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Name: Submission for Rezoning of Wellington Lot 501 Southern Estuary Road, Lake Clifton from "Rural 1 General Farming" to "Rural 6 - Rural - Residential"
Date: 08/05/2006
Capture Author: Thomas Leong

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- High = Document contained visual and or described spatial references easily copied, resulting in little or no polygon boundary errors
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Attributes
Report Info – Captured without problems
Custodial/Contact – Captured without problems
Content – Partial photocopy of original document, chapter 6 only, "Existing Environment", information entered cannot be taken as accurate

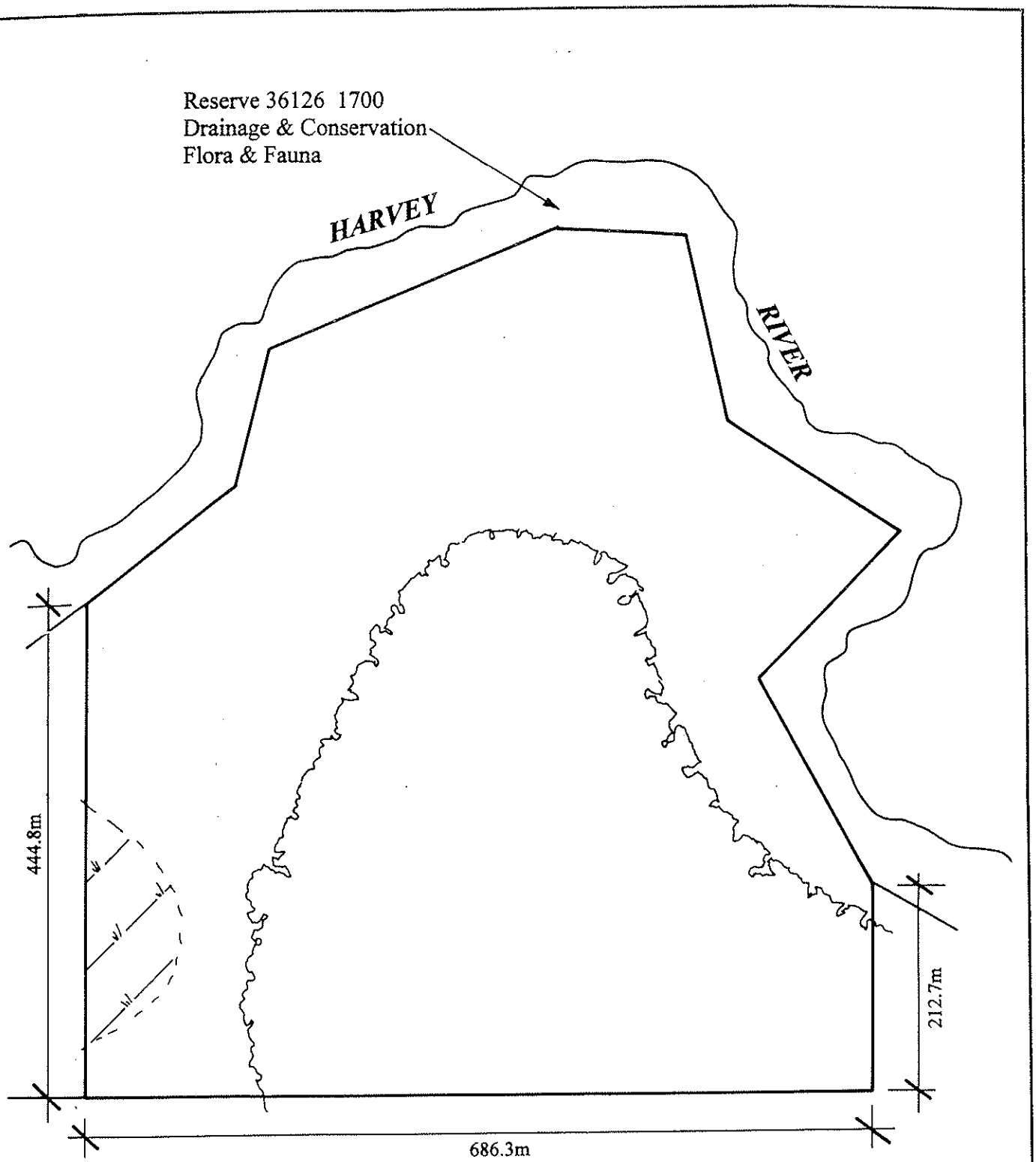
SHIRE OF WAROONA
TOWN PLANNING SCHEME NO. 7
AMENDMENT No. 18

SUBMISSION FOR REZONING OF WELLINGTON LOT 501 SOUTHERN ESTUARY ROAD, LAKE CLIFTON FROM "RURAL 1 GENERAL FARMING" TO "RURAL 6 - RURAL - RESIDENTIAL"

Prepared for: Ronald Lilburne and Rosemary O`Neill

Prepared by: SJB TOWN PLANNING AND DESIGN
Unit 17, D & J Fowler Bldg
33-35 Pakenham Street
FREMANTLE W.A. 6160

JANUARY 2005



LEGEND

Intermittent Swamp

Vegetation / Tree Cover

SITE PLAN

LOT 501

SOUTHERN ESTUARY ROAD

Sjb Town Planning & Urban Design
Unit 17, 33 Pakenham Street, Fremantle 6160

Plate 1: Newly constructed access drive that can be used for road access. Facilitated by land swap with Location 2986.

Plate 2: Existing Shed on Property.

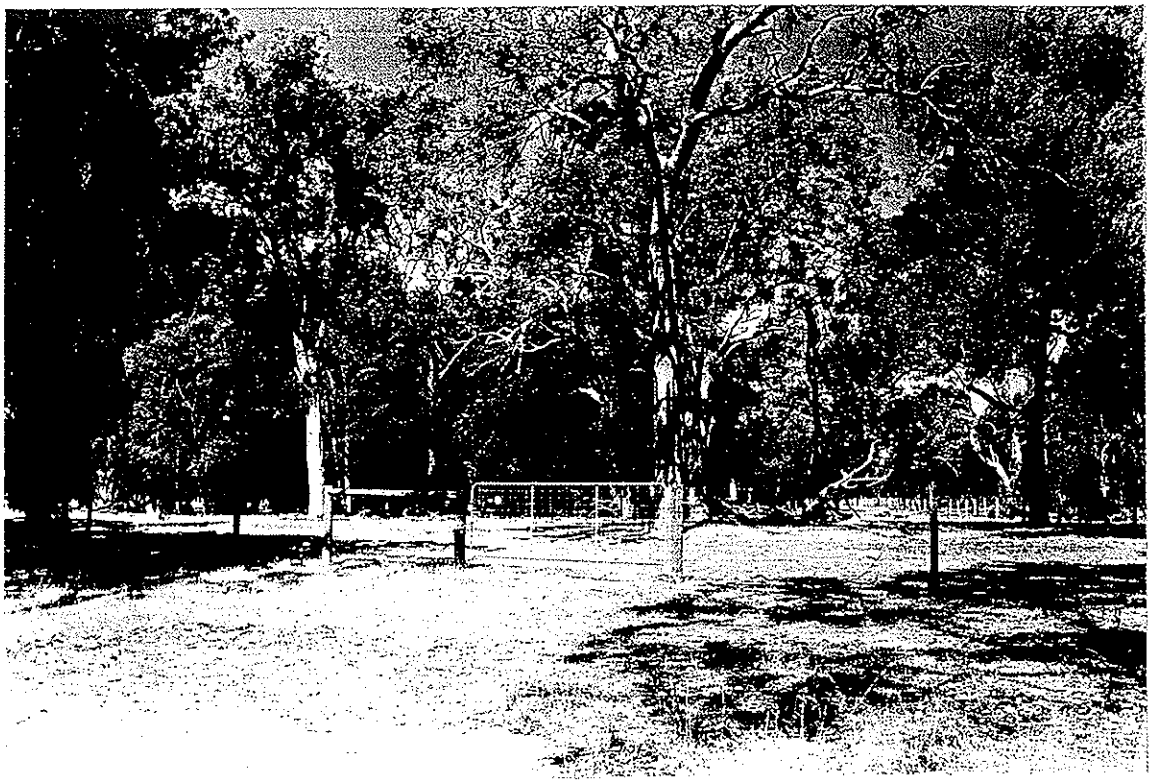


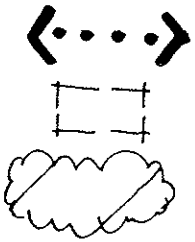
Plate 3: Vegetated Central Portion of Property.

Plate 4: Cleared northern area on edge of central Vegetated portion of property.

Plate 5: Western portion of property is subject to inundation with wetland from adjoining northern property. Lower lying area is shown in centre of photograph. This area is identified for a future reserve.

Plate 6: Land abutting the Harvey River – with steeply incised banks and good vegetation cover. 30m of the subject land is identified as a foreshore reserve.

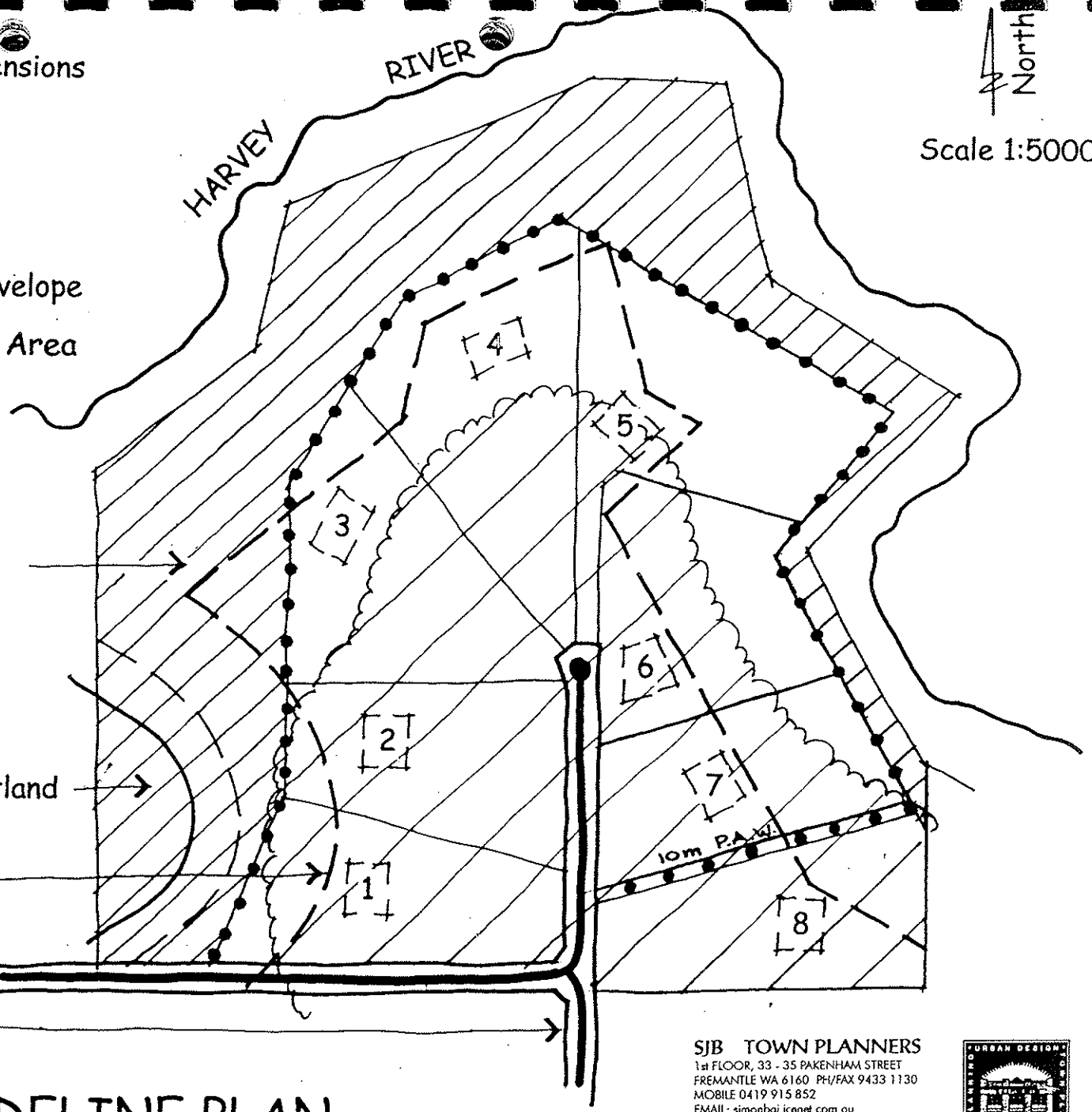
Note : All areas and dimensions
Subject to survey



Strategic Fire Break

2000m Development Envelope

Vegetation Protection Area



Wetland and foreshore reserve
set aside for future acquisition

Wetland

100m setbacks
from water body

Possible future
Extension to South

SUBDIVISION & GUIDELINE PLAN

LOT 501 SOUTHERN ESTUARY ROAD LAKE CLIFTON

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SCALE 1:5000

6.0 EXISTING ENVIRONMENT

The description of the existing environment targets those environmental components of relevance to the proposed subdivision of the subject land, namely:

- landform and soils;
- vegetation;
- drainage and nutrients;
- groundwater;
- wetlands;
- flooding;
- Foreshore Reserve; and
- System 6 Reserve C51/Peel Regional Park.

6.1 Landforms and Soils

The subject land comprises of two landform types (see Plan 4) namely the Bassendean dune and sandplain system and the Vasse estuarine and lagoonal deposits (Van Goole 1992).

The Bassendean dune and sandplain system occupy approximately 90% (or 36 hectares) of the subject land and are characterised by low relief dunes and gently undulating sandplains which range from about 4 - 9 metres above Australian Height Datum (AHD). The component land units and dominant soil types are as follow:

B4 Broad poorly drained sandplain and very low rises with deep grey siliceous sands, underlain at depths greater than 1.5 metres by clay or strong iron-organic pan.

B6 Sandplain similar to B4 with imperfectly drained soils.

The Bassendean dune and sandplain system is the oldest dune system having originated along a coastline as calcareous sands and then been subjected to extensive leaching which removed carbonates (McArthur and Bettenay, 1960).

The Vasse estuarine and lagoonal deposits occupy approximately 10% (or 4 hectares) of the subject land and are characterised by the low lying, poorly drained terraces, flats and beach ridges fringing

the Peel-Harvey Estuarine System. The component land unit and soils, which generally occur at (or below) 4 metres AHD, are as follow:

V3 Sand flats marginally higher than V2 and also consisting of deep alkaline sands and clayey sands.

The soils of the Vasse estuarine and lagoon deposits are extremely variable, being formed on unconsolidated estuarine alluvium, and may be subject to periodic inundation.

6.2 Vegetation

The natural vegetation associated with the landforms and soils of the Mandurah - Bunbury Coastal Zone have been described previously by McArthur and Bartle (1980).

Approximately half of the native vegetation associated with the subject land has been cleared for the purposes of animal grazing with the other half having remnant vegetation remaining (see Plan 5).

A site survey of the subject land was undertaken in April 1994 and with the aid of recent aerial photographs, the main vegetation types were identified as:

- dryland vegetation
- wetland vegetation
- pasture grasses.

6.2.1 Dryland Vegetation

The dryland vegetation mainly consists of native overstorey species with a limited diversity of native understorey species. Marri (*Eucalyptus calophylla*) trees are the dominant overstorey species with jarrah (*E. marginata*) scattered throughout (see Plate 2). A number of species forming a middle canopy include peppermints (*Agonis flexuosa*), wattles (Acacia rostillifera) and Christmas trees (*Nuytsia floribunda*).

The understorey has been subject to grazing with hardy species such as zamia palm (*Macrozamia riedlei*), prickly moses (*Acacia pulchella*) and *Jacksonia furcellata* still persisting. The dryland species occur on the higher sandy rises of the Bassendean dunes and extend into the predominantly sandy beach terraces associated with the V3 land unit within the Vasse estuarine and lagoonal deposits.

The dryland vegetation types are proposed to be retained as important landscape features and enhanced through regrowth and the future reserve area.

6.2.2 Wetland Vegetation

The wetland vegetation is associated with the low lying estuarine deposits (V3 land unit). The swamp located in the western section of the subject land is devoid of small shrub and groundcover species (due to grazing) and dominated by paperbarks (*Melaleuca rhaphiophylla*) which range from 2 - 3 metres in height. Adjacent to the Harvey River, the paperbarks are supported by an overstorey of flooded gum (*Eucalyptus rudis*) which occurs as the main tree species in the parkland cleared area abutting the foreshore.

Several clumps of native rushes, a section of bulrushes (*Typha domingensis*), scattered robin red breast bushes (*Melaleuca laterita*) and a tall thicket of paperbark. Naturally regenerating flooded gums were also noted within this seasonally wet area.

It is proposed to retain the native wetland vegetation and utilise key overstorey and understorey species for revegetation purposes. It is likely that the native wetland plants will naturally colonise cleared areas once the grazing pressure is removed.

6.2.3 Pasture Grasses

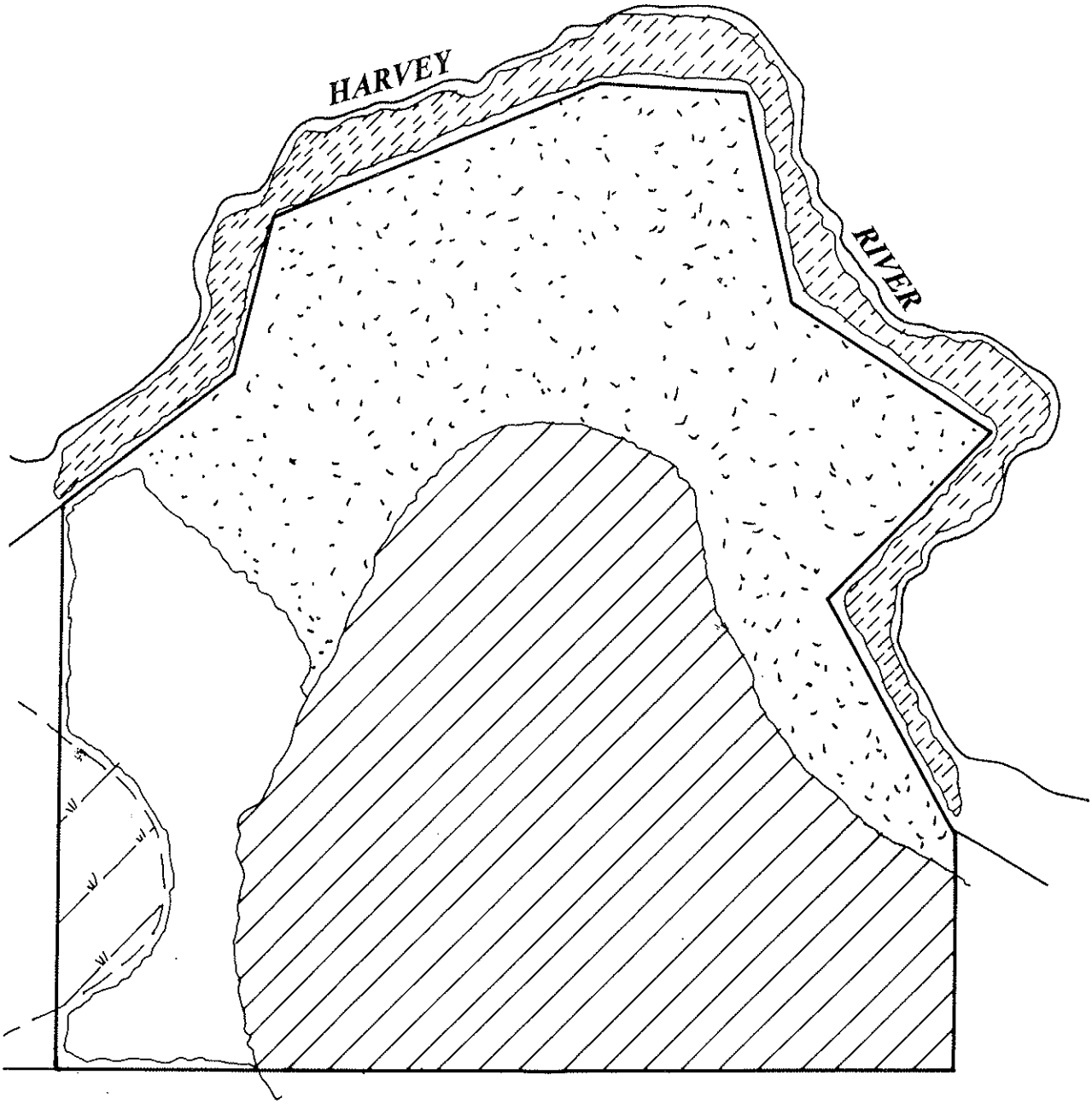
A large proportion of the low lying Vasse soils have been cleared of native vegetation and now support perennial grasses. Species include couch grass and subterranean clover in the wetter areas.

The pasture areas are likely to be valuable summer grazing areas, however, once stock has been removed it is proposed to assist in the natural regeneration of wetland and dryland areas and allow regrowth of the voluntary reserve. This will maximise the uptake of nutrients in the soils and assist in enhancing the environmental values of the site.

6.3 Drainage and Nutrients

The soils of the subject land proposed for Rural - Residential development belong to the Bassendean sands and are characteristically well drained.

Potential surface run would be associated with that collected from residences throughout the subject land and internal subdivision roads. The requirement for houses to collect rainwater as the main water supply for drinking and other domestic purposes results in minimal additional discharge of



LEGEND

Scattered Scrub

Medium Scrub

Wetland Vegetation

Subject to Seasonal Inundation

Pasture Grasses

VEGETATION TYPES

LOT 501

SOUTHERN ESTUARY ROAD

Sjb Town Planning & Urban Design
Unit 17, 33 Pakenham Street, Fremantle 6160

stormwater to the environment. Discharge from the roads will be minimal in that the road will be designed using water sensitive design principles and the sandy soils will assist stormwater disposal.

Consequently, no surface run-off is expected as a result of the development and drainage from the site is likely to flow naturally through subsurface sediments via the underlying superficial aquifer. The subject land is within the Peel-Harvey catchment which flows predominantly in an easterly direction toward the Harvey River.

The Peel-Harvey Estuary is currently under stress caused by the inflow of excessive nutrients, principally phosphorus and nitrogen. This state of nutrient enrichment or eutrophication has resulted in algal blooms and associated water quality problems within the estuarine system.

Care must be taken to limit the export of nutrients to the estuarine system in order to assist the estuary reach a healthy state which inhibits the incidence of algal blooms. Increased flushing associated with the recent opening of the Dawesville Channel is hoped will improve the water quality of the Peel-Harvey Estuarine System. More details in relation to groundwater hydrology and flooding are provided in the following sections.

There are also a network of informal drainage channels traversing the adjoining land which link together and eventually connect with the Harvey River.

The direct connections between the river and the wetland on this land may be closed, however, care must be taken to avoid possible flooding and not create stagnant water conditions favourable for mosquito breeding. If this occurs pipes will be installed to allow water to flow off the property into the river. Pipes will also restrict the excessive flooding of water into the property.

The Department of Transport, responsible for the Dawesville Cut, has been invited to participate in the closing of the drains. To date the Department has shown no such interest, although the Cut has made the flooding situation worse.

6.4 Groundwater Hydrology

There is no available hydrological data found to date which specifically relates to the groundwater characteristics of the subject land. However, characteristics of the groundwater system in the vicinity has been described in a regional study of the relationship between groundwater and the coastal lakes between Mandurah and Bunbury (Commander 1988) and a local study of groundwater in relation to Lake Clifton (Moore and Turner 1988). These studies have determined that the lake and groundwater systems are closely related.

The subject land occurs within the South West Coastal Groundwater area as gazetted by the Water and Rivers Commission (WRC) who also manage usage of the underlying groundwater via water abstraction licences.

The groundwater consists of superficial formations which are primarily unconfined aquifers consisting of very thin freshwater lenses.

Hydrogeological information suggests that the groundwater flow over the site is generally in an easterly direction toward the Harvey River. The superficial groundwater aquifer flows under a very low hydraulic gradient which limits the rate of directional flow.

Drilling tests carried out in close proximity to the subject land (Commander 1988) indicate that the maximum water table levels associated with the superficial formations range from 1.5 = 2.0m AHD. This corresponds to a watertable at 2 - 5 metres below ground surface in the areas proposed to support dwellings and 1 - 2 metres below the surface of the lagoonal deposits within the voluntary reserve and foreshore areas. According to WRC Allocation Policy (WRC 1989) the local availability of this groundwater resource for abstraction purposes is generally limited to 1500m^3/lot/year on lots between 2 - 4 ha. However, details regarding precise abstraction rates, groundwater quality and availability for each lot would require site specific assessment and approval from WRC.

The superficial formations are underlain by the Leederville formation WRC information indicates there is little water available for private abstraction from this confined aquifer and that it should generally not be considered as a groundwater resource for allocation.

6.5 Wetlands

There is one seasonal wetlands (or more specifically dampland) within the subject land (refer to area shown as subject to seasonal inundation on Plan 5).

The dampland in the western portion of the subject land is dominated by paperbark (Melaleuca rhaphiophylla) thickets and has had the understorey vegetation removed through grazing (see Plate 4). This wetland is also connected indirectly by an informal drain network which eventually links with the Harvey River.

The wetlands are not protected by any environmental legislation such as the Environmental Protection (Swan Coastal Plain Lakes) Policy, 1992, but are considered to have hydrological and some limited ecological values.

Using the EPA's wetland classification guide (EPA, 1993) the wetland is classified as a multiple use (Category M) wetlands (see Appendix C). Category M wetlands are significantly degraded, possessing few natural attributes and limited human-use interests.

According to the wetland classification guide:

> *The management objectives for multiple use wetlands should be considered in the context of catchment and land use planning (especially drainage, nutrient enrichment, surface and groundwater pollution), in terms of the current value of the wetland and the potential value to the community if rehabilitated.*

Under the proposed subdivision of the subject land the management objectives for the wetland will be achieved and, in most cases, enhanced.

6.6 Flooding

The low lying nature of the subject land suggests that it may be susceptible to flooding during the winter months. There are no flood maps available for the Harvey River, however, discussions with officers at WRC's Flood Management Branch indicate that the subject land is unlikely to experience flooding problems as any excessive flows are taken away by the Harvey Diversion Drain. The drain is located upstream of the subject land and alleviates widespread potential flooding problems. The drain also acts to lower groundwater levels in the vicinity.

It is relevant to note that the existing foreshore reserve abutting the Harvey River adjacent to the subject land ranges from 20 - 50 metres wide, is rather steeply banked and is likely to mitigate against flooding. Evidence of this relates to the good condition of river embankments, lack of erosion problems and the existing fringing vegetation which included several drier land species, such as peppermints and marri in close proximity to the foreshore reserve.

6.7 Foreshore Reserve

Based on the extent and composition of existing vegetation, the condition of the river banks and the flooding characteristics at this locality, it is considered that the existing foreshore reserve, which ranges from 20 - 50 metres wide adjacent to the subject land, is adequate. Although the 20 - 50 metre width provides sufficient protection of the riverine environment, it is proposed as part of the subdivision of the land to provide an additional 30 metre foreshore reserve area to be ceded free of cost.

6.8 System Six Reserve C51/Peel Regional Park

The riverine environment abutting the subject land is subject to System Six recommendations regarding Conservation Reserve C51 - Harvey River Estuary. These mainly relate to suggestions that the recommended conservation reserve area, which generally coincides with the foreshore reserve abutting the subject land, is considered for incorporation into a regional park.

The Inner Peel Region Structure Plan proposes the property as Open Space - Conservation to form part of the Peel Regional Park. This is consistent with the proposal for the property which proposes to set aside the wetland for future acquisition and inclusion in the Regional Park, giving up a 30m foreshore reserve free of cost and the preservation of the remainder of the property by strict controls on clearing and the location of buildings.

The report specifies that the Open Space area is privately owned land to be acquired for Parks and Recreation. The proposal is to set aside the wetland as a separate lot which can be acquired for open space purposes in the future.

The Peel Regional Park reinforces recommendations made in the System Six report regarding conservation of the estuarine environment and extends the recommended protection area accordingly. Section 3.7 of this report provides further details in relation to the Peel Regional Park.

Discussion with officers at the Department of Environmental Protection (DEP) suggest that the recommendations associated with System Six Area C51 have been adequately incorporated into the Peel Regional Park. The DEP considers the strategies and land use plans contained within the Regional Park document form the conservation framework for the estuarine environment of the study area.

Lot 501 - development 'approved'
not regionally significant

Lot 501 Southern Estuary Road

Local Government Authority Boundaries

Photos 1 - 3760
2 - 3761. W to Spearwood Dunes
3/4 - 3762/3 under Kos Eucrua, Mel rhaph
Hak var. Melvne,
5 - along fenceline
6 - 3765
7 - 3767 Ag flex / Marri / Jarrah
Bank att / Kunzea
No understory evident.

0.05 0 0.05 0.1 0.15 0.2 0.25 Kilometers

GDA Projection: Map Grid of Australia (MGA94)

DEP Internal Use Only
This map has been produced using various data from other agencies. No responsibility is accepted for any error or omission.

Adj W Block 37624 – PP wetland cleared
but regrown Cos 06 photo Mel – Paris