KELLEY COVEY
GROUP PTY LTD
Consulting Engineers

DEVELOPMENT SERVICING STRATEGY

FOR

PROPOSED COMMERCIAL/INDUSTRIAL DEVELOPMENT

AT

LOTS 2 & 3 IN DP1234850, 55 DAMPIER STREET, TAMINDA NSW

FOR

ELTON CONSULTING PTY LTD

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1. Introduction

This Servicing Strategy Report has been prepared by Kelley Covey Group for Elton Consulting Pty Ltd to accompany a planning proposal and future development application for the rezoning of Lots 2 & 3 in DP1234850, part 55 Dampier Street, Taminda. It is proposed to re-zone the site to a mix of IN1 – General Industrial and B5 – Business Development zones to facilitate development of a commercial/industrial business park at the site. The site is currently zoned RU4 – Primary Production Small Lots as per the *Tamworth Local Environment Plan, 2010 (LEP).*

This Servicing Strategy Report has been prepared in accordance with *Schedule 1 of the Environmental Planning and Assessment Regulation, 2000*, the *Tamworth Regional Development Control Plan, 2010 (TRDCP)* and the *Tamworth Regional Engineering Minimum Standards for Subdivisions and Developments*. Within this report, references to "the site" means Lot 2 & 3 in DP1234850 to which this servicing strategy relates, "the parcel" refers to the Consolidated Chan Abbey Holdings Pty Ltd Lands (described herein) and "Council" refers to Tamworth Regional Council.

2. Description of the Property

1. Site Details

- Property Description: Lot 2 & 3 in DP 1234850
  Locality of Taminda
  Parish of Murroon
  County of Parry
- Property Address: 55 Dampier Street, Taminda NSW.
- Registered Owner: Chan Abbey Holdings
- Applicant: Elton Consulting Pty Ltd
- Local Authority: Tamworth Regional Council
- Total Site Area: 11.34ha
- Zoning: RU4 – Primary Production Small Lots, Minimum Lot Size: 40ha;

2. Property Description

The subject property is located on the north-eastern fringe of the Taminda industrial area, approximately 3km west of the Tamworth city centre. The site consists of two lots; Lot 2 on the western side has road frontage to Wallamore Road, whilst Lot 3 on the eastern side has frontage to Dampier Street. The lots are bisected adjacent to their northern boundary by a 40m road reserve for future road construction. The lots are part of a larger parcel of land, known as the Consolidated Chan Abbey Holdings Lands Pty Ltd (the parcel), that also includes Lot 1 in DP 1234850 and Lot 60 in DP1227482, also known as Somerset Farm. For the purpose of this servicing strategy, only Lots 2 & 3 are to be considered.

Along the southern boundary of the site are existing small lot light-industrial developments, to the east is the Tamworth Lawn Cemetery (with expansion currently under construction), and to the north and west of the site the land is used for agriculture, in particular irrigated feed crops and some stock grazing.

The site is located within the Wallamore Anabrach flood plain of the Peel River system, and is within the Flood Planning Area as defined in the TRLEP. The site is considered reasonably flat, with a slight grade north towards the Peel River. The natural topography ranges from RL372 to RL373.

The site is virtually undeveloped, with a history of mixed use farming including crop production and stock grazing. In the south-east corner of the site, an area of approximately 6,500m^2 is currently being used for the storage of miscellaneous items including shipping containers, small transportable buildings and temporary ablutions blocks.

An existing 6m wide easement for the drainage of sewer traverses the site diagonally from the south eastern corner to the north-western corner. The easement contains a 900mm diameter trunk sewer main that conveys flows from a large catchment including South Tamworth, West Tamworth and Taminda and eventually discharges to the Westdale Wastewater Treatment Plant located approximately 2.7km to the west.

There is also a 5m easement to drain water the traverses the site north to south along the eastern boundary of Lot 2. A 450mm diameter RCP discharges via a headwall to a channel formed within the easement. A 150mm diameter sewer line is also constructed within this easement, and discharges into the 900mm trunk main.

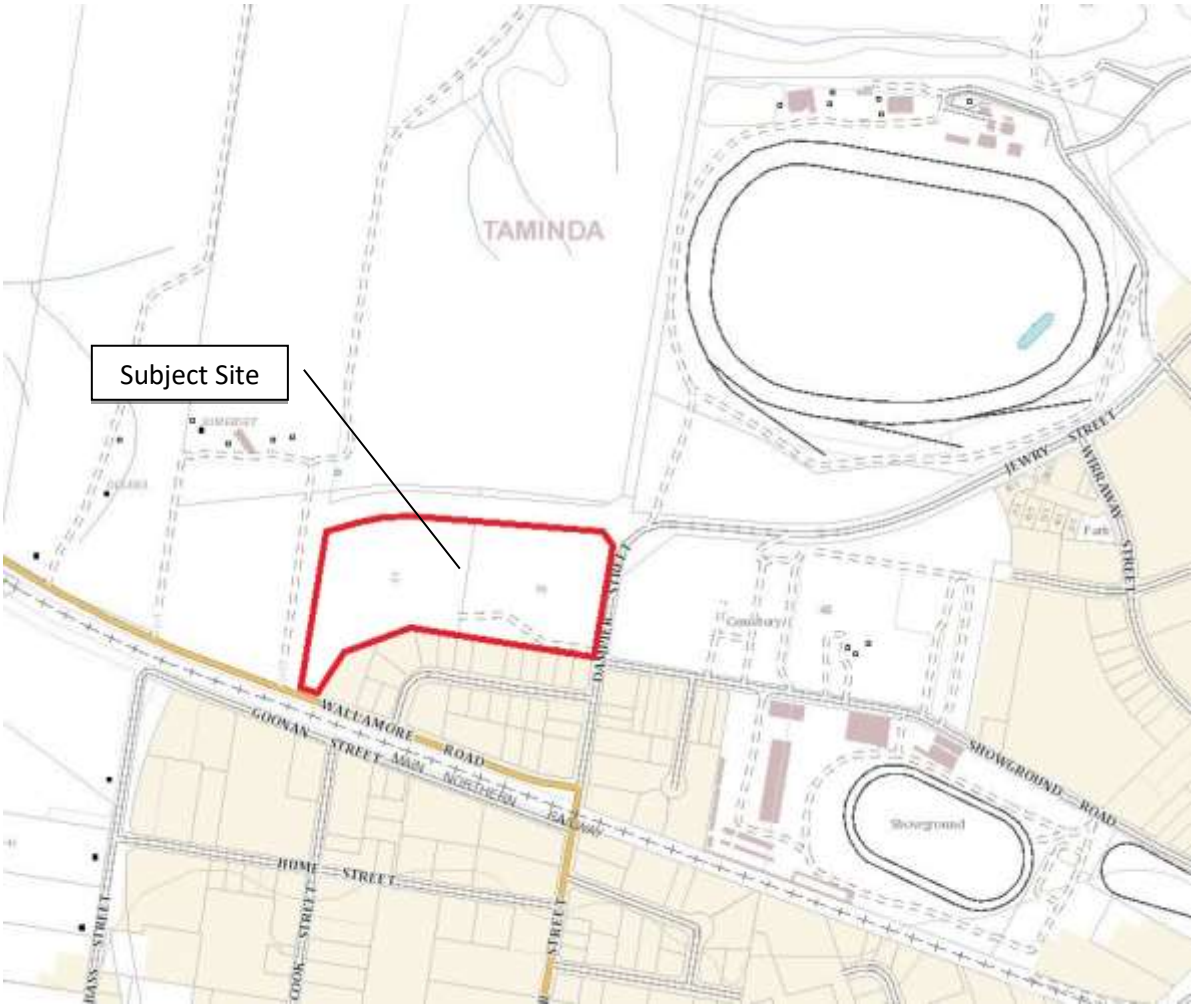

Plate 1. Site Location Plan (*Source: SIX Maps, retrieved 12 August 2019*)

Plate 2. Aerial Photo of Site (*Source: NearMaps, retrieved 12 August 2019*)

3. Existing Services and Utilities

The site benefits from a water service connection from the existing DN100 DICL main located on the northern side of the Wallamore Road reserve. There is sewer infrastructure available to provide connection to the site but it is believed that the site is not currently connected to sewer.

The site drains as sheet flow north to the Peel River, and the 450mm diameter RCP and headwall located in the drainage easement at the southern boundary of the site discharges runoff from the upstream developed area to the south of the site in Kingsford Smith Street. A stormwater pipe also discharges at the south-eastern boundary of the site in Dampier Street to existing open channels located within the road reserve. There is minimal stormwater drainage infrastructure in Wallamore Road, and flows from the road reserve discharge through roughly formed open swales to a natural watercourse and causeway west of the site, which forms part of the Timbumburi Creek floodplain.

There is overhead electrical power in both Wallamore Road and Dampier Street as well as underground telecommunications and natural gas connections. The site is within the NBN-ready area of Tamworth.

4. Proposed Development

It is proposed to re-zone the site from RU4 – Primary Production Small Lots to a mix of IN1 – General Industrial and B5 – Business Development, with the long term objective to develop the site as a mixed use commercial/industrial business park consisting of up to 41 Business Development sites and 14 General Industrial sites, as well as internal roads, car parking and landscaped areas. The potential site layout consists of a proposed central loop road using the existing road reserve that traverses the site intended for future road construction. Additional internal roads will branch off this main loop road, potentially intersecting with Dampier Street.

The industrial sites will occupy the southern half of the site, with the business development sites to occupy the remaining northern half of the site east of the existing sewer easement. An indicative masterplan for the proposed development is included in Appendix A. The final layout for the proposed development is still to be finalised, and the mixture of business types that may occupy the site is presently at a very preliminary stage, however the following areas are considered a reasonable estimation of the proposed land use for the site (as taken from the TRLEP permitted uses for land use tables);

- B5 – Business Development; 1.5ha Gross Floor Area (GFA). Potential business types could include, but not to be limited to, the following;

  Centre-based child care facilities; Garden centres; Hardware and building supplies; Landscaping material supplies; Light industries; Liquid fuel depots; Oyster aquaculture; Passenger transport facilities; Respite day care centres; Self-storage units; Shop top housing; Specialised retail premises; Tank-based aquaculture; Warehouse or distribution centres;

- IN1 – General Industrial; 3.5ha Gross Floor Area (GFA). Potential business types could include, but not to be limited to, the following;

  *Depots; Freight transport facilities; Garden centres; General industries (**general industry** means a building or place (other than a heavy industry or light industry) that is used to carry out an industrial activity); Hardware and building supplies; Industrial training facilities; Landscaping material supplies; Light industries; Liquid fuel depots; Neighbourhood shops; Oyster aquaculture; Places of public worship; Plant nurseries; Rural supplies; Shop top housing; Take away food and drink premises; Tank-based aquaculture; Timber yards; Vehicle sales or hire premises; Warehouse or distribution centres;*

The legal framework defining the development and individual sites (ie. Torrens Title lots, Strata Title or Community Title) is yet to be determined and will be decided following consultation between the owners, potential purchasers and Council as part of future development applications for the site. For the purposes of this strategy, the legal framework of the development is not considered critical.

5. Site Servicing

Strategies for stormwater drainage, electrical and telecommunications utilities, road and pedestrian access and traffic management have been prepared separately and are not included in this report, and only sewer and water utilities have been considered here. Each of the utilities will comply with the design requirements of Council's *Engineering Guidelines for Subdivisions and Developments* (the Guidelines) and *the Tamworth Regional Development Control Plan, 2010 (DCP).* The specific requirements for each service are detailed below:

Sewerage Supply

Options Considered

The site is located within the footprint of the Tamworth Regional gravity sewer network, and indeed several existing sewer mains either traverse the property or are located in adjacent properties and road reserves. A 900mm diameter trunk main traverses the site, and a 150mm diameter main also runs through the site to discharge to the 900mm trunk main, as per Plate 3 below. However, the following advice has been received from Tamworth Regional Council regarding the capacity of the existing 900mm trunk main;

> *"Council officers indicate that the sewer line that traverses this site is at capacity, particularly during wet weather. The supporting information needs to demonstrate that a system acceptable to Council can be put in place for sewerage."*

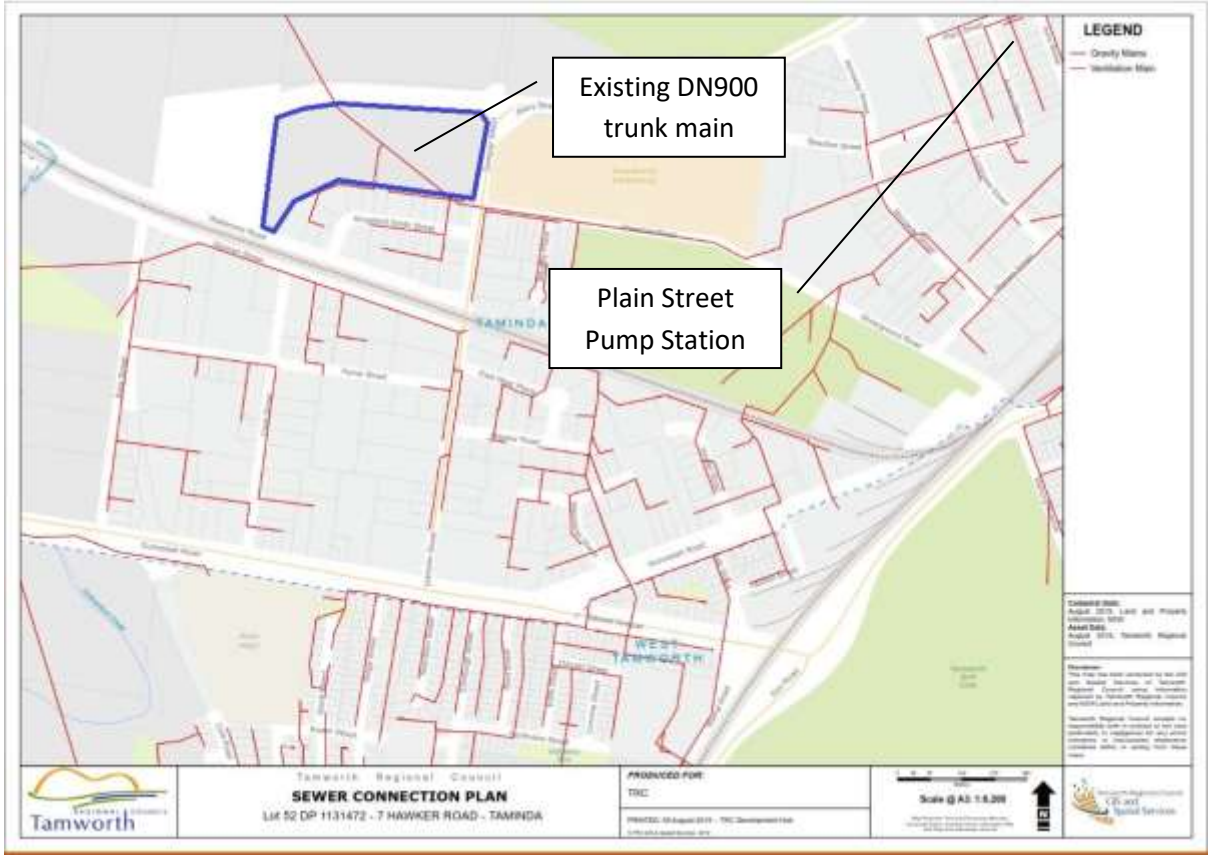

Plate 3. GIS Sewer Information (*Source: Tamworth Regional Council, retrieved 12 August 2019*)

Following a meeting with Council officers to discuss the potential capacity of the 900mm trunk main further, and following further investigation of GIS data and other available information regarding the existing sewer system, the following has been determined;

- The trunk main commences at the Plain Street Sewer Pump Station, approximately 2km away (by pipeline alignment) and located at 62-64 Plain Street. The pump station collects gravity sewer discharge from a large catchment including West Tamworth, South Tamworth and Taminda, at an invert level of approximately RL367.400, and lifts this discharge to a level of approximately RL372.150 (a lift of approximately 4.75m) to discharge to the 900mm trunk main, which flows by gravity to the Westdale Wastewater Treatment Plant (WWTP) at minimal grade.
- The trunk main has been demonstrated to be at full capacity, particularly during wet weather, and there have been occasions of surcharge from manholes during wet weather events. Analysis of the invert levels of the pipe along the length from the site to the WWTP indicate a grade of less than 0.1%, which is considered significantly constrained.
- The main may have capacity during dry weather and at times of low flows (outside peak daily demand times).
- Council will not permit discharge of sewer by gravity directly to the trunk main on the grounds of there not being consistent and reliable capacity in the main at all times.
- There are no other potential discharge points for sewer by gravity in the vicinity of the site. Indeed, the site is located at essentially the last connection point to the trunk sewer main and the overall sewer network in general.

Council advised there are preliminary plans to upgrade the Plain Street Pump Station capacity by constructing a rising main and associated pump infrastructure to discharge via direct connection to the WWTP. The intention is that the existing 900mm trunk main will be utilised to discharge at full capacity, and any additional required capacity would be met by the rising main, thereby providing additional overall capacity for the Plain Street pump station catchment. This arrangement will not

provide additional capacity at the site however, which is downstream of the pump station and relies on capacity being available in the trunk main.

Following the meeting with Council, and after analysis of available information regarding the existing sewer network, several options for resolution of sewer servicing have been identified;

1. *Gravity discharge to an alternative location within the vicinity of the site* – this is not considered a viable option as the site is within the larger catchment for the Plain Street Pump Station and related trunk main, and so any connection nearby will eventually discharge to the over-capacity trunk main. Therefore, gravity discharge will not be possible without building additional capacity in the trunk main, particularly during wet weather and peak discharge times;
2. *Gravity discharge to a location within a different catchment within the network* – this is not considered viable as the closest network connection point outside the catchment is several kilometres away and a gravity connection will not be physically possible due to natural topography constraints;
3. *Duplicated gravity connection to discharge directly to WWTP* – the construction of a dedicated sewer main for the development along either the same alignment as the trunk main or on a new alignment within road reserve allocations is plausible. The minimum pipeline length, along the same alignment as the existing trunk main, is approximately 2.5km. The principle challenges for this option include the availability of a connection point to the WWTP, achieving minimum vertical grade for the smaller pipe size and discharge rates, the acquirement of easements over private land or finding appropriate service corridors within road reserves, and the cost of construction. However, if these challenges could be overcome, this option represents the least risk and lowest maintenance burden for both the developer and Council.
4. *Sewer Pump Station (SPS) and Rising Main to discharge directly to WWTP* – a pump station and rising main to connect directly to the WWTP would overcome the challenge of finding a viable vertical alignment for the main (as Option 4 above), however the initial capital cost and on-going operational costs of an SPS will typically be considerably higher compared to a gravity connection.
5. *Sewer Pump Station with discharge to an alternative catchment* – A portion of the upstream Westdale area discharges to the trunk main further downstream and closer to the WWTP. There may be an option to construct an SPS to pump to a connection point within this catchment and then allow gravity flow through the existing network. From the discussions with Council it appears as though the existing trunk main has capacity constraints all the way to the WWTP, so this option may not be considered viable.
6. *Sewer Pump Station with discharge to existing rising main on Consolidated Chan Abbey Holdings Lands* – there is an existing rising main traversing the larger lots to the north within the land parcel, which conveys flows across the Peel River from the Swan Street pump station in North Tamworth to the WWTP. Connection to this rising main is plausible, and would involve an SPS and approximately 1.6km of rising main, however the capacity of this rising main to accept additional flows is not known, and there are multiple technical challenges to be overcome with connecting rising mains.
7. *Sewer Pump Station with storage and timed/delayed discharge to trunk main* – Council have advised that the existing 900mm trunk main may have capacity to accept flows outside peak daily flow times (typically around 7-9am and 6-10pm) and during dry weather. This capacity could be utilised by the construction of an SPS with a rising main connection to the trunk main at the site with appropriate pump well storage capacity to enable the restriction or delaying of pumping to the trunk main to times where there is demonstrated and confirmed capacity.

   This option is considered favourable by Council, and will remove the cost of construction of a considerable length of rising main (as per other rising main options discussed here) although

the initial capital cost and on-going operational costs of an SPS may still be prohibitive. There is also considerable risk involved in the basic assumption that there will always be capacity in the trunk main available to permit discharge of the stored contents of the pump station at some time before the storage capacity is exceeded. The addition of surplus emergency storage or even an offline emergency storage tank would mitigate this risk, albeit by increasing the initial capital and operational costs of the system. The storage of untreated sewerage for an extended length of time also increases the risk of odour and bacteria growth and potential septicity, and will need to be carefully managed.

8. *Co-ordination of proposed Plain Street Pump Station Upgrade to provide additional trunk main capacity* – As discussed earlier, Council outlined a proposal to upgrade the Plain Street Pump Station to add a rising main with direct connection to the WWTP. In fact a connection point for the proposed rising main was built in to the WWTP when it was constructed several years ago. The rising main is intended to provide additional capacity above that of the 900mm trunk main rather than reduce the demand on the trunk main. That is, following the upgrade the trunk main will still "run full" – and the rising main will fulfil the remainder of the demand.

   There is potential for the developer and Council to co-ordinate their efforts (through a joint funding arrangement or similar) and apply a modified design philosophy whereby the pump station and rising main upgrade is increased in scope and scale to achieve a reduction in demand on the 900mm trunk main so that the main will not have to "run full"; thereby providing capacity in the main that may be utilised for the proposed development.

   This option provides synergies for both Council and the developer, as the infrastructure required to meet the needs of both parties with a single pump station/rising main system will be far less in quantity and scale compared to two systems running independently, thereby reducing overall initial capital and operational costs.

   Of course, the viability of this option will require extensive consultation between the developer and Council, and there remains a risk that the timeframes of each party for the delivery of the upgraded system may not align.

9. *Low-pressure sewer system* – There are existing areas. Including residential areas in the Hills Plain area and an industrial development in Taminda, where low-pressure sewer has been used to service the development. Low-pressure sewer involves the construction of small individual pump stations at each lot, with rising mains connecting each pump station to form a network. The network outlet can then discharge to a gravity system or other rising main.

   This type of system could be considered in lieu of a single large pump station as per Options 4-7 above. Council discourage the use of low-pressure sewer systems as they have been proven to have expensive operating and maintenance costs, however they have allowed their use in extenuating circumstances.

Assessment of Daily Flows

The assessment of flows generated by development of the proposal and the associated capacity of the existing sewer network to accept these flows is difficult to quantify due to the highly variable nature of flows generated by industrial developments. *Appendix HW N 'Estimation of Equivalent Tenements (ET), Storm Allowance (SA) and Design Flow' in the Hunter Water Edition (Version 2) of WSA 02* provides a range of values for a range of different industrial and business uses based on either the number of employees or the gross area of development. These values are highly variable and industry specific, and it is impossible at this stage of the planning process to determine an appropriate value to estimate design flows for this development without any knowledge of the likely use of each lot. As the planning process evolves and the likely nature of proposed developments at the site becomes known; more detailed estimates of design sewer flows can be determined.

However, as a guide, the following conservative values have been adopted;

- Industrial – Multi Purpose, Future Use Unknown; 30 ET per gross hectare;
- Commercial – High Density Zone; 10 ET per built-up hectare.

Based on the preliminary proposed development areas for each zone type, the following demand has been determined;

(10 ET x 1.5ha Commercial GFA) + (30 ET x 3.5ha Industrial GFA) = 120 ET

PWWF = 13.16 litres/second

Daily Operating Storage Demand; 120 x 180 litres/ET = 21,600 litres

Recommended Servicing Methodology

From the options explored above, and following discussions with Council and preliminary investigation of the existing sewer networks, we are of the opinion that a technical solution for sewer servicing of the site and the proposed development can be found, however we cannot provide any guarantee such solution exists without further analysis of the existing sewer network and design of the proposed development layout. Such analysis is not within the scope of this report.

Similarly, the financial viability of any proposed solution has not been assessed and cannot be reasonably assessed until further detailed investigation and design to accurately determine the existing conditions, the physical attributes of the proposed development, and the suitability of the proposed options has been thoroughly assessed.

In our opinion, we believe the options with the greatest chance of success with regard to technical and financial feasibility would be (in ascending order of assumed capital cost);

1. Option 3 - Duplicated gravity connection to discharge directly to WWTP;
2. Option 7 - Sewer Pump Station with storage and timed discharge to trunk main, and
3. Option 8 - Co-ordination of proposed Plain Street Pump Station Upgrade to provide additional trunk main capacity.

Duplication of a gravity connection is certainly the simplest technical solution (and most likely the least expensive), however finding an alignment that provides a suitable vertical grade (a 225mm diameter sewer main will require a minimum grade of 0.3% to provide self-cleansing flows for a 120 ET loading), and achieving a direct discharge to the WWTP may be problematic.

A stand-alone pump station with timed discharge to the existing main provides a development specific solution, but will require co-ordination with Council (such as the installation of flow meters on the existing trunk main to determine when capacity is available) and will involve significant capital investment and operational costs. The legal framework of the development (torrens title, strata etc) may also affect the viability of this option, as Council may be reluctant to acquire assets that impose a financial burden on operational budgets, and so the system may need to be owned and operated by the development as a collective agreement.

The potential to address capacity shortfalls and co-ordinate a shared-investment upgrade to the existing Plain Street Pump Station in collaboration with Council is a sensible and potentially cost-effective solution, but will require extensive consultation and negotiation with Council and there is a risk that if timeframes for funding and/or delivery aren't aligned the development may be delayed.

We recommend that the developer explore each of these three options further (as well as the other options outlined if desired), in consultation with Council, to determine the most suitable option for servicing of the proposed development.

Water Supply

The site is serviced by a water connection from the existing 100mm diameter main in Wallamore Road. The development will require reticulation of a minimum 150mm main (as per Clause 4.5.6 of The Guidelines) to provide adequate service and fire-fighting capabilities. As there are no suitable mains within the vicinity of the development, and extension of an existing main is required. Analysis of GIS data of the existing water network indicates that the two closest 150mm mains are located at the following, and as shown in Plate 4 below;

- The intersection of Dampier Street and Gunnedah Road (Oxley Highway), approximately 850m south. Whilst the extension of this main seems relatively straight-forward, the road reserve verges in Dampier St are known to be congested with existing and redundant infrastructure, and a subterranean crossing of an active railway line (the Main Northern Railway) will be required, which can be problematic from a regulatory and administration perspective.
- The intersection of Barnes Street and Showground Road, approximately 1,050m east. Despite being a further distance, this route may be more desirable as the road verges in Showground Road are wider than those of Dampier Street, and re-instatement costs will be lower as Showground Road has unsealed shoulders without kerb and gutter.

The most appropriate route for the extension of the 150mm water main to the site should be determined following detailed survey of the proposed routes and consultation with all regulatory authorities, including Council, John Holland (for the railway crossing) and other asset owners.

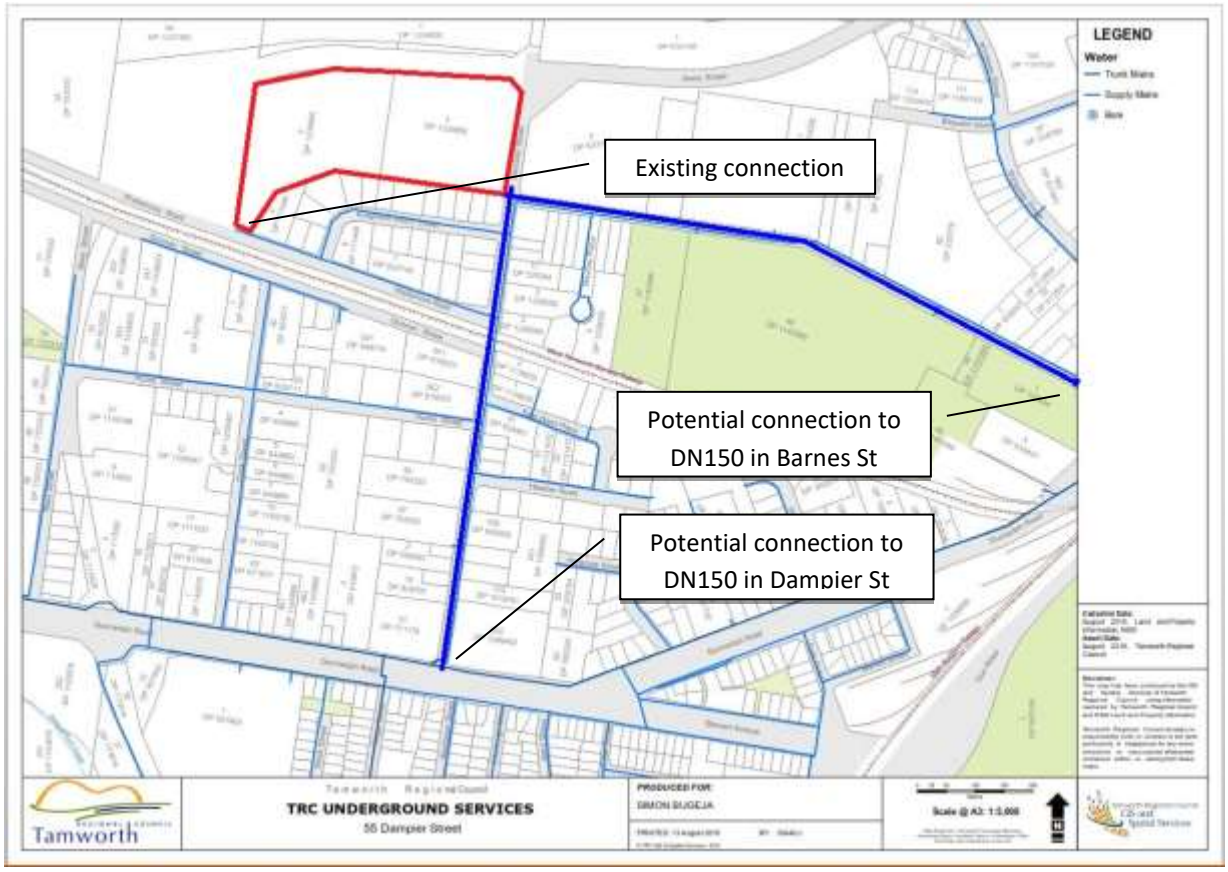

Plate 4. GIS Water Information (*Source: Tamworth Regional Council , retrieved 12 August 2019*)

Following the extension of the 150mm water main to the site, the reticulation of the water supply within the development is considered relatively simple. The main will be required to loop through the site (most likely from Dampier Street) and connect to the existing 100mm main in Wallamore Road to provide continuity of supply and eliminate dead ends, and individual service connections will need to be provided to each development lot.

Council have advised that the suitability of supply from a pressure and flow perspective will not be a constraint. The legal framework of the development will have an impact on the metering arrangement for the site – torrens title lots will each have individual water meters whilst a strata or community title development will have a single meter at the connection to the main with individual sub-meters for the development lots.

6. Summary

The proposed development consists of a re-zoning of two existing lots in Taminda from RU4 – Primary Production Small Lots to a mixture of B5 – Business Development and IN1 – General Industrial, with the intention of developing the site into a mixed business/industrial development consisting of 41 business site and 14 industrial sites.

Servicing of the site involves the provision of bitumen sealed roads, reticulated water supply, sewer supply, stormwater drainage and underground electrical and telecommunications supply.

A preliminary feasibility analysis to determine the potential for sewer and water serviceability of the site, in the context of the proposed lot layout, has been undertaken to ensure the development can be adequately serviced by each. The preliminary analysis has been undertaken in accordance with the Tamworth Regional Council Engineering Guidelines for Subdivisions and Developments, other applicable standards and design specifications and in consultation with Council officers. The detailed design of each of the services will be completed as part of future development applications.

In our opinion, the preliminary investigation of each of the abovementioned services and utilities indicates that the satisfactory provision of suitable sewer and water infrastructure to the site and proposed development can be achieved, however the technical and financial feasibility of any proposed servicing design, particularly with respect to sewer, will need to be carefully considered as part of further detailed investigations. Additionally, detailed analysis of the existing supply networks for water and sewer, as well as adoption of best-practice demand figures for both water and sewer utilities will be required to determine the requirements for adequate servicing.

Appendix A – Indicative Masterplan (supplied by Elton Consulting)