



DENNIS + PRICE + MILLER

Dennis, Price + Miller Pty Ltd

22 Business Park Drive

NOTTING HILL VIC 3168

t (03) 9538 5000

f (03) 9538 5050

e-mail: consulting@dpmvic.com.au

web site: www.dpmvic.com.au

ABN 47 006 550 803

ACN 006 550 803

Job No: 1962/M/A(ii)

SIENNA PARK ESTATE:
1525 POUND ROAD,
CLYDE NORTH

SERVICING STRATEGY:

June, 2013

INTRODUCTION:

Dennis, Price & Miller Pty. Ltd. Consulting Civil Engineers and Project Managers have been engaged by DFC (Project Management) Pty Ltd. to prepare an Engineering Servicing Report associated with the development of a parcel of land comprising of approximately 48.42 hectares, located at 1525 Pound Road, Clyde North in the municipality of the City of Casey.

It is expected that the subject development will comprise mainly of residential lots with an expected lot yield in the order of 633 lots based on 15 lots per hectare of developable area together with an area set aside for School and Community facilities.

The subject parcel of land is currently zoned Urban Growth Zone and is bounded by Pound Road (western boundary), an Electricity Transmission Line Reserve / Easement (northern boundary), and future developable land also zoned Urban Growth are adjacent to the eastern and southern boundaries.

The subject property falls within the proposed Precinct Structure Plan (PSP 1053) which is currently being developed by the Growth Areas Authority and will be required to be approved prior to the development of the property.

It should be noted that the information contained in this Preliminary Servicing Report is derived from usually reliable sources however, is subject to variation after detailed planning, survey, design and formal liaison with the relevant authorities. It should be noted that the development of other properties in the surrounding area may also have an impact on the development potential of the site.

SOUTH EAST WATER LTD:

South East Water Ltd. is the responsible authority for Potable Water Supply, Class A Recycled Water Supply and Sewer facilities in the Clyde North area and would require the developer to construct services to each allotment created.

South East Water Ltd is currently working with the Growth Area Authority (GAA) and a number of key stakeholders including the City of Casey, Department of Planning & Community Development, Department of Sustainability & Environment, the Office of Living Victoria and affected Developers in the Clyde North area in determining a preferred servicing strategy for the area.

Water Supply Requirements:

Officials from South East Water Ltd have advised that the water servicing strategy for the PSP 1053 Clyde North area has yet to be finalised and is dependent on the outcome of a number of servicing options currently being discussed with the relevant stakeholders.

Preliminary advice previously obtained by Dennis, Price & Miller Pty Ltd indicated a likely interim servicing strategy for the Clyde North area that involved sourcing a water supply from the Thompsons Road Pressure Reducing Station (PRS).

In order to service the proposed development approximately 6.0 km of 450mm dia - 300mm dia distribution water mains would need to be extended from the Thompsons Road PRS east along Thompsons Road to the Berwick Cranbourne Road, south along Berwick Cranbourne Road to Hardy's Road, and east along Hardy's Road to the property boundary.

In the longer term it was indicated that water supply would be sourced from an off take on the desalination pipeline to be located at the junction of Pattersons Road, McCormacks Road and Hardy's Road (approximately 2.1 km south of the subject property).

Class A Recycled Water Supply Requirements:

South East Water Ltd is currently investigating into the mandating of the installation of Class A Recycled Water Supply for the Clyde North (PSP 1053) area. Initial indications are that the area would be included and that supply could possibly be made available from the Berwick South System.

In the interim South East Water Ltd would probably require the developer to install Class A Recycled Water Supply pipes throughout the proposed development that would carry potable water by a cross connection to the Potable Water supply system until Class A Recycled Water is available to the subject area.

Sewerage Reticulation:

South East Water Ltd. is also the responsible authority for sewerage facilities in the Clyde North area and would require the extension of sewerage facilities to service the proposed development area.

Officials from South East Water Ltd have advised that the Sewer servicing strategy for the PSP 1053 Clyde North area is also currently under review and is dependent on the outcome of a number of servicing options currently being discussed with the relevant stakeholders.

Previous preliminary servicing advice obtained from South East Water Ltd indicated that the ultimate sewer strategy for the area would involve the construction of major infrastructure works, and it was suggested that in the short term South East Water Ltd would consider a temporary option to pump to the Hallam Valley Catchment.

Sewerage flows from the proposed development would be directed via gravity sewer mains to a Temporary Pump Station to be located in Pound Road approximately 1.0 km from the southern boundary of the subject property. Flows would then be pumped via a rising main in a northerly direction along Pound Road to the Hallam Valley Main Sewer Catchment and discharge to a lift pump station currently being built north of Grices Road and due to be commissioned in 2014. Sewerage flows would then be pumped to the existing Ti Tree Creek Branch Sewer.

It should be noted that the existing Ti Tree Creek Branch Sewer has limited capacity and demands from other proposed developments within the Hallam Valley Catchment would determine whether the proposed development could discharge into this system.

MELBOURNE WATER CORPORATION:

Main Drainage Facilities:

The Melbourne Water Corporation (Waterways and Drainage Group) is the responsible authority for **main drainage** facilities in the Clyde North area. The developer will be required to enter into an agreement with the Melbourne Water Corporation pursuant to Section 269A of the Melbourne and Metropolitan Board of Works Act 1989, for the acceptance of stormwater from the proposed development site directly or indirectly into the Melbourne Water Corporation's drainage system.

The subject land is part of a larger area that was included in the extension of the Melbourne Urban Growth Boundary in July, 2010. The Melbourne Water Corporation will be working with the Growth Area Authority in preparing Growth Area Framework Plans and subsequent Precinct Structure Plans for the area.

To date the Melbourne Water Corporation does not yet have servicing advice prepared for the subject area of Clyde North, however, has indicated that a scheme will be established for the area and has identified proposed scheme boundaries. It should be noted that the priorities and timeframes for Drainage Scheme preparation will be dictated by the Growth Areas Authorities priorities.

In order to develop the area ahead of the Growth Areas Authority timeframes the developer will be required to engage an Engineering Consultant to prepare a Surface Water Management Strategy (SWMS) in consultation with the Melbourne Water Corporation and other relevant authorities. The SWMS will cover all aspects of drainage, waterways and water quality management for the subject land.

The majority of the property (i.e. 36.52 hectares) falls with grades of approximately 1 in 50 to the southern boundary and is contained within Melbourne Water Corporation's **proposed Muddy Gates Drain Drainage Scheme**. A portion of the

property in the north east corner of the comprising of 11.90 hectares falls with grades up to 1 in 30 in an easterly direction and drains to the Cardinia Creek Floodplain Extension Catchment. The property is located at the top of both catchments and therefore has no external upstream catchment to consider.

As part of the development of the property contained within the Muddy Gates Drain Drainage Scheme it is **envisaged** that the Melbourne Water Corporation will require *the developer* to construct approximately 1.0 km of 1350mm – 1500mm dia main drainage pipeline from the southern boundary of the property along Pound Road to an existing water course. Upon viewing the limited contour information available, it would appear that Pound Road grades at between 1 in 100 and 1 in 150 and flattens out at the low point and existing water course. This would appear to be an appropriate location for a future retarding basin / wetlands for the future Muddy Gates Drain Drainage Scheme that would accommodate water quality works for the subject land, however, the location of these works would be subject to Melbourne Water Corporation evaluation of the Scheme Works and the land owner's cooperation.

In the interim to allow the property to be developed independently (i.e. out of sequence) it may be possible to construct a temporary retarding basin / wetlands along the southern boundary with a temporary piped outlet to the existing table drain within Pound Road. The interim retarding basin / wetlands would require approximately 1.10 hectares to accommodate the works.

The portion of the property (i.e. 11.90 hectares) that drains to the Cardinia Creek Floodplain Extension has relatively steep grades and is in relatively close proximity to the floodplain. In view of this it is envisaged that stormwater flows from the development would be piped to the Cardinia Creek floodplain via a 750mm - 900mm dia pipe along the southern boundary of the Electricity Transmission Line Easement. Due to the steepness of the terrain it is deemed that an area closer to the floodplain would be a more appropriate location for any water quality works that may be required.

It should be noted that the interim drainage system would be subject to approval by the Melbourne Water Corporation and the City of Casey Council and the developer would need to fund all the costs associated with any works that are deemed to be temporary.

SP AusNet):
Electricity Supply:

SP AusNet Pty Ltd is the responsible authority for the supply of electricity and can supply the proposed development on the completion of an extension contract with the developer.

Officials from SP AusNet Pty Ltd have advised that an existing overhead single phase high voltage feeder cable (*i.e. Rural type supply*) extends along the north side of Hardy's Road and west side of Pound Road along the frontage of the property, however, the existing electricity supply infrastructure would not be capable of servicing the proposed development.

SP AusNet Pty Ltd has indicated that the existing overhead power-line along Tuckers Road has future capacity and there are three options to increase the supply capacity to supply the proposed development area.

OPTION 1: - Involves the installation of new overhead conductors on new cross-arms under the existing overhead power-lines located in the Electricity Transmission Reserve between Tuckers Road and Pound Road and the installation of additional poles along Pound Road. A new H.V. cable would be extended from the northern end of Tuckers Road, east along the Electricity Transmission Reserve and south along Pound Road to a point of supply for the proposed development.

OPTION 2: - Involves the installation of a new overhead H.V. cable along Hardy's Road between Tuckers Road and Pound Road to a point of supply. (*It should be noted that the existing power poles along Hardy's Road will probably need to be relocated due to the proposed upgrading of Hardy's Road.*)

OPTION 3: - Involves the installation of new underground H.V. cable along Hardy's Road between Tuckers Road and Pound Road to a point of supply.

It should be noted that SP AusNet Pty Ltd would require that any augmentation to the existing system would be required to be funded by the developer.

The extension of electricity services within the development would be reticulated underground with developer providing all the necessary trenching, conduits and backfilling. SP AusNet Pty Ltd would require 300KVA kiosk type substation sites as part of the underground H.V. power system. The locations of these sites will be determined during the detailed design phase in consultation with SP AusNet Pty Ltd.

NBN Co & Telstra:
Telecommunication Facilities:

Telstra is the responsible authority for the **existing** telecommunication services in the Clyde North area and has limited existing infrastructure.

Currently there is limited information available as to how telecommunications infrastructure will be made available to future developments in the Clyde North area. It is expected however, that once an application to develop is lodged, the NBN Co. will determine whether the fibre footprint will be extended to accommodate the proposed development.

It is envisaged that although currently there is no major plant in the area, the NBN Co being the designated “telecommunication infrastructure provider of last resort” will extend services to the property when required.

It is envisaged that services would be extended along Hardy’s Road to the proposed development from the existing telecommunication infrastructure located on the western side of the Berwick Cranbourne Road.

Under current arrangements the NBN Co. would provide internal underground cable reticulation to the development, where the Development has been approved by the local planning authority and the Developer agrees to arrange for:

- ◆ The provision for NBN Co’s use of a trench shared with one or more other service authority, or an exclusive trench for NBN Co’s use,

- ◆ Co-ordination of the sharing arrangements with other authorities,
- ◆ All road crossings and street works trenching to be carried out in accordance with NBN Co's specifications,
- ◆ Suitable backfilling and reinstatement,
- ◆ The design, trenching and installation of pit and pipe to be funded by the developer.

No problems have been identified with the provision of Telecommunication services to the proposed development at this stage.

ENVESTRA (Natural Gas):
Gas Supply:

The APA Group are the asset managers for Envestra (Natural Gas) whom are the distribution company responsible for the extension of gas facilities to the proposed development.

Officials from Envestra have advised that although no gas mains are currently located within Pound Road or Hardy's Road, a supply will be made to the proposed development.

In order to provide gas facilities to the proposed development Envestra will extend a 125mm dia (minimum) gas main along Hardy's Road from the existing 100mm dia High Pressure steel gas main located at the intersection of Tuckers Road and Hardy's Road.

No problems have been identified with the provision of gas services to the proposed development at this stage.

CITY OF CASEY COUNCIL:
Council Requirements:

City of Casey Council is the responsible municipal authority and would require *the developer* to fully construct all proposed roads and underground drainage facilities to service the proposed development.

Access to the proposed development would be from Hardy's Road and Pound Road which are currently unsealed rural type roads.

It is envisaged that Hardy's Road and Pound Road will ultimately be upgraded to arterial roads and funded from the establishment of a Development Contributions Plan for the area.

All proposed Council drains will be directed to the previously mentioned Melbourne Water Corporation drainage system.

All proposed roads and drainage works will be constructed in accordance with the current Growth Area Authority's Engineering Design & Construction Manual and the City of Casey standards.

DISCLAIMER:

The information provided in this report should be considered as "Preliminary" and used for discussion purposes.

The information is subject to variation following further advice and confirmation from respective authorities.

