

City of Gosnells

**Maddington-Kenwick Strategic  
Industrial Area**

Engineering Feasability Study

Report

July 2005



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## Executive Summary

The proposed new Maddington-Kenwick Industrial Area is an area of rural land to the north of the existing Maddington Industrial Area. It is partly located on an area of palusplain adjacent to Yule Brook and the Greater Brixton Street Wetlands. The management of the increased quantity and poorer quality stormwater run-off that will result from urbanisation of the area is a critical requirement for the development.

Key outcomes of the Engineering Feasibility Report included:

- » the development of drainage, groundwater and nutrient management strategy for the proposed development; and
- » the identification of the new or upgraded servicing infrastructure required to support the proposed development area.

### **Align development area boundaries with proposed drainage sub-catchment boundaries**

- » Victoria Road forms a boundary separating sub-catchments draining to Yule Brook from sub-catchments draining to Bickley Brook. The land immediately east of Victoria Road is currently included in Area 2 of the proposed development. It is recommended that the development areas be amended to coincide with the proposed drainage catchment boundary formed by Victoria Road, so that Area 1B extends west from Kelvin Road to Victoria Road.

### **Wetland areas within the proposed development**

- » The development area includes a number of conservation category wetlands (EPP wetlands) and resource enhancement wetlands between Yule Brook and Victoria Road. Traditional industrial development of land in areas identified as conservation category and resource enhancement wetlands is contrary to a number of State Government policies and position statements and is unlikely to be supported by the Department of Environment.

### **Proposed drainage concept**

- » The approach adopted for the stormwater management in the proposed Maddington-Kenwick Industrial Area is closely based on the approaches suggested in the *Stormwater Management Manual for Western Australia* (Department of Environment, 2004).
- » To minimise runoff, reduce peak flows and improve water quality from the development area it is recommended that all stormwater runoff be retained and infiltrated as high in the catchment as possible. The requirement for the retention and infiltration of runoff from low flow events within the property boundary provides an equitable sharing of responsibility and costs for stormwater management throughout the catchment.
- » It is proposed that a condition of development should be that each property provide an on-site stormwater retention (OSR) system with a capacity to retain (for



infiltration or reuse) runoff up to the 2 year ARI rainfall event. It is recommended that the OSR comprise a vegetated bioretention basin. For moderate rainfall events (>2 year ARI), the OSR system will overflow to the roadside drainage network.

- » It is proposed that road drainage within the development area is conveyed using a traditional piped drainage system adopting bottomless side entry pits which will promote infiltration of small rainfall events. The piped road drainage network should be sized to convey the 10 year runoff from the road catchment and overflow from property OSR measures, providing a high level of serviceability to the local road network.
- » Multiple use corridors should be located at the outlet from each major subcatchment. The piped road drainage system from each subcatchment will discharge into a length of open channel within the Multiple Use Corridor, constructed to function as an ephemeral living stream. These lengths of ephemeral living stream will provide water quality treatment for road drainage during inter-annual rainfall events, and detention and infiltration for design storm events.
- » The proposed drainage system will discharge at the same locations as the current open unlined drains. The peak flow at these outlets will not be greater than the existing peak flows with detention storage distributed through the catchment by the property bio-retention basins and by the multiple use corridors.

### **Staging of development**

It is recommended that development proceed in the following sequence:

- » Area 1A: This area is a natural extension of the existing Maddington Industrial Area. Area 1A has the considerable advantage of being serviced by existing gravity sewer in the Maddington Industrial Area. It will require the extension of the medium pressure gas main along Bickley Road and the extension of a water main from Tonkin Highway. It may require a new mini-exchange for telecommunications, although this item of infrastructure could be postponed until the development of Area 1B. The drainage system for Area 1A has its outlet at the intersection of Kenwick and Bickley Roads, in Area 1B, and it is proposed to construct the multiple use corridor at that location to provide the necessary water quality improvement for runoff from the road catchment in the area. The area between Kenwick and Kelvin roads will be served by this multiple use corridor and could be included in Area 1A.
- » Area 1B: This area is also adjacent to the existing Maddington Industrial Area and does not require the construction of additional water or gas trunk mains. It will however require a new mini-exchange, to be shared with Area 1A, to provide high quality telecommunications. The critical infrastructure required by Area 1B is the construction of a new trunk sewer along Bickley Road to connect to the Maida Vale Main Sewer. This is estimated to cost in excess of \$3.5 million.
- » Area 3 (amended): Area 3 is well separated from the existing Maddington Industrial Area and will require considerable additional servicing infrastructure (in addition to the sewer main construction and mini-exchange required for Area 1B) for development.



## 1. Introduction

GHD Pty Ltd (GHD) was commissioned by the City of Gosnells to undertake an engineering feasibility study for the proposed Maddington-Kenwick Strategic Industrial Area. The study was to include:

- » development of drainage, groundwater and nutrient management strategy for the proposed development, to provide for the retention of the environmental values, integrity and functions of the existing wetlands, whilst balancing the need to provide sufficient suitable industrial land in the development area, with broad preliminary costs of the key recommendations; and
- » identification of the new or upgraded servicing infrastructure required to support the proposed development area.

The proposed new industrial subdivision is an area of rural land to the north of the existing Maddington Industrial Area. It is partly located on an area of palusplain adjacent to Yule Brook and the Greater Brixton Street Wetlands. The management of the increased quantity and poorer quality stormwater run-off that will result from urbanisation of the area is a critical requirement for the development.

The proposal to develop the new industrial area comes at a time when urban water management is under considerable scrutiny from all stakeholders, including the regulatory agencies and the wider public. The Department of Environment is currently developing a new *Stormwater Management Manual for Western Australia* (Department of Environment, 2004), which presents a new comprehensive approach to the management of urban stormwater, based on the principle that stormwater is a resource, not wastewater. The drainage, groundwater and nutrient management strategy has been based on these new principles of sustainable urban water management and makes extensive use of on-site retention to manage run-off from low-moderate rainfall events. This represents an alternative approach to the drainage system in the adjacent Maddington Industrial Area.

This report presents relevant background information on the proposed development area, identifies constraints and opportunities and outlines key objectives on which the stormwater management strategy has been based. The report describes the recommended drainage concept plan, including budgets for key components. The final section reviews current levels of service provision to the area and identifies additional service infrastructure required to support future industrial development.