

Document Reference: EP20-099(02)—003 SKP

15 March 2021

Attention: Native Vegetation Regulation
Department of Water and Environmental Regulation
Locked Bag 10
JOONDALUP WA 6919

Delivered by email to: info@dwer.wa.gov.au

Dear Sir/Madam

**LETTER ADDRESSING THE *ENVIRONMENTAL PROTECTION ACT 1986*
CLEARING PRINCIPLES TO SUPPORT THE PROPOSED DUPLICATION OF
WARTON ROAD BETWEEN RANFORD ROAD AND NICHOLSON ROAD IN
CANNING VALE**

Overview

The City of Gosnells ('the applicant') has engaged Emerge Associates (Emerge) to provide environmental consultancy services to support the proposed duplication of Warton Road between Nicholson Road and Ranford Road in Canning Vale ('referred to as the 'works area').

The works area comprises approximately 1.952 ha. Of this area, 0.6974 ha consists of native vegetation that will be impacted by the proposed road duplication (herein referred to as the 'clearing permit application area'). The works area and clearing permit application area are shown in **Figure 1**.

The following letter is provided in support of a clearing permit application (purpose permit) pursuant to Part V of the *Environmental Protection Act 1986* (EP Act) and addresses the ten clearing principles.

1 INTRODUCTION AND BACKGROUND

The City of Gosnells ('the applicant') are progressing the proposed duplication of Warton Road between Nicholson Road and Ranford Road in Canning Vale. This portion of Warton Road is bordered to the east by the Jandakot Regional Park (herein referred to as the 'regional park'). The Warton Road road reserve is under the applicant's management and the Western Australian Planning Commission (WAPC) owns the adjoining regional park. In addition, Lots 7, 8 and 9 within the regional park are under DBCA management. The City has successfully acquired two small areas within the Regional Park for road reserve widening, which fall under the City of Armadale's management.

The works area is largely confined to the road reserve and is 1.952 ha in size, as shown in **Figure 1**. The works area includes land classified as 'reserve' under the Metropolitan Region Scheme (MRS) and 'parks and recreation' under the City of Armadale *Town Planning Scheme* (TPS) No. 4 and the City of Gosnells TPS No. 6.

The clearing permit 'application area' identifies the 0.6974 ha of native vegetation within the works area.

An additional 0.0477 ha of native vegetation will require clearing as part of the project to re-instate all of the Regional Park firebreaks (to 3 m wide) along the new Regional Park boundaries adjoining the two small land take areas and to allow sufficient width for fire trucks to turn at intersections adjoining modified access points.

This 0.0477 ha of native vegetation has been identified as being exempt from requiring a clearing permit under Clause 1, Schedule 6 of the EP Act, as the City of Armadale's Fire Control Notice requires firebreaks along the boundaries of all properties.

2 APPLICATION OF MITIGATION HIERARCHY

In accordance with *A guide to the assessment of applications to clear native vegetation* (DER 2014), the impact mitigation sequence has been considered in order to ensure the environmental impact from the proposed clearing for the project was kept to a minimum.

2.1 Avoidance

Avoidance measures taken include the following:

- The City designed the road duplication to minimise the land take areas in the Regional Park to the smallest required extent. Measures incorporated into the design to minimise the footprint within the narrow road reserve include:
 - the reduction of median to 2 m which is the minimum width required by Western Power for installation of street lighting
 - minimising taper widening within Austroads/MRWA guidelines out to required median width at either end of the duplication length
 - reducing kerbing to the median and near retaining walls in high cut area with outfall captured by planted swale drains.
 - installation of retaining walls within the road reserve where level differences would otherwise require battering into the Regional Park
 - installation of linear biofiltration drains in lieu of table drains in a narrow verge.
- The works area was located within an area that had previously been cleared of native vegetation. Where impacts to native vegetation would occur they were targeted at areas of lower quality vegetation.
- Ongoing liaison with land managers and civil engineers was conducted to ensure that areas of clearing were minimised within the works area and to manage the interface with the Regional Park.

2.2 Mitigation

As part of the proposed road duplication, vegetation removed from the clearing permit application area will be salvaged for mulch for the City's parks and environmental operations. Where vegetation is cleared from the clearing permit application area, large wood may also be moved to adjacent areas of vegetation to provide fauna habitat for these areas.

The applicant has committed to Department of Biodiversity, Conservation and Attractions (DBCA) that it will undertake rubbish removal and weed control every 6 weeks within the first 20 m of the regional park from the disturbance areas for three years post-construction. The applicant also committed to DBCA to undertake three years of post-construction monitoring within the first 20 m of the regional park to monitor whether the road duplication results in future impacts and to inform management actions to remedy any identified impacts. The details of future monitoring and priority areas for weed control as part of the three-year maintenance program in the Regional Park is included in the *Flora and Vegetation Survey and Monitoring Report* (Emerge 2021) submitted as part of the clearing permit application. The extent of maintenance in the Regional Park is shown by the furthest extent of the survey area shown in the figures of this Flora and Vegetation Survey and Monitoring Report.

2.3 Offset

The City believes that given the avoidance and mitigation measures outlined above (maintenance and monitoring) that have been developed in consultation with the DBCA, an offset is not deemed required for clearing 0.6974 ha of fragmented roadside vegetation. In addition, as the below assessment will outline, proposed clearing is not likely to be at variance to any of the clearing principles, an offset is not deemed necessary.

3 SUMMARY OF SURVEY RESULTS

A flora and vegetation survey was completed in the spring of 2020 across the works area and an additional 20 m buffer area, which are referred to collectively as the 'survey area'. The full results are presented within the *Flora and Vegetation Survey and Monitoring Report* (Emerge 2021).

A summary of the results as they relate to the clearing application area are provided below:

- A total of 133 native and 45 non-native (weed) species were recorded within the survey area during the field survey, representing 47 families and 129 genera.
- No threatened or priority flora were recorded within the clearing permit application area. A number of locally or regionally significant species were recorded within the regional park portion of the survey area but not the clearing permit application area, including *Hensmania turbinata*, *Gonocarpus cordiger*, *Platysace juncea* and *Styphelia xerophylla*.
- No declared pest species were recorded within the clearing permit application area. One species listed as declared pest was recorded in the regional park portion of the survey area: *Zantedeschia aethiopica* (arum lily).
- Four native plant communities were identified within the clearing permit application area: **BaBm**, **AcEaPc**, **AfBK** and **MpAf**. The areas of each community within the clearing permit application area are shown in **Figure 2**.
- Historical aerial photography indicate that the entire road reserve was cleared by 1965 for the construction of Warton Road.
- The majority of the works area was mapped as being in 'degraded' or 'completely degraded' condition and contains tracks, bare ground and scattered native trees and shrubs over non-native grasses and herbs. However, small pockets of 'good' and 'very good' condition vegetation also occur within the clearing permit application area (**Table 1** and **Figure 3**).
- The majority of the vegetation within the regional park portion in the survey area adjoining the works area was in very good and 'excellent' condition, with localised areas and tracks with higher disturbance in 'completely degraded', 'degraded' and 'good' condition.
- Plant communities **BaBm** and **AcEaPc** were considered to most likely represent FCT 23a. Plant communities **AfBKg** and **MpAf** were considered to represent FCT 21c. Both FCT 23a and FCT 21c are included within the 'banksia woodlands of the Swan Coastal Plain' Commonwealth 'threatened ecological community' (TEC) and the State 'priority ecological community' (PEC) (P3). FCT 21c ('lower lying *Banksia attenuata* woodlands and shrublands' is also separately listed at the State level as a PEC. As such, 0.65 ha of the banksia woodland Commonwealth TEC and State PEC and 0.54 ha of the FCT 21c PEC are present within the clearing permit application area. The areas of each TEC and PEC are shown on **Figure 4**.
- Applying the diagnostic criteria for inclusion as the banksia woodland Commonwealth TEC and State PEC, the vegetation within the clearing permit application area is contiguous with banksia woodland vegetation within the survey area and extending further to the east and west. As such, the banksia woodland TEC and PEC within the clearing permit application area is part of a large (approximately 170 ha) patch.

Table 1: Extent of vegetation condition categories within the wider works area, clearing permit application area and exempt clearing

Condition category (Keighery 1994)	Size (ha)		
	Works area	Clearing permit application area	Exempt clearing (for firebreaks within the Regional Park)
Pristine	0	0	0
Excellent	0.0003	0	0.0003
Very good	0.2374	0.1957	0.0417
Good	0.1816	0.1761	0.0055
Degraded	0.2788	0.2787	0.0002
Completely degraded [^]	1.2539	0.0469	0
TOTAL	1.9521	0.6974	0.1308

Note: [^]Total area of completely degraded vegetation within the works area is much larger than what is included within the clearing permit application area to avoid including cleared areas with no native cover. 'Completely degraded' areas included within the clearing permit application area consist of scattered native shrubs present within cleared areas.

4 RESPONSE TO EP ACT CLEARING PRINCIPLES

Under Section 51C of the EP Act, clearing of native vegetation is an offence unless a clearing permit has been obtained or an exemption applies. When assessing clearing permit applications, DWER has regard to the ten clearing principles contained in Schedule 5 of the EP Act so far as they are relevant to the matter under consideration.

In support of this area permit clearing application, we have considered and responded to the ten clearing principles in the following sections.

Principle (a) – Native vegetation should not be cleared if it comprises a high level of biological diversity.

The clearing permit application area is located on the Swan Coastal Plain, which is recognised as an area of high biological diversity (EPA 2007). The plant community **BaBm** was considered representative of FCT SCP 23a and plant communities **MpAf** and **AfKgB** were considered to be representative of FCT 21c. The flora survey identified that all of the plant communities represent the Commonwealth listed 'banksia woodlands of the Swan Coastal Plain' TEC (herein referred to as the 'banksia woodland TEC'), and the State 'banksia woodlands of the Swan Coastal Plain' PEC (herein referred to as the 'banksia woodland PEC'). FCT 21c is also listed separately as a PEC (P3). The areas of each TEC and PEC are shown on **Figure 4**.

Noting however, that the patches of this vegetation that are present within the clearing permit application area are small, scattered and identified as being in 'very good', 'good' and 'degraded' condition. The **BaBm**, **MpAf** and **AfKgB** vegetation is well reserved locally outside of the clearing permit application area within the broader regional park. Within the regional park the TEC and PEC is present in large contiguous patches that are not fragmented in the same manner as per the vegetation within the clearing permit application area.

Due to the level of historical disturbance, the small size of the clearing permit application area, the majority of vegetation being in a 'degraded' or 'completely degraded' condition, and the limited fauna habitat present within the clearing permit application area, the clearing permit application area does not support a high level of biological diversity. The proposed clearing is therefore not considered to be at variance with Principle (a).

Principle (b) – Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

Fauna values within the clearing permit application area are limited due to the historical clearing, vegetation degradation, and the presence of weeds. Vegetation within the clearing permit

application area is likely to represent the greatest habitat for avian fauna species, including for two black cockatoo species (Carnaby's cockatoo and the forest red-tailed black cockatoo), and potentially represents habitat for Baudin's cockatoo, although it is noted that it is on the edge of the habitat range for this species.

The clearing permit application area contains 12 significant trees (native tree species with diameter at breast height (DBH) ≥ 50 cm). Of these 12 significant trees, none were identified as containing hollows that were potentially suitable for use by breeding black cockatoos (**Figure 4**).

There is the potential for populations of black cockatoos to occur in the broader area, with 12 known roost sites within 12 km of the clearing permit application area, in addition to a separate population that breed outside of the Perth metropolitan area and forage on the Swan Coastal Plain. Whilst populations of black cockatoos exist within the broader area, the vegetation within the clearing permit application area is not considered necessary for the maintenance of habitat for these populations, given the vegetation proposed to be cleared does not represent habitat necessary for breeding or roosting. Given that significant areas of foraging habitat located within 6 km of the clearing permit application area (particularly in the adjoining Regional Park), it is not likely that cumulative impacts would result in significant local impacts to the extent that the occurrence of the species locally would be affected.

It is also unlikely that the clearing permit application area would provide important fauna habitat to other conservation significant fauna species given the small size of the clearing permit application area, and its highly modified and fragmented environment. There are also areas of better-quality contiguous vegetation located to the north and east of the clearing permit application area, which are likely to be preferred by native fauna.

Based on the small extent of vegetation proposed to be cleared, the removal of vegetation within the clearing permit application area is unlikely to have a significant impact on a habitat for fauna indigenous to Western Australia. Therefore, clearing within the clearing permit application area is not considered to be at variance with Principle (b).

Principle (c) – Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.

No occurrences of rare flora were recorded, or are likely to occur, within the clearing permit application area. The flora and vegetation survey over the clearing permit application area and adjacent portion of the Regional Park was undertaken in the main flowering season for the vast majority of threatened flora species known to occur in the wider local area. As such most of these species would likely have been visible at the time of the survey. Moreover, multiple transects were walked over areas of potential habitat for this species. Eight other orchid species were recorded including *Caladenia paludosa* and *Caladenia longicauda* subsp. *calcigena*, indicating survey timing and survey intensity were sufficient to record orchid species (Emerge 2021).

One threatened orchid species known to occur in the local area, *Diuris purdiei*, only tends to flower after summer fire. Given the survey area has not been burnt recently, it was not possible to confirm if this species is absent from the area. However, as *D. purdiei* tends to occur on grey-black sand in winter wet swamps (Western Australian Herbarium 2020), if present, this species would be more likely to occur closer to Harrisdale Swamp and is highly unlikely to occur within the clearing permit application area.

The proposed clearing is therefore not at variance with Principle (c).

Principle (d) – Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.

The Emerge (2021) survey identified that plant communities **BaBm**, **AcEaPc**, **MpAf** and **AfKgB** represents the Commonwealth 'banksia woodlands of the Swan Coastal Plain' TEC (banksia woodland TEC) and the state listed 'Banksia woodlands of the Swan Coastal Plain' priority ecological community (PEC). The areas of these plant communities within the clearing permit application area consist of numerous small scattered pockets present within the road reserve (**Figure 4**). As such, independently, the vegetation within the clearing permit application area does not meet the

condition or size thresholds required under the diagnostic criteria (DoEE 2016). However, as the **BaBm**, **AcEaPc**, **MpAf** and **AfKgB** vegetation within the clearing permit application area is within 30 m of the adjacent vegetation within the regional park, the clearing permit application area is contiguous with a large patch of the Commonwealth TEC and State PEC.

As the TEC identified within the clearing permit application area is a Commonwealth TEC it is not relevant to the clearing principles specified in the EP Act.

Nevertheless, given that only small, fragmented and predominantly degraded patches of the Commonwealth TEC exist in the clearing permit application area and there is substantial areas of higher quality and more intact patches of the Commonwealth TEC in the adjoining Regional Park, the proposed clearing is not considered to be at variance to this principle if it were to be considered.

Principle (e) – Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

Vegetation complex mapping for the Swan Coastal Plain undertaken by Heddle *et al.* (1980) indicates that the clearing permit application area occurs within an area mapped as the 'Southern River complex'. This is described as 'Open woodland of *Corymbia calophylla* - *Eucalyptus marginata* - *Banksia* species with fringing woodland of *Eucalyptus rudis* - *Melaleuca raphiophylla* along creek beds'.

The Southern River complex has 18.43% of its pre-European extent remaining on the Swan Coastal Plain with 1.18% under formal protection (Government of Western Australia 2018). Within the City of Gosnells, 8.23% of the original extent of the Southern River complex is remaining (Government of Western Australia 2018).

The Environmental Protection Authority's (EPA) (2006) *Guidance Statement No. 10. Guidance for the Assessment of Environmental Factors – Level of Assessment for Proposals Affecting Natural Areas Within the System 6 Region and Swan Coastal Plain Portion of the System 1 Region* identified a standard level of native vegetation retention of at least 10% of the pre-clearing extent of the vegetation complex in 'constrained areas' such as the Swan Coastal Plain portion of the Perth Metropolitan Region.

It is acknowledged that whilst over 10% of the Southern River complex remains on the Swan Coastal Plain, there is currently very low levels of this complex retained in formal protection.

A large portion of the vegetation contained within the clearing permit application area has been assessed as being in a 'degraded' condition. The vegetation is also present as long, linear strips along the roadside and where in 'very good' condition, is directly associated with intact vegetation within the regional park (not separated by a firebreak). Due to the long linear shape, level of degradation, and the presence of large areas of more intact vegetation directly adjacent, the vegetation within the clearing permit area is not considered to represent significant vegetation of the Southern River complex.

Based on the small amount of vegetation proposed to be removed along a long linear alignment, the predominantly degraded condition of the vegetation and the presence of large areas of more intact vegetation directly adjacent, the vegetation within the clearing permit application area is not considered to be representative of the Southern River complex. Thus, the proposed clearing is not considered to be at variance with Principle (e).

Principle (f) – Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

A review of the *Geomorphic Wetlands of the Swan Coastal Plain* dataset (DBCA 2020) indicates that a conservation category wetland (CCW) 7209 is located 10 m to the south-east of the clearing permit application area. However, no vegetation associated with this wetland will be cleared as part of the works within the clearing permit application area.

As the vegetation within the clearing permit application area to be cleared is not directly associated with a wetland, the proposed clearing is not considered to be at variance with Principle (f).

Principle (g) – Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

An examination of broad scale mapping places the clearing permit application area within the Southern River association (Churchward and McArthur 1980). The Southern River association comprises 'sandplain with low dunes and many intervening swamps; iron and humus podzols, peats and clays.' Soil landscape mapping indicates that the majority of the clearing permit application area is identified as sand (DPIRD 2019). Due to the features of these soils, the key risk for land degradation is wind erosion.

The proposed clearing of vegetation is unlikely to cause substantial wind erosion within the clearing permit application area, given the small amount of vegetation to be cleared, and mitigation measures to be employed during clearing, including dust suppression and surface stabilisation where required. Exposed surfaces within the clearing permit application area will be sealed post-clearing. The City will also be installing linear biofiltration drains to treat road run-off and prevent water quality impacts post-construction to the Regional Park (see attached City of Gosnells Plan E44-20-801).

The proposed clearing is therefore not at variance to Principle (g).

Principle (h) – Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

Directly to the east of Warton Road is the regional park, which also forms Bush Forever Site No. 253 'Harrisdale Swamp and Adjacent Bushland, Forrestdale'. The land to the west of Warton Road forms part of Bush Forever Site No. 472 'Canning Vale Prison Bushland'. The vegetation within both Bush Forever sites provides an ecological linkage with remnant vegetation to the west, east and south. No other conservation areas occur within or adjacent to the clearing permit application area.

The proposed clearing will involve the removal of 0.21 ha of native vegetation associated with Bush Forever Site No. 253 within the two small areas of the Regional Park recently acquired for road widening. However, as discussed above, the vegetation within the clearing permit application area is predominantly in a 'degraded' or 'completely degraded' condition.

The removal of vegetation has the potential to indirectly impact the regional park through the introduction of weeds or dieback within the broader Bush Forever site. However, it is noted that the vegetation within the clearing permit application area is predominantly in a degraded or worse condition already, with weed species prevalent throughout the road reserve. Weed and dieback management will be controlled through the clearing process, including ensuring that all vehicles are washed down prior to entering the clearing permit application area and ensuring that no dieback infected soil or fill is used. In addition, a baseline monitoring program was set up in spring of 2020 within the 20 m linear buffer to the east of the clearing permit application area, in order to allow for pre- and post-development vegetation and weed monitoring.

The City will commit to undertaking a three-year maintenance and monitoring program as outlined in the Flora and Vegetation and Monitoring Report. The maintenance will include weed control and rubbish removal every 6 weeks within the first 20 m of the regional park. The details of the post-construction monitoring program is outlined in **Section 5.7** of the *Flora and Vegetation and Monitoring Report*. This will allow for the City to implement additional management measures should the condition of the Regional Park directly adjoining the site showing signs of decline.

Given the management measures proposed by the City, the relatively small extent of vegetation proposed to be cleared from the Regional Park and that the vegetation within the clearing permit application area is predominantly present in degraded condition, the proposed clearing is not considered to be at variance to Principle (h).

Principle (i) – Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

Deterioration in quality of surface water or underground water can occur as a result of activities that result in sedimentation, increased nutrient levels, changes to pH (through acid sulphate soils), salinity or changes in water regimes of groundwater dependent ecosystems. As outlined above, given the

small amount of vegetation to be cleared; mitigation measures to be employed during clearing (dust suppression and surface stabilisation where required); and the long-term management of exposed surfaces post-clearing (surface sealing and the installation of linear biofiltration drains to treat road run-off), clearing is not likely to cause a deterioration in water quality.

Acid sulphate soil (ASS) risk mapping prepared by DWER (2020) indicates that the entire clearing permit application area has been identified as having a moderate to low risk of ASS occurring within 3 m of the natural soil surface.

It is therefore unlikely that the proposed clearing will cause ASS or other issues that could cause a deterioration in water quality within or surrounding the clearing permit application area, and therefore the proposed clearing is not at variance with Principle (i).

Principle (j) – Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

The clearing permit application area is located within an area that is mapped as having predominantly sandy, free-draining soils.

A review of publicly available data and site-specific investigations did not identify any environmental factors that would increase the incidence of flooding, as discussed below:

- The water table below the clearing permit application area is between approximately 3.0 to at least 6.3 m below the natural surface level (DWER 2021).
- The clearing permit application area is not mapped as occurring within a floodplain area (DWER 2020).
- The city is installing linear biofiltration drains to manage run-off and prevent water from the road directly running off into the Regional Park.

Based on the above factors, the proposed removal of native vegetation within the clearing permit application area will not cause or exacerbate an incidence of flooding. The proposed clearing is not considered to be at variance with Principle (j).

5 SUMMARY AND CLOSING

The clearing permit application area is approximately 0.697 hectares (ha) in size, and contains:

- Three native plant communities, ranging in condition from ‘very good’ to ‘completely degraded’.
- No recorded threatened flora species.
- A Commonwealth threatened ecological community and State listed priority ecological community, ‘Banksia woodlands of the Swan Coastal Plain’.
- 12 significant trees (native trees over 500 mm DBH). No potentially suitable nesting hollows for black cockatoo species were identified within the trees.

Overall, the majority of native vegetation within the clearing permit application area is in ‘completely degraded’ or ‘degraded’ condition.

A summary of response to clearing principles is provided in **Table 2**.

Table 2: Summary of response to each clearing principle

Clearing principle	Response to clearing permit principle
Principle (a)	Not at variance.
Principle (b)	Not at variance.
Principle (c)	Not at variance.
Principle (d)	Not at variance.

Clearing principle	Response to clearing permit principle
Principle (e)	Not at variance.
Principle (f)	Not at variance.
Principle (g)	Not at variance.
Principle (h)	Not at variance.
Principle (i)	Not at variance.
Principle (j)	Not at variance.

Emerge believe that the proposed clearing is consistent with the EP Act Clearing Principles, as detailed in this letter. This application relates to a relatively small amount of clearing along a narrow linear strip, that will predominantly impact upon degraded vegetation and that is required for the construction of an important upgrade to a busy section of road.

Should you have any questions regarding the content of this letter, please do not hesitate to contact the undersigned.

Yours sincerely
Emerge Associates



cc:

Encl: Figure 1: Site Location
Figure 2: Plant Communities
Figure 3: Vegetation Condition
Figure 4: Conservation Significant Features
City of Gosnells Plan E44-20-801

General References

Churchward, H. M. and McArthur, W. M. 1980, '*Landforms and Soils of the Darling System, Western Australia*', in Department of Conservation and Environment (ed.), *Atlas of Natural Resources Darling System Western Australia*, Department of Conservation and Environment.

Department of Biodiversity, Conservation and Attractions (DBCA) 2020, *Geomorphic Wetlands, Swan Coastal Plain (DBCA-019)*.

Department of Environment Regulation (DER) 2014, *A guide to the assessment of applications to clear native vegetation under Part V Division 2 of the Environmental Protection Act 1986*, Perth.

Department of Environment and Energy (DoEE) 2016, *Approved Conservation Advice (incorporating listing advice) for the Banksia Woodlands of the Swan Coastal Plain ecological community*, Canberra.

Department of Primary Industries and Regional Development (DPIRD) 2019, *Soil Landscape Mapping - Best Available (DPIRD-027)*.

Department of Water and Environmental Regulation (DWER) 2020, *FPM 1 in 100 (1%) AEP Floodplain Development Control Area (DWER-003)*.

Environmental Protection Authority (EPA) 2006, *Guidance Statement No. 10. Level of Assessment for Proposals Affecting Natural Areas Within the System 6 Region and Swan Coastal Plain Portion of the System 1 Region*, Perth.

Environmental Protection Authority (EPA) 2007, *State of the Environment Report: Western Australia 2007*, Perth.

Government of Western Australia 2018, *Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of December 2017*, WA Department of Biodiversity, Conservation and Attractions, Perth.

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Online References

Department of Water and Environmental Regulation (DWER) 2020, *Perth Groundwater Map*, viewed August 2020, <https://maps.water.wa.gov.au/#/webmap/gwm>.

Landgate 2020, *Map Viewer*, viewed August 2020, <https://maps.landgate.wa.gov.au/maps-landgate/registered/>.

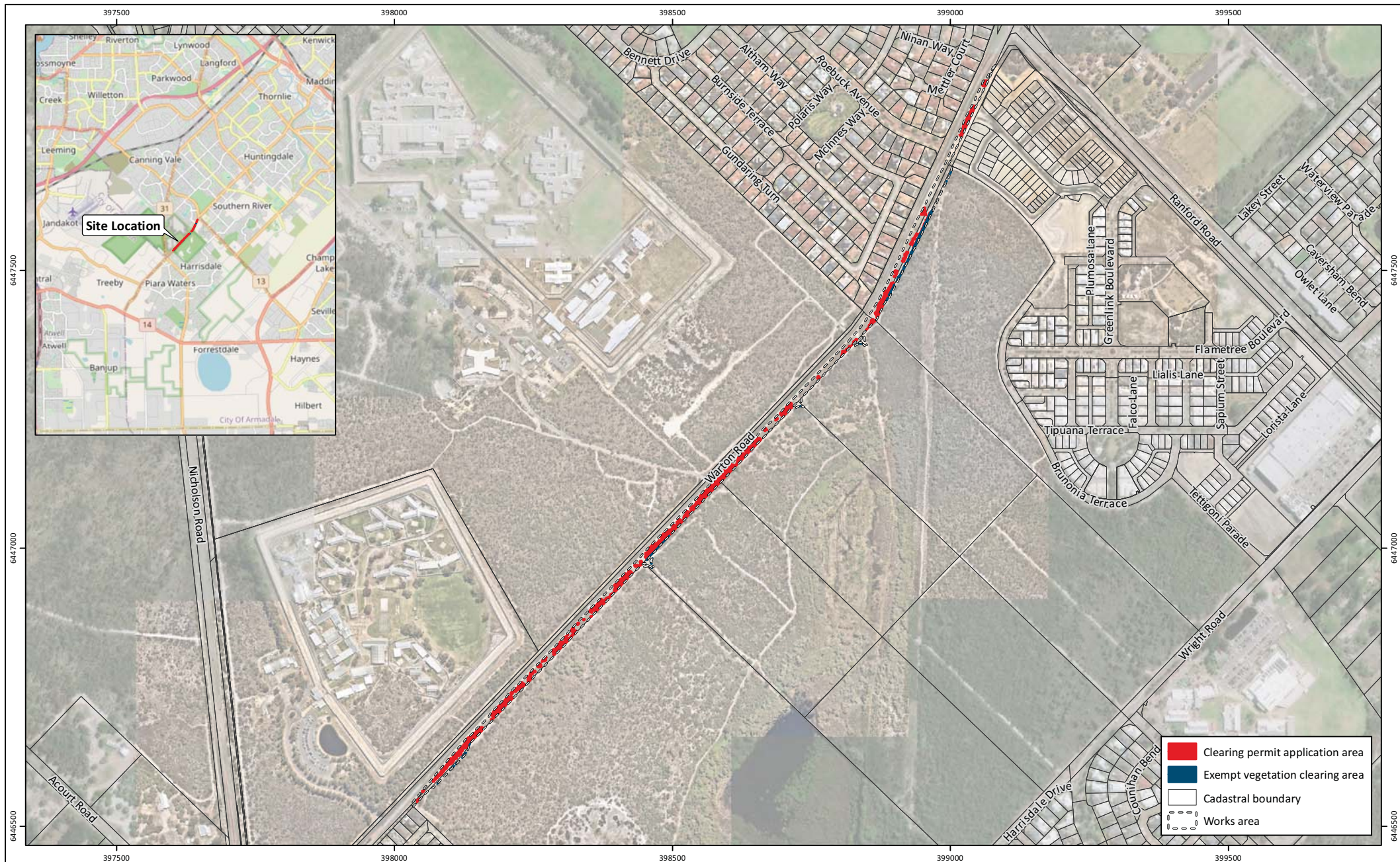


Figure 1: Site Location

Project: Letter addressing *Environmental Protection Act 1986* clearing principles
Proposed Warton Road Duplication, Canning Vale

Client: City of Gosnells

Plan Number:
EP20-099(02)-F15a

Drawn: GAR
Date: 03/03/2021

Checked: SKP
Approved: TAA
Date: 03/03/2021



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Metres
Scale: 1:9,000@A4
GDA 1994 MGA Zone 50

emerge
ASSOCIATES

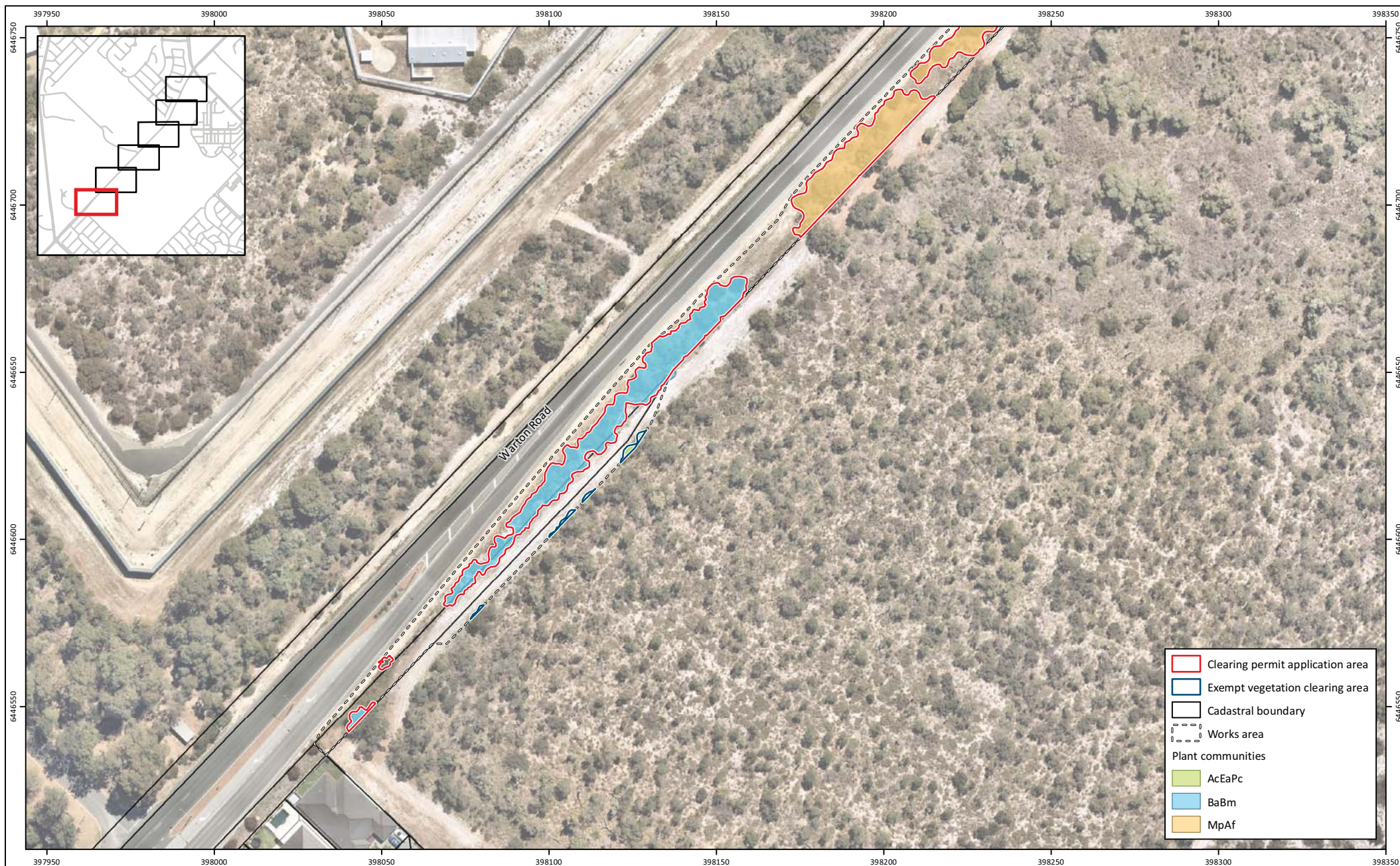


Figure 2: Plant Communities - Map 1 of 6

Project: Letter addressing *Environmental Protection Act 1986* clearing principles
Proposed Warton Road Duplication, Canning Vale

Client: City of Gosnells

Plan Number:
EP20-099(02)-F16a

Drawn: GAR
Date: 03/03/2021

Checked: SKP
Approved: TAA
Date: 03/03/2021



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GDA 1994 MGA Zone 50

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Figure 2: Plant Communities - Map 2 of 6

Project: Letter addressing *Environmental Protect Act 1986* clearing principles
Proposed Warton Road Duplication, Canning Vale

Client: City of Gosnells

Plan Number:
EP20-099(02)--F16a

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GDA 1994 MGA Zone 50

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Figure 2: Plant Communities - Map 3 of 6

Project: Letter addressing *Environmental Protect Act 1986* clearing principles
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GDA 1994 MGA Zone 50

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Figure 2: Plant Communities - Map 4 of 6

Project: Letter addressing *Environmental Protection Act 1986* clearing principles
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Plan Number:
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Metres

Scale: 1:1,500@A4
GDA 1994 MGA Zone 50

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Figure 2: Plant Communities - Map 5 of 6

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0 25 50
Metres

Scale: 1:1,500@A4

GDA 1994 MGA Zone 50





Figure 2: Plant Communities - Map 6 of 6

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Approved: TAA

Date: 03/03/2021



0 25 50
Metres

Scale: 1:1,500@A4

GDA 1994 MGA Zone 50

emerge
ASSOCIATES

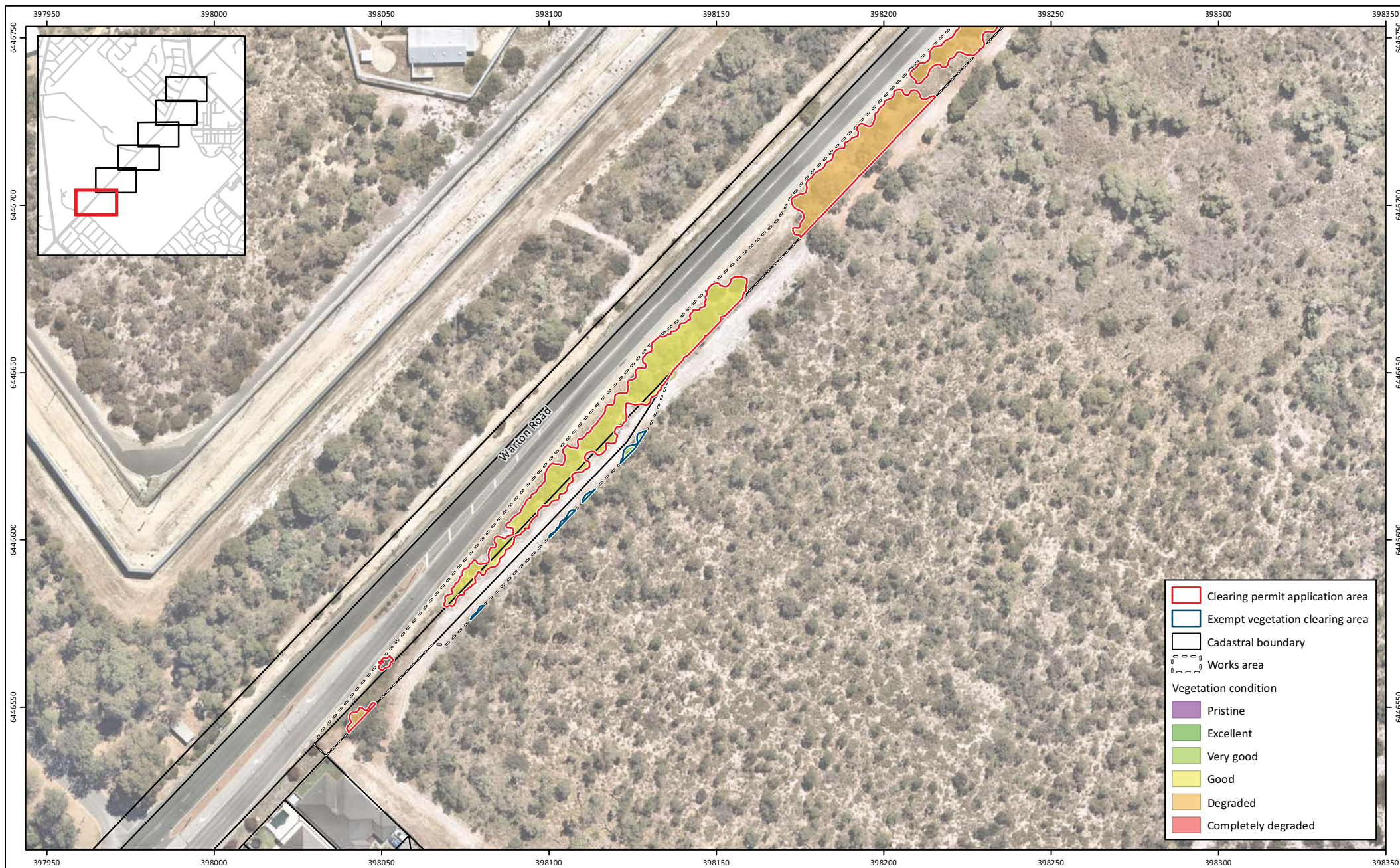


Figure 3: Vegetation Condition - Map 1 of 6

Project: Letter addressing *Environmental Protection Act 1986* clearing principles
Proposed Warton Road Duplication, Canning Vale

Client: City of Gosnells

Plan Number:
EP20-099(02)-F17a

Drawn: GAR

Date: 03/03/2021

Checked: SKP

Approved: TAA

Date: 03/03/2021



0 25 50
Metres

Scale: 1:1,500@A4

GDA 1994 MGA Zone 50

emerge
ASSOCIATES



Figure 3: Vegetation Condition - Map 2 of 6

Project: Letter addressing *Environmental Protect Act 1986* clearing principles
Proposed Warton Road Duplication, Canning Vale

Client: City of Gosnells

Plan Number:
EP20-099(02)--F17a

Drawn: GAR

Date: 03/03/2021

Checked: SKP

Approved: TAA

Date: 03/03/2021



0 25 50
Metres

Scale: 1:1,500@A4

GDA 1994 MGA Zone 50

emerge
ASSOCIATES



Figure 3: Vegetation Condition - Map 3 of 6

Project: Letter addressing *Environmental Protection Act 1986* clearing principles
Proposed Warton Road Duplication, Canning Vale

Client: City of Gosnells

Plan Number:
EP20-099(02)--F17a

Drawn: GAR
Date: 03/03/2021

Checked: SKP
Approved: TAA
Date: 03/03/2021



0 25 50
Metres

Scale: 1:1,500@A4
GDA 1994 MGA Zone 50

emerge
ASSOCIATES



Figure 3: Vegetation Condition - Map 4 of 6

Project: Letter addressing *Environmental Protection Act 1986* clearing principles
Proposed Warton Road Duplication, Canning Vale

Client: City of Gosnells

Plan Number:
EP20-099(02)--F17a

Drawn: GAR
Date: 03/03/2021

Checked: SKP
Approved: TAA
Date: 03/03/2021



0 25 50
Metres
Scale: 1:1,500@A4
GDA 1994 MGA Zone 50





Figure 3: Vegetation Condition - Map 5 of 6

Project: Letter addressing *Environmental Protect Act 1986* clearing principles
Proposed Warton Road Duplication, Canning Vale

Client: City of Gosnells

Plan Number:
EP20-099(02)-F17a

Drawn: GAR

Date: 03/03/2021

Checked: SKP

Approved: TAA

Date: 03/03/2021



0 25 50
Metres

Scale: 1:1,500@A4

GDA 1994 MGA Zone 50

emerge
ASSOCIATES

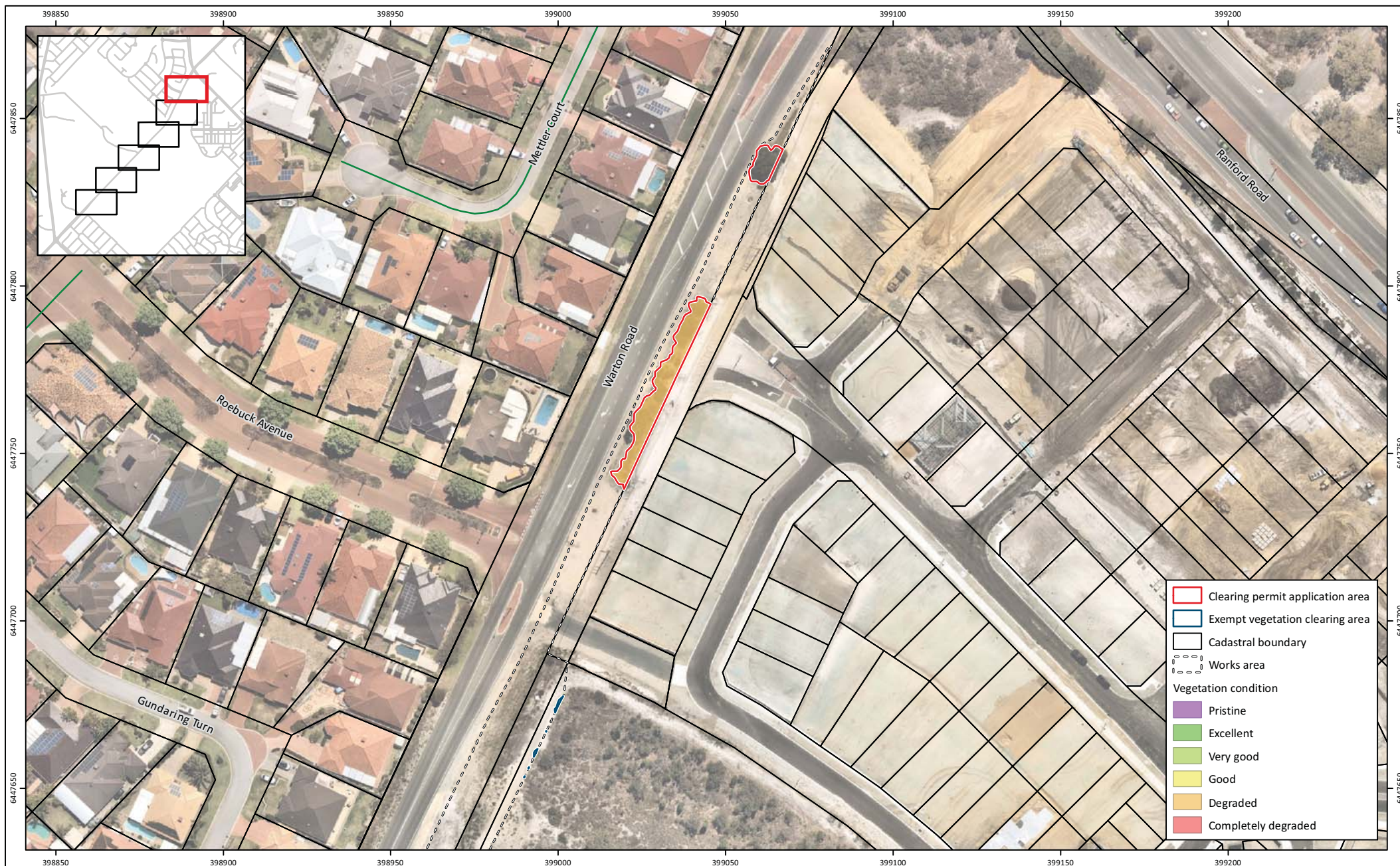


Figure 3: Vegetation Condition - Map 6 of 6

Project: Letter addressing *Environmental Protect Act 1986* clearing principles
Proposed Warton Road Duplication, Canning Vale

Client: City of Gosnells

Plan Number:
EP20-099(02)-F17a

Drawn: GAR

Date: 03/03/2021

Checked: SKP

Approved: TAA

Date: 03/03/2021



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Metres

Scale: 1:1,500@A4
GDA 1994 MGA Zone 50

emerge
ASSOCIATES

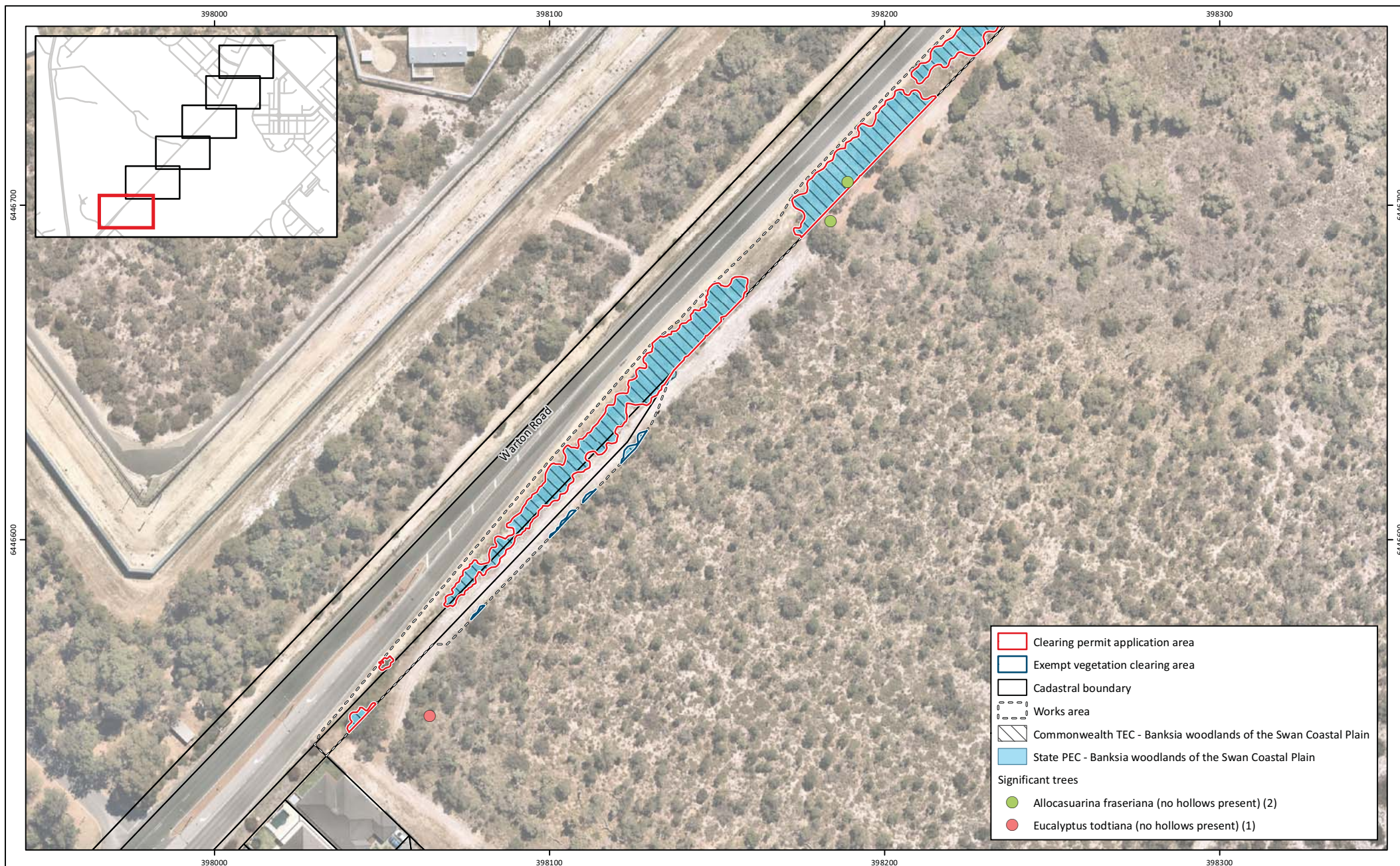


Figure 4: Conservation Significant Features - Map 1 of 6

Project: Letter addressing *Environmental Protection Act 1986* clearing principles
Proposed Warton Road Duplication, Canning Vale

Client: City of Gosnells

Plan Number:
EP20-099(02)-F18a

Drawn: GAR

Date: 03/03/2021

Checked: SKP

Approved: TAA

Date: 03/03/2021



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Scale: 1:1,500@A4
GDA 1994 MGA Zone 50

emerge
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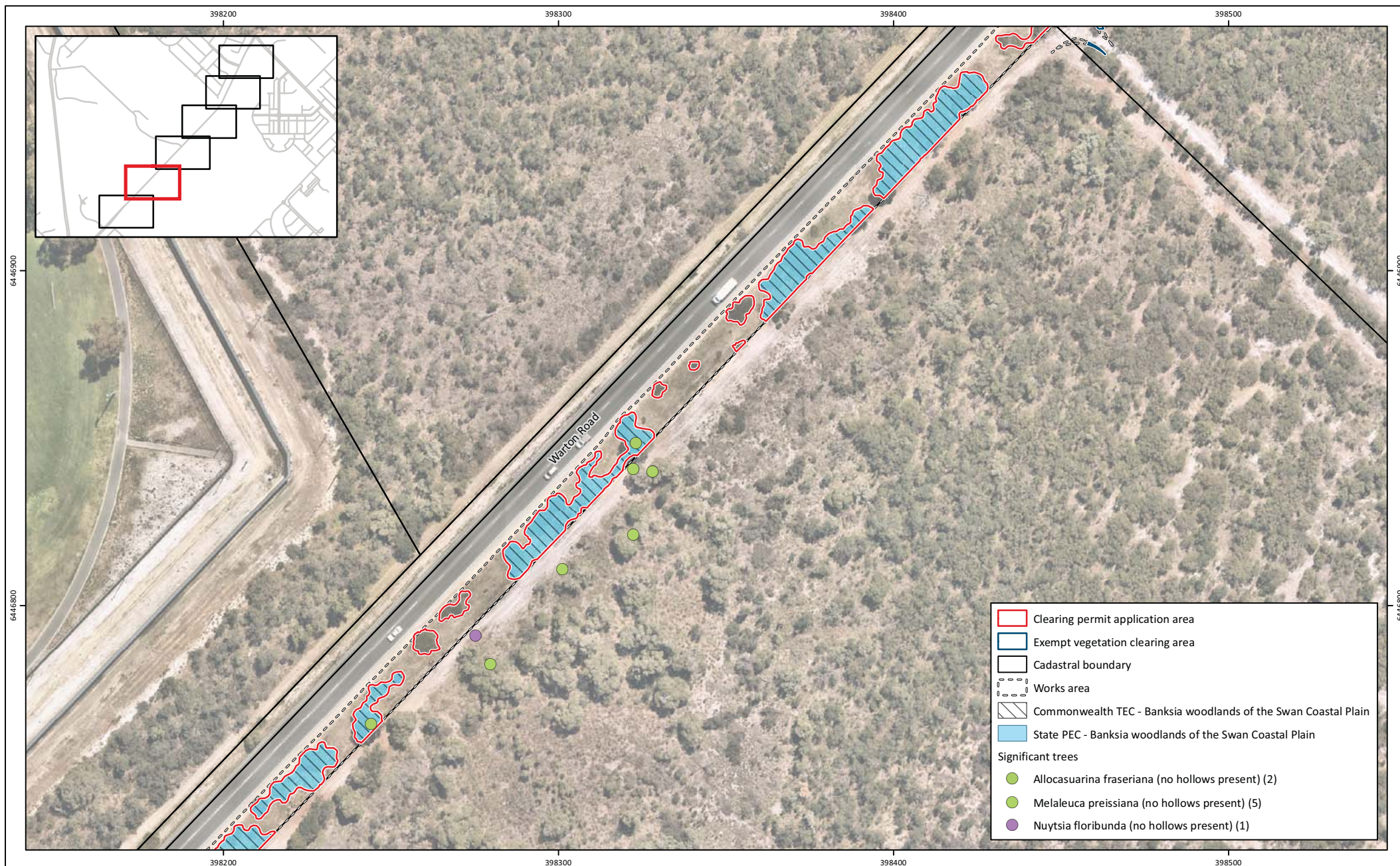


Figure 4: Conservation Significant Features - Map 2 of 6

Project: Letter addressing *Environmental Protect Act 1986* clearing principles
Proposed Warton Road Duplication, Canning Vale

Client: City of Gosnells

Plan Number:
EP20-099(02)--F18a

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Date: 03/03/2021

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0 25 50
Metres

Scale: 1:1,500@A4
GDA 1994 MGA Zone 50

emerge
ASSOCIATES

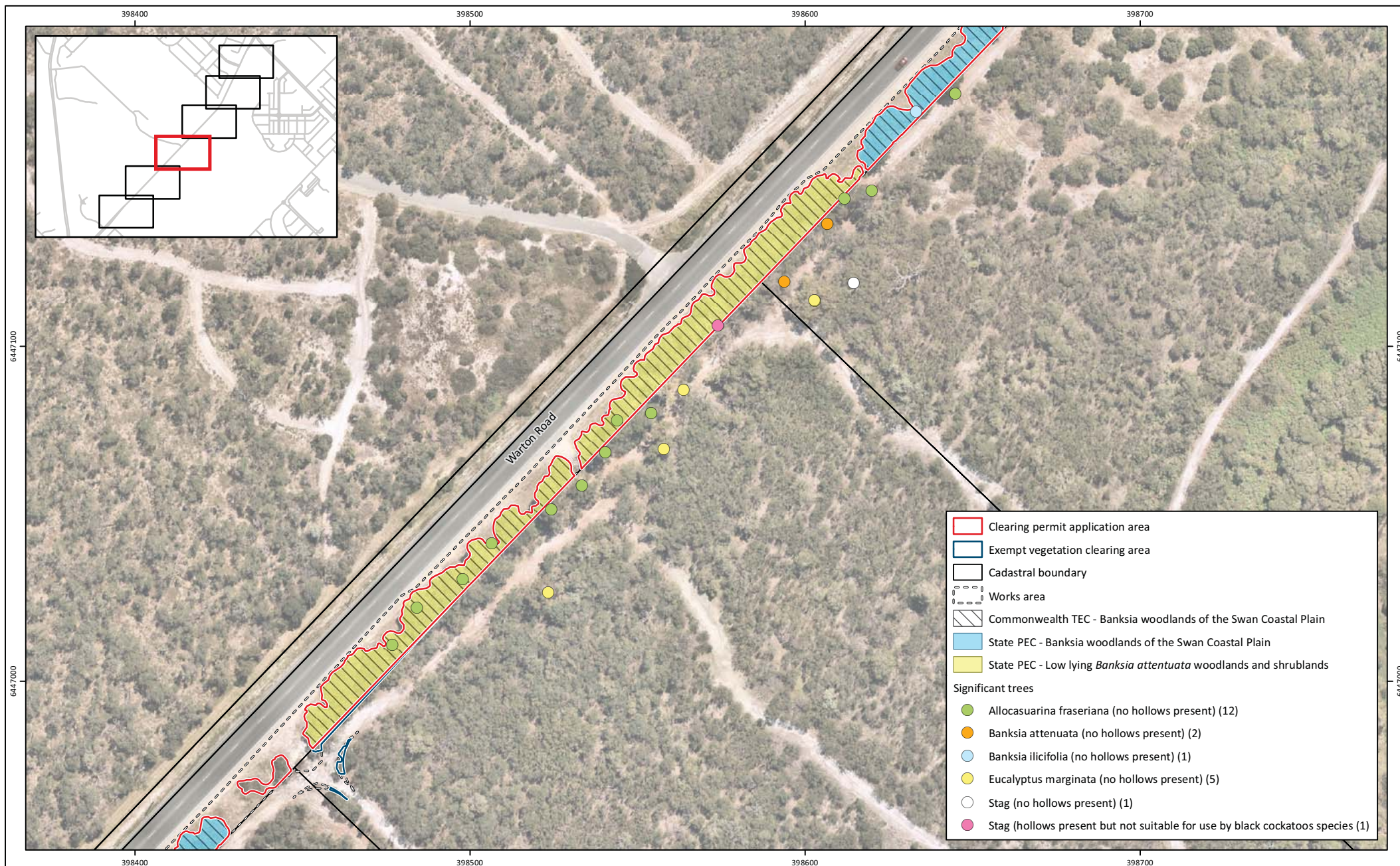


Figure 4: Conservation Significant Features - Map 3 of 6

Project: Letter addressing *Environmental Protection Act 1986* clearing principles
Proposed Warton Road Duplication, Canning Vale

Client: City of Gosnells

Plan Number:
EP20-099(02)--F18a

Drawn: GAR
Date: 03/03/2021

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Date: 03/03/2021



0 25 50
Metres

Scale: 1:1,500@A4
GDA 1994 MGA Zone 50

emerge
ASSOCIATES

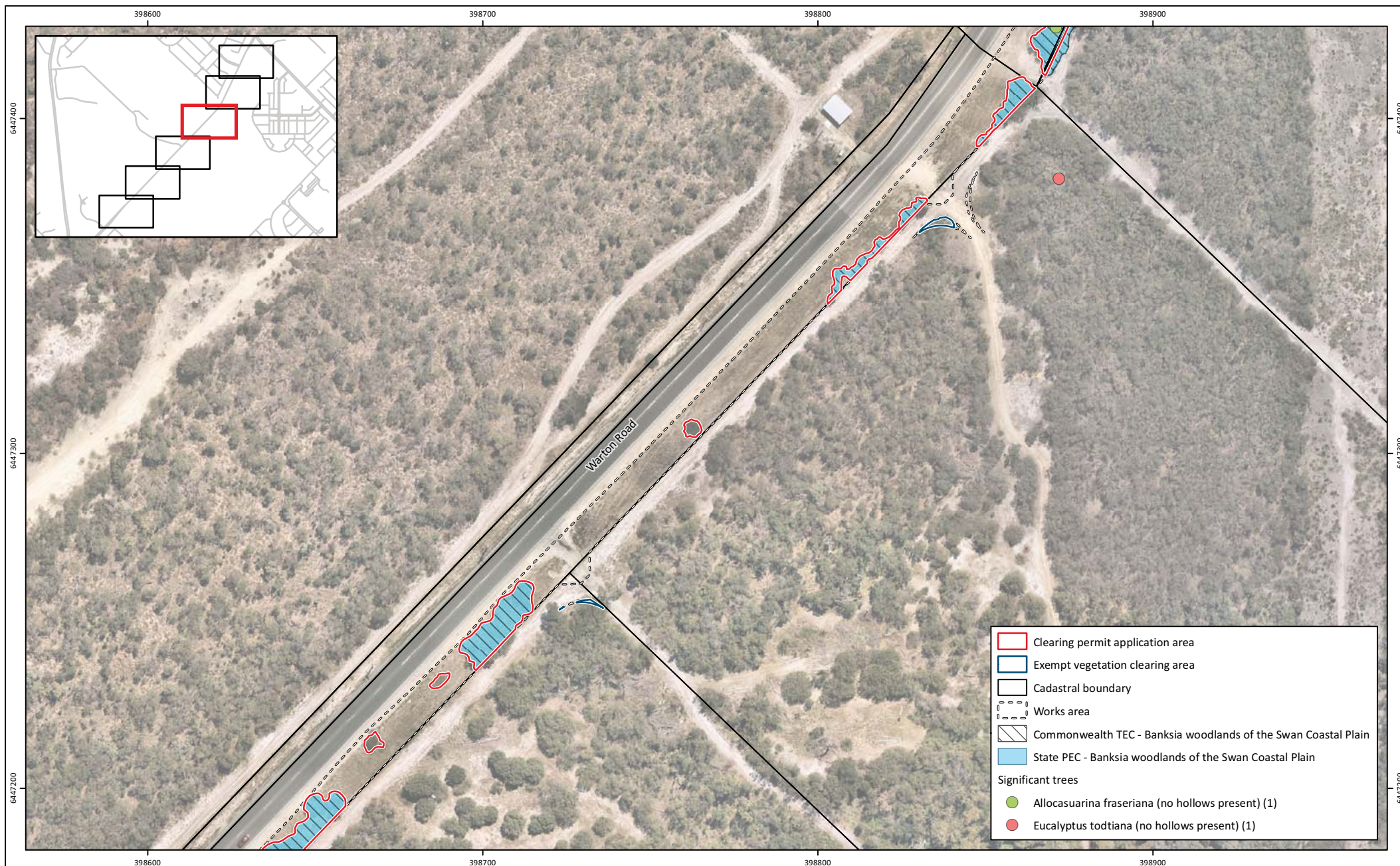


Figure 4: Conservation Significant Features - Map 4 of 6

Project: Letter addressing *Environmental Protect Act 1986* clearing principles
Proposed Warton Road Duplication, Canning Vale

Client: City of Gosnells

Plan Number:
EP20-099(02)--F18a
Drawn: GAR
Date: 03/03/2021
Checked: SKP
Approved: TAA
Date: 03/03/2021



0 25 50
Metres
Scale: 1:1,500@A4
GDA 1994 MGA Zone 50

emerge
ASSOCIATES

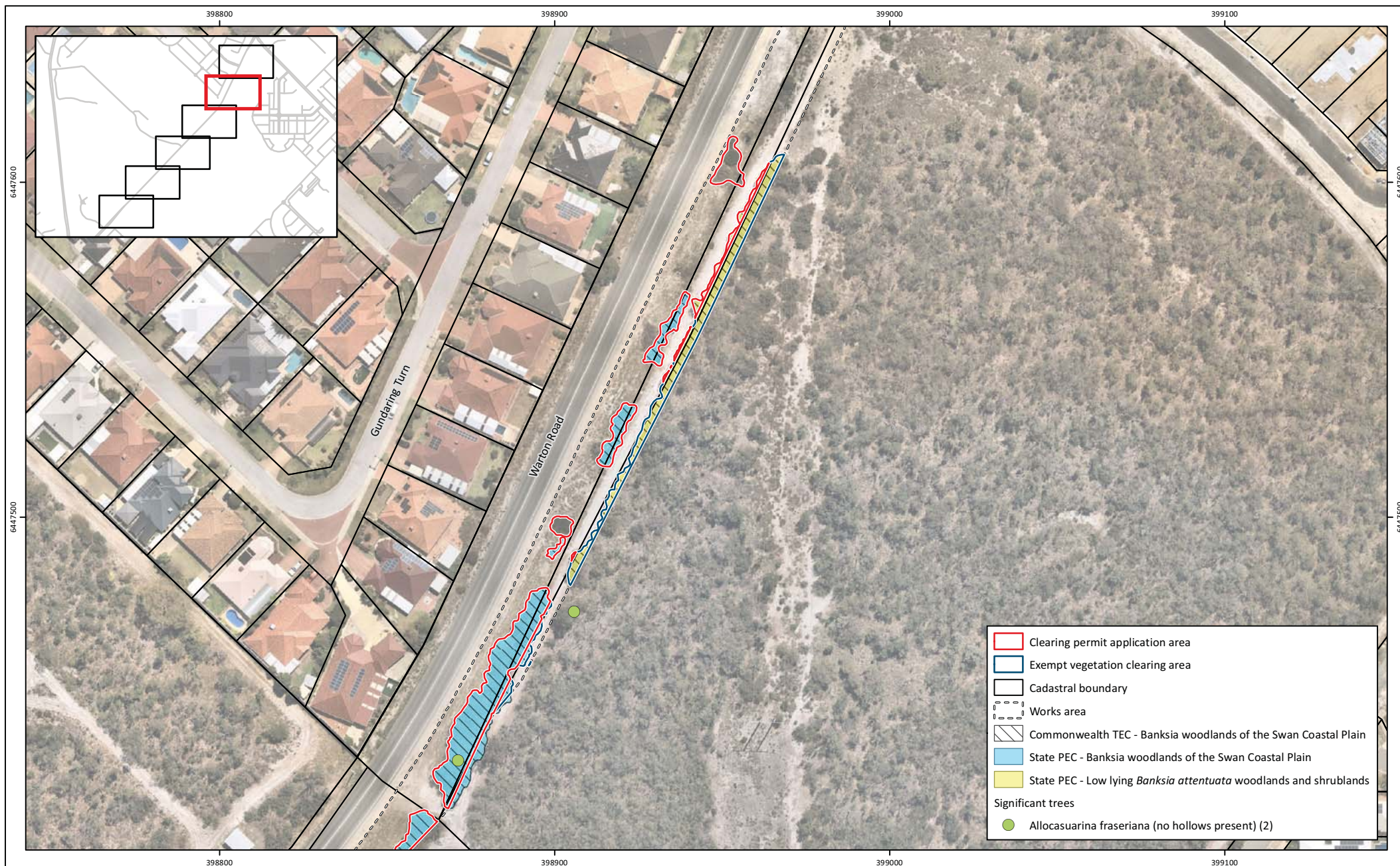


Figure 4: Conservation Significant Features - Map 5 of 6

Project: Letter addressing *Environmental Protect Act 1986* clearing principles
Proposed Warton Road Duplication, Canning Vale

Client: City of Gosnells

Plan Number:
EP20-099(02)-F18a

Drawn: GAR

Date: 03/03/2021

Checked: SKP

Approved: TAA

Date: 03/03/2021



0 25 50
Metres

Scale: 1:1,500@A4

GDA 1994 MGA Zone 50

emerge
ASSOCIATES

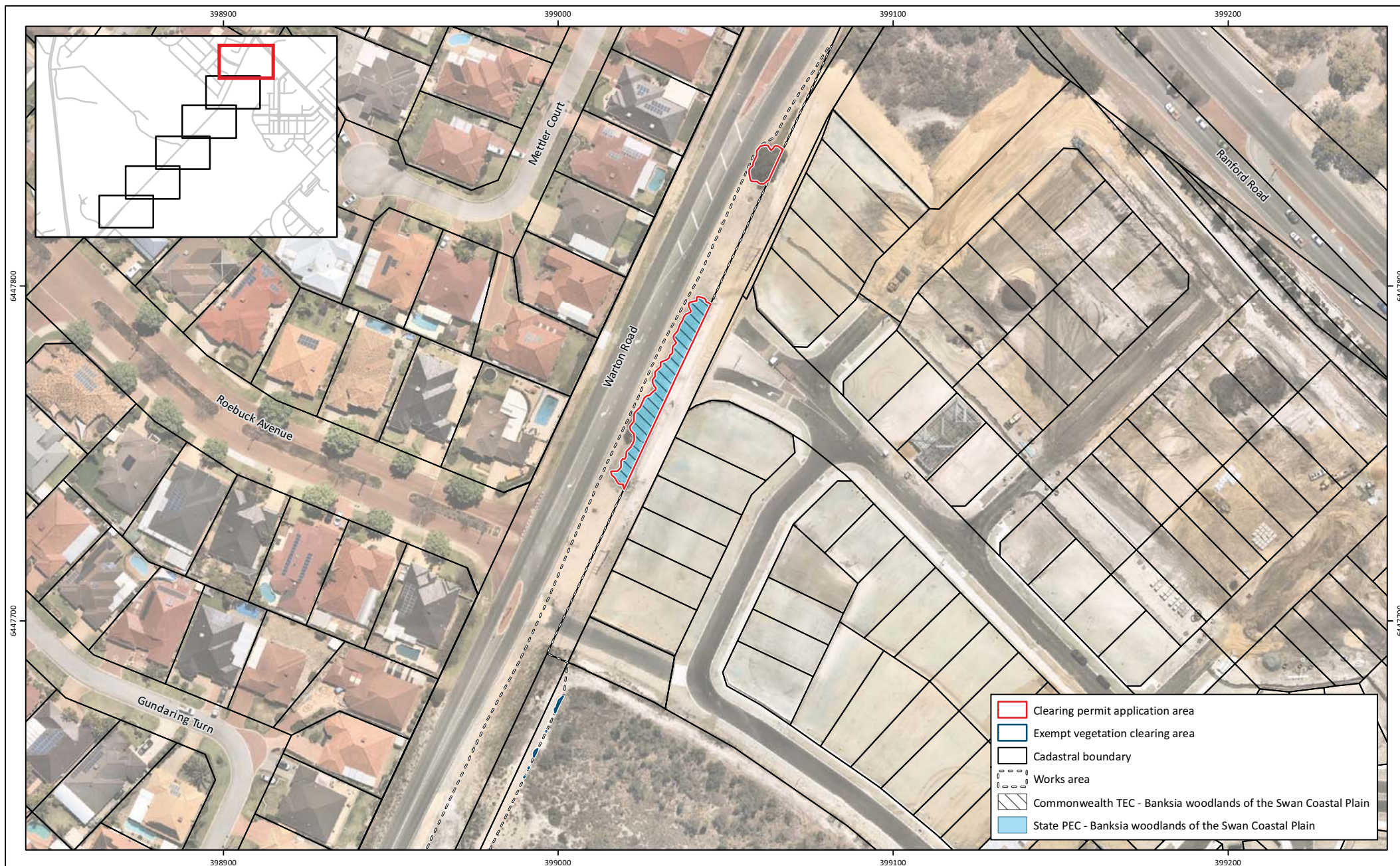


Figure 4: Conservation Significant Features - Map 6 of 6

Project: Letter addressing *Environmental Protect Act 1986* clearing principles
Proposed Warton Road Duplication, Canning Vale

Client: City of Gosnells

Plan Number:
EP20-099(02)--F18a

Drawn: GAR

Date: 03/03/2021

Checked: SKP

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Date: 03/03/2021

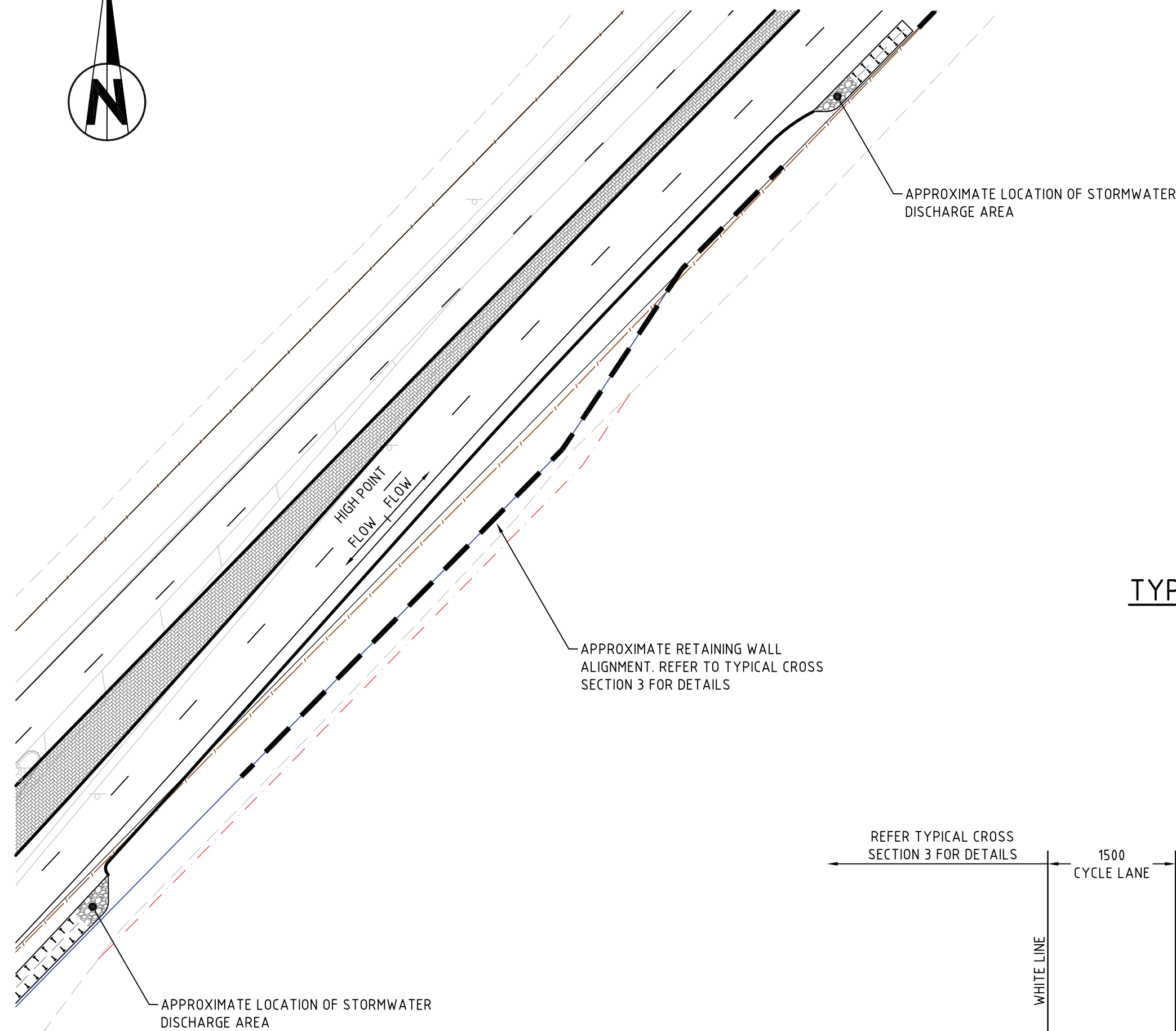
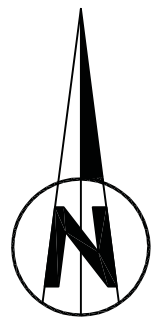


0 25 50
Metres

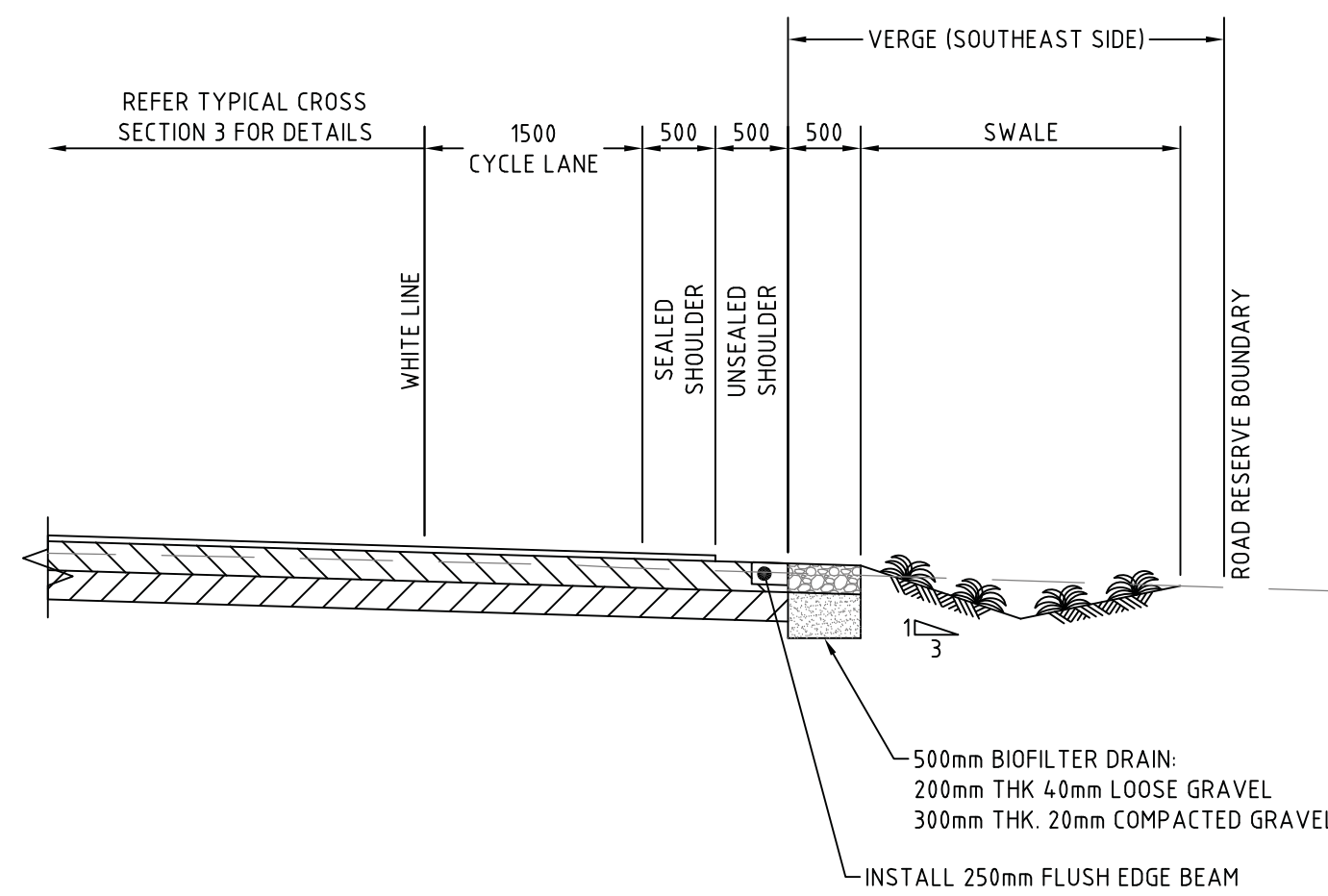
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GDA 1994 MGA Zone 50

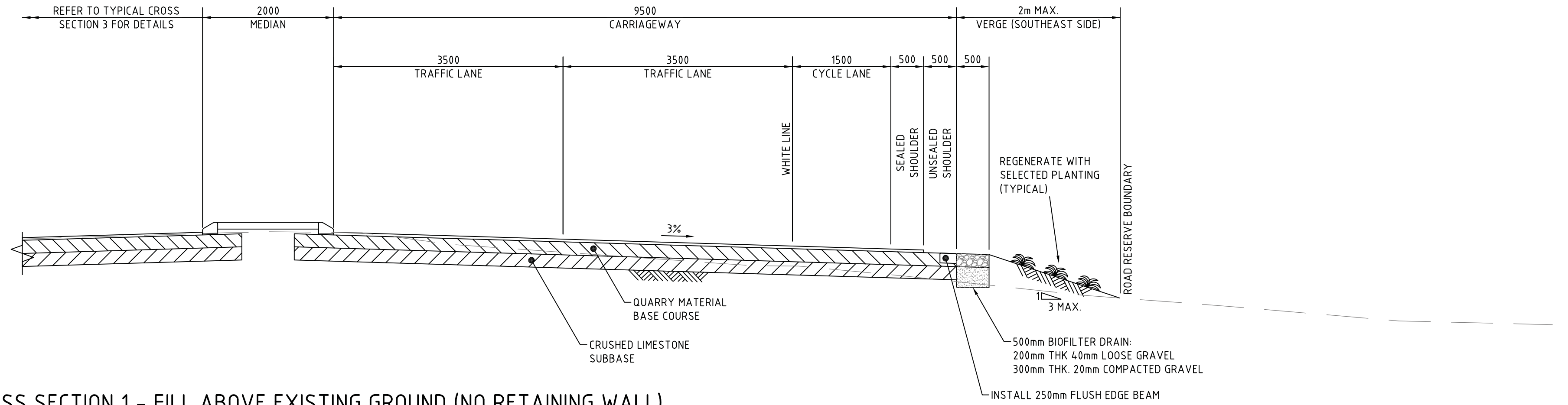
emerge
ASSOCIATES



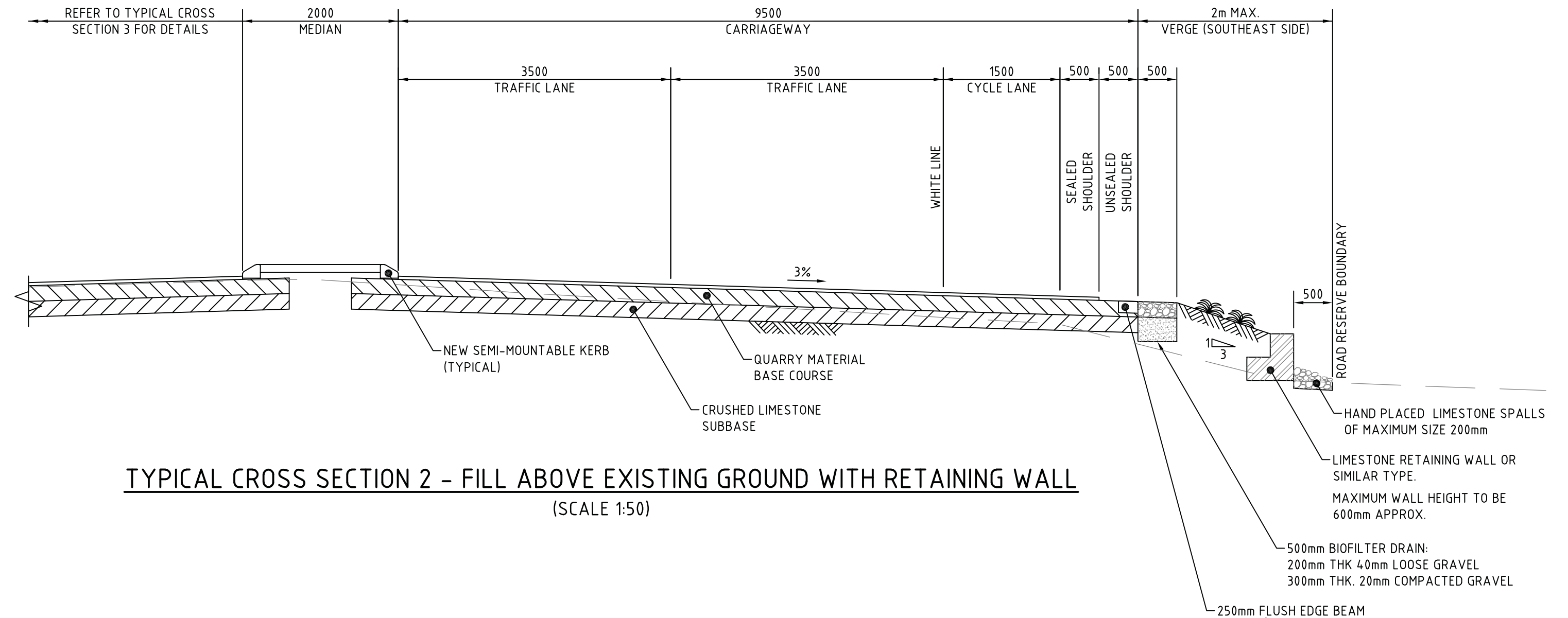
PLAN AREA FOR TYPICAL CROSS SECTION 3
(SCALE 1:500)



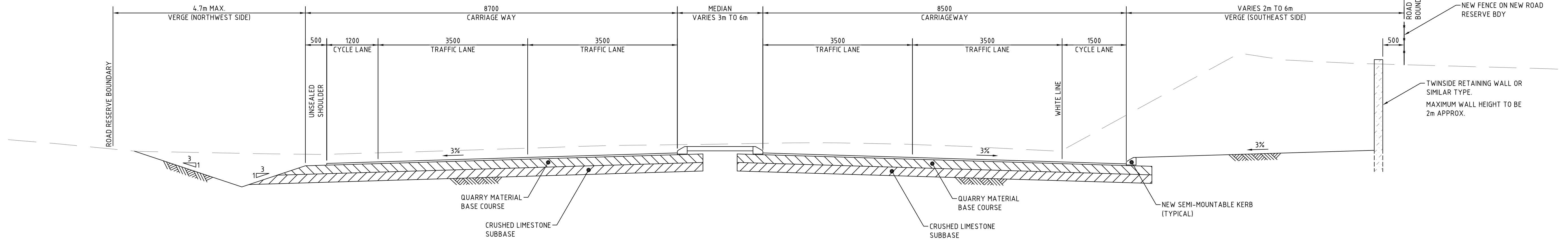
TYPICAL CROSS SECTION 4 - SWALE ARRANGEMENT
(SCALE 1:50)



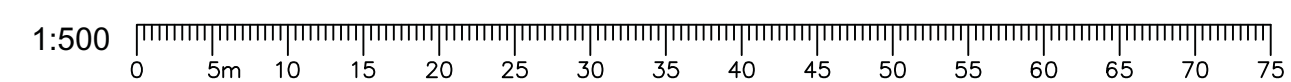
TYPICAL CROSS SECTION 1 - FILL ABOVE EXISTING GROUND (NO RETAINING WALL)
(SCALE 1:50)



TYPICAL CROSS SECTION 2 - FILL ABOVE EXISTING GROUND WITH RETAINING WALL
(SCALE 1:50)



TYPICAL CROSS SECTION 3 - CUT TO EXISTING GROUND WITH RETAINING WALL
(SCALE 1:50)



GENERAL NOTES

1. THIS DRAWING ALWAYS REMAINS THE PROPERTY OF THE CITY OF GOSNELLS AND MUST NOT BE RETAINED OR REPRODUCED WITHOUT PERMISSION.
2. IN THE ABSENCE OF THE APPROVED SIGNATURE (ie MANAGER TECHNICAL SERVICES) THIS DRAWING SHALL BE TREATED AS PRELIMINARY.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4. ANNOTATED DIMENSIONS SHALL ALWAYS TAKE PRECEDENCE OVER SCALED DISTANCES.

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ALL WORKS SHALL BE IMPLEMENTED IN ACCORDANCE WITH THE CITY'S SPECIFICATIONS, CONTRACTUAL CONDITIONS AND INDUSTRY BEST PRACTICE. ANY CONFLICTS, OMISSIONS, ISSUES OR VARIATIONS ARE TO BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE PROJECT DESIGNER.



CITY OF GOSNELLS

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DESIGN ND	DATE FEB 2020	SCALE HORIZ. AS SHOWN VERT. -
DRAWN ND	29/12/2020	DATUM AHD
CHECKED		GRID PCG94
AUTHORISED		PFN PR21/172
		JOB NUMBER 80357

PROJECT WARTON ROAD
RANFORD ROAD TO BANKSIA JDC ACCESS, CANNING VALE
DRAWING TITLE CARRIAGEWAY DUPLICATION TYPICAL CROSS SECTION DETAILS & VERGE TREATMENTS HARRISDALE SWAMP SIDE

PLAN No E44-20-801	REV
PRELIMINARY	A1
CHIEF ENGINEER	
S. ASMUS	DATE

