



## 2. Description of the Study Area

### 2.1 Location

The proposed Maddington-Kenwick Strategic Industrial Area is located in the City of Gosnells, and extends over an area of 585 ha between the major roads of Tonkin Highway, Maddington Road, Kelvin Road, Albany Highway and Roe Highway (Figure 1).

The study area includes the existing industrial area in Maddington, with the remainder comprising predominantly semi-rural land.

### 2.2 Topography

The study area is relatively flat and low-lying with some low dune areas. Ground levels at the eastern end of the site are approximately 25 m AHD and fall towards Yule Brook in the west where the ground levels are approximately 10 m AHD (Figure 1).

Two isolated low dunes just north of Bickley Road represent important drainage features. A linear dune rising approximately 5 m from adjacent ground levels runs for approximately 1 km north from the intersection of Bickley and Brentwood Road to Brook Road. A smaller dune of approximately 5 m elevation lies at the southern end of Victoria Road.

### 2.3 Soils

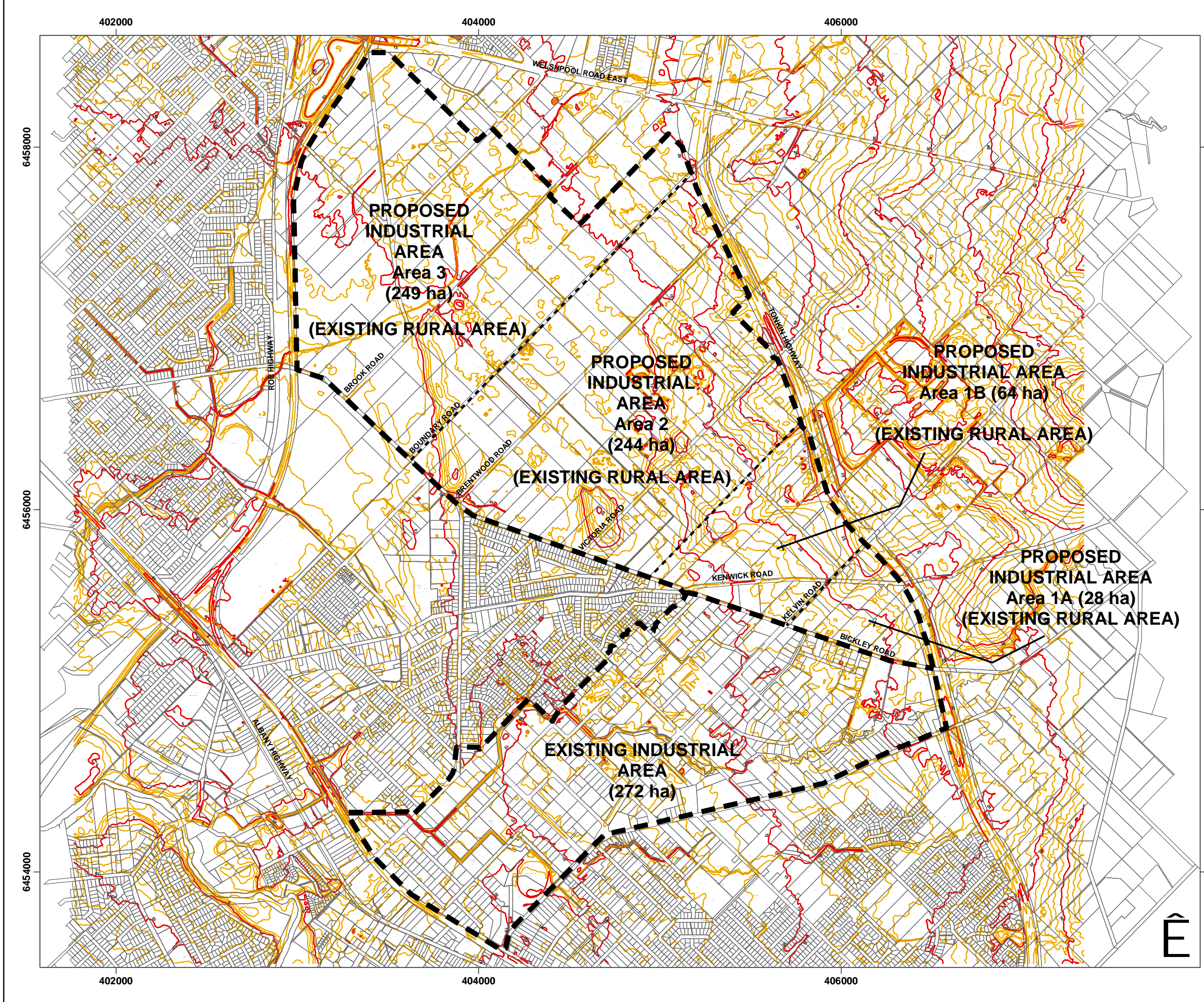
Environmental geology mapping (Jordan, 1986) shows that most of the study area comprises a thin veneer of Bassendean Sands overlying Guildford Formation, with some areas of greater depth of sand corresponding with higher dune areas (Figure 2) and some areas of Guildford Formation at the eastern ends (clayey sand immediately west of and east of Kenwick Road) and far western end (sandy clay west of Grove Road) of the study area.

Areas where thin Bassendean Sand overlies Guildford Formation are typically associated with high water table and foundation properties are generally determined by the underlying Guildford Formation. Although constrained by the shallow depth to groundwater, infiltration should not be precluded in these soils by permeability (Argue, 2001). The Environmental Geology mapping (Jordan, 1986) reports that these soil types are areas of current groundwater recharge.

Areas of sandy clay such as those found at the western end of the study area are prone to seasonal flooding and would typically require sand pads for foundations.

Areas of clayey sand such as those at the eastern end of the study area are also associated with high water table with foundation properties that depend on the percentage of clay.





**LEGEND**

- Proposed Maddington - Kenwick Strategic Industrial Area
- Proposed Development Stages
- Cadastral Boundaries

**TOPOGRAPHY**

- 1 metre Contour
- 5 metre Contour

NOTE THAT POSITIONAL ERRORS CAN BE > 5M IN SOME AREAS  
AERIAL PHOTOGRAPHY SOURCED FROM DLI - SEPT 2004

**SCALE**

200 0 200 400 600m

**1:2000 at A3**

**LOCALITY MAP**

**Perth - Metro Area**

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**MADDINGTON - KENWICK SIA FEASIBILITY STUDY**

**Figure 1**  
Locality and Study Area





**Figure 2 Soil Types**



## 2.4 Groundwater

The study area is in an area with shallow depth to groundwater. The Perth Groundwater Atlas (Department of Environment, 2004) gives an indication of groundwater elevation across the site in May 2003 (end of summer) and indicates groundwater levels vary from 5m AHD at the intersection of Bickley Road and Roe Highway, to 15m AHD at the intersection of Kelvin Road and Tonkin Highway. Groundwater flow is in westerly direction toward the Canning River. Comparison of topography to the groundwater atlas contours suggests that groundwater is very close to the surface in the area west of Brook Road. This is consistent with the presence of the Greater Brixton St Wetlands and the classification of the area as palusplain. It is likely that at some times of the year Yule Brook is a surface expression of the surrounding groundwater table. Groundwater over the eastern half of the study area is not as close to the surface.

The presence of important wetlands and groundwater dependent ecosystems is a critical issue for the sustainable development of the proposed Maddington-Kenwick Industrial Area. There are currently no groundwater monitoring bores in the area of the development that are able to establish an accurate assessment of existing conditions or monitor any potential impacts. There are 65 registered bores within the study area. These bores are predominantly used for irrigation of private land.

A detailed groundwater investigation should be undertaken to confirm groundwater levels in the development area and to investigate existing groundwater quality.

## 2.5 Waterways and wetlands

The proposed Maddington-Kenwick Industrial Area is partly located on an area of palusplain adjacent to Yule Brook and includes a number of wetlands, including part of the Greater Brixton Street Wetlands.

Yule Brook runs through the western end of the study area, forming a natural drainage path running in a south-westerly direction. Yule Brook is a Water Corporation Main drain and discharges to the Canning River. As a tributary of the Canning River, water quality is subject to the targets of the Swan Canning Clean-up Program (Section 3.2).

Wetlands on the Swan Coastal Plain are protected by an Environmental Protection Policy (EPP) – currently the *Environmental Protection (Swan Coastal Plain Lakes) Policy 1992* (EPA, 1992), which may soon be replaced by the draft *Environmental Protection (Swan Coastal Plain Wetlands) Policy 2004* (EPA, 2004). The EPP specifically protects wetlands listed on the Swan Coastal Plain Wetlands Register.

The Swan Coastal Plain Wetlands Register currently includes several wetlands within the proposed Maddington-Kenwick Industrial Area as conservation (C) category wetlands (EPP wetlands) (Figure 3). The EPP wetlands within the development area are:

- » Yule Brook Nature Reserve (part of the Greater Brixton Street chain of wetlands) between Brook Road and Boundary Road (also a Bush Forever site);



- » four wetlands adjacent to the Yule Brook Nature Reserve between Boundary Road and Brentwood Road;
- » a wetland east of Brentwood Road; and
- » a wetland area near the intersection of Kelvin Road and Tonkin Highway (also a Bush Forever site).

Geomorphic wetland mapping by the Department of Environment has also categorised large areas of the proposed development area as resource enhancement (R) wetland (Hill et al., 1996) (see Figure 3). These include:

- » most of the area between Victoria Road and Boundary Road;
- » areas adjacent to, and east and west of, Yule Brook; and
- » a small area east of Victoria Road.

A significant area of the remaining land in the proposed Maddington-Kenwick Industrial Area has been categorised as multiple use (M) wetlands.

The presence of EPP wetlands may be a significant constraint on development in the study area.

## **2.6 Review of existing drainage**

Stormwater drainage in the study area currently comprises a network of open unlined drains in the rural area north of Bickley Road and a predominantly piped network in the existing Maddington Industrial Area. Stormwater from both these areas eventually discharges to Yule Brook, Binley Brook and Bickley Brook. The existing drainage system is shown on Figure 4.

### **Yule Brook West (Y1 and Y2)**

Surface water runoff from land west of Coldwell Road (west of Yule Brook) drains through roadside open unlined drains that discharge into a drainage channel that joins Yule Brook east of Grove Road. This drainage channel is mainly formed by a natural drainage line, except a short length of formed drain in a drainage easement west of Edward Street.

### **Yule Brook East (Y5, Y6, Y8 and Y10)**

Surface runoff from most of the area east of Yule Brook to Victoria Road drains through a network of unlined open drains that discharge through the Yule Brook Nature Reserve (Greater Brixton Street wetlands) to Yule Brook, east of Grove Road. The drainage network comprises of roadside drains (running generally south-easterly) that discharge into open unlined drains in drainage reserves perpendicular to and linking road corridors and running in a north-westerly direction towards Yule Brook.

### **Binley Brook (Y4, Y7 and Y9)**

The land immediately northeast of Bickley Road from Boundary Road to Victoria Road drains towards Bickley Road in a network of roadside open unlined drains that eventually discharge to Binley Brook, a tributary of Yule Brook. The drains running



south west along the first 300 m of Boundary Road discharge into an open unlined drain that runs south west from Bickley Road along a drainage reserve through the Brixton Street Wetlands to Binley Brook. The drains running south west along the first 400 m of Brentwood Road, together with the roadside drains along Bickley Road west of Victoria Road, discharge into an open unlined drain that runs south west along Wanaping Road to Binley Brook.

### **Bickley Brook (B2 and B3)**

The area east of Victoria Road currently drains towards the Maddington Industrial Area south of Bickley Road. The existing industrial area is currently served by a stormwater drainage system that discharges to Bickley Brook, a Water Corporation main drain.