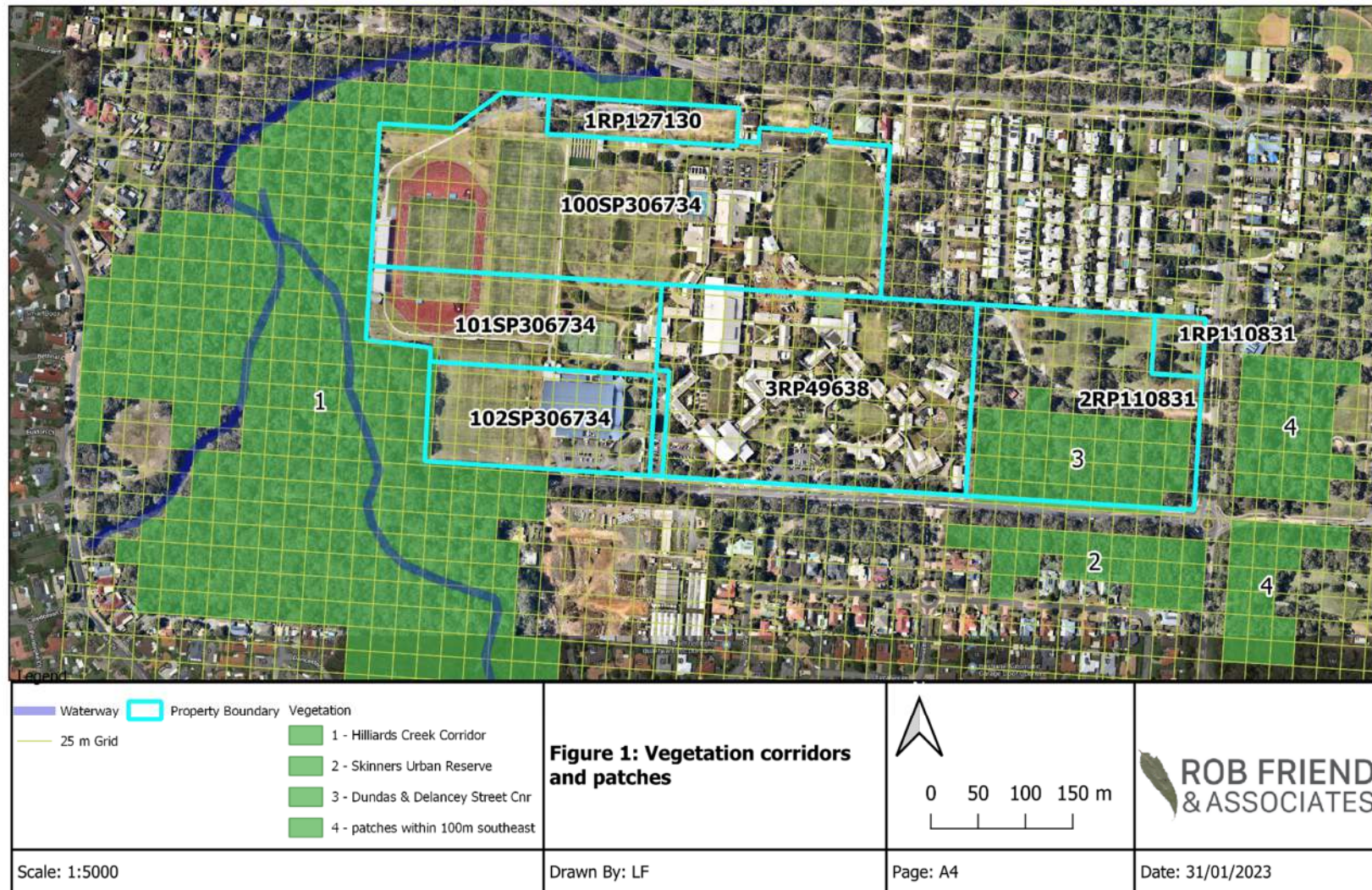
Making or amending a local planning instrument
and designating land for community infrastructure

Date: 18/01/2023

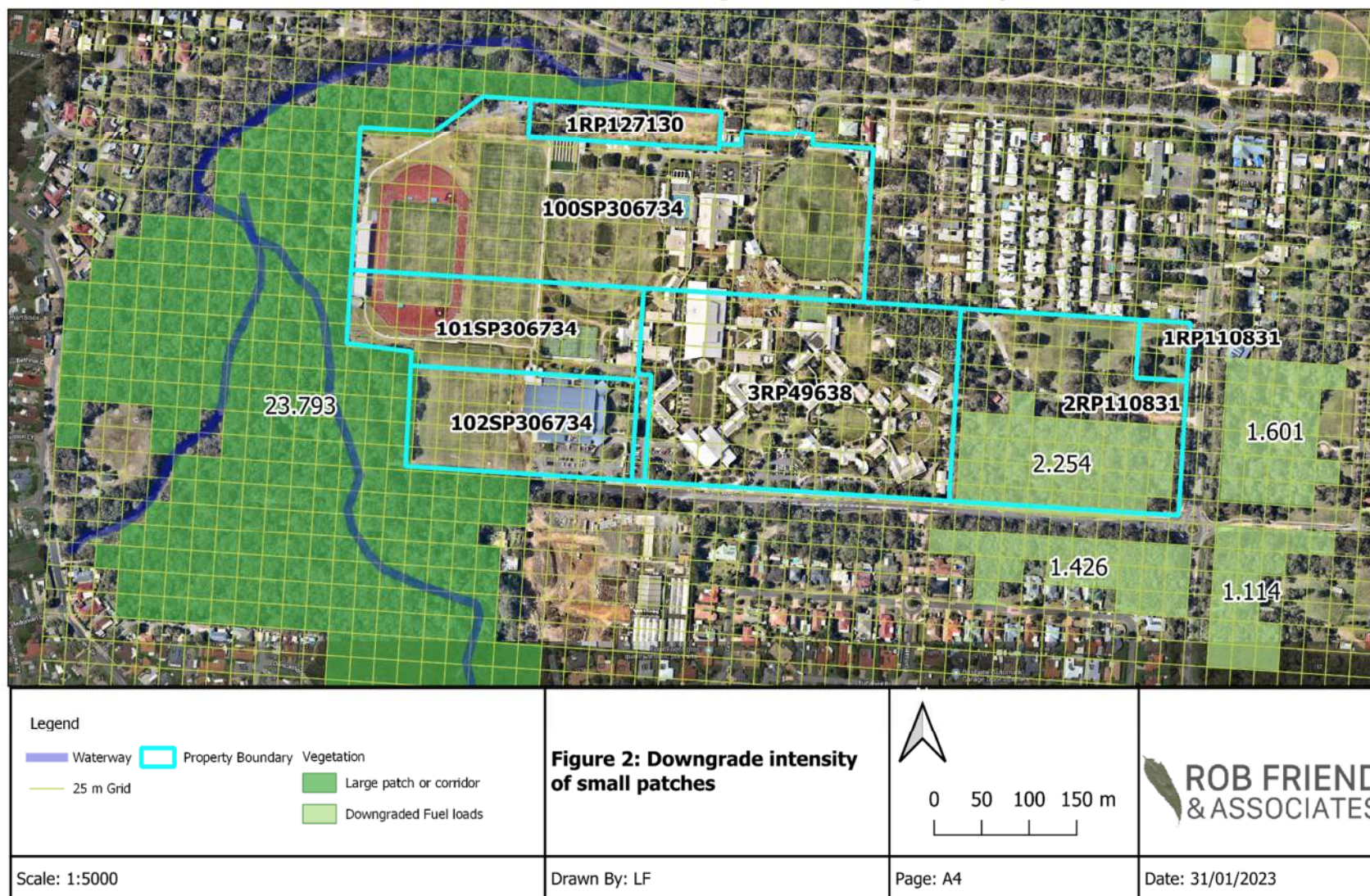
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11 PATCH AND CORRIDOR FILTERING OUTPUTS

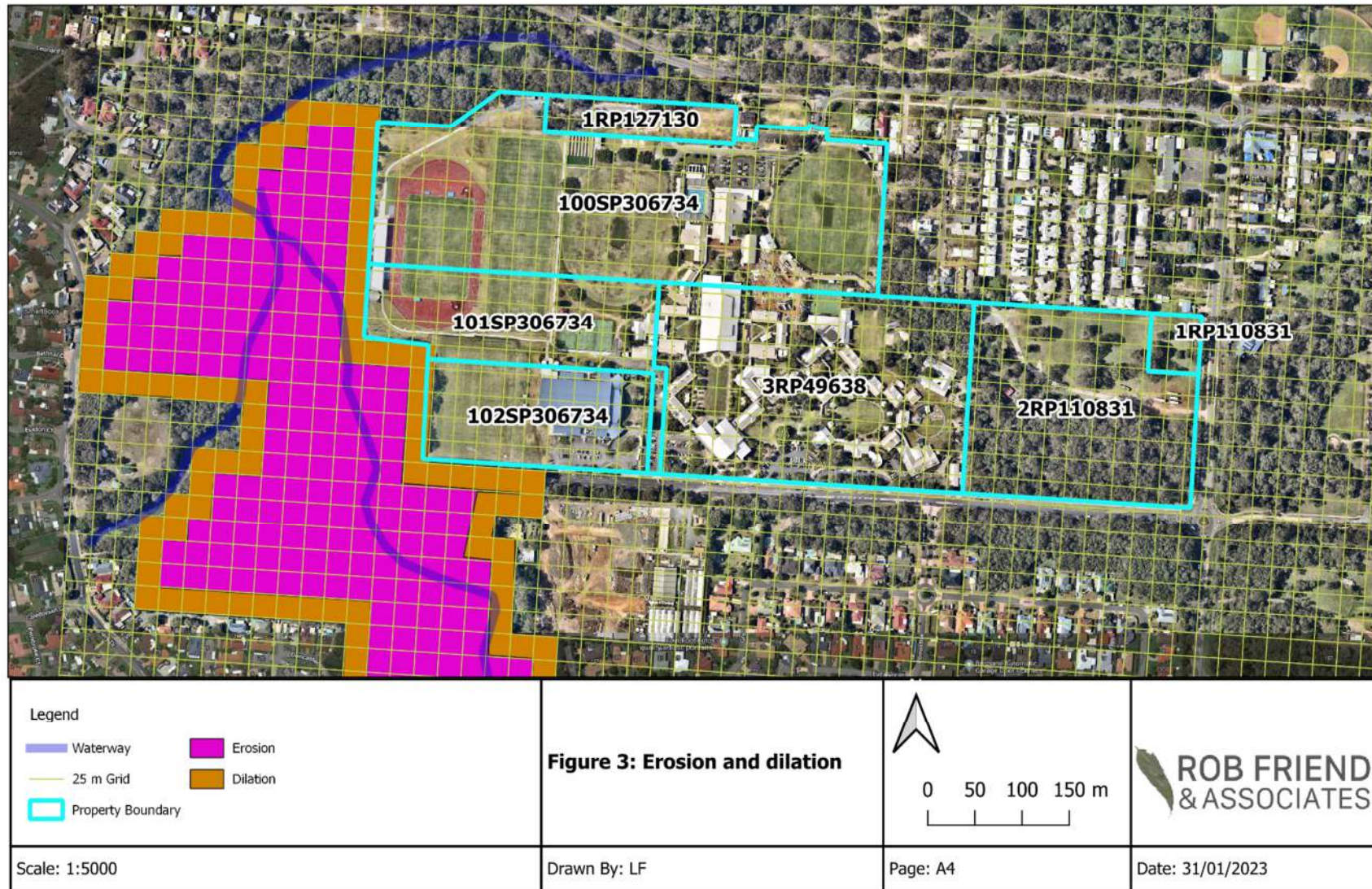
Patch and Corridor Filtering Ormiston College Campus



Patch and Corridor Filtering Ormiston College Campus



Patch and Corridor Filtering Ormiston College Campus



Patch and Corridor Filtering Ormiston College Campus

