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ST. GERMAIN CLYDE NORTH

Servicing and Utility Infrastructure Report

September 2013

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1 EXECUTIVE SUMMARY

This report discusses the availability of services to a proposed development at 1425 Pound Road and 2100 Thompsons Road, Clyde North, collectively known as St. Germain. Our investigation identified the availability of the following services.

1.1 Findings

Roads (Council / VicRoads)	Available External Works required	The arterial road network will be upgraded in a 1.6 km grid pattern with collector roads located within that network. Intersections will be signalised when / where required. As existing conditions show, Thompsons Road, Pound Road and Smiths Lane are to a rural gravel standard. As part of the first stage of works, Thompsons Road will need to be upgraded to residential asphalt standard to be constructed by the developer but reimbursed through the DCP or other funding. Pound Road will have to be realigned and become a Connector type road to be constructed and funded by the Developer. On the eastern side of the site, Smiths Lane will be realigned and become a Connector type road.
Sewer (South East Water Ltd)	Not Currently Available External Works Required	The area will be serviced by an interim strategy of gravity sewers, pump stations and rising mains. The system will be designed to cater for future development in the area by the augmentation of extra pumps and storage facilities as required. The Pump station is to form part of permanent works and as such, should be part to fully reimbursable.
Electricity (SP Ausnet)	Available External Works Required	Power supply is available to the site but the feed along Thompsons Road needs to be upgraded from a rural standard from Berwick-Cranbourne Road, a distance of 2.7km to the stage one intersection.
Gas (Envestra/APA Group)	Available External Works Required	An existing high pressure gas main is located in Pound Road; a secondary main will have to be constructed along Thompsons Road to the first stage entrance which may have a shortfall in funding.
Telecommunications (Telstra)	Available	Telstra copper cable assets are available along Thompsons Road but it is not envisaged to be utilised by this development.
(Fibre Optic)	Available when required	There are no fibre optic assets in the area but the subject site is within the NBN Co footprint. NBN fibre optic will be required to be laid from Berwick-Cranbourne Road to the first stage entrance as part of

		external works.
Potable Water (South East Water Corporation)	Available External Works Required	No SEWC assets are present on Thompsons Road, Pound Road or Smiths Lane. A small private main exists in Pound Road but cannot be utilised by this development. The nearest available supply is located at the intersection of Riverstone Boulevard & Springleaf Avenue approx. 1.5km away north.
Re-use Water (South East Water Corporation)	Not Available Works Required	Recycled water assets will need to be constructed for future use. A cross connection will need to be constructed between the potable and recycled water assets until such time as recycled water becomes available. New Customer contributions required for recycled water.
Main Drainage (City of Casey & Melbourne Water)	Not Available Works Required	There is a proposed Melbourne Water Wetland, Sediment Ponds and retarding basins shown in two locations on PSP1053 for the site servicing a number of properties adjoining the subject site. The developer will be required to construct the wetlands and undertake associated landscaping works. These works are reimbursable by Melbourne Water. Preliminary drainage outfall points indicate two catchment areas. The western portion of the site discharges to the Ti-Tree Creek Drainage scheme and the eastern portion discharges to the Baillieu Creek Catchment Scheme. There are currently no Council drainage assets servicing the property. A retarding basin / wetland will have to be constructed in the north west part of the site along Thompsons Road to retard flows to pre-developed rates. A second basin located within the power line easement near Smiths Lane will retard flows for the eastern catchment area.

Internal reticulation of all these services will be required to be undertaken by St. Germain Developments.

2 INTRODUCTION

2.1 Introduction

Beveridge Williams has been engaged by St. Germain Developments to provide preliminary advice with respect to the provision of the necessary infrastructure required to service the proposed development of land at 1425 Pound Road and 2100 Thompsons Roads, Clyde North (collectively known as St. Germain). Refer to Figure 1 for site location.

2.2 Site Location and Description

The project area is approximately 50 kilometres south-east of the Melbourne CBD. The land is 171.2 Ha in size and is bounded on the west side by Pound Road, on the north side by Thompsons Road and on the east side by Smiths Lane. An Electrical Transmission Power line easement traverses the site from east to west.

The land is currently used for agricultural/rural purposes and has a number of farm buildings and dams on site. The land is divided up into a number of pastures bounded by post & wire fences and has some scattered trees around buildings and has rows of trees dividing pastures and bordering the property on the southern and northern sides.

The 1425 Pound Road part of the site drains to a low point approximately 200m along Thompsons Road from the western boundary. The 2100 Thompsons Road part of the site drains to a low point in the south east corner of the site. Both outlet points discharge to existing open drains across private property before reaching a Melbourne Water waterway.

The site generally has good fall to the low points, however, there is a significant flat area along Thompsons Road that is prone to flooding due to the limited fall downstream of the site.

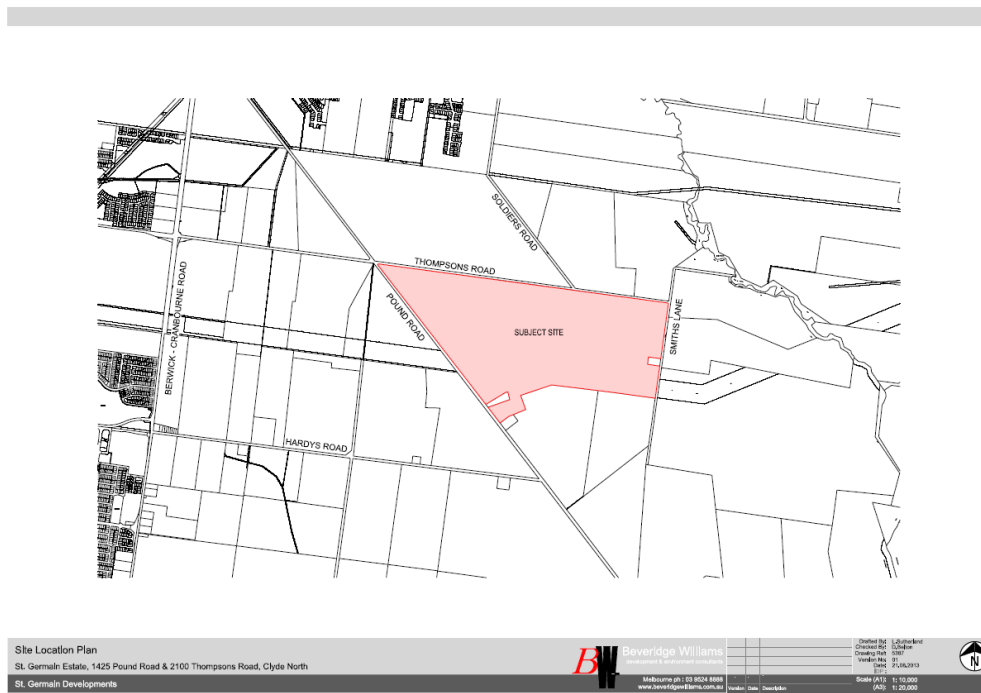


Figure 1 - Site Location Plan

2.3 Assumptions and Limitations

This project has been scoped and undertaken as a desktop study to provide preliminary advice on the servicing requirements for the proposed development of St Germain, within the new growth area under PSP 1053. There are limitations to the level of detail provided given the nature of this review. Desktop studies are reliant upon information made available from service authorities, with assumptions of the accuracy and completeness of the information provided. Further assessment and confirmation of details provided will be necessary during the planning and design stages.

3 SERVICES

3.1 Investigation

Our investigation into the availability of services to the proposed development included obtaining written and verbal information relating to existing services in the area along with requirements to service the area. A number of service authority responses have been received however due to the status of the proposed PSP1053, the advice received has been of a preliminary nature. Our servicing advice is based on our own research and advice, knowledge of the region and likely requirements of authorities. Our research comprised of obtaining information relating to existing services from the following organisations:

- Melbourne Water
- SP Ausnet
- Telstra / NBN
- South East Water Corporation
- APA Group (Envestra)
- City of Casey
- Dial Before You Dig

3.2 Roads

Beveridge Williams has been involved in the GAA consultation in relation to the development of PSP areas 1053 and 1054. The road network has been taken into consideration of the PSP in regard to the development plan in Figure 2.

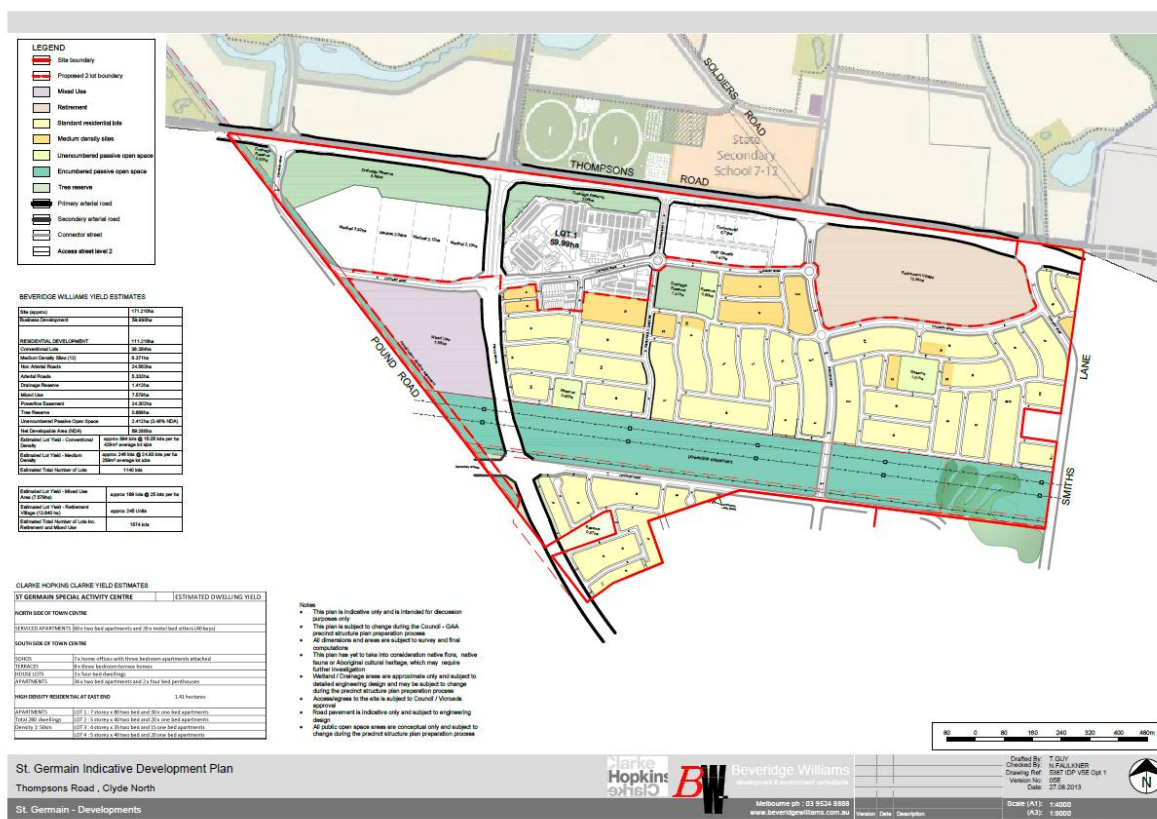


Figure 2 - Indicative Development Plan

Thompsons Road will ultimately be developed as a 6 lane arterial road but in the interim it will have to be upgraded from the current gravel road to a sealed 2 way carriageway from Berwick-Cranbourne Road to the proposed North-South Road (the second intersection shown along Thompsons Road in Figure 2). The aforementioned North-South Road is classified as an arterial road in the PSP, and will ultimately be a dual carriageway 6 lanes wide. The construction of this road is expected to be covered by DCP and Developer funding. Smiths Lane is a gravel road but is rated as a Connector Road and as such, will be required to be constructed with Developer funding.

Thompsons Road, being a designated arterial road, will require road reserve widening and this is expected to occur on the southern side of the existing road reserve boundary, thereby impacting upon client land. Intersection treatments will require widening to allow for turning lanes, and the extent of the treatments will be determined in preliminary functional road designs.

As per the preliminary PSP plans, the north-south arterial road is required near the western end of the site with land set aside for the ultimate width of the arterial. Only a single carriageway is required to be built by the developer to initially service the site.

3.3 Intersections

In the interim, as the arterial road network will only consist of a single carriageway, Beveridge Williams sought City of Casey advice, as the controlling road authority, for the development of the intersections into the estate and for the Thompsons Road and Soldiers Road (realigned) intersection.

For minor road intersections on Thompsons Road, a T-intersection incorporating left and right hand turn lanes would be acceptable to City of Casey. However, if development occurs on both sides of Thompsons Road at approximately the same time, a signalised intersection would be required. As the developer for St.Germain seeks to construct business and residential precincts at the same time

incorporating medical facilities, the traffic volumes would escalate at an early time. It is advisable to install a signalised intersection on Thompsons Road with Soldiers Road to ensure development can occur at a faster pace without disruption of expanding the capability of the intersection to cope with higher traffic volumes. The arterial road intersection itself is to be based upon the ultimate location with a median strip approach in anticipation of Thompsons and Soldiers Roads becoming dual carriageways.

There has been discussions concerning DCP reimbursements for the construction of Thompsons Road and Soldiers Road with City of Casey, and they have indicated that it is likely that these works would be DCP funded.

3.4 Sewer

South East Water Corporation (SEWC) is the responsible authority for sewer servicing in the area. Beveridge Williams has been working with South East Water since mid-2012 to develop a sewer strategy which incorporates PSP areas 1053, 1054 and 1055. Monthly meetings have been held with Beveridge Williams and South East Water to discuss the servicing strategy, and the advice provided in those meetings has been used to formulate the following advice.

The ultimate strategy for servicing the area is not yet finalised but may include the development of a sewerage treatment plant to the south east of the growth area. A decision on that cannot be made until a decision is made on the use of recycled water for the area (see below), however, South East Water is working on a strategy for servicing the area in a timely manner. The interim sewer provision strategy is to transfer sewage from the subject area to existing infrastructure to the north and west via the Cranbourne East gravity sewers and pump stations. The existing infrastructure has a limited capacity to utilise before augmentation works are required at significant cost.

The main discharge point for the subdivision is from a proposed temporary pumping station located next to the Melbourne Water drainage reserve near the Pound Road and Thompsons Road intersection. This pumping station may form part of a permanent network of pumping stations and gravity sewers for the PSP area and as such, may be reimbursable. Depending upon whether South East Water views the construction as short term or mid-term delivery, this will result in a 0-40% contribution rate by the developer. A rising main will need to be constructed to connect the pumping station to an existing trunk gravity sewer located near Riverstone Boulevard within the Berwick Waters Estate approximately 1.2km north along Pound Road. This would be the most economical and most appropriate discharge point for the site. However, advice from South East Water Corporation has indicated that the rising main should be constructed to the Wild Scotchmans Way Pump Station off Linsell Boulevard located approximately 4.2km away. Refer Figure 3 for the route options of the rising main.

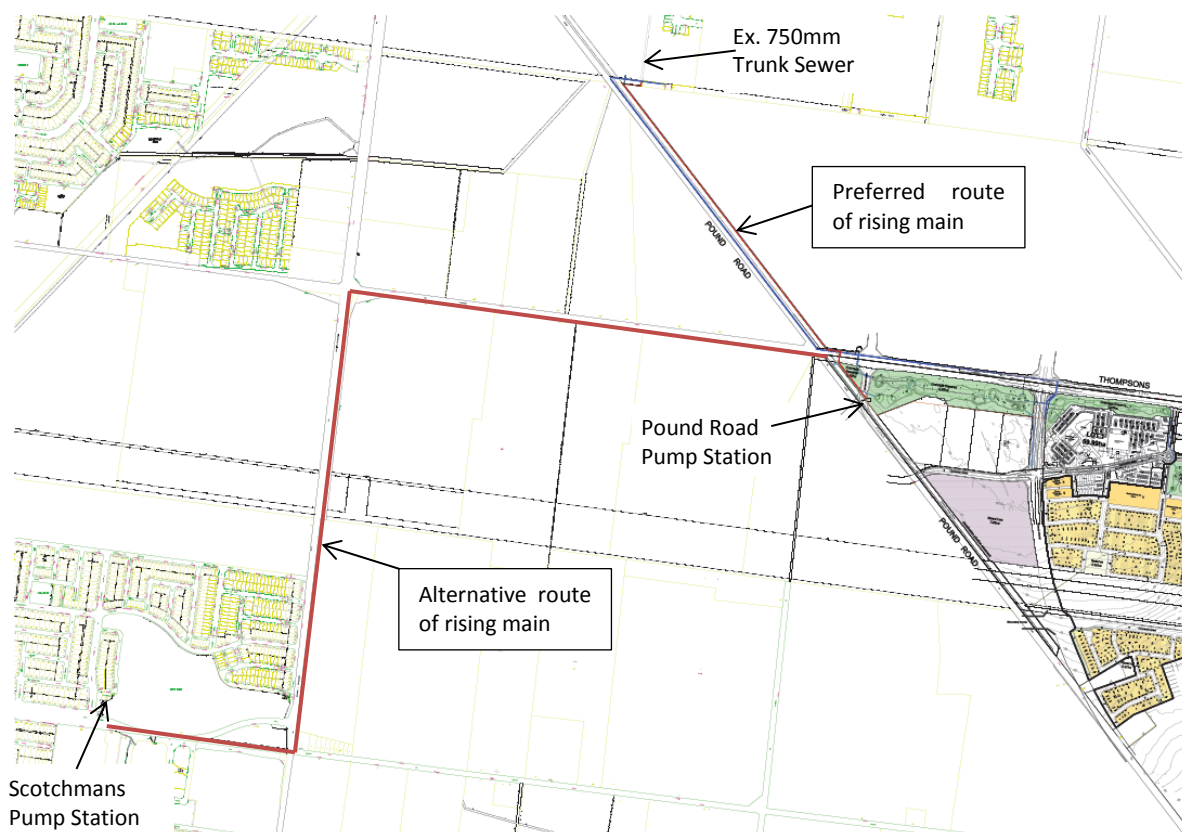


Figure 3 - Route of Sewer Rising Main

A network of gravity sewers will be required to convey sewage to the new pump station, allowing waste to be transferred to existing sewers. Parts of this network will service surrounding properties and will therefore attract a reimbursement from South East Water.

A second pump station will be required to service the eastern part of the site including the Retirement Village. A rising main from this pump station to the Pound Road pump will have to be constructed. As this catchment will ultimately drain to the southeast, the rising main is considered temporary work and will not be reimbursable.

Refer to APPENDIX B for SEWC sewer strategy plan

3.5 Water

SEWC is the responsible authority for water assets in the area. SEWC has advised that as the PSP area is under review, they can't advise whether potable water or recycled water will be available to the site in a timely manner. It is expected that South East Water will be in a position to outline their strategy for PSP 1053 & 1054 later in the year.

We do know that a 225mm dia potable water supply main has been constructed within the Berwick Waters Estate in Riverstone Boulevard approximately 1.2km north of the site. South East Water plans for this main to be extended, as a 375mm dia main, through the Clyde North PSP along future road reserves to cross Thompsons Road 600m west of the subject site and service properties to the south. A 225mm dia main could be constructed to the site from this location. However, as the area

on the north side of Thompsons Road is yet to be developed, the route of the main could be constructed along Pound Road to Thompsons Road as a 375mm dia main. As South East Water have indicated that this main is due to be constructed in 2018, only part reimbursement would be forthcoming. A main extended along Thompsons Road should cater for the entire site.

Recycled water assets will also need to be constructed for future use, however recycled water supply will not be available initially for the development and a cross connection will need to be constructed between the potable and recycled water assets at the entrance of the development.

3.6 Stormwater Drainage

City of Casey has indicated that there is no existing local drainage infrastructure available to service the site.

Melbourne Water is the catchment management authority for the subject site with the property contained within the existing Ti-Tree Creek drainage scheme numbered 0619 and a new drainage scheme labelled 1310X, Baillieu Creek (part of the Cardinia Creek Drainage Scheme). The catchment areas are shown on Figure 4.

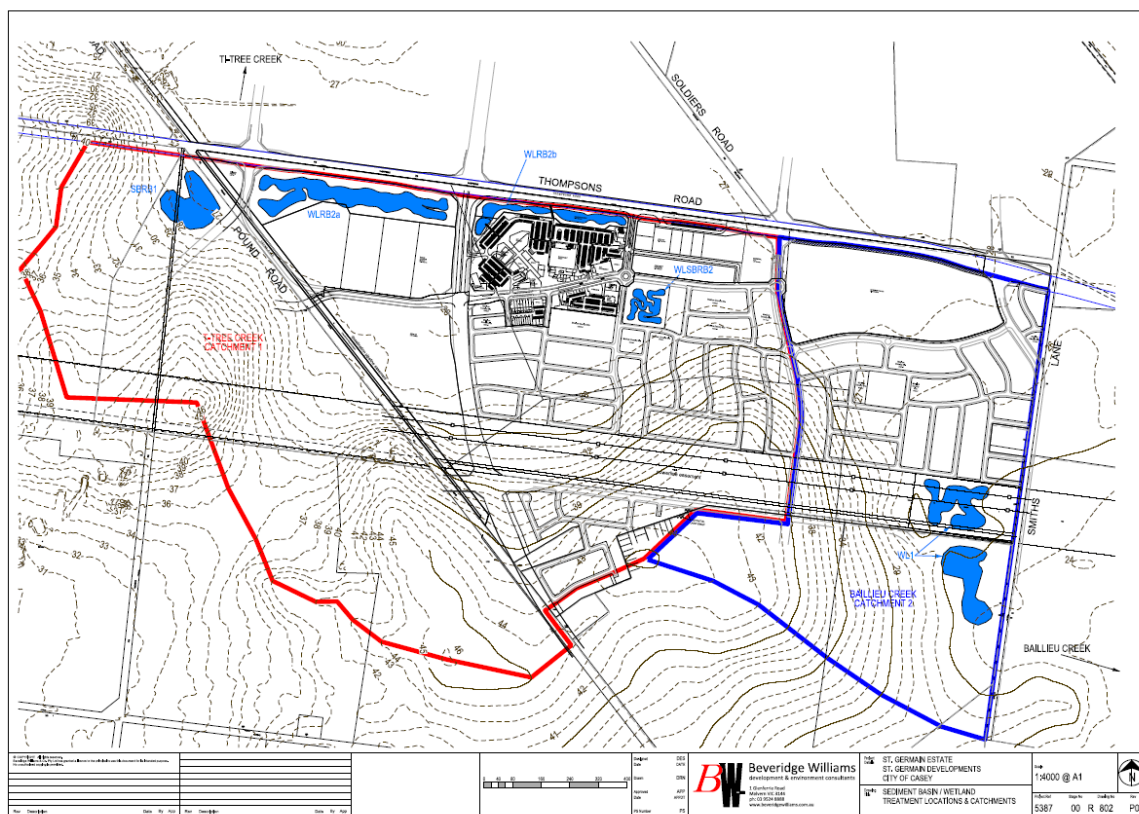


Figure 4 - Drainage Catchment Areas

The Scheme identifies that the expected drainage works for the development requires the construction of a wetland, on-line sediment ponds and to act as the 100 year ARI retarding basin for the whole of the subject site, although divided between two Drainage schemes. According to a drainage study carried out by Neil Craigie in 2012, a total water surface area of 4.65ha (3.55ha

within subject site) will treat the area, to best WSUD practices, contributing from the Ti-Tree Creek catchment area and a water surface area of 1.80ha (0.9ha within subject site) will treat the Baillieu Creek Catchment area to best WSUD practices. As these works are within a designated Melbourne Water scheme, when formalised, the wetlands and basin works would be reimbursable. The provision of culverts for the crossing of Thompsons Road near Pound Road would also be reimbursable by Melbourne Water. As the cost of the entire wetland system would be prohibitive to construct as part of stage one, the works can be staged to treat the site as development progresses.

There is an external catchment to the west of the site that will have to be catered for with a 5 year ARI pipe and overland flood paths. The majority of the catchment will be directed to a sediment /retarding basin located on the south west corner of Pound Road and Thompsons Road and thence into the wetland system on the subject site. There is a second external catchment contributing to the Baillieu Creek wetland but this can be catered for with the extension of the wetland into the adjoining property to the south of the Power line transmission easement, as part of other developer works.

In regards to overland flood paths for external catchments, this has to be handled within the road network or combination of increased underground pipe discharge and overland flows. As Thompsons Road or the North-South Arterial will not be permitted to be used as a floodway, being an arterial road, an overland flow path must utilise the internal local road network. The overland flows can be split up to utilise the local road network to ensure no road will exceed safety parameters for flooding. All flows are to be directed into the wetland system.

As the intervening waterway between Thompsons Road and Berwick Waters wetland has not been constructed, a temporary system will be constructed to convey low flows in a free draining situation with excess flows restricted to predeveloped flows across downstream properties. As with drainage schemes within City of Casey's boundaries not controlled by Melbourne Water, permission from property owners, affected by the works, will have to be obtained.

Melbourne Water has provided contribution rates for the Ti-Tree Creek Drainage Scheme and the rates are as follows:

Hydraulic rate -	\$43,383/Ha
Stormwater quality	<u>\$10,398/Ha</u>
Total Residential Rate	\$53,781/Ha

The Baillieu Creek catchment area is yet to be formalised but based upon the adjoining drainage scheme, which required extensive Melbourne Water works (Collison Road 2371), the minimum rates that can be anticipated are as follows:

Hydraulic rate -	\$70,658/Ha
Stormwater quality	<u>\$4,361/Ha</u>
Total Residential Rate	\$75,019/Ha

Based on a total site area of 171.2Ha minus the powerline easement, then the total contribution cost for the site is approximately \$8,848,000. This sum would be confirmed in an offer from Melbourne Water once a planning permit has been issued and a formal application made. On-site retention of stormwater could be combined with water quality treatment to meet *Best Practice Environmental Guidelines (BPEMG) – Stormwater*. Management of stormwater quality to BPEMG is likely to be a requirement of any planning permit.

Refer APPENDIX C for the Melbourne Water Drainage Scheme Plan.

3.7 Electricity

SP AusNet has advised that the development site cannot be serviced by the infrastructure that currently exists along Thompsons Road. Works will have to be carried out to upgrade the current network. This includes constructing new lines from the zone substation located in Berwick-Cranbourne Road along Thompsons Road at the ballpark cost of \$150,000 per km. The distance required to lay the new lines to service the site is 2.7km, and therefore totally approx. \$400,000. This external upgrade would be at Developers Cost. The Client can enter into a cost sharing arrangement with other Developers along Thompsons Road to minimise the cost of the upgrade to the Client.

There is a good feeder rated overhead line along the Power line easement but would have to be upgraded from Tuckers Road a distance of 800m and then underground across the transmission lines and along future road reserves. This upgrade does not have SPAusnet approval and would require further negotiation to be considered a viable option. This external work would be at developer cost.

In recent planning permits issued, City of Casey has stipulated that any electricity supply, whether external or otherwise, should be constructed underground. As only one Power Company is involved, SP AusNet has stated that the City of Casey planning permit will dictate the requirements of the location of electricity power lines. The cost of undergrounding power along Thompsons Road has been advised by SPAusNet to cost approximately \$1.2Mil. Again, this cost can be shared amongst other Developers if the Client negotiates with them.

If development is delayed for any significant length of time, SP AusNet have stated that with other developments due to proceed as well, further augmentation works to the electricity network would be required. It would be in the interests of the Client to seek cost sharing arrangements with other Developers in this case.

High Voltage (HV) infrastructure within the estate is reimbursed through SP AusNet based on a schedule of rates. These are determined by the price that SP AusNet pays for materials. Low Voltage infrastructure is rebated at a flat rate of \$980 for every new lot. If SP AusNet was chosen for construction of electricity infrastructure, the HV costs would be credited off the cost of the works, and the Developer would pay the difference.

Further advice indicates that kiosk reserves would be required for every 110 - 125 lots. The standard reserve area is 8m x 4.2m wide, but occasionally a 5m wide reserve is required. Design and construction of URD estates can be undertaken using Accredited Service Providers, rather than having SP AusNet carry out this service.

Refer APPENDIX D for SP AusNet plans.

3.8 Gas

APA Group has advised that there is an existing 100mm high pressure gas main running along Pound Road with natural gas.

Envestra will be able to service the development with natural gas but for stage one, a supply main will be required to be constructed along Thompsons Road, a contribution from the developer may be required as Envestra has indicated a shortfall in funding may occur. A detailed cost would be provided once a formal application has been made.

An APA Group asset plan is attached in APPENDIX E.

3.9 Telecommunications (Copper)

Telstra has advised that there is existing Telstra infrastructure along Thompsons Road servicing the existing farm build houses. Beveridge Williams has determined that it does not have the capacity for any significant further development, though could possibly be useful for a sales office or some other preliminary use.

3.10 Telecommunications (Fibre Optic)

Telecommunications could be provided by NBN Co. The site is within the NBN Co. servicing footprint but no works have been undertaken within this area as yet. It should be noted that the Developer is required to pay for the installation of pit & pipe if NBN is chosen. To service the site, the Developer will have to provide pit and pipe along Thompsons Road to the site at Developer cost, a distance of 2.7km at an approximate cost of \$160,000

Alternatively, the developer may wish to supply telecommunications via another provider. That is a feasible option for the developer as Opticom has supplied several estates to the west in Berwick-Cranbourne Road. This will require a commercial decision to be made at the time of development.

4 CONCLUSION

The subject land known as St. Germain is within proposed PSP area 1053 and is within the Urban Growth boundary. The GAA has advised that the PSP for the area is due for exhibition this year. The service authorities are aware of progress within the area and are planning to address the upcoming demand for services.

The extension of all services can be achieved through known and proven techniques. The area is suitable for development as proposed and the only concern is the ability of South East Water to provide services in a timely manner. As South East Water are working on their strategies currently, we feel confident that the development will be able to be supplied in the required timeframe.

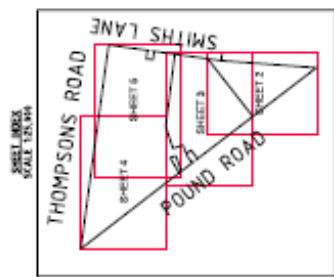
Through traditional delivery models, developers are required to fund the infrastructure up front and be reimbursed at a later time. Road, drainage, electricity, gas and sewerage infrastructure will require significant investment, and the demand for the services will exist from the outset, while collection of funds from traditional means such as DCP levies and drainage scheme levies will mean funds will not be able to be collected and distributed quickly. Service authorities need to turn their attention to this issue now to avoid blockages to efficient development of the area.

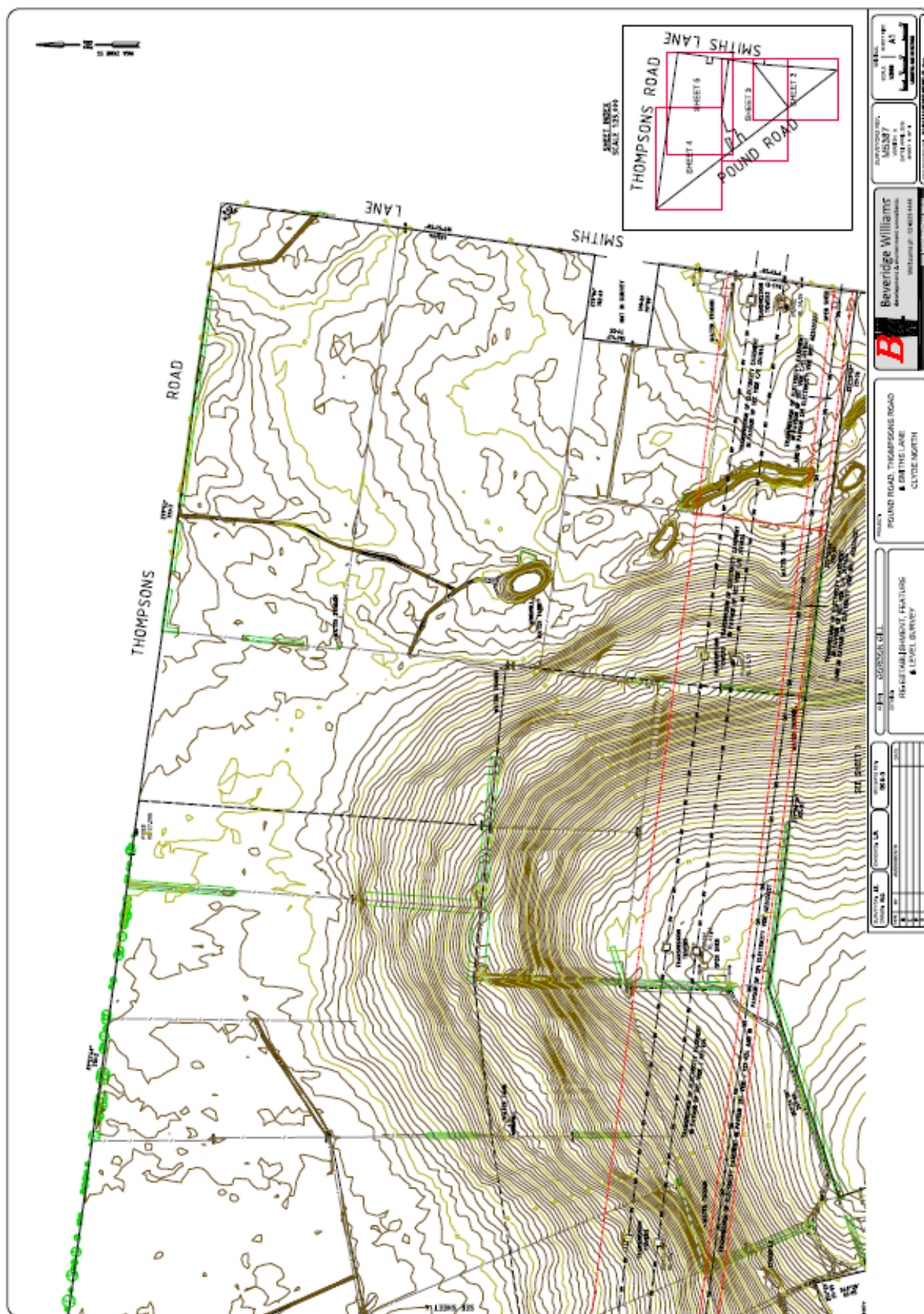
Service Authorities, like Melbourne Water, are open to discussion for alternative methods of financing their infrastructure. The use of off-setting contributions to cost of construction, thereby eliminating or reducing the reimbursements to be paid by Melbourne Water, is one example. These arrangements should be discussed with Melbourne Water at the time applications are made for works.

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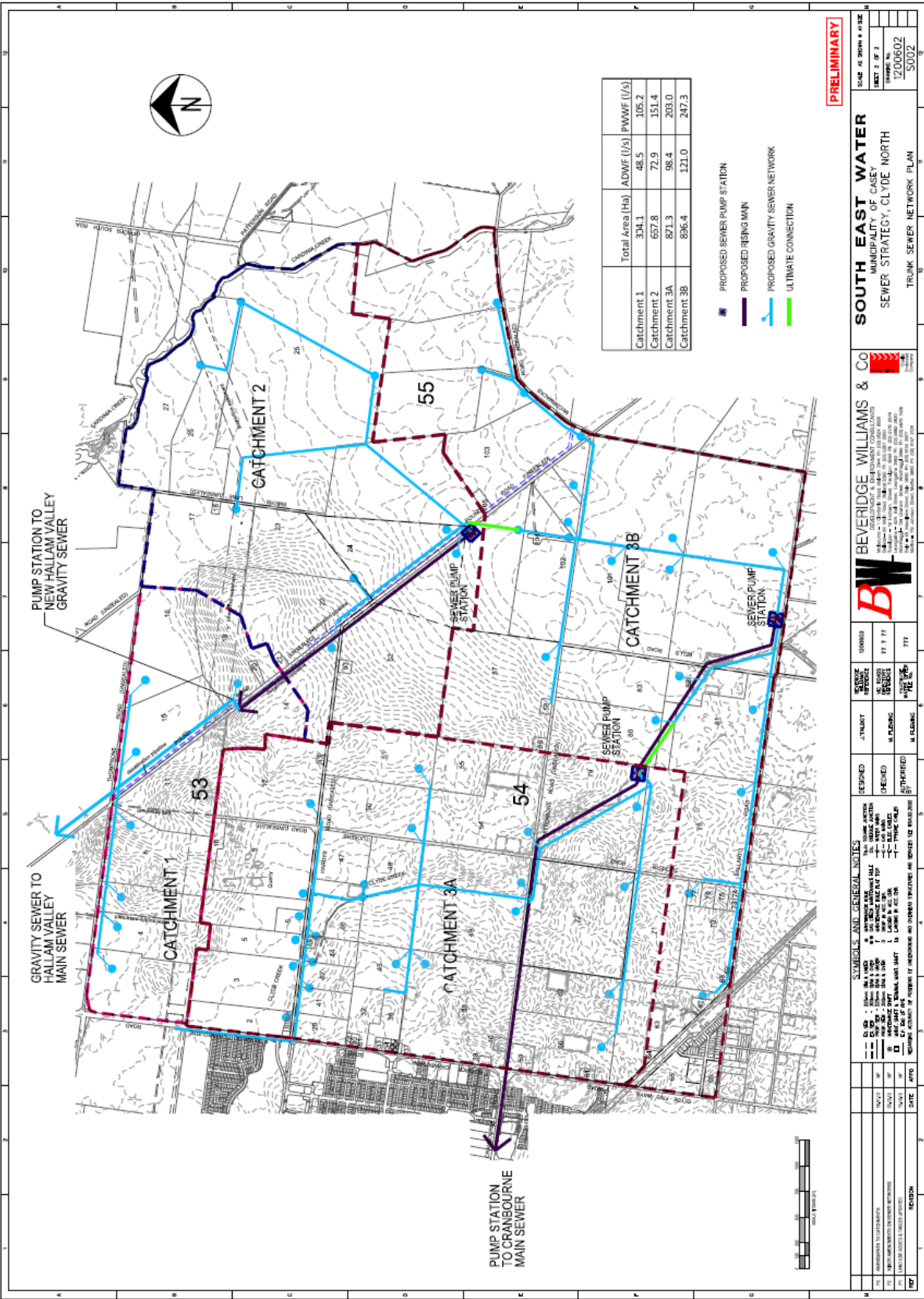
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APPENDIX A. Site Contour Plan

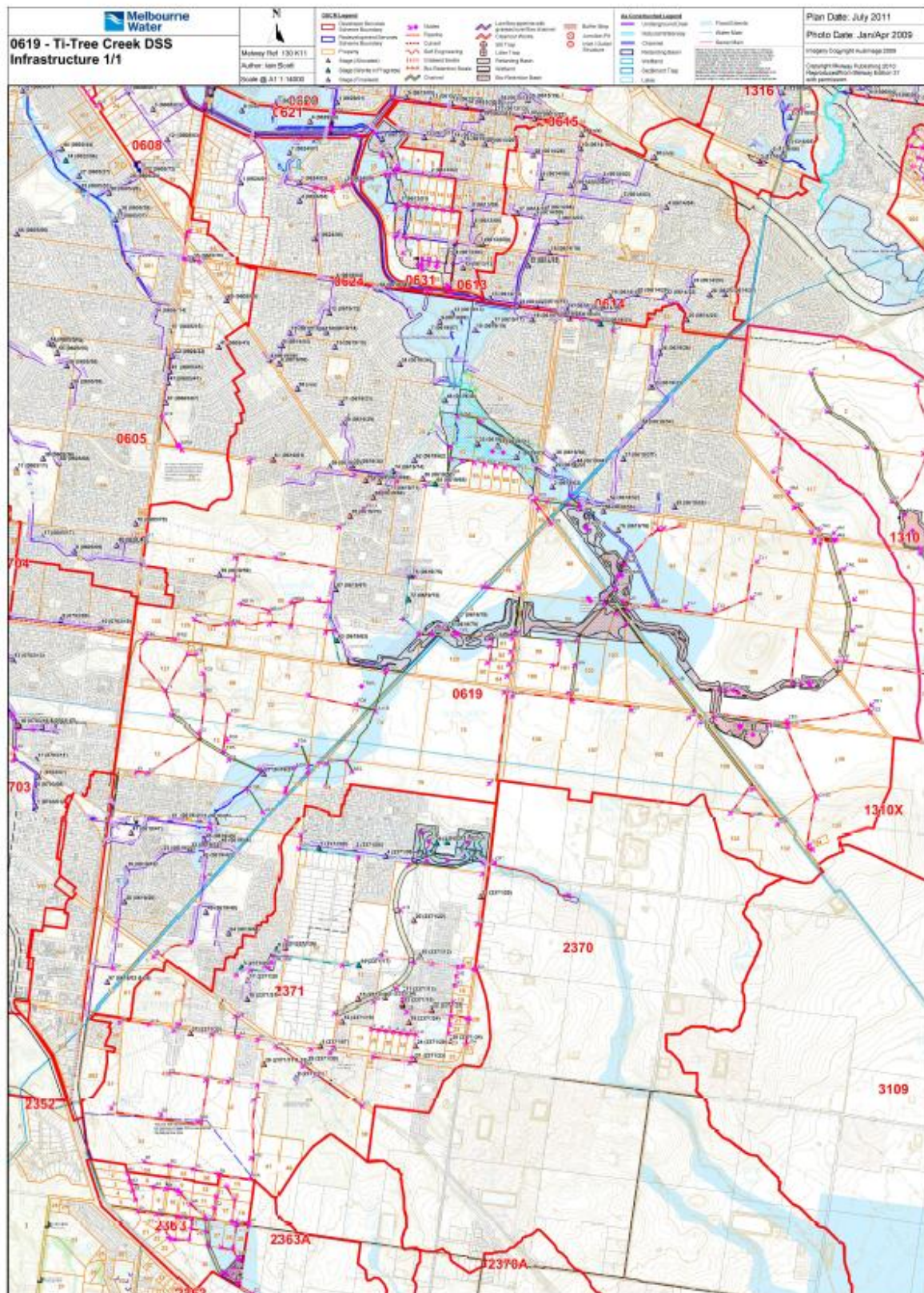




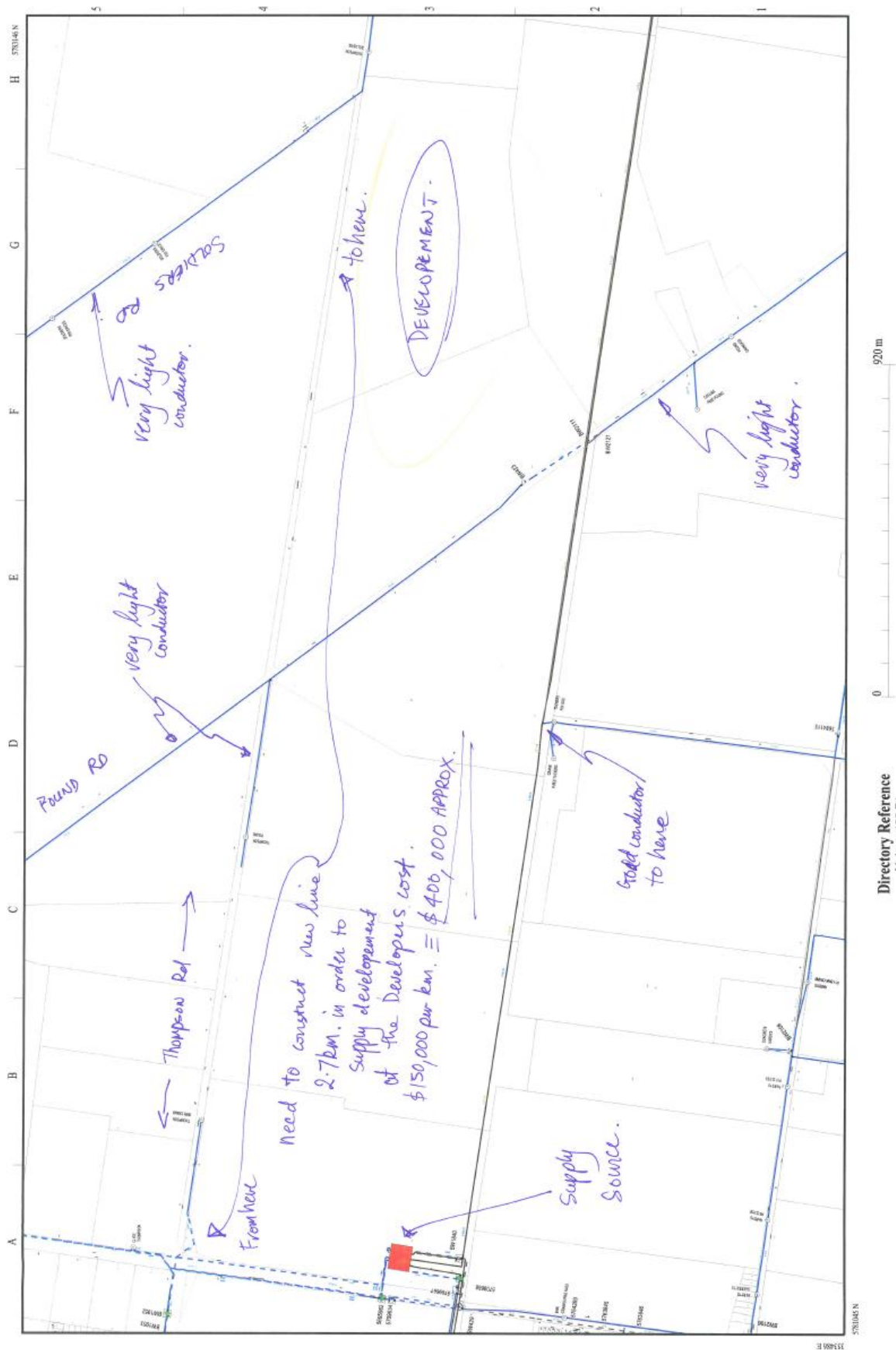
APPENDIX B. Sewer Strategy Plan



APPENDIX C. Melbourne Water Drainage Scheme Plan



APPENDIX D. SP AusNet Plans



Directory Reference
 Melway 135 E1
 Vic Roads 95 H2
 ESNAP 766 F7
 Canum 2,500/24,18



APPENDIX E. APA Group Gas Services Plan

