City of Whittlesea

815-835 Yan Yean Road, Doreen

Development Plan

Prepared by Head & Humphreys for Corvac P/L

31th March 2017

815-835 Yan Yean Road, Doreen - Development Plan

The Development Plan was approved by the City of Whittlesea on 28 February 2017, in accordance with Clause 43.04 Schedule 5 of the Whittlesea Planning Scheme.

18/04/2017

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Signature of the Responsible Authority

HEAD & HUMPHREYS
LAND CONSULTANTS

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FIGURES:

1. INTRODUCTION

This document constitutes the Development Plan for the land 815-835 Yan Yean Road Doreen Preparation of a Development Plan is a statutory requirement prior to consideration of any application for residential subdivision by the City of Whittlesea.

This Development Plan consists of both text and plan components, comprising:

- An outline of the statutory controls and influences,
- A description of the site characteristics,
- A design response,
- Details of the required Development Contributions, and
- An outline of the planning permit application requirements.

Once approved, all subsequent subdivision applications for land within the Development Plan area must be in accordance with this Development Plan.

1.1 Mernda Strategy Plan

The Mernda Strategy Plan (MSP) was approved in October 2004 and applies to land within the Mernda growth area. The MSP is an incorporated document within the Whittlesea Planning Scheme and is intended to provide a refinement of the principles contained within the broader Plenty Valley Strategic Plan.

The MSP outlines a planning framework for development in the Mernda growth area by identifying the location of major land uses and sets out the development criteria on matters such as residential development, transport, community facilities, recreation and open space, urban design, employment, staging and infrastructure provision. As the MSP only provides the framework for these matters, more detailed planning is undertaken at the Development Plan stage.

The subject land is located within Precinct 2B of the MSP. The key elements of this precinct which affect this site are:

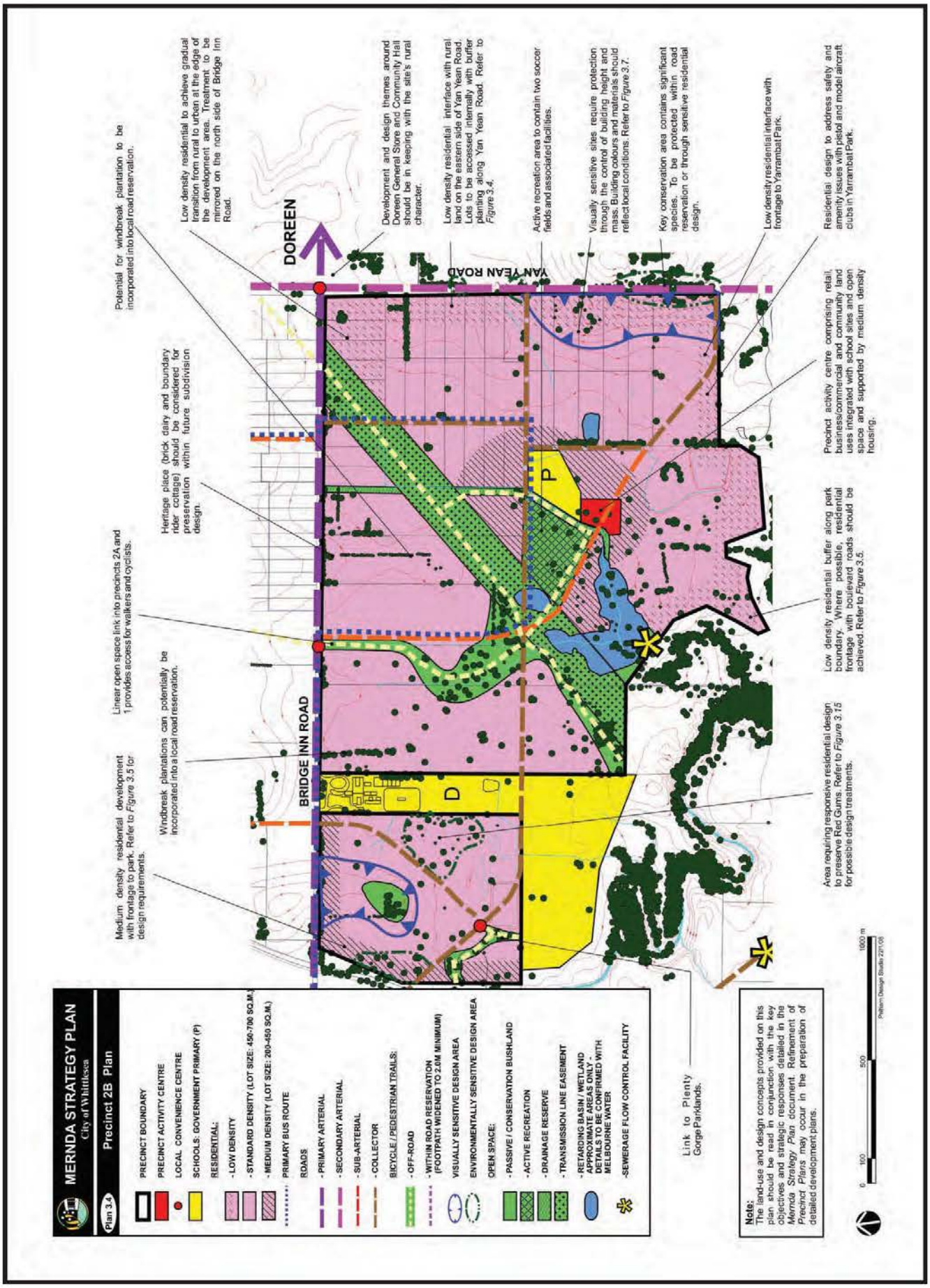
- Standard density lots for the site with larger lots (>800m^2) and treed buffer along Yan Yean Road.
- Hill top lots are visually sensitive requiring appropriate building design and materials. Building heights should be minimised to keep buildings below tree heights.
- Innovative medium density housing encouraged around open space.
- Local streets to be based on a modified grid layout responsive to landform and provides efficient connectivity for cycle and pedestrian movement.
- Preservation of remnant vegetation in public land.
- Diversity of housing by offering a range of lot sizes.
- Orientation of lots to maximise solar efficiency.

1.2 Development Plan Overlay

The Development Plan Overlay Schedule 5 (DPO5) applies to land within Mernda. This Overlay requires that a Development Plan be prepared prior to a permit being granted for subdivision, use or development. The extent of area and boundaries to be covered by a Development Plan area varies depending on specific site issues such as natural features, landholding patterns, internal and external integration issues and strategic land use considerations.

The Development Plan is intended to sit between the framework level MSP and the detailed subdivision plan. The DPO5 requires that the Development Plan be generally consistent with the MSP and include sufficient detail to ensure subdivision and development of the land covered by the Development Plan will be integrated with the surrounding area.

Figure 1 – MERNDA STRATEGY PLAN – PRECINCT 2B



1.3 Role of the Development Plan

Given the statutory background outlined above, the role of this Development Plan is to facilitate the integrated development of the three undeveloped lots on the south side of Orchard Road in the context of the principles contained within the Mernda Strategy Plan (see figure 2 – Sub Regional Context). The site is influenced by factors including:

- Restricted access to Yan Yean Road,
- Surrounding development,
- Site topography, housing and indigenous trees.

The Development Plan will be the basis and guide for the future subdivision of land holdings in the Plan area taking into account the above site features, the requirements of the MSP and the DPO5. Once the Development Plan has been approved, a permit may be issued for subdivision and development proposals that accord with the Development Plan.

The key objectives of the Plan are to provide a broad layout for a residential subdivision that is consistent with the MSP, that is integrated well with surrounding developments and which generally allows individual landholders within the Development Plan area to develop independently. The Development Plan also aims to incorporate existing dwellings on the land within the future subdivision layout so that landholders have the option of retaining or demolishing the dwellings at the time of subdivision.

This development plan has been prepared following extensive consultation and expert reports regarding the merits of the site. The most significant remnant vegetation has been preserved in reserves that will vest with Council. Buffer vegetation is being retained along Yan Yean Road with larger abutting lots to transition the interface to the rural land opposite. The subdivision road pattern provides for standard density lots in a modified grid layout that provides efficient vehicle, cycle and pedestrian connectivity and meets the key design criteria of the Mernda Strategy plan and precinct 2B.

2. THE SUBJECT LAND

The subject land is located near the south boundary of Doreen and represents one of the last undeveloped land holdings in the immediate area south of Orchard Road. The site is bounded by Orchard Road to the north, the Orchard Park development to the west and south, and Yan Yean Road to the east. The development plan comprises 3 landholdings each with an area of approx. 3.25 hectares, resulting in a total development plan area of 9.8 hectares

Corvac P/L are under contract to purchase the 2 northern parcels of land located at 825 & 835 Yan Yean Road.

2.1 Zoning and Overlays

The subject land is zoned General Residential 1 (GRZ1), with all land contained within the Urban Growth Boundary. The proposed development of land for standard and medium density residential purposes is consistent with the provisions of the zone. A planning permit is required for subdivision.

The Development Plan Overlay Schedule 5 (DPO5) applies to the subject land. This Overlay requires that a Development Plan be prepared prior to a permit being granted for subdivision, use or development. This Development Plan has been prepared pursuant to the requirement of this Overlay.

The Development Contributions Plan Overlay Schedule 6 (DCPO6) precinct 2B applies to the subject land. The Overlay provides for Council to levy a development contribution upon subdivision of land to enable Council to provide the necessary infrastructure and recreational facilities for the proposed housing lots.

The subject land is affected by the Vegetation Protection Overlay – Schedule 1 (River Red Gum Grassy Woodland) (VPO1). This overlay states that a permit is required to remove, destroy or lop any native vegetation.

The Incorporated Plan Overlay Schedule 1 (IPO1) applies to the site. The approval of Mernda Strategy Plan (MSP) satisfies the requirements of the IPO. This development plan is in accordance with the MSP

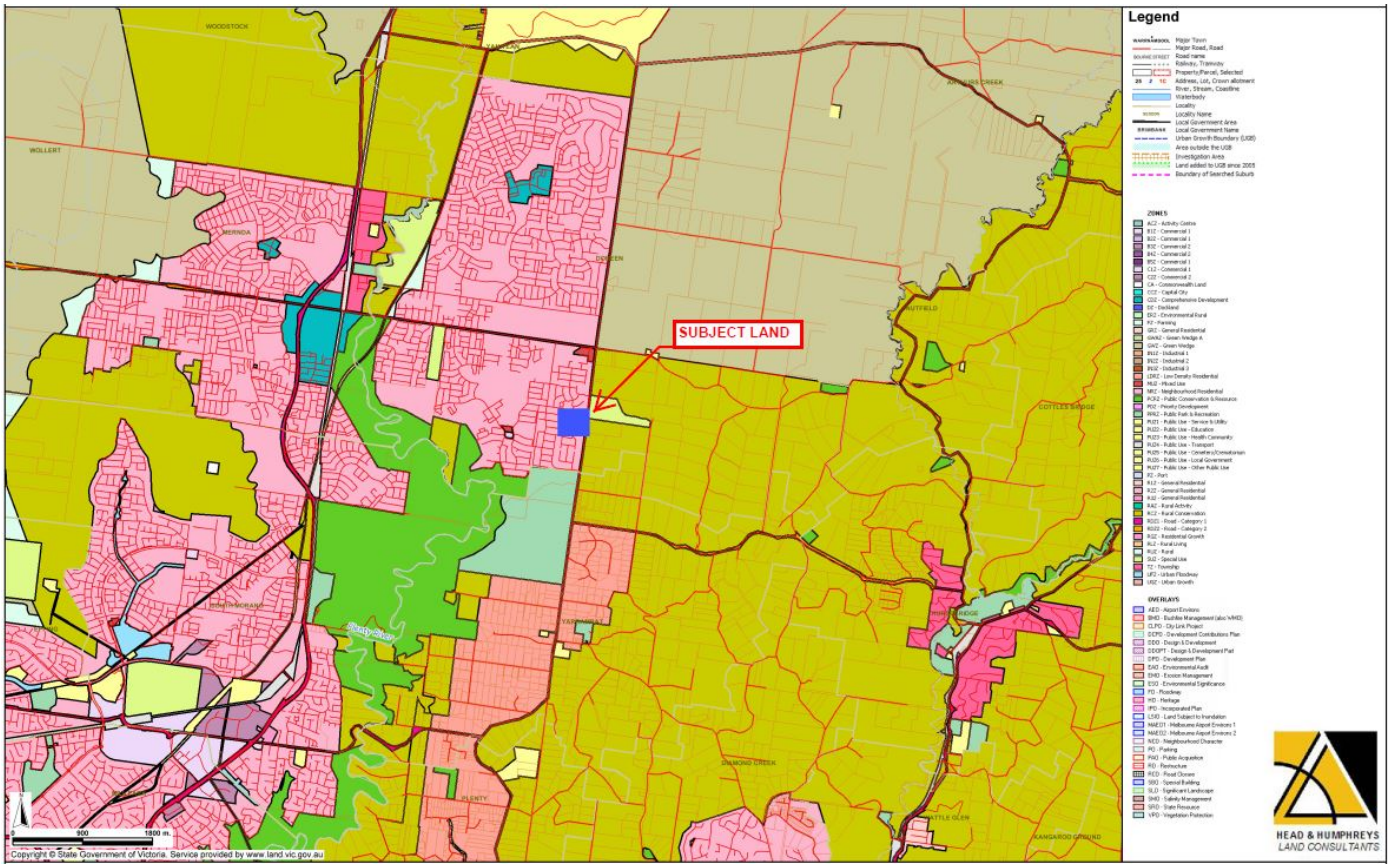
2.2 Site Boundaries

To the west and south of the subject land, the Orchard Park estate, developed approx 10-12 years ago, comprises primarily standard density residential lots in the 400-700m2 range as per expectation at that time.

To the north, the Garden Road development plan was approved in 2005 and provide for a mix of lot sizes generally varying between 300 -500m2 in area.

The land to the east of Yan Yean Road is zoned Rural Conservation with Plenty Valley Christian College occupying a Special Use zoned site

Figure 2 – SUB REGIONAL CONTEXT MAP



3. SITE ANALYSIS

Figure 2 – Site Analysis Plan illustrates the existing land uses and land form conditions and significant trees on site.

3.1 Topography

The site falls generally South-east to the North-west from Australian Height Datum (AHD) 195 to AHD 161. A shallow gully crosses the NW corner of the site with the lowest part of the site at the eastern termination of Counthan Terrace.

3.2 Vegetation

The subject land has generally been cleared of most indigenous remnant vegetation, however, there are several isolated indigenous trees on site or in the abutting road reserve. All three properties contain plantings of native and introduced species, particularly along property boundaries and within gardens surrounding existing houses.

An arboriculture assessment of 825 & 835 Yan Yean Road has been undertaken by Tree Wishes and is attached in the Appendix to this report. This assessment identified a number of Remnant River Red Gums and several other mature remnant trees of significance. A small group of juvenile red gums have established o the east side of the dam on the north-most title. This dam needs to be removed as part of the land development and these juvenile trees cannot be retained. The large Red Gum on the northern boundary of 825 Yan Yean Road straddles the boundary and substantially overhangs the existing building. Its size and location make it impractical to retain. Similarly a smaller red gum approximately 40m further east is also not suitable for retention. The most significant native trees on site are to be retained with the TPZ wholly within a reserve or the roads.

An arboriculture assessment of 815 Yan Yean Road has been undertaken by Treemap Arboriculture and is attached in the Appendix to this report. Whilst no River Red Gums exist on this site, several indigenous trees of significance were identified.

The proposed Development plan layout provides for the subdivision of the land and provides for the retention of the significant indigenous trees – see figure 6.
A tree reserve along Yan Yean Road has been proposed to allow retention of the established tree planting along this road where the Mernda Strategy Plan has dictated the need for a vegetation buffer to enhance the visual aesthetic along the main road. Details of all vegetation removals and retentions are shown on figures 7 & 8.

3.3 Access

The MSP has dictated that no vehicular access directly from Yan Yean Road. Two local streets currently terminate on the south boundary of this Development Plan site and a further 3 local streets terminate on the western boundary. This development plan will connect to all of these local streets and provide a new northern connection onto Orchard Road approximately 200m west of Yan Yean Road

Orchard Road is a bus route, with Route 381 travelling along Orchard Road between South Morang and Diamond Creek Stations. Two bus stops are located on either side of Orchard Road and at present are kerb side stops with minimal infrastructure.

With a housing catchment of approx 150 homes, less than 1500vpd car movements are expected through the proposed road connection to Orchard Road, well within the design capacity of up to 3000vpd.
The proposed road layout provides excellent vehicular connectivity for all of the new housing and abutting development. Convenient pedestrian link are being provided directly to a proposed shared path on Yan Yean Road and throughout the development for easy permeability.
Refer to the movement report prepared by GTA Consultants attached in the appendix to this report.

Figure 3 – SITE ANALYSIS PLAN

Map Centre - Melways 184 G1
Map Scale 1:2,215
June 16, 201610:56:56 AM

3.4 Views

The elevated south-east corner of #825 and the eastern end of #815 enjoy long range views to the north and west. The tree reserve and larger lots along Yan Yean Road will enhance the visual aesthetic for people travelling along Yan Yean Road.

3.5 Existing Housing

Houses have been constructed on the 3 land holdings and are proposed for retention on enlarged lots that will be suitable for efficient redevelopment should the houses ever be demolished. These houses are positioned within close proximity to the street with private yards to the rear of the lot.
The housing is contemporary with no heritage significance. Siting of existing dwellings within allotments was a key constraint in the preparation of the integrated allotment and road layout.

3.6 Planning for Bushfire

A narrow strip of land approximately 40m wide along Yan Yean Road is designated Bushfire Prone Area (BPA) and represents the western limit of the BPA placed over the Rural Conservation Land on the east side of Yan Yean Road.

Dwellings on all lots affected by the BPA will be required to meet the specific bushfire construction standards under Building Regulations. The current minimum construction standard for dwellings within the BPA is a Bushfire Attack Level (BAL) of 12.5, but this may increase depending on the proximity of a dwelling to a fire threat and the fire threat classification.

Preliminary assessment reveals that the RCZ land to the east of Yan Yean Road is predominantly managed grassland providing a low fire risk. The land opposite 835 Yan Yean Road is predominantly the constructed carpark of the Plenty Valley Christian College and provides no significant bushfire risk and ample defendable space. See aerial image of site & surrounds in Figure 3.

3.7 Heritage

The land in this development plan is not affected by any heritage overlay. Visual inspection reveals that contemporary homes that are approx 30yrs old exist on each title with no historic buildings or structures.

The land is well remote from any permanent water courses and is clear of land designated as being of cultural heritage sensitivity. Accordingly there is no requirement for a cultural heritage assessment to be undertaken for the land in this development plan.

4. DESIGN RESPONSE

Figure 4 comprises the Development Plan for the area. Details relating to the rationale for this particular design are provided in this section.

4.1 Opportunities and Constraints

In preparing the design response for the site, the following opportunities and constraints were considered, which were derived from the site analysis above and from the statutory and strategic documents that inform the planning of this area.
Development within the subject area provides the opportunity to capitalise on the features of the site in the following ways:

- Incorporate retention of existing River Red Gums within open space where possible,
- Provide a diversity of allotment size and housing choice with medium density lots located surrounding the reserve,
- Improve/create connectivity with surrounding development.

Development within the subject area is constrained by:

- A fragmented land ownership pattern and development timelines.
- Retention of existing dwellings & significant vegetation,
- The topography of the site and drainage outfall requirements
- Requirement for large lots abutting Yan Yean Road with no direct vehicular access allowed.

4.2 Design Rationale

In response to the above site analysis and requirements of the MSP and the DPO5, the Development Plan has been prepared with an emphasis on:

- Retention of environmental assets,
- Use of an interconnected, grid-based movement network,
- Provision of a range of development densities, dwelling types and lot sizes to facilitate housing choice,
- Higher densities abutting/fronting onto the new reserve,
- Access control to Orchard & Yan Yean Roads,
- Ability for existing houses to be retained.
- Retention of vegetation within a tree reserve along Yan Yean Road

This Development Plan aims to ensure the proper and orderly development of the subject land.

4.3 Density & Uses

The Development Plan illustrates the desired densities for the different areas of the land. A range of densities have been provided to ensure a diversity of residential allotment sizes, with housing options to cater for a range of household sizes. In addition, the range of lot sizes are arranged so as to provide a transition of higher density development on the flatter northern & western portions of the land.

Medium density allotments providing for dwelling density greater than one per 300 square metres will be located adjacent to public open space in areas as indicated on Figure 6 - Development Plan map. Any medium density housing on these lots must have an outlook onto the reserve as well as to the road network to the satisfaction of Council.

Standard density allotments form the majority of the proposed land use with the larger lots being located along Yan Yean Road.
Standard density allotments are to transition in size, width and density from the low density lots abutting Yan Yean Road and the existing residential lots to the west of the Development Plan area, to smaller lots more centrally located within the internal road network to Council's satisfaction.

In accordance with the requirement in 3.1.2 of the Mernda Strategy Plan, large lots with an average area greater than 800m2 are proposed abutting the new tree reserve along Yan Yean Road. These lots are only to be accessed from the new internal road network and the existing access to Yan Yean Road is to be abandoned upon development of the lots. These larger lots and vegetation strip provide an appropriate buffer to the major road and non-urban use that currently exists on the east side of Yan Yean Road.

Existing residences have been retained on larger allotments with consideration for the removal of the houses to allow for further subdivision of these lots within the road and allotment frameworks.

Council have advised that standalone non-residential use will not be supported for any lot within this site.

4.4 Movement Network

Existing Roads
The current road network surrounding this site is fully constructed residential roads with the exception of Yan Yean Road which remains as a rural collector road. Yan Yean Road is a designated category 2 road and it is likely that it will be upgraded in the future as more surrounding land is developed.

The development plan provides for the future road widening at the intersection of Yan Yean Road and Orchard Road to allow for the potential future signalisation of this intersection. The exact extent of the road widening shall be determined in consultation with Council and VicRoads at the time of the planning permit application for the subdivision on the abutting land. It is noted that the effective function of the existing intersection roundabout does not require any road widening or works.

Proposed Road Network
The Development Plan establishes a modified grid layout that responds to the alignment of existing roads, existing property boundaries, surrounding and proposed development, retained houses and trees and topographical features. The proposed tree reserve served to prevent direct vehicle access to Yan Yean Road and to Orchard Road in the immediate vicinity of the Yan Yean Road intersection.

The road cross-sections that have been proposed will cater for the expected traffic volumes and provide atleast one on-street visitor parking space for each dwelling.
Roads and intersections straddling the existing property boundaries have been avoided in order to allow individual property owners to develop independently of adjoining landholders.

As noted on the development plan (figure 6), a roundabout is proposed for the cross road intersection of Barak Parade and Counthan Terrace. This severs to slow all traffic on the approach to Orchard Road and to efficiently manage the expected traffic movements for the proposed development.
Traffic management measures must be considered for all roads in excess of 200m length when application is made for a permit to subdivide.

Pedestrian & Bicycle Movement
Along Yan Yean Road, a 2.5m wide shared path is to be provided within the tree reserve.
In Orchard Road, A 1.5m footpath is to be provided on the south side of the road noting that a 2.5m wide shared path already exists on the north side of the road.
Standard width footpaths are to be provided in all local streets and through reserves that connect between streets – refer to GTA report
The alignment and design of the paths in Orchard Road and abutting Yan Yean Road are to respond to site constrained and minimise intrusion into Tree Protection zones. The alignment is to be finalised at the detailed design phase of development to Council's satisfaction prior to construction.

Car Parking
The proposed road profiles of the new local streets will provide ample on-road parking for the abutting homes. However, with the higher traffic volumes expected in Orchard Road, a minimum of 8 indent parking bays are to be provided to service the abutting lots whilst keeping the existing road pavement clear for two-way traffic movement.

4.5 Drainage requirement:

The site is within the Melbourne Water Doreen Drainage Scheme. Permanent outfall drainage infrastructure exists in the streets abutting the north and west boundaries of the site. The new development will connect to this infrastructure. The street and reverse design ensures that drainage surcharge can be contained within public land so as to minimise potential property damage.

During construction, best practice site management practices will be implemented to reduce sediment export from the site into the drainage lines
In adopting a focus towards sustainability of water usage, all new dwellings in this development plan are to incorporate a rainwater tank for the purpose of garden irrigation in order to contribute towards the conservation of potable water. All lots are to be connected to underground outfall drainage.

The drainage strategy for the land in this Development Plan has been confirmed as acceptable by Council.

4.6 Open Space

Land set aside as open space within the Development Plan area will not be credited as open space but will be considered as an appropriate subdivision design response to retain the more significant vegetation.

There are a number of significant trees (including but not limited to River Red Gums) located throughout the Development Plan area. Most of these trees will be protected within reserves with the entire Tree Protection Zone of each tree wholly contained within the reserve.

4.7 Buildings and Infrastructure on Slopes

Part of the subject land is affected by significant slope – see figure 4 – Slope analysis plan below.
Subdivision applications which include land identified as being in excess of 10% slope should refer to the preferred outcomes identified within Figures 3A of this document.

Subdivision, engineering, landscape design and buildings and works must provide a sensitive response to current landforms and minimise the need for excavation and cut and fill earthworks.
Retaining walls over 1 metre must be avoided along the street edge.
Earthworks, retaining structures and embankments must be carefully and sensitively designed to transition gradually into natural contours.
Where lawns are utilised for embankments in public areas, the gradient must be in accordance with Council standards.

Figure 4: SLOPE ANALYSIS PLAN

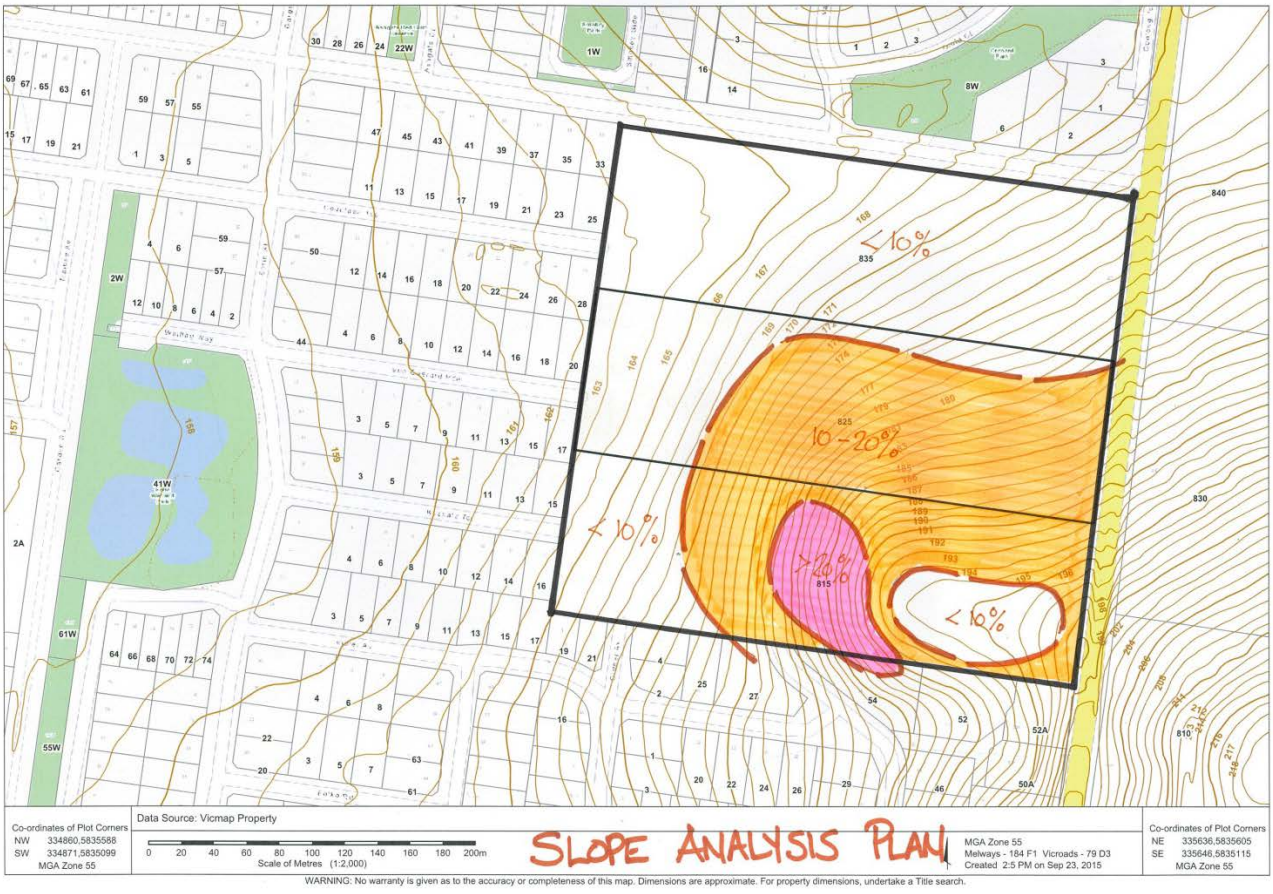
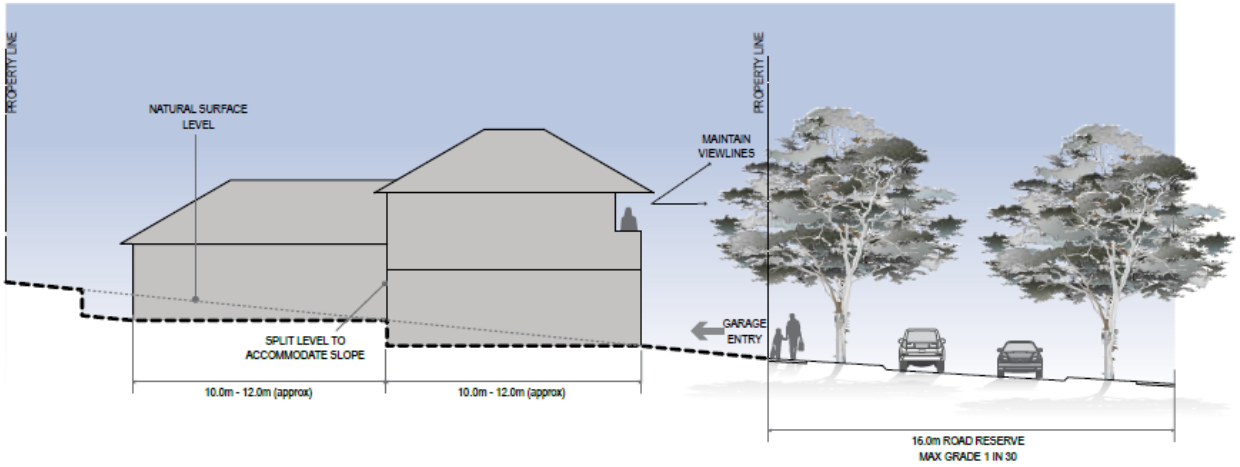
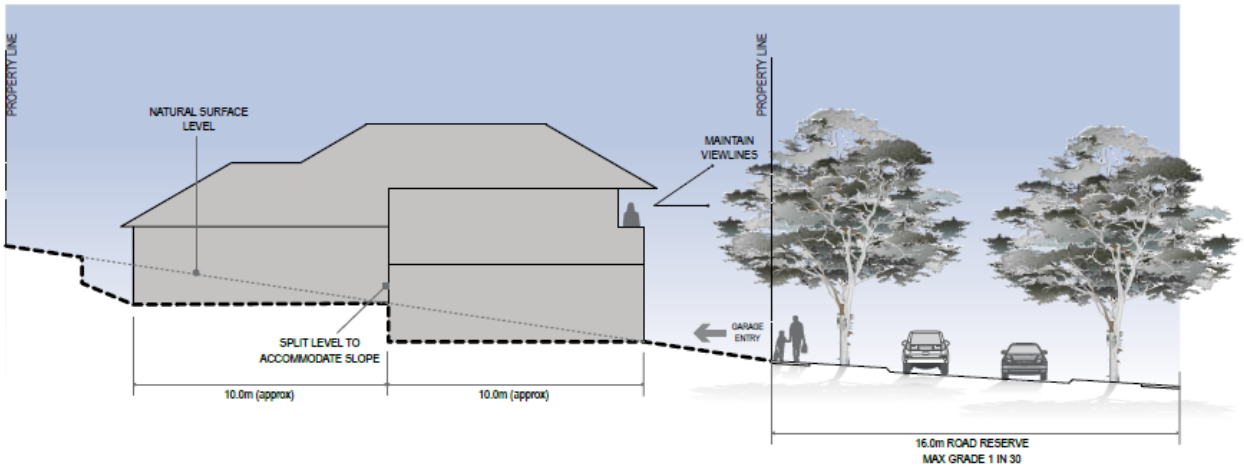


Figure 5: Dwellings on slope

Dwellings constructed on 10-15% Slope



Dwelling constructed on 15-20% Slope



Dwelling constructed on greater 20% Slope

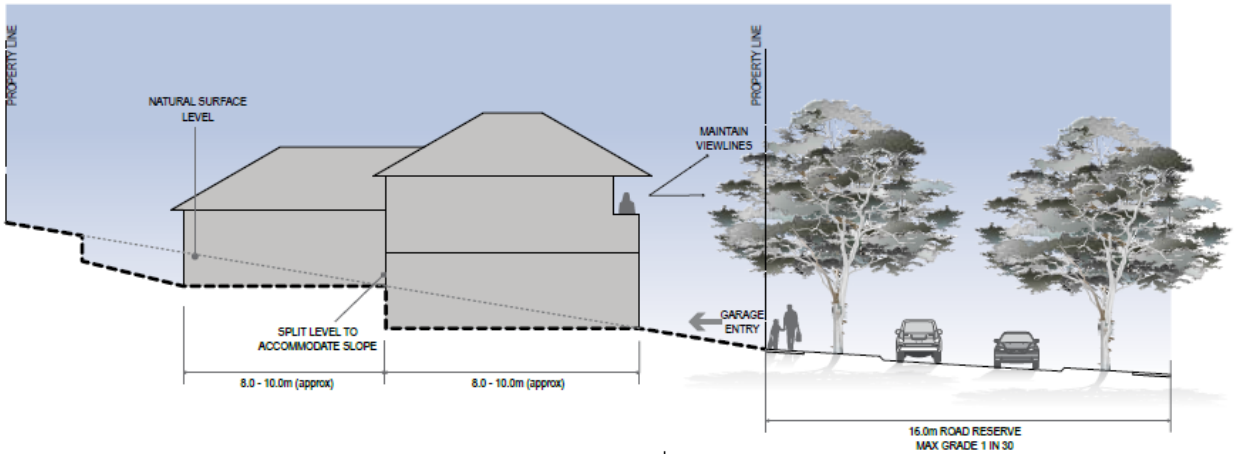


Figure 6 – DEVELOPMENT PLAN

Figure 7 – TREE PLAN 825 & 835 YAN YEAN ROAD, DOREEN

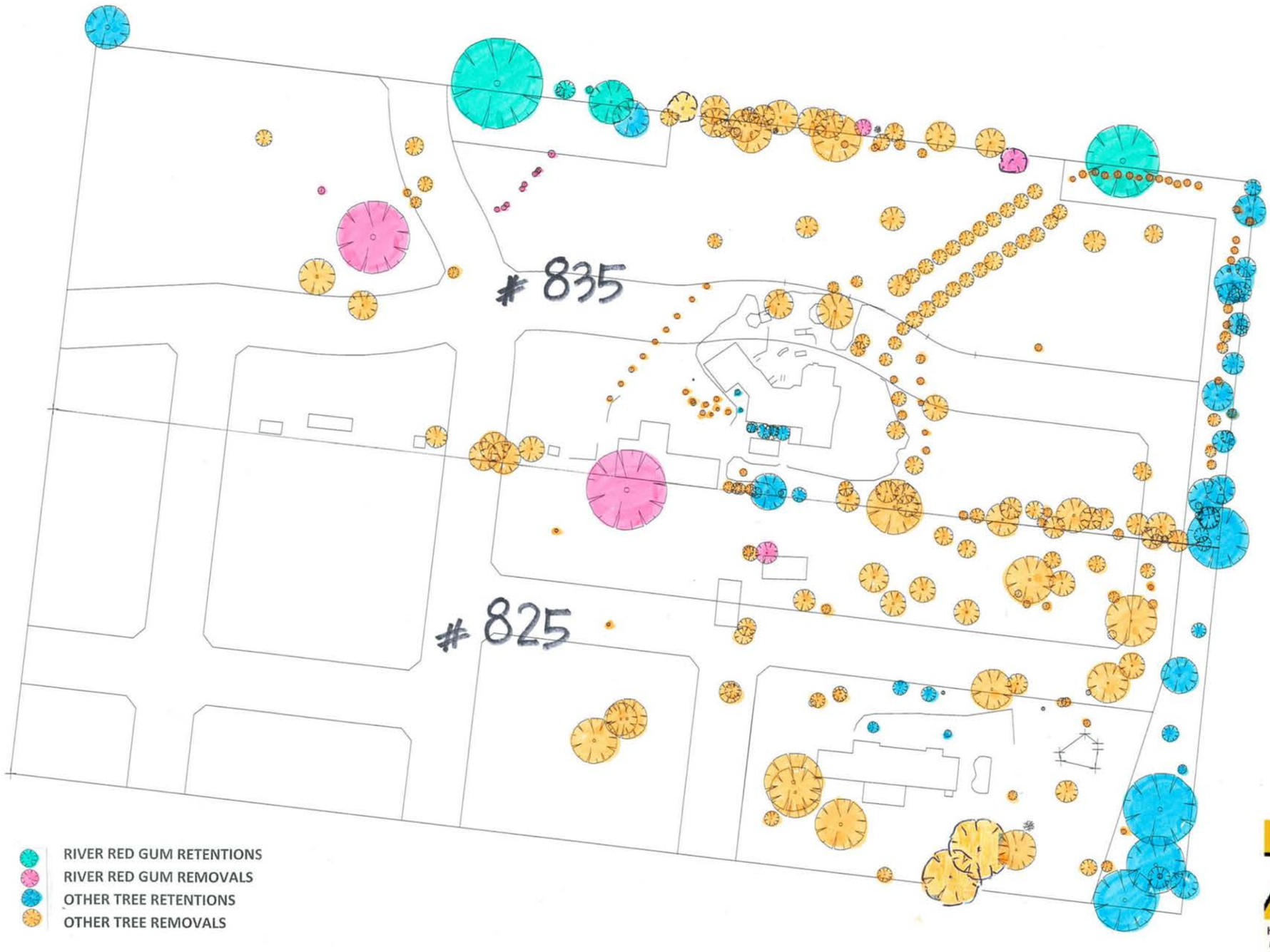


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Figure 8 – TREE PLAN 815 YAN YEAN ROAD, DOREEN

4. DEVELOPMENT CONTRIBUTIONS

5.1 Mernda Strategy Plan Area 2B - Contributions

Development Contributions are calculated on a per hectare basis in accordance with DCPO6, which requires a contribution of $91,574.77 per hectare. The items funded within this contribution are detailed within DCPO6 and relate generally to transport and community infrastructure items. It is noted that no DCPO funded works apply within the land in this development plan.

5.2 Other Contributions

Individual landowners/developers will be responsible for the following items, which are traditionally provided as part of subdivision works:

- Construction of all new internal roads within the Development Plan boundary,
- Construction of pedestrian pathways,
- Provision of open space reserves for tree protection purposes.
- Physical services including underground drainage, water, supply, sewerage and electricity.

6. DEVELOPMENT STAGING

With each land holding likely to yield approx 40-50 lots, it is expected that each parcel will be developed as a single stage.

It is expected that #825 Yan Yean Road will be the first parcel to be developed and it will use the existing road network for site access.

The first stage of #825 Yan Yean Road must include the construction of 'South Rise' as part of the subdivision to ensure that the eastern portion of #815 Yan Yean Road is not 'landlocked'.

Once the adjoining properties at 815 & 835 Yan Yean Road are developed, the integrated road network will be complete allowing full vehicle and pedestrian movement through the site and abutting properties.
The developer of stage 1 (825 Yan Yean Road) intend to commence construction in 2017 as soon as planning and construction approvals have been obtained with completion expected late that year. That same developer has also entered into a contract to purchase the adjoining property at #835 Yan Yean Road but that settlement will not occur until early 2018. It is the developer's expectation that the development of this northern parcel will commence soon after the development of stage 1 and will be completed late 2018.

The medium density housing sites abutting the reserves on the east side of Barak Parade will be developed as separate infill stages taking advantage of shared driveways, services and is expected to require an Owners Corporation to manage the shared services and common property. Separate planning applications for the development of those sites will be required.

Discussions with the Owner of #815 reveal their intent to develop the western portion of their site in the near future with the existing house on the eastern portion of the site being held as a super lot for the time being. The development of #825 will provide the future road connection required for the efficient servicing and access to the east portion of #815

As part of the engineering design, each stage will provide reticulated services and drainage infrastructure to accommodate the ultimate servicing solution for the subject land.
See figure 4 - Development Plan for proposed staging.

7 Applications for Subdivision – Further Information

7.1 815 Yan Yean Road

Access to the property at 815 Yan Yean Road was not available at the time of preparation of this development plan. The assessment information has been limited to DCMB contours, visual inspection from the property boundaries and aerial images of the site. Accordingly, the following additional reports will be required prior as part of any subdivision application for the 815 Yan Yean Road property

Environmental Risk Assessment:

Whilst there is no evidence apparent of any activities or contamination on site that would pose an environmental risk, the Planning Permit application for the subdivision of this site must be accompanied by an environmental risk assessment prepared by a suitably qualified person.

Drainage Assessment.

The drainage assessment is to demonstrate that the drainage shall suit the proposed staging, will connect to the MW main drain located on the western boundary of the site, and the WSUD design principles that are to be included in the development of this portion of the site.

7.2 Landscape Design

Each landholding must provide a proposed landscape masterplan concept for their entire parcel to the satisfaction of the responsible authority.

The landscape masterplan will be required to show:

a) the overall landscaping theme to be developed for the subdivision;
b) the type or types of species to be used for street tree planting in the subdivision;
c) the principles of the proposed treatment of the open space and drainage reserves; and
d) a management plan for the native vegetation proposed for retention to ensure their integrity during the site development and landscape maintenance period must be submitted with the landscape masterplan.

7.3 Vegetation Removal

The planning applications for subdivision of each property will also need to apply for the removal of vegetation on that site. This vegetation removal is to be supported by an arborists report with emphasis on retaining the significant remnant trees including the large old River Red Gums. It is expected that most of the planted vegetation on the sites will be removed when the land is being developed.

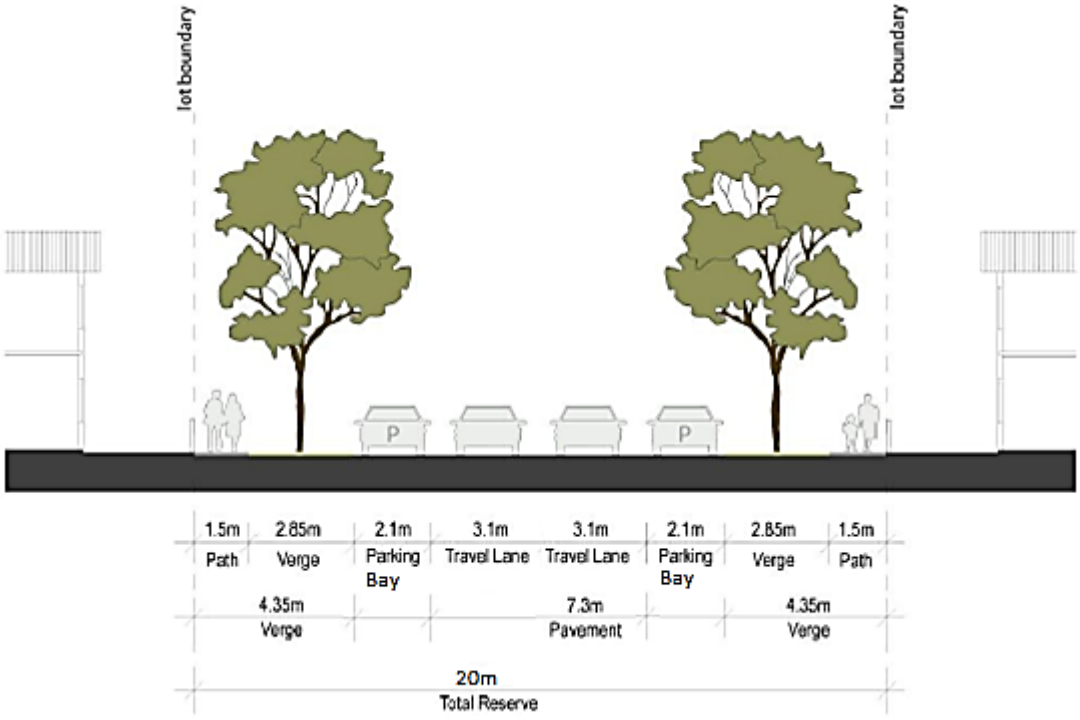
Whilst this development plan provides for the removal of the mature trees surrounding the existing houses, it is recommended that these trees be retained until those house lots are redeveloped. Figures 5 & 5A included in this report show the significant remnant trees that are to be retained or removed. These figures also show the other vegetation on the sites and the proposed actions.

Any application to develop and/ or subdivide the land must include a Biodiversity Report if any native vegetation is proposed for removal and a calculation of offsets must be submitted with any planning permit application.

7.4 Movement Network Plan

Each planning application for subdivision must be accompanied by a movement network plan that details the road profiles, traffic calming measure, parking provisions and pedestrian pathway network. These detailed plans are to be in general accord with this development plan.

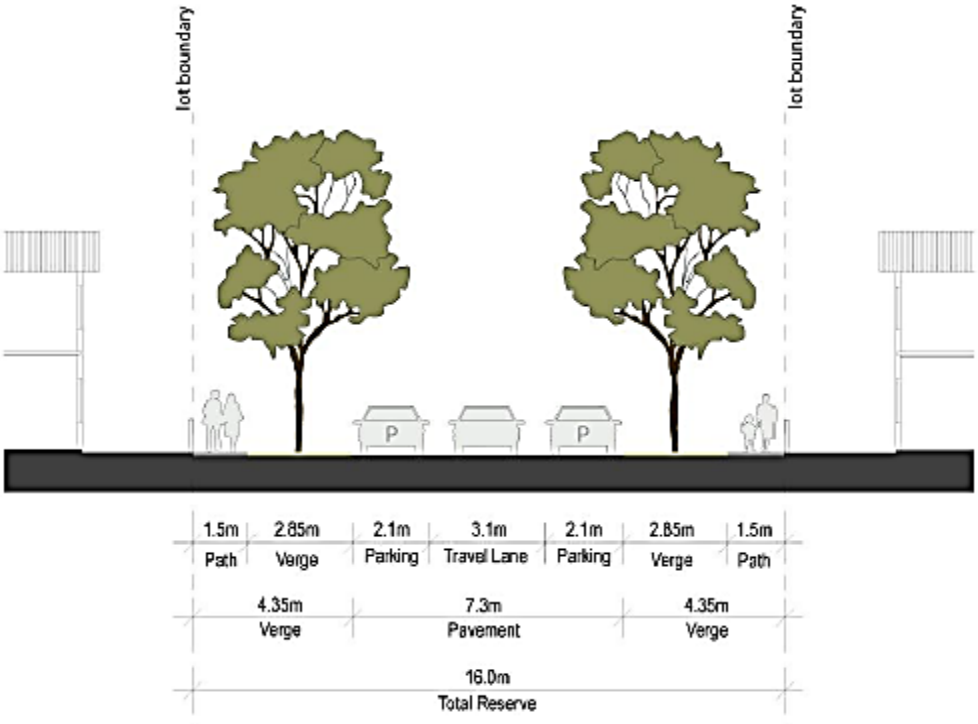
FIGURE 9–ORCHARD ROAD



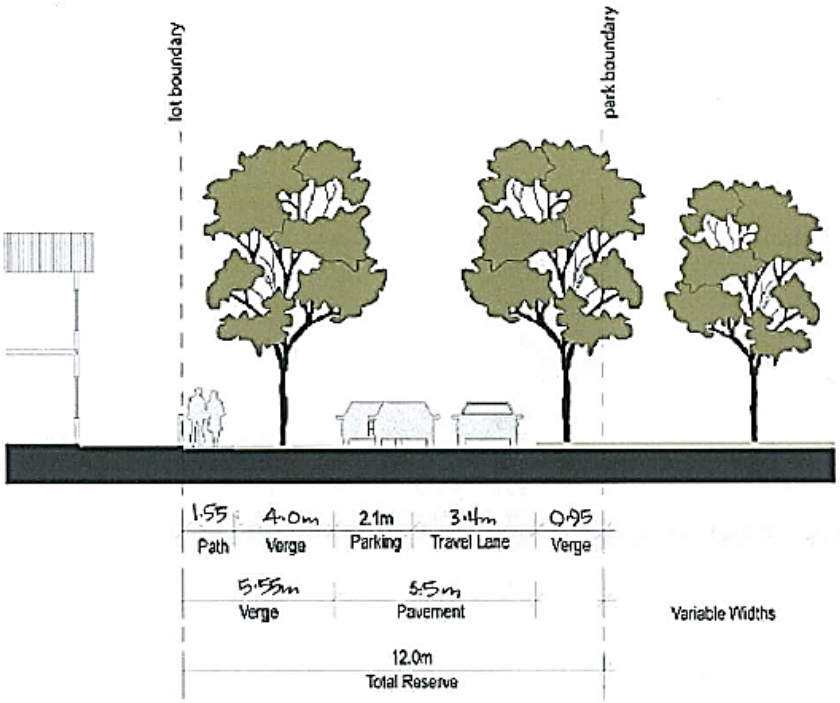
ORCHARD ROAD NOTES:

1. South setback to kerb varies from 5.5 to 7.5m
2. 1.5m wide path to be provided on south side of road. Existing 2.5m share path on north
3. 2.1m wide indented parking bays for a minimum of 8 cars to be installed on the south side of the road. On pavement parking shall not be allowed on the south side of Orchard Road.

FIGURE 10 – LOCAL STREETS



LOCAL STREET ABUTTING YAN YEAN ROAD TREE RESERVE



8 CONCLUSION

It is demonstrated that the proposed Development Plan appropriately addresses the provisions contained within DP05 of the Whittlesea Planning Scheme, and is doing so, has responded appropriately to the Mernda Strategy Plan and objectives.

The Development Plan provides a site responsive design with careful management of the relevant environmental, topographic, access and landscaping issues. Whilst only an indicative concept plan has been prepared, it is evident that the site can accommodate an appropriate subdivision development.

Approval of this development plan paves the way for planning permits to be applied for and approved by Council. These permit applications will provide a higher level of detail regarding such items as lot sizes and area, building envelopes, landscaping, vegetation removal and biodiversity offset. These permits will then require the preparation of design plans that demonstrate in detail how the sites will be serviced, road design & traffic management, landscape treatments and plan species etc, with these detailed plans requiring further approval from the responsible authority before the relevant works can commence.

City of Whittlesea

825-835 Yan Yean Rd, Doreen

Development Plan Annexures

Prepared by Head & Humphreys for Corvac P/L

31st March 2017

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Development Plan for 815-835 Yan Yean Rd Doreen

CONTENTS

Appendix 1 – Titles

REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 09667 FOLIO 175 Security no : 124057019763A
Produced 22/09/2015 03:26 pm

LAND DESCRIPTION

Lot 1 on Title Plan 106083R (formerly known as Lot 32 on Plan of Subdivision 003700).
PARENT TITLE Volume 08442 Folio 046
Created by instrument M043178K 13/12/1985

REGISTERED PROPRIETOR

Estate Fee Simple
Joint Proprietors
ROBERT WILLIAM STARBUCK
SANDRA MARIA STARBUCK both of 825 YAN YEAN RD DOREEN 3754
T609049V 22/03/1995

ENCUMBRANCES, CAVEATS AND NOTICES

MORTGAGE T609050V 22/03/1995
COMMONWEALTH BANK OF AUSTRALIA

MORTGAGE T895100C 04/10/1995
COMMONWEALTH BANK OF AUSTRALIA

MORTGAGE AH237593P 20/05/2010
COMMONWEALTH BANK OF AUSTRALIA

CAVEAT AM150084B 01/09/2015
Caveator
DIANNE PATRICIA ELDERFIELD
Grounds of Claim
PURCHASERS' CONTRACT WITH THE FOLLOWING PARTIES AND DATE.
Parties
THE REGISTERED PROPRIETOR(S)
Date
24/08/2015
Estate or Interest
FREEHOLD ESTATE
Prohibition
ABSOLUTELY
Lodged by
ISAKOW D
Notices to
ISAKOW D of LEVEL 4 221 QUEEN STREET MELBOURNE VIC 3000

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section 24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION

SEE TP106083R FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NUMBER		STATUS	DATE
AM150084B	CAVEAT	Registered	01/09/2015

REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

----------END OF REGISTER SEARCH STATEMENT----------

Additional information: (not part of the Register Search Statement)

Street Address: 825 YAN YEAN ROAD DOREEN VIC 3754

DOCUMENT END

TITLE PLAN		EDITION 1	TP 106083R

Location of Land

Parish: MORANG
Township:
Section:
Crown Allotment:
Crown Portion:

Last Plan Reference: LP3700
Derived From: VOL 9667 FOL 175
Depth Limitation: NIL

Notations

ANY REFERENCE TO MAP IN THE TEXT MEANS THE DIAGRAM SHOWN ON THIS TITLE PLAN

Description of Land / Easement Information

THIS PLAN HAS BEEN PREPARED FOR THE LAND REGISTRY, LAND VICTORIA, FOR TITLE DIAGRAM PURPOSES AS PART OF THE LAND TITLES AUTOMATION PROJECT
COMPILED: 12/08/1999
VERIFIED: AA

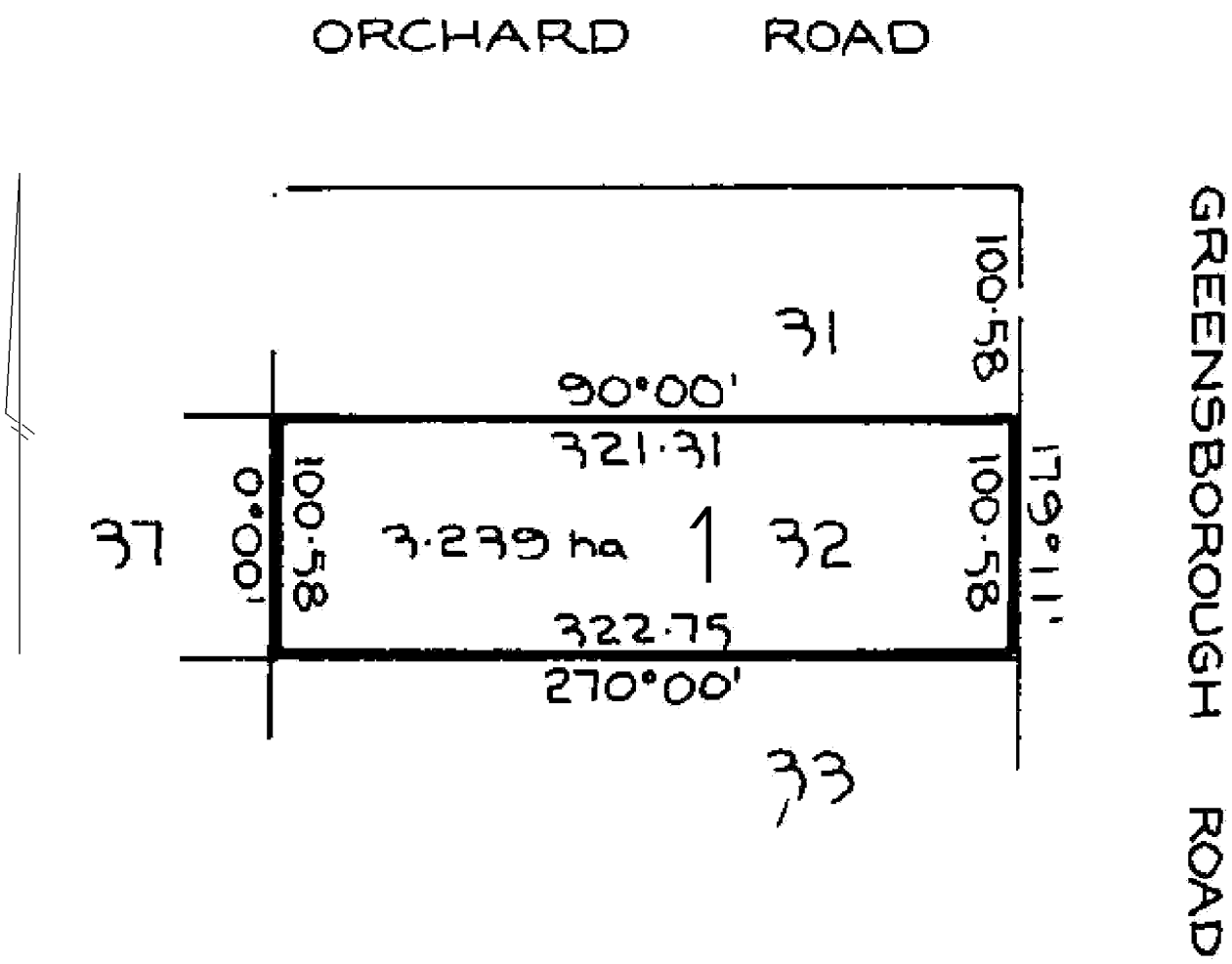


TABLE OF PARCEL IDENTIFIERS
WARNING: Where multiple parcels are referred to or shown on this Title Plan this does not imply separately disposable parcels under Section 8A of the Sale of Land Act 1962
PARCEL 1 = LOT 32 ON LP3700

LENGTHS ARE IN METRES	Metres = 0.3048 x Feet Metres = 0.201168 x Links		Sheet 1 of 1 sheets

REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 09642 FOLIO 240

Security no : 124057018218E
Produced 22/09/2015 02:49 pm

LAND DESCRIPTION

Lot 1 on Title Plan 103928C (formerly known as Lot 31 on Plan of Subdivision 003700).
PARENT TITLE Volume 08442 Folio 046
Created by instrument L858788X 28/08/1985

REGISTERED PROPRIETOR

Estate Fee Simple
Joint Proprietors
GEORGE PARASKEVAKIS
BRUNA ANTONIA PARASKEVAKIS both of 104 GLEESON DRIVE BUNDOORA
L858788X

ENCUMBRANCES, CAVEATS AND NOTICES

COVENANT L858788X

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section 24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION

SEE TP103928C FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NIL

----------END OF REGISTER SEARCH STATEMENT----------

Additional information: (not part of the Register Search Statement)

Street Address: 835 YAN YEAN ROAD DOREEN VIC 3754

DOCUMENT END

TITLE PLAN		EDITION 1	TP 103928C

Location of Land

Parish: MORANG
Township:
Section:
Crown Allotment:
Crown Portion:

Last Plan Reference: LP 3700
Derived From: VOL 9642 FOL 240
Depth Limitation: NIL

Notations

ANY REFERENCE TO MAP IN THE TEXT MEANS THE DIAGRAM SHOWN ON THIS TITLE PLAN

Description of Land / Easement Information

THIS PLAN HAS BEEN PREPARED FOR THE LAND REGISTRY, LAND VICTORIA, FOR TITLE DIAGRAM PURPOSES AS PART OF THE LAND TITLES AUTOMATION PROJECT
COMPILED: 11/08/1999
VERIFIED: M.P

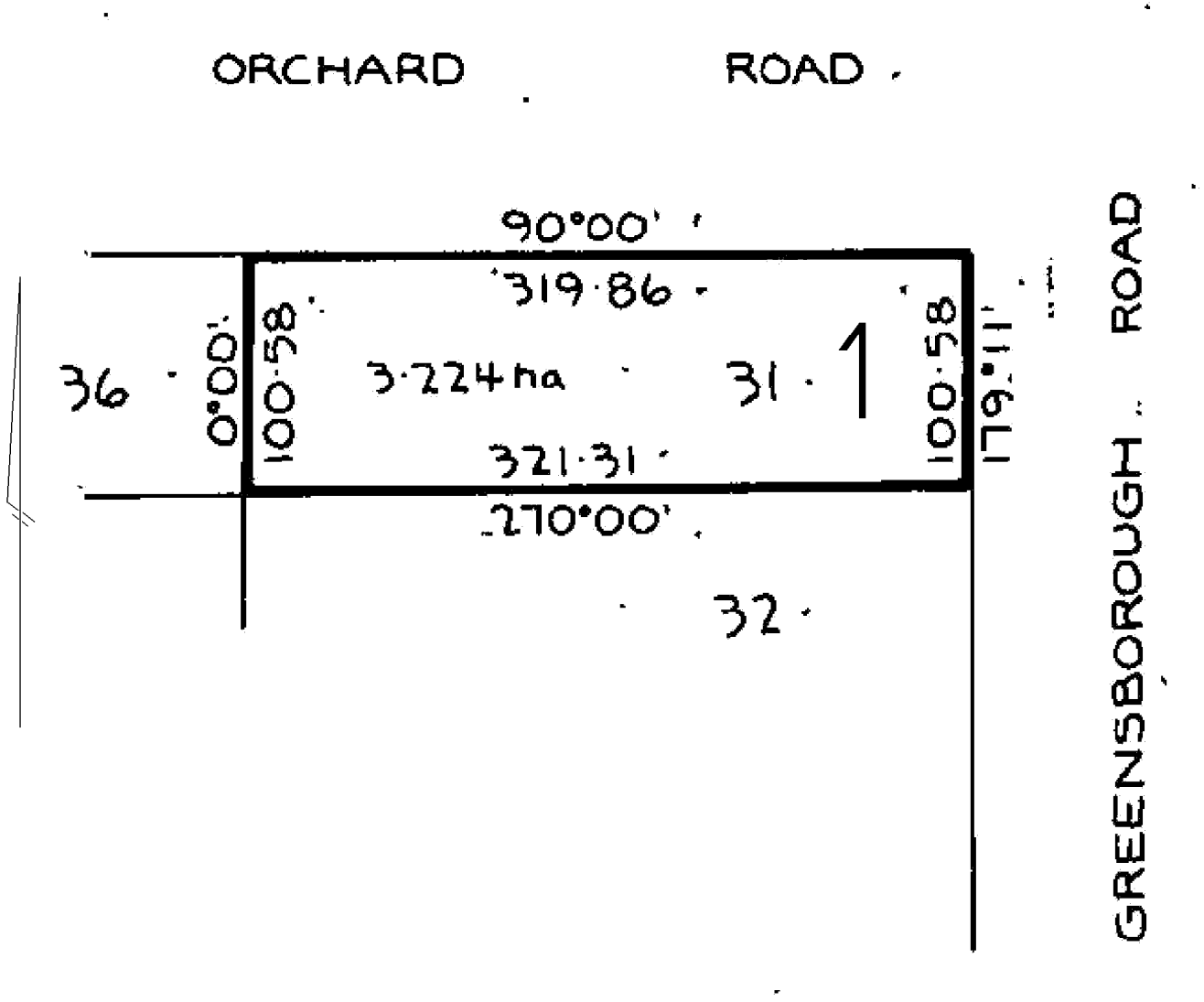


TABLE OF PARCEL IDENTIFIERS
WARNING: Where multiple parcels are referred to or shown on this Title Plan this does not imply separately disposable parcels under Section 8A of the Sale of Land Act 1962
PARCEL 1 = LOT 31 ON LP 3700

LENGTHS ARE IN METRES	Metres = 0.3048 x Feet Metres = 0.201168 x Links		Sheet 1 of 1 sheets

$280.

BY LETTER

Lodged at the Titles Office by

D.T. BURT & ASSOCIATES

Code 563B

Titles Office Use Only

280885 2053 45½ 126 L858788X

VICTORIA

TRANSFER OF LAND

Subject to the encumbrances affecting the land including any created by dealings lodged for registration prior to the lodging of this instrument the transferor for the consideration expressed at the request and by the direction of the directing party (if any) transfers to the transferee the estate and the interest specified in the land described together with any easement hereby created and subject to any easement hereby reserved or restrictive covenant herein contained or covenant created pursuant to statute and included herein. (Notes 1-4)

Land (Note 5)

Lot 31 on Plan of Subdivision No. 3700 being part of the land more particularly described in Certificate of Title Volume 8442 Folio 046.

NEW TITLE

Consideration (Note 6)

ONE HUNDRED AND TWENTY SIX THOUSAND DOLLARS ($126,000.00)

Transferor (Note 7)

ARTHUR JAMES CHRISTIAN

AUG-23-85 309769 70177 LE A 101 ***4,410-00

Transferee (Note 8)

VICTORIA STAMP DUTY

GEORGE PARASKEVAKIS and BRUNA ANTONIA PARASKEVAKIS both of 104 Gleeson Drive, Bundoora in the State of Victoria as joint tenants.

Estate and Interest (Note 9)

All my estate and interest in fee simple.

CODE:

DUTY: $ 4410

ASSESSOR: IX

VALUE: $ 126000

Directing Party (Note 10)

Comptroller of Stamps Use Only

CT 8442/046 (Pt.)

Area: 3.224ha

8/10/85

E. 8.10.85

Creation (or Reservation) of Easement and/or Covenant (Notes 11-12)

See over.

DL858788X-1-1

T2 Office Use Only

OFFICE OF TITLES VICTORIA

A memorandum of the within instrument has been entered in the Register Book

OFFICE OF TITLES J.E.O. VICTORIA

MS 9/9/85

Approval No. T2/1

RESTRICTIVE COVENANTS

And the said GEORGE PARASKEVAKIS and BRUNA ANTONIA PARASKEVAKIS with the intent that the benefit of this Covenant shall be attached to and run at law and in equity with every Lot on the said Plan of Subdivision other than the Lot or Lots hereby transferred and that the burden of this Covenant shall be annexed to and run at law and in equity with the said land hereby transferred and every part thereof and that the same shall be noted and appear on the Certificate of Title to issue for the same and every part thereof DOTH HEREBY for themselves and their Transferees Executors Administrators and Assigns and as seperate covenants covenant with the said ARTHUR JAMES CHRISTIAN and other the registered proprietor or proprietors for the time being of the land and every Lot comprised in the said Plan of Subdivision or on any part or parts thereof other than the Lot or Lots hereby transferred that the said GEORGE PARASKEVAKIS and BRUNA ANTONIA PARASKEVAKIS shall not construct or erect or cause to be built constructed or erected on the said Lot or Lots hereby transferred or any part thereof a dwelling house unless it is constructed of brick or brick veneer with terra cotta tiled roof and which dwelling shall have at least a minimum living area of twenty five (25) squares and be located not less than twenty (20) metres from the southern boundary of the property hereby transferred.

Date 26th day of July, 1985 (Note 13)

Execution and Attestation (Note 14)

SIGNED by the said Transferor)
)
in Victoria in the presence of:)

Witness

SIGNED by the said Transferees)
)
in Victoria in the presence of:)

Witness

DL858788X-2-8

To the Registrar of Titles
Please register this transfer of land,
certificate of title to issue to lodging party
& return original title to Gray & Gray.

NOTES

1. This form must be used for any transfer by the registered proprietor—
   (a) of other than the whole of an estate and interest in fee simple
   (b) by direction
   (c) in which an easement is created or reserved
   (d) which contains a restrictive covenant or a covenant created pursuant to statute.
2. Transfers may be lodged as an original only and must be typed or completed in ink.
3. All signatures must be in ink.
4. If there is insufficient space in any panel to accommodate the required information use an annexure sheet (Form A1) or (if there is space available) enter the information under the appropriate heading after any creation or reservation of easement or covenant. Insert only the words "See Annexure A" (or as the case may be) or "See overleaf" in the panel as appropriate.

   Multiple annexures may appear on the same annexure sheet but each must be correctly headed.

   All annexure sheets should be properly identified and signed by the parties and securely attached to the instrument.
5. Volume and folio references must be given. If the whole of the land in a title is to be transferred no other description should be used. If the transfer affects part only of the land in a title the lot and plan number or Crown description should also be given. Any necessary diagram should be endorsed hereon or on an annexure sheet (Form A1).
6. Set out the amount (in figures) or the nature of the consideration. If the transfer is by direction show the various considerations
   e.g. $ .... paid by B to A
   $ .... paid by C to B

   In a transfer on sale of land subject to a mortgage it should be clearly shown whether or not the amount owing under the mortgage is included in the consideration e.g. $ .... which includes the amount owing under mortgage No. ....
7. Insert full name. Address is not required.
8. Insert full name and address. If two or more transferees state whether as joint tenants or tenants in common. If tenants in common specify shares.
9. Set out "All my estate and interest in the fee simple" (or other as the case may be).
10. If the transfer is by direction give the full name of any directing party and show the various considerations under the consideration heading.
11. Set out any easement being created or reserved and define the dominant and servient tenements.
12. Set out full details of any covenant and define the covenantee and the land to bear the burden and to take the benefit of the covenant.
13. The transfer must be dated.
14. If an executing party is a natural person execution should read "Signed by the transferor (transferee, directing party) in the presence of ....". The witness must be an independent person. If an executing party is a body corporate execution should conform to any prescribed formalities relating to the affixing of the common seal.

Appendix 2 - Planning Report

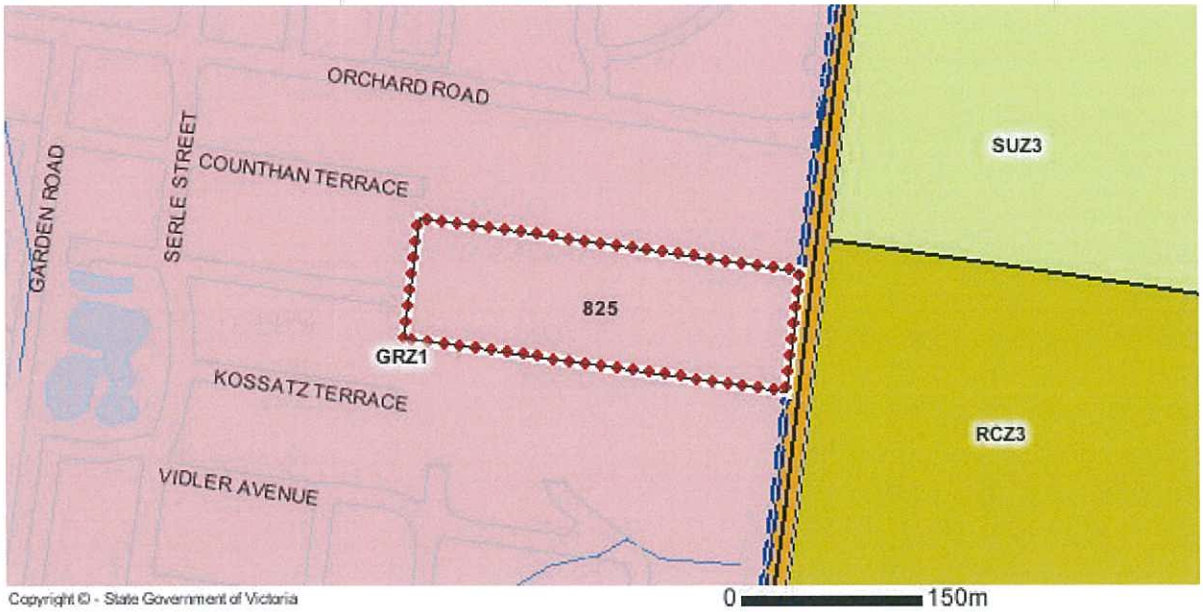
Planning Property Report

from www.dtpli.vic.gov.au/planning on 13 February 2015 08:49 AM

Address: 825 YAN YEAN ROAD DOREEN 3754
Lot and Plan Number: Lot 1 TP106083
Local Government (Council): WHITTLESEA **Council Property Number:** 545483
Directory Reference: Melway 184 G1

Planning Zone

GENERAL RESIDENTIAL ZONE - SCHEDULE 1 (GRZ1)
SCHEDULE TO THE GENERAL RESIDENTIAL ZONE - SCHEDULE 1



Note: labels for zones may appear outside the actual zone - please compare the labels with the legend.

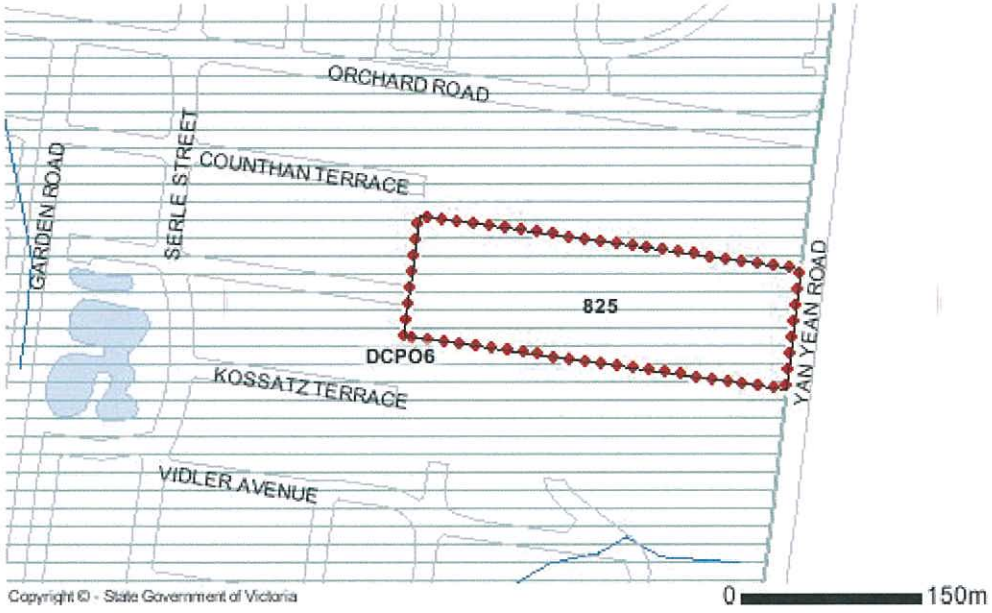
Zones Legend

- ACZ - Activity Centre
- B1Z - Commercial 1
- B2Z - Commercial 1
- B3Z - Commercial 2
- B4Z - Commercial 2
- B5Z - Commercial 1
- C1Z - Commercial 1
- C2Z - Commercial 2
- CA - Commonwealth Land
- CCZ - Capital City
- CDZ - Comprehensive Development
- DZ - Dockland
- ERZ - Environmental Rural
- FZ - Farming
- GRZ - General Residential
- GWAZ - Green Wedge A
- GWZ - Green Wedge
- IN1Z - Industrial 1
- IN2Z - Industrial 2
- IN3Z - Industrial 3
- LDRZ - Low Density Residential
- MUZ - Mixed Use
- NRZ - Neighbourhood Residential
- PCRZ - Public Conservation & Resource
- PDZ - Priority Development
- PPRZ - Public Park & Recreation
- PUZ1 - Public Use - Service & Utility
- PUZ2 - Public Use - Education
- PUZ3 - Public Use - Health Community
- PUZ4 - Public Use - Transport
- PUZ5 - Public Use - Cemetery/Crematorium
- PUZ6 - Public Use - Local Government
- PUZ7 - Public Use - Other Public Use
- PZ - Port
- R1Z - General Residential
- R2Z - General Residential
- R3Z - General Residential
- RAZ - Rural Activity
- RCZ - Rural Conservation
- RDZ1 - Road - Category 1
- RDZ2 - Road - Category 2
- RGZ - Residential Growth
- RLZ - Rural Living
- RUZ - Rural
- SUZ - Special Use
- TZ - Township
- UFZ - Urban Floodway
- UGZ - Urban Growth
- Urban Growth Boundary

Planning Overlays

DEVELOPMENT CONTRIBUTIONS PLAN OVERLAY (DCPO)

DEVELOPMENT CONTRIBUTIONS PLAN OVERLAY - SCHEDULE 6 (DCPO6)



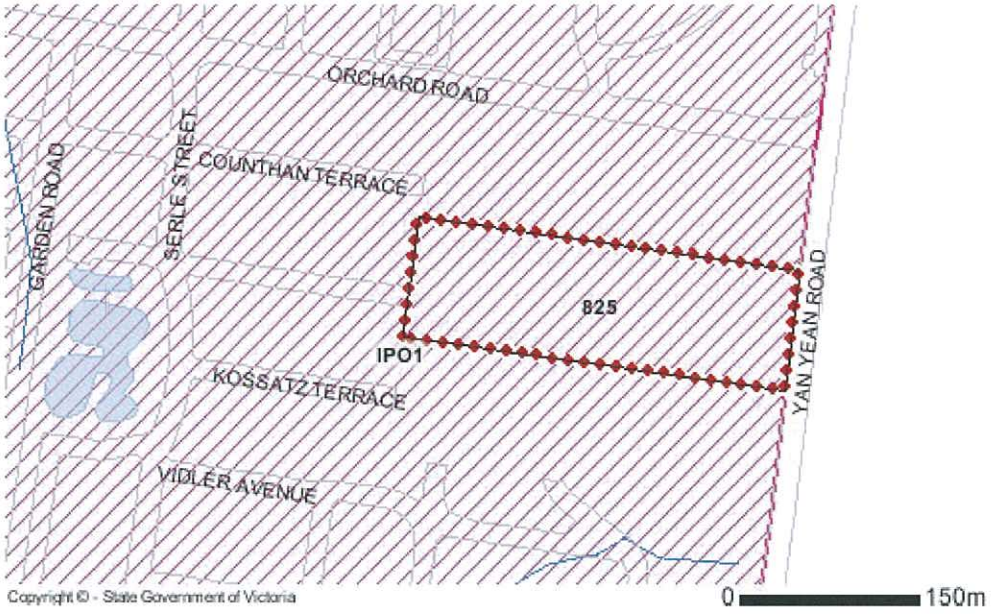
DEVELOPMENT PLAN OVERLAY (DPO)

DEVELOPMENT PLAN OVERLAY - SCHEDULE 5 (DPO5)

Planning Overlays

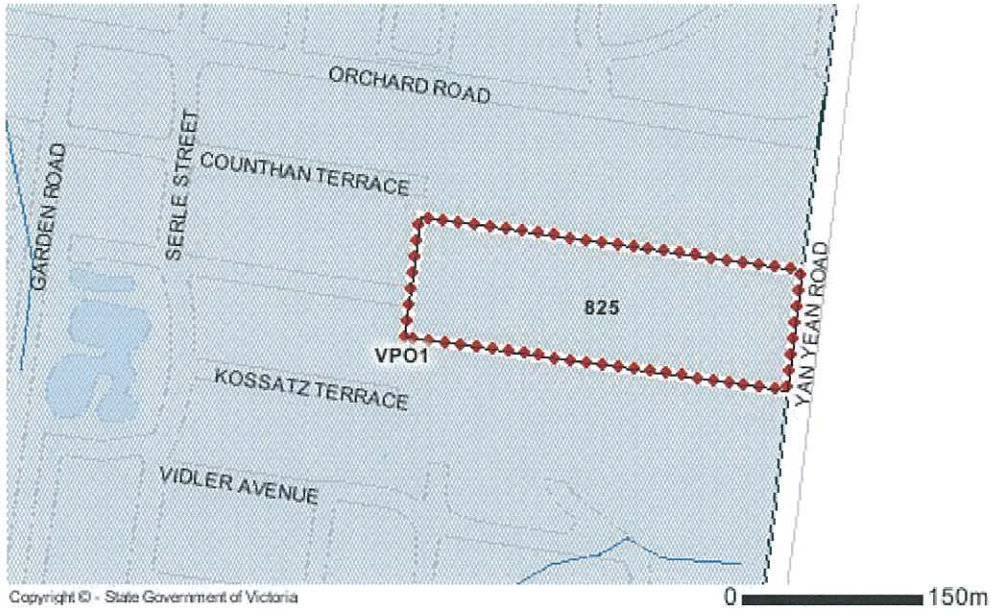
INCORPORATED PLAN OVERLAY (IPO)

INCORPORATED PLAN OVERLAY - SCHEDULE 1 (IPO1)



VEGETATION PROTECTION OVERLAY (VPO)

VEGETATION PROTECTION OVERLAY - SCHEDULE 1 (VPO1)



Planning Overlays

OTHER OVERLAYS

Other overlays in the vicinity not directly affecting this land

ENVIRONMENTAL SIGNIFICANCE OVERLAY (ESO)

Overlays Legend

- AEO - Airport Environs
- BMO - Bushfire Management (also WMO)
- CLPO - City Link Project
- DCPO - Development Contributions Plan
- DDO - Design & Development
- DDOPT - Design & Development Part
- DPO - Development Plan
- EAO - Environmental Audit
- EMO - Erosion Management
- ESO - Environmental Significance
- FO - Floodway
- HO - Heritage
- IPO - Incorporated Plan
- LSIO - Land Subject to Inundation
- MAEO1 - Melbourne Airport Environs 1
- MAEO2 - Melbourne Airport Environs 2
- NCO - Neighbourhood Character
- PO - Parking
- PAO - Public Acquisition
- RO - Restructure
- RCO - Road Closure
- SBO - Special Building
- SLO - Significant Landscape
- SMO - Salinity Management
- SRO - State Resource
- VPO - Vegetation Protection

Note: due to overlaps some colours on the maps may not match those in the legend.

Further Planning Information

Planning scheme data last updated on 12 February 2015.

A **planning scheme** sets out policies and requirements for the use, development and protection of land. This report provides information about the zone and overlay provisions that apply to the selected land. Information about the State, local, particular and general provisions of the local planning scheme that may affect the use of this land can be obtained by contacting the local council or by visiting Planning Schemes Online

This report is NOT a **Planning Certificate** issued pursuant to Section 199 of the Planning & Environment Act 1987. It does not include information about exhibited planning scheme amendments, or zonings that may abut the land. To obtain a Planning Certificate go to Titles and Property Certificates

For details of surrounding properties, use this service to get the Reports for properties of interest

To view planning zones, overlay and heritage information in an interactive format visit Planning Maps Online

For other information about planning in Victoria visit www.dpcd.vic.gov.au/planning

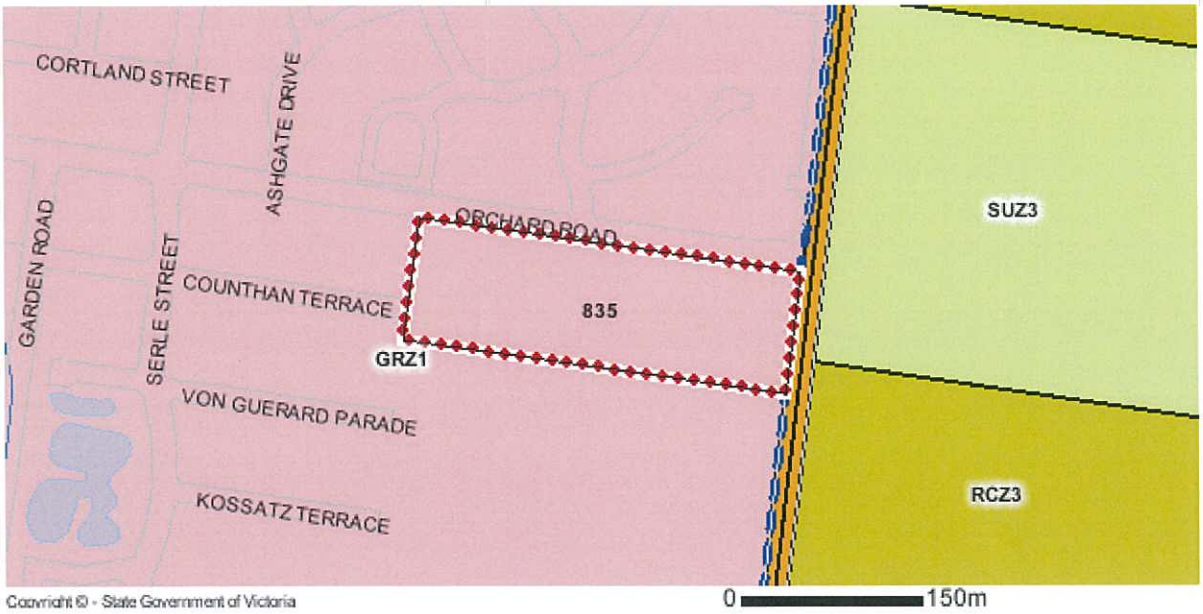
Planning Property Report

from www.dtpli.vic.gov.au/planning on 01 December 2015 04:51 PM

Address: 835 YAN YEAN ROAD DOREEN 3754
Lot and Plan Number: Lot 1 TP103928
Local Government (Council): WHITTLESEA **Council Property Number:** 545475
Directory Reference: Melway 184 G1

Planning Zone

GENERAL RESIDENTIAL ZONE - SCHEDULE 1 (GRZ1)
SCHEDULE TO THE GENERAL RESIDENTIAL ZONE - SCHEDULE 1



Note: labels for zones may appear outside the actual zone - please compare the labels with the legend.

Zones Legend

- ACZ - Activity Centre
- B1Z - Commercial 1
- B2Z - Commercial 1
- B3Z - Commercial 2
- B4Z - Commercial 2
- B5Z - Commercial 1
- C1Z - Commercial 1
- C2Z - Commercial 2
- CA - Commonwealth Land
- CCZ - Capital City
- CDZ - Comprehensive Development
- DZ - Dockland
- ERZ - Environmental Rural
- FZ - Farming
- GRZ - General Residential
- GWAZ - Green Wedge A
- GWZ - Green Wedge
- IN1Z - Industrial 1
- IN2Z - Industrial 2
- IN3Z - Industrial 3
- LDRZ - Low Density Residential
- MUZ - Mixed Use
- NRZ - Neighbourhood Residential
- PCRZ - Public Conservation & Resource
- PDZ - Priority Development
- PPRZ - Public Park & Recreation
- PUZ1 - Public Use - Service & Utility
- PUZ2 - Public Use - Education
- PUZ3 - Public Use - Health Community
- PUZ4 - Public Use - Transport
- PUZ5 - Public Use - Cemetery/Crematorium
- PUZ6 - Public Use - Local Government
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- PZ - Port
- R1Z - General Residential
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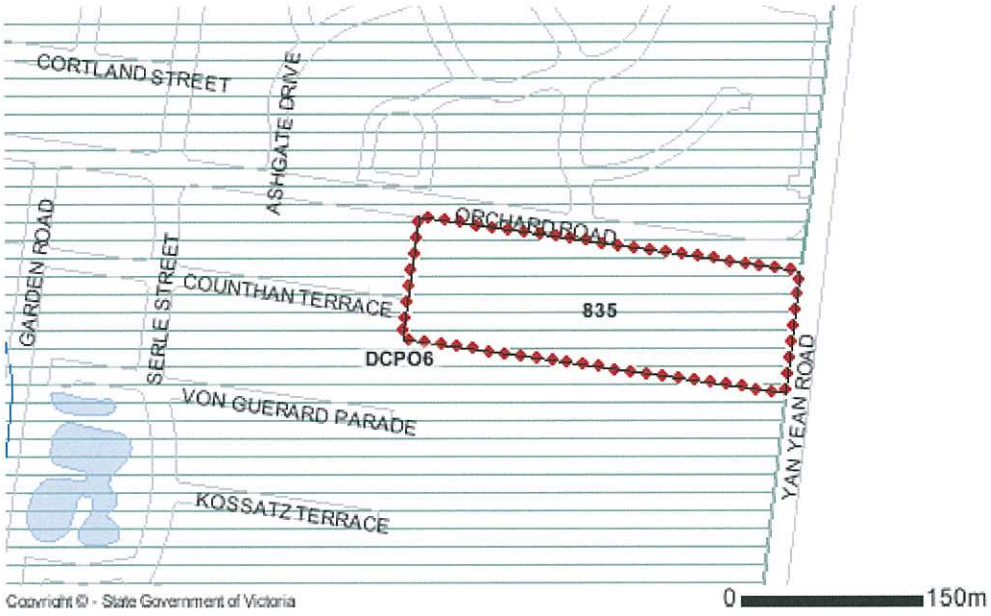
- RAZ - Rural Activity
- RCZ - Rural Conservation
- RDZ1 - Road - Category 1
- RDZ2 - Road - Category 2
- RGZ - Residential Growth
- RLZ - Rural Living
- RUZ - Rural
- SUZ - Special Use
- TZ - Township
- UFZ - Urban Floodway
- UGZ - Urban Growth
- Urban Growth Boundary

Planning Overlays

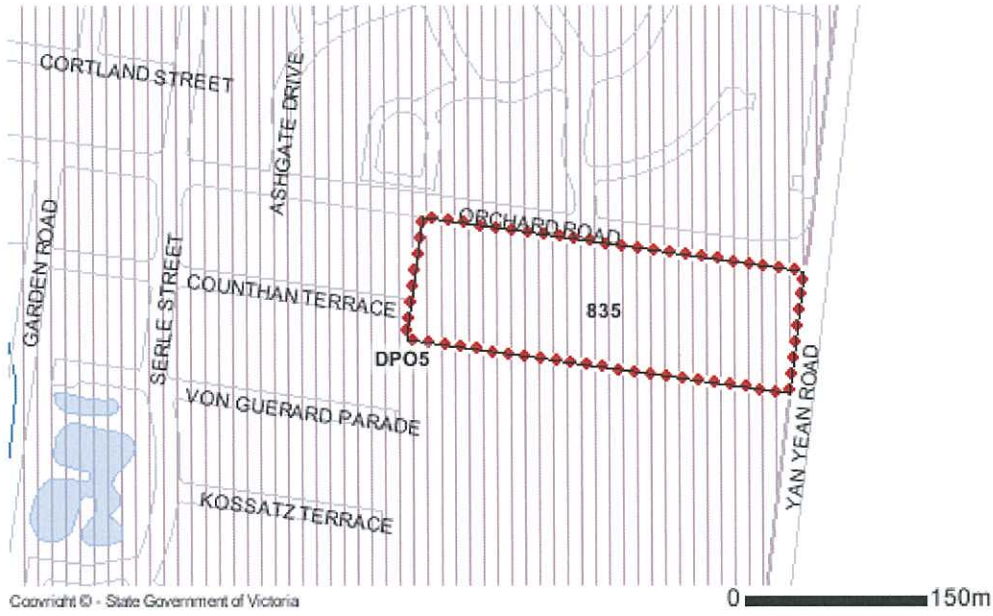
DEVELOPMENT CONTRIBUTIONS PLAN OVERLAY (DCPO)

DEVELOPMENT CONTRIBUTIONS PLAN OVERLAY - SCHEDULE 6 (DCPO6)



DEVELOPMENT PLAN OVERLAY (DPO)

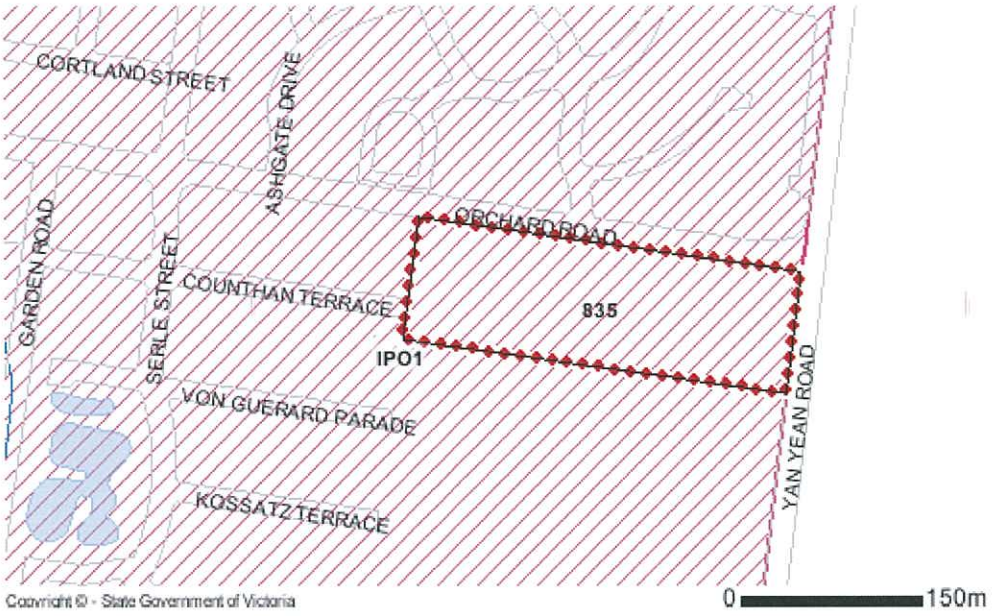
DEVELOPMENT PLAN OVERLAY - SCHEDULE 5 (DPO5)



Planning Overlays

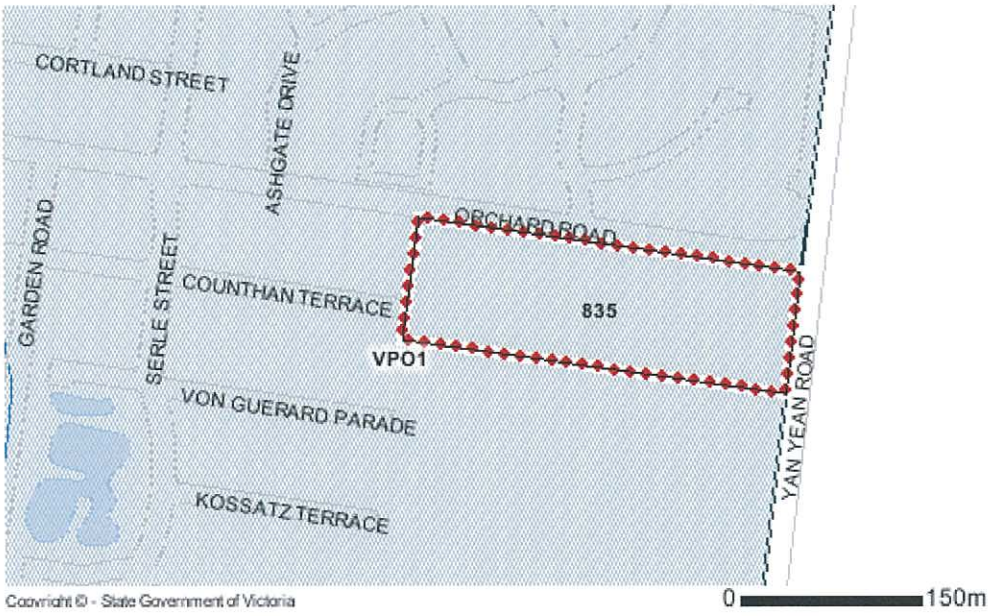
INCORPORATED PLAN OVERLAY (IPO)

INCORPORATED PLAN OVERLAY - SCHEDULE 1 (IPO1)



VEGETATION PROTECTION OVERLAY (VPO)

VEGETATION PROTECTION OVERLAY - SCHEDULE 1 (VPO1)



Planning Overlays

OTHER OVERLAYS

Other overlays in the vicinity not directly affecting this land

ENVIRONMENTAL SIGNIFICANCE OVERLAY (ESO)

Overlays Legend

- AEO - Airport Environs
- BMO - Bushfire Management (also WMO)
- CLPO - City Link Project
- DCPO - Development Contributions Plan
- DDO - Design & Development
- DDOPT - Design & Development Part
- DPO - Development Plan
- EAO - Environmental Audit
- EMO - Erosion Management
- ESO - Environmental Significance
- FO - Floodway
- HO - Heritage
- IPO - Incorporated Plan
- LSIO - Land Subject to Inundation
- MAEO1 - Melbourne Airport Environs 1
- MAEO2 - Melbourne Airport Environs 2
- NCO - Neighbourhood Character
- PO - Parking
- PAO - Public Acquisition
- RO - Restructure
- RCO - Road Closure
- SBO - Special Building
- SLO - Significant Landscape
- SMO - Salinity Management
- SRO - State Resource
- VPO - Vegetation Protection

Note: due to overlaps some colours on the maps may not match those in the legend.

Further Planning Information

Planning scheme data last updated on 26 November 2015.

A **planning scheme** sets out policies and requirements for the use, development and protection of land. This report provides information about the zone and overlay provisions that apply to the selected land. Information about the State, local, particular and general provisions of the local planning scheme that may affect the use of this land can be obtained by contacting the local council or by visiting Planning Schemes Online

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For details of surrounding properties, use this service to get the Reports for properties of interest

To view planning zones, overlay and heritage information in an interactive format visit Planning Maps Online

For other information about planning in Victoria visit www.delwp.vic.gov.au/planning

Appendix 3 - Bushfire Prone Land map

Department of
Transport, Planning and
Local Infrastructure

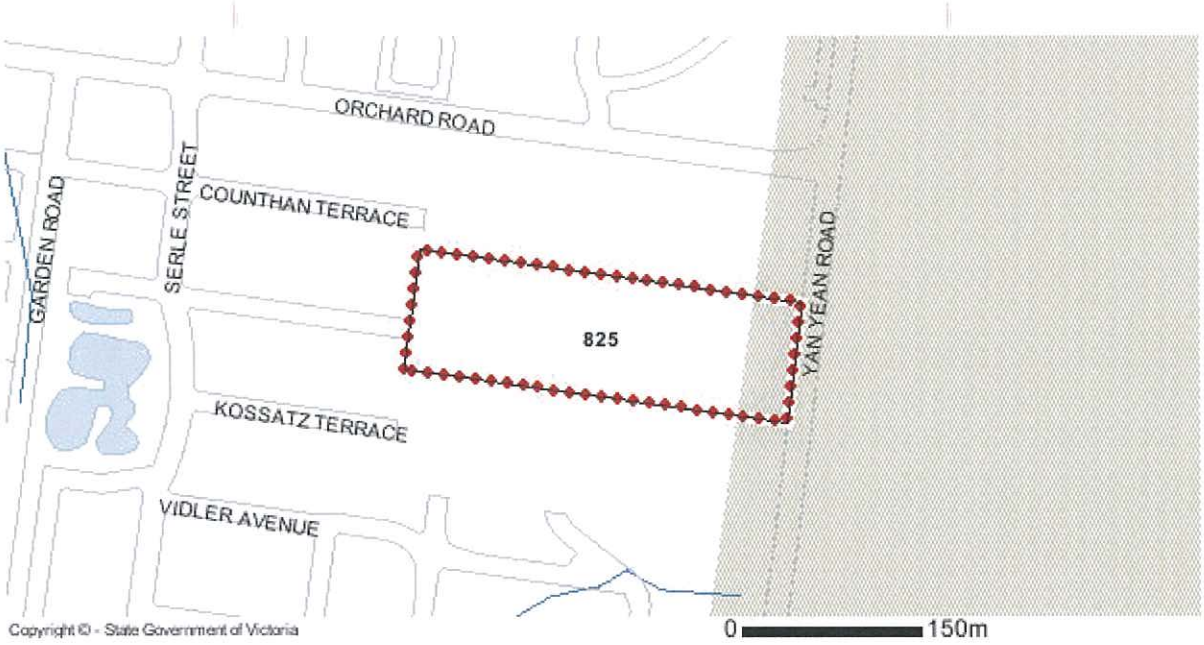
Designated Bushfire Prone Areas

from www.dtpli.vic.gov.au/planning on 17 February 2015 03:43 PM

Address: 825 YAN YEAN ROAD DOREEN 3754
Lot and Plan Number: Lot 1 TP106083
Local Government (Council): WHITTLESEA **Council Property Number:** 545483
Directory Reference: Melway 184 G1

This property is in a designated bushfire prone area.
Special bushfire construction requirements apply. Planning provisions may apply.

Designated Bushfire Prone Area Map



Bushfire Prone Area Legend Bushfire Prone Area Selected Land

Designated bushfire prone areas as determined by the Minister for Planning are in effect from 8 September 2011, as amended by gazette notices on 25 October 2012, 8 August 2013, 30 December 2013, 3 June 2014 and 22 October 2014.

The Building Regulations 2006 through application of the Building Code of Australia, apply bushfire protection standards for building works in designated bushfire prone areas.

Designated bushfire prone areas maps can be viewed via the Bushfire Prone Areas Map Service at services.land.vic.gov.au/maps/bushfire.jsp or at the relevant local council.

Note: prior to 8 September 2011, the whole of Victoria was designated as bushfire prone area for the purposes of the building control system.

Further information about the building control system and building in bushfire prone areas can be found in the Building Commission section of the Victorian Building Authority website www.vba.vic.gov.au

Copies of the Building Act and Building Regulations are available from www.legislation.vic.gov.au

For Planning Scheme Provisions in bushfire areas visit Planning Schemes Online

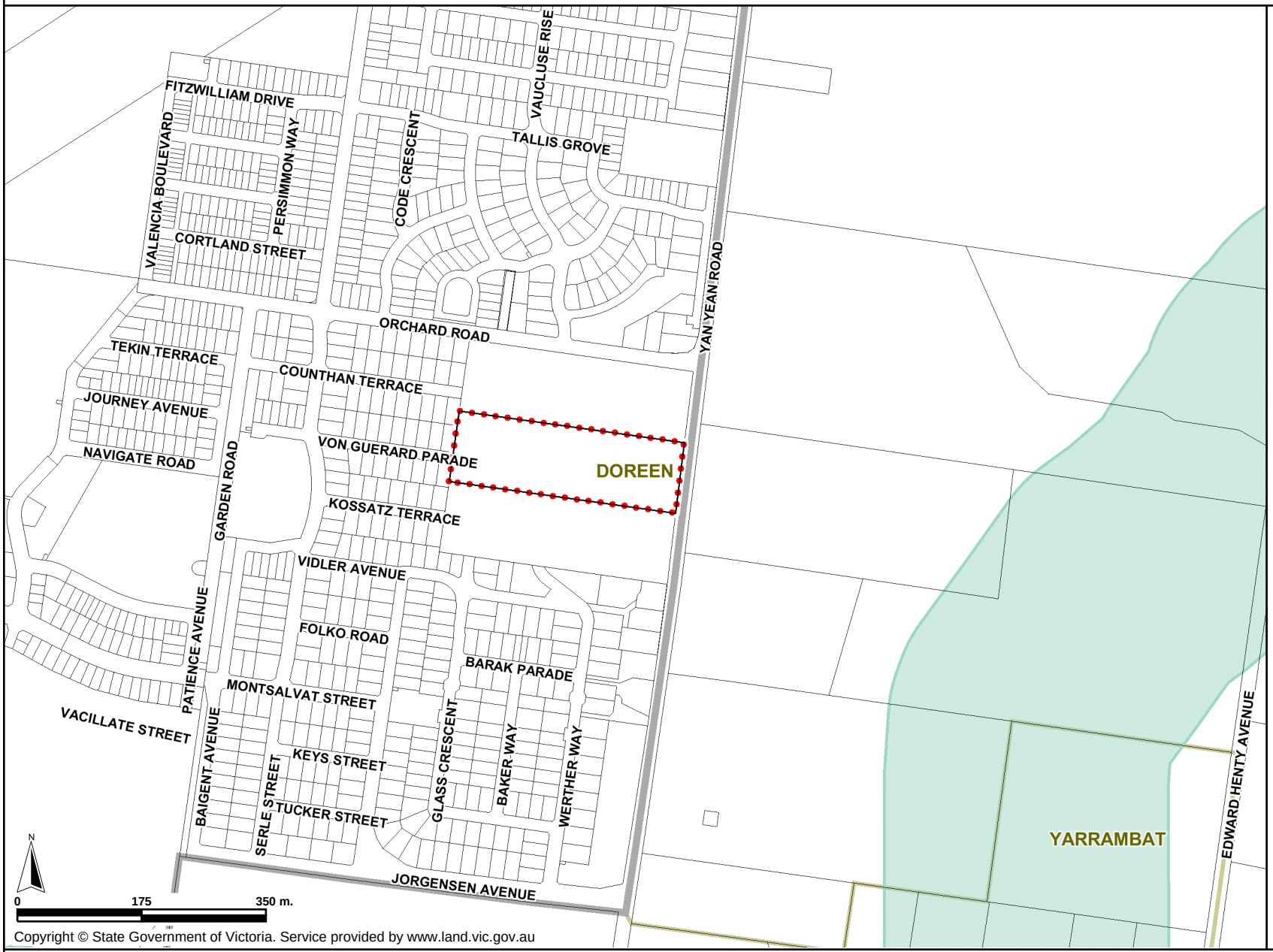
For Planning Scheme Provisions for this property return to the GetReports list and select the Planning Property Report.

Appendix 4 - Cultural Heritage Sensitivity Map

Planning Map

7324 heritage

Department of Transport, Planning and Local Infrastructure



Legend

- WARRNAMBOOL — Major Town
- Major Road, Road
- BOURKE STREET — Road name
- Railway, Tramway
- Property/Parcel, Selected
- 25 2 1C — Address, Lot, Crown allotment
- River, Stream, Coastline
- Waterbody
- Locality
- SEDDON — Locality Name
- Local Government Area
- BRIMBANK — Local Government Name
- Urban Growth Boundary (UGB)
- Area outside the UGB
- Investigation Area
- Land added to UGB since 2005
- Boundary of Searched Suburb

ZONES

- ACZ - Activity Centre
- B1Z - Commercial 1
- B2Z - Commercial 1
- B3Z - Commercial 2
- B4Z - Commercial 2
- B5Z - Commercial 1
- C1Z - Commercial 1
- C2Z - Commercial 2
- CA - Commonwealth Land
- CCZ - Capital City
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- DZ - Dockland
- ERZ - Environmental Rural
- FZ - Farming
- GRZ - General Residential
- GWAZ - Green Wedge A
- GWZ - Green Wedge
- IN1Z - Industrial 1
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- PDZ - Priority Development
- PPRZ - Public Park & Recreation
- PUZ1 - Public Use - Service & Utility
- PUZ2 - Public Use - Education
- PUZ3 - Public Use - Health Community
- PUZ4 - Public Use - Transport
- PUZ5 - Public Use - Cemetery/Crematorium
- PUZ6 - Public Use - Local Government
- PUZ7 - Public Use - Other Public Use
- PZ - Port
- R1Z - General Residential
- R2Z - General Residential
- R3Z - General Residential
- RAZ - Rural Activity
- RCZ - Rural Conservation
- RDZ1 - Road - Category 1
- RDZ2 - Road - Category 2
- RGZ - Residential Growth
- RLZ - Rural Living
- RUZ - Rural
- SUZ - Special Use
- TZ - Township
- UFZ - Urban Floodway
- UGZ - Urban Growth

OVERLAYS

- AEO - Airport Environs
- BMO - Bushfire Management (also WMO)
- CLPO - City Link Project
- DCPO - Development Contributions Plan
- DDO - Design & Development
- DDOPT - Design & Development Part
- DPO - Development Plan
- EAO - Environmental Audit
- EMO - Erosion Management
- ESO - Environmental Significance
- FO - Floodway
- HO - Heritage
- IPO - Incorporated Plan
- LSIO - Land Subject to Inundation
- MAEO1 - Melbourne Airport Environs 1
- MAEO2 - Melbourne Airport Environs 2
- NCO - Neighbourhood Character
- PO - Parking
- PAO - Public Acquisition
- RO - Restructure
- RCO - Road Closure
- SBO - Special Building
- SLO - Significant Landscape
- SMO - Salinity Management
- SRO - State Resource
- VPO - Vegetation Protection

Map Centre - Melways **184 G1**
Map Scale 1:8,000
April 9, 2015 3:54:14 PM

State Government Victoria

Appendix 5 - Feature Survey Plan

ORCHARD

ROAD

T.B.M RIVET IN KERB R.L.164.87

T.B.M RIVET IN ROUNDABOUT R.L.173.84

VAUCLUSE RISE

MELBOURNE WATER DRAIN

MELBOURNE WATER DRAIN

M.G.A.94 ZONE 55

GATE

POST & WIRE +30yrs

96°54'

319.86

POST & WIRE +30yrs

BRICK PILLARS

BRICK PILLARS

POST & WIRE & NETT. +10yrs

GRASS

GRASS

DAM

SINGLE STOREY DWELLING

CAPPED PALINGS (5-10Y)

6°52'20"
100.78 SURVEY
T.100.58

C/T Vol.9642 Fol.240
Lot 1 on TP103928C
3.227ha

GRASS

GRASS

GRAVEL DRIVEWAY

186°02'40"
100.58

POST & WIRE & NETT. +10yrs

SINGLE STOREY DWELLING

SINGLE STOREY DWELLING

CARPORT

CARPORT

STEPS

GRAVEL DRIVEWAY

BRICK GARAGE

COUNTHAN TERRACE

T.B.M RIVET R.L. 162.63

CONCRETE HARDSTAND

SHED

SHED

SHED

SHED

NOT FENCED

POST & WIRE & NETTING +30yrs

96°51'40"

NOT FENCED

321.31

POST & WIRE & NETTING +30yrs

T.B.M SPIKE R.L. 183.48

UNDERGROUND ELECTRICAL FINAL SERVICE PROTECTION UG DETECTION NEEDED FOR ACTUAL LOCATION

STAY WIRE

GATES & BLUESTONE PILLARS

SHED

GRASSED PADDOCKS

OLD DAM SITE

STONE RUBBLE

SHED

GRAVEL DRIVEWAY

GRASS

GRAVEL DRIVEWAY

STOCK PILE

C/T Vol.9667 Fol.175
Lot 1 on TP106083R
3.239ha

GRAVEL DRIVEWAY

BRICK PAVING

GARDEN BED

SINGLE STOREY DWELLING

BRICK PAVING

POOL

RET. WALL

CANOPY

BSTONE

BRICK PAVING

GRASS

186°02'40"
100.58

SPLIT POST & WIRE +30yrs

YAN YEAN ROAD

VON GEURARD PDE

'TEMPORARY FENCING'

STOCK PILE

STOCK PILE

STONE RUBBLE

T.B.M RIVET R.L. 162.34

TIMBER RETAINING WALL 31oyrs

GRASSED PADDOCKS

BLUESTONE STORAGE AREA

STOCK PILE

276°51'40" SPLIT POST & WIRE +30yrs

T.B.M STAR PICKET R.L. 185.30

322.77S
322.75T

SPLIT POST & WIRE +30yrs

VERSIONS

01	09.10.2015	INITIAL ISSUE OF DRAWING

HEAD & HUMPHREYS
LAND CONSULTANTS
Suite 3, 47 Railway Road
P.O. Box 63, Blackburn 3130
Phone : +61 3 9875 8777
Fax : +61 3 9875 8778
e-mail: contact@hhsurvey.com.au
ABN 80 006 516 169

NOTATIONS

LEVEL DATUM

THE LEVELS SHOWN HEREON ARE TO A.H.D. (AUSTRALIAN HEIGHT DATUM). LEVEL DATUM VIDE GPSnet CONNECTION TO GREENSBOROUGH PM 66 (R.L 203.710m).

BEARING DATUM

THIS PLAN IS ON APPROX. M.G.A.94 ZONE 55 HORIZONTAL DATUM (MAP GRID AUSTRALIA). DATUM VIDE GPSnet CONNECTION TO GREENSBOROUGH PM 66. ROTATE -6°51'40" FOR TITLE BEARINGS

CONTOURS

THE CONTOURS SHOWN ARE PROVIDED AS AN INDICATION OF GRADES ONLY AS VARIATIONS MAY OCCUR BETWEEN ACTUAL LEVEL POINTS SHOWN.

CONTOUR INTERVAL SHOWN MAJOR: 1.0m MINOR:0.20m
CONTOURS ON THE NORTHERN SIDE OF THE EXISTING DWELLING ON No.835 ARE INDICATIVE ONLY DUE TO EXISTING LANDSCAPING.

PURPOSE

THIS PLAN HAS BEEN PREPARED EXCLUSIVELY FOR THE SILVERI FAMILY TRUST, THE PURPOSE OF THIS PLAN IS TO SHOW THE LOCATION OF EXISTING FEATURES ONSITE AS REQUESTED AT THE TIME OF SURVEY FOR DESIGN.

THIS PLAN SHOULD NOT BE USED FOR ANY OTHER PURPOSES.

TITLE BOUNDARIES

TITLE BOUNDARIES HAVE BEEN DETERMINED BY THIS SURVEY.
THE TITLE BOUNDARIES HAVE NOT BEEN MARKED.

SERVICES

THE LOCATION OF SERVICES, SURFACE PITS, VALVE COVERS etc. SHOWN HEREON HAVE BEEN DETERMINED BY THIS SURVEY.

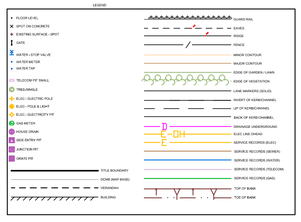
THE LOCATION OF UNDERGROUND SERVICES HAVE BEEN NOTED FROM EXISTING RECORDS WHERE SHOWN AND AS VARIATIONS WITH RECORDS MAY EXIST, COMPLETE ACCURACY CANNOT BE GUARANTEED.

THE LOCATION OF SERVICES HAVE BEEN LOCATED FROM A COMBINATION OF FIELD SURVEY AND RECORDS FROM RELEVANT AUTHORITIES. HEAD & HUMPHREYS ACCEPTS NO RESPONSIBILITY FOR THE LOCATION OR COMPLETENESS OF DATA SUPPLIED BY SERVICES AUTHORITIES.

PRIOR TO ANY DEMOLITION, EXCAVATION OR CONSTRUCTION ON THIS SITE, THE RELEVANT AUTHORITY SHOULD BE CONTACTED TO ASCERTAIN THE POSSIBLE LOCATIONS OF FURTHER SERVICES AND DETAILED LOCATIONS OF ALL SERVICES.

MISCELLANEOUS

DRAWING REFERENCE NO. 7324-00-FEA-0102.DWG
LAYER STATE: 20150907
DATE OF FIELD SURVEY: 01/09/2015, 04/09/2015, 06/10/2015 & 07/10/2015



0 10 20 30 40 50

THIS LINE REPRESENTS 50.0 METRES.
SCALE 1 : 500

CLIENT

DIANNE ELDERFIELD

PROJECT

825-835 YAN YEAN RD DOREEN

TITLE

SITE PLAN
EXISTING CONDITIONS

PROJECT No	7324	DATE	09.10.2015
DRAWN	JO	CHECKED	GC
ORIGINAL	A1 SCALE	1:500	VERSION 02
	A3 SCALE	1:1000	
SHEET No	SHEET No. 1 OF 1		

LAYER STATE: 20150907 DRAWING REF: 7324-00-FEA-0102.DWG

Appendix 6 - SJE - Drainage Report

From: Ankit Shah [mailto:Ankit.Shah@whittlesea.vic.gov.au]
Sent: Friday, 10 June 2016 9:41 AM
To: Chadia Chahoud
Subject: RE: Re: 815 - 835 Yan Yean Road, Doreen

Hi Chadia,

The attached drainage strategy and catchment plans are now acceptable Council.

If you have any questions regarding the above, please call me on 9217 2166.

Regards,

Ankit Shah
Development Engineer
City Design and Transport
City of Whittlesea

Phone: (03) 9217 2166
Fax: (03) 94099862
TTY: (03) 92172420
Email: DevelopmentEngineering@whittlesea.vic.gov.au
Email. Ankit.Shah@whittlesea.vic.gov.au
Web Address: http://www.whittlesea.vic.gov.au
Street Address: Civic Centre, 25 Ferres Boulevard, South Morang 3752 (Melway 183 A10)
Postal Address: Locked Bag 1, Bundoora MDC, 3083

From: Chadia Chahoud
Sent: Tuesday, 26 April 2016 12:29 PM
To: 'ankit.shah@whittlesea.vic.gov.au'
Cc: Gary Coles (colesg@hhsurvey.com.au)
Subject: Re: 815 - 835 Yan Yean Road, Doreen

Ankit,

As per our discussions find attached the plans that show the 100yr flow paths and the direction of fall. We don't have a copy of the overland flow paths from the previous estate but reviewing the contours and the steepness of the site the over land flow paths would follow the existing contours.

As for the WUSD, if that can be a condition in the permit that we contact MW for their requirements on this. The site will not allow any WUSD due to the steepness. Also the downstream subdivision has a wetland which I would be sure that it would of catered for the upstream developments as well.

Could you advise if you need any other information to address your comments.

Thank you for your time.

Regards,
Chadia Chahoud
Civil Engineering Manager
738 High Street, Epping
PO Box 1018 VIC 3076
Phone (03) 8405 3377
Fax (03) 9408 8680
Mb: 0488 333 846
chadia@sje.com.au

30 November 2015

Dear Gary,

Re: 825-835 Yan Yean Road, Doreen - Drainage

Stormwater Drainage

Discussions with Whittlesea City Council and information supplied by Council indicate that Council drains run along the road reserve of Orchard Road, Counthan Tce and Von Guerard Pde. The catchment plan provided of the abutting subdivision shows that both sites 825 and 835 can cater for the 5yr storm event via the existing pipe networks constructed along these roads.

The Overland flows will be directed within the road reserves to match the existing topography of the site.

The road layouts have been designed to take into consideration the existing topography of the site and the requirements of the CFA with longitudinal road grading's and steepness of the site.

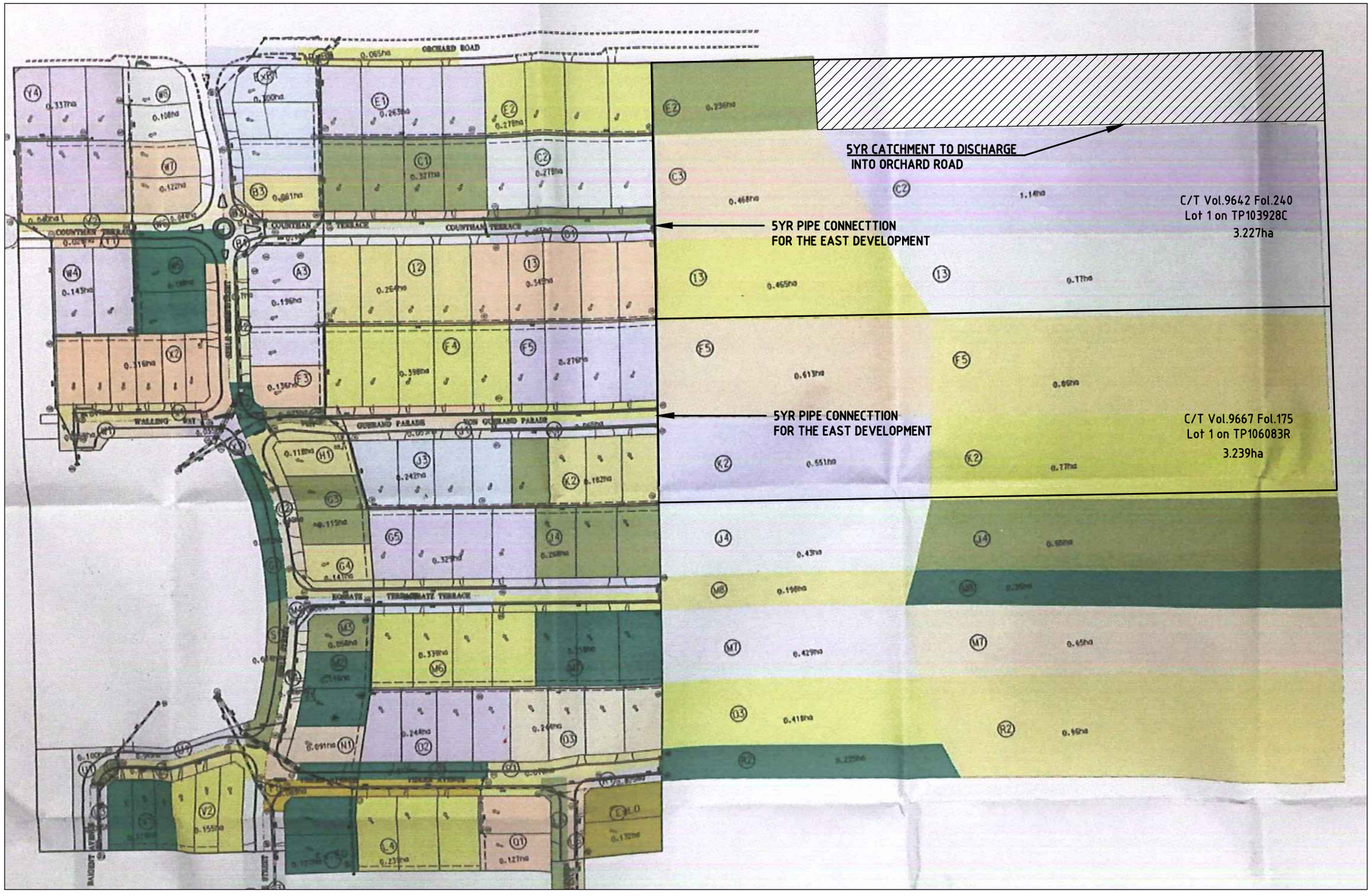
The site will not provide WUSD via a wetland or treatment system. It will have to be a offset contribution set by Melbourne Water.

Refer to the attached plans showing the overland flow paths and the 5yr existing stormwater pipes and our proposed connections via the existing subdivision.

Regards

Chadia Chahoud
Civil Engineering Manager
SJE Consulting
chadia@sje.com.au

M.G.A 94
ZONE 55

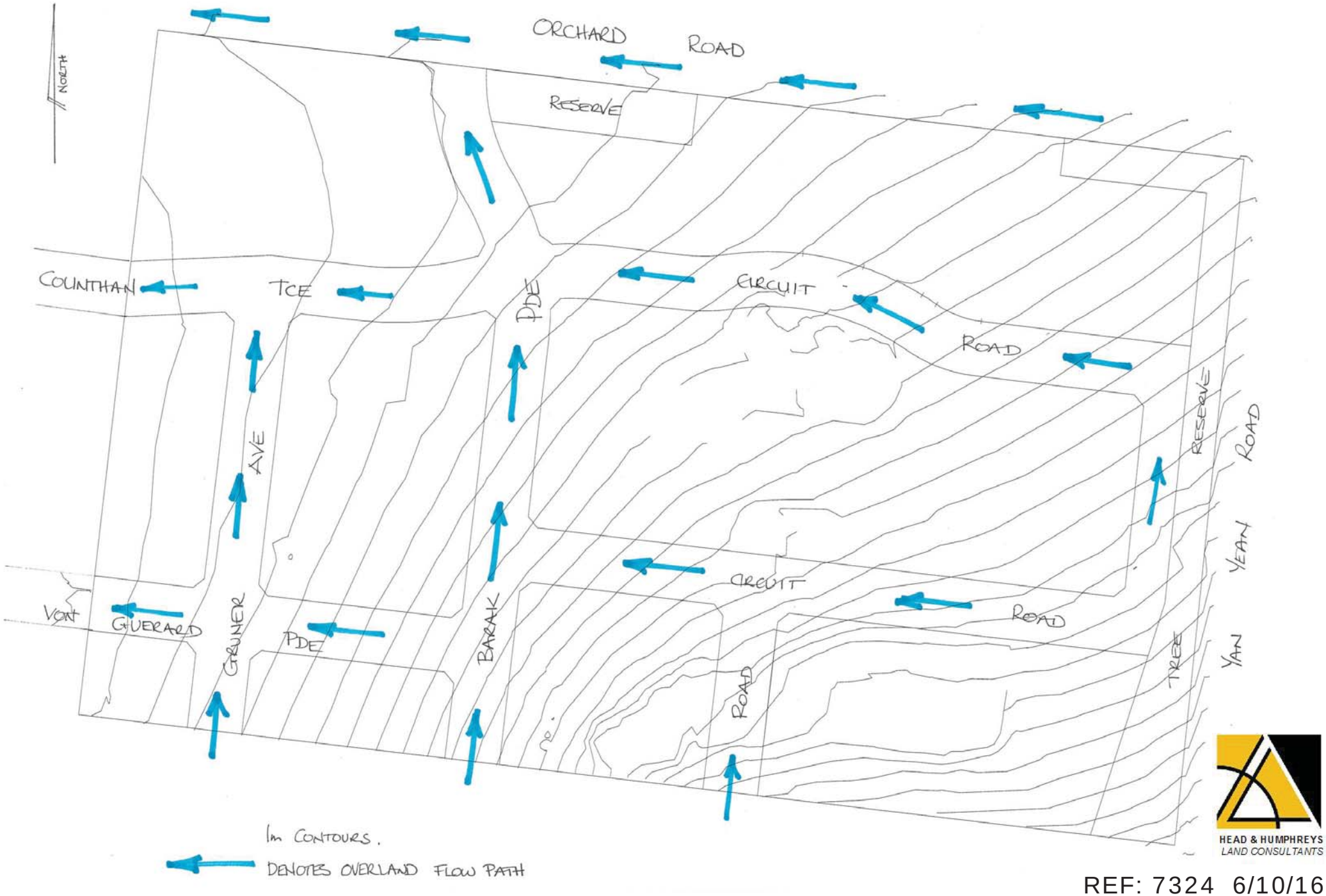


N.T.S

5YR FLOW
825-835 YAN YEAN ROAD
PREPARED ON 26/11/2015
SHEET 2 OF 2

SJE Consulting
738 HIGH STREET, EPPING, V.I.C. 3076
PH:(03) 8405 3377 FAX:(03) 9408 8680 EMAIL:CONSULTING@SJE.COM.AU

OVERLAND FLOW PATHS FOR 825-835 YAN YEAN RD, DOREEN



HEAD & HUMPHREYS
LAND CONSULTANTS

REF: 7324 6/10/16

Appendix 7 - GTA - Traffic Report

Reference: #16M1384000

13 October 2016

City of Whittlesea
C/- Head & Humphreys Pty Ltd
Suite 3/47 Railway Road
BLACKBURN VIC 3130
sent via email: colesg@hhsurvey.com.au

Attention: Mr. Gary Coles

Dear Gary

RE: 825-835 YAN YEAN ROAD, DOREEN – PROPOSED RESIDENTIAL SUBDIVISION (AMENDED DEVELOPMENT PLAN)

Background & Proposal

Approval for a development plan is currently being sought for a proposed residential subdivision at 825-835 Yan Yean Road in Doreen. The proposed development incorporates 93 lots, including the retention of three existing dwellings following subdivision. The current subdivision plan (excerpt) is included in Attachment A, which has recently been amended based on recent discussions with Council.

GTA Consultants was originally commissioned by Head & Humphreys Pty Ltd in October 2015 to provide traffic and transport advice, and most recently to prepare a transport impact assessment of the proposed residential subdivision (amended development plan) with due regard to Clause 56 of the Whittlesea Planning Scheme, Whittlesea Council's Guidelines for Urban Development and various MPA guidelines (as required).

Subject Site

The subject land is located at 825-835 Yan yean Road, Doreen and is bound by Orchard Road to the north and Yan Yean Road to the east. To the south of the subject land there is a property known as lot 815 Yan Yean Road, noting that is not part of the subject land and associated development plan application[1].

[1] A concept subdivision plan for 815 Yan Yean Road prepared by Head & Humphries (to confirm that the proposal wouldn't impede development to the south and would also link to existing residential areas to the south) indicates an indicative yield of approximately 40 lots could potentially be provided.

melbourne
sydney
brisbane
canberra
adelaide
gold coast
townsville
perth

Level 25, 55 Collins Street
MELBOURNE VIC 3000
PO Box 24055
MELBOURNE VIC 3000
t// +613 9851 9600

www.gta.com.au

Road Network

Yan Yean Road

Yan Yean Road is a major road in the vicinity of the subject land and is located within a Road Zone 2 (RZ2). Yan Yean Road is a two lane carriageway in the vicinity of the subject land, with sealed shoulders on both sides and is set within a 20 metre road reserve (approximate).

Orchard Road

Orchard Road is a local street and is aligned in an east-west direction, configured with a 7 metre carriageway and set within a 20 metre wide road reserve (approximate).

Orchard Road carries approximately 4,000[2] vehicles per day in the vicinity of the subject land.

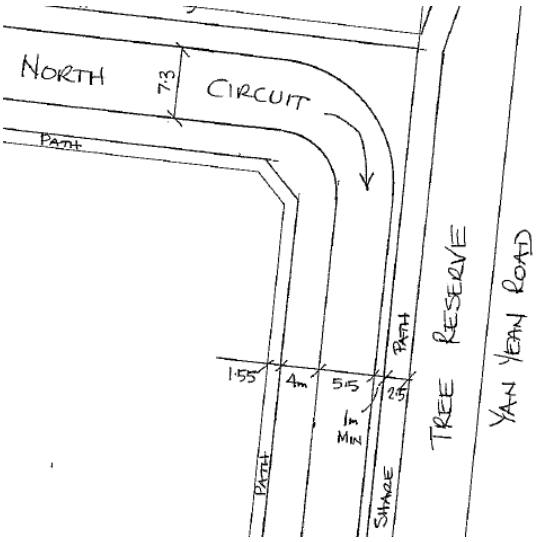
Proposed Road Network

The overall development plan is reproduced in Figure 1, and all roads include 'standard' 16m local access streets, excluding the internal loop road (Yan Yean Road frontage road section) which comprises a 12m road previously agreed with Council shown in Figure 2.

Figure 1: Proposed Overall Development Plan – 815-835 Yan Yean Road, Doreen

[2] Based on peak hour traffic counts commissioned by GTA Consultants on 12 November 2015 and applying a peak to daily ratio of 8% for arterial roads and 10% for local roads.

Figure 2: 12m Internal Loop Road



A summary of the characteristics of the proposed internal roads is provided in Table 1.

Table 1: Proposed Internal Roads – Road Configuration

Street Type	Road Reserve	Carriageway	Parking Provision	Pedestrian and Cyclist Provisions	Indicative Amenity Capacity Threshold
Access Street	16.0m	7.3m	Kerbside parking on both sides of carriageway	1.5m (min) pedestrian paths on both sides of carriageway	<2,000vpd
Access Street (loop road / Yan Yean Rd frontage)	12.0m	5.5m	Parking on one side of carriageway only.	1.5m (min) pedestrian path on one side of carriageway and 2.5m shared path within adjacent tree reserve	

[1] No stopping signage to be provided in proximity to bends in the road to accommodate swept path requirements.

The above 16m access street cross section complies with VPA's Engineering Guidelines and contemporary transport planning practice. The proposed 12m loop road (Yan Yean Rd frontage road) has been developed in consultation, and with agreement, with Council and is generally consistent with minimum Access Street requirements under Clause 56 of the Planning Scheme. Both internal road types are therefore considered appropriate.

Internal Road Layout

The internal road network has been designed with adequate spacing between intersections, and to avoid any cross-intersections, where possible. Street blocks are generally between 120 and 240 metres in length and generally between 60 and 120 metres in width as per the requirements of Clause 56.06 of the Whittlesea Planning Scheme.

There are two cross intersections proposed at Barak Parade / Counthan Terrace / "North" Circuit and Gruner Avenue / Von Guerard Pde. The former is understood to be a roundabout controlled intersection, and following direction from Council, the latter is proposed to be a priority controlled cross intersection by the applicant.

It is recommended that appropriate ROW splays are provided for the proposed Barak Parade / Counthan Terrace / "North" Circuit roundabout, and an east-west priority be provided at the Gruner Avenue / Von Guerard Parade cross intersection.

A single hammerhead treatment is anticipated on Lot 815 Yan Yean Road. The hammerhead treatment has been design to accommodate a 10.5m refuse collection truck[3] with a swept path assessment demonstrating satisfactory access provided in Attachment B.

Walking Network

All internal roads are proposed with 1.5m (min) pedestrian paths on both sides (excluding the proposed access street loop road which has a 1.5m path on one side and a 2.5m shared path within the adjacent tree reserve), and a pedestrian path is also proposed along the subject land's Orchard Road frontage (within the Orchard Road road reserve).

In terms of external connections, the pedestrian path network links to existing pedestrian links on Counthan Terrace, Von Guerard Parade, Kossatz Terrace, Orchard Road and Yan Yean Road.

Traffic Impact Assessment

Existing Conditions

GTA commissioned traffic surveys of the Orchard Road / Vaucluse Rise intersection on Thursday 12 November 2015 between 8:00am-9:00am and 5:00pm-6:00pm with results shown in Figure 3and Figure 4.

Figure 3: Existing Traffic Volumes – AM Peak

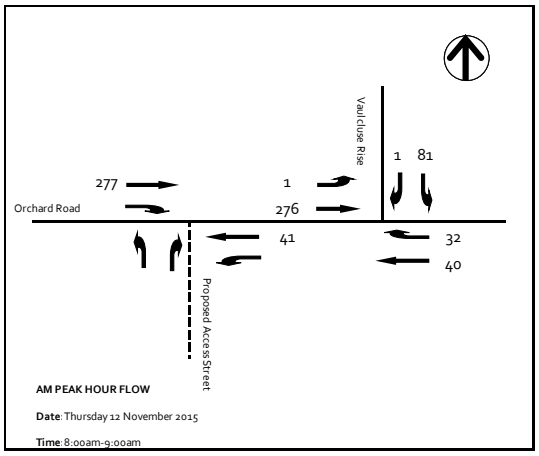
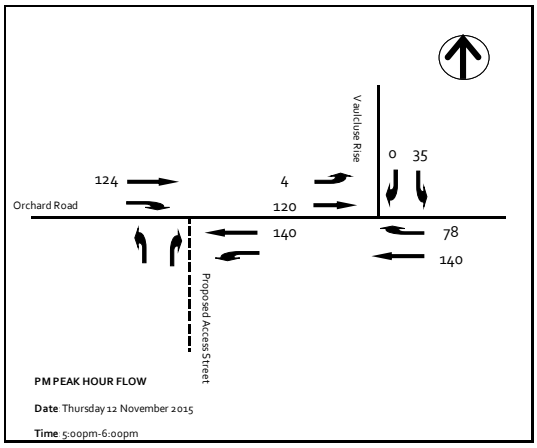


Figure 4: Existing Traffic Volumes – PM Peak



The operation of the Orchard Road / Vaucluse Drive intersection under existing conditions has been assessed using *SIDRA INTERSECTION*[4], a computer based modelling package which calculates intersection performance.

The commonly used measure of intersection performance is referred to as the *Degree of Saturation (DOS)*. The DOS represents the flow-to-capacity ratio for the most critical movement on each leg of the intersection.

[3] Hobsons Bay Council's refuse collection truck – largest Council refuse collection truck within GTA's vehicle library for *any* Council

[4] Program used under license from Akcelik & Associates Pty Ltd.

For un-signalised intersections, a DOS of around 0.90 has been typically considered the 'ideal' limit, beyond which queues and delays increase disproportionately[5].

Table 2 presents a summary of the existing operation of the intersection, with full results presented within Attachment C.

Table 2: Orchard Road / Vaucluse Rise – Existing Operating Conditions

Peak Hour	Approach	DOS	Average Delay (sec)	95th Percentile Queue (m)
AM	Orchard Road (East)	0.05	5 sec	2 m
	Vaucluse Rise (North)	0.10	10 sec	3 m
	Orchard Road (West)	# 0.15	-	-
PM	Orchard Road (East)	# 0.14	4 sec	6 m
	Vaucluse Rise (North)	0.04	9 sec	1 m
	Orchard Road (West)	0.07	-	-

DOS – Degree of Saturation, # - Intersection DOS

Table 2 demonstrates that the intersection of Orchard Road / Vaucluse Rise currently operates with excellent service levels with minimal queues and delays on all approaches.

Development Traffic Generation

The Victorian Integrated Survey of Travel Activity (VISTA) is a survey of personal travel for residents in each of the Melbourne municipalities and major regional centres in Victoria. Travel data collated provided data regarding the number of trips each household generated, including vehicle (passenger and driver), public transport, walking and cycling trips. Specifically, the most recent data for Whittlesea (2009) indicates a car generation rate of 5.4 movements per household. It is noted that this data does not distinguish between various housing types, i.e. detached, medium density or apartment types or indeed location (municipality wide).

It is expected that dwellings in the area would generate traffic movements at a slightly higher rate given the subject land's location and lack of nearby neighbourhood activity, local town centre and other activity centres. To this end, GTA expects a rate of up to 8 vehicle movements per household per day to be appropriate.

Notwithstanding, to provide a conservative assessment (on the high side) a traffic generation rate of 10 vehicle movements per household per day has been assumed for this analysis. Application of this rate to the 93 proposed residential lots equates to a total of up to 930 vehicle movements per day and 93 vehicle movements in any peak hour.

With regard to the 40 additional lots within Lot 815, the development proposal and 815 Yan Yean Road could be expected to generate up to 1,330 vehicle trips per day with approximately 133 of these occurring in both the AM and PM peak periods.

[5] SIDRA INTERSECTION adopts the following criteria for Level of Service assessment:

		Intersection Degree of Saturation (X)	
		Unsignalised Intersection	Signalised Intersection
A	Excellent	<=0.50	<=0.60
B	Very Good	0.50-0.70	0.60-0.75
C	Good	0.70-0.80	0.75-0.90
D	Acceptable	0.80-0.90	0.90-0.95
E	Poor	0.90-1.00	0.95-1.00
F	Very Poor	>=1.0	>=1.0

The following assessment has been undertaken assuming development of both 825-835 Yan Yean Road and 815 Yan Yean Road (which is not part of the subject land) and assumes:

- All vehicle movements to and from the subject land (including 815 Yan Yean Road) enter and exit via the proposed Barak Parade / Orchard Road T-intersection, and
- The existing residential development further south is expected to continue to access Orchard Road via Vidler Avenue, Jorgensen Avenue and the Serle Street Connector Road (as per existing arrangements).

Immediate Post Development Conditions

Based on the traffic generation volumes specified above Figure 5 and Figure 6 have been prepared to show the anticipated development generated traffic volumes based on existing traffic distributions in the area.

Specifically, the distribution of traffic to/from the development has been assumed that all traffic travels/to from the east of the subject land which is generally consistent with existing conditions at the Vaucluse Rise intersection. Further a 20%/80% and 60%/40% IN/OUT split has been assumed in the AM and PM peak hours.

The immediate post development traffic volumes are then summarised in Figure 7 and Figure 8.

Figure 5: Site Generated Traffic – AM Peak

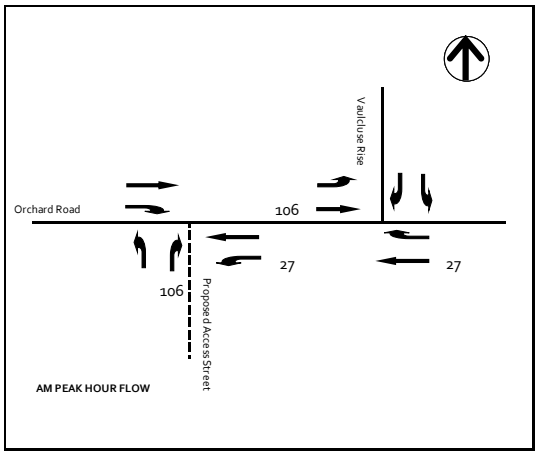


Figure 6: Site Generated Traffic– PM Peak

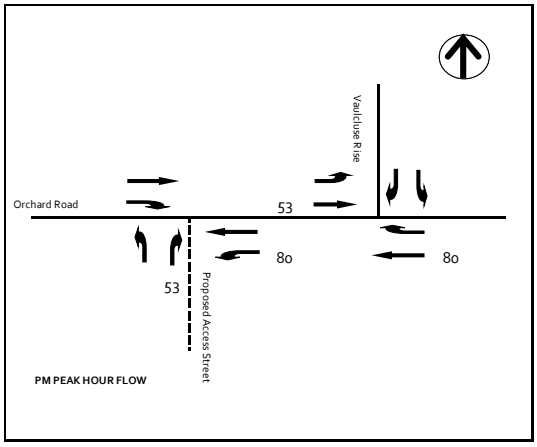


Figure 7: Post Development Volumes – AM Peak

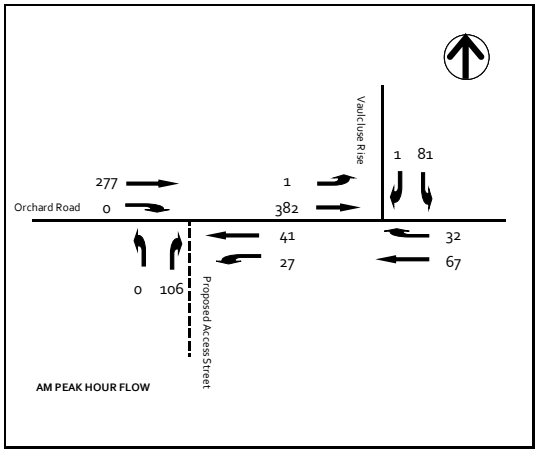
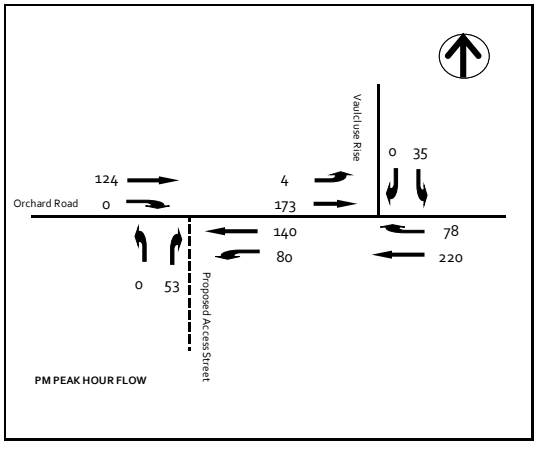


Figure 8: Post Development Volumes – PM Peak



Intersection Operation

The operation of the Orchard Road/Barak Parade as well as the Orchard Road / Vaucluse Drive intersections under post development conditions has been assessed using *SIDRA INTERSECTION*, a computer based modelling package which calculates intersection performance.

Table 3 and Table 4 presents a summary of the anticipated post development operating conditions of the intersections, with full results presented within Attachment C.

Table 3: Orchard Road / Vaucluse Rise – Post Development Operating Conditions

Peak Hour	Approach	DOS	Average Delay (sec)	95th Percentile Queue (m)
AM	Orchard Road (East)	0.07	5 sec	3 m
	Vaucluse Rise (North)	0.12	11 sec	3 m
	Orchard Road (West)	# 0.21	-	-
PM	Orchard Road (East)	# 0.19	3 sec	9 m
	Vaucluse Rise (North)	0.04	9 sec	1 m
	Orchard Road (West)	0.10	-	-

DOS – Degree of Saturation, # - Intersection DOS

Table 4: Orchard Road / Barak Parade – Post Development Operating Conditions

Peak Hour	Approach	DOS	Average Delay (sec)	95th Percentile Queue (m)
AM	Barak Parade (South)	# 0.21	13 sec	6 m
	Orchard Road (East)	0.04	3 sec	-
	Orchard Road (West)	0.15	-	7 m
PM	Barak Parade (South)	0.10	12 sec	3 m
	Orchard Road (East)	# 0.12	3 sec	-
	Orchard Road (West)	0.07	1 sec	3 m

DOS – Degree of Saturation, # - Intersection DOS

The above analysis demonstrates that the intersections of Orchard Road / Vaucluse Rise and the proposed Orchard Road / Barak Parade are anticipated to operate with an excellent level of service with minimal queues and delays on all approaches. Importantly, the spacing/stager of the intersection is approximately 50m, noting that no (95th percentile) queuing events from either intersection could be expected to queue back into the next intersection.

Furthermore, it is understood that Council has queried the adequacy of a single access point from the development to Orchard Road. Based on the SIDRA intersection assessment results it is evident that the provision of a single access point from the development to Orchard Road is appropriate in this instance.

Other Considerations

Yan Yean Road / Orchard Road ROW Intersection Splay

It is understood that no approved intersection designs currently exist for the Yan Yean Road / Orchard Road intersection. As noted by Council, ultimately this intersection will be upgraded to form a signalised Arterial Road / Connector Road intersection.

In the absence of approved functional layout plan(s) it is noted that verge width / tree reserve to the north and east of the site fronting Orchard Road and Yan Yean Road respectively is expected to be sufficient to allow for future signalisation of the intersection.

Barak Parade / Orchard Road Intersection Treatment

It is understood that due to concerns regarding vehicle speed on Orchard Road and the 'strategic need' to provide a continuous north-south link, Council have previously suggested that Barak Parade be realigned to form a four-way roundabout intersection with Vaucluse Rise.

In the first instance reference is made to the Mernda Strategy Plan and it is noted that there is no nominated 'key local access road' or 'connector road' providing a continuous north-south link between the residential (only) areas north and south of Orchard Road, either of which would indicate that a continuous north-south road link is required.

The Mernda Strategy Plan does however nominate north-south aligned Connector Roads to the west of the subject land. These have been constructed as a continuous north-south Connector Road link (i.e. Garden Road and Serle Street) and is approximately spaced 500m from Yan Yean Road. This north-south road is ideally located to provide for north-south traffic movements in the local area. On this basis, it is GTA's view that there is no need or requirement for a continuous north-south local access road link to be provided as an extension of Barak Parade (to connect to Vaucluse Rise).

Given that the areas north and south of Orchard Road are both residential areas and do not contain local town centres or neighbourhood activity centres it is considered that very few residents will want to travel across Orchard Road to the north or south. If they do, the Garden Road / Serle Street Connector Streets are provided to accommodate this, in addition to Yan Yean Road.

Moreover, the provision of a continuous north-south local access road link will, as noted by Council require the provision of a roundabout controlled four-way intersection. Noting that no Vaucluse Rise ROW splay provision has been made for the already constructed land to the north, provision of a roundabout in this location will have undue land take requirements for the land on the south side of Orchard Road (i.e. the subject land).

Due to the existing tree reserve on the southern side of Orchard Road a physical raised splitter island cannot be provided on the eastern and western approaches to the Barak Parade T-intersection with Orchard Road. This is due to the requirement for islands to be a minimum of 1.2m to allow for the installation of signage to ensure they are visible to drivers. It is our view that a narrower painted island would not be effective in reducing vehicle speeds at Barak Parade and may create confusion for motorists who may not see the linemarking in some conditions due to rain or sun glare. It is noted that Council has recently installed speed humps approximately 120m east and 30m west of the proposed Barak Parade intersection. These treatments are anticipated to represent the most effective method of control for vehicle speeds throughout the aforementioned section of road.

Summary

On the basis of the above analysis and discussion I note the following:

i The proposed road network, road configurations is generally consistent with the requirements of VPA's Engineering Guidelines, the Whittlesea Planning Scheme and Guidelines for Urban Development, and is considered to be appropriate and to satisfactorily provide for safe and efficient movement of people within the subject land.

ii The single proposed hammerhead treatment has been assessed using vehicle swept paths for a number of design vehicles and has been found to provide satisfactory manoeuvring space for refuse collection entry and exit movements.

iii The proposed Barak Parade / Counthan Terrace / "North" Circuit roundabout, and Council agreed Gruner Avenue / Von Guerard Parade cross-intersection are considered to be appropriate subject to the latter being an east-west priority intersection.

iv Providing access from Orchard Road is considered to be appropriate and has more than sufficient intersection capacity under post development conditions.

v It is not considered necessary or warranted to provide a four-way roundabout intersection for Orchard Road / Barak Parade / Vaucluse Rise for a number of reasons, including:

- It is considered that there is no need to provide a continuous north-south link across Orchard Road given it is expected that this people will travel in this direction, there is already a north-south connector road link provided to the west of the subject land.
- The ROW splays on Vaucluse Rise have not been designed to accommodate a connector road 'standard' roundabout and provision of a roundabout in this location (or anywhere else along the subject land's frontage) will have undue land take requirements on the subject land.
- It is expected that a continuous north-south local access road link will raise the role of these roads in the road network hierarchy and may have unintended consequences such as rat running, potential speed issues, etc.

I trust the above is clear and consistent with your expectations. Naturally, should you have any questions or require any further information, please do not hesitate to contact Ben Simpson or me in our Melbourne office on (03) 9851 9600.

Yours sincerely

GTA CONSULTANTS

Simon Davies
Director

Attachment A

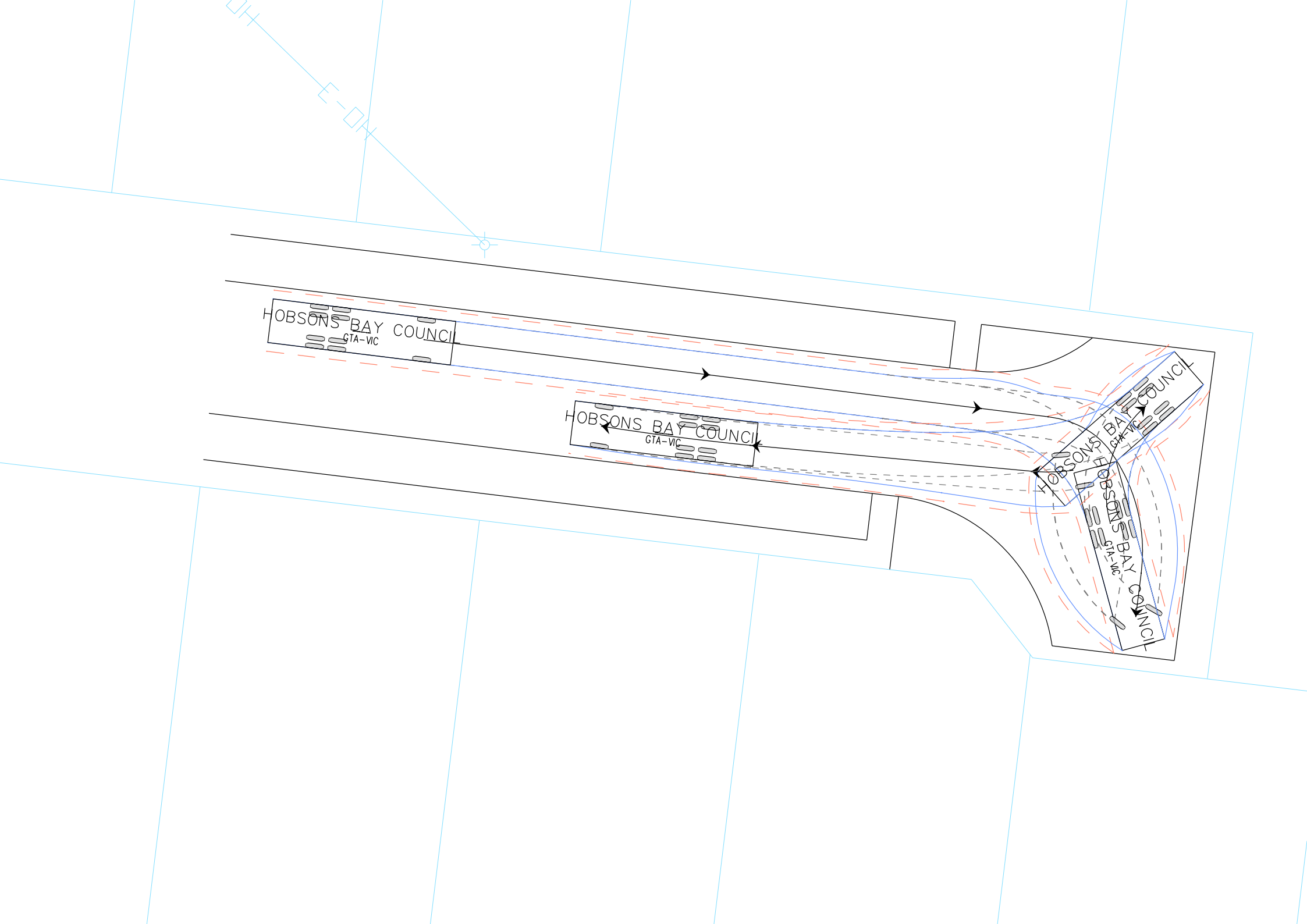
Subdivision Plan 7324 dated 29/09/16

1:2000 @ A4

7324
29/9/16

Attachment B

Hammerhead Swept Path Assessment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Attachment C

SIDRA Intersection Results

MOVEMENT SUMMARY

Site: AM Peak - Existing Conditions

Orchard Road & Vaucluse Rise Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Orchard Road (East Approach)											
5	T	42	2.0	0.053	1.3	LOS A	0.3	2.0	0.38	0.00	52.2
6	R	34	2.0	0.053	9.8	LOS A	0.3	2.0	0.38	0.81	48.2
Approach		76	2.0	0.053	5.1	NA	0.3	2.0	0.38	0.36	50.3
North: Vaucluse Rise (North Approach)											
7	L	85	2.0	0.100	9.9	LOS A	0.4	2.6	0.39	0.70	47.2
9	R	1	2.0	0.100	10.1	LOS B	0.4	2.6	0.39	0.79	47.0
Approach		86	2.0	0.100	9.9	LOS A	0.4	2.6	0.39	0.70	47.2
West: Orchard Road (West Approach)											
10	L	1	2.0	0.151	8.2	LOS A	0.0	0.0	0.00	1.09	49.0
11	T	291	2.0	0.151	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		292	2.0	0.151	0.0	NA	0.0	0.0	0.00	0.00	60.0
All Vehicles		454	2.0	0.151	2.8	NA	0.4	2.6	0.14	0.20	55.3

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: PM Peak - Existing Conditions

Orchard Road & Vaucluse Rise Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Orchard Road (East Approach)											
5	T	147	2.0	0.141	0.6	LOS A	0.8	5.6	0.27	0.00	54.4
6	R	82	2.0	0.141	9.1	LOS A	0.8	5.6	0.27	0.83	48.5
Approach		229	2.0	0.141	3.6	NA	0.8	5.6	0.27	0.30	52.1
North: Vaucluse Rise (North Approach)											
7	L	37	2.0	0.037	8.9	LOS A	0.1	0.9	0.24	0.62	47.9
9	R	1	2.0	0.037	9.1	LOS A	0.1	0.9	0.24	0.74	47.8
Approach		38	2.0	0.037	8.9	LOS A	0.1	0.9	0.24	0.63	47.9
West: Orchard Road (West Approach)											
10	L	4	2.0	0.068	8.2	LOS A	0.0	0.0	0.00	1.07	49.0
11	T	126	2.0	0.068	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		131	2.0	0.068	0.3	NA	0.0	0.0	0.00	0.03	59.6
All Vehicles		398	2.0	0.141	3.0	NA	0.8	5.6	0.18	0.24	53.9

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: AM Peak - Post Development

Orchard Road & Vaucluse Rise Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Orchard Road (East Approach)											
5	T	71	2.0	0.073	2.0	LOS A	0.4	3.1	0.46	0.00	51.0
6	R	34	2.0	0.073	10.5	LOS B	0.4	3.1	0.46	0.88	48.0
Approach		104	2.0	0.073	4.8	NA	0.4	3.1	0.46	0.28	50.0
North: Vaucluse Rise (North Approach)											
7	L	85	2.0	0.116	10.8	LOS B	0.4	3.0	0.47	0.76	46.3
9	R	1	2.0	0.116	11.0	LOS B	0.4	3.0	0.47	0.85	46.1
Approach		86	2.0	0.116	10.9	LOS B	0.4	3.0	0.47	0.76	46.2
West: Orchard Road (West Approach)											
10	L	1	2.0	0.209	8.2	LOS A	0.0	0.0	0.00	1.09	49.0
11	T	402	2.0	0.209	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		403	2.0	0.209	0.0	NA	0.0	0.0	0.00	0.00	60.0
All Vehicles		594	2.0	0.209	2.4	NA	0.4	3.1	0.15	0.16	55.6

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: PM Peak - Post Development

Orchard Road & Vaucluse Rise Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Orchard Road (East Approach)											
5	T	232	2.0	0.189	0.9	LOS A	1.2	8.5	0.35	0.00	53.1
6	R	82	2.0	0.189	9.4	LOS A	1.2	8.5	0.35	0.87	48.6
Approach		314	2.0	0.189	3.1	NA	1.2	8.5	0.35	0.23	51.8
North: Vaucluse Rise (North Approach)											
7	L	37	2.0	0.040	9.3	LOS A	0.1	1.0	0.30	0.64	47.7
9	R	1	2.0	0.040	9.5	LOS A	0.1	1.0	0.30	0.78	47.6
Approach		38	2.0	0.040	9.3	LOS A	0.1	1.0	0.30	0.64	47.7
West: Orchard Road (West Approach)											
10	L	4	2.0	0.097	8.2	LOS A	0.0	0.0	0.00	1.08	49.0
11	T	182	2.0	0.097	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		186	2.0	0.097	0.2	NA	0.0	0.0	0.00	0.02	59.7
All Vehicles		538	2.0	0.189	2.6	NA	1.2	8.5	0.23	0.19	54.0

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: AM Peak - Post Development

Orchard Road & Proposed Street Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Proposed Street (South Approach)											
1	L	1	2.0	0.214	12.7	LOS B	0.9	6.2	0.53	0.52	44.3
3	R	112	2.0	0.214	13.0	LOS B	0.9	6.2	0.53	0.82	44.2
Approach		113	2.0	0.214	13.0	LOS B	0.9	6.2	0.53	0.82	44.2
East: Orchard Road (East Approach)											
4	L	28	2.0	0.038	8.3	LOS A	0.0	0.0	0.00	0.87	49.0
5	T	43	2.0	0.038	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		72	2.0	0.038	3.3	NA	0.0	0.0	0.00	0.34	55.1
West: Orchard Road (West Approach)											
11	T	292	2.0	0.152	0.3	LOS A	1.0	6.8	0.20	0.00	56.2
12	R	1	2.0	0.152	8.7	LOS A	1.0	6.8	0.20	1.04	48.9
Approach		293	2.0	0.152	0.3	NA	1.0	6.8	0.20	0.00	56.1
All Vehicles		477	2.0	0.214	3.8	NA	1.0	6.8	0.25	0.25	52.6

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: PM Peak - Post Development

Orchard Road & Proposed Street Intersection
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Proposed Street (South Approach)											
1	L	1	2.0	0.102	11.8	LOS B	0.4	2.8	0.48	0.63	45.1
3	R	56	2.0	0.102	12.1	LOS B	0.4	2.8	0.48	0.77	45.0
Approach		57	2.0	0.102	12.1	LOS B	0.4	2.8	0.48	0.76	45.0
East: Orchard Road (East Approach)											
4	L	84	2.0	0.123	8.3	LOS A	0.0	0.0	0.00	0.88	49.0
5	T	147	2.0	0.123	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		232	2.0	0.123	3.0	NA	0.0	0.0	0.00	0.32	55.5
West: Orchard Road (West Approach)											
11	T	131	2.0	0.069	1.0	LOS A	0.5	3.3	0.38	0.00	53.3
12	R	1	2.0	0.069	9.4	LOS A	0.5	3.3	0.38	0.98	49.2
Approach		132	2.0	0.069	1.0	NA	0.5	3.3	0.38	0.01	53.3
All Vehicles		420	2.0	0.123	3.6	NA	0.5	3.3	0.18	0.28	53.1

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model used.

Appendix 8 - Tree Wishes – Vegetation Reports 825 & 835 Yan Yean Road

Tree Assessment Report

Proposed Subdivision

835 Yan Yean Road

Doreen

October 2016

Tree Wishes
land care advice

Report Title	**Tree Assessment Report; Proposed Subdivision, 835 Yan Yean Road, Doreen**
Report directed by	Dean Platt[1]
Report written by	Tania Begg[2]
Acknowledgements	Craig Lockens[3]
Internal editing	Dean Platt[1]
Previous Versions	May 2016, December 2015, February 2016

1 – Principal Consultant, Tree Wishes – Master of Environment (Uni Melb); GDip (Land Rehabilitation); BApSc (Biological Resources Management); ASSSI (member)

2 – Project Manager – Dip. ApSc. (Conservation and Land Management)

3- Consultant Arborist – Associate Diploma Horticulture (arb) Burnley

Disclaimer: Although Tree Wishes have taken all reasonable steps to ensure that an accurate document has been prepared, the company accepts no liability for any damages or loss incurred as a result of reliance placed upon the report or its content.

Report prepared by Tree Wishes

Tree Wishes land care advice
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0407 500 767
treewishes@optusnet.com.au

Introduction

As part of plans to subdivide land at 835 Yan Yean Road Doreen some vegetation removal is required.

There are a number of non-indigenous planted trees and shrubs on the property, some of which are native, however they do not fall under the influence of the Biodiversity Assessment Guidelines.

The site is covered by a Vegetation Protection Overlay (VPO) which relates to preserving existing trees, Schedule 1 of the overlay relates specifically to native vegetation.

The indigenous trees on the property are Red Gums (*Eucalyptus camaldulensis*). The only other indigenous species recorded at the site were individual Climbing Saltbush (*Eidnadia nutans*), Berry Saltbush (*Atriplex semibaccata*), Kidney Weed (*Dichondra repens*) and Weeping Grass (*Microlaena stipoides*). An inspection of the property by Tree Wishes ecological consultant and competent Vegetation Quality Assessor Tania Begg determined that the cover of these understorey species was below 25% and as such is not classified as a remnant patch.

No remnant patches or scattered trees classified as indigenous vegetation will be removed a part of this proposal; with the exception of some regenerating juvenile Red Gums (*Eucalyptus camaldulensis*) less than 10 years old, which have self-sown in an area previously cleared, with no remaining understorey vegetation. This regeneration cannot be practically retained as the dam is removed. Tree 2 is also a regenerating Red Gum to be removed due to damage and risk as per council's direction. Planting of *Eucalyptus camaldulensis* will occur within the proposed reserves to compensate for the loss of the regenerating Red Gums. Council's Arborist has directed the removal of tree 3, a large Red Gum (*Eucalyptus camaldulensis*) due to truck damage and public safety.

A large Red Gum within the property and several along the roadside adjoining the property will be avoided as part of the project, protected during development, and incorporated into reserves.

Some of the non-indigenous trees along Yan Yean Road will be avoided if shared pathways and road pavements permit; they will be retained and will be protected as part of the development, and will be incorporated into a reserve.

The critical root zones of the trees being retained will be protected during development to ensure that no impact occurs.

Table One details the indigenous trees at the site, and outlines the non-indigenous species also present.

Table One: Tree details.

No	Scientific Name	Common name	Life Form	DBH (cm)	TPZ (m)	Height (m)	Status	Structure	Health	ULE (Yrs)	Retention rating	Retain/ Remove
1	*Corymbia ficifolia*	Flowering Gum	T	24.8	3	3	Non-indigenous Native	G	F	21-50	G	Remove
2	*Eucalyptus camaldulensis*	Red Gum	UT	6.4	0.8	4	Indigenous	F	F	>50	F	Remove
3	*Eucalyptus camaldulensis*	Red Gum	T	125.2	n/a	19	Indigenous Remnant	F	F	>50	F	Remove
4	*Eucalyptus sideroxylon*	Ironbark	T	82.2	9.9	8	Non-indigenous Native	G	G	21-50	G	Remove
5	*Melaleuca armillaris*	Bracelet Honey Myrtle	S	n/a	n/a	4	Non-indigenous Native	G	G	5-20	G	Remove
6	*Cupressus sp.*	Cypress	S	n/a	n/a	7	Non-indigenous Exotic	F-P	F-P	0	P	Remove
7	*Picea sp.*	Blue Pine	T	14.3	1.7	4	Non-indigenous Exotic	F	F	<5	P	Remove
8	*Kunzea ericoides*	Burgan	S	n/a	n/a	2	Non-indigenous Native	P	F	0	P	Remove
9	*Picea sp.*	Blue Pine	T	9.6	1.1	4	Non-indigenous Exotic	F-P	F-P	0	P	Remove
10	*Leptospermum laevigatum*	Coastal Teatree	S	n/a	n/a	3	Non-indigenous Native	F-P	F-P	0	P	Remove
11	*Leptospermum laevigatum*	Coastal Teatree	S	n/a	n/a	3	Non-indigenous Native	G	G	5-20	P	Remove
12	*Eucalyptus botryoides*	Bangalay	T	38.5	4.6	8	Non-indigenous Native	G	G	5-20	G	Remove
13	*Eucalyptus nicholii*	Narrow-leaved Black Peppermint	T	35.7	4.3	9	Non-indigenous Native	G	G	21-50	G	Remove
14	*Eucalyptus nicholii*	Narrow-leaved Black Peppermint	T	43.6	5.2	10	Non-indigenous Native	G	G	21-50	G	Remove
15	*Eucalyptus sideroxylon*	Ironbark	T	44.6	5.4	9	Non-indigenous Native	G	G	21-50	G	Remove
16	*Quercus sp.*	Oak	T	6.4	0.8	4	Non-indigenous Exotic	G	G	>50	G	Remove
17	*Eucalyptus lehmannii*	Bushy Yate	S	n/a	n/a	6	Non-indigenous Native	F	F	5-20	F	Remove
18	*Fraxinus sp.*	Ash	T	14.6	1.8	6	Non-indigenous Exotic	G	G	5-20	P	Remove
19	*Eucalyptus leucoxylon*	Yellow Gum	T	28.3	3.4	6	Non-indigenous	G	G	21-50	F	Remove
20	*Eucalyptus sideroxylon*	Ironbark	T	56.7	6.8	10	Non-indigenous	G	G	5-20	G	Remove
21	*Melaleuca armillaris*	Bracelet Honey Myrtle	S	n/a	n/a	2	Non-indigenous	G	G	5-20	F	Remove
22	*Cupressus sp.*	Cypress	S	n/a	n/a	4	Non-indigenous Exotic	G	G	5-20	F	Remove
23	*Eucalyptus nicholii*	Narrow-leaved Black Peppermint	T	44.3	5.3	9	Non-indigenous Native	G	G	21-50	G	Remove
24	*Cupressus sp.*	Cypress	S	n/a	n/a	4	Non-indigenous Exotic	G	G	21-50	F	Remove

25	*Eucalyptus nicholii*	Narrow-leaved Black Peppermint	T	33.8	4.1	8	Non-indigenous Native	G	G	21-50	G	Remove
26	*Cupressus sp.*	Cypress	S	n/a	n/a	6	Non-indigenous	G	G	21-50	F	Remove
27	*Eucalyptus sideroxylon*	Ironbark	T	51	6.1	10	Non-indigenous Native	G	G	21-50	G	Remove
28	*Pittosporum sp.*	Pittosporum	S	n/a	n/a	2	Non-indigenous Native	G	G	21-50	P	Remove
29	*Cupressus sp.*	Cypress	S	n/a	n/a	3	Non-indigenous Exotic	G	G	21-50	F	Remove
30	*Cupressus sp.*	Cypress	S	n/a	n/a	3	Non-indigenous Exotic	G	G	21-50	F	Remove
31	*Eucalyptus nicholii*	Narrow-leaved Black Peppermint	T	n/a	n/a	10	Non-indigenous Native	G	G	21-50	G	Remove
32	*Melaleuca styphelioides*	Prickly-leaved Paperbark	S	47.5	5.7	3	Non-indigenous Native	G	G	5-20	G	Remove
33	*Pittosporum sp.*	Pittosporum	S	n/a	n/a	2	Non-indigenous Native	G	G	5-20	P	Remove
34	*Acacia sp.*	Wattle	S	n/a	n/a	2	Planted, potentially indigenous	G	G	5-20	F	Remove
35	*Cupressus sp.*	Cypress	S	n/a	n/a	8	Non-indigenous Exotic	G	G	21-50	F	Remove
36	*Eucalyptus globulous*	Blue Gum	T	47.1	5.7	9	Non-indigenous Native	G	G	21-50	G	Remove
37	*Eucalyptus gomphocephala*	Tuart	T	n/a	n/a	4	Non-indigenous Native	G	G	21-50	G	Remove
38	*Photinia sp.*	Photinia	S	n/a	n/a	3	Non-indigenous Exotic	G	G	5-20	G	Remove
39	*Melaleuca styphelioides*	Prickly-leaved Paperbark	S	n/a	n/a	2	Non-indigenous Native	G	F	5-20	F	Remove
40	*Eucalyptus nicholii*	Narrow-leaved Black Peppermint	T	49.7	6	8	Non-indigenous Native	F	F	5-20	F	Remove
41	*Cupressus sp.*	Cypress	S	n/a	n/a	7	Non-indigenous Exotic	G	G	21-50	F	Remove
42	*Eucalyptus globulous*	Blue Gum	T	9.6	1.1	9	Non-indigenous Native	F	F	5-20	F	Remove
43	*Acacia implexa*	Lightwood	T	10.5	1.3	3	Indigenous Planted	G	G	5-20	G	Remove
44	*Pittosporum sp.*	Pittosporum	S	n/a	n/a	4	Non-indigenous Native	G	G	5-20	P	Remove
45	*Cupressus sp.*	Cypress	S	n/a	n/a	3	Non-indigenous Exotic	G	G	21-50	F	Remove
46	*Pittosporum sp.*	Pittosporum	S	n/a	n/a	2	Non-indigenous Native	G	G	5-20	P	Remove
47	*Pittosporum sp.*	Pittosporum	S	n/a	n/a	2	Non-indigenous Native	G	G	5-20	P	Remove
48	*Eucalyptus viminalis*	Manna Gum	T	82.5	9.9	14	Non-indigenous Native	G	G	>50	G	Retain
49	*Eucalyptus sideroxylon*	Ironbark	T	33.4	4	5	Non-indigenous Native	G	G	>50	G	Retain
50	*Eucalyptus globulous*	Blue Gum	T	48.4	5.8	7	Non-indigenous Native	G	G	>50	G	Retain
51	*Eucalyptus globulous*	Blue Gum	T	53.2	6.4	10	Non-indigenous Native	G	G	>50	G	Retain

52	*Eucalyptus botryoides*	Bangalay	T	32.8	3.9	8	Non-indigenous Native	G	G	21-50	G	Retain
53	*Eucalyptus globulous*	Blue Gum	T	47.5	5.7	8	Non-indigenous Native	G	G	>50	G	Retain
54	*Eucalyptus botryoides*	Bangalay	T	35.7	4.3	7	Non-indigenous Native	G	G	21-50	G	Retain
55	*Eucalyptus botryoides*	Bangalay	T	48.4	5.8	10	Non-indigenous Native	G	G	21-50	G	Retain
56	*Eucalyptus botryoides*	Bangalay	T	62.1	7.5	10	Non-indigenous Native	G	G	21-50	G	Retain
57	*Eucalyptus leucoxylon*	Yellow Gum	T	12.7	1.5	4	Non-indigenous Native	G	G	21-50	G	Retain
58	*Melaleuca styphelioides*	Prickly-leaved Paperbark	S	n/a	n/a	2	Non-indigenous Native	F	F	1-5	P	Remove
59	*Eucalyptus viminalis*	Manna Gum	T	44.9	5.4	8	Non-indigenous Native	G	G	>50	G	Retain
60	*Eucalyptus leucoxylon*	Yellow Gum	T	21.7	2.6	6	Non-indigenous Native	G	G	21-50	G	Retain
61	*Eucalyptus camaldulensis*	Red Gum	T	140.8	See Map Two	See Map Two	Indigenous Remnant	G	G	>50	G	Retain
62	*Eucalyptus camaldulensis*	Red Gum	T	42.4	5.1	11	Indigenous	G	G	>50	G	Remove
63	*Melaleuca styphelioides*	Prickly-leaved Paperbark	S	0	0	6	Non-indigenous Native	F	F	1-5	P	Remove
64	*Banksia marginata*	Silver Banksia	T	11.5	1.4	4	Non-indigenous Native	F	G	1-5	F	Remove
65	*Hakea sp.*	Hakea	S	0	0	3	Non-indigenous Native	F	F	1-5	P	Remove
66	*Melaleuca armillaris*	Bracelet Honey Myrtle	S	0	0	4	Non-indigenous Native	F	F	1-5	P	Remove
67	*Eucalyptus globulous*	Blue Gum	T	70.7	8.5	10	Non-indigenous Native	G	G	21-50	G	Remove
68	*Eucalyptus globulous*	Blue Gum	T	58.3	7	10	Non-indigenous Native	G	G	21-50	G	Remove
69	*Eucalyptus sideroxylon*	Ironbark	T	46.5	5.6	9	Non-indigenous Native	G	G	21-50	G	Remove
70	*Eucalyptus sideroxylon*	Ironbark	T	43	5.2	10	Non-indigenous Native	G	G	21-50	G	Remove
71	*Eucalyptus gomphocephala*	Tuart	T	12.7	1.5	3	Non-indigenous Native	F-P	F-P	1-5	P	Remove
72	*Eucalyptus leucoxylon*	Yellow Gum	T	27.4	3.3	4	Non-indigenous Native	G	G	21-50	G	Remove
73	*Eucalyptus globulous*	Tasmanian Blue Gum	T	58	7	10	Non-indigenous Native	G	G	21-50	G	Retain if possible
74	*Eucalyptus camaldulensis*	Red Gum	T	199.4	See Map Two	See Map Two	Indigenous Remnant	G	G	>50	G	Retain
75	*Fraxinus sp.*	Ash	T	12.1	1.4	5	Planted	G	G	21-50	P	Remove
76	*Grevillea robusta*	Silky Oak	T	11.1	1.3	3	Non-indigenous Native	G	G	21-50	F	Remove
77	*Acacia sp.*	Wattle	S	n/a	n/a	2	Planted, potentially indigenous	F	F	1-5	F	Remove
78	*Acacia sp.*	Wattle	S	n/a	n/a	2	Planted, potentially	G	G	1-5	F	Remove

							indigenous					
79	*Acacia sp.*	Wattle	S	n/a	n/a	2	Planted, potentially indigenous	G	G	1-5	F	Retain
80	*Acacia sp.*	Wattle	S	n/a	n/a	2	Planted, potentially indigenous	G	G	1-5	F	Retain
81	*Acacia sp.*	Wattle	S	n/a	n/a	2	Planted, potentially indigenous	G	G	1-5	F	Retain
82	*Acacia sp.*	Wattle	S	n/a	n/a	2	Planted, potentially indigenous	G	F	1-5	F	Retain
83	*Acacia baileyana*	Cootamundra Wattle	S	n/a	n/a	3	Non-indigenous Native Weed	G	G	1-5	P	Remove
84	*Ulmus sp.*	Elm	T	n/a	n/a	8	Non-indigenous Exotic	G	G	21-50	G	Remove
85	*Umlus sp.*	Elm	T	n/a	n/a	8	Non-indigenous Exotic	G	G	21-50	G	Remove
86	*Pinus radiata*	Monterey Pine	T	60.5	7.3	12	Non-indigenous Exotic	G	G	21-50	P	Remove
87	*Pinus radiata*	Monterey Pine	T	57	6.8	11	Non-indigenous Exotic	G	G	21-50	P	Remove
88	*Pinus radiata*	Monterey Pine	T	37.6	4.5	11	Non-indigenous Exotic	G	G	21-50	P	Remove
89	*Eucalyptus camaldulensis*	Red Gum	T	30.9	3.7	12	Indigenous	G	F-P	21-50	F	Remove
90	*Pinus radiata*	Monterey Pine	T	53.2	6.4	14	Non-indigenous Exotic	G	G	21-50	P	Remove
91	*Pinus radiata*	Monterey Pine	T	48.4	5.8	13	Non-indigenous Exotic	G	G	21-50	P	Remove
92	*Pinus radiata*	Monterey Pine	T	52.5	6.3	13	Non-indigenous Exotic	G	G	21-50	P	Remove
93	*Pinus radiata*	Monterey Pine	T	38.2	4.6	13	Non-indigenous Exotic	G	G	21-50	P	Remove
94	*Pinus radiata*	Monterey Pine	T	27.1	3.2	13	Non-indigenous Exotic	G	G	21-50	P	Remove
95	*Pinus radiata*	Monterey Pine	T	44.9	5.4	13	Non-indigenous Exotic	G	G	21-50	P	Remove
96	*Eucalyptus globulous*	Blue Gum	T	36.3	4.4	11	Non-indigenous Native	G	G	21-50	G	Remove
97	*Eucalyptus camaldulensis*	Red Gum	T	44.6	See Map Two	See Map Two	Indigenous	G	G	21-50	G	Retain
98	*Eucalyptus camaldulensis*	Red Gum	UT	6.4	0.8	3	Indigenous	F	F	21-50	F	Retain
99	*Eucalyptus camaldulensis*	Red Gum	UT	12.7	1.5	4.5	Indigenous	F	F	21-50	F	Retain
100	*Eucalyptus camaldulensis*	Red Gum	T	23.2	See Map Two	See Map Two	Indigenous	F	F	21-50	F	Retain

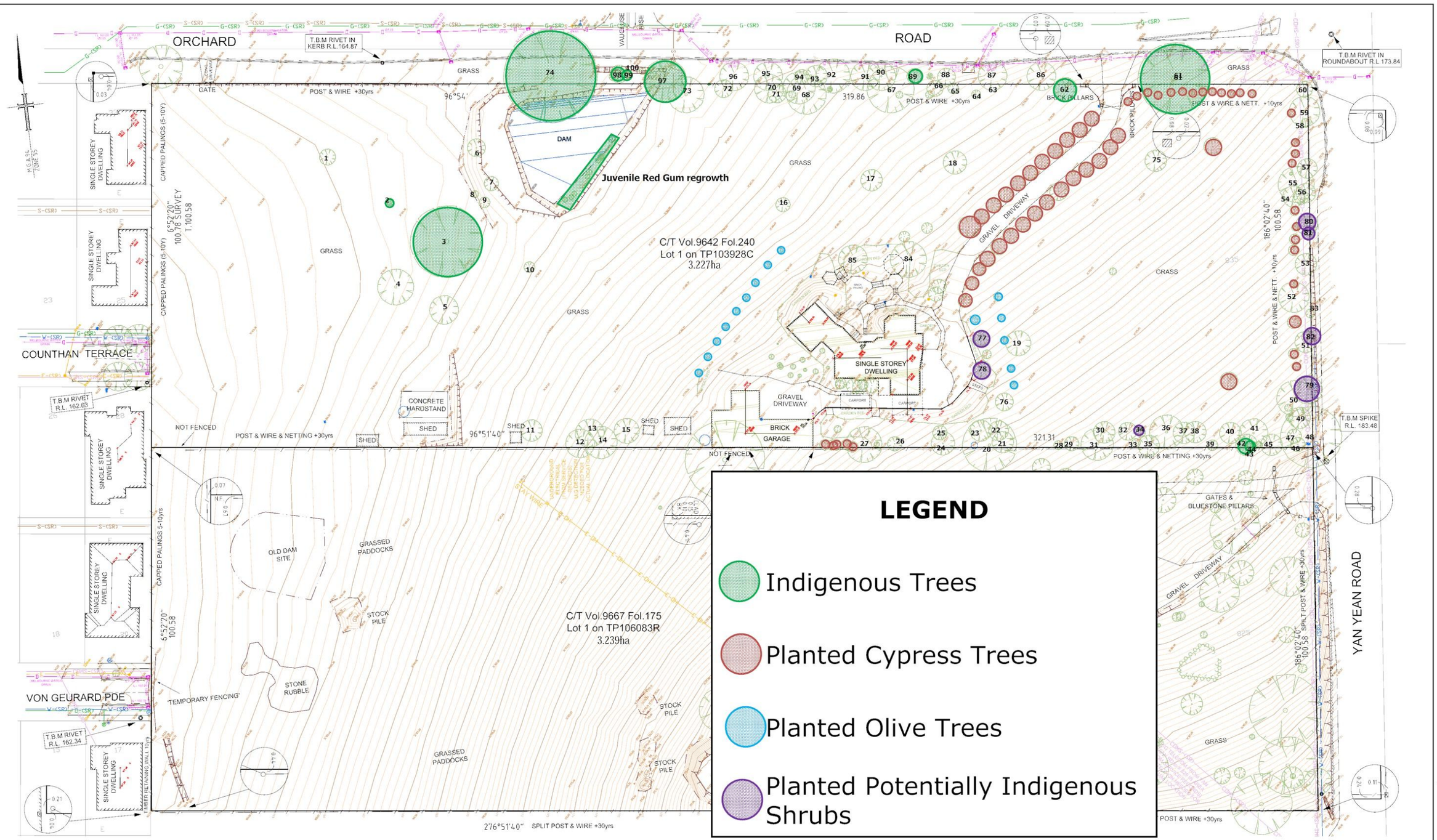
Diameter at Breast Height (DBH) measured at 1.5m above the ground.
Tree Protection Zone (TPZ) calculated by the Diameter at Breast Height (DBH) multiplied by 12.
Shrubs and low growing multi-stemmed plants could not be measured for a DBH.

Table Two details the Tree Protection Zones for Red Gums (*Eucalyptus Camaldulensis*) to be retained in accordance with City of Whittlesea's Tree Protection Zone Standard. All measurements were taken on site using tape measures. See Map Two for further details.

Table Two: Tree Protection Zones for Red Gums to be Retained

Tree number	**Scientific Name**	**Common Name**	**DBH (cm)**	**Height (m)**	**Half Height (m)**	**Maximum Canopy Width (m)**	**Half Maximum Canopy Width (m)**	**Tree Protection Zone as radius calculation (m)** (Greatest value)
100	*Eucalyptus camaldulensis*	Red Gum	23.2	**9**	**4.5**	**6**	**3**	4.5
99	*Eucalyptus camaldulensis*	Red Gum	12.7	**4.5**	**2.25**	**2**	**1**	2.25
98	*Eucalyptus camaldulensis*	Red Gum	6.4	**3**	**1.5**	**2**	**1**	1.5
97	*Eucalyptus camaldulensis*	Red Gum	44.6	**13**	**6.5**	**7**	**3.5**	6.5
74	*Eucalyptus camaldulensis*	Red Gum	199.4	24	12	**25**	**12.5**	12.5
61	*Eucalyptus camaldulensis*	Red Gum	140.8	**22**	**11**	21	10.5	11

The green cells show the greatest value of either canopy width or tree height, which has been used for the calculation.



LEGEND

- Indigenous Trees
- Planted Cypress Trees
- Planted Olive Trees
- Planted Potentially Indigenous Shrubs

VERSIONS

01 09.10.2015 INITIAL ISSUE OF DRAWING

NOTATIONS

LEVEL DATUM

THE LEVELS SHOWN HEREON ARE TO A.H.D. (AUSTRALIAN HEIGHT DATUM) LEVEL DATUM VIDE GPSnet CONNECTION TO GREENSBOROUGH PM 66 (R.L 203.70m)

BEARING DATUM

THIS PLAN IS ON APPROX. M.G.A 94 ZONE 55 HORIZONTAL DATUM (MAP GRID AUSTRALIA). DATUM VIDE GPSnet CONNECTION TO GREENSBOROUGH PM 66. ROTATE -6°51'40" FOR TITLE BEARINGS

CONTOURS

THE CONTOURS SHOWN ARE PROVIDED AS AN INDICATION OF GRADES ONLY AS VARIATIONS MAY OCCUR BETWEEN ACTUAL LEVEL POINTS SHOWN.

CONTOUR INTERVAL SHOWN MAJOR 1.0m MINOR 0.20m
CONTOURS ON THE NORTHERN SIDE OF THE EXISTING DWELLING ON No 835 ARE INDICATIVE ONLY DUE TO EXISTING LANDSCAPING.

PURPOSE

THIS PLAN HAS BEEN PREPARED EXCLUSIVELY FOR THE SILVERI FAMILY TRUST. THE PURPOSE OF THIS PLAN IS TO SHOW THE LOCATION OF EXISTING FEATURES ONSITE AS REQUESTED AT THE TIME OF SURVEY FOR DESIGN.

THIS PLAN SHOULD NOT BE USED FOR ANY OTHER PURPOSES.

TITLE BOUNDARIES

TITLE BOUNDARIES HAVE BEEN DETERMINED BY THIS SURVEY.
THE TITLE BOUNDARIES HAVE NOT BEEN MARKED

SERVICES

THE LOCATION OF SERVICES, SURFACE PITS, VALVE COVERS etc. SHOWN HEREON HAVE BEEN DETERMINED BY THIS SURVEY.

THE LOCATION OF UNDERGROUND SERVICES HAVE BEEN NOTED FROM EXISTING RECORDS WHERE SHOWN AND AS VARIATIONS WITH RECORDS MAY EXIST, COMPLETE ACCURACY CANNOT BE GUARANTEED.

THE LOCATION OF SERVICES HAVE BEEN LOCATED FROM A COMBINATION OF FIELD SURVEY AND RECORDS FROM RELEVANT AUTHORITIES. HEAD & HUMPHREYS ACCEPTS NO RESPONSIBILITY FOR THE LOCATION OR COMPLETENESS OF DATA SUPPLIED BY SERVICES AUTHORITIES.

PRIOR TO ANY DEMOLITION, EXCAVATION OR CONSTRUCTION ON THIS SITE, THE RELEVANT AUTHORITY SHOULD BE CONTACTED TO ASCERTAIN THE POSSIBLE LOCATIONS OF FURTHER SERVICES AND DETAILED LOCATIONS OF ALL SERVICES.

MISCELLANEOUS

DRAWING REFERENCE NO. 7324-00-FEA-0102.DWG
LAYER STATE 20150907
DATE OF FIELD SURVEY 01/09/2015, 04/09/2015, 06/10/2015 & 07/10/2015

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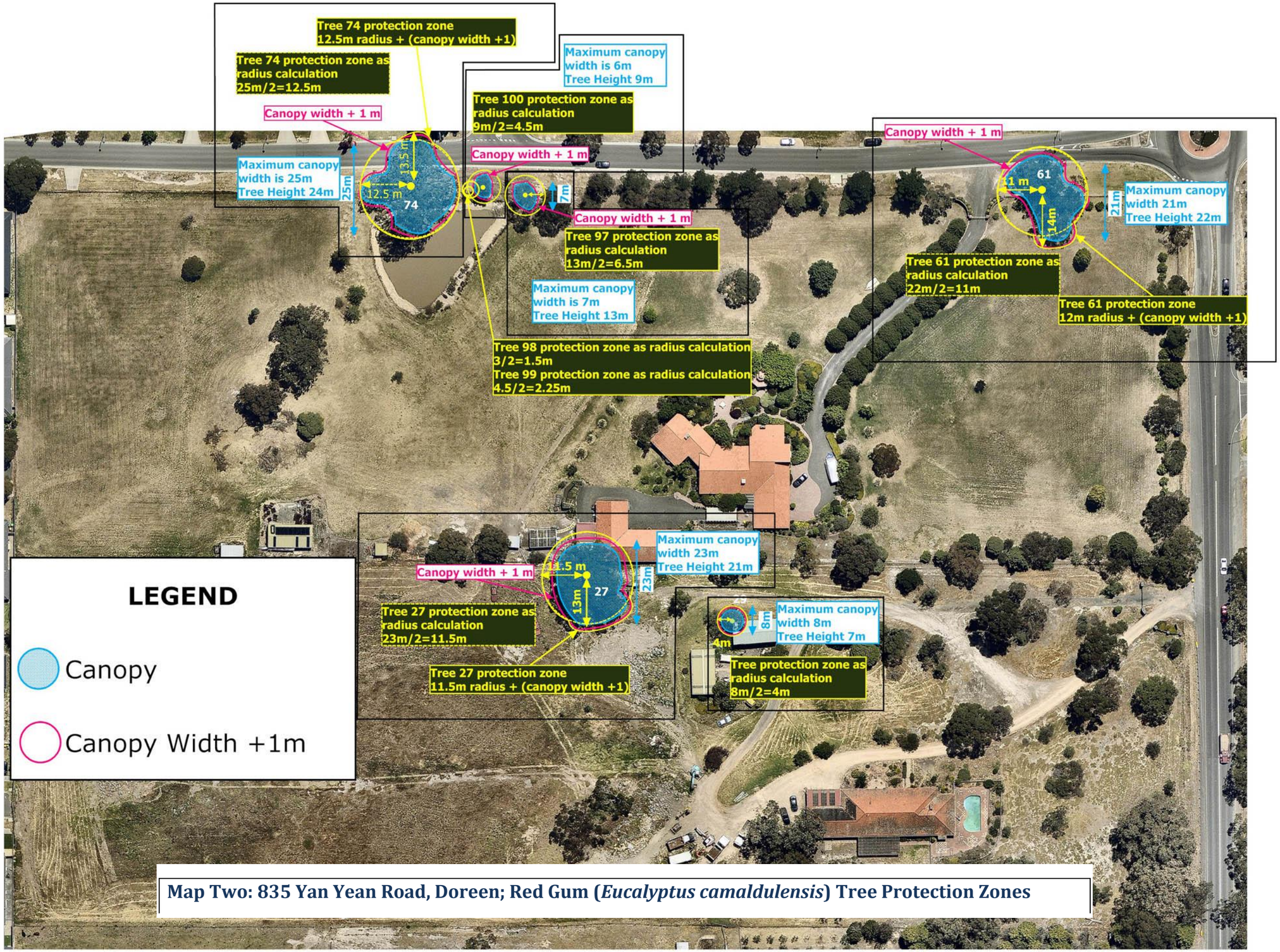
0 10 20 30 40 50
THIS LINE REPRESENTS 50.0 METRES.
SCALE 1 : 500

CLIENT

DIANNE ELDERFIELD

Map One: 835 Yan Yean Road, Doreen
Tree locations and site Layout.

LAYER STATE: 20150907 DRAWING REF: 7324-00-FEA-0102.DWG



Map Two: 835 Yan Yean Road, Doreen; Red Gum (*Eucalyptus camaldulensis*) Tree Protection Zones

Figure One: Olives growing to the west of the dwelling.

Figure Two: Garden plantings along the north of the dwelling

Figure Three: Juvenile Red Gums (*Eucalyptus camaldulensis*) to be removed.

Figure Four: Non-indigenous trees along Orchard Road.

Figure Five: Non-indigenous trees along Yan Yean Road.

Tree Description Definitions

Height: Approximate height to upper most point of canopy.
DBH: Diameter of trunk at Breast Height (1.4m).
TPZ is calculated using the (Australian Standard) AS 4970-2009
TPZ: Tree Protection Zone: Area required for the protection of tree during construction to maintain its health. The TPZ is measured as a radius out from the centre of the trunk.

Useful Life Expectancy (ULE)
ULE is the length of time the tree can be expected to be retained as a viable healthy tree. Any works carried out on the site can alter the tree's ULE.
0 (Dead or in significant decline)
< 5 Years
5 – 20 Years
21 – 50 Years
> 50 Years
Health:
G - Good – Crown full, can be unbalanced. Foliage is entire with good colour, minimal or no pathogen damage. Good growth indicators, e.g. Extension growth.
F - Fair – Tree has <30% dead wood. Canopy can be unbalanced. Foliage generally with good colour, some discolouration may be present. Minor pathogen damage may be present, (typical for species in location).
P – Poor – Tree has >30% dead wood; discoloured or distorted leaves and/or excessive epicormic growth. Pathogen is present and/or stress symptoms that could lead to decline of tree. Or the tree has major structural faults.
D – Dead – The tree is dead

Structure:
G – Good - Good branch attachment no structural defects, well-structured trunk with no fault or co-dominant stems.
F – Fair - Some minor structural defects may be present. Basically well-structured but may have some minor faults.
P – Poor - Major structural defects and/or damage and/or missing bark, large cavities or health issues.
H – Hazardous - Tree poses immediate hazard potential that should be rectified as soon as possible.

Retention Value:
G – Good - The tree is a good healthy specimen suitable for the long term retention on the site and should be retained.
F – Fair - The tree is suitable for retention but may have some health or structural conditions which could shorten its ULE.
P – Poor - The tree is not suitable for retention due to poor health and/or structure, it is considered a weed, or is unsuitable to the site due to problems it is causing e.g. Infrastructure damage.

Tree Assessment Report

Proposed Subdivision

825 Yan Yean Road

Doreen

October 2016

Tree Wishes
land care advice

Report Title	**Tree Assessment Report; Proposed Subdivision, 825 Yan Yean Road, Doreen**
Report directed by	Dean Platt[1]
Report written by	Tania Begg[2]
Acknowledgements	Craig Lockens[3]
Internal editing	Dean Platt[1]
Previous Versions	February 2016, December 2015

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2 – Project Manager – Dip. ApSc. (Conservation and Land Management)

3- Consultant Arborist – Associate Diploma Horticulture (arb) Burnley

Disclaimer: Although Tree Wishes have taken all reasonable steps to ensure that an accurate document has been prepared, the company accepts no liability for any damages or loss incurred as a result of reliance placed upon the report or its content.

Report prepared by Tree Wishes

Tree Wishes land care advice
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Introduction

As part of plans to subdivide land at 825 Yan Yean Road Doreen some vegetation removal is required.

There are a number of non-indigenous planted trees and shrubs on the property, some of which are native, however they do not fall under the influence of the Biodiversity Assessment Guidelines.

The site is covered by a Vegetation Protection Overlay (VPO) which relates to preserving existing trees, Schedule 1 of the overlay relates specifically to indigenous vegetation.

The indigenous trees on the property are Red Gums (*Eucalyptus camaldulensis*), Black Wattle (*Acacia mearnsii),* Yellow Box (*Eucalyptus melliodora*) and Long-leafed Box (*Eucalyptus goniocalyx*). The only other indigenous species recorded at the site were individual Climbing Saltbush (*Eidnadia nutans*), Berry Saltbush (*Atriplex semibaccata*), Kidney Weed (*Dichondra repens*) and Weeping Grass (*Microlaena stipoides*). An inspection of the property by Tree Wishes (DELWP certified Vegetation Quality Assessor Tania Begg) determined that the cover of these understorey species was below 25% and as such is not classified as a remnant patch.

As part of this project some indigenous trees and understorey will be removed. This has been accounted for in the Low risk-based pathway permit application form for 825 Yan Yean Road, Doreen (Tree Wishes November 2015).

Some large Yellow Box trees within the property will be avoided as part of the project, protected during development, and incorporated into reserves.

Some of the non-indigenous trees along Yan Yean Road will be avoided if shared pathways and road pavements permit, if retained they will be protected as part of the development, and will be incorporated into a reserve.

The critical root zones of the trees being retained will be protected during development to ensure that no impact occurs.

Table One details the indigenous trees at the site, and outlines the non-indigenous species also present.

Table One: Tree details.

No.	Scientific Name	Common name	Life Form	DBH (cm)	TPZ (m)	Status	Structure	Health	ULE	Retention rating	Retain/Remove
1	*Eucalyptus cladocalyx*	Sugar Gum	T	56.4	6.8	Non-indigenous Native	G	G	>50	P	Remove
2	*Eucalyptus cladocalyx*	Sugar Gum	T	85	10.2	Non-indigenous Native	G	G	>50	P	Retain if possible
3	*Hakea sp.*	Hakea	S	0	0	Non-indigenous Native	F	F	5-20	P	Retain if possible
4	*Eucalyptus cladocalyx*	Sugar Gum	T	13.7	1.6	Non-indigenous Native	G	G	>50	P	Retain if possible
5	*Eucalyptus melliodora*	Yellow Box	T	95.5	11.5	Indigenous Remnant	G	G	>50	G	Retain
6	*Eucalyptus melliodora*	Yellow Box	T	93.3	11.2	Indigenous Remnant	G	G	>50	G	Retain
7	*Dead*		T	n/a	n/a	-	G	G	0	P	Remove
8	*Eucalyptus melliodora*	Yellow Box	T	6.4	0.8	Indigenous Remnant	G	G	>50	G	Retain
9	*Eucalyptus melliodora*	Yellow Box	T	63.1	7.6	Indigenous Remnant	G	G	>50	G	Retain
10	*Eucalyptus melliodora*	Yellow Box	T	76.1	9.1	Indigenous Remnant	G	G	>50	G	Retain
11	*Eucalyptus sp.*	Gum Tree	T	<10	1.2	Non-indigenous Native	G	G	21-50	G	Remove
12	*Eucalyptus sp.*	Gum Tree	T	<10	1.2	Non-indigenous Native	G	G	21-50	G	Remove
13	*Eucalyptus sp.*	Gum Tree	T	<10	1.2	Non-indigenous Native	F	F	21-50	G	Remove
14	*Eucalyptus sp.*	Gum Tree	T	<10	1.2	Non-indigenous Native	G	F	21-50	G	Remove
15	*Eucalyptus sp.*	Gum Tree	T	48.1	5.8	Non-indigenous Native	G	G	21-50	G	Remove
16	*Eucalyptus melliodora*	Yellow Box	T	106.4	12.8	Indigenous Remnant	G	G	>50	G	Retain
17	*Eucalyptus melliodora*	Yellow Box	T	87.3	10.5	Indigenous Remnant	G	G	>50	G	Retain
18	*Eucalyptus sideroxylon*	Ironbark	T	28.3	3.4	Non-indigenous Native	G	G	>50	G	Remove
19	*Eucalyptus melliodora*	Yellow Box	T	95.5	11.5	Indigenous Remnant	G	G	>50	G	Remove
20	*Eucalyptus melliodora*	Yellow Box	T	58	7	Indigenous Remnant	G	G	>50	G	Remove
21	*Eucalyptus melliodora*	Yellow Box	T	93.6	11.2	Indigenous Remnant	G	G	>50	G	Remove
22	*Eucalyptus sp.*	Gum Tree	T	0	0	Non-indigenous Native	P	P	0	G	Remove
23	*Eucalyptus polyanthemos*	Red Box	T	6.4	0.8	Planted, Potentially Indigenous	G	F	21-50	G	Remove
24	*Eucalyptus sideroxylon*	Iron Bark	T	<10	1.2	Non-indigenous Native	G	G	>50	G	Remove
25	*Eucalyptus goniocalyx*	Long-leaved Box	T	72.6	8.7	Indigenous Remnant	F	P	1-5	G	Remove
26	*Eucalyptus melliodora*	Yellow Box	T	77.4	9.3	Indigenous Remnant	F	P	1-5	G	Remove

27	*Eucalyptus camaldulensis*	Red Gum	T	117.2	See Table Two	Indigenous Remnant	G	G	>50	G	Remove
28	*Schinus sp.*	Peppercorn	T	n/a	n/a	Non-indigenous Exotic	G	G	5-20	F	Remove
29	*Eucalyptus camaldulensis*	Red Gum	T	39.5	4.7	Indigenous Remnant	G	G	>50	G	Remove
30	*Melaleuca armillaris*	Bracelet Honey Myrtle	S	n/a	n/a	Non-indigenous Native	G	G	5-20	F	Remove
31	*Melaleuca armillaris*	Bracelet Honey Myrtle	S	n/a	n/a	Non-indigenous Native	G	G	5-20	F	Remove
32	*Eucalyptus leucoxylon*	Yellow Gum	T	<10		Non-indigenous Native	G	G	>50	G	Remove
33	*Callistemon sp.*	Bottlebrush	S	n/a	n/a	Non-indigenous Native	G	G	5-20	F	Remove
34	*Pittosporum sp.*	Pittosporum	S	n/a	n/a	Non-indigenous Native	G	G	5-20	P	Remove
35	*Callistemon sp.*	Bottlebrush	S	n/a	n/a	Non-indigenous Native	G	G	5-20	F	Remove
36	*Acacia sp.*	Wattle	S	n/a	n/a	Planted, Potentially Indigenous	G	G	5-20	G	Remove
37	*Eucalyptus sp.*	Gum Tree	T	n/a	n/a	Non-indigenous Native	G	G	>50	G	Remove
38	*Melaleuca styphelioides*	Prickly-leaved Paperbark	T	n/a	n/a	Non-indigenous Native	G	G	5-20	F	Remove
39	*Eucalyptus sp.*	Gum Tree	T	n/a	n/a	Non-indigenous Native	G	G	>50	G	Remove
40	*Acacia mearnsii*	Black Wattle	T	22.6	2.7	Indigenous Remnant	G	G	5-20	F	Remove
41	*Eucalyptus sp.*	Gum Tree	T	37.3	4.5	Non-indigenous Native	F	F	>50	F	Remove
42	*Eucalyptus sp.*	Gum Tree	T	49.4	5.9	Non-indigenous Native	F	F	>50	F	Remove
43	*Eucalyptus cladocalyx*	Sugar Gum	T	58.3	7	Non-indigenous Native	G	G	>50	P	Remove
44	*Eucalyptus sp.*	Gum Tree	T	33.4	4	Non-indigenous Native	G	G	>50	G	Retain if possible
45	*Eucalyptus sp.*	Gum Tree	T	21	2.5	Non-indigenous Native	F	F	>50	F	Remove
46	*Eucalyptus leucoxylon*	Yellow Gum	T	20.7	2.5	Non-indigenous Native	F	F	>50	F	Remove
47	*Eucalyptus sp.*	Gum Tree	T	45.2	5.4	Non-indigenous Native	G	G	>50	G	Remove
48	*Eucalyptus cladocalyx*	Sugar Gum	T	52.2	6.3	Non-indigenous Native	G	G	>50	G	Remove
49	*Eucalyptus polyanthemos*	Red Box	T	43	5.2	Planted, Potentially Indigenous	G	G	>50	G	Remove
50	*Eucalyptus sp.*	Gum Tree	T	76.4	9.2	Non-indigenous Native	G	G	>50	G	Remove
51	*Melaleuca armillaris*	Bracelet Honey Myrtle	S	n/a	n/a	Non-indigenous Native	F	F	5-20	F	Retain if possible
52	*Callistemon sp.*	Bottlebrush	S	n/a	n/a	Non-indigenous Native	F	F	5-20	F	Retain

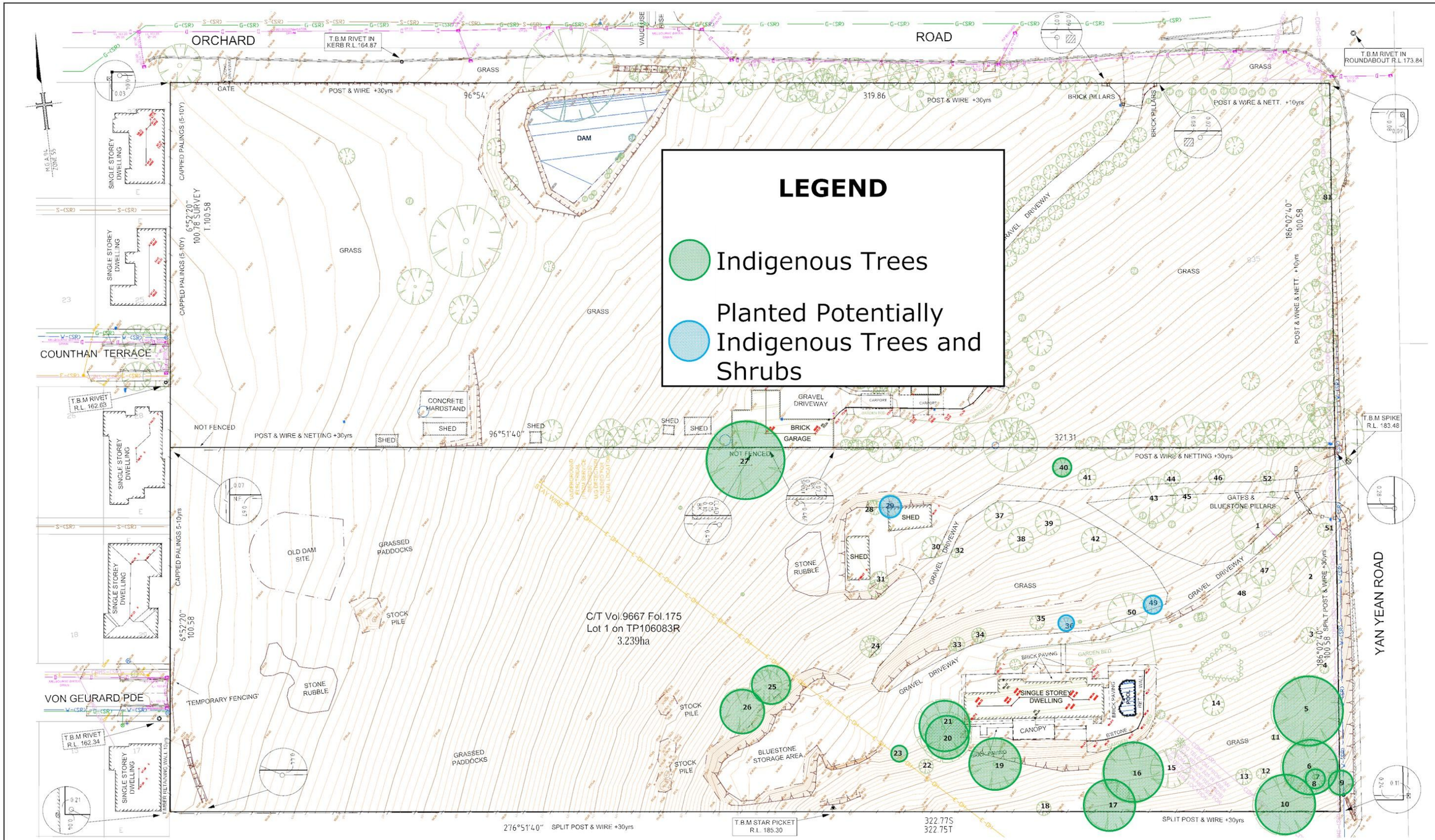
Diameter at Breast Height (DBH) measured at 1.5m above the ground.
Tree Protection Zone (TPZ) calculated by the Diameter at Breast Height (DBH) multiplied by 12.
Shrubs and low growing multi-stemmed plants could not be measured for a DBH.

Table Two details the Tree Protection Zones for Red Gums (*Eucalyptus Camaldulensis*) in accordance with City of Whittlesea's Tree Protection Zone Standard. All measurements were taken on site using tape measures. See Map Two for further details.

Table Two: Tree Protection Zones for Red Gums

Tree number	**Scientific Name**	**Common Name**	**DBH (cm)**	**Height (m)**	**Half Height (m)**	**Maximum Canopy Width (m)**	**Half Maximum Canopy Width (m)**	**Tree Protection Zone as radius calculation (m)** (Greatest value)
29	*Eucalyptus camaldulensis*	Red Gum	39	7	3.5	**8**	**4**	4
27	*Eucalyptus camaldulensis*	Red Gum	199.4	21	10.5	**23**	**11.5**	11.5

The green cells show the greatest value of either canopy width or tree height, which has been used for the calculation.



VERSIONS

01 09.10.2015 INITIAL ISSUE OF DRAWING

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NOTATIONS

LEVEL DATUM

THE LEVELS SHOWN HEREON ARE TO A.H.D. (AUSTRALIAN HEIGHT DATUM) LEVEL DATUM VIDE GPSnet CONNECTION TO GREENSBOROUGH PM 66 (R.L 203.716m).

BEARING DATUM

THIS PLAN IS ON APPROX. M.G.A 94 ZONE 55 HORIZONTAL DATUM (MAP GRID AUSTRALIA) DATUM VIDE GPSnet CONNECTION TO GREENSBOROUGH PM 66. ROTATE -6°51'40" FOR TITLE BEARINGS

CONTOURS

THE CONTOURS SHOWN ARE PROVIDED AS AN INDICATION OF GRADES ONLY AS VARIATIONS MAY OCCUR BETWEEN ACTUAL LEVEL POINTS SHOWN.

CONTOUR INTERVAL SHOWN MAJOR: 1.0m MINOR:0.20m
CONTOURS ON THE NORTHERN SIDE OF THE EXISTING DWELLING ON No.835 ARE INDICATIVE ONLY DUE TO EXISTING LANDSCAPING.

PURPOSE

THIS PLAN HAS BEEN PREPARED EXCLUSIVELY FOR THE SILVERI FAMILY TRUST. THE PURPOSE OF THIS PLAN IS TO SHOW THE LOCATION OF EXISTING FEATURES ONSITE AS REQUESTED AT THE TIME OF SURVEY FOR DESIGN.

THIS PLAN SHOULD NOT BE USED FOR ANY OTHER PURPOSES.

TITLE BOUNDARIES

TITLE BOUNDARIES HAVE BEEN DETERMINED BY THIS SURVEY.
THE TITLE BOUNDARIES HAVE NOT BEEN MARKED.

SERVICES

THE LOCATION OF SERVICES, SURFACE PITS, VALVE COVERS etc. SHOWN HEREON HAVE BEEN DETERMINED BY THIS SURVEY.

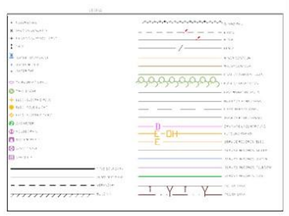
THE LOCATION OF UNDERGROUND SERVICES HAVE BEEN NOTED FROM EXISTING RECORDS WHERE SHOWN AND AS VARIATIONS WITH RECORDS MAY EXIST, COMPLETE ACCURACY CANNOT BE GUARANTEED.

THE LOCATION OF SERVICES HAVE BEEN LOCATED FROM A COMBINATION OF FIELD SURVEY AND RECORDS FROM RELEVANT AUTHORITIES. HEAD & HUMPHREYS ACCEPTS NO RESPONSIBILITY FOR THE LOCATION OR COMPLETENESS OF DATA SUPPLIED BY SERVICES AUTHORITIES.

PRIOR TO ANY DEMOLITION, EXCAVATION OR CONSTRUCTION ON THIS SITE, THE RELEVANT AUTHORITY SHOULD BE CONTACTED TO ASCERTAIN THE POSSIBLE LOCATIONS OF FURTHER SERVICES AND DETAILED LOCATIONS OF ALL SERVICES.

MISCELLANEOUS

DRAWING REFERENCE NO. : 7324-00-FEA-0102.DWG
LAYER STATE : 20150907
DATE OF FIELD SURVEY : 01/09/2015, 04/09/2015, 06/10/2015 & 07/10/2015



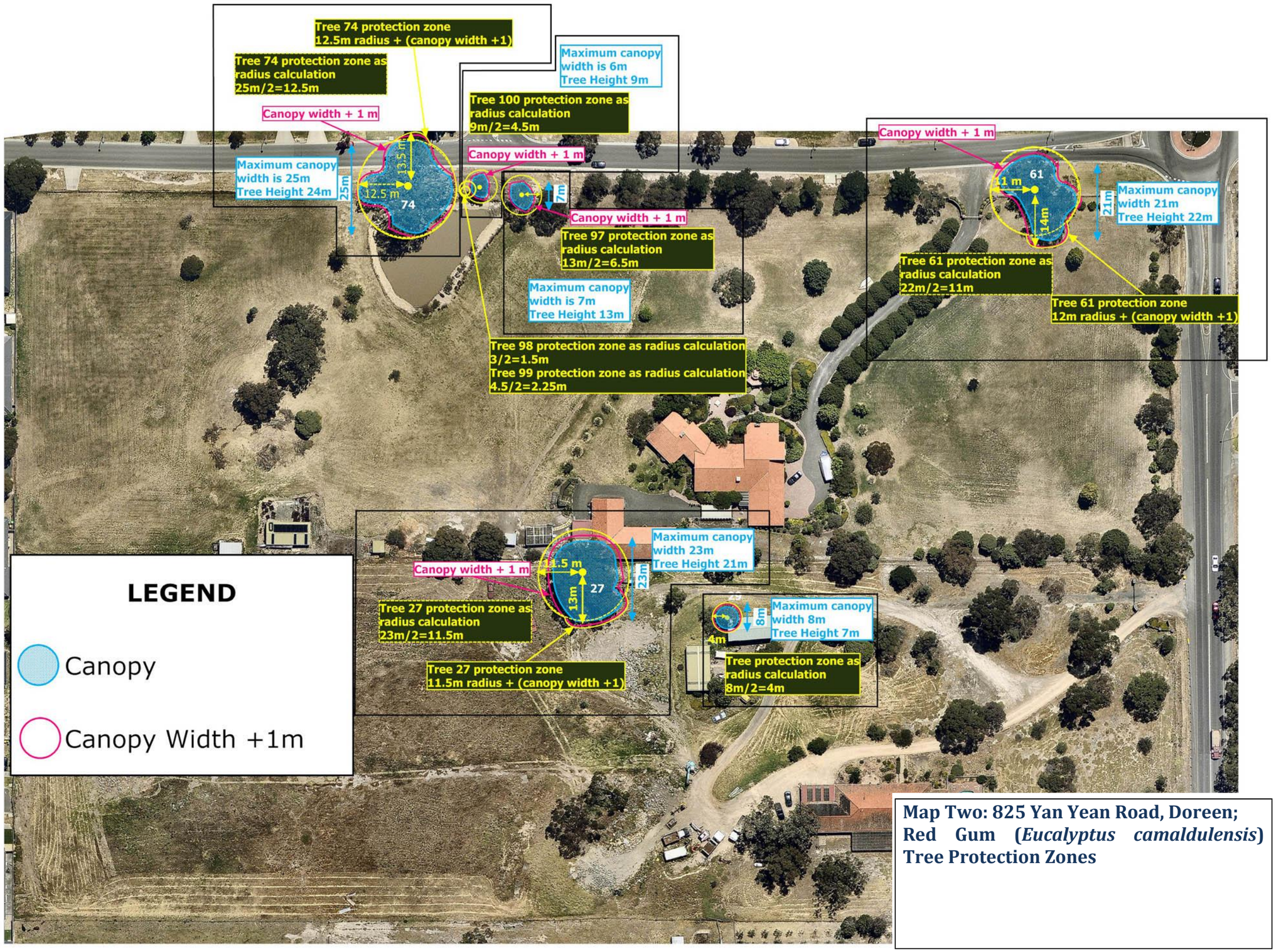
0 10 20 30 40 50
THIS LINE REPRESENTS 50.0 METRES.
SCALE 1 : 500

CLIENT

DIANNE ELDERFIELD

Map One: 825 Yan Yean Road, Doreen
Tree locations and site Layout.

LAYER STATE: 20150907 DRAWING REF: 7324-00-FEA-0102.DWG



Map Two: 825 Yan Yean Road, Doreen; Red Gum (*Eucalyptus camaldulensis*) Tree Protection Zones

Figure One: Yellow Box (*Eucalyptus melliodora*) trees next to Yan Yean Road to be retained. The understorey is predominantly Carpet Weed (*Galenia pubescens*).

Figure Three: Showing the non-indigenous trees to the north of the dwelling.

Figure Four: Non-indigenous trees with a weedy understorey facing north-east to Yan Yean Road.

Tree Description Definitions

Height: Approximate height to upper most point of canopy.
DBH: Diameter of trunk at Breast Height (1.4m).
TPZ is calculated using the (Australian Standard) AS 4970-2009
TPZ: Tree Protection Zone: Area required for the protection of tree during construction to maintain its health. The TPZ is measured as a radius out from the centre of the trunk.

Useful Life Expectancy (ULE)
ULE is the length of time the tree can be expected to be retained as a viable healthy tree. Any works carried out on the site can alter the tree's ULE.
0 (Dead or in significant decline)
< 5 Years
5 – 20 Years
21 – 50 Years
> 50 Years
Health:
G - Good – Crown full, can be unbalanced. Foliage is entire with good colour, minimal or no pathogen damage. Good growth indicators, e.g. Extension growth.
F - Fair – Tree has <30% dead wood. Canopy can be unbalanced. Foliage generally with good colour, some discolouration may be present. Minor pathogen damage may be present, (typical for species in location).
P – Poor – Tree has >30% dead wood; discoloured or distorted leaves and/or excessive epicormic growth. Pathogen is present and/or stress symptoms that could lead to decline of tree. Or the tree has major structural faults.
D – Dead – The tree is dead

Structure:
G – Good - Good branch attachment no structural defects, well-structured trunk with no fault or co-dominant stems.
F – Fair - Some minor structural defects may be present. Basically well-structured but may have some minor faults.
P – Poor - Major structural defects and/or damage and/or missing bark, large cavities or health issues.
H – Hazardous - Tree poses immediate hazard potential that should be rectified as soon as possible.

Retention Value:
G – Good - The tree is a good healthy specimen suitable for the long term retention on the site and should be retained.
F – Fair - The tree is suitable for retention but may have some health or structural conditions which could shorten its ULE.
P – Poor - The tree is not suitable for retention due to poor health and/or structure, it is considered a weed, or is unsuitable to the site due to problems it is causing e.g. Infrastructure damage.

Appendix 9 – Treemap Arboriculture

Vegetation Reports

815 Yan Yean Road

TREEMAP
ARBORICULTURE

Arboricultural Assessment & Report
815 Yan Yean Road, Doreen

Treemap Arboriculture
PO Box 465, Heidelberg VIC 3084
ABN 20 325 463 261
www.treemap.com.au

January 2017

Prepared for:
Michael Franco

TREEMAP
ARBORICULTURE

1 Name and address of consultant

Dean Simonsen
Treemap Arboriculture
PO Box 465, Heidelberg, Victoria 3084

2 Instructions

2.1 The instructions provided to Treemap Arboriculture on 04/01/17 by Michael Franco were to provide an Arboricultural assessment and report on trees located on or near to the subject site, the subject site being 815 Yan Yean Road, Doreen.

3 Introduction

3.1 The owners of the subject site are undertaking investigations to develop the property at 815 Yan Yean Road, Doreen. As part of the design and application process, the owners are undertaking a review of the vegetation located on the land, in relation to preparing a suitable development plan. This report examines the arboricultural matters associated with this vegetation.

3.2 Under AS4970-2009 (Australian Standard – Protection of trees on development sites), the following report would be defined as a 'Preliminary assessment and arboricultural report'. The standard indicates that *"This information is to be used by planners, architects and designers, in conjunction with any planning controls and other legislation, to develop the design layout in such a way that trees selected for retention are provided with enough space."*

4 Key Objectives

4.1 To undertake a general assessment of specific trees located on or near the subject site.

4.2 To provide an assessment of the subject trees with respect to their overall condition, structure, safety and suitability for preservation.

4.3 To provide recommendations on the suitability of trees for removal or retention, and provide guidance on approved methods of tree protection if retention is recommended.

5 Method

5.1 A site and tree inspection was conducted on Monday 16th January, 2017.

5.2 The tree assessment consisted of a visual inspection, which was undertaken with regard to modern arboricultural principles and practices. The assessment did not involve a detailed examination of below ground or internal tree parts. The assessment was undertaken from the ground to determine species type and condition. Measurements were taken to establish trunk and crown dimensions. No tree samples or site soil samples were taken unless specified. Trunk diameters for trees on adjoining properties may be estimated due to site access limitations.

5.3 The trees have been allocated a retention value rating which combines tree condition factors with functional and aesthetic characteristics in the context of an urban landscape. The retention or preservation of trees may not depend solely on arboricultural considerations; therefore, the ratings may act as a guide to assist in decisions relating to tree management and retention.

5.4 A feature survey plan was not available for the site. Tree mapping was conducted using a combination of GNSS (Global Navigation Satellite System) real time differentially corrected point positions and orthorectified aerial imagery using field GIS (Geographic Information Systems) ESRI Arcpad software. GNSS positions were collected using a Javad GPS unit (Triumph 2, Glonass ready) and corrected using Vicmap Position - GPSnet™. GPSnet is a positioning and navigation correction service for Global Navigation Satellite System (GNSS) users, throughout Victoria.

Tree point accuracies collected using the GPS receivers typically range from 0.3m to 1.0m. The coordinate positions for each tree are projected to X and Y coordinates (metres) in Map Grid of Australia 1994 - Grid Coordinates (MGA94, Zone 55) and GDA94 longitude and latitude coordinates (decimal degrees).

5.5 The assessed trees have been located and numbered on the prepared plan (Appendix 3).

6 Observations

6.1 The site under review presented as a single semi-rural allotment (measuring approximately 3.23 hectares) and it contained a single dwelling and detached sheds and other farming type structures. The site adjoins a similar style property to the north and there are existing residential subdivisions to the south and west. Yan Yean Road frontage is located to the east. The subject site contained native and exotic plantings, including some mature indigenous trees.

6.2 Sixty-three (63) trees or shrubs were assessed in detail as part of the site review. This included 60 trees on the subject site, 2 neighbouring trees and 1 street tree. The detail of each individual tree assessment is provided in table format at Appendix 1. Tree numbers within the assessment table correspond to those provided on the prepared plan (Appendix 3).

6.3 A further 275 trees (approximate) were examined and recorded amongst 13 individual Tree Groups. The majority of group records contained the same species throughout the group. All of the tree groups were assigned a retention value of ‘Low’. The majority of tree groups were windrow plantings of Cypress, orchard style plantings of Olives or other fruit trees and palm trees. The detail of each individual tree group assessment is provided in table format at Appendix 1a. Tree group numbers within the assessment table correspond to those provided on the prepared plan (Appendix 3).

6.4 The site is influenced by a local vegetation control. A City of Whittlesea Vegetation Protection Overlay (VPO) and Schedule 1 to the Overlay (VPO1) apply to the site. This is based on a planning property report for the site being obtained from www.dtpli.vic.gov.au/planning on 04/01/17. The overlay states:

- No permit is required to remove, destroy or lop vegetation, which is not native vegetation.

The overlay specifically mentions the following tree species as being particularly significant:

> *Vegetation within the Redgum Grassy Woodlands of particular significance includes; River Red Gum, Black Box, White Box and Grey Box, Yellow Box and various native grasses*.

6.5 Native vegetation is defined as '*Plants that are indigenous to Victoria, including trees, shrubs, herbs, and grasses'* under the Definitions of the State Planning provisions – Clause 72.

6.6 Trees that are native to Victoria will also be influenced by Clause 52.17 (Native vegetation) of the planning scheme because the site is larger than 0.4ha. This clause has particular obligations and requirements relating to indigenous trees, but there are also exemptions that apply under this clause.

6.7 There are also exemptions provided under Clause 52.48 of the Victoria Planning Provisions (Bushfire Protection: Exemptions) in relation to any vegetation controls. Trees that are situated within 10m of an existing dwelling and within 4m of the property boundary are exempt from any permit requirements relating to vegetation removal. This exemption would apply to a proportion of the vegetation on the site because some of assessed trees were within 4m of the title boundaries, or within 10m of the existing dwelling.

6.8 Nearly all of the trees recorded in the survey were located within the eastern half of the property.

6.9 There was no *Eucalyptus camaldulensis* (River Red Gum) recorded on the property.

6.10 The following 24 indigenous trees were identified as part of the survey and they would need to be considered under VPO1 and Clause 52.17 (Native vegetation). This group includes mostly *Eucalyptus goniocalyx* (Long-leaved Box), *Eucalyptus melliodora* (Yellow Box) and a few Wattle trees. Tree 11, 12 & 20 include neighbouring trees and 1 street tree. Tree 9, 59 & 60 are dead or near dead.

- Tree 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 15, 17, 20, 33, 57, 58, 59, 60, 61, 62, 63

6.11 The following 7 non-indigenous Victorian natives would also need a permit under Schedule 1 to the Vegetation Protection Overlay (VPO1):

- Tree 26, 28, 30, 53, 54, 55, 56

6.12 The following 32 trees do not require a permit for removal under Schedule 1 to the Vegetation Protection Overlay (VPO1) because they are not Victorian natives.

- Tree 13, 16, 18, 19, 21, 22, 23, 24, 25, 27, 29, 31, 32, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52

7 Discussion

The Australian Standard (AS4970-2009) – 'Protection of trees on development sites' puts forward a process for undertaking tree inspections and reports on property where development is being considered. It recommends a preliminary assessment to help guide planners and property owners with regard to the preservation of existing trees; that is trees that might contribute to the completed proposal. The standard points out that the preliminary report 'information is to be used by planners, architects and designers, in conjunction with any planning controls and other legislation, to develop the design layout in such a way that trees selected for retention are provided with enough space'.

These assessments generally reveal a range of trees with differing attributes for health, structure and overall value. Some trees may be considered insignificant for their size, age, species type or condition, but they might still be considered for retention because they are situated conveniently on the site. Conversely, some trees may be exceptional for various reasons but there may be no scope for their retention because of their location and other site constraints. An

objective of the tree assessment is to determine trees that may be preferable, in terms of preservation, and to identify poor or insignificant trees that may be easily replaced or replaced with better species.

The arborist must also exercise judgement and expertise with respect to the types of trees that are deemed suitable for retention, and they should also consider what stage the tree is at in its overall lifecycle.

The subject site presented as a semi-rural property with planted trees and indigenous trees. The vegetation on the land was concentrated towards the eastern half of the site and the dominant indigenous tree species was *Eucalyptus goniocalyx (Long-leaved Box)* and *Eucalyptus melliodora (Yellow Box).*

The assessment was undertaken with regard to contemporary arboricultural principles and practices. On the basis of these principles and criteria, the site contained the following 6 trees of 'Moderate' and 'High' retention value (underlined):

- Tree 4, 5, 28, 57, 62, 63

Five of the 6 trees in this group are indigenous, and they would be influenced by Clause 52.17 (Native vegetation). All the trees in this group would be influenced by Schedule 1 to the Vegetation Protection Overlay (VPO1).

Thirty-two (32) trees were assigned a 'Low' retention value and a recommendation of 'Could be retained'. This group included indigenous, native and exotic trees in variable condition. Trees assigned a 'Low' retention value do not generally warrant design modifications to facilitate their retention.

A further 15 trees were assigned a 'Low' retention value and a recommendation of 'Remove'. Trees in this category displayed poor health and or structure and they would generally be removed regardless of the changes proposed for the land.

A total of 7 trees were assigned a retention value of 'None' and a recommendation of 'Remove'. Trees in this category included weed species such as *Chamaecytisus palmensis (Tree Lucerne)* and dead or near dead trees that should be removed regardless of the changes proposed for the land.

The retention values indicated above basically disregard any vegetation controls that apply to the land, and the values are assigned on the basis of individual tree condition factors, combined with functional and aesthetic characteristics in the context of an urban landscape. The statutory obligations of tree preservation, from a planning perspective, are often different compared to the arboricultural characteristics that identify a tree with potential usefulness in an urban landscape.

The 13 Tree Group records examined included 'Low' value exotic plants, except for 1 small native group (Grp 6) of 3 *Acacia implexa* (Lightwood). Group 7 & 8 - X*Cupressocyparis leylandii* (Leyland Cypress) appear to be located in the neighbouring properties to the south, but the property cadastre indicates that this southern boundary fence may be incorrectly positioned, and the trees may be located within the subject site. This might only be verified by a title re-establishment survey.

Street tree 20 - *Eucalyptus goniocalyx* (Long-leaved Box) was in poor condition, but it may still need to be considered in the design response.

Neighbouring trees 11 & 12 - *Eucalyptus melliodora (Yellow Box)* are large significant trees that were assigned a 'High' retention value and they would need to be considered in the design response.

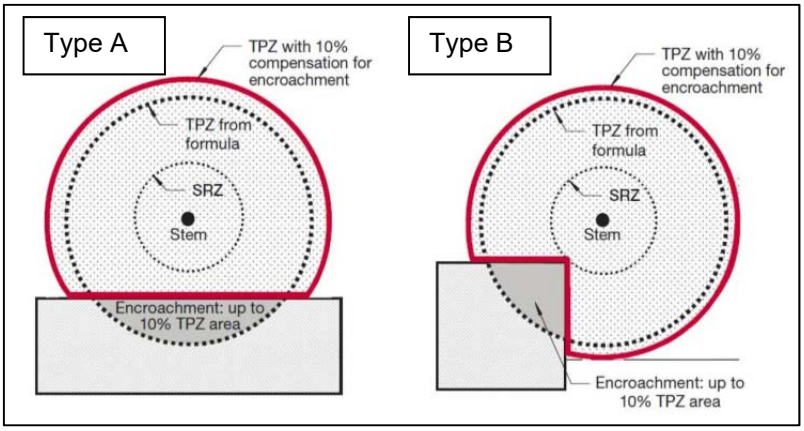
The Tree Protection Zones for each of these trees is illustrated at Appendix 3 and listed at Appendix 1.

7.1 Tree protection zones on construction sites

The level of encroachment and the impact to specific trees can be estimated by comparing standard or modified tree protection clearances with those clearances provided to trees in the design. The overall impact on any given tree will be based on the severity of encroachment into the respective tree protection zones. The degree of root activity in the tree protection zone can vary significantly (because of existing structures or soil conditions), which can result in more or less severe impacts to trees. It is often difficult to accurately determine the level of root activity in these zones and root investigations are generally impractical. The alternative to undertaking root investigations is to assign appropriate tree protection zones.

This report adopts AS4970-2009, Australian Standard – Protection of trees on development sites as the preferred tree protection method. The method provides a tree protection zone and a tree protection fencing distance (radial measurement from trunk centre) by using the width of the trunk at 1.4m above ground multiplied by 12. The prescribed TPZ distances are provided for each tree in Appendix 1 and they are also illustrated for indigenous trees at Appendix 3a.

There is scope under the standard to reduce the tree protection zone area by 10% without any further investigations. The rationale for any reduced tree protection distance (as may be necessary for some trees) is detailed in AS4970-2009 (*Australian Standard – Protection of trees on development sites*). Under encroachment Type A, it is acceptable to reduce the Tree Protection Zone (TPZ) area by 10%. This translates to a reduction in radial clearance distance of approximately 33% on one side of the tree only. This can be applied if there is contiguous space around the tree for root development to occur. The following diagram (from AS4970-2009) is provided to illustrate the approach.



8 Summary & Recommendations

8.1 The following 24 indigenous trees were identified as part of the survey and they would need to be considered under VPO1 and Clause 52.17 (Native vegetation). This group includes mostly *Eucalyptus goniocalyx* (Long-leaved Box), *Eucalyptus melliodora* (Yellow Box) and a few Wattle trees. Tree 11, 12 & 20 include neighbouring trees and 1 street tree. Tree 9, 59 & 60 are dead or near dead. The following trees and their Tree Protection Zones according to AS4970 are specifically highlighted at Appendix 3a.

- Tree 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 15, 17, 20, 33, 57, 58, 59, 60, 61, 62, 63

8.2 The obligations and application arrangements under Clause 52.17 may not be particularly onerous for the site. However, the process of any application under Clause 52.17 should be referred to a suitably qualified ecologist.

8.3 The following 7 non-indigenous Victorian natives also technically need a permit under Schedule 1 to the Vegetation Protection Overlay (VPO1), but they are less significant than the indigenous tree group mentioned above:

- Tree 26, 28, 30, 53, 54, 55, 56

8.4 The following 32 trees do not require a permit for removal under Schedule 1 to the Vegetation Protection Overlay (VPO1) because they are not Victorian natives.

- Tree 13, 16, 18, 19, 21, 22, 23, 24, 25, 27, 29, 31, 32, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52

8.5 The site contained the following 6 trees of 'Moderate' and 'High' retention value (underlined) with regard to contemporary arboricultural principles and practices:

- Tree 4, 5, 28, 57, 62, 63

Five of the 6 trees in this group are indigenous, and they would be influenced by Clause 52.17 (Native vegetation). All the trees in this group would be influenced by Schedule 1 to the Vegetation Protection Overlay (VPO1).

8.6 The remaining 54 trees on the site were assigned retention values of 'Low' or 'None' and they would not ordinarily deserve design modifications to facilitate their retention.

8.7 The 13 Tree Group records examined included 'Low' value exotic plants, except for 1 small native group (Grp 6) of 3 *Acacia implexa* (Lightwood). Group 7 & 8 - X*Cupressocyparis leylandii* (Leyland Cypress) appear to be located in the neighbouring properties to the south, but the property cadastre indicates that this southern boundary fence may be incorrectly positioned, and the trees may be within the subject site. This might only be verified by a title re-establishment survey. A permit would not be required to remove any tree groups, apart from Group 6.

8.8 Street tree 20 - *Eucalyptus goniocalyx* (Long-leaved Box) was in poor condition, but it may still need to be considered in the design response.

8.9 Neighbouring trees 11 & 12 - *Eucalyptus melliodora (Yellow Box)* are large significant trees that were assigned a 'High' retention value and they would need to be considered in the design response.

8.10 Any vegetation in the study area that was not assessed as part of this report was considered insignificant, generally undesirable or sufficiently clear of any expected site changes.

Dean Simonsen (BAppSc *Melb*.)
Consultant Arborist

9 References

Australian Standard AS 4970, 2009. *Protection of trees on development sites*. Standards Australia

10 Definitions

The TPZ and SRZ are defined in AS4970-2009, Australian Standard – Protection of trees on development sites as:

Tree protection zone (TPZ)
A specified area above and below ground and at a given distance from the trunk set aside for the protection of a tree's roots and crown to provide for the viability and stability of a tree to be retained where it is potentially subject to damage by development.

Structural root zone (SRZ)
The area around the base of a tree required for the tree's stability in the ground. The woody root growth and soil cohesion in this area are necessary to hold the tree upright. The SRZ is nominally circular with the trunk at its centre and is expressed by its radius in metres. This zone considers a tree's structural stability only, not the root zone required for a tree's vigour and long-term viability, which will usually be a much larger area.

Tree Assessment Detail for 815 Yan Yean Road, Doreen

Appendix 1

No	SPECIES	COMMON NAME	DBH (cm)	TPZ AS4970 (m)	SRZ (m)	HxW (m)	AGE	HEALTH	STRUCTURE	FORM	ULE	COMMENT	TREE TYPE	RETENTION VALUE	RECOMMEND	X coordinate	Y coordinate
1	*Eucalyptus melliodora*	Yellow Box	40	4.80	2.34	10x7	Semi-mature	Fair	Fair to Poor	Symmetric	15 to 30 years	Upper canopy defect bifurcation	Indigenous	Low	Could be retained	335501.517	5835273.536
2	*Eucalyptus melliodora*	Yellow Box	24	2.88	1.89	10x6	Semi-mature	Fair	Poor	Symmetric	5 to 15 years	Limbfall evidence, Bifurcation of main stem with included bark	Indigenous	Low	Remove	335502.131	5835280.525
3	*Eucalyptus goniocalyx*	Long-leaved Box	19	2.28	1.71	8x5	Semi-mature	Fair to Poor	Fair to Poor	Asymmetric	15 to 30 years		Indigenous	Low	Could be retained	335494.688	5835278.592
4	*Eucalyptus melliodora*	Yellow Box	28	3.36	2.01	11x5	Semi-mature	Fair	Fair	Symmetric	30 to 50 years		Indigenous	Moderate	Could be retained	335492.418	5835279.601
5	*Eucalyptus melliodora*	Yellow Box	27	3.24	1.98	12x5	Semi-mature	Fair	Fair	Symmetric	30 to 50 years		Indigenous	Moderate	Could be retained	335492.880	5835278.777
6	*Eucalyptus goniocalyx*	Long-leaved Box	27	3.24	1.98	9x7	Semi-mature	Fair to Poor	Fair to Poor	Asymmetric	15 to 30 years	Dieback, In decline	Indigenous	Low	Could be retained	335492.827	5835275.711
7	*Eucalyptus goniocalyx*	Long-leaved Box	12	2.00	1.5	5x3	Semi-mature	Fair to Poor	Fair to Poor	Asymmetric	5 to 15 years	Suppressed	Indigenous	Low	Remove	335489.487	5835275.865
8	*Eucalyptus goniocalyx*	Long-leaved Box	45,39 (59.5)	7.14	2.76	11x11	Maturing	Fair	Poor	Minor asymmetry	5 to 15 years	Muliple bifurcations with included bark	Indigenous	Low	Remove	335487.356	5835274.205
9	*Eucalyptus goniocalyx*	Long-leaved Box	36	4.32	2.24	9x10	Semi-mature	Poor	Very poor	Asymmetric	0 years	Near dead, Active split, Bifurcation of main stem with included bark	Indigenous	None	Remove	335489.183	5835281.928
10	*Eucalyptus goniocalyx*	Long-leaved Box	36	4.32	2.24	9x8	Semi-mature	Fair	Fair to Poor	Minor asymmetry	15 to 30 years		Indigenous	Low	Could be retained	335480.571	5835283.069
11	*Eucalyptus melliodora*	Yellow Box	70	8.40	2.96	19x18	Maturing	Fair	Fair	Minor asymmetry	50+ years		Indigenous	High	Neighbour's tree	335520.873	5835288.532
12	*Eucalyptus melliodora*	Yellow Box	75	9.00	3.05	19x18	Maturing	Fair	Fair	Minor asymmetry	50+ years		Indigenous	High	Neighbour's tree	335472.369	5835294.823
13	*Chamaecytisus palmensis*	Tree Lucerne	16,11 (19.4)	2.33	1.72	4x5	Semi-mature	Fair	Fair to Poor	Minor asymmetry	0 years	Woody weed	Exotic evergreen	None	Remove	335524.552	5835238.983
14	*Acacia implexa*	Lightwood	16,14 (21.3)	2.56	1.79	5x5	Semi-mature	Very Poor	Very poor	Asymmetric	1 to 5 years	Bifurcation of main stem with included bark, In severe decline	Indigenous	Low	Remove	335527.633	5835234.601
15	*Acacia implexa*	Lightwood	20,20,15,15,14 (38)	4.56	2.29	7x8	Semi-mature	Fair	Poor	Asymmetric	5 to 15 years	Muliple bifurcations with included bark	Indigenous	Low	Could be retained	335527.735	5835228.397
16	*Chamaecytisus palmensis*	Tree Lucerne	12	2.00	1.5	3x3	Semi-mature	Fair	Fair to Poor	Asymmetric	0 years	Woody weed	Exotic evergreen	None	Remove	335526.798	5835220.495
17	*Acacia implexa*	Lightwood	22	2.64	1.82	6x6	Semi-mature	Fair	Poor	Symmetric	5 to 15 years		Indigenous	Low	Could be retained	335527.390	5835218.724
18	*Chamaecytisus palmensis*	Tree Lucerne	12	2.00	1.5	3x3	Semi-mature	Fair	Fair to Poor	Asymmetric	0 years	Woody weed	Exotic evergreen	None	Remove	335526.207	5835215.176
19	*Chamaecytisus palmensis*	Tree Lucerne	12	2.00	1.5	3x3	Semi-mature	Fair	Fair to Poor	Asymmetric	0 years	Woody weed	Exotic evergreen	None	Remove	335526.705	5835210.969
20	*Eucalyptus goniocalyx*	Long-leaved Box	55	6.60	2.67	12x10	Maturing	Fair to Poor	Poor	Major asymmetry	5 to 15 years	In severe decline	Indigenous	Low	Street tree	335527.529	5835200.584
21	*Eucalyptus scoparia*	Wallangarra White Gum	32	3.84	2.13	11x8	Semi-mature	Fair	Fair to Poor	Symmetric	15 to 30 years		Australian native	Low	Could be retained	335488.202	5835193.457
22	*Eucalyptus bancroftii*	Bancroft's Red Gum	20	2.40	1.75	9x4	Semi-mature	Fair	Fair	Minor asymmetry	30 to 50 years		Australian native	Low	Could be retained	335484.617	5835193.718
23	*Eucalyptus scoparia*	Wallangarra White Gum	28	3.36	2.01	11x8	Semi-mature	Fair	Fair	Symmetric	15 to 30 years		Australian native	Low	Could be retained	335481.175	5835194.468
24	*Eucalyptus bancroftii*	Bancroft's Red Gum	23	2.76	1.85	9x4	Semi-mature	Fair	Fair	Minor asymmetry	30 to 50 years		Australian native	Low	Could be retained	335477.705	5835194.842
25	*Eucalyptus* sp.	Gum Tree	18	2.16	1.67	7x5	Semi-mature	Fair	Fair	Symmetric	30 to 50 years		Australian native	Low	Could be retained	335467.496	5835195.243
26	*Eucalyptus sideroxylon*	Red Ironbark	32,28 (42.5)	5.10	2.4	10x8	Semi-mature	Fair	Poor	Symmetric	15 to 30 years	Bifurcation of main stem with included bark	Victorian native	Low	Remove	335460.473	5835196.367
27	*Eucalyptus* sp.	Gum Tree	24,16 (28.8)	3.46	2.04	8x8	Semi-mature	Fair	Poor	Symmetric	5 to 15 years	Muliple bifurcations with included bark	Australian native	Low	Remove	335453.954	5835197.366
28	*Eucalyptus sideroxylon*	Red Ironbark	42	5.04	2.39	11x10	Semi-mature	Fair	Fair	Minor asymmetry	30 to 50 years		Victorian native	Moderate	Could be retained	335446.481	5835197.909
29	*Pinus* sp.	Pine	25	3.00	1.92	9x5	Semi-mature	Fair	Poor	Asymmetric	5 to 15 years	Acute branch attachments, Suppressed, 2 needles	Exotic conifer	Low	Remove	335443.694	5835198.591
30	*Eucalyptus leucoxylon*	Yellow Gum	32	3.84	2.13	8x10	Semi-mature	Fair	Fair to Poor	Minor asymmetry	30 to 50 years		Victorian native	Low	Could be retained	335428.988	5835200.197
31	*Cupressus macrocarpa*	Monterey Cypress	32	3.84	2.13	7x6	Semi-mature	Fair to Poor	Poor	Minor asymmetry	5 to 15 years	Limbfall evidence	Exotic conifer	Low	Remove	335416.834	5835201.839
32	*Cupressus macrocarpa*	Monterey Cypress	43	5.16	2.41	9x10	Semi-mature	Fair	Fair to Poor	Minor asymmetry	15 to 30 years		Exotic conifer	Low	Remove	335405.406	5835202.583
33	*Acacia melanoxylon*	Blackwood	25	3.00	1.92	8x7	Semi-mature	Fair	Fair to Poor	Major asymmetry	15 to 30 years	Planted?, Suppressed	Indigenous	Low	Could be retained	335401.527	5835203.296
34	*Olea europaea*	Olive	15	2.00	1.55	4x4	Semi-mature	Fair	Fair to Poor	Asymmetric	30 to 50 years		Exotic evergreen	Low	Could be retained	335459.841	5835212.441
35	*Washingtonia filifera*	California Palm	45	3.00	1.5	5x4	Maturing	Fair	Fair	Symmetric	50+ years		Palm	Low	Could be retained	335408.520	5835220.754
36	*Phoenix canariensis*	Canary Island Date Palm	20	3.50	1.5	4x5	Maturing	Fair	Fair	Symmetric	50+ years		Palm	Low	Could be retained	335416.867	5835216.020
37	*Phoenix canariensis*	Canary Island Date Palm	60	4.50	1.5	6x7	Maturing	Fair	Fair	Symmetric	50+ years		Palm	Low	Could be retained	335425.090	5835223.788
38	*Platycladus orientalis*	Bookleaf Cypress	15	2.00	1.55	3x2	Maturing	Fair	Fair	Symmetric	15 to 30 years		Exotic conifer	Low	Could be retained	335439.234	5835223.522
39	*Juniperus* sp.	Juniper	16	2.00	1.59	5x2	Maturing	Fair	Fair	Symmetric	15 to 30 years		Exotic conifer	Low	Could be retained	335446.619	5835222.806
40	*Juniperus* sp.	Juniper	16	2.00	1.59	5x2	Maturing	Fair	Fair	Symmetric	15 to 30 years		Exotic conifer	Low	Could be retained	335451.854	5835222.343
41	*Picea pungens*	Blue Spruce	17	2.04	1.63	6x3	Semi-mature	Fair	Fair	Symmetric	30 to 50 years		Exotic conifer	Low	Could be retained	335460.326	5835222.432
42	*Magnolia grandiflora*	Bull Bay	10	2.00	1.5	3x3	Semi-mature	Fair	Fair	Symmetric	30 to 50 years		Exotic evergreen	Low	Could be retained	335459.773	5835224.864
43	*Magnolia grandiflora*	Bull Bay	10	2.00	1.5	3x3	Semi-mature	Fair	Fair	Symmetric	30 to 50 years		Exotic evergreen	Low	Could be retained	335459.812	5835226.297
44	*Magnolia grandiflora*	Bull Bay	10	2.00	1.5	3x3	Semi-mature	Fair	Fair	Symmetric	30 to 50 years		Exotic evergreen	Low	Could be retained	335459.812	5835227.710
45	*Araucaria heterophylla*	Norfolk Island Pine	68	8.16	2.92	16x11	Maturing	Fair to Poor	Fair	Symmetric	30 to 50 years		Native conifer	Low	Could be retained	335464.805	5835233.098
46	*Gleditsia triacanthos*	Honey Locust	15	2.00	1.55	4x5	Semi-mature	Fair	Fair	Symmetric	15 to 30 years		Exotic deciduous	Low	Could be retained	335466.504	5835242.341
47	*Cedrus deodara*	Deodar	15,12 (19.2)	2.30	1.72	5x5	Semi-mature	Fair	Fair to Poor	Symmetric	30 to 50 years		Exotic conifer	Low	Could be retained	335457.810	5835241.171
48	*Magnolia Xsoulangeana*	Saucer Magnolia	15	2.00	1.55	4x4	Semi-mature	Fair to Poor	Fair to Poor	Symmetric	15 to 30 years	Multi-stemmed from base	Exotic deciduous	Low	Could be retained	335454.314	5835232.805
49	*Eucalyptus cinerea*	Argyle Apple	60	7.20	2.77	13x9	Semi-mature	Fair	Poor	Asymmetric	5 to 15 years	Major limbfall evidence and associated wound, Upper canopy defect bifurcation	Australian native	Low	Remove	335451.471	5835246.378
50	*XCupressocyparis leylandii*	Leyland Cypress	20,15,15,15,15 (36.1)	4.33	2.24	9x8	Semi-mature	Fair	Poor	Symmetric	5 to 15 years		Exotic conifer	Low	Remove	335450.873	5835258.617
51	*XCupressocyparis leylandii*	Leyland Cypress	20,15,15 (29.2)	3.50	2.05	8x6	Semi-mature	Fair	Poor	Symmetric	5 to 15 years	Muliple bifurcations with included bark	Exotic conifer	Low	Remove	335426.223	5835261.156
52	*XCupressocyparis leylandii*	Leyland Cypress	20,15,15 (29.2)	3.50	2.05	8x6	Semi-mature	Fair	Poor	Symmetric	5 to 15 years	Muliple bifurcations with included bark	Exotic conifer	Low	Remove	335424.487	5835256.847
53	*Corymbia maculata*	Spotted Gum	25	3.00	1.92	9x6	Semi-mature	Fair	Fair to Poor	Symmetric	5 to 15 years	Upper canopy defect bifurcation	Victorian native	Low	Remove	335417.404	5835265.879
54	*Corymbia maculata*	Spotted Gum	25	3.00	1.92	10x6	Semi-mature	Fair	Fair to Poor	Symmetric	15 to 30 years		Victorian native	Low	Could be retained	335414.646	5835264.888
55	*Corymbia maculata*	Spotted Gum	23	2.76	1.85	9x6	Semi-mature	Fair	Fair	Symmetric	15 to 30 years		Victorian native	Low	Could be retained	335407.559	5835259.529
56	*Corymbia maculata*	Spotted Gum	20	2.40	1.75	9x5	Semi-mature	Fair	Fair	Symmetric	15 to 30 years		Victorian native	Low	Could be retained	335405.845	5835257.144
57	*Eucalyptus melliodora*	Yellow Box	74	8.88	3.03	16x16	Maturing	Fair	Fair to Poor	Symmetric	30 to 50 years		Indigenous	Moderate	Could be retained	335417.342	5835286.599
58	*Eucalyptus goniocalyx*	Long-leaved Box	78	9.36	3.1	12x13	Maturing	Poor	Very poor	Asymmetric	5 to 15 years	Major trunk decay and hollow at base	Indigenous	Low	Remove	335340.941	5835302.663
59	*Eucalyptus goniocalyx*	Long-leaved Box	84	3.2	3.2	12x15	Maturing	Dead	Poor	Asymmetric	0 years		Indigenous	None	Remove	335343.227	5835293.149
60	*Eucalyptus goniocalyx*	Long-leaved Box	68	2.92	2.92	6x2	Maturing	Dead	Poor	Minor asymmetry	0 years	Stump	Indigenous	None	Remove	335349.152	5835282.128
61	*Eucalyptus goniocalyx*	Long-leaved Box	120	14.40	3.71	18x15	Maturing	Fair	Poor	Minor asymmetry	5 to 15 years	Trunk decay-cavities, Major limbfall evidence multiple events	Indigenous	Low	Could be retained	335378.183	5835239.932
62	*Eucalyptus melliodora*	Yellow Box	88	10.56	3.26	20x20	Maturing	Fair	Fair	Symmetric	50+ years	Basal wound	Indigenous	High	Could be retained	335393.617	5835271.073
63	*Eucalyptus melliodora*	Yellow Box	96	11.52	3.38	20x20	Maturing	Fair	Fair	Minor asymmetry	50+ years	Exposed roots	Indigenous	High	Could be retained	335388.043	5835270.483

Group Assessment Detail for 815 Yan Yean Road, Doreen

Appendix 1a

No.	SPECIES	COMMON NAME	NO OF TREES	AVG DIAMETER	COMMENT	TREE TYPE	RETENTION VALUE	RECOMMEND
Grp 1	Cupressus macrocarpa	Monterey Cypress	13	70	13mx10m, Fair to Poor health, Cypress decline	Exotic conifer	Low	Remove
Grp 2	Cupressus sp.	Cypress	35	40	10mx6m, Poor health, Cypress decline, some dead	Exotic conifer	Low	Remove
Grp 3	Olea europaea	Olive	40	12	3mx3m	Exotic evergreen	Low	Remove
Grp 4	Olea europaea	Olive	20	12	3mx3m, Plus some Cherry	Exotic evergreen	Low	Remove
Grp 5	Prunus sp.	Almond, Cherry, Peach, Plum	22	12	3mx3m, Plus some Olives	Exotic deciduous	Low	Remove
Grp 6	Acacia implexa	Lightwood	3	5	3m x 2m	Indigenous	Low	Remove
Grp 7	XCupressocyparis leylandii	Leyland Cypress	9	25	9m x 5m	Exotic conifer	Low	Neighbour's trees?
Grp 8	XCupressocyparis leylandii	Leyland Cypress	25	20	6m x 3m	Exotic conifer	Low	Neighbour's trees?
Grp 9	XCupressocyparis leylandii	Leyland Cypress	50	10	6m x 3m	Exotic conifer	Low	Remove
Grp 10	Gleditsia triacanthos	Honey Locust	17	15	5m x 5m	Exotic deciduous	Low	Remove
Grp 11	Syagrus romanzoffiana	Queen Palm	15	20	5m x 5m	Palm	Low	Remove
Grp 12	Syagrus romanzoffiana	Queen Palm	6	20	5m x 5m	Palm	Low	Remove
Grp 13	Olea europaea	Olive	20	12	3mx3m	Exotic evergreen	Low	Remove

Appendix 2
Descriptors (Version C - 2013)

Field name	Description
No.	Tree identification number. Unique numbers are assigned to each assessed individual tree or tree group.
Species	Identifies the tree using the international taxonomic classification system of binomial (or trinomial) nomenclature (genus, species, variety and cultivar).
Common Name	Provides the common name as occurs in current Australian horticultural literature. More than one common name can exist for a single tree species, or several species can share the same common name.
DBH (Diameter at breast height)	Indicates the trunk diameter (expressed in centimetres) of an individual tree usually measured at 1.4m above the existing ground level. Multiple stemmed trees are calculated using a formula to combine the stems into a single stem for tree protection zone calculations.
TPZ (Tree protection zone)	Tree protection zone expressed as a radial distance in metres, measured from trunk centre. Based on AS 4970
TPZr (Tree protection zone reduced)	Reduced tree protection zone expressed as a radial distance in metres measured from trunk centre and justified according to a standard (Usually AS4970) or other method.
HxW (Height x Width)	Indicates height and width of single tree and measurement generally expressed in whole metres

Age	Description
Young	Sapling tree and/or recently planted
Semi-mature	Tree rapidly increasing in size and yet to achieve expected size in situation
Maturing	Specimen approaching expected size in situation, with reduced incremental growth
Over-mature	Tree is senescent and in decline

Health	Term assigned that provides a broad description of the health and vigour of the tree.					
Ratings	*Good*	*Fair*	*Fair to Poor*	*Poor*	*Very poor*	*Dead*

Structure	Term assigned that provides a broad description of the structure and stability of the tree.					
Ratings	*Good*	*Fair*	*Fair to Poor*	*Poor*	*Very poor*	*Failed*

Form	Description
Symmetric	Evenly balanced crown
Asymmetric	Crown biased in one direction; can be minor or major
Stump re-sprout	Adventitious shoots originating from stump or trunk
Manipulated	Hedge, pollard, topiary, windrow; managed for specific landscape use or aesthetic outcome

Comment	Additional comments that provide specific detail on the condition of the tree or management requirements

Tree type	Description
Indigenous	Occurs naturally in the area or region of the subject site (Planted means evidence was observed the tree was planted)
Victorian native	Occurs naturally within some part of Victoria (not exclusively) but is not indigenous
Australian native	Occurs naturally within Australia but is not a Victorian native or indigenous
Exotic deciduous	Occurs outside of Australia and typically sheds its leaves during winter
Exotic evergreen	Occurs outside of Australia and typically holds its leaves all year round
Exotic conifer	Occurs outside of Australia and is classified as a gymnosperm
Native conifer	Occurs naturally within Australia and is classified as a gymnosperm
Palm	Woody monocotyledon
Other	Other descriptions as indicated

Retention value	Qualitative rating provided on tree based on assessment factors. Provided as a guide for management decisions.			
Ratings	*High*	*Moderate*	*Low*	*None*

Recommend	Recommended action based on condition of the tree with reference to proposed site changes							
Responses	*Retain*	*Could be retained*	*Consider removal*	*Remove*	*Street tree*	*Neighbour's Tree*	*Already removed*	*Transplant*

Descriptors reviewed annually and subject to change

Arboricultural Assessment & Report
815 Yan Yean Road, Doreen
January 2017

Appendix 3
Tree & Group location plan

TREEMAP
ARBORICULTURE

Arboricultural Assessment & Report
815 Yan Yean Road, Doreen
January 2017

TPZ - AS4970
Indigenous trees

Appendix 3a
Tree & Group location plan

TREEMAP
ARBORICULTURE

Assumptions and limiting conditions of arboricultural consultancy report

1. Any legal description provided to Treemap Arboriculture is assumed to be correct. Any titles and ownerships to any property are assumed to be correct. No responsibility is assumed for matters outside the consultant's control.

2. Treemap Arboriculture assumes that any property or project is not in violation of any applicable codes, ordinances, statutes or other local, state or federal government regulations.

3. Treemap Arboriculture has taken care to obtain all information from reliable sources. All data has been verified insofar as possible; however Treemap Arboriculture can neither guarantee nor be responsible for the accuracy of the information provided by others not directly under Treemap Arboriculture control.

4. No Treemap Arboriculture employee shall be required to give testimony or to attend court by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee for such services.

5. Loss of this report or alteration of any part of this report not undertaken by Treemap Arboriculture invalidates the entire report.

6. Possession of this report or a copy thereof does not imply right of publication or use for any purpose by anyone but the client or their directed representatives, without the prior consent of the Treemap Arboriculture.

7. This report and any values expressed herein represent the opinion of the Treemap Arboriculture consultant and the Treemap Arboriculture fee is in no way conditional upon the reporting of a specified value, a stipulated result, the occurrence of a subsequent event, nor upon any finding to be reported.

8. Sketches, diagrams, graphs and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural drawings, reports or surveys.

9. Unless expressed otherwise: 1) Information contained in this report covers only those items that were covered in the project brief or that were examined during the assessment and reflect the condition of those items at the time of inspection; and 2) The inspection is limited to visual examination of accessible components without dissection, excavation or probing unless otherwise stipulated.

10. There is no warranty or guarantee, expressed or implied by Treemap Arboriculture, that the problems or deficiencies of the plants or site in question may not arise in the future.

11. All instructions (verbal or written) that define the scope of the report have been included in the report and all documents and other materials that the Treemap Arboriculture consultant has been instructed to consider or to take into account in preparing this report have been included or listed within the report.

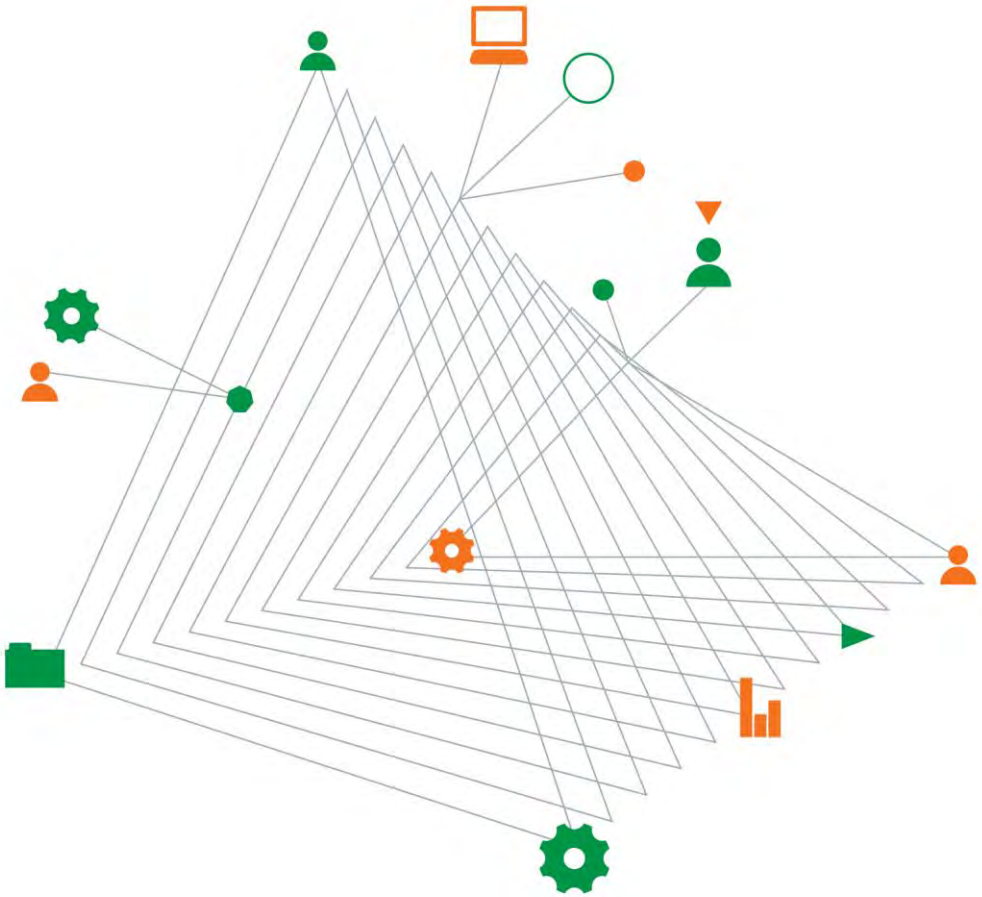
12. To the writer's knowledge all facts, matter and all assumptions upon which the report proceeds have been stated within the body of the report and all opinion contained within the report have been fully researched and referenced and any such opinion not duly researched is based upon the writers experience and observations.

Appendix 10 - Coffey – Environmental Assessment

Head & Humphreys Pty Ltd

Preliminary Environmental Assessment - 825 & 835 Yan Yean Road, Doreen, VIC

29 October 2015



Experience comes to life when it is powered by expertise

Preliminary Environmental Assessment - 825 & 835 Yan Yean Road, Doreen, VIC

Prepared for
Head & Humphreys Pty Ltd

Prepared by
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29 October 2015

ENAUABTF20236AB-R02

Quality information

Revision history

Revision	Description	Date	Author	Reviewer
R01	Final	27/10/ 2015	Ian Newby	Sarah Richards
R02	Amended Final	28/10/2015	Ian Newby	Sarah Richards

Distribution

Report Status	No. of copies	Format	Distributed to	Date
R01	1	PDF	Head & Humphreys Pty Ltd	27/10/2015
R02	1	PDF	Head & Humphreys Pty Ltd	29/10/2015

Executive summary

Head & Humphreys Pty Ltd (H&H) engaged Coffey Environments Australia Pty Ltd (Coffey) to undertake a preliminary environmental and geotechnical assessment at 825 and 835 Yan Yean Road, Doreen, Victoria (the site). The location of the site is presented in Figure 1 (Appendix A).

The site covers an area of approximately 6.6 ha and comprises rural residential properties, sheds and open space. It is understood that the two rural properties are proposed to be subdivided for residential development.

The objective of the environmental assessment was to evaluate the likelihood of contamination at the site by collecting and summarising information related to current and former uses that have had the potential to cause site contamination and to identify the chemical substances that are potentially associated with those activities. This was achieved by undertaking a Phase 1 desktop study, a site walkover and limited soil sampling across the site.

Based on the Phase 1 and limited Phase 2 environmental site assessment undertaken by Coffey, the following conclusions have been made:

- The desktop study and site inspection identified several areas of potential environmental concern, including maintenance sheds, waste storage areas, the infilled dam, vehicle storage areas, a burn site, 205 L drums and potential for the application of herbicides and pesticides across the site.
- Soil sampling was undertaken to target these areas of concern, with samples being analysed for the associated potential chemicals of concern.
- Parts of the site had a layer of fill/reworked natural soil, overlying silt and siltstone.
- Black staining was observed at the surface at the burn area. Some potential oil staining was also observed near maintenance sheds and around equipment storage. No other visual or olfactory evidence of contamination was observed during site works.
- No evidence of contamination was observed during the drilling through the infilled dam and chemicals were not reported above health or ecological investigation levels in the samples tested.
- Detectable concentrations of metals were reported in all samples and concentrations of zinc and/or nickel were above ecological investigation levels in the surface samples taken from the areas of visible staining from the burn area and the waste storage and maintenance areas.
- Detectable concentrations of petroleum hydrocarbons (TRH C_{16}-C_{40}) were reported in two samples taken from maintenance and waste storage areas of the site. These results exceeded the ecological screening levels.
- All other chemicals that were analysed, were reported below the laboratory limits of reporting. There were no results that exceeded human health investigation levels for a residential scenario.
- Stockpiled material on site, comprising either soil or bluestone, did not appear to have any impact from contamination. Soil stockpiled at the site appears to be sourced either from the site or locally.
- On the basis that potential contamination is limited to localised areas of shallow soil impact, there is considered to be a low risk of contamination of groundwater.

Based on the information reviewed, site observations and the results of targeted soil testing, Coffey considers that there is a low risk of contamination at the site that would adversely impact residential development. Localised areas of aesthetically impacted soil, which may also have a minor impact on site ecology, can be addressed by targeted removal during demolition and site preparation works.

This report must be read in the context of the limitations described in *Important information about your Coffey environmental report* attached.

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Figures (Appendix A)

Tables (Appendix B)

Appendices

1. Introduction

Head & Humphreys Pty Ltd (H&H) engaged Coffey Environments Australia Pty Ltd (Coffey) to undertake a preliminary environmental and geotechnical assessment at 825 and 835 Yan Yean Road, Doreen, Victoria (the site). The location of the site is presented in Figure 1 (Appendix A).

The site covers an area of approximately 6.6 ha and comprises residential properties, sheds and open space. It is understood that the two rural properties are to be subdivided for residential development.

The environmental and geotechnical investigations are required at the site to inform site development and as part of the planning process for the subdivision. The local council requested '*a suitably qualified professional to document the land use history of the site (desktop analysis), assess any potential sources of contaminants and provide a risk analysis. If further work is required as a result of that, then next steps would need to be identified*'.

The purchaser of the site requires an understanding of the approximate depth, composition and density of the material used to backfill the old dam and information regarding the remaining fill depths and types beneath the rock stockpile sites (if removed at the time of investigation).

1.1. Objectives

The objective of the environmental assessment was to evaluate the likelihood of contamination at the site by collecting and summarising information related to current and former uses that have had the potential to cause site contamination and to identify the chemical substances that are potentially associated with those activities.

The objectives of the geotechnical investigation were to inform the need for earthworks during development by providing information of the depth, composition and density of the backfill within the old dam and to assess the subsurface conditions and depth of fill across the site and specifically beneath the former rock stockpiles. The geotechnical assessment has been reported separately to this report. Refer to Coffey document ENAUABTF20236AB-R02 (Geotechnical Investigation).

1.2. Scope of works

The scope of works undertaken included a Phase 1 desktop study and limited Phase 2 environmental assessment. The scope of works for the Phase 1 included:

- A detailed site inspection to appraise current site condition and to check for any visual evidence of potential contamination;
- Review of historical aerial photographs at the Land Information Office of the Departments of Sustainability and Environment;
- Previous environmental reports for the site and surrounding area (if available), including Environmental Audits.
- Review of relevant site zonings;
- Licences and notices (i.e. water discharge licences, hazardous materials, trade waste etc.);
- Review of EPA Priority Sites Register to assess whether Clean Up or Pollution Abatement Notices have been issued for the site or immediately surrounding properties;
- Enquiry to the local water authority regarding site drainage plans and any trade waste records;
- Sewer and service plans (where available);
- Review of Cathodic Protection Systems Database (Energy Safe Victoria); and
- Review of geological, hydrogeological and topographical maps.

The scope of works for the targeted soil sampling assessment included:

- Drilling of one soil bore in the old dam to a maximum depth of 5.0 m.
- Five hand augers at 825 Yan Yean Road and three hand augers at 835 Yan Yean Road to a maximum depth of 0.5 m at locations selected based on observations made during the site inspection.
- Soil sampling of fill and natural soils.
- Laboratory analysis for chemicals of potential concern (COPCs), including:
    - Total Recoverable Hydrocarbons (TRH)
    - Benzene, toluene, ethylbenzene and xylenes (BTEX)
    - Polycyclic aromatic hydrocarbons (PAH)
    - Metals
    - Herbicides and pesticides
- Preparation of this report.

2. Site Information

This section presents the information obtained as part of the Phase 1 Environmental Site Assessment.

CheckSite reports were requested for 825 Yan Yean Road are presented as Appendix C. We note that, although the CheckSite reports were not requested specifically for 835 Yan Yean Road, the searches made by CheckSite cover a radius around the target site, which in this case includes the whole of 835 as well as 825 Yan Yean Road.

2.1. Site identification

General site information is presented in Table 2.1 below and site features are shown on Figure 2 (Appendix B).

Table 2.1: Site identification

Site Address	825 & 835 Yan Yean Road, Doreen, Victoria
Approximate Total Site Area	825 Yan Yean Road: 3.3 ha 835 Yan Yean Road: 3.3 ha
Title Identification Details 825 Yan Yean Road	Lot 1 on Title Plan 106083R (formerly known as Lot 32 on Plan of Subdivision 003700). Volume 09667 Folio 175.
Title Identification Details 835 Yan Yean Road	Lot 1 on Title Plan 103928C Volume 09642 Folio 240.
Planning Authority	City of Whittlesea
Current Zoning	General Residential Zone – Schedule 1 (GRZ1)
Current Site Use	Residential

Adjoining Site Uses	North: Residential East: College and open space South: Residential West: Residential

2.2. Topography, geology and hydrogeology

2.2.1. Topography

The elevation of the two blocks of land is between approximately 165 m and 195 m Australian Height Datum (AHD). The site generally slopes to the north west, with the highest point of the site being in the southeast. 835 Yan Yean Road is generally flatter than 825 Yan Yean Road.

The nearest surface water bodies to the site are Serle Wetland Park, located approximately 200 m west of the site, and Plenty River, located approximately 1.1 km southwest of the site.

2.2.2. Geology

The Geological Survey of Victoria 1:63,360 scale Yan Yean map sheet indicates that the site is underlain by Silurian aged Dargile Formation, which typically comprises sandstone interbedded with siltstone and shale. The subsurface conditions encountered beneath the fill at the site are considered to be generally consistent with the geological map indications.

2.2.3. Hydrogeology

Based on information obtained from Visualising Victoria's Groundwater (www.vvg.org.au), groundwater at the site is predicted to be between 5 and 10 m below ground surface (BGS) in the west of the site and between 10 and 20 mBGS in the east of the site. Based on the Groundwaters of Victoria Beneficial Use map, salinity at the site is expected to be between 1,001 and 3,500 mg/L total dissolved solids (TDS). This TDS concentration would classify the groundwater as Segment B under the 1997 State Environment Protection Policy (SEPP) *Groundwaters of Victoria* (Groundwater SEPP), issued under the *Environment Protection Act 1970*. The protected beneficial uses of groundwater include Maintenance of Ecosystems, Potable Mineral Water Supply, Agriculture, Parks and Gardens, Stock Watering, Industrial Water Use, Primary Contact Recreation and Buildings & Structures.

No registered groundwater bores were identified within 1 km of the site.

2.3. Site history

Aerial photographs since 1951 (Appendix C) show that both sites were covered with grass and sparse trees and appeared to be grazing paddocks associated with a rural residential property directly south of 825 Yan Yean Road. There was no evidence of stock infrastructure (such as dips or yards on the subject sites). The 1965 Morang Parish Plan indicates that an area of approximately 300 ha, including 825 and 835 Yan Yean Road was acquired by William Verner in February 1940.

The current dwellings on 825 and 835 Yan Yean Road were erected between 1979 and 2004. The site has remained relatively unchanged since 2004. Aerial photographs of the area were not available between 1979 and 2004. The parent title for 825 Yan Yean Road was in 1985, and it is likely that the larger grazing property was divided at this time into the current rural residential lots.

2.4. Environmental Audits and EPA Priority Sites Register

There have been no Certificates or Statements of Environmental Audit within 1 km of the site and there are no sites on the EPA Priority Sites Register within 1 km of the site.

2.5. Site inspection summary

Observations made during the site walkover conducted on 12 October are summarised in the sections below. Please refer to Figure 2 for the locations of points of interest discussed. Site Photographs taken during the site inspection can be found in Appendix F.

2.5.1. 825 Yan Yean Road

The site comprised a large, single-storey dwelling with a swimming pool. To the north and west of the property were sheds and shipping containers, with vehicle storage (cars, trucks and mini excavators).

Areas of interest are summarised below. Refer to Figure 2 for the location of each point.

1. Shed containing motorcycles and maintenance equipment.
2. Waste / storage area – including car and motorcycle parts, tyres, lead-acid batteries, a 205 L closed head drum, engine oil cans, jerry cans, metal and wood.
3. Burn area – some black staining and charcoal observed at the surface.
4. Waste / storage area – including a wood pile, household electrical components, plastics, excavator parts, tyres and metal.
5. Propane above-ground storage tank (AST).
6. Old dam site. Infilled. No visual signs of contamination at the surface.
7. Cars (appear to have been stored long term based on length of grass underneath and presence in historical aerial photographs).

Other observations made during the site walkover included the following:

- A second workshop/shed (shown on Figure 2), which was locked.
- Two locked shipping containers.
- An area of stressed vegetation, likely to have been caused by rabbits.
- Two haulage trucks.

2.5.2. Stockpiles on 825 Yan Yean Road

Several stockpiles were observed during the site walkover of 825 Yan Yean Road. The following table summarises the approximate size and composition of stockpiles on site. Stockpile locations are shown on Figure 2.

Table 2.2: Summary of stockpiles

Stockpile ID	Composition	Approximate size (m^3)
SP1	Bluestone and silt soil	200
SP2	Bluestone	20
SP3	Bluestone	20

Stockpile ID	Composition	Approximate size (m^3)
SP4	Bluestone	20
SP5*	Silt soil	75

* Five separate piles of the same material (approx. 15 m^3 each) grouped together.

2.5.3. 835 Yan Yean Road

The eastern portion of the site comprised two single storey buildings, paved and gravelled areas, ornamental gardens and a pond, trees and grassed areas. The western portion of the site comprised several small storage sheds, a large pond, trees and grassed areas.

Areas of interest are summarised below. Refer to Figure 2 for the location of each point.

8. 205 L closed head drums (x4). Appear to be undamaged and closed.
9. 2 x empty intermediate bulk container (IBC). Labels are for Eurofount N. Contains chloromethylisothiazolone (a biocide) and diethylene glycol monobutyl ether (a solvent used in products such as pesticides, inks and dyes).

Chloromethylisothiazolone and diethylene glycol monobutyl ether have not been targeted in the limited soil assessment as there was no evidence of recent use of these chemicals at the site and the analysis and interpretation of risk in soil is onerous. Chloromethylisothiazolone is expected to degrade rapidly in the environment. If used on site, the chemicals would be expected to be present in combination with pesticides or herbicides.

2.6. Summary of areas of environmental concern and contaminants of potential concern

Based on the findings of the Phase 1 ESA, areas of the site were identified that had the potential to pose a risk of harm to environmental or human health as a result of current or previous site activities. The AECs and chemicals of potential concern (COPCs) are summarised in the table below.

Table 2.3: Summary of AECs and associated COPCs

Area	General COPCs
825 Yan Yean Road	
Sheds and waste/storage areas	TRH, BTEX, metals, PAH
Branch burning area	PAH
Vehicle storage areas	TRH, BTEX, metals, PAH
Infilled dam	PAH, metals, asbestos
General grassed areas	Pesticides and herbicides
835 Yan Yean Road	
205 l closed head drum area	TRH, BTEX, lead, PAH
General grassed areas	Pesticides and herbicides

TRH: Total Recoverable Hydrocarbons
BTEX: benzene, toluene, ethylbenzene and xylenes *PAH: polycyclic aromatic hydrocarbons*

It is noted that no evidence of asbestos or asbestos containing material (ACM) was observed during the site walkover.

3. Phase 2 soil sampling methodology

A summary of the works and methodologies undertaken at the site as part of the ESA are presented below.

Table 3.1: Site assessment works

Activity	Details
Drilling	Dial Before You Dig (DBYD) plans were reviewed prior to selecting drilling locations. Soil bore SB1 was drilled using a truck mounted Explorar 50 drill rig. The soil bore was extended using solid stem augers and SPT methods to a maximum depth of 5.0 m below ground surface (BGS). Soil bore locations HA1 to HA8 were progressed using a hand auger to a maximum depth of 0.5 mBGS. Hand auger locations were selected based on observations made during the site inspection. Soil type classifications and descriptions are based on USCS and AS4482.1-1997. Soil bore logs are included in Appendix D.
Soil Sampling Method	Soil sampling and logging of subsurface conditions was conducted by an experienced Coffey consultant.
Stockpiles	Samples were collected from all stockpiles that were observed to contain soil on site. Other stockpiles, which appeared to consist of only bluestone, were not sampled.
Decontamination procedure	All reusable sampling equipment (including the hand auger) was decontaminated between sampling locations using laboratory grade detergent and rinsed with deionised water.
Disposal of Soil Cuttings	Soil cuttings were used to backfill soil bores.
Laboratory Analysis	Soil and groundwater samples were analysed for TRH C_6 – C_{40}, BTEXN and PAHs. The primary laboratory was ALS. The secondary laboratory was Eurofins. Both laboratories are accredited by the National Association of Testing Authorities (NATA) for the analyses undertaken.

4. Assessment Criteria

4.1. Regulatory framework for soil assessment

The *State Environment Protection Policy (Prevention and Management of Contamination of Land)* (the Land SEPP) sets out the regulatory framework for the prevention and management of contaminated land within the State of Victoria. The beneficial uses of land requiring protection under this policy, based on the current and/or potential future land use(s) are shaded in Table 4.1.

Table 4.1: Protected beneficial uses of land*

Beneficial Uses	Land Use						
	Parks & Reserves	Agricultural	Sensitive Use		Recreational/Open Space	Commercial	Industrial
			High Density	Other			
Maintenance of Ecosystems							
Natural Ecosystems	✓						
Modified Ecosystems	✓	✓		✓	✓		
Highly Modified Ecosystems		✓	✓	✓	✓	✓	✓
Human Health	✓	✓	✓	✓	✓	✓	✓
Buildings & Structures	✓	✓	✓	✓	✓	✓	✓
Aesthetics	✓		✓	✓	✓	✓	
Production of Food, Flora & Fibre	✓	✓		✓			

Note: Shading denotes beneficial uses to be protected for the site.
**: The above table is a reproduction of Table 1 from the State Environment Protection Policy Prevention and Management of Contamination of Land (June 2002).*

Current site users

Given that residential properties are present on the site, the beneficial uses to be protected for the current site use is considered to be “Sensitive Use – Other”.

Potential future low density residential users

The beneficial use to be protected for potential future low density residential users is considered to be “Sensitive Use – Other”.

Based on the highlighted relevant beneficial uses from the above table, the adopted criteria associated with each of these beneficial uses are discussed below. Where the listed guidelines do not provide criteria for specific analytes, alternative criteria have been adopted. Where applicable, these criteria are discussed and referenced below.

Maintenance of Ecosystems

The protection of the beneficial use “Maintenance of Ecosystems” has been assessed with reference to the Ecological Investigation Levels (EILs) for metals and Ecological Screening Levels (ESLs) for petroleum hydrocarbons provided in Schedule B1 of the NEPM 2013. Ecological receptors (or values) are defined in the *NEPM 2013* as plants, animals, fungi or ecological processes associated with a defined area that are considered to be of significant societal, ecological or economic significance. Relevant ecological receptors at the site are considered to include surface and creek vegetation, as well as shallow dwelling terrestrial organisms. Given that accommodation facilities are present on the site, and the presence of garden/accessible soil, in addition to the potential for future low density residential site users, the reported soil conditions have been compared to the Urban residential/public open space criteria. The NEPM 2013 provides an approach for calculating site specific EILs for chromium (III), copper, nickel and zinc as the added contaminant limit (ACL), which has been adopted for this assessment. This requires consideration of the ambient background concentration (ABC) and key soil characteristics (i.e. pH and CEC). The ABC and ACL was calculated for chromium, copper, lead, nickel and zinc in the two predominant natural soil types encountered at the site (silty clay and sandy clay) and used in conjunction with pH and/or CEC values to calculate the respective EILs.

ESLs for petroleum hydrocarbons are provided for coarse textured soils. The appropriate soil texture for derivation of ESL criteria has been based on field observations of surface soils (i.e. soil logs). EILs/ESLs for aged contamination (> 2 years) were adopted.

Human Health

The protection of the beneficial use “Human Health” has been assessed with reference to the NEPM 2013 guidelines. Given that residential properties are present on the site, the Health Investigation Levels (HILs) and Health Screening Levels (HSLs) for exposure setting “A” (i.e. low density residential) have been adopted for current site users, in addition to potential future low density residential users.

Buildings and Structures

The Land SEPP states that “contamination must not cause the land to be corrosive to or adversely affect the integrity of structures or building materials”. In the area of Victoria in which the site is located, ground conditions are not considered likely to present any threat to buildings and structures. Field observations and pH analytical results have been used to assess any extreme conditions (such as acidity) that might undermine structures/buildings (based on Australian Standard AS2159-2009 *Piling-Design and Installation*).

Aesthetics

The Land SEPP states that “contamination must not cause the land to be offensive to the senses of human beings”. Currently, there are no concentration based aesthetic criteria for soil. While aesthetic observations are subjective, it is considered that if there is unnatural discolouration, noticeable odour from the soil on the site, or if there are obvious components of waste, such as rubble, slag, bagged waste or similar, then there is a potential aesthetic concern.

Production of Food, Flora and Fibre

The Land SEPP states that “Contamination of land must not adversely affect produce quality or yield; and (or) affect the level of any indicator in food, flora and fibre produced at the site (or that may be produced) such that the level of that indicator is greater than that specified by the *Australia New Zealand Food Authority, Food Standards Code*. Typically, soil contamination levels exceeding EILs would be an indicator of potential impact to this beneficial use and therefore the EILs have been used as screening values for potential adverse effects on the growth of food, flora and fibre associated with the potential future low density residential site use.

5. Field Observations

5.1. Site specific lithology

The subsurface lithology encountered at the site generally comprised natural silt overlying siltstone. Areas of fill were also encountered during the works, primarily in the old dam area, where approximately 2.5 m of fill was encountered during drilling. Other areas across the site had approximately 0.05 m of fill, if any.

In general, fill material across unsealed areas of the site comprised clayey, sandy silt. Given that the natural material encountered at the investigation locations generally comprised similar material, it is considered that much of the material identified as fill in the unsealed portions of the site may be reworked natural material.

Bore logs are included in Appendix D.

5.2. Soil field observations

Visible evidence of soil contamination was observed at HA2 (an area where branches had been burned), with some charcoal material and black staining in the surface soil. Potential oil staining was also observed in surface soil around the waste storage (HA1) and equipment maintenance (HA3) areas. No other visual or olfactory evidence of impacted soil was noted during the soil sampling works.

5.3. Soil analytical results

Laboratory analytical reports for the soil assessment are provided in Appendix E and results are summarised in the tables provided in Appendix B.

5.3.1. Soil bores

Detectable concentrations of metals including arsenic, chromium, copper, lead, nickel and zinc were reported in most samples. Concentrations of zinc were reported above the NEPM ecological investigation levels (EIL) in three samples (HA1-0.1, HA2-0.1 and HA3-0.1). Nickel was also reported above the NEPM EIL criteria at one location (HA3-0.1). All other samples reported concentrations of metals below the adopted assessment criteria.

Detectable concentrations of TRH C_{16}-C_{34} and C_{34}-C_{40} were reported in samples HA1-0.1 and HA3-0.1 taken from the waste storage and equipment maintenance areas. Ecological screening levels were exceeded in these samples for the TRH C_{16}-C_{34} fraction relevant for coarse soils.

Concentrations of all other analytes were reported below the laboratory limit of reporting (LOR).

There were no results above human health investigation levels.

5.3.2. Stockpiles

Samples were collected from stockpiles SP1 and SP5. Metals were present at detectable concentrations but were below health and ecological investigation levels.

Concentrations of all other analytes were reported below the laboratory LOR in the samples from SP1 and SP5.

6. Quality Assessment

Coffey has completed a review of the QA steps and QC results, according to the following two documents:

- US EPA Guidance on Environmental Data Verification and Data Validation (2002);and
- US EPA Contract Laboratory Program for Organic (1999) and Inorganic (2002) Data Review.

This included examining holding times, laboratory accreditation, sample preservation methods, a review of field quality control sample results and a review of laboratory quality control sample results. Quality control results are presented in Tables 2 and 3. A more detailed analysis of the data quality is provided in Appendix G.

The data quality of the works was considered to be acceptable for this assessment.

7. Conclusions

Based on the Phase 1 and limited Phase 2 environmental site assessment undertaken by Coffey, the following conclusions have been made:

- The desktop study and site inspection identified several areas of potential environmental concern, including maintenance sheds, waste storage areas, the infilled dam, vehicle storage areas, a burn site, 205 L drums and potential for the application of herbicides and pesticides across the site.
- Soil sampling was undertaken to target these areas of concern, with samples being analysed for the associated potential chemicals of concern.
- Parts of the site had a layer of fill/reworked natural soil, overlying silt and siltstone.
- Black staining was observed at the surface at the burn area. Some potential oil staining was also observed near maintenance sheds and around waste storage. No other visual or olfactory evidence of contamination was observed during site works.
- No evidence of contamination was observed during the drilling through the infilled dam and chemicals were not reported above health or ecological investigation levels in the samples tested.
- Detectable concentrations of metals were reported in all samples and concentrations of zinc and/or nickel were above ecological investigation levels in the surface samples taken from the areas of visible staining from the burn area and the waste storage and maintenance areas.
- Detectable concentrations of petroleum hydrocarbons (TRH C_{16}-C_{40}) were reported in two samples taken from maintenance and waste storage areas of the site. These results exceeded the ecological screening levels.
- All other chemicals that were analysed, were reported below the laboratory limits of reporting. There were no results that exceeded human health investigation levels for a residential scenario.
- Stockpiled material on site, comprising either soil or bluestone, did not appear to have any impact from contamination. Soil stockpiled at the site appears to be sourced either from the site or locally.
- On the basis that potential contamination is limited to localised areas of shallow soil impact, there is considered to be a low risk of contamination of groundwater.

Based on the information reviewed, site observations and the results of targeted soil testing, Coffey considers that there is a low risk of contamination at the site that would adversely impact residential development. Localised areas of aesthetically impacted soil, which may also have a minor impact on site ecology, can be addressed by targeted removal during demolition and site preparation works.

This report must be read in the context of the limitations described in *Important information about your Coffey environmental report* attached.

8. References

ANZECC (1992). *Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites*, Published by the Australian and New Zealand Environment and Conservation Council, National Health and Medical Research Council.

Friebel & Nadebaum. (2011). *Health Screening Levels for Petroleum Hydrocarbons in Soil and Groundwater - Technical paper No. 10*.

NEPC (2013) *National Environmental Protection (Assessment of Site Contamination) Measure 1999*, as amended in 2013, National Environment Protection Council.

NHMRC/NRMMC (2011). *National Water Quality Management Strategy, Australian Drinking Water Guidelines*, National Health and Medical Research Council and National Resource Management Ministerial Council.

Standards Australia Publications, (2005). Australia Standard (AS 4482.1) *Guide to the Investigation and Sampling of Sites with Potentially Contaminated Soil, Part 1: Non Volatile and Semi-Volatile Compounds*.

Standards Australia Publications, (1999). Australia Standard (AS 4482.2) *Guide to the Sampling and Investigation of Potentially Contaminated Soil, Part 2: Volatile Substances*.

State Government of Victoria (2002) *State Environment Protection Policy (Prevention and Management of Contamination of Land)*, No: S95, State of Victoria, Environment Protection Act, 4 June.

Important information about your **Coffey** Environmental Report

Introduction

This report has been prepared by Coffey for you, as Coffey's client, in accordance with our agreed purpose, scope, schedule and budget.

The report has been prepared using accepted procedures and practices of the consulting profession at the time it was prepared, and the opinions, recommendations and conclusions set out in the report are made in accordance with generally accepted principles and practices of that profession.

The report is based on information gained from environmental conditions (including assessment of some or all of soil, groundwater, vapour and surface water) and supplemented by reported data of the local area and professional experience. Assessment has been scoped with consideration to industry standards, regulations, guidelines and your specific requirements, including budget and timing. The characterisation of site conditions is an interpretation of information collected during assessment, in accordance with industry practice,

This interpretation is not a complete description of all material on or in the vicinity of the site, due to the inherent variation in spatial and temporal patterns of contaminant presence and impact in the natural environment. Coffey may have also relied on data and other information provided by you and other qualified individuals in preparing this report. Coffey has not verified the accuracy or completeness of such data or information except as otherwise stated in the report. For these reasons the report must be regarded as interpretative, in accordance with industry standards and practice, rather than being a definitive record.

Your report has been written for a specific purpose

Your report has been developed for a specific purpose as agreed by us and applies only to the site or area investigated. Unless otherwise stated in the report, this report cannot be applied to an adjacent site or area, nor can it be used when the nature of the specific purpose changes from that which we agreed.

For each purpose, a tailored approach to the assessment of potential soil and groundwater contamination is required. In most cases, a key objective is to identify, and if possible quantify, risks that both recognised and potential contamination pose in the context of the agreed purpose. Such risks may be financial (for example, clean up costs or constraints on site use) and/or physical (for example, potential health risks to users of the site or the general public).

Limitations of the Report

The work was conducted, and the report has been prepared, in response to an agreed purpose and scope, within time and budgetary constraints, and in reliance on certain data and information made available to Coffey.

The analyses, evaluations, opinions and conclusions presented in this report are based on that purpose and scope, requirements, data or information, and they could change if such requirements or data are inaccurate or incomplete.

This report is valid as of the date of preparation. The condition of the site (including subsurface conditions) and extent or nature of contamination or other environmental hazards can change over time, as a result of either natural processes or human influence. Coffey should be kept appraised of any such events and should be consulted for further investigations if any changes are noted, particularly during construction activities where excavations often reveal subsurface conditions.

In addition, advancements in professional practice regarding contaminated land and changes in applicable statues and/or guidelines may affect the validity of this report. Consequently, the currency of conclusions and recommendations in this report should be verified if you propose to use this report more than 6 months after its date of issue.

The report does not include the evaluation or assessment of potential geotechnical engineering constraints of the site.

Interpretation of factual data

Environmental site assessments identify actual conditions only at those points where samples are taken and on the date collected. Data derived from indirect field measurements, and sometimes other reports on the site, are interpreted by geologists, engineers or scientists to provide an opinion about overall site conditions, their likely impact with respect to the report purpose and recommended actions.

Variations in soil and groundwater conditions may occur between test or sample locations and actual conditions may differ from those inferred to exist. No environmental assessment program, no matter how comprehensive, can reveal all subsurface details and anomalies. Similarly, no professional, no matter how well qualified, can reveal what is hidden by earth, rock or changed through time.

The actual interface between different materials may be far more gradual or abrupt than assumed based on the facts obtained. Nothing can be done to change the actual site conditions which exist, but

steps can be taken to reduce the impact of unexpected conditions.

For this reason, parties involved with land acquisition, management and/or redevelopment should retain the services of a suitably qualified and experienced environmental consultant through the development and use of the site to identify variances, conduct additional tests if required, and recommend solutions to unexpected conditions or other unrecognised features encountered on site. Coffey would be pleased to assist with any investigation or advice in such circumstances.

Recommendations in this report

This report assumes, in accordance with industry practice, that the site conditions recognised through discrete sampling are representative of actual conditions throughout the investigation area. Recommendations are based on the resulting interpretation.

Should further data be obtained that differs from the data on which the report recommendations are based (such as through excavation or other additional assessment), then the recommendations would need to be reviewed and may need to be revised.

Report for benefit of client

Unless otherwise agreed between us, the report has been prepared for your benefit and no other party. Other parties should not rely upon the report or the accuracy or completeness of any recommendation and should make their own enquiries and obtain independent advice in relation to such matters.

Coffey assumes no responsibility and will not be liable to any other person or organisation for, or in relation to, any matter dealt with or conclusions expressed in the report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report.

To avoid misuse of the information presented in your report, we recommend that Coffey be consulted before the report is provided to another party who may not be familiar with the background and the purpose of the report. In particular, an environmental disclosure report for a property vendor may not be suitable for satisfying the needs of that property's purchaser. This report should not be applied for any purpose other than that stated in the report.

Interpretation by other professionals

Costly problems can occur when other professionals develop their plans based on misinterpretations of a report. To help avoid misinterpretations, a suitably qualified and experienced environmental consultant should be retained to explain the implications of the report to other professionals referring to the report and then review plans and specifications produced to see how other professionals have incorporated the report findings.

Given Coffey prepared the report and has familiarity with the site, Coffey is well placed to provide such assistance. If another party is engaged to interpret the recommendations of the report, there is a risk that the contents of the report may be misinterpreted and Coffey disowns any responsibility for such misinterpretation.

Data should not be separated from the report

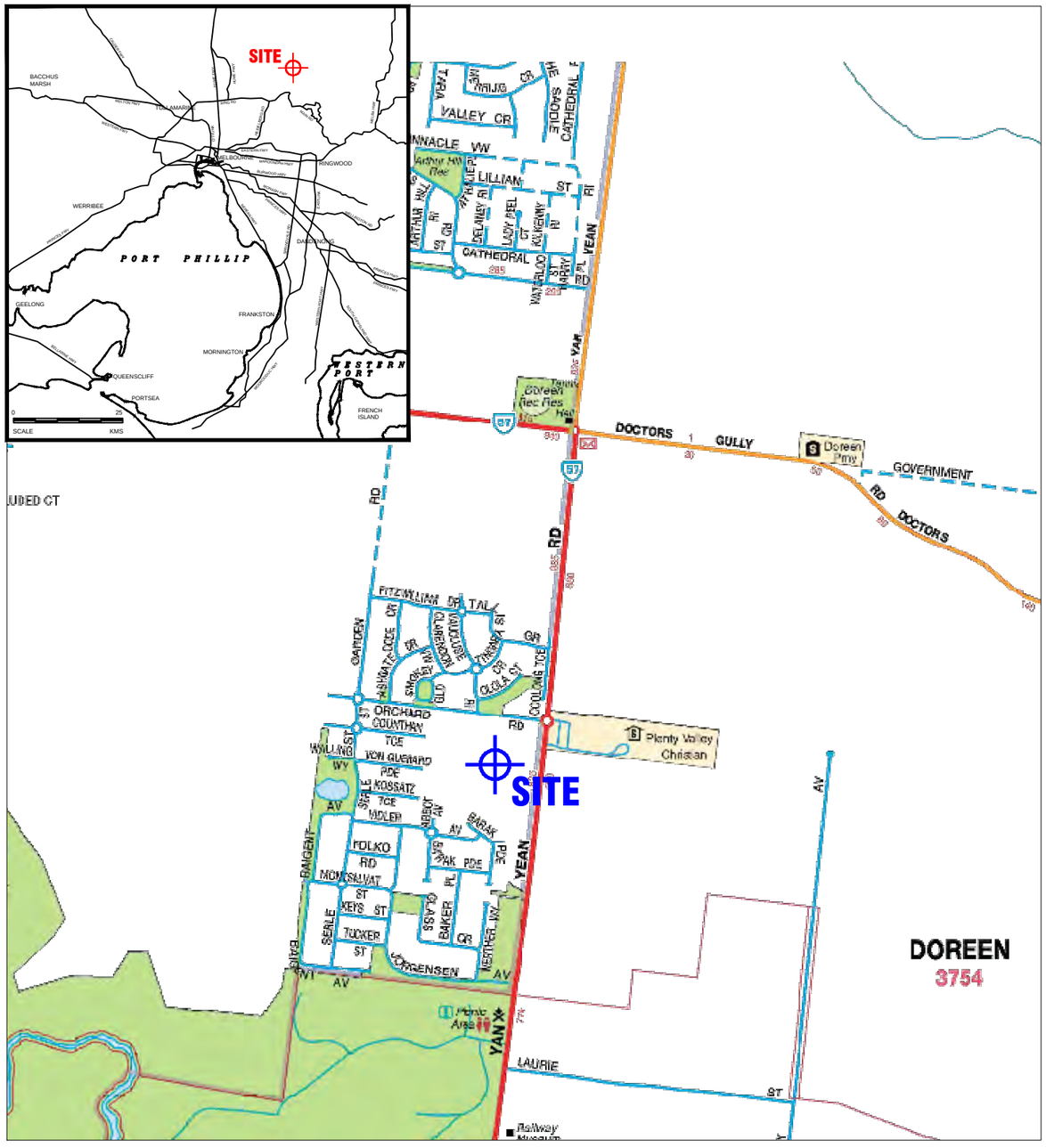
The report as a whole presents the findings of the site assessment and the report should not be copied in part or altered in any way. Logs, figures, laboratory data, drawings, etc. are customarily included in our reports and are developed by scientists or engineers based on their interpretation of field logs, field testing and laboratory evaluation of samples. This information should not under any circumstances be redrawn for inclusion in other documents or separated from the report in any way.

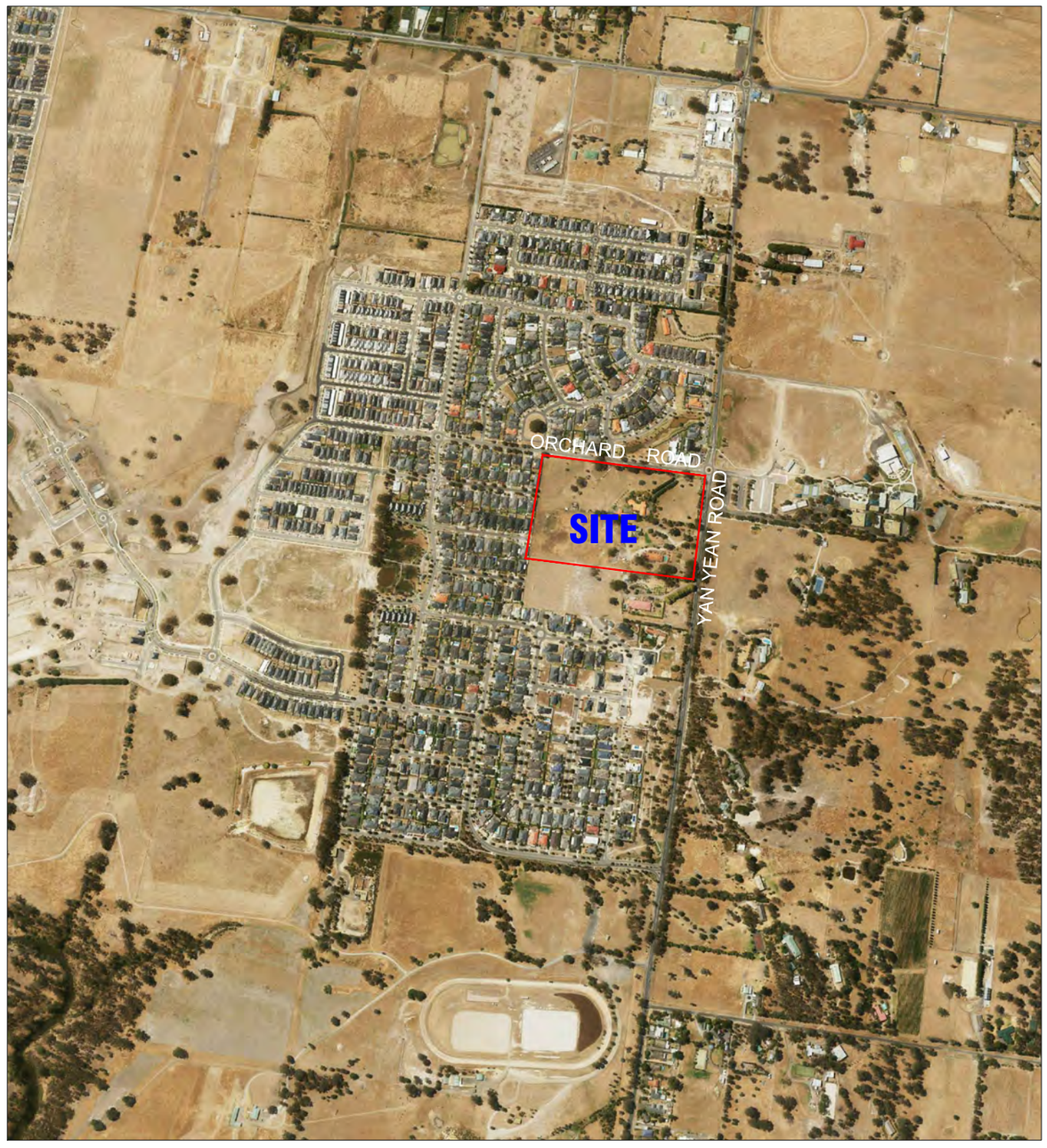
This report should be reproduced in full. No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties.

Responsibility

Environmental reporting relies on interpretation of factual information using professional judgement and opinion and has a level of uncertainty attached to it, which is much less exact than other design disciplines. This has often resulted in claims being lodged against consultants, which are unfounded. As noted earlier, the recommendations and findings set out in this report should only be regarded as interpretive and should not be taken as accurate and complete information about all environmental media at all depths and locations across the site.

Appendix A - Figures





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drawn	MV
approved	PC
date	26/10/15
scale	AS SHOWN
original size	A3

coffey

client: HEAD & HUMPHREYS LAND CONSULTANTS

project: PRELIMINARY ENVIRONMENTAL ASSESSMENT AND GEOTECHNICAL INVESTIGATION
835 YAN YEAN ROAD, DOREEN, VIC

title: SITE LOCATION PLAN

project no: ENAUABTF20236AB-R01-D01 | figure no: FIGURE 1 | rev: A

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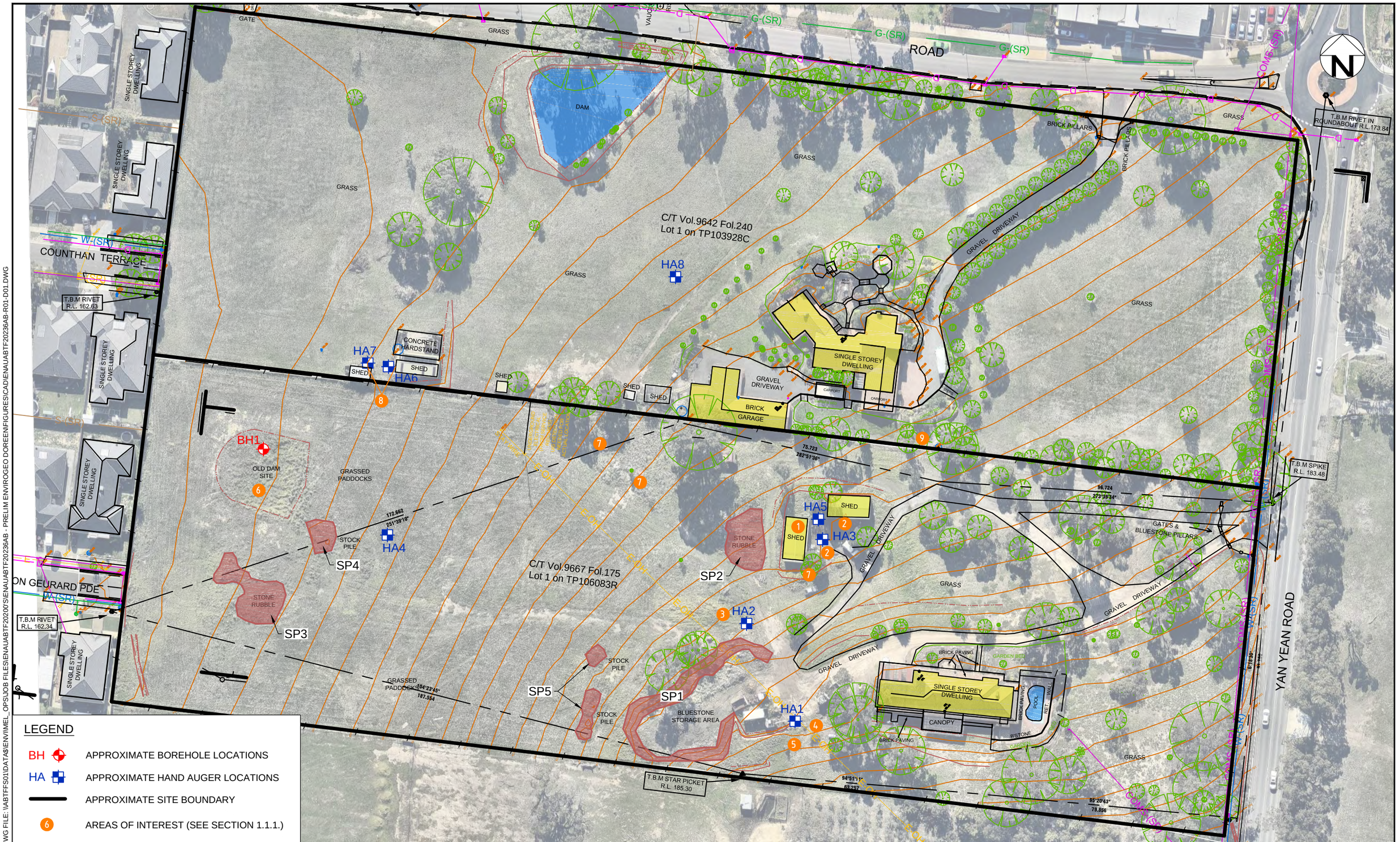


LEGEND

- BH — APPROXIMATE BOREHOLE LOCATIONS
- HA — APPROXIMATE HAND AUGER LOCATIONS
- APPROXIMATE SITE BOUNDARY
- 6 — AREAS OF INTEREST (SEE SECTION 1.1.1.)

revision	no.	description	drawn	approved	date
	A	ORIGINAL ISSUE	MV	PC	26/10/15

AERIAL IMAGE SOURCE: NEARMAP.COM
DRAWING: HEAD & HUMPHREYS, 7324-00-FEA-0102, 09.10.2015.

SCALE 1:1000 (A3) METRES

drawn	MV
approved	PC
date	26/10/15
scale	AS SHOWN
original size	A3

coffey

client: HEAD & HUMPHREYS LAND CONSULTANTS

project: PRELIMINARY ENVIRONMENTAL ASSESSMENT AND GEOTECHNICAL INVESTIGATION
825 AND 835 YAN YEAN ROAD, DOREEN, VIC

title: SITE WALKOVER AND SOIL SAMPLING LOCATIONS

project no: ENAUABTF20236AB-R01-D01 | figure no: FIGURE 2 | rev: A

PLOT DATE: 26/10/2015 4:34:17 PM DWG FILE: \\ABTFFS01\DATA$\ENV\MEL_OPS\JOB FILES\ENAU\ABTF20200'S\ENAUABTF20236AB - PRELIM ENVIROGEO DOREEN\FIGURES\CAD\ENAUABTF20236AB-R01-D01.DWG

Appendix B - Tables

Table 1
Soil Analytical Results
Doreen Preliminary ESA

Head Humphreys
825-835 Yan Yean Road, Doreen VIC

						Field_ID	BH1 - 3.5	BH1- 0.5	HA1-0.1	HA2-0.1	HA3-0.1	HA4-0.1	HA6-0.1	HA7-0.1	HA8-0.1	SP1	SP5
						Sampled_Date-Time	12/10/2015	12/10/2015	12/10/2015	12/10/2015	12/10/2015	12/10/2015	12/10/2015	12/10/2015	12/10/2015	12/10/2015	12/10/2015
Chem_Group	ChemName	Units	EQL	NEPM 2013 EIL / ESL	NEPM 2013 HILs Residential A Soil	NEPM 2013 Residential Soil HSL											
BTEX	Benzene	mg/kg	0.2			0.6	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Ethylbenzene	mg/kg	0.5				<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Toluene	mg/kg	0.5			390	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Total BTEX	mg/kg	0.2				<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Xylene (m & p)	mg/kg	0.5				<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Xylene (o)	mg/kg	0.5				<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Xylene Total	mg/kg	0.5			95	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	C6-C10 less BTEX (F1)	mg/kg	10			40	<10	<10	<10	-	<10	<10	<10	<10	<10	<10	<10
TPH	F2-NAPHTHALENE	mg/kg	50			230	<50	<50	<50	-	<50	<50	<50	<50	<50	<50	<50
	C6 - C9	mg/kg	10				<10	<10	<10	-	<10	<10	<10	<10	<10	<10	<10
	C10 - C14	mg/kg	50				<50	<50	<50	-	<50	<50	<50	<50	<50	<50	<50
	C15 - C28	mg/kg	100				<100	<100	180	-	250	<100	<100	<100	<100	<100	<100
	C29 - C36	mg/kg	100				<100	<100	290	-	380	<100	<100	<100	<100	<100	<100
	C10 - C36 (Sum of total)	mg/kg	50				<50	<50	470	-	630	<50	<50	<50	<50	<50	<50
	C10 - C40 (Sum of total)	mg/kg	50				<50	<50	510	-	770	<50	<50	<50	<50	<50	<50
	C10-C16	mg/kg	50	120			<50	<50	<50	-	<50	<50	<50	<50	<50	<50	<50
	C16-C34	mg/kg	100	300			<100	<100	380	-	540	<100	<100	<100	<100	<100	<100
	C34-C40	mg/kg	100	2800			<100	<100	130	-	230	<100	<100	<100	<100	<100	<100
	C6 - C10	mg/kg	10	180			<10	<10	<10	-	<10	<10	<10	<10	<10	<10	<10
PAH	Acenaphthene	mg/kg	0.5				<0.5	<0.5	-	<0.5	-	-	-	-	-	<0.5	<0.5
	Acenaphthylene	mg/kg	0.5				<0.5	<0.5	-	<0.5	-	-	-	-	-	<0.5	<0.5
	Anthracene	mg/kg	0.5				<0.5	<0.5	-	<0.5	-	-	-	-	-	<0.5	<0.5
	Benzo(a)anthracene	mg/kg	0.5				<0.5	<0.5	-	<0.5	-	-	-	-	-	<0.5	<0.5
	Benzo(a)pyrene	mg/kg	0.5				<0.5	<0.5	-	<0.5	-	-	-	-	-	<0.5	<0.5
	Benzo(g,h,i)perylene	mg/kg	0.5				<0.5	<0.5	-	<0.5	-	-	-	-	-	<0.5	<0.5
	Benzo(k)fluoranthene	mg/kg	0.5				<0.5	<0.5	-	<0.5	-	-	-	-	-	<0.5	<0.5
	Chrysene	mg/kg	0.5				<0.5	<0.5	-	<0.5	-	-	-	-	-	<0.5	<0.5
	Benzo[b+j]fluoranthene	mg/kg	0.5				<0.5	<0.5	-	<0.5	-	-	-	-	-	<0.5	<0.5
	Dibenz(a,h)anthracene	mg/kg	0.5				<0.5	<0.5	-	<0.5	-	-	-	-	-	<0.5	<0.5
	Fluoranthene	mg/kg	0.5				<0.5	<0.5	-	<0.5	-	-	-	-	-	<0.5	<0.5
	Fluorene	mg/kg	0.5				<0.5	<0.5	-	<0.5	-	-	-	-	-	<0.5	<0.5
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.5				<0.5	<0.5	-	<0.5	-	-	-	-	-	<0.5	<0.5
	Naphthalene	mg/kg	0.5	170		4	<0.5	<0.5	<1	<0.5	<1	<1	<1	<1	<1	<0.5	<0.5
	Phenanthrene	mg/kg	0.5				<0.5	<0.5	-	<0.5	-	-	-	-	-	<0.5	<0.5
	Pyrene	mg/kg	0.5				<0.5	<0.5	-	<0.5	-	-	-	-	-	<0.5	<0.5
	Total PAHs	mg/kg	0.5		300		<0.5	<0.5	-	<0.5	-	-	-	-	-	<0.5	<0.5
	Benzo(a)pyrene TEQ (half LOR)	mg/kg	0.5				0.6	0.6	-	0.6	-	-	-	-	-	0.6	0.6
	Benzo(a)pyrene TEQ (LOR)	mg/kg	0.5				1.2	1.2	-	1.2	-	-	-	-	-	1.2	1.2
	Benzo(a)pyrene TEQ (zero)	mg/kg	0.5				<0.5	<0.5	-	<0.5	-	-	-	-	-	<0.5	<0.5
Inorganics	Moisture	%	1				11.8	18.6	14.8	38.8	12.8	9.1	14.8	20	15.1	34.5	14.4
Metals	Arsenic	mg/kg	5	100	100		<5	7	14	10	<5	<5	6	8	<5	<5	5
	Cadmium	mg/kg	1		20		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Chromium	mg/kg	2				10	28	21	36	28	8	18	27	10	72	18
	Copper	mg/kg	5	60	6000		<5	10	23	25	24	<5	12	19	<5	18	9
	Lead	mg/kg	5	1100	300		8	14	40	31	67	6	21	37	13	16	9
	Mercury	mg/kg	0.1		40		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1
	Nickel	mg/kg	2	30	400		<2	7	15	21	34	<2	19	12	2	36	9
	Zinc	mg/kg	5	70	7400		<5	<5	106	87	150	<5	25	48	8	56	10
Herbicides	2,4,5-Trichlorophenoxy acetic acid	mg/kg	0.02		600		<0.02	<0.04	<0.04	-	<0.04	<0.04	<0.04	<0.04	<0.04	<0.02	<0.02
	2,4,5-TP (Silvex)	mg/kg	0.02				<0.02	<0.04	<0.04	-	<0.04	<0.04	<0.04	<0.04	<0.04	<0.02	<0.02
	2,4-Dichlorophenoxy acetic acid	mg/kg	0.02		900		<0.02	<0.04	<0.04	-	<0.04	<0.04	<0.04	<0.04	<0.04	<0.02	<0.02
	2,4-dichlorophenoxybutanoic acid	mg/kg	0.02				<0.02	<0.04	<0.04	-	<0.04	<0.04	<0.04	<0.04	<0.04	<0.02	<0.02
	2,4-Dichlorprop	mg/kg	0.02				<0.02	<0.04	<0.04	-	<0.04	<0.04	<0.04	<0.04	<0.04	<0.02	<0.02
	4-Chlorophenoxy acetic acid	mg/kg	0.02				<0.02	<0.04	<0.04	-	<0.04	<0.04	<0.04	<0.04	<0.04	<0.02	<0.02
	Clopyralid	mg/kg	0.02				<0.02	<0.04	<0.04	-	<0.04	<0.04	<0.04	<0.04	<0.04	<0.02	<0.02
	Dicamba	mg/kg	0.02				<0.02	<0.04	<0.04	-	<0.04	<0.04	<0.04	<0.04	<0.04	<0.02	<0.02
	Fluroxypyr	mg/kg	0.02				<0.02	<0.04	<0.04	-	<0.04	<0.04	<0.04	<0.04	<0.04	<0.02	<0.02
	2-Methyl-4-chlorophenoxy acetic acid	mg/kg	0.02		600		<0.02	<0.04	<0.04	-	<0.04	<0.04	<0.04	<0.04	<0.04	<0.02	<0.02
	2-Methyl-4-Chlorophenoxy butanoic acid	mg/kg	0.02		600		<0.02	<0.04	<0.04	-	<0.04	<0.04	<0.04	<0.04	<0.04	<0.02	<0.02
	Mecoprop	mg/kg	0.02		600		<0.02	<0.04	<0.04	-	<0.04	<0.04	<0.04	<0.04	<0.04	<0.02	<0.02
	Picloram	mg/kg	0.02		4500		<0.02	<0.04	<0.04	-	<0.04	<0.04	<0.04	<0.04	<0.04	<0.02	<0.02
	Triclopyr	mg/kg	0.02				<0.02	<0.04	<0.04	-	<0.04	<0.04	<0.04	<0.04	<0.04	<0.02	<0.02
OCP	4,4-DDE	mg/kg	0.05				<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	a-BHC	mg/kg	0.05				<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Aldrin	mg/kg	0.05				<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Aldrin + Dieldrin	mg/kg	0.05		6		<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	b-BHC	mg/kg	0.05				<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Chlordane	mg/kg	0.05		50		<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	cis-Chlordane	mg/kg	0.05				<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	d-BHC	mg/kg	0.05				<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	DDD	mg/kg	0.05				<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	DDT	mg/kg	0.2	180			<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	DDT+DDE+DDD	mg/kg	0.05		240		<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Dieldrin	mg/kg	0.05				<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Endosulfan	mg/kg	0.05		270		<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Endosulfan I	mg/kg	0.05				<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Endosulfan II	mg/kg	0.05				<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Endosulfan sulphate	mg/kg	0.05				<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Endrin	mg/kg	0.05		10		<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Endrin aldehyde	mg/kg	0.05				<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Endrin ketone	mg/kg	0.05				<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	g-BHC (Lindane)	mg/kg	0.05				<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Heptachlor	mg/kg	0.05		6		<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Heptachlor epoxide	mg/kg	0.05				<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Hexachlorobenzene	mg/kg	0.05		10		<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Methoxychlor	mg/kg	0.2		300		<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	trans-chlordane	mg/kg	0.05				<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OPP	Azinophos methyl	mg/kg	0.05				<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Bromophos-ethyl	mg/kg	0.05				<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Carbophenothion	mg/kg	0.05				<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Chlorfenvinphos	mg/kg	0.05				<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Chlorpyrifos	mg/kg	0.05		160		<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Chlorpyrifos-methyl	mg/kg	0.05				<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Demeton-S-methyl	mg/kg	0.05				<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Diazinon	mg/kg	0.05				<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Dichlorvos	mg/kg	0.05				<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Dimethoate	mg/kg	0.05				<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Ethion	mg/kg	0.05				<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Fenamiphos	mg/kg	0.05				<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Fenthion	mg/kg	0.05				<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Malathion	mg/kg	0.05				<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Methyl parathion	mg/kg	0.2				<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Monocrotophos	mg/kg	0.2				<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Parathion	mg/kg	0.2				<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Pirimphos-ethyl	mg/kg	0.05				<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Prothiofos	mg/kg	0.05				<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Field Duplicates (SOIL)
Filter: ALL

SDG		9763	9763		9763	Interlab_D	
Field ID		HA8-0.1	QC2a	**RPD**	HA8-0.1	QC2B	**RPD**
Sampled Date/Time		12/10/2015 15:00	12/10/2015 15:00		12/10/2015 15:00	12/10/2015 15:00	
Method_Type	**ChemName**	**Units**	**EQL**						
TRH Volatiles/BTEX	Benzene	mg/kg	0.2 (Primary): 0.1 (Interlab)	<0.2	<0.2	0	<0.2	<0.1	0
	Ethylbenzene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Toluene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Total BTEX	mg/kg	0.2	<0.2	<0.2	0	<0.2		
	Xylene (m & p)	mg/kg	0.5 (Primary): 0.2 (Interlab)	<0.5	<0.5	0	<0.5	<0.2	0
	Xylene (o)	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0
	Xylene Total	mg/kg	0.5 (Primary): 0.3 (Interlab)	<0.5	<0.5	0	<0.5	<0.3	0
	C6-C10 less BTEX (F1)	mg/kg	10 (Primary): 20 (Interlab)	<10.0	<10.0	0	<10.0	<20.0	0
Moisture Content	Moisture	%	1	15.1	11.7	25	15.1		
Total Mercury by FIMS	Mercury	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0
Total Metals by ICP-AES	Arsenic	mg/kg	5 (Primary): 2 (Interlab)	<5.0	7.0	33	<5.0	4.2	0
	Cadmium	mg/kg	1 (Primary): 0.4 (Interlab)	<1.0	<1.0	0	<1.0	<0.4	0
	Chromium	mg/kg	2 (Primary): 5 (Interlab)	10.0	11.0	10	10.0	11.0	10
	Copper	mg/kg	5	<5.0	<5.0	0	<5.0	<5.0	0
	Lead	mg/kg	5	13.0	14.0	7	13.0	19.0	38
	Nickel	mg/kg	2 (Primary): 5 (Interlab)	2.0	2.0	0	2.0	<5.0	0
	Zinc	mg/kg	5	8.0	8.0	0	8.0	18.0	77
TRH Volatiles/BTEX	Naphthalene	mg/kg	1 (Primary): 0.5 (Interlab)	<1.0	<1.0	0	<1.0	<0.5	0
TRH - Semivolatile Fraction	F2-NAPHTHALENE	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0
	C10 - C14	mg/kg	50 (Primary): 20 (Interlab)	<50.0	<50.0	0	<50.0	<20.0	0
	C15 - C28	mg/kg	100 (Primary): 50 (Interlab)	<100.0	<100.0	0	<100.0	<50.0	0
	C29 - C36	mg/kg	100 (Primary): 50 (Interlab)	<100.0	<100.0	0	<100.0	59.0	0
	C10 - C36 (Sum of total)	mg/kg	50	<50.0	<50.0	0	<50.0	59.0	17
	C10 - C40 (Sum of total)	mg/kg	50	<50.0	<50.0	0	<50.0		
	C10-C16	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0
	C16-C34	mg/kg	100	<100.0	<100.0	0	<100.0	<100.0	0
	C34-C40	mg/kg	100	<100.0	<100.0	0	<100.0	<100.0	0
TRH Volatiles/BTEX	C6 - C9	mg/kg	10 (Primary): 20 (Interlab)	<10.0	<10.0	0	<10.0	<20.0	0
	C6 - C10	mg/kg	10 (Primary): 20 (Interlab)	<10.0	<10.0	0	<10.0	<20.0	0

*RPDs have only been considered where a concentration is greater than 0 times the EQL.
**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 200 (0-10 x EQL); 50 (10-20 x EQL); 30 (> 20 x EQL))
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory

Field Blanks (WATER)
Filter: ALL

SDG	9763	9763
Field ID	QC4	QC3
Sampled_Date/Time	12/10/2015 15:00	12/10/2015 15:00
Sample Type	Rinsate	Trip_B

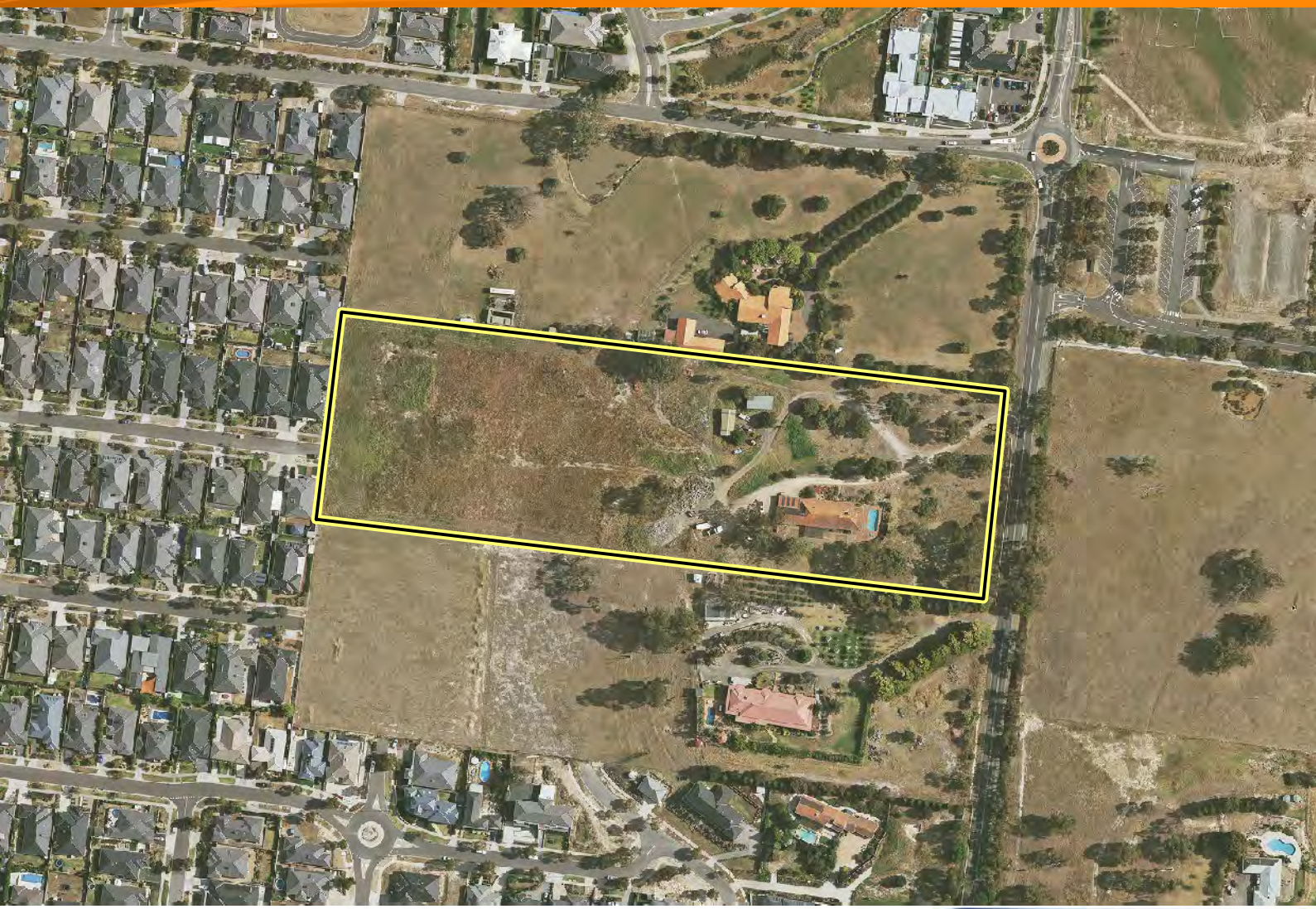
Method_Type	ChemName	Units	EQL		
Dissolved Mercury by FIMS	Mercury (Filtered)	mg/l	0.0001	<0.0001	
Dissolved Metals by ICP-MS - Suite A	Arsenic (Filtered)	mg/l	0.001	<0.001	
	Cadmium (Filtered)	mg/l	0.0001	<0.0001	
	Chromium (Filtered)	mg/l	0.001	<0.001	
	Copper (Filtered)	mg/l	0.001	<0.001	
	Lead (Filtered)	mg/l	0.001	<0.001	
	Nickel (Filtered)	mg/l	0.001	<0.001	
	Zinc (Filtered)	mg/l	0.005	<0.005	
TRH - Semivolatile Fraction	F2-NAPHTHALENE	mg/l	0.1	<0.1	
	C10 - C14	µg/L	50	<50	
	C15 - C28	µg/L	100	<100	
	C29 - C36	µg/L	50	<50	
	C10 - C36 (Sum of total)	µg/L	50	<50	
	C10 - C40 (Sum of total)	µg/L	100	<100	
	C10-C16	mg/l	0.1	<0.1	
	C16-C34	mg/l	0.1	<0.1	
	C34-C40	mg/l	0.1	<0.1	
TRH Volatiles/BTEX	Benzene	µg/L	1	<1	<1
	Ethylbenzene	µg/L	2	<2	<2
	Naphthalene	µg/L	5	<5	<5
	Toluene	µg/L	2	<2	<2
	Total BTEX	mg/l	0.001	<0.001	<0.001
	C6 - C9	µg/L	20	<20	<20
	Xylene (m & p)	µg/L	2	<2	<2
	Xylene (o)	µg/L	2	<2	<2
	Xylene Total	µg/L	2	<2	<2
	C6-C10 less BTEX (F1)	mg/l	0.02	<0.02	<0.02
	C6 - C10	mg/l	0.02	<0.02	<0.02

Appendix C – Phase 1 Reports

The reports have been requested for 825 Yan Yean Road, Doreen and include a radius around the site that includes all of 835 Yan Yean Road. Therefore these reports have been used to inform assessment of both sites.

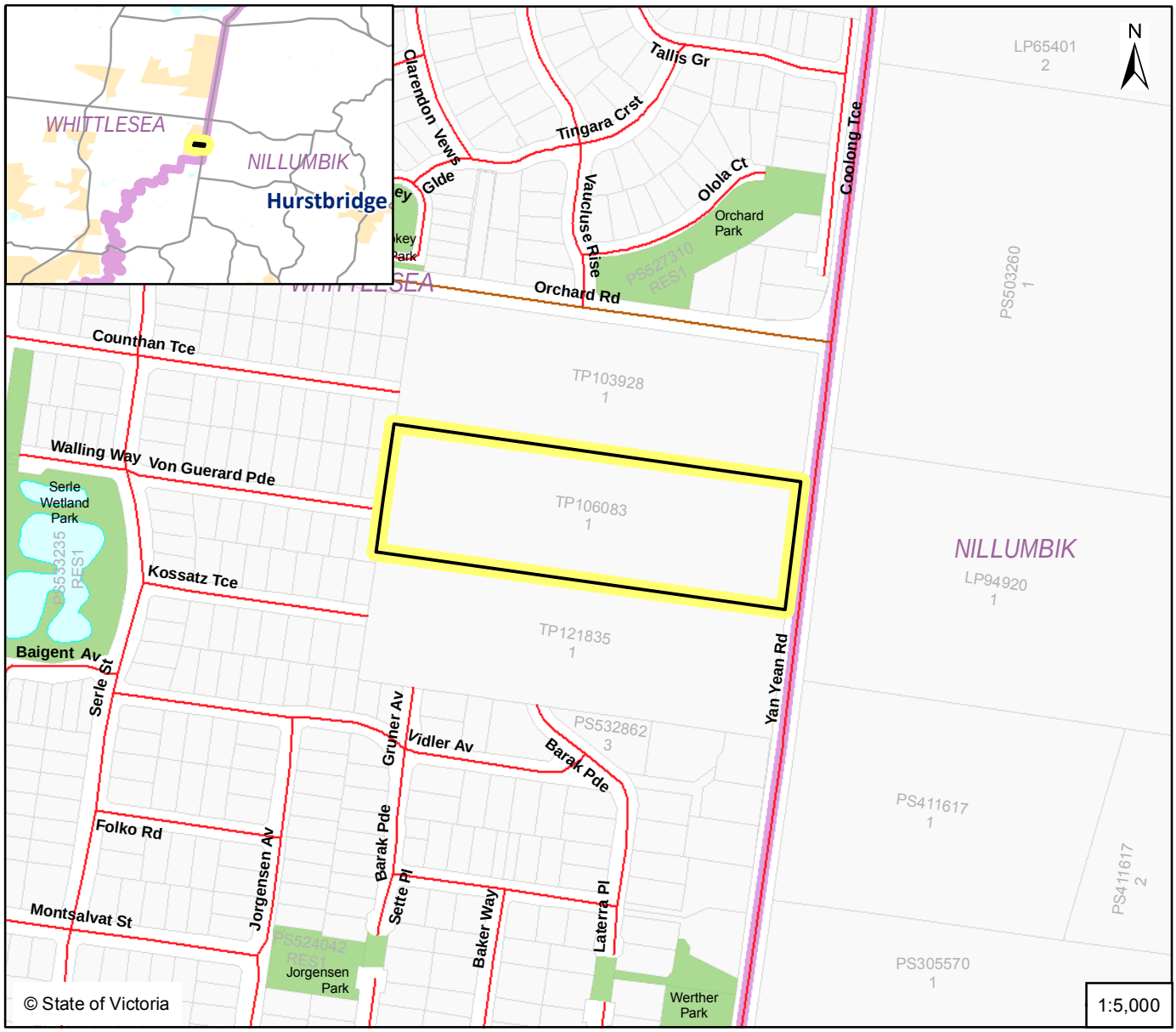
825 Yan Yean Road, Doreen, 3754

CS00333



This report has been produced for the subject site:

825 Yan Yean Road, Doreen, 3754



Legend

- Subject Site
- Watercourse
- Waterbody
- Reserves
- LGA Boundary
- *LGA NAME*
- Locality Name

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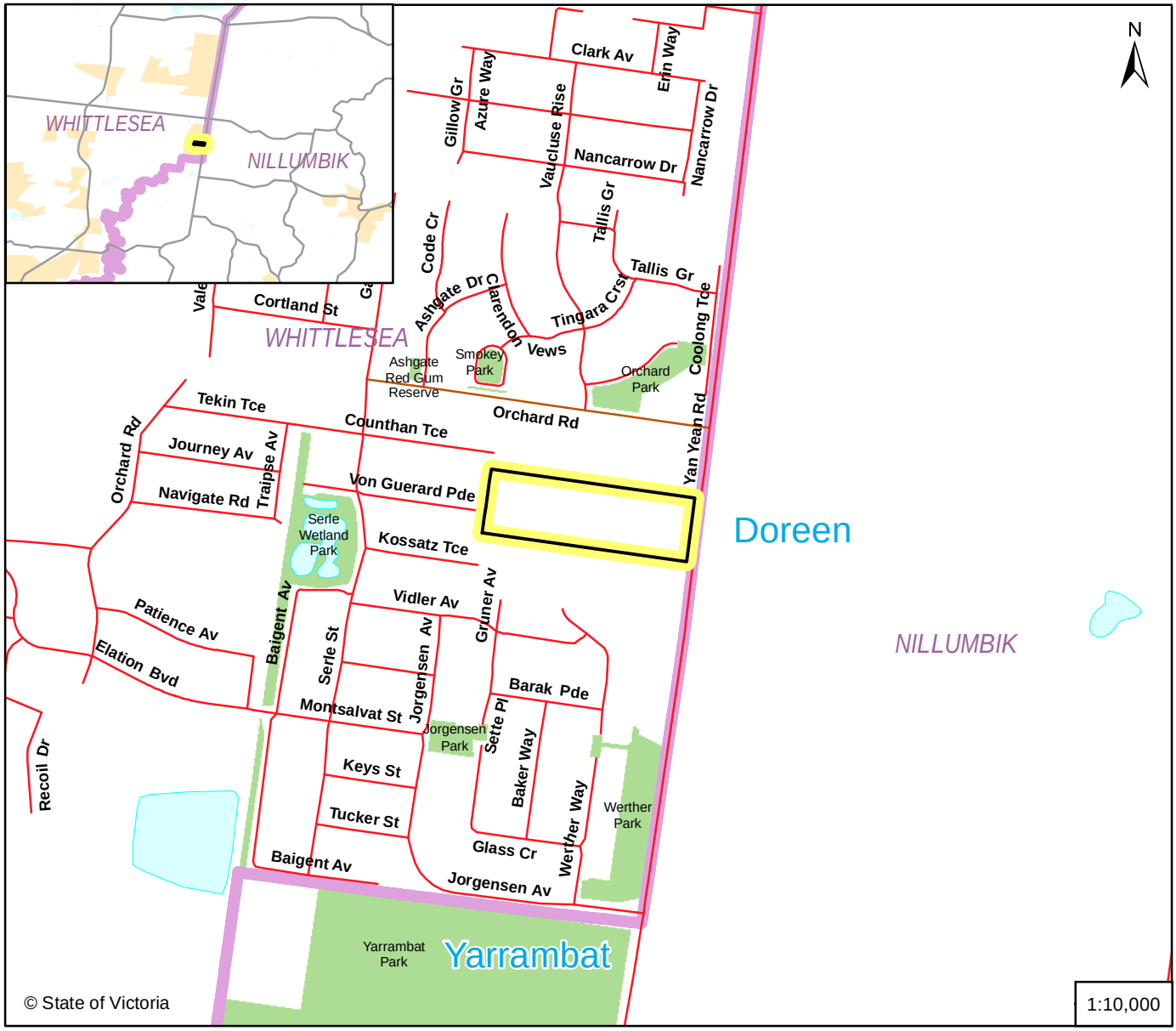
Contact: ph +61 3 9691 3000 or info@checksite.com.au
www.checksite.com.au

CS00333

Property Description

Address: 825 Yan Yean Road, Doreen, 3754
Parish: Morang
Description: Lot 1, TP106083



Legend

- Subject Site
- Road Freeway
- Road Highway
- Road Local Sealed
- Road Local Unsealed
- Road Private Access
- Road Proposed
- Road 2WD
- Road 4WD
- Road Bicycle Track
- Road Walking Track
- Railway
- Railway Station
- Waterbody
- Reserves
- LGA Boundary
- LGA NAME
- Locality Name

CS00333

Current Aerial Photography

Source: Department of Environment Land Planning and Transport Coordinated Imagery Program

Date: Summer Epoch December 2013 - January 2014

Address: 825 Yan Yean Road, Doreen, 3754

CS00333

REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

VOLUME 09667 FOLIO 175 Security no : 124057163574J
Produced 30/09/2015 03:29 pm

LAND DESCRIPTION

Lot 1 on Title Plan 106083R (formerly known as Lot 32 on Plan of Subdivision 003700).
PARENT TITLE Volume 08442 Folio 046
Created by instrument M043178K 13/12/1985

REGISTERED PROPRIETOR

Estate Fee Simple
Joint Proprietors
ROBERT WILLIAM STARBUCK
SANDRA MARIA STARBUCK both of 825 YAN YEAN RD DOREEN 3754
T609049V 22/03/1995

ENCUMBRANCES, CAVEATS AND NOTICES

MORTGAGE T609050V 22/03/1995
COMMONWEALTH BANK OF AUSTRALIA

MORTGAGE T895100C 04/10/1995
COMMONWEALTH BANK OF AUSTRALIA

MORTGAGE AH237593P 20/05/2010
COMMONWEALTH BANK OF AUSTRALIA

CAVEAT AM150084B 01/09/2015
Caveator
DIANNE PATRICIA ELDERFIELD
Grounds of Claim
PURCHASERS' CONTRACT WITH THE FOLLOWING PARTIES AND DATE.
Parties
THE REGISTERED PROPRIETOR(S)
Date
24/08/2015
Estate or Interest
FREEHOLD ESTATE
Prohibition
ABSOLUTELY
Lodged by
ISAKOW D
Notices to
ISAKOW D of LEVEL 4 221 QUEEN STREET MELBOURNE VIC 3000

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section 24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION

SEE TP106083R FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NUMBER		STATUS	DATE
AM150084B	CAVEAT	Registered	01/09/2015

REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

----------END OF REGISTER SEARCH STATEMENT----------

Additional information: (not part of the Register Search Statement)

Street Address: 825 YAN YEAN ROAD DOREEN VIC 3754

DOCUMENT END

Imaged Document Cover Sheet

The document following this cover sheet is an imaged document supplied by LANDATA®, Land Victoria.

Document Type	**plan**
Document Identification	**TP106083R**
Number of Pages (excluding this cover sheet)	**1**
Document Assembled	**30/09/2015 15:30**

TITLE PLAN		EDITION 1	TP 106083R

Location of Land

Parish: MORANG
Township:
Section:
Crown Allotment:
Crown Portion:

Last Plan Reference: LP3700
Derived From: VOL 9667 FOL 175
Depth Limitation: NIL

Notations

ANY REFERENCE TO MAP IN THE TEXT MEANS THE DIAGRAM SHOWN ON THIS TITLE PLAN

Description of Land / Easement Information

THIS PLAN HAS BEEN PREPARED FOR THE LAND REGISTRY, LAND VICTORIA, FOR TITLE DIAGRAM PURPOSES AS PART OF THE LAND TITLES AUTOMATION PROJECT
COMPILED: 12/08/1999
VERIFIED: AA

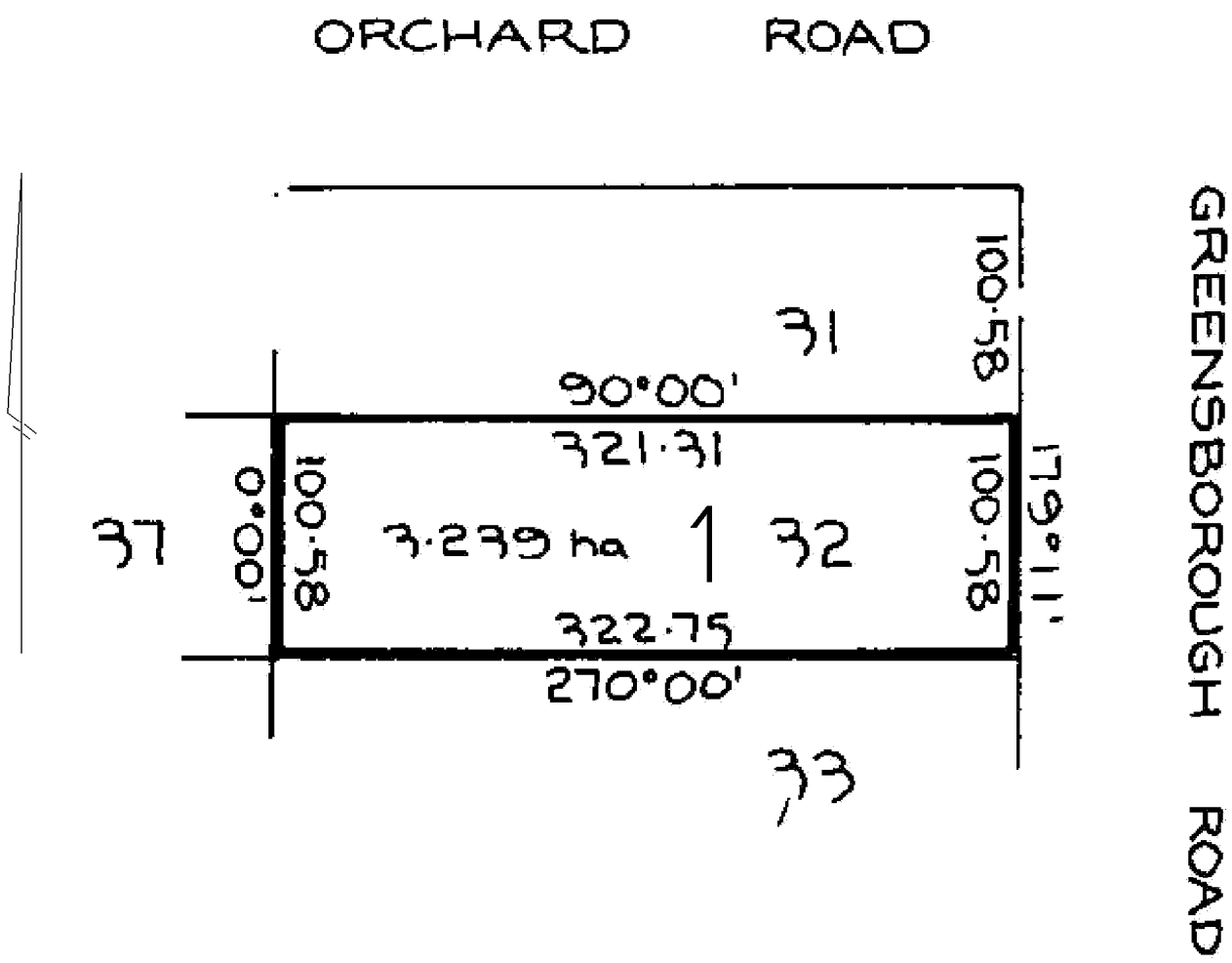


TABLE OF PARCEL IDENTIFIERS
WARNING: Where multiple parcels are referred to or shown on this Title Plan this does not imply separately disposable parcels under Section 8A of the Sale of Land Act 1962
PARCEL 1 = LOT 32 ON LP3700

LENGTHS ARE IN METRES	Metres = 0.3048 x Feet Metres = 0.201168 x Links		Sheet 1 of 1 sheets

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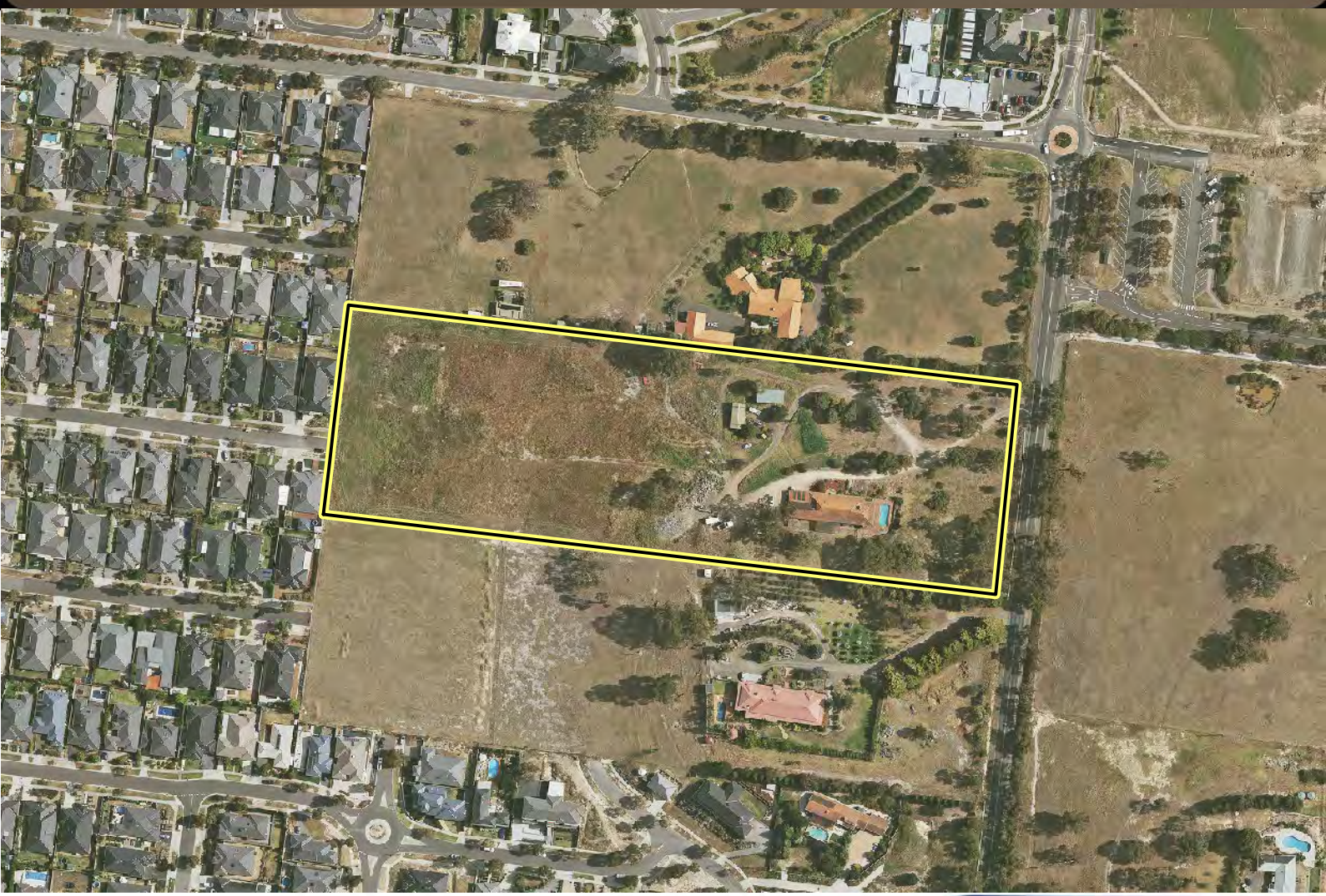
CheckSite Historical

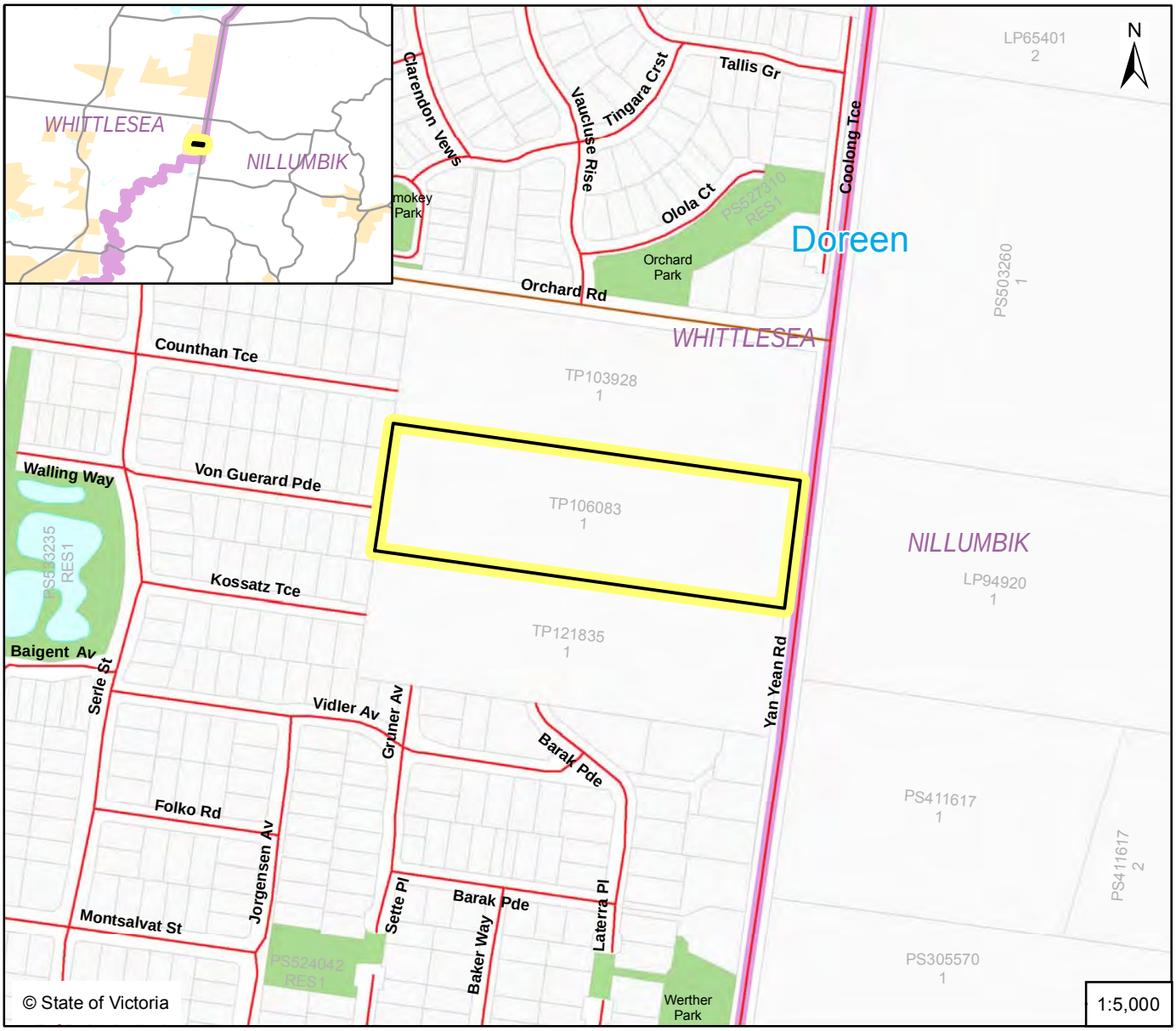
825 Yan Yean Road, Doreen, 3754

CS00333



This report has been produced for the subject site:

825 Yan Yean Road, Doreen, 3754



Legend

Subject Site
Watercourse
Waterbody
Reserves
LGA Boundary
LGA NAME
Locality Name

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CS00333

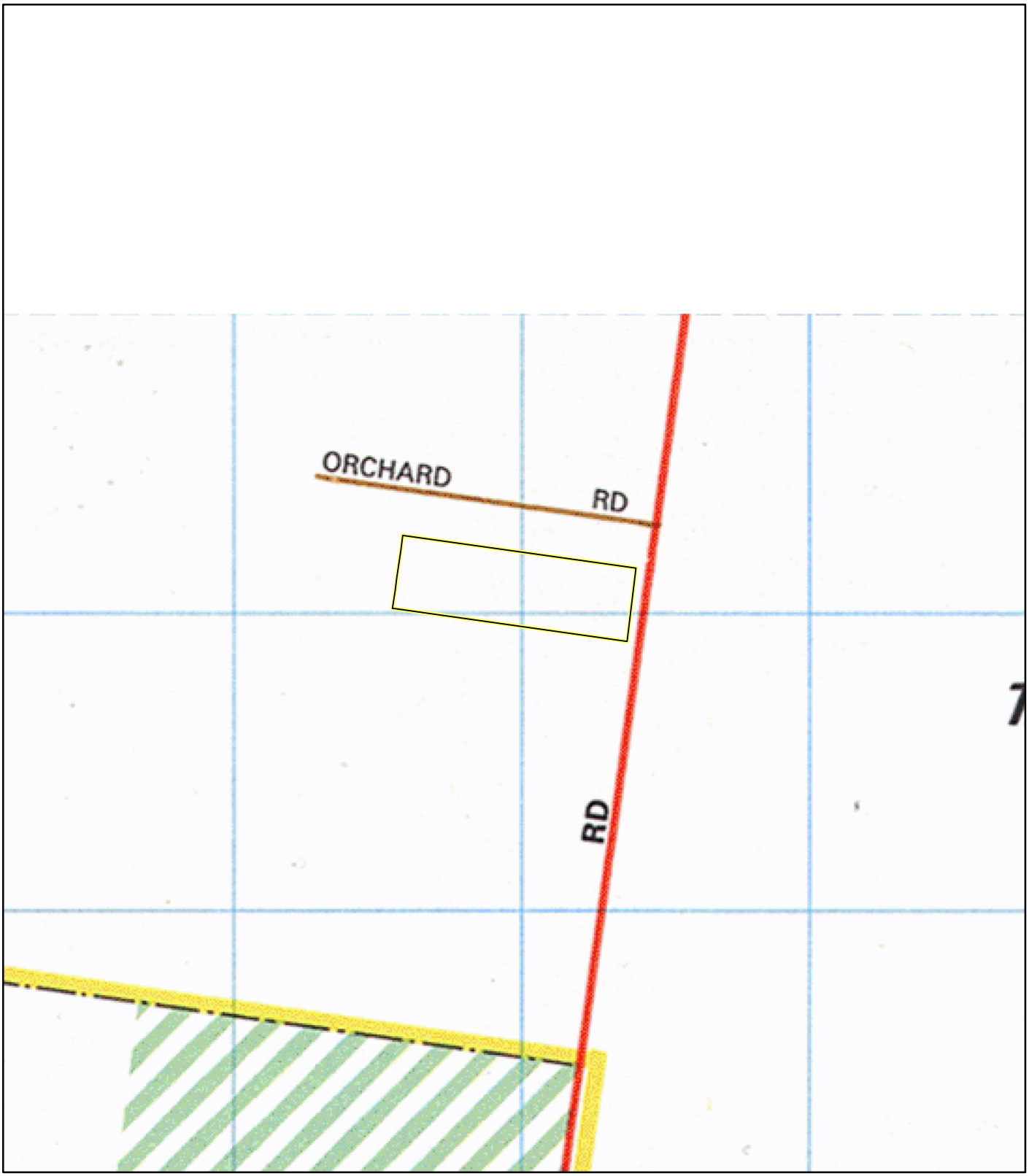
The following searches have been undertaken for this report.

CONTENT	SOURCES	SEARCH UNDERTAKEN	INFO. PROVIDED	DETAILS
Melway	AUSWAY Publishing	(•) Yes ( ) No	(•) Yes ( ) No	No Melway Ed1 1966 coverage available Melway Ed11 1978 provided
Historic Aerial Images	Department of Sustainability & Environment	(•) Yes ( ) No	(•) Yes ( ) No	Aerial Imagery from 1951, 60, 74, 79 and 2005
Parish Plans	Public Records Office Victoria	(•) Yes ( ) No	(•) Yes ( ) No	Refer to Map
Historic Planning Schemes	Department of Planning & Community Development	(•) Yes ( ) No	(•) Yes ( ) No	None prior to 1985. 1985 Historic Planning Scheme Provided
MMBW Detail Plan	State Library of Victoria	(•) Yes ( ) No	( ) Yes (•) No	No MMBW Plan available

Terms and Conditions

Melway Edition 11 - 1978

Map Number: 184



CS00333

Report Date: 30/09/2015

CheckSite Historical

Historical Aerial Imagery

Image Date: January 1951

Scale of Original Photograph: 1:12,000

Photo ID: p65r2y01_1951film1424fr15_photoid2110644_serial08228_dpi1000.jp2

CS00333

CheckSite Historical

Historical Aerial Imagery

Image Date: February 1960

Scale of Original Photograph: 1:9,600

Photo ID: p360r4y02_1960film1284fr54_photoid1753527_serial00258_dpi1000.jp2

CS00333

CheckSite Historical

Historical Aerial Imagery

Image Date: June 1974

Scale of Original Photograph: 1:30,000

Photo ID: 2924_179_04_16um_04111974.jp2

CS00333

CheckSite Historical

Historical Aerial Imagery

Image Date: October 1979

Scale of Original Photograph: 1:25,000

Photo ID: 3443_187_04_16um_31101979.jp2

CS00333

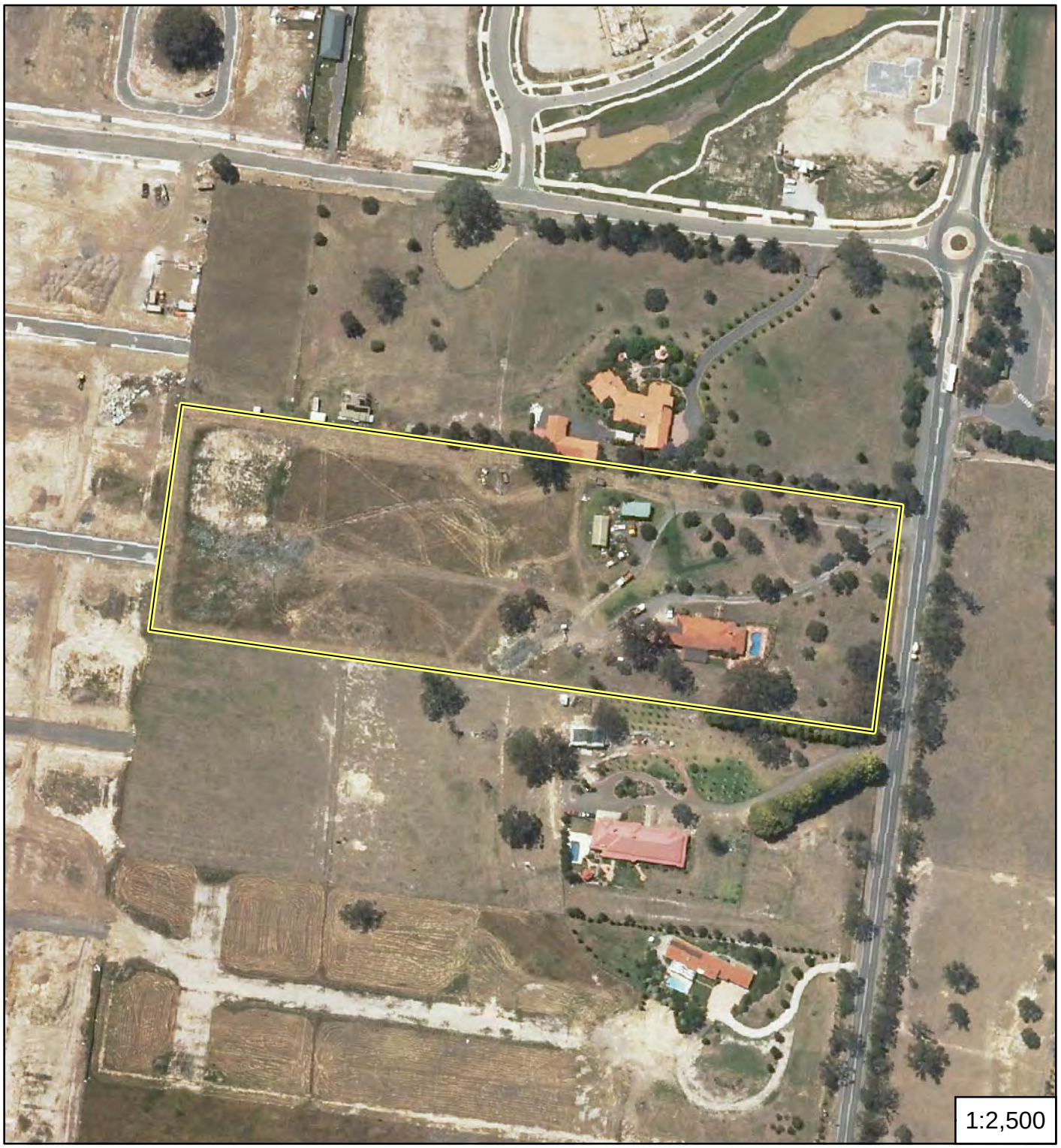
CheckSite Historical

Historical Aerial Imagery

Image Date: December 2005

Scale of Original Photograph: 35cm Pixel Resolution

Photo ID: portphillip_2005dec11_air_vis_35cm_mga55.ecw



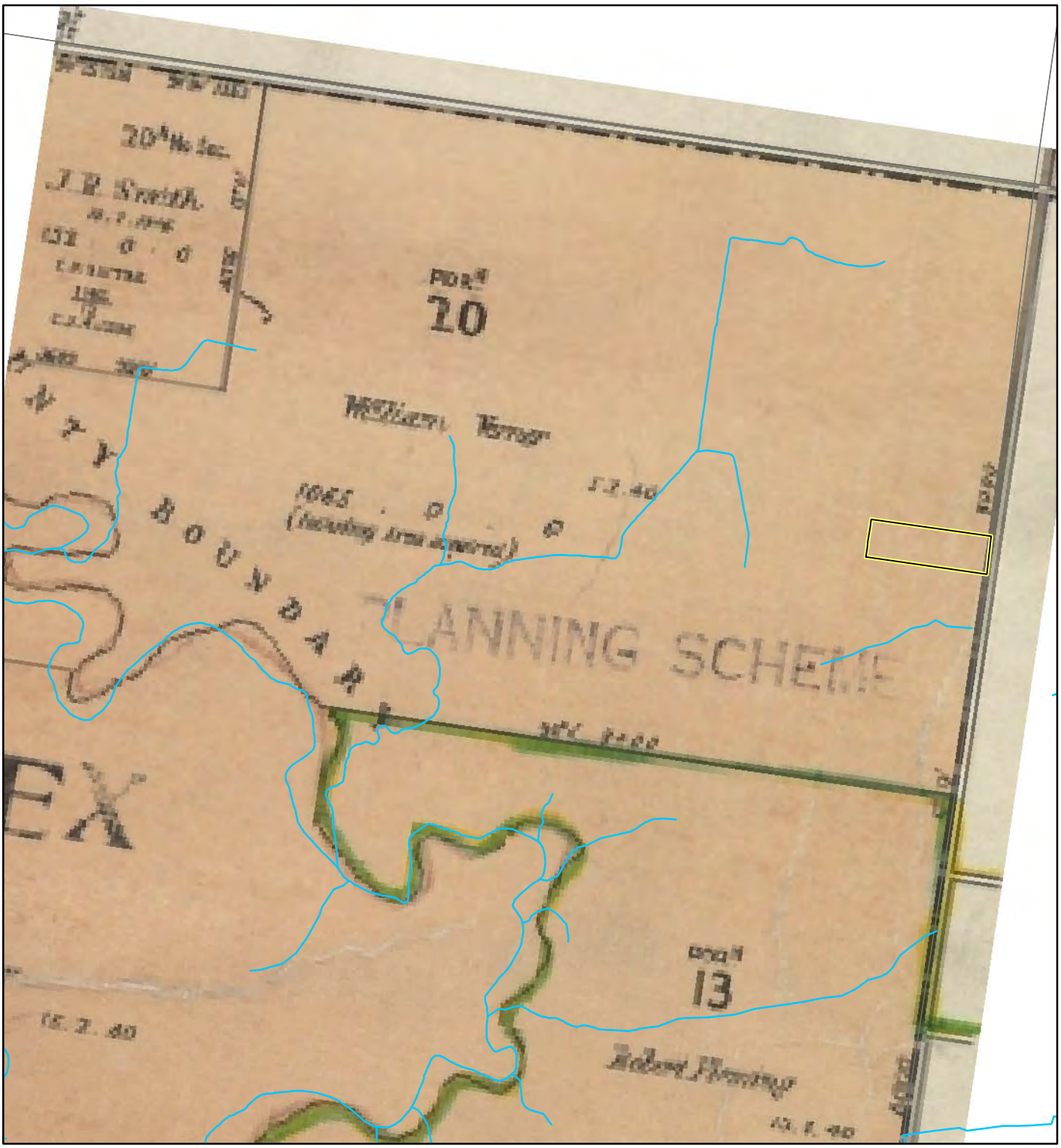
CS00333

Parish Plan

Parish: Morang

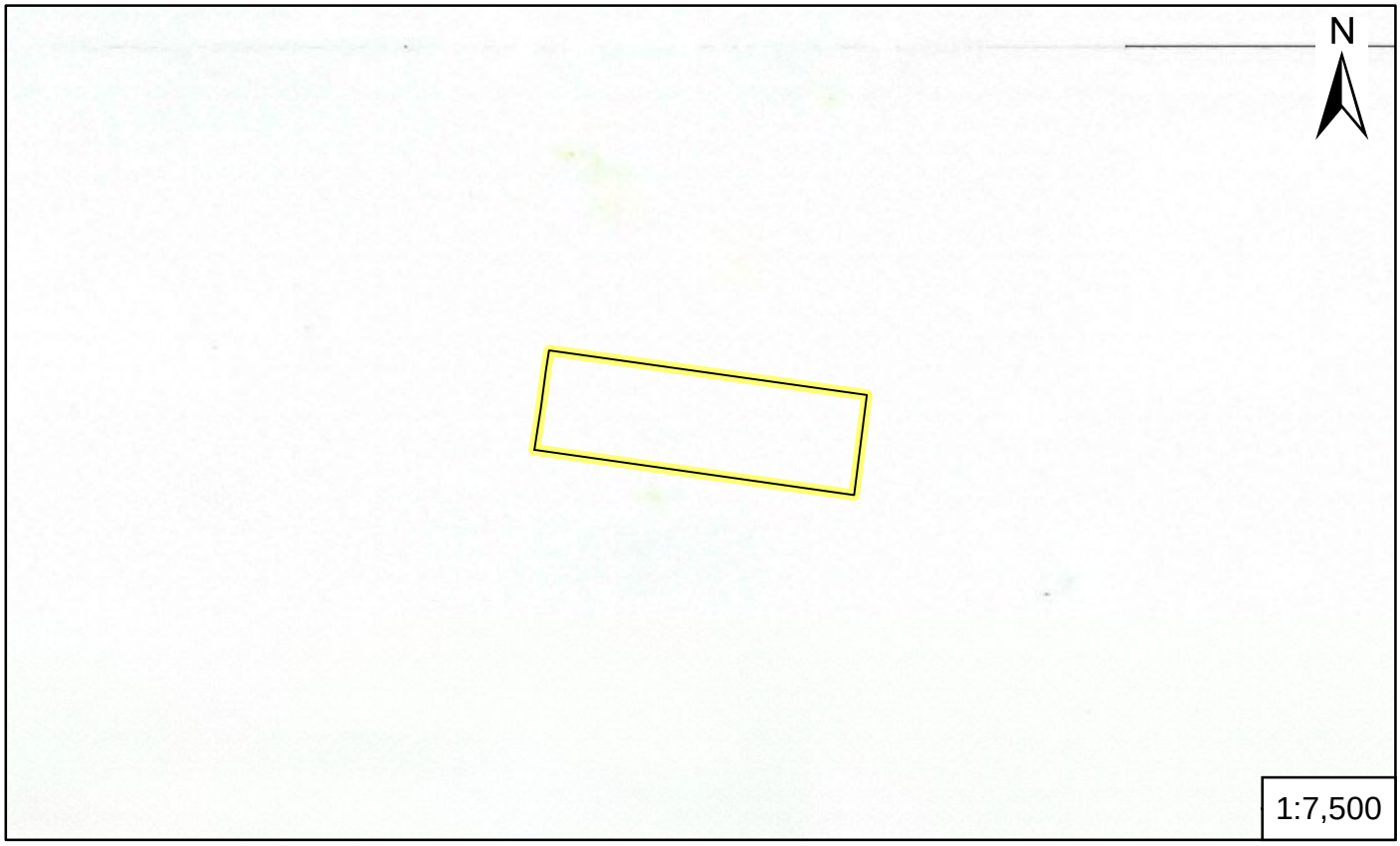
Section: NO SEC

Allotment: Portion of 20



Historical Planning Schemes

1968



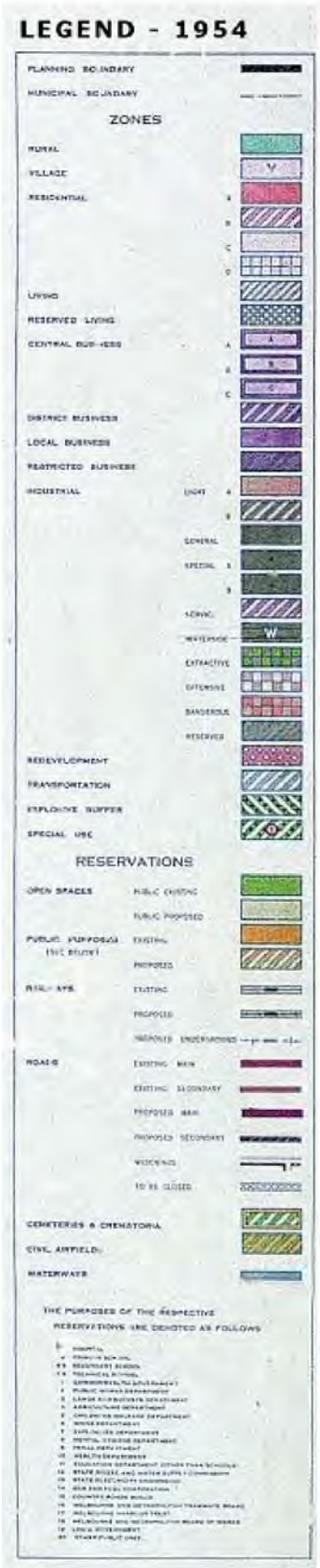
1985

CS00333

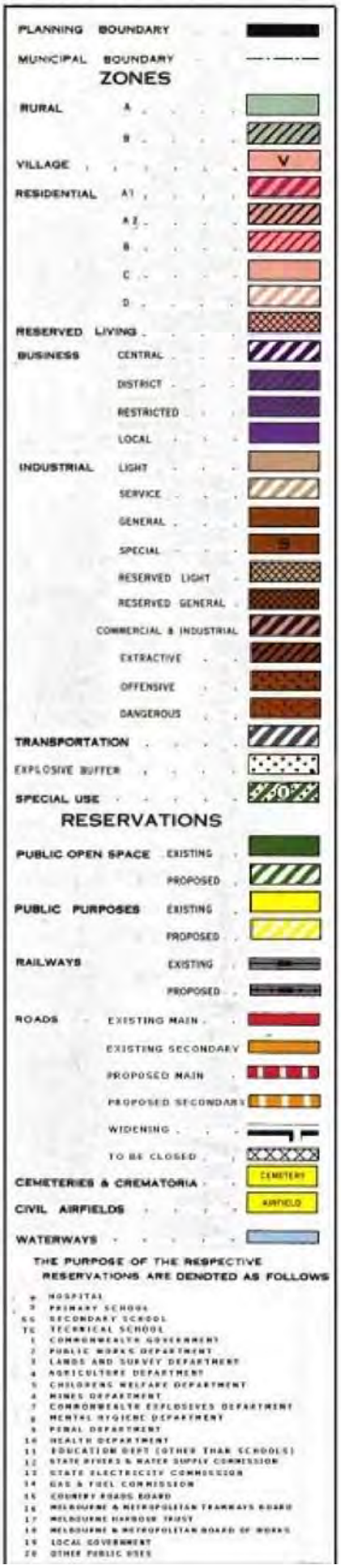
Report Date: 30/09/2015

HISTORIC PLANNING SCHEMES LEGENDS

LEGEND - 1954



LEGEND - 1959



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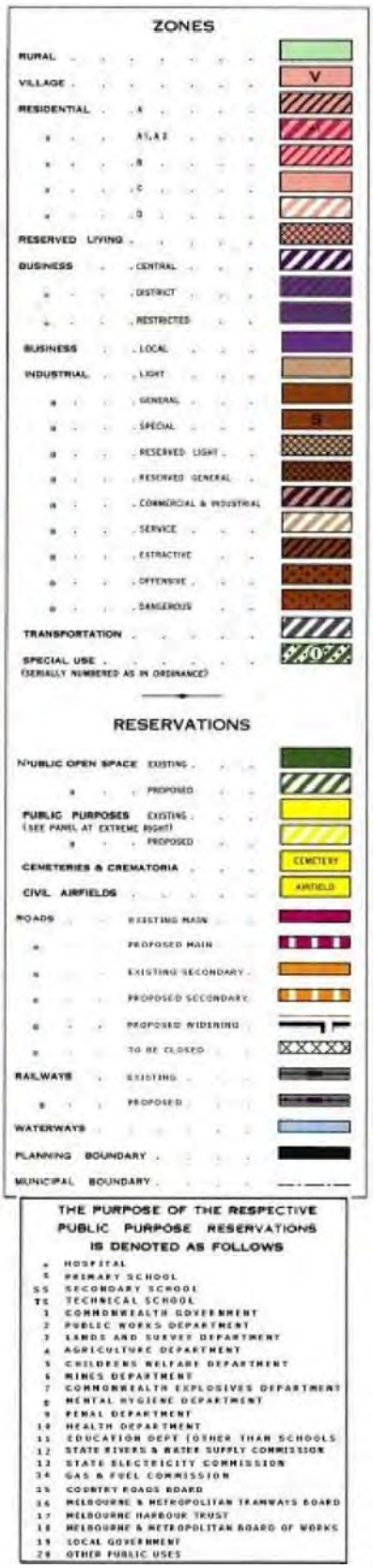
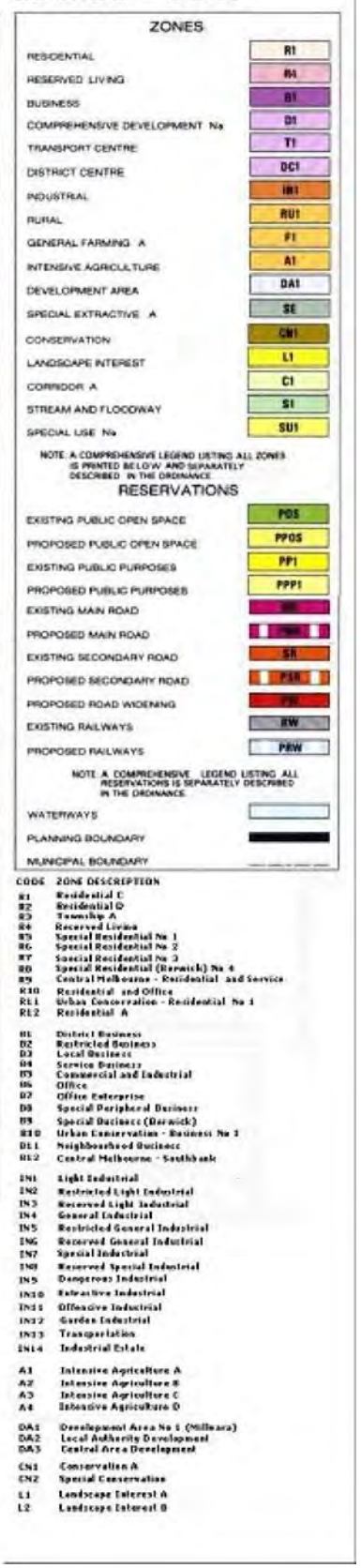


LEGEND - 1985



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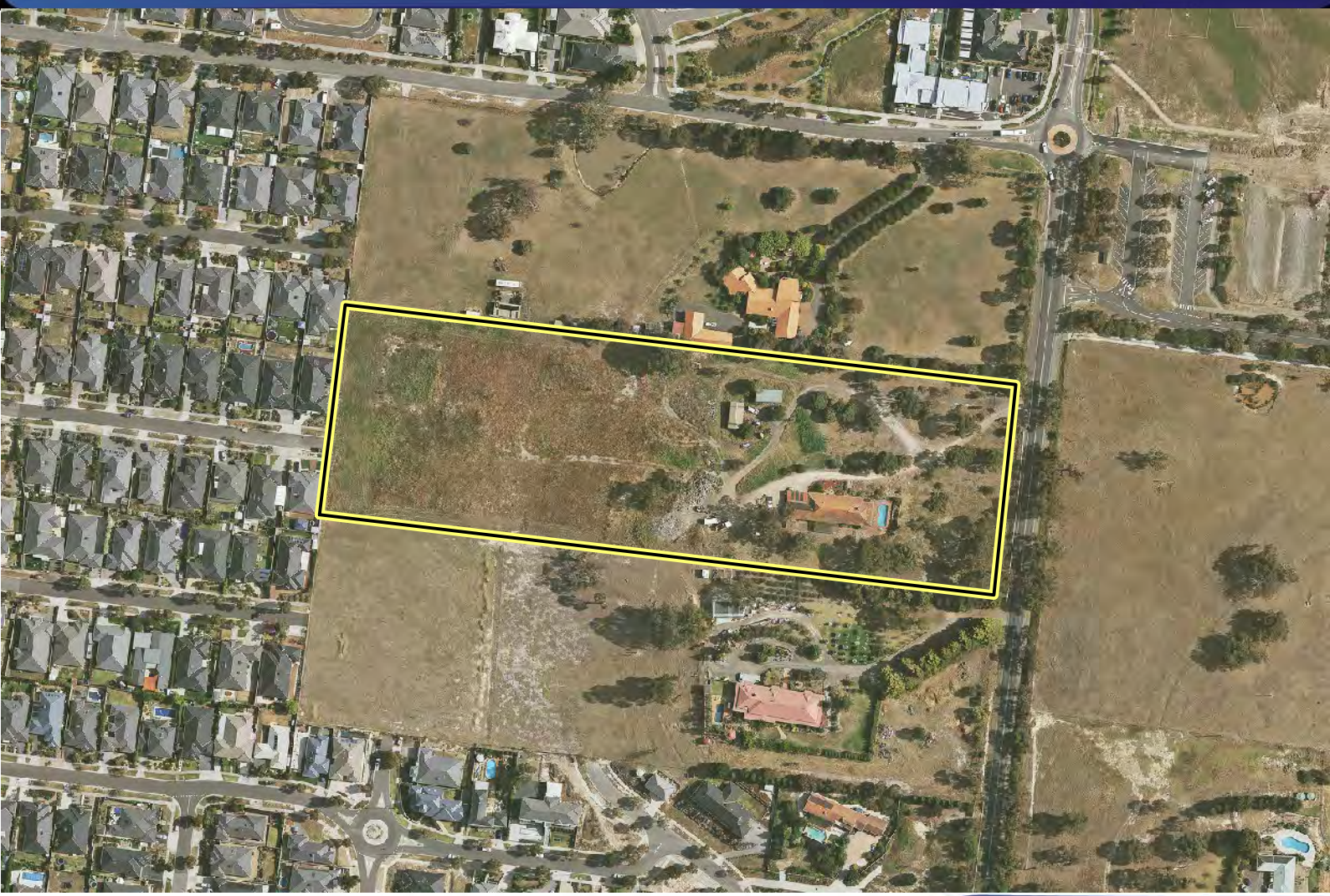
CheckSite
Geology & Groundwater

825 Yan Yean Road, Doreen, 3754

CS00333



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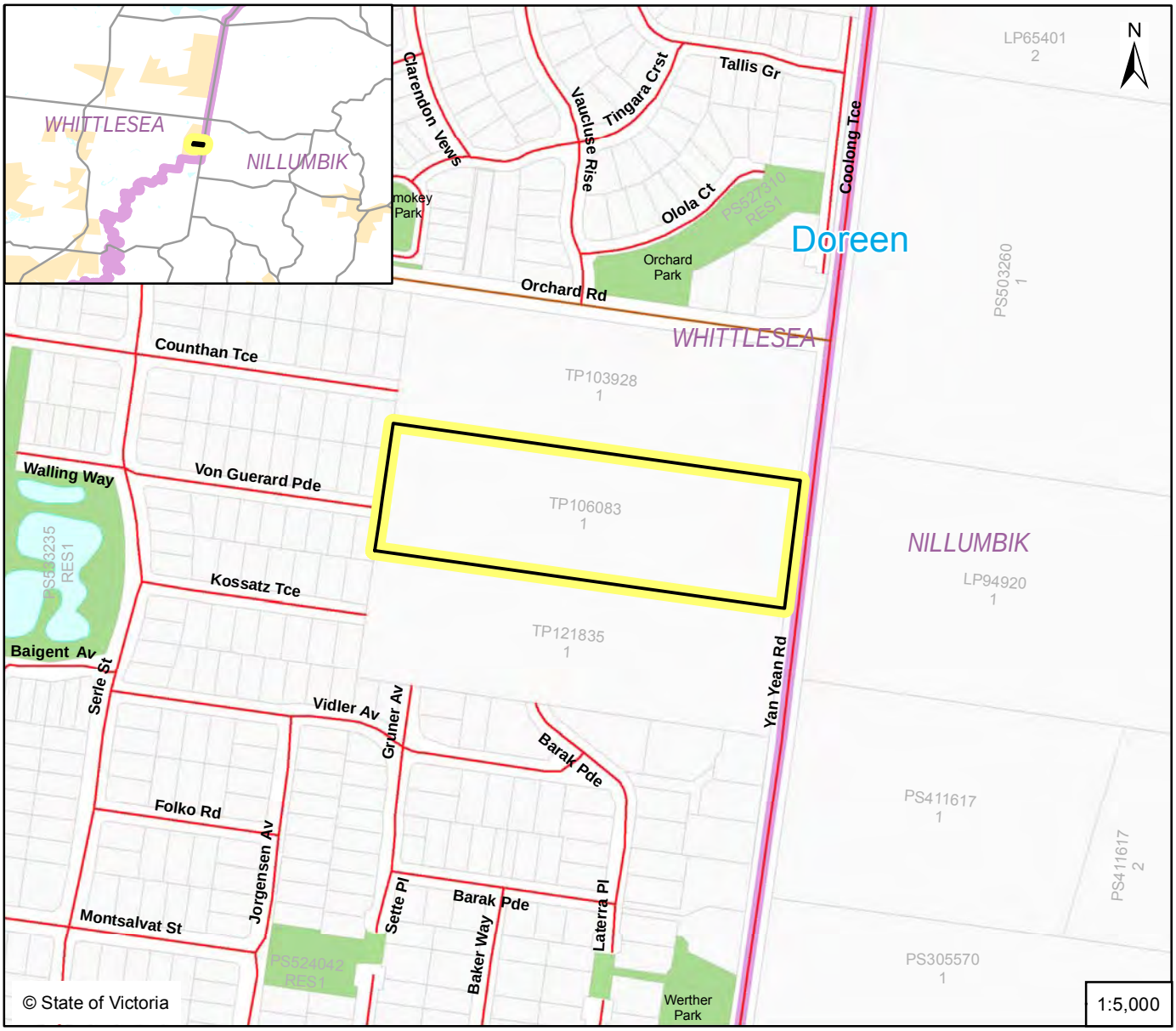

Legend

- Subject Site
- Watercourse
- Waterbody
- Reserves
- LGA Boundary

LGA NAME

Locality Name

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CS00333

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Groundwater Bores*	Visualising Victoria's Groundwater	(•) Yes ( ) No	**0** Bores identified within 1km of site:	No Bores identified within 1km of site Refer to map
Coastal Acid Sulfate Soils (CASS)	Department of Environment and Primary Industries	(•) Yes ( ) No	Potential for CASS on or near site.	No CASS on or near site Refer to map
Groundwater Resource Report	Groundwater Resource Report	(•) Yes ( ) No	(•) Yes ( ) No	Refer to report
Geological Map	Geoscience Victoria	(•) Yes ( ) No	(•) Yes ( ) No	Refer to map
Topographic Map	Department of Environment and Primary Industries	(•) Yes ( ) No	(•) Yes ( ) No	Refer to map

* To view Groundwater Bore data click on the Visualising Victoria's Groundwater link provided, click within the map, Agree to the Terms and Conditions of Use.
In the Info box at the bottom right hand side of the map page click on the Search tab and enter the bore ID of the bore in which you are interested.

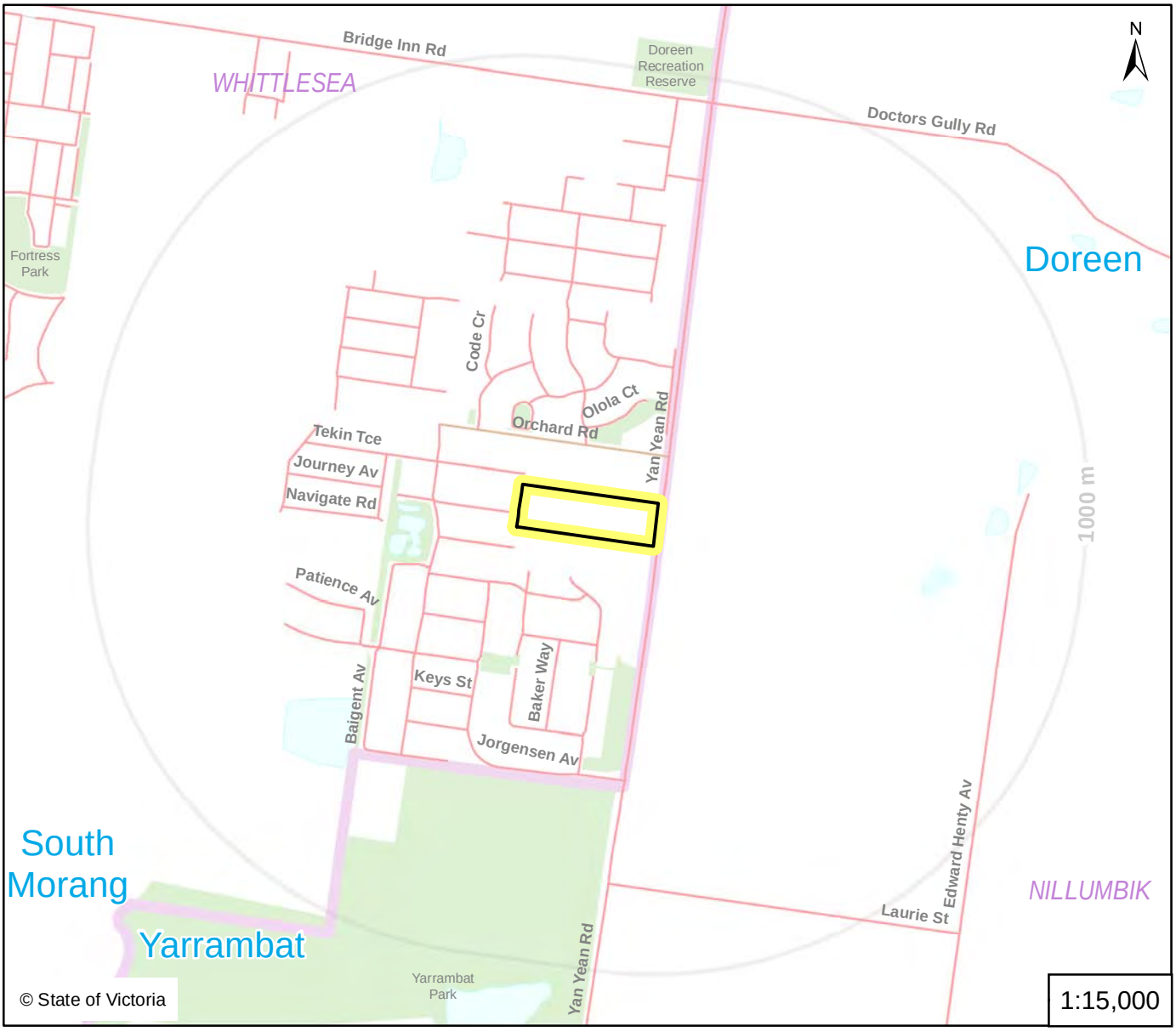
Terms and Conditions

NO Groundwater Bores within 1km of 825 Yan Yean Rd, Doreen

Bore ID	Date Completed	Depth (m)	Distance (m)	Lithologic	Use Code

Groundwater Bores within 1km of

825 Yan Yean Road, Doreen, 3754



Legend

- Subject Site
- Road Freeway
- Road Highway
- Road Local Sealed
- Road Local Unsealed
- Road Private Access
- Road Proposed
- Road 2WD
- Road 4WD
- Road Bicycle Track
- Road Walking Track
- Railway
- Railway Station
- Waterbody
- Reserves
- LGA Boundary
- LGA NAME
- Locality Name

Bores Types:

Source: Department of Sustainability and Environment

CS00333

Coastal Acid Sulfate Soils

825 Yan Yean Road, Doreen, 3754

Coastal Acid Sulfate Soil Potential in Victoria

The disturbance of acid sulfate soil can lead to degradation of water quality in estuaries and degradation of lowland land environments.
In Victoria the potential distribution of acid sulfate soil is concentrated in coastal areas
On Victoria the Department of Primary Industries (DPI) undertook a pilot study by Paul Rampant, Austin Brown and George Croatto (2003) into the distribution of Coastal Acid Sulfate Soil (CASS) in Victoria.
The study used digital elevation models, review of the geological record, aerial photo analysis, fieldwork and lab testing of soils to prepare maps of potential areas of CASS distribution.
The maps are intended as a guide for the potential distribution of CASS and are intended to indicate where caution is needed or further investigation required before undertaking any land disturbance.
Note that because of scale limitations in the mapping, those areas adjacent to those identified as potential CASS hazard should also be investigated.
The CheckSite CASS map indicates the potential presence of CASS on or near a nominated site. A 1000 metre buffer has been applied.
Further information about Coastal Acid Sulphate Soils, can be found here:
http://www.dpi.vic.gov.au/dpi/vro/vrosite.nsf/pages/soil_acid_sulfate_soils.

CS00333

Groundwater Resource Report

Groundwater catchment : East Port Phillip Bay **VICGRID94 Easting:** 2511968 **Northing:** 2431841

Depth to Water Table: 10 - 20m **Water Table Salinity (mg/L):** 1001-3500

Groundwater Layers (Aquifers and Aquitards)	*Depth Below Surface (m)*	*Groundwater Salinity (mg/L)*	*Groundwater Management Unit (GMU)*	*(GMU) Depth Below Surface (m)*	*PCV (ML/yr)*
BSE Mesozoic and Palaeozoic Bedrock (basement) sedimentary (fractured rock): Sandstone, siltstone, mudstone, shale. Igneous (fractured rock): includes volcanics, granites, granodiorites.	0 200	1001-3500	Unincorporated Area		

For further information about this report contact:
Department of Environment, Land, Water & Planning
Email: ground.water@delwp.vic.gov.au

For further information on groundwater licensing in this area contact:
Southern Rural Water Corporation
Phone: 1300 139 510
Email: srw@srw.com.au
Website: www.srw.com.au

Printed: 01 Oct 2015
Date Updated: 31 May 2014

Department of Environment, Land, Water & Planning
State Government Victoria

How to read this report

Introduction

Groundwater is part of the water cycle. When rain or snow falls on land, some of it evaporates, some flows to streams and rivers, and some seeps into the soil. Some of the water in the soil is used by plants but some continues to move down through the soil and rock until all the pores and cracks are full of water. This is known as the water table and this water is called groundwater.

Groundwater is a finite resource that, like surface water, is allocated under the *Water Act (1989)*. A Bore Construction Licence is required to drill for groundwater including for domestic and stock purposes. Taking and using groundwater for commercial or irrigation purposes requires an additional licence.

Purpose of this report

This report has been prepared to provide potential groundwater users with basic information about groundwater beneath their property. This includes the different geological layers, the depths of the layers and the salinity of groundwater in the layers. Information on the groundwater management units (GMU) and any associated caps on the volume that can be licensed (the PCV) are also provided.

Definitions and context

Term	Description
Groundwater Catchment	An identified area of the State within which groundwater resources are connected.
Easting / Northing	The VICGRID 94 coordinates of the spot that was selected on the interactive map.
Groundwater Salinity	Indicates the possible concentration of salts within the groundwater. The salt content indicates the possible uses of the water (see the Beneficial Use Table below). Fertilisers and other contaminants can also enter groundwater and affect its use. It is up to you to make sure that the groundwater you use is suitable for your purpose.
Aquifer	An aquifer is a layer of soil or rock which stores usable volumes of groundwater. Aquifers are generally limestones, gravels and sands, as well as some fractured rocks where the cracks in the rock are open and connected (some basalts, sandstones and limestones). How much water can be pumped from an aquifer depends on how much water is stored in pores and cracks, how well connected the pores and cracks are, and how thick the layer is. It is more likely that volumes of water for irrigation and urban water supply will come from gravels, sands, limestones and basalts that are at least 30 metres thick. Low volumes of water for domestic and stock use are likely from any aquifer greater than 10 metres thick. The advice above is a guide only, as the amount of water available can be highly variable. Actual pumping volumes can only be determined from drilling, appropriate construction and testing of a bore.
Aquitard	An aquitard is a layer of rock or soil that does not allow water to move through it easily, limiting its capacity to supply water. Aquitards are generally silts, clays and fractured rocks (where there are few cracks in the rock or the cracks are poorly connected).
Groundwater Management Unit (GMU)	A collective term for groundwater management areas (GMAs) and water supply protection areas (WSPAs). GMAs and WSPAs are defined areas and depths below the surface where rules for groundwater use may apply. WSPAs often have caps on groundwater use and plans describing how the resource is managed. GMAs usually have caps on groundwater use and may have local plans and rules. All other areas are managed directly through the Water Act (1989). Always check with your local Rural Water Corporation to be sure that the information on the GMU is correct for your specific location.
Permissible Consumptive Volume (PCV)	A cap that is set under the Water Act (1989) declaring the total volume of groundwater that may be taken from the area. Once the PCV is reached, no additional extraction can be licensed for use within the area unless traded from another groundwater licence holder.
Depth to Water Table	This is an indication of the depth at which groundwater might first be encountered when drilling a bore. The depth can vary from year to year, and from place to place and may vary significantly from that indicated in this report.

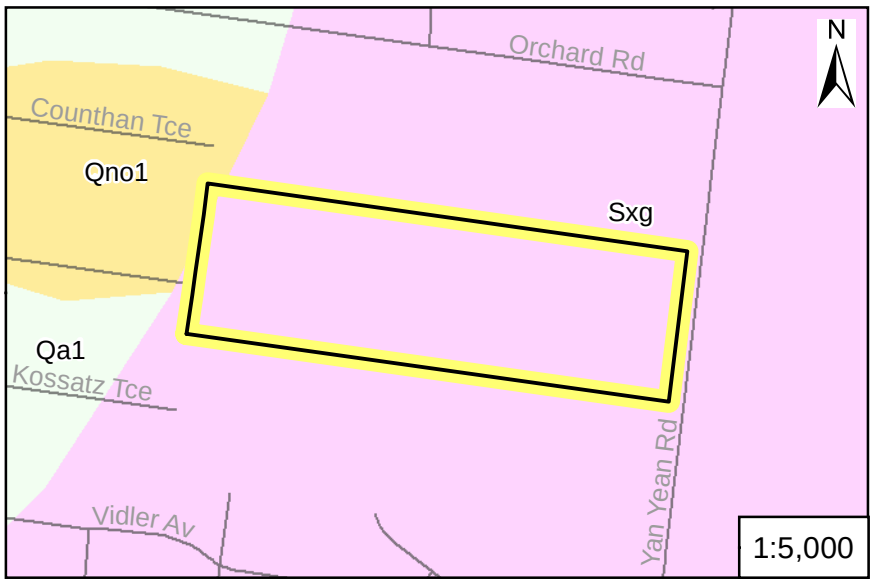
Beneficial use table

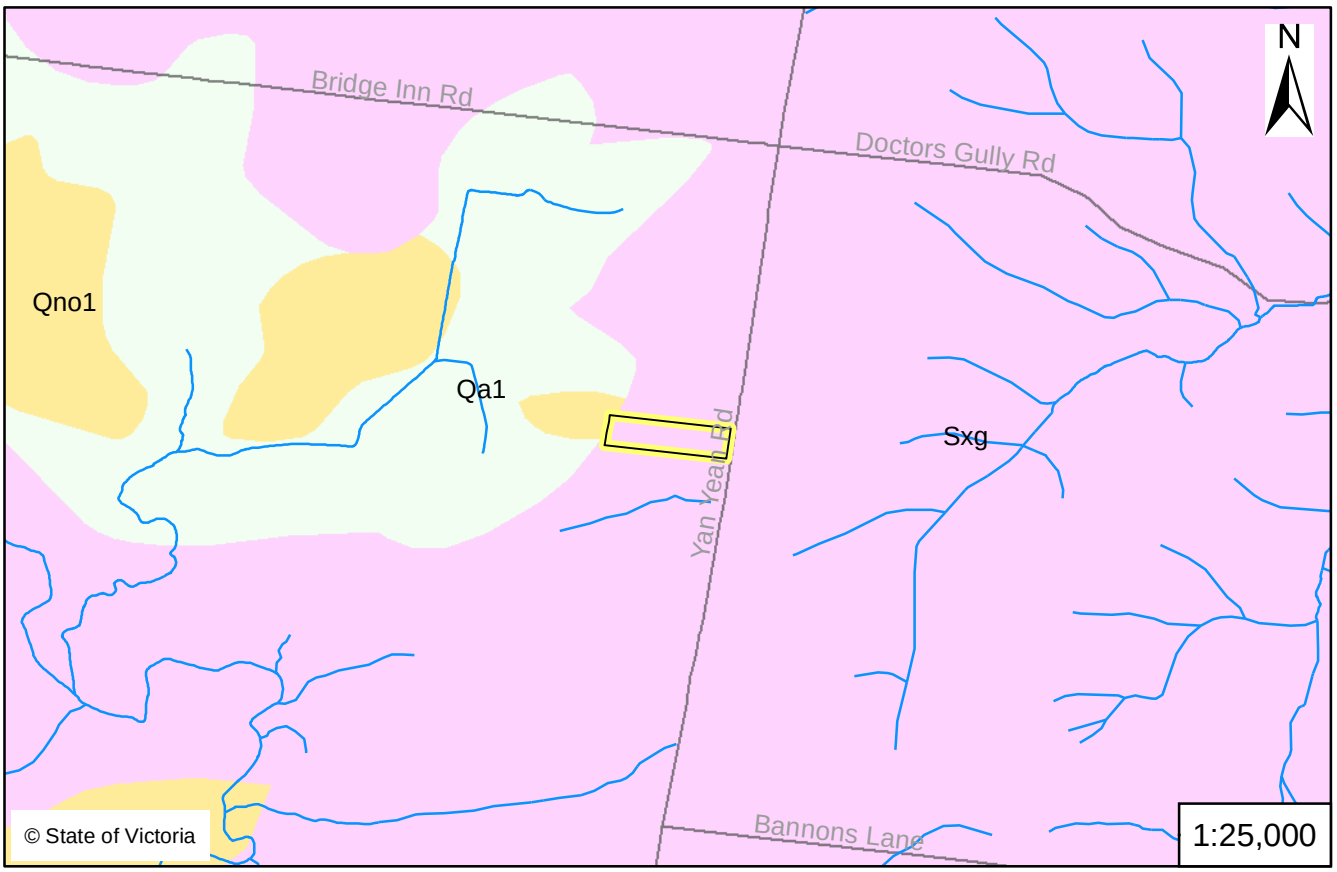
Salinity Range (mg/L TDS)	Beneficial Use as described by State Environment Protection Policy (Groundwaters of Victoria) s160							
	Potable Water - Preferred	Potable Water - Acceptable	Potable Mineral Water	Irrigation	Stock Water	Industry	Ecosystem Protection	Buildings and Structures
<500	✓	✓	✓	✓	✓	✓	✓	✓
501-1000		✓	✓	✓	✓	✓	✓	✓
1001-3500			✓	✓	✓	✓	✓	✓
3501-13000					✓	✓	✓	✓
13001+						✓	✓	✓

Department of Environment, Land, Water & Planning
State Government Victoria

Geological Map

825 Yan Yean Road, Doreen, 3754





Geology Interpretations

- Qa1 - Unnamed Alluvium
- Qno1 - Unnamed Sheetflow Basalt
- Sxg - Dargile Formation

Geological Lines & Faults

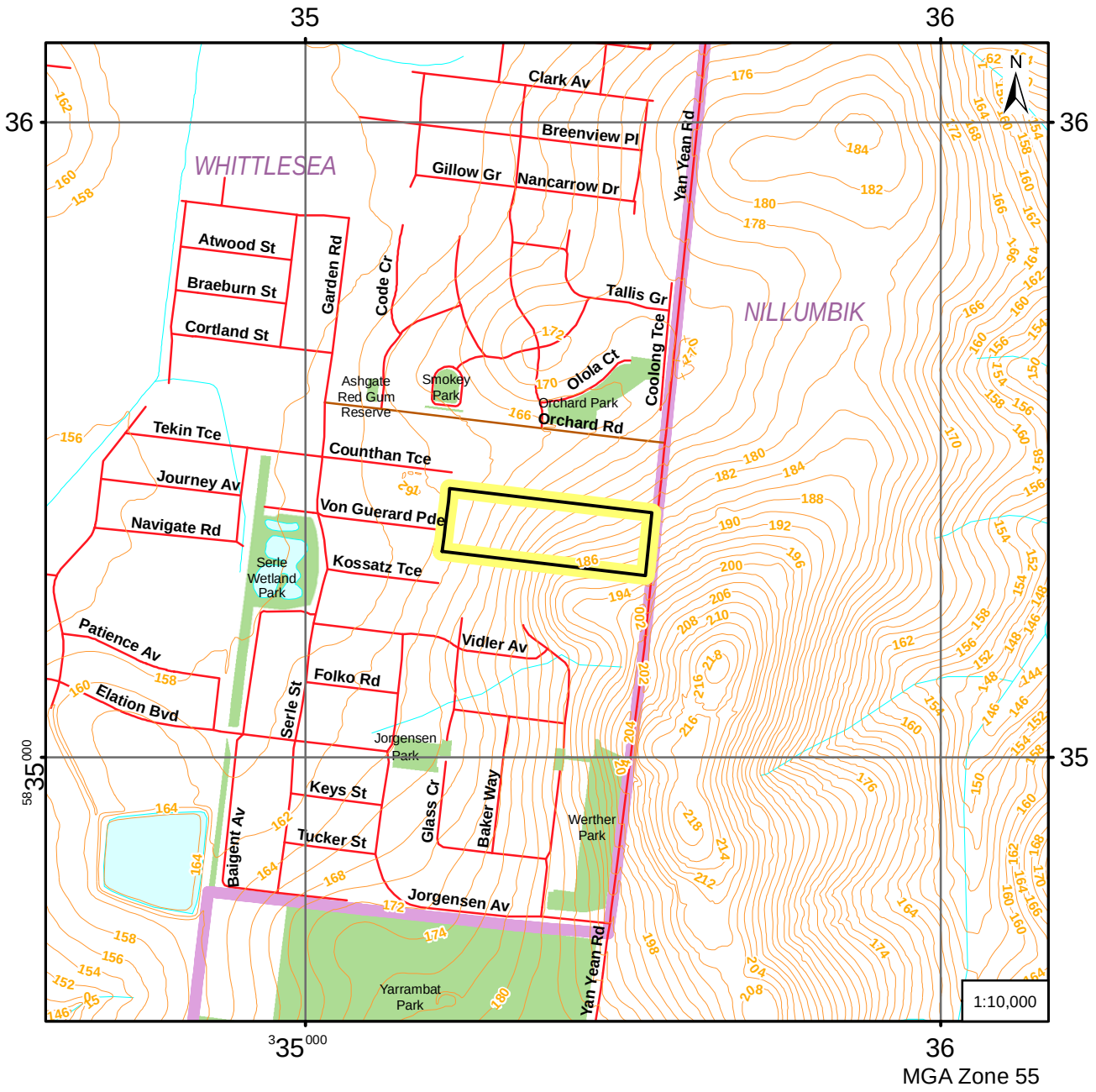
- Railway
- Watercourse
- Subject Site

Source: Department of Primary Industries Victoria - Earth Resources (Geology)

CS00333

Topographic Map

825 Yan Yean Road, Doreen, 3754



Legend

- Subject Site
- Road Freeway
- Road Highway
- Road Local Sealed
- Road Local Unsealed
- Road Private Access
- Road Proposed
- Road 2WD
- Road 4WD
- Road Bicycle Track
- Road Walking Track
- Railway
- Waterbody
- Reserves
- LGA Boundary
- LGA NAME
- Locality Name

CS00333

Report Date: 29/09/2015

What is CheckSite?

Gathering information about a particular site to understand its history of use can be a time consuming and frustrating task. As a professional environmental auditor, developer or property consultant, you need access to a variety of information from reliable sources to assess whether the site may be associated with a risk or hazard.

CheckSite draws on information from a wide range of government agencies and authoritative sources to generate reports about a property. CheckSite provides you with complete, professional reports compiled from the best current information, freeing up your resources. All you have to do is provide an address or property description (Lot on Plan), CheckSite will do the rest!

Standard CheckSite reports not what you are looking for? Please contact Spatial Vision with your needs – we would be happy to provide an estimate of a custom solution.

CheckSite reports are produced by:

Spatial Vision Innovations Pty Ltd

Level 4, 575 Bourke Street Melbourne VIC 3000

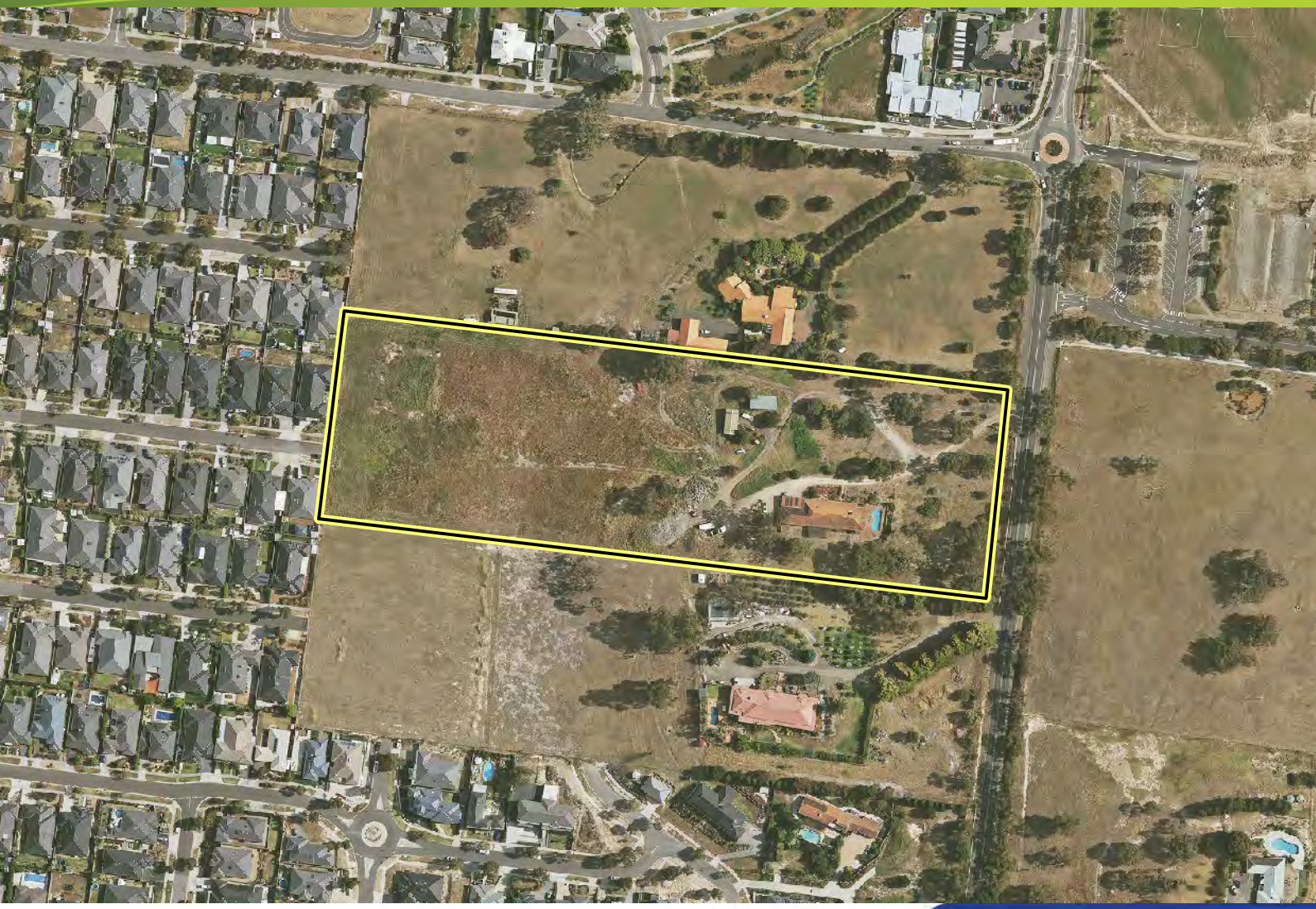
Contact: ph +61 3 9691 3000 or info@checksite.com.au

www.checksite.com.au

CheckSite Environmental

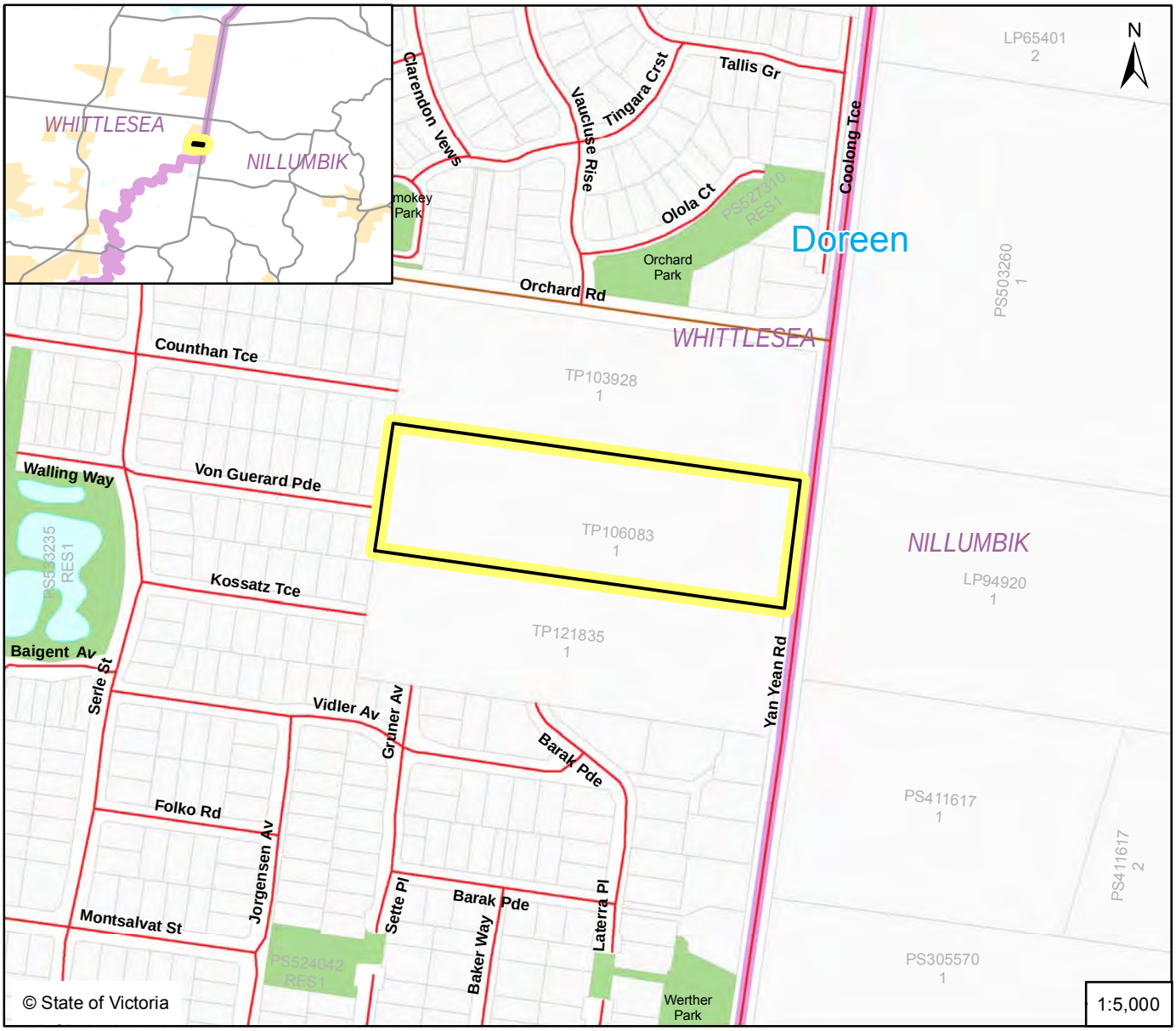
825 Yan Yean Road, Doreen, 3754

CS00333



This report has been produced for the subject site:

825 Yan Yean Road, Doreen, 3754



Legend

- Subject Site
- Watercourse
- Waterbody
- Reserves
- LGA Boundary
- *LGA NAME*
- Locality Name

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CS00333

Environment Protection Responsibility in Victoria

The Environment Protection Authority's sole role is to regulate pollution and has independent authority to make regulatory decisions under the *Environment Protection Act 1970*.

EPA aspires to create a healthy environment that supports a liveable and prosperous Victoria. By effectively regulating pollution in Victoria, the EPA strives to deliver clean air, healthy waterways, safe land and minimal disturbances from noise and odour for Victorians.

EPA is an administrative office of the Department of Sustainability and Environment.

CheckSite provides you with information regarding three different aspects of the work of the EPA in Victoria. It provides information on

- EPA Priority Sites
- EPA Licensed Sites
- Certificates and Statements of Environmental Audit

Priority Sites and the Priority Sites Register

Priority sites are sites for which EPA has issued a clean-up notice pursuant to section 62A or a pollution abatement notice pursuant to section 31A or 31B (relevant to land and/or groundwater) of the *Environment Protection Act 1970*.

The condition of these sites is not compatible with the current or approved use of the site without active management to reduce the risk to human health and the environment. Such management can include clean-up, monitoring and/or institutional controls.

The Priority Sites Register is not a listing of all contaminated sites in Victoria, nor is it a list of all contaminated sites of which EPA has knowledge.

The Priority Sites Register does not list sites managed by voluntary agreements or sites subject to management by planning controls (for example sites managed in accordance with section 173 agreement under the Planning and Environment Act 1987). Land purchasers should be aware of these limitations and make their own enquiries.

Click here for further information about Priority Sites and the Priority Sites Register.

EPA Licenses

Under the *Environment Protection Act 1970*, premises which have the potential for significant environmental impact are subject to works approvals (for construction or modification of facilities or processes) and/or licences (for operating conditions, discharge limits, monitoring and reporting requirements).

The *Environment Protection (Scheduled Premises and Exemptions) Regulations 2007* prescribe the premises that are subject to works approval and/or licensing by EPA, and provide for exemptions in certain circumstances. They provide a means to effectively manage these premises in a transparent way, which ensures an adequate level of community confidence is maintained.

EPA issues licences for all scheduled premises. Licences contain standard conditions that aim to control the operation of the premises so that there is no adverse effect on the environment. These conditions address areas such as waste acceptance and treatment, air and water discharges, and

noise and odour. The *Environment Protection Act 1970* specifies penalties for breach of licence conditions and for operating a site without a licence.

For further information about EPA Licences visit the Licences section of the EPA Website

Certificates and Statements of Environmental Audit.

An environmental audit is an assessment of the nature and extent of harm (or risk of harm) to the environment posed by an industrial process or activity, waste, substance or noise. An audit must be able to deliver authoritative advice that can be relied upon to make decisions affecting our future.

The *Environment Protection Act 1970* provides for the statutory appointment of environmental auditors and their responsibilities to ensure high quality, rigorous environmental audits are conducted by appropriately qualified professionals.

Appointed environmental auditors may be engaged by anyone from private or public sectors to provide independent, objective environmental advice.

The most extensive use of the system to date has been by planning authorities, government agencies and the private sector to ensure potentially contaminated land is suitable for its intended use, or to advise how to make the land suitable for its intended use.

EPA maintains a searchable list of properties issued either with a certificate or statement of environmental audit under part IXD of the *Environment Protection Act 1970* since the environmental audit system commenced in 1990.`

A certificate of environmental audit is issued for a property where, following an audit, an environmental auditor believes the environmental condition of the land is suitable for any beneficial use.

A statement of environmental audit is issued where, following an audit, an environmental auditor believes the land isn't suitable for all possible beneficial uses, but is suitable for specific uses or developments. It may contain conditions for clean-up or management of contamination. If the land use changes for a property which has been issued an environmental audit, a new audit may be needed.

Further information about Victoria's system of Environmental Auditing may be found here.

Energy Safe Victoria - Cathodic Protection Database Search

Cathodic protection devices protect structures and metalwork from corrosion. They place the metal to be protected by a cathode element in an electric current which encourages corrosion in a less critical or cheaper, anode material.

Cathodic protection systems are often used with structures like building reinforcement, buried metallic pipeline and cables.

The Electricity Safety Act 1998 (the Act) contains provisions relating to Cathodic Protection Systems (CPS), Mitigation Systems and the constitution of the Victorian Electrolysis Committee (VEC). Section 93(1) of the Act prohibits the operation of a Cathodic Protection System unless that system is registered with Energy Safe Victoria (ESV) in accordance with the Regulations.

The VEC maintains the register to Cathodic Protection Systems installed in Victoria. CheckSite requests a search of the Cathodic Protection register to determine whether there is any CPS at the subject site.

The Cathodic Protection search will only identify whether CPS are present at the subject site – it will not identify whether they are present at neighbouring sites.

For further information about Cathodic Protection in Victoria visit the ESV website.

WorkSafe Victoria Dangerous Goods Database Search

Dangerous goods can cause injury and death and can seriously damage property and the environment.

In Victoria WorkSafe Victoria licences certain types of work including the handling and transport of Dangerous Goods. WorkSafe Victoria maintains a database of sites where licences have been issued permitting Dangerous Goods handling and storage. CheckSite requests a search of the Dangerous Goods Database to determine whether there is any record of Dangerous Goods handling and storage at the subject site.

The property owner's permission must be provided before a Dangerous Goods Database Search can be undertaken for a site. The database search will only identify whether Dangerous Goods are managed at the subject site – it will not identify whether they are present at neighbouring sites.

For further information about the management and licensing of Dangerous Goods in Victoria visit the WorkSafe Victoria website.

The following searches have been undertaken for this report.

CONTENT	SOURCES	SEARCH UNDERTAKEN	INFO. PROVIDED	DETAILS
Certificates and Statements of Environmental Audit.	EPA Victoria	(•) Yes ( ) No	( ) Yes (•) No	No audits within 1km of site Refer to map
EPA Priority Sites Register	EPA Victoria	( ) Yes (•) No	( ) Yes (•) No	No Priority sites within 1km of site Refer to map
EPA Priority Sites Extract *	Landata	(•) Yes ( ) No	(•) Yes ( ) No	Refer to Extract from Priority Sites Register
EPA Licence Register	EPA Victoria	(•) Yes ( ) No	( ) Yes (•) No	No EPA Licenses within 1km of site Refer to map
Petrol Stations/ Garages 1965, 1975, 1985 and 1995	Spatial Vision	(•) Yes ( ) No	( ) Yes (•) No	No Petrol Stations/Garages Within 1km of site Refer to map
Energy Safe Victoria - Cathodic Protection Search	Energy Safe Victoria	( ) Yes (•) No	(•) Yes ( ) No	Awaiting Cathodic Protection results ESV response not incuded in this report
WorkSafe Victoria - Dangerous Goods Search	WorkSafe Victoria	( ) Yes (•) No	( ) Yes (•) No	Awaiting permission letter Not included in this report

***Note that occasionally the information provided on the Priority Sites map will differ from the information in the EPA Priority Sites Extract. The extract is based on an approximate map reference, while CheckSite researches the Priority Sites Register to identify the Priority Sites on and around a property.**

Terms and Conditions

be solely responsible for any damage to their computer arising from accessing the site or downloading any information. You must check for and maintain your own protection against computer viruses.

To view Spatial Vision's CheckSite Terms and Conditions, visit www.checksite.com.au.

EPA SEARCH

	Certificates and Statements of Envrionmental Audit	Priority SitesRegister	EPA Licences
On the site	NO	NO	NO
Around the site	NO	NO	NO

Certificates and Statements of Envrionmental Audit

CARMS No	Address	Locality	Link to Further Information

EPA Priority Sites Register

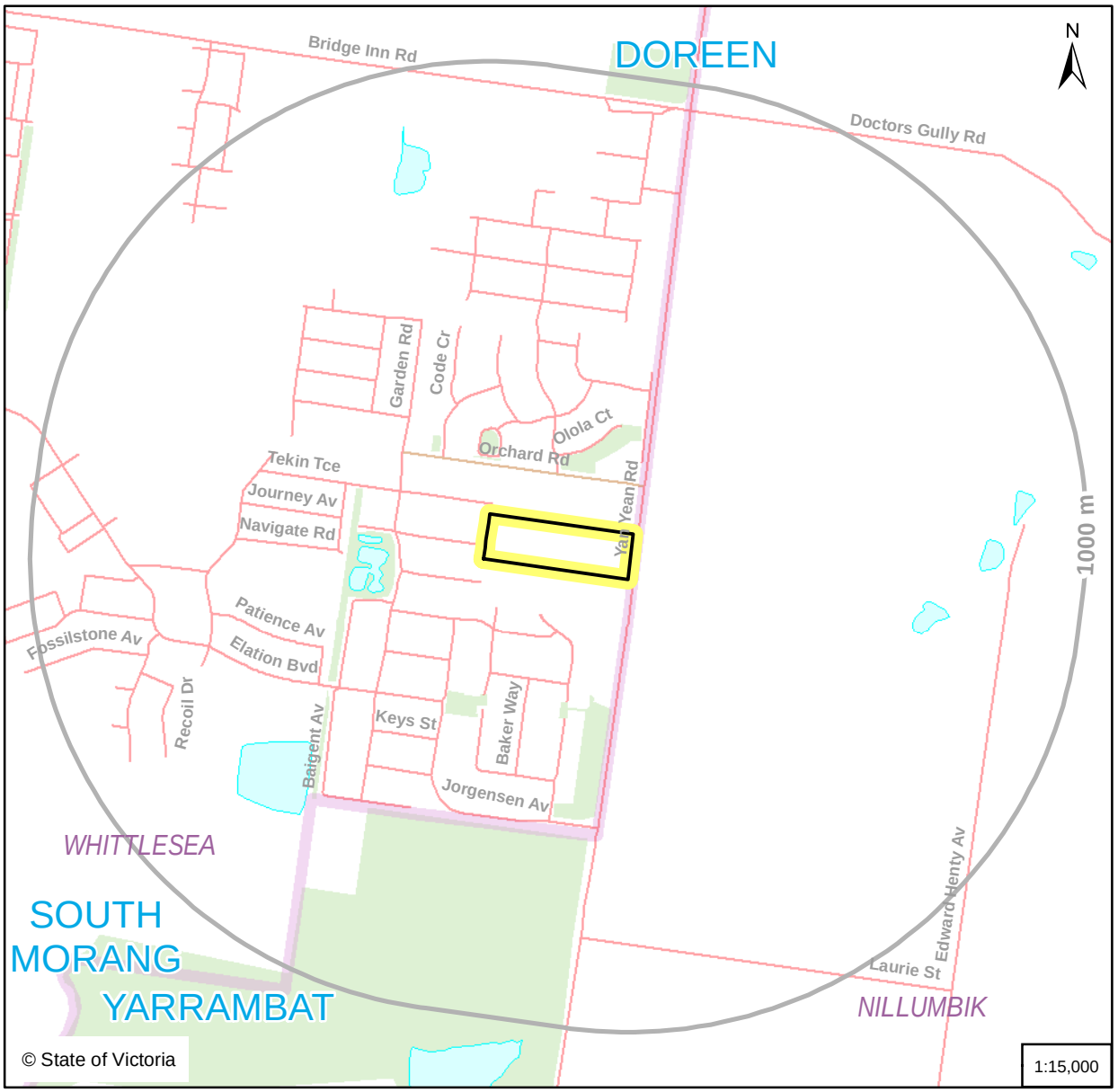
NOTICE Id	Address	Locality	Issue

EPA Licences

Licence Id	Licensee	Premises Address	Link to Further Information

Environmental Information Search

825 Yan Yean Road, Doreen, 3754



Legend

- Subject Site
- Road Freeway
- Road Highway
- Road Local Sealed
- Road Local Unsealed
- Road Private Access
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- Road 2WD
- Road 4WD
- Road Bicycle Track
- Road Walking Track
- Railway
- Railway Station
- Waterbody
- Reserves
- LGA Boundary
- LGA NAME
- Locality Name
- EPA Priority Sites
- Former EPA Priority Sites
- EPA Audits
- EPA Licence Sites
- EPA Corporate Licences

CS00333

Extract of EPA Priority Site Register

**** Delivered by the LANDATA® System, Department of Environment, Land, Water & Planning ****

PROPERTY INQUIRY DETAILS:

STREET ADDRESS: 825 YAN YEAN ROAD
SUBURB: DOREEN
MUNICIPALITY: CITY OF WHITTLESEA
MAP REFERENCES: Melways 40th Edition, Street Directory, Map 184 Reference G2
Melways 40th Edition, Street Directory, Map 184 Reference G1
Melways 40th Edition, Street Directory, Map 184 Reference F2
Melways 40th Edition, Street Directory, Map 184 Reference F1

DATE OF SEARCH: 30th September 2015

PRIORITY SITES REGISTER REPORT:

A search of the Priority Sites Register for the above map references, corresponding to the address given above, has indicated that this site is not listed on, and is not in the vicinity of a site listed on the Priority Sites Register at the above date.

IMPORTANT INFORMATION ABOUT THE PRIORITY SITES REGISTER:

You should be aware that the Priority Sites Register lists only those sites for which EPA has requirements for active management of land and groundwater contamination. Appropriate clean up and management of these sites is an EPA priority, and as such, EPA has issued either a:

Clean Up Notice pursuant to section 62A, or a
Pollution Abatement Notice pursuant to section 31A or 31B

of the Environment Protection Act 1970 on the occupier of the site to require active management of these sites.

The Priority Sites Register does not list all sites known to be contaminated in Victoria. A site should not be presumed to be free of contamination just because it does not appear on the Priority Sites Register.

Persons intending to enter into property transactions should be aware that many properties may have been contaminated by past land uses and EPA may not be aware of the presence of contamination. EPA has published information advising of potential contaminating land uses. Municipal planning authorities hold information about previous land uses, and it is advisable that such sources of information also be consulted.

For sites listed on the Priority Sites Register, a copy of the relevant Notice, detailing the reasons for issue of the Notice, and management requirements, is available on request from EPA for $8 per Notice.

For more information relating to the Priority Sites Register, refer to EPA contaminated site information bulletin: Priority Sites Register & Contaminated Land Audit Site Listing (EPA Publication 735). For a copy of this publication, copies of relevant Notices, or for more information relating to sites listed on the Priority Sites Register, please contact EPA as given below:

EPA Information Centre
Herald & Weekly Times Tower
40 City Road, Southbank 3006
Tel: (03)9695 2700 Fax:(03)9695 2710

[Extract of Priority Sites Register] # 20336225 - 20336225152912 'CS00333'

Extract of EPA Priority Site Register

**** Delivered by the LANDATA® System, Department of Environment, Land, Water & Planning ****

[Extract of Priority Sites Register] # 20336225 - 20336225152912 'CS00333'

Petrol Stations and Garages in Metropolitan Melbourne

The location of former petrol stations is of key interest to those investigating the potential for land contamination. CheckSite has developed a geographic database of petrol stations for the Melbourne Metropolitan area for ten year intervals from 1965 to 1995.

The data shows the location of either operational or former operational Garages and Petrol retailers. Each location also has a confidence measure of high, moderate or low. In many cases, the CheckSite team has been able to locate these sites with a high degree of confidence. In other instances the location cannot be determined with absolute accuracy and the position is indicative. Sites with a low degree of confidence should be treated with caution.

Map Data

The maps show 3 different categories of site;

1. Current Petrol Stations/Garages – site currently used for the sale and storage of petrol.
2. Former Petrol Stations/Garages – site not currently used for the sale/storage of petrol, however was likely to be used in the past (in many cases, this has been inferred due to reference between the site and a former retail petroleum company (i.e Golden Fleece, Shell, Esso etc.) or if the past use of a site has been described as 'Service Station'.
3. Mechanical Services Only Garage – site has been identified as a garage or workshop, but there is no evidence that the site sold petrol such as a past or current relationship to a retail petroleum company. Caution should be exercised as some garages may have sold petrol as independent retailers.

Tabular Data

The table below lists the following fields

ID	Site identifier – a single site record to which petrol station or garage "entities" have been linked across multiple years
Year	The year in which a particular entiity related to a site appears in source material.
Name	The name of the entity in a particular year
Address	The address provided for an entity in a particular year.
Current Proprietor	The current proprietor of the site, if known.
Confidence	Provides an estimate of the accuracy of the geocoded location of a site. There are three levels of confidence; 100 (High) Sites are given this confidence level where there is strong evidence that the site has been used as a Petrol Station or Garage (eg it is currently operational). 50 (Medium) This rating was assigned under one of two circumstances; (i) a listing in a historical report exists that could be fully geocoded, or (ii) a listing in a historical report exists that could be only

	partially geocoded, but could be traced to a site where there is sufficient evidence in the current use or site appearance (for example evidence of a building, apron, porch or driveway configuration indicative of the past use). 25 (Low) This value is assigned where there is not a good match between a historical report of an Address of a site and the geocoded address. In particular, where the location is given as 'Corner of X Road and Y Street' and follow up review does not provide enough evidence to determine the exact corner. The location was placed at a "most likely" corner or in some cases in the road between likely corner locations.

Sites for which a location could not be determined

In a relatively small number of instances, the location of a service station could not be determined. Usually these are where the location of the site is described in the manner of"Smithfield Road Newmarket" or in cases where there is a street number provided there may be uncertainty about the suburb or locality. These sites are separately listed in a sheet that can be provided on request.

Sources

- Various Business Directories
- Aerial imagery
- EPA Priority Sites Register

Tell us if we are wrong

CheckSite welcomes any feedback on this data, whether on the location or on the data attributes. Any information that improves the Petrol Station/Garage data would be very welcome.

Contact info@checksite.com.au.

SERVICE STATION SEARCH

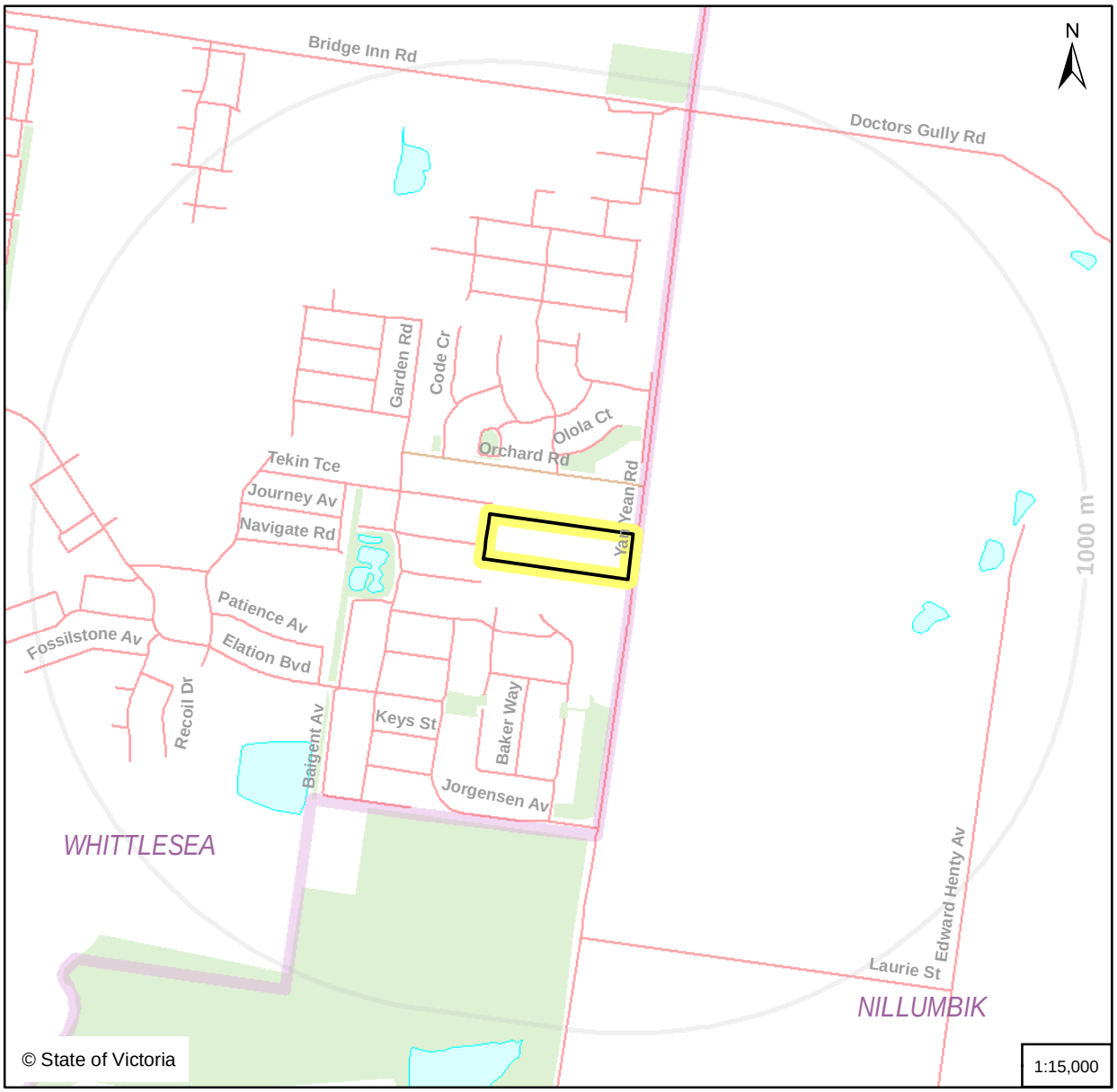
	Service Stations
On the site	NO
Around the site	NO

Petrol Stations and Garages within 1km of 825 Yan Yean Rd, Doreen

ID	Year	Name	Address	Current Proprietor	Confidence

Petrol Station Search

825 Yan Yean Road, Doreen, 3754



Legend

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- Road Local Unsealed
- Road Private Access
- Road Proposed
- Road 2WD
- Road 4WD
- Road Bicycle Track
- Road Walking Track
- Railway
- Railway Station
- Waterbody
- Reserves
- LGA Boundary
- LGA NAME
- Locality Name
- Active Petrol Station
- Former Petrol Station
- Garage/Workshop (Active/Inactive)

CS00333

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Appendix D – Bore Logs

coffey

Engineering Log - Borehole

Borehole ID.	**BH01**
sheet:	1 of 1
project no.	**ENAUABTF20236AB**
client:	**Head & Humphreys Pty Ltd**
principal:	
project:	**Preliminary Environmental Assessment and Geotechnical Investigation**
location:	**825 Yan Yean Road, Doreen, VIC**
date started:	**12 Oct 2015**
date completed:	**12 Oct 2015**
logged by:	**BK**
checked by:	

position: E: 335262; N: 5835392 (WGS84 , Google Earth) surface elevation: 164.00 m (AHD) — angle from horizontal: 90°

drill model: Explorar 50, Truck mounted — hole diameter : 110 mm

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	hand penetrometer (kPa) 100 200 300 400	structure and additional observations
AD/V, T		Not Observed		164								
			SPT HW/300mm, 0, 0, 3 N*=3	163	1.0		CI-CH	**FILL: Silty CLAY**: medium - high plasticity, dark brown, trace of roots.	M	VS - S		**FILL**
							CH	**FILL: Silty CLAY**: high plasticity, grey brown, trace of fine to coarse grain sand.				Environmental Sample taken from SPT at 0.5m
			SPT HW/450mm	162	2.0		CI	**FILL: Silty CLAY**: medium plasticity, dark grey/blue, trace of fine to coarse grain sand.		VS		Environmental Sample taken from SPT at 1.5m
			SPT 20/50mm HB N*=R	161	3.0			**SILTSTONE**: pale grey, estimated highly weathered, very low to low strength, remoulds as Silty CLAY, medium plasticity.		Fb		**WEATHERED BEDROCK** Environmental Sample taken from SPT at 2.5m. Limited Sample Recovery
			SPT 10/40mm HB N*=R									Environmental Sample taken from SPT at 3.5m. Limited Sample Recovery
			E	160	4.0							Taken from Auger
				159	5.0			Borehole BH01 terminated at 5.0 m Target depth				
				158	6.0							
				157	7.0							

CDF_0_9_06_LIBRARY.GLB rev:AJ Log COF BOREHOLE: NON CORED ENAUABTF20236AB.GPJ <<DrawingFile>> 13/10/2015 17:09

method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore

* bit shown by suffix, e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Drilling Log

Hand Auger Hole **HA1**

Project *Prelim. Envi and Geot Assessment, Doreen* Owner *Head and Humphreys Pty Ltd*

Location *825-835 Yan Yean Road, Doreen* Proj. No. *ENAUABTF20236AB*

Surface Elev. *NA* Total Hole Depth *0.3 m.* North *NA* East *NA*

Top of Casing *NA* Water Level Initial *NA* Static *NA* Diameter

Screen: Dia *NA* Length *NA* Type/Size *NA*

Casing: Dia *NA* Length *NA* Type *NA*

Fill Material *Backfilled and no impacted soil cuttings* Rig/Core

Drill Co. Method *Hand auger*

Driller Log By *I. Newby* Date *10/12/15* Permit # *NA*

Checked By License No.

COMMENTS

Depth (m.)	PID (ppm)	Sample ID / % Recovery	Blow Count Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Geologic descriptions are based on ASTM Standard D 2487-93 and the USCS.
0						
						FILL: Silty SAND; fine to medium grained, brown, with gravel and organic matter, moist.
		HA1_0-0.1			ML	**Sandy SILT**; light brown, dry.
						With siltstone cobbles.
		HA1_0.3				Refusal on siltstone, end of investigation at 0.3 mbgs
1						

Drilling Log

Hand Auger Hole **HA2**

Project *Prelim. Envi and Geot Assessment, Doreen* Owner *Head and Humphreys Pty Ltd*

Location *825-835 Yan Yean Road, Doreen* Proj. No. *ENAUABTF20236AB*

Surface Elev. *NA* Total Hole Depth *0.5 m.* North *NA* East *NA*

Top of Casing *NA* Water Level Initial *NA* Static *NA* Diameter

Screen: Dia *NA* Length *NA* Type/Size *NA*

Casing: Dia *NA* Length *NA* Type *NA*

Fill Material *Backfilled and no impacted soil cuttings* Rig/Core

Drill Co. Method *Hand auger*

Driller Log By *I. Newby* Date *10/12/15* Permit # *NA*

Checked By License No.

COMMENTS

Depth (m.)	PID (ppm)	Sample ID / % Recovery	Blow Count Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Geologic descriptions are based on ASTM Standard D 2487-93 and the USCS.
0		HA2_0.1				**FILL: Sandy SILT;** organic material wood/charcoal, moist, black staining, no odour.
					ML	**SILT;** light brown, dry, no staining, no odour. With cobbles of siltstone, orange and brown.
		HA2_0.5				End of investigation at 0.5 mbgs
1						

Drilling Log

Hand Auger Hole **HA3**

Project *Prelim. Envi and Geot Assessment, Doreen* Owner *Head and Humphreys Pty Ltd*

Location *825-835 Yan Yean Road, Doreen* Proj. No. *ENAUABTF20236AB*

Surface Elev. *NA* Total Hole Depth *0.3 m.* North *NA* East *NA*

Top of Casing *NA* Water Level Initial *NA* Static *NA* Diameter

Screen: Dia *NA* Length *NA* Type/Size *NA*

Casing: Dia *NA* Length *NA* Type *NA*

Fill Material *Backfilled and no impacted soil cuttings* Rig/Core

Drill Co. Method *Hand auger*

Driller Log By *I. Newby* Date *10/12/15* Permit # *NA*

Checked By License No.

COMMENTS

Depth (m.)	PID (ppm)	Sample ID / % Recovery	Blow Count Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Geologic descriptions are based on ASTM Standard D 2487-93 and the USCS.
0						
						FILL: Silty SAND; brown, moist
						Sandy SILT; low plasticity, brown, some clay, moist.
		HA3_0.1			ML	With cobbles of siltstone
		HA3_0.3				Refusal on siltstone, end of investigation at 0.3 mbgs
1						

Drilling Log

Hand Auger Hole **HA4**

Project *Prelim. Envi and Geot Assessment, Doreen* Owner *Head and Humphreys Pty Ltd*

Location *825-835 Yan Yean Road, Doreen* Proj. No. *ENAUABTF20236AB*

Surface Elev. *NA* Total Hole Depth *0.2 m.* North *NA* East *NA*

Top of Casing *NA* Water Level Initial *NA* Static *NA* Diameter

Screen: Dia *NA* Length *NA* Type/Size *NA*

Casing: Dia *NA* Length *NA* Type *NA*

Fill Material *Backfilled and no impacted soil cuttings* Rig/Core

Drill Co. Method *Hand auger*

Driller Log By *I. Newby* Date *10/12/15* Permit # *NA*

Checked By License No.

COMMENTS

Depth (m.)	PID (ppm)	Sample ID / % Recovery	Blow Count Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Geologic descriptions are based on ASTM Standard D 2487-93 and the USCS.
0						
		HA4_0.1			ML	**SILT;** light brown, dry. with cobbles of siltstone.
						Refusal. End of investigation at 0.2 mbgs.
1						

Drilling Log

Hand Auger Hole **HA5**

Project *Prelim. Envi and Geot Assessment, Doreen* Owner *Head and Humphreys Pty Ltd*

Location *825-835 Yan Yean Road, Doreen* Proj. No. *ENAUABTF20236AB*

Surface Elev. *NA* Total Hole Depth *0.2 m.* North *NA* East *NA*

Top of Casing *NA* Water Level Initial *NA* Static *NA* Diameter

Screen: Dia *NA* Length *NA* Type/Size *NA*

Casing: Dia *NA* Length *NA* Type *NA*

Fill Material *Backfilled and no impacted soil cuttings* Rig/Core

Drill Co. Method *Hand auger*

Driller Log By *I. Newby* Date *10/12/15* Permit # *NA*

Checked By License No.

COMMENTS

Depth (m.)	PID (ppm)	Sample ID / % Recovery	Blow Count / Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Geologic descriptions are based on ASTM Standard D 2487-93 and the USCS.
0						
		HA5_0.1				**FILL: Silty SAND**; roots, with organic material, moist.
						Refusal, on concrete, end of investigation at 0.2 mbgs
1						

Drilling Log

Hand Auger Hole **HA6**

Project *Prelim. Envi and Geot Assessment, Doreen* Owner *Head and Humphreys Pty Ltd*

Location *825-835 Yan Yean Road, Doreen* Proj. No. *ENAUABTF20236AB*

Surface Elev. *NA* Total Hole Depth *0.5 m.* North *NA* East *NA*

Top of Casing *NA* Water Level Initial *NA* Static *NA* Diameter

Screen: Dia *NA* Length *NA* Type/Size *NA*

Casing: Dia *NA* Length *NA* Type *NA*

Fill Material *Backfilled and no impacted soil cuttings* Rig/Core

Drill Co. Method *Hand auger*

Driller Log By *I. Newby* Date *10/12/15* Permit # *NA*

Checked By License No.

COMMENTS

Depth (m.)	PID (ppm)	Sample ID / % Recovery	Blow Count / Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Geologic descriptions are based on ASTM Standard D 2487-93 and the USCS.
0						
		HA6_0.1			ML	**SILT**; light brown, moist, no odour.
						Becoming slightly clayey.
		HA6_0.5				End of investigation at 0.5 mbgs.
1						

Drilling Log

Hand Auger Hole **HA7**

Project *Prelim. Envi and Geot Assessment, Doreen* Owner *Head and Humphreys Pty Ltd*

Location *825-835 Yan Yean Road, Doreen* Proj. No. *ENAUABTF20236AB*

Surface Elev. *NA* Total Hole Depth *0.5 m.* North *NA* East *NA*

Top of Casing *NA* Water Level Initial *NA* Static *NA* Diameter

Screen: Dia *NA* Length *NA* Type/Size *NA*

Casing: Dia *NA* Length *NA* Type *NA*

Fill Material *Backfilled and no impacted soil cuttings* Rig/Core

Drill Co. Method *Hand auger*

Driller Log By *I. Newby* Date *10/12/15* Permit # *NA*

Checked By License No.

COMMENTS

Depth (m.)	PID (ppm)	Sample ID / % Recovery	Blow Count Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Geologic descriptions are based on ASTM Standard D 2487-93 and the USCS.
0						
		HA7_0.1			ML	**SILT**; light brown, moist, no odour.
						Becoming slightly clayey
		HA7_0.5				End of investigation at 0.5 mbgs.
1						

Drilling Log

Hand Auger Hole **HA8**

Project *Prelim. Envi and Geot Assessment, Doreen* Owner *Head and Humphreys Pty Ltd*

Location *825-835 Yan Yean Road, Doreen* Proj. No. *ENAUABTF20236AB*

Surface Elev. *NA* Total Hole Depth *0.5 m.* North *NA* East *NA*

Top of Casing *NA* Water Level Initial *NA* Static *NA* Diameter

Screen: Dia *NA* Length *NA* Type/Size *NA*

Casing: Dia *NA* Length *NA* Type *NA*

Fill Material *Backfilled and no impacted soil cuttings* Rig/Core

Drill Co. Method *Hand auger*

Driller Log By *I. Newby* Date *10/12/15* Permit # *NA*

Checked By License No.

COMMENTS

Depth (m.)	PID (ppm)	Sample ID / % Recovery	Blow Count / Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Geologic descriptions are based on ASTM Standard D 2487-93 and the USCS.
0						
		HA8_0.1			ML	**SILT**; brown, moist to dry.
						With cobbles of siltstone
		HA8_0.5				End of investigation at 0.5 mbgs.
1						

Appendix E – Laboratory Analytical Reports

coffey

Chain of Custody

825/835 Yan Yean Rd, Doreen

Laboratory Quotation / Order No:

Job No: ENAVABTF20236AB

No: 09763

Sheet 1 of 2

Dispatch to: (Address & Phone No.) ALS	Sampled by: Ian Newby	Consigning Officer: / Date Dispatched:
Attention:	Project Manager: (report results to) Phillipa Cances	Courier Service: / Consignment Note No:

SCANNED

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
	13/10	0940	Karen Cates 13/10, 12-20	13/10	0940

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	BTEX	Metals: 8	Pesticides	Herbicides	HOLD	Sample Condition on Receipt
1	S	1 soil jar	HA1 – 0.1	12/10/15		✓	✓	✓	✓	✓		
2			HA1 – 0.3								✓	
3			HA2 – 0.1		✓			✓				
4			HA2 – 0.5								✓	
5			HA3 – 0.1			✓	✓	✓	✓	✓		
6			HA3 – 0.3								✓	
7			HA4 – 0.1			✓	✓	✓	✓	✓	✓	
8			HA5 – 0.1								✓	
9			HA6 – 0.1			✓	✓	✓	✓	✓		
10			HA6 – 0.5								✓	
11			HA7 – 0.1			✓	✓	✓	✓	✓		
12			HA7 – 0.5							✓	✓	
13			HA8 – 0.1			✓	✓	✓	✓	✓		
14			HA8 – 0.5								✓	
15			QC1a			[illegible]					✓	
16			QC1b								✓	
17	↓		QC2a	↓		✓	✓	✓				

Forwarded to Secondary Lab

Initials SD Date 13/10

Environmental Division Melbourne AH 14/10

Work Order Reference

EM1515670

Telephone : + 61-3-8549 9600

Special Laboratory Instructions:

Detection Limits:

Turnaround Required: Std

AH 14/10

JOB NUMBER **MUST** BE REFERENCED ON ALL SUBSEQUENT PAGES

64220/9-06

Copies: **WHITE:** Sign on release. **YELLOW:** If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. **BLUE:** To be returned with results.

coffey

Chain of Custody

125 1835 Yan Yean Rd, Doreen — Laboratory Quotation / Order No: ENVJABTF20236AB — Job No: — No: 09762 — Sheet 2 of 2

Dispatch to: (Address & Phone No.) ALS	Sampled by: Ian Newby	Consigning Officer: / Date Dispatched:
Attention:	Project Manager: (report results to) Phillipa Cances	Courier Service: / Consignment Note No:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
	13/10	0940		13/10	0940
			Maria (ALS)	13/10	17:30

	Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	BTEX	Metals: 8	Herbicides	Pesticides	HOLD	Sample Condition on Receipt
–	Forward to Eurofins	S	1 soil jar	QC2b	12/10/15		✓	✓	✓				
18	C6–C10	W	2V	QC3	↓		✓	✓					
19		W	2V 1G 1P	QC4	↓		✓	✓	✓				
20			1 soil jar	BH1 – 0.5		✓	✓	✓	✓	✓	✓		
21				1.5								✓	
22				2.5								✓	
23				3.5		✓	✓	✓	✓	✓	✓		
24	.			4.0–4.2								✓	
	.												
	Extra Sample:												
25	SP1 (12/10/15)	S	1x150ml Soil Jar										
26	SP5 (12/10/15)	S	1x150ml Soil Jar										

Special Laboratory Instructions:

Detection Limits:

Turnaround Required: Std

JOB NUMBER **MUST** BE REFERENCED ON ALL SUBSEQUENT PAGES

642209-06

Copies: **WHITE:** Sign on release. **YELLOW:** If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. **BLUE:** To be returned with results.

Samantha Smith

From: Ian Newby <Ian.Newby@coffey.com>
Sent: Thursday, 15 October 2015 7:47 AM
To: Bronwyn Sheen; Phillipa Cances
Subject: RE: WO Info - EM1515670 - Coffey - ENAUABTF20236AB

Hi Bronwyn,

Please analyse both for TRH, BTEXN, PAH, metals (8), herbicides and pesticides

Thanks,

Ian Newby
Environmental Scientist

t: +61 3 9290 7078
m: +61 437 555 582

From: Bronwyn Sheen [mailto:bronwyn.sheen@alsglobal.com]
Sent: Wednesday, 14 October 2015 11:37 PM
To: Phillipa Cances; Ian Newby
Subject: WO Info - EM1515670 - Coffey - ENAUABTF20236AB

HI Pip and Ian,
For the attached CoC we have received two extra samples labelled SP1 and SP5. Please let me know if you require any analysis on these samples.

Kind Regards,

Bronwyn Sheen

Client Services Manager - VIC
ALS | Environmental Division

2-4 Westall Road
Springvale VIC 3171 Australia

T +61 3 8549 9600
F +61 3 8549 9626
M +438 174 359

Please note I can be contacted in the office until 3pm each day and am available via mobile after this.
Emails received after 3pm will be actioned that evening.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM1515670**	Page	: 1 of 17
Client	: **COFFEY ENVIRONMENTS PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: MS PHILLIPA CANCES	Contact	: Bronwyn Sheen
Address	: LEVEL 1, 436 JOHNSTON STREET ABBOTSFORD VIC, AUSTRALIA 3067	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: phillipa.cances@coffey.com	E-mail	: bronwyn.sheen@alsglobal.com
Telephone	: +61 03 9290 7000	Telephone	: +61-3-8549 9636
Facsimile	: +61 03 9473 1301	Facsimile	: +61-3-8549 9601
Project	: ENAUABTF20236AB	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: ----	Date Samples Received	: 13-Oct-2015 12:30
C-O-C number	: 09763	Date Analysis Commenced	: 14-Oct-2015
Sampler	: IAN NEWBY	Issue Date	: 22-Oct-2015 11:31
Site	: 825/835 Yan Yean Rd, Doreen		
		No. of samples received	: 26
Quote number	: ----	No. of samples analysed	: 14

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Chris Lemaitre	Non-Metals Team Leader	Melbourne Inorganics
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics
Eric Chau	Metals Team Leader	Melbourne Inorganics
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Inorganics
Phalak Inthakesone	Laboratory Manager - Organics	Melbourne Organics Sydney Organics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.

- EP202: Particular samples required dilution due to matrix interferences. LOR values have been adjusted accordingly.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR.
  Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	HA1-0.1	HA2-0.1	HA3-0.1	HA4-0.1	HA6-0.1
			Client sampling date / time	[12-Oct-2015]	[12-Oct-2015]	[12-Oct-2015]	[12-Oct-2015]	[12-Oct-2015]
Compound	CAS Number	LOR	Unit	EM1515670-001	EM1515670-003	EM1515670-005	EM1515670-007	EM1515670-009
				Result	Result	Result	Result	Result
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1	%	14.8	38.8	12.8	9.1	14.8
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	14	10	<5	<5	6
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	21	36	28	8	18
Copper	7440-50-8	5	mg/kg	23	25	24	<5	12
Lead	7439-92-1	5	mg/kg	40	31	67	6	21
Nickel	7440-02-0	2	mg/kg	15	21	34	<2	19
Zinc	7440-66-6	5	mg/kg	106	87	150	<5	25
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	----	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	HA1-0.1	HA2-0.1	HA3-0.1	HA4-0.1	HA6-0.1
				Client sampling date / time	[12-Oct-2015]	[12-Oct-2015]	[12-Oct-2015]	[12-Oct-2015]	[12-Oct-2015]
Compound	CAS Number	LOR	Unit		EM1515670-001	EM1515670-003	EM1515670-005	EM1515670-007	EM1515670-009
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	----	<0.2	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
^ Sum of DDD + DDE + DDT	----	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	----	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	----	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg		<0.2	----	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		----	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		----	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		----	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg		----	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		----	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg		----	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		----	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg		----	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		----	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg		----	<0.5	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	HA1-0.1	HA2-0.1	HA3-0.1	HA4-0.1	HA6-0.1
				Client sampling date / time	[12-Oct-2015]	[12-Oct-2015]	[12-Oct-2015]	[12-Oct-2015]	[12-Oct-2015]
Compound	CAS Number	LOR	Unit		EM1515670-001	EM1515670-003	EM1515670-005	EM1515670-007	EM1515670-009
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		----	<0.5	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		----	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		----	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		----	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		----	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		----	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		----	**0.6**	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		----	**1.2**	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	----	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	----	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		**180**	----	**250**	<100	<100
C29 - C36 Fraction	----	100	mg/kg		**290**	----	**380**	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		**470**	----	**630**	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg		<50	----	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		**380**	----	**540**	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		**130**	----	**230**	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		**510**	----	**770**	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	----	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	----	<1	<1	<1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	HA1-0.1	HA2-0.1	HA3-0.1	HA4-0.1	HA6-0.1
				Client sampling date / time	[12-Oct-2015]	[12-Oct-2015]	[12-Oct-2015]	[12-Oct-2015]	[12-Oct-2015]
Compound	CAS Number	LOR	Unit		EM1515670-001	EM1515670-003	EM1515670-005	EM1515670-007	EM1515670-009
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
EP202A: Phenoxyacetic Acid Herbicides by LCMS									
4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg		<0.04	----	<0.04	<0.04	<0.04
2.4-DB	94-82-6	0.02	mg/kg		<0.04	----	<0.04	<0.04	<0.04
Dicamba	1918-00-9	0.02	mg/kg		<0.04	----	<0.04	<0.04	<0.04
Mecoprop	93-65-2	0.02	mg/kg		<0.04	----	<0.04	<0.04	<0.04
MCPA	94-74-6	0.02	mg/kg		<0.04	----	<0.04	<0.04	<0.04
2.4-DP	120-36-5	0.02	mg/kg		<0.04	----	<0.04	<0.04	<0.04
2.4-D	94-75-7	0.02	mg/kg		<0.04	----	<0.04	<0.04	<0.04
Triclopyr	55335-06-3	0.02	mg/kg		<0.04	----	<0.04	<0.04	<0.04
2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg		<0.04	----	<0.04	<0.04	<0.04
2.4.5-T	93-76-5	0.02	mg/kg		<0.04	----	<0.04	<0.04	<0.04
MCPB	94-81-5	0.02	mg/kg		<0.04	----	<0.04	<0.04	<0.04
Picloram	1918-02-1	0.02	mg/kg		<0.04	----	<0.04	<0.04	<0.04
Clopyralid	1702-17-6	0.02	mg/kg		<0.04	----	<0.04	<0.04	<0.04
Fluroxypyr	69377-81-7	0.02	mg/kg		<0.04	----	<0.04	<0.04	<0.04
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		99.5	----	92.5	112	96.3
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		93.9	----	96.2	116	88.5
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		----	83.3	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		----	86.3	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		----	78.2	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	110	----	----	----
Anthracene-d10	1719-06-8	0.5	%		----	99.7	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		----	112	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		97.4	----	96.6	99.7	99.1
Toluene-D8	2037-26-5	0.2	%		85.2	----	83.6	91.8	91.9
4-Bromofluorobenzene	460-00-4	0.2	%		84.6	----	82.3	88.5	87.0
EP202S: Phenoxyacetic Acid Herbicide Surrogate									
2.4-Dichlorophenyl Acetic Acid	19719-28-9	0.02	%		56.8	----	61.4	59.2	63.7

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	HA7-0.1	HA8-0.1	QC2a	BH1- 0.5	BH1 - 3.5
				Client sampling date / time	[12-Oct-2015]	[12-Oct-2015]	[12-Oct-2015]	[12-Oct-2015]	[12-Oct-2015]
Compound	CAS Number	LOR	Unit		EM1515670-011	EM1515670-013	EM1515670-017	EM1515670-020	EM1515670-023
					Result	Result	Result	Result	Result
EA055: Moisture Content									
^ Moisture Content (dried @ 103°C)	----	1	%		20.0	15.1	11.7	18.6	11.8
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		8	<5	7	7	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		27	10	11	28	10
Copper	7440-50-8	5	mg/kg		19	<5	<5	10	<5
Lead	7439-92-1	5	mg/kg		37	13	14	14	8
Nickel	7440-02-0	2	mg/kg		12	2	2	7	<2
Zinc	7440-66-6	5	mg/kg		48	8	8	<5	<5
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	<0.2	----	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	HA7-0.1	HA8-0.1	QC2a	BH1- 0.5	BH1 - 3.5
				Client sampling date / time	[12-Oct-2015]	[12-Oct-2015]	[12-Oct-2015]	[12-Oct-2015]	[12-Oct-2015]
Compound	CAS Number	LOR	Unit		EM1515670-011	EM1515670-013	EM1515670-017	EM1515670-020	EM1515670-023
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	<0.2	----	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
^ Sum of DDD + DDE + DDT	----	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	<0.2	----	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	<0.2	----	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg		<0.2	<0.2	----	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		----	----	----	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		----	----	----	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		----	----	----	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		----	----	----	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		----	----	----	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		----	----	----	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		----	----	----	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		----	----	----	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		----	----	----	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		----	----	----	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	HA7-0.1	HA8-0.1	QC2a	BH1- 0.5	BH1 - 3.5
				Client sampling date / time	[12-Oct-2015]	[12-Oct-2015]	[12-Oct-2015]	[12-Oct-2015]	[12-Oct-2015]
Compound	CAS Number	LOR	Unit		EM1515670-011	EM1515670-013	EM1515670-017	EM1515670-020	EM1515670-023
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		----	----	----	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		----	----	----	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		----	----	----	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		----	----	----	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		----	----	----	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		----	----	----	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		----	----	----	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		----	----	----	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		----	----	----	**0.6**	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		----	----	----	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	HA7-0.1	HA8-0.1	QC2a	BH1- 0.5	BH1 - 3.5
				Client sampling date / time	[12-Oct-2015]	[12-Oct-2015]	[12-Oct-2015]	[12-Oct-2015]	[12-Oct-2015]
Compound	CAS Number	LOR	Unit		EM1515670-011	EM1515670-013	EM1515670-017	EM1515670-020	EM1515670-023
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
EP202A: Phenoxyacetic Acid Herbicides by LCMS									
4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg		<0.04	<0.04	----	<0.04	<0.02
2.4-DB	94-82-6	0.02	mg/kg		<0.04	<0.04	----	<0.04	<0.02
Dicamba	1918-00-9	0.02	mg/kg		<0.04	<0.04	----	<0.04	<0.02
Mecoprop	93-65-2	0.02	mg/kg		<0.04	<0.04	----	<0.04	<0.02
MCPA	94-74-6	0.02	mg/kg		<0.04	<0.04	----	<0.04	<0.02
2.4-DP	120-36-5	0.02	mg/kg		<0.04	<0.04	----	<0.04	<0.02
2.4-D	94-75-7	0.02	mg/kg		<0.04	<0.04	----	<0.04	<0.02
Triclopyr	55335-06-3	0.02	mg/kg		<0.04	<0.04	----	<0.04	<0.02
2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg		<0.04	<0.04	----	<0.04	<0.02
2.4.5-T	93-76-5	0.02	mg/kg		<0.04	<0.04	----	<0.04	<0.02
MCPB	94-81-5	0.02	mg/kg		<0.04	<0.04	----	<0.04	<0.02
Picloram	1918-02-1	0.02	mg/kg		<0.04	<0.04	----	<0.04	<0.02
Clopyralid	1702-17-6	0.02	mg/kg		<0.04	<0.04	----	<0.04	<0.02
Fluroxypyr	69377-81-7	0.02	mg/kg		<0.04	<0.04	----	<0.04	<0.02
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		111	84.7	----	105	100.0
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		92.9	114	----	110	89.4
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		----	----	----	85.9	87.0
2-Chlorophenol-D4	93951-73-6	0.5	%		----	----	----	90.5	92.7
2.4.6-Tribromophenol	118-79-6	0.5	%		----	----	----	93.2	89.6
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	----	----	98.0	97.5
Anthracene-d10	1719-06-8	0.5	%		----	----	----	122	115
4-Terphenyl-d14	1718-51-0	0.5	%		----	----	----	113	111
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		95.3	106	99.2	100	97.8
Toluene-D8	2037-26-5	0.2	%		84.8	92.9	91.3	89.0	90.3
4-Bromofluorobenzene	460-00-4	0.2	%		79.0	88.2	86.3	83.9	79.0
EP202S: Phenoxyacetic Acid Herbicide Surrogate									
2.4-Dichlorophenyl Acetic Acid	19719-28-9	0.02	%		61.6	59.6	----	62.5	59.2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	SP1	SP5	----	----	----
			Client sampling date / time	[12-Oct-2015]	[12-Oct-2015]	----	----	----
Compound	CAS Number	LOR	Unit	EM1515670-025	EM1515670-026	--------	--------	--------
				Result	Result	Result	Result	Result
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1	%	**34.5**	**14.4**	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	**5**	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	**72**	**18**	----	----	----
Copper	7440-50-8	5	mg/kg	**18**	**9**	----	----	----
Lead	7439-92-1	5	mg/kg	**16**	**9**	----	----	----
Nickel	7440-02-0	2	mg/kg	**36**	**9**	----	----	----
Zinc	7440-66-6	5	mg/kg	**56**	**10**	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	**0.1**	<0.1	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	----	----	----
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP1	SP5	----	----	----
				Client sampling date / time	[12-Oct-2015]	[12-Oct-2015]	----	----	----
Compound	CAS Number	LOR	Unit		EM1515670-025	EM1515670-026	--------	--------	--------
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	<0.2	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		<0.05	<0.05	----	----	----
^ Sum of DDD + DDE + DDT	----	0.05	mg/kg		<0.05	<0.05	----	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	<0.05	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	<0.05	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	<0.2	----	----	----
Dimethoate	60-51-5	0.05	mg/kg		<0.05	<0.05	----	----	----
Diazinon	333-41-5	0.05	mg/kg		<0.05	<0.05	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	<0.05	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	<0.2	----	----	----
Malathion	121-75-5	0.05	mg/kg		<0.05	<0.05	----	----	----
Fenthion	55-38-9	0.05	mg/kg		<0.05	<0.05	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	<0.05	----	----	----
Parathion	56-38-2	0.2	mg/kg		<0.2	<0.2	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	<0.05	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	<0.05	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	<0.05	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	<0.05	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	<0.05	----	----	----
Ethion	563-12-2	0.05	mg/kg		<0.05	<0.05	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	<0.05	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg		<0.05	<0.05	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP1	SP5	----	----	----
				Client sampling date / time	[12-Oct-2015]	[12-Oct-2015]	----	----	----
Compound	CAS Number	LOR	Unit		EM1515670-025	EM1515670-026	--------	--------	--------
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	**0.6**	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	**1.2**	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	----	----	----
>C10 - C16 Fraction	>C10_C16	50	mg/kg		<50	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	----	----	----
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5	<0.5	----	----	----
Naphthalene	91-20-3	1	mg/kg		<1	<1	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP1	SP5	----	----	----
				Client sampling date / time	[12-Oct-2015]	[12-Oct-2015]	----	----	----
Compound	CAS Number	LOR	Unit		EM1515670-025	EM1515670-026	--------	--------	--------
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
EP202A: Phenoxyacetic Acid Herbicides by LCMS									
4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg		<0.02	<0.02	----	----	----
2.4-DB	94-82-6	0.02	mg/kg		<0.02	<0.02	----	----	----
Dicamba	1918-00-9	0.02	mg/kg		<0.02	<0.02	----	----	----
Mecoprop	93-65-2	0.02	mg/kg		<0.02	<0.02	----	----	----
MCPA	94-74-6	0.02	mg/kg		<0.02	<0.02	----	----	----
2.4-DP	120-36-5	0.02	mg/kg		<0.02	<0.02	----	----	----
2.4-D	94-75-7	0.02	mg/kg		<0.02	<0.02	----	----	----
Triclopyr	55335-06-3	0.02	mg/kg		<0.02	<0.02	----	----	----
2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg		<0.02	<0.02	----	----	----
2.4.5-T	93-76-5	0.02	mg/kg		<0.02	<0.02	----	----	----
MCPB	94-81-5	0.02	mg/kg		<0.02	<0.02	----	----	----
Picloram	1918-02-1	0.02	mg/kg		<0.02	<0.02	----	----	----
Clopyralid	1702-17-6	0.02	mg/kg		<0.02	<0.02	----	----	----
Fluroxypyr	69377-81-7	0.02	mg/kg		<0.02	<0.02	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		100	104	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		112	119	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		74.4	71.4	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		81.7	81.4	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		73.2	74.1	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		98.0	98.0	----	----	----
Anthracene-d10	1719-06-8	0.5	%		115	119	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		109	112	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		78.8	84.5	----	----	----
Toluene-D8	2037-26-5	0.2	%		81.4	83.0	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		89.2	90.7	----	----	----
EP202S: Phenoxyacetic Acid Herbicide Surrogate									
2.4-Dichlorophenyl Acetic Acid	19719-28-9	0.02	%		60.1	72.5	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC3	QC4	----	----	----
				Client sampling date / time	[12-Oct-2015]	[12-Oct-2015]	----	----	----
Compound	CAS Number	LOR	Unit		EM1515670-018	EM1515670-019	--------	--------	--------
					Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		----	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		----	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L		----	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L		----	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L		----	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L		----	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L		----	<0.005	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		----	<0.0001	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	----	----	----
C10 - C14 Fraction	----	50	µg/L		----	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L		----	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L		----	<50	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		----	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	----	----	----
>C10 - C16 Fraction	>C10_C16	100	µg/L		----	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		----	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		----	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		----	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		----	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	----	----	----
Toluene	108-88-3	2	µg/L		<2	<2	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	----	----	----
^ Total Xylenes	1330-20-7	2	µg/L		<2	<2	----	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	----	----	----

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	QC3	QC4	----	----	----
				Client sampling date / time	[12-Oct-2015]	[12-Oct-2015]	----	----	----
Compound	CAS Number	LOR	Unit		EM1515670-018	EM1515670-019	--------	--------	--------
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**102**	**96.7**	----	----	----
Toluene-D8	2037-26-5	2	%		**95.9**	**88.5**	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		**104**	**101**	----	----	----

Certificate of Analysis

Coffey Environments Pty Ltd VIC
3G Marine Pde
Abbotsford
VIC 3067

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Phillipa Cances**

Report **475851-S**
Project name 825/835 YAN YEAN RD DOREEN
Project ID ENAUABTF20236AB
Received Date Oct 14, 2015

Client Sample ID			**QC2B**
Sample Matrix			**Soil**
Eurofins | mgt Sample No.			**M15-Oc09980**
Date Sampled			**Oct 12, 2015**
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	20	mg/kg	< 20
TRH C10-C14	20	mg/kg	< 20
TRH C15-C28	50	mg/kg	< 50
TRH C29-C36	50	mg/kg	59
TRH C10-36 (Total)	50	mg/kg	59
BTEX			
Benzene	0.1	mg/kg	< 0.1
Toluene	0.1	mg/kg	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2
o-Xylene	0.1	mg/kg	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3
4-Bromofluorobenzene (surr.)	1	%	82
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene[N02]	0.5	mg/kg	< 0.5
TRH C6-C10	20	mg/kg	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
TRH >C10-C16	50	mg/kg	< 50
TRH >C16-C34	100	mg/kg	< 100
TRH >C34-C40	100	mg/kg	< 100
Heavy Metals			
Arsenic	2	mg/kg	4.2
Cadmium	0.4	mg/kg	< 0.4
Chromium	5	mg/kg	11
Copper	5	mg/kg	< 5
Lead	5	mg/kg	19
Mercury	0.1	mg/kg	< 0.1
Nickel	5	mg/kg	< 5
Zinc	5	mg/kg	18
% Moisture	0.1	%	17

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Oct 15, 2015	14 Day
- Method: TRH C6-C36 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Oct 15, 2015	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Oct 15, 2015	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
BTEX	Melbourne	Oct 15, 2015	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Metals M8	Melbourne	Oct 15, 2015	28 Day
- Method: LTM-MET-3030 by ICP-OES (hydride ICP-OES for Mercury)			
% Moisture	Melbourne	Oct 14, 2015	14 Day
- Method: LTM-GEN-7080 Moisture			

eurofins | mgt

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NATA # 1261 Site # 20794

Company Name: Coffey Environments Pty Ltd VIC
Address: 3G Marine Pde
Abbotsford
VIC 3067

Project Name: 825/835 YAN YEAN RD DOREEN
Project ID: ENAUABTF20236AB

Order No.:
Report #: 475851
Phone: 03 8413 6900
Fax:

Received: Oct 14, 2015 3:36 PM
Due: Oct 21, 2015
Priority: 5 Day
Contact Name: Phillipa Cances

Eurofins | mgt Client Manager: Mary Makarios

Sample Detail					Metals M8	BTEX	Moisture Set	Total Recoverable Hydrocarbons
Laboratory where analysis is conducted								
Melbourne Laboratory - NATA Site # 1254 & 14271					X	X	X	X
Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794								
External Laboratory								
Sample ID	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**				
QC2B	Oct 12, 2015		Soil	M15-Oc09980	X	X	X	X

Eurofins | mgt Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

UNITS

mg/kg: milligrams per Kilogram

ug/l: micrograms per litre

ppb: Parts per billion

org/100ml: Organisms per 100 millilitres

MPN/100mL: Most Probable Number of organisms per 100 millilitres

mg/l: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Nephelometric Turbidity Units

TERMS

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - ACCEPTANCE CRITERIA

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC DATA GENERAL COMMENTS

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxophene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxophene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPD's are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	118			70-130	Pass	
TRH C10-C14	%	85			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	101			70-130	Pass	
Toluene	%	101			70-130	Pass	
Ethylbenzene	%	104			70-130	Pass	
m&p-Xylenes	%	112			70-130	Pass	
Xylenes - Total	%	107			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	116			75-125	Pass	
TRH C6-C10	%	107			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	86			70-130	Pass	
LCS - % Recovery							

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Heavy Metals									
Arsenic			%	80			80-120	Pass	
Cadmium			%	85			80-120	Pass	
Chromium			%	92			80-120	Pass	
Copper			%	91			80-120	Pass	
Lead			%	88			80-120	Pass	
Mercury			%	104			75-125	Pass	
Nickel			%	88			80-120	Pass	
Zinc			%	95			80-120	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	M15-Oc11073	NCP	%	122			70-130	Pass	
TRH C10-C14	M15-Oc11077	NCP	%	100			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	M15-Oc11073	NCP	%	98			70-130	Pass	
Toluene	M15-Oc11073	NCP	%	101			70-130	Pass	
Ethylbenzene	M15-Oc11073	NCP	%	106			70-130	Pass	
m&p-Xylenes	M15-Oc11073	NCP	%	115			70-130	Pass	
o-Xylene	M15-Oc11073	NCP	%	99			70-130	Pass	
Xylenes - Total	M15-Oc11073	NCP	%	109			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M15-Oc11073	NCP	%	116			70-130	Pass	
TRH C6-C10	M15-Oc11073	NCP	%	110			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	M15-Oc11077	NCP	%	101			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M15-Oc09978	NCP	%	83			75-125	Pass	
Cadmium	M15-Oc09978	NCP	%	80			75-125	Pass	
Chromium	M15-Oc09978	NCP	%	81			75-125	Pass	
Copper	M15-Oc09978	NCP	%	90			75-125	Pass	
Lead	M15-Oc09978	NCP	%	78			75-125	Pass	
Mercury	M15-Oc09978	NCP	%	97			70-130	Pass	
Nickel	M15-Oc09978	NCP	%	80			75-125	Pass	
Zinc	M15-Oc09978	NCP	%	83			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M15-Oc11072	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	M15-Oc09981	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	M15-Oc09981	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	M15-Oc09981	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M15-Oc11072	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	M15-Oc11072	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	M15-Oc11072	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	M15-Oc11072	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	M15-Oc11072	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	M15-Oc11072	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	

Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M15-Oc11072	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	M15-Oc11072	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	M15-Oc09981	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	M15-Oc09981	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	M15-Oc09981	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M15-Oc09978	NCP	mg/kg	4.6	5.0	7.0	30%	Pass	
Cadmium	M15-Oc09978	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M15-Oc09978	NCP	mg/kg	12	12	2.0	30%	Pass	
Copper	M15-Oc09978	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Lead	M15-Oc09978	NCP	mg/kg	14	13	6.0	30%	Pass	
Mercury	M15-Oc09978	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	M15-Oc09978	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	M15-Oc09978	NCP	mg/kg	11	11	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	M15-Oc09960	NCP	%	23	23	3.0	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.

Authorised By

Mary Makarios	Analytical Services Manager
Carroll Lee	Senior Analyst-Organic (VIC)
Carroll Lee	Senior Analyst-Volatile (VIC)
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)

Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

coffey

Chain of Custody (4)

825/835 Yan Yean Rd, Doreen

Laboratory Quotation / Order No:

Job No: ENAUABTF20236AB

No: 09763

Sheet 1 of 2

Dispatch to: (Address & Phone No.) ALS	Sampled by: Ian Newby	Consigning Officer: Date Dispatched:
Attention:	Project Manager: (report results to) Phillipa Cances	Courier Service: LIAM EF/MERT Consignment Note No: 14/10/15 3.36pm 475851

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
[signature]	13/10	0940	[signature]	13/10	0940
			[signature] RAVIN (ALS) 13/10, 12-1		

Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	PAHs	TPHs	~~MAHs~~ BTEX	Metals: 8	Pesticides	Herbicides	HOLD									Sample Condition on Receipt
1	S	1 soil jar	HA1-0.1	12/10/15		✓	✓	✓	✓	✓										
2	↓		HA1-0.3	↓							✓									
3			HA2-0.1		✓			✓												
4			HA2-0.5								✓									
5			HA3-0.1			✓	✓	✓	✓	✓										
6			HA3-0.3								✓									
7			HA4-0.1			✓	✓	✓	✓	✓										
8			HA5-0.1								✓									
9			HA6-0.1			✓	✓	✓	✓	✓										
10			HA6-0.5								✓									
11			HA7-0.1			✓	✓	✓	✓	✓										
12			HA7-0.5								✓									
13			HA8-0.1			✓	✓	✓	✓	✓										
14			HA8-0.5								✓									
15			QC1a			~~✓~~	~~✓~~	~~✓~~			✓									
16			QC1b			~~✓~~	~~✓~~	~~✓~~			✓									
17	↓		QC2a	↓		✓	✓	✓												

Environmental Division
Melbourne
Work Order Reference
EM1515670

Telephone : + 61-3-8549 9600

Special Laboratory Instructions:

Relinquished by Ravi (ALS) 14/10/15 @ 3.30pm

Detection Limits:

Turnaround Required: Std

JOB NUMBER **MUST** BE REFERENCED ON ALL SUBSEQUENT PAGES

642209-06

Copies: WHITE: Sign on release. **YELLOW:** If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. **BLUE:** To be returned with results.

coffey

(4)

Chain of Custody

825/835 Yan Yean Rd, Doreen — Laboratory Quotation / Order No:

ENAVABTF20236AB — Job No:

No: 09762 — Sheet 2 of 2

Dispatch to: (Address & Phone No.) ALS	Sampled by: Ian Newby	Consigning Officer: / Date Dispatched:
Attention:	Project Manager: (report results to) Phillipa Cances	Courier Service: / Consignment Note No: 475851

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
	13/10	0940		13/10	0940
			Maria (ALS)	13/10	17:30

	Comments	Sample Matrix	Container Type and Preservative	Sample No.	Date Sampled	Analyses Required: PAHs	TPHs	BTEX	Metals: 8	Herbicides	Pesticides	HOLD	Sample Condition on Receipt
–	Forward to Eurofins	S	1 Soil Jar	QC2b	12/10/15		/	/	/				
18	C6–C10	W	2V	QC3	↓		/	/	/				
19		W	2V 1G 1P	QC4	↓		/	/	/				
20			1 Soil Jar	BH1 – 0.5		/	/	/	/	/	/		
21				1.5								/	
22				2.5								/	
23				3.5		/	/	/	/	/	/		
24				4.0–4.2								/	
	Extra Sample:												
25	SP1 (12/10/15)	S	1x150ml Soil Jar										
26	SP5 (12/10/15)	S	1x150ml Soil Jar										

Special Laboratory Instructions:

Detection Limits:

Turnaround Required: Std

Relinquished by: [signature] 14/10/15 @3:30

JOB NUMBER **MUST** BE REFERENCED ON ALL SUBSEQUENT PAGES

64220/9-06

Copies: **WHITE:** Sign on release. **YELLOW:** If dispatched to interstate Lab, Lab to sign on receipt and fax back to Coffey. **BLUE:** To be returned with results.

Appendix F – Site Photographs

Photograph 1. Waste Storage Area: Area 4 on Figure 2. Hand auger HA1 located in this area.

Photograph 2. Maintenance Area and Waste Storage: Photo taken from area 2 on Figure 2. Hand Auger HA3 taken from area next to oil containers and lead-acid batteries.

Photograph 3. Burn Area: Area 3 on Figure 2. Sample taken from HA2.

Photograph 4. Old Dam Site: Photo looks south towards old dam site, where BH1 is being drilled.

Photograph 5: Stockpile SP1

Photograph 6. Drum Storage: Area 8 on Figure 2. 4 x 205 L drums stored in this area. No evidence of leaks or spills.

Photograph 7. Chemical Storage: Area 9 on Figure 2. 2 x empty IBCs which contained Eurofount, a biocide and solvent.

Appendix G – Data Validation Assessment

Coffey Environments Australia Pty Ltd

A.C.N. 140 765 902 A.B.N. 65 140 765 902

ESA DATA QUALITY CHECK

Project No: ENAUABTF20236AB

I. SOIL SAMPLING

	Notes	Yes	No
1. Drilling Methodology (types/adequate?)		☒	☐
2. Sampling Methodology (types/adequate?)		☒	☐
3. Sampling Locations Appropriate?		☒	☐
4. Were appropriate decontamination procedures used?		☒	☐
5. Were samples in proper custody? (COC, stored in an esky, on ice etc)		☒	☐
6. What temperature did samples arrive at laboratory? (adequate)		☒	☐
7. What laboratories were used?	Primary: ALS Secondary: Eurofins		
8. Were sample locations clearly marked on a plan (able to be found again)?		☒	☐

COMMENTS:

- Nil

Soil Sampling was:	☒ Satisfactory ☐ Partially Satisfactory	☐ Unsatisfactory

QUALITY ASSURANCE/QUALITY CONTROL REVIEW

IV. SAMPLE HANDLING

Yes	No

Coffey Environments Australia Pty Ltd

A.C.N. 140 765 902 A.B.N. 65 140 765 902

ESA DATA QUALITY CHECK

Project No: ENAUABTF20236AB

		(Comment below)
1. Were the sample **holding times** met?	☒	☐
2. Were the samples in **proper custody** between the field and reaching the laboratory?	☒	☐
3. Were the samples **properly and adequately** preserved? *This includes keeping the samples chilled, where applicable.*	☒	☐
4. Were the samples received by the laboratory in good condition?	☒	☐

COMMENTS:

- Nil

Sample Handling was: ☒ Satisfactory ☐ Partially Satisfactory ☐ Unsatisfactory

V. PRECISION/ACCURACY ASSESSMENT

	Yes	No (Comment below)
1. Was a NATA registered laboratory used?	☒	☐
2. Did the laboratory perform the requested tests?	☒	☐
3. Were the laboratory methods adopted NATA endorsed?	☒	☐
4. Were the appropriate test procedures followed?	☒	☐
5. Were the reporting limits satisfactory?	☒	☐
6. Was the NATA Seal on the reports?	☒	☐
7. Were the reports signed by an authorised person?	☒	☐

COMMENTS:

- Nil

Precision/Accuracy of the Laboratory Report	☒ Satisfactory	☐ Unsatisfactory
	☐ Partially Satisfactory	

VI. FIELD QA/QC

1. Sampling information:

Matrix:	Number of days sampling:	Sampling dates:	Number of primary samples analysed:
Soil:	1	12/10/2015	11

2. Number and Type of QA/QC Samples Collected:

	SOIL	WATER
Field Duplicates (intra) (at least 1 in 20 samples)	1	0
Field Triplicates (inter) (at least 1 in 20 samples)	1	0
Rinsate blank (wash blank) (at least 1/day/matrix/equipment)	1	0
Trip blanks (at least 1 per esky)	1	0
Other (Field Blanks, Spiked Trip Blanks, etc.)	0	0

3. FIELD DUPLICATES and TRIPLICATES

	Yes	No (Comment below)
A. Were an Adequate Number of field duplicates analysed for each chemical?	☒	☐
B. Were RPDs within Control Limits? a. Organics (< 50 % for soil; < 30% for water) b. Metals/Inorganics (< 50 % for soil; < 30% for water)	☒	☐
C. Were an Adequate Number of field triplicates analysed for each chemical?	☒	☐
D. Were RPDs within Control Limits? a. Organics (< 50 % for soil; < 30% for water) b. Metals/Inorganics (< 50 % for soil; < 30% for water)	☒	☐

COMMENTS:

- Nil

5. RINSATE BLANKS

	Yes	No (Comment below)
A. Were an adequate number of Rinsate Blanks collected?	☒	☐
B. Were the Rinsate blanks free of contaminants? (If no, comment whether the contaminants present are also detected in the samples and whether they are common laboratory chemicals.)	☒	☐

6. TRIP BLANKS

	Yes	No (Comment below)
A. Were an Adequate Number of trip blanks collected?	☒	☐
B. Were the Trip Blanks free of contaminants? (If no, comment whether the contaminants present are also detected in the samples and whether they are common laboratory chemicals.)	☒	☐

COMMENTS:

- Nil

Field QA/QC was:	☒ Satisfactory	☐ Unsatisfactory
	☐ Partially Satisfactory	

VII. LABORATORY INTERNAL QUALITY CONTROL PROCEDURES

1. Summary of laboratory QC

- An adequate number of laboratory QC samples (including duplicates, surrogates and spikes) were taken.
- Laboratory Control Spike recoveries were marginally outside acceptable limits for ten results.
- Matrix Spike recoveries were outside of acceptable limits for nine results.
- All other spikes were within acceptable limits.
- Lab duplicates reported acceptable RPDs.
- Surrogate variation was acceptable.

COMMENTS:

5. The laboratory internal QA/QC was:	☐ Satisfactory ☒ Partially Satisfactory	☐ Unsatisfactory

VIII. DATA USABILITY

1.	Data Directly Usable	☒
2.	Data Usable with the following corrections/modifications (see comment below)	☐
3.	Data Not Usable.	☐

QA/QC Review Conducted by: Ian Newby

QA/QC Report Reviewed by: Sarah Richards (Reviewer)