Report Name: Servicing Report

Project Title: Lot M1456 (No. 3488) & Lot 50 Great Northern Highway, Muchea

Reference No: PC20171.REP.001

Revision	Description	Author	Checked	Approved	Date
A	DRAFT	HW	OO	OO	15/11/2020
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1. EXECUTIVE SUMMARY

Peritas undertook servicing due diligence for Lot 50 & Lot M1456 (No. 3488) Great Northern Highway, Muchea (Development Sites), which is located within Precinct 2 of the Muchea Industrial Precinct (MIP). The subject land can sustain the increased density of Industrial Lots. The following are the summary of the due diligence study.

- Site Characteristics
    - Topography – Elevations from Landgate noted that Development Sites has minimal grade north to south. The land primarily grade east (high) to west (low) from approximately 60m Australian Height Datum (AHD) to 55m AHD at a grade of approximately 3%.
    - Geotechnical – Brown Geotechnics undertook site investigation works in November 2020 indicating the site to be mainly non-cohesive ground underlain with clayey soils. The site classification in accordance with AS2870 to range from Class S to Class A sites.
    - Groundwater – Various data sources area available for groundwater level. Bayley Environmental Services completed an analysis of the Annual Average Maximum Groundwater Level (AAMGL) and noted this to range from 0m to 6m depth below the surface.
    - Water Resources – Groundwater allocation are still available (can be licensed) from the Superficial Swan Aquifer and Yarragadee North Aquifer.
    - Environmental – there appear to be constraints associated with significant flora and fauna to be considered (the same conclusion was noted on Precinct 3).
        - Black Cockatoo Roosting and Breeding Site — No
        - Carnabys Cockatoo Confirmed Breeding Areas — Yes
        - Carnabys Cockatoo Feeding Habitat — Small area to north-east
        - Geomorphic Wetland — Multiple Use
        - Bush Forever — No
        - Acid Sulfate Soils — No Data
        - Clearing Regulations — Small are
        - Public Drinking Water Source Areas — No
        - Surface Water Management Areas — Yes

      Bayley Environmental Services completed a site surveys. Refer to “Tallangatta Farm, Lots 50 and 1456 Great Northern Highway, Muchea, Environmental Assessment and Strategy.
    - Existing Services – Power and communication only.
    - Other notable constraints –
        - Power and communication services appear to encroach into the property.
        - Non-perennial waterway needed to be restored to conservation level unless they are proven to have no environmental or ecological function.
- Serviceability
    - Road Network
        - Based on traffic count information, approximately 7,500-7,700 vehicles travel to the site (from north and south), comprising of 28-30% trucks.

- Access to site is greatly improved with the completion of the Main Roads Northlink Project.
- RAV 10 network is currently proposed to circulate internally within the precinct (as part of Shire of Chittering Local Planning Policy No33).
- However, the RAV 10 network loop outside of land holdings owned by Tallangatta Beef and therefore temporary circulation arrangement are considered in the Local Structure Plan proposed within Tallangatta Beef land holding.

- Earthworks
  - The Developer will be required to undertake earthworks for road Construction.
  - Future lot owners may choose to fill the site to suit their own development.
- Surface Water Management
  - Small Rainfall Event– bio-retention recommended for impervious area created (excluding roof). Bio-retention to manage 15mm of rainfall.
  - Minor Rainfall Event – Institute of Public Works Engineering Australasia recommended industrial sites to be designed with pit and pipe infrastructures to manage up to 10% AEP. However, Muchea Precinct 3 manage only up to 20% AEP and the therefore the same philosophy is recommended for Precinct 2. Minor rainfall to be managed by overland flow and detention basin with minor infiltration (where possible) and outlet.
  - Major Rainfall Event – 1% AEP event to be managed via overland flow and detention basin. A 0.3m freeboard from building to flood water level is recommended for asset protection.
- Groundwater
  - Stormwater infiltration systems with groundwater separation less than 3m-5m shall be appropriately modelled to consider reduced permeability.
  - Subsoil pipes, if proposed, shall be positioned above the AAMGL.
- Water
  - Fit for purpose water usage is critical as there are limited potable water sources.
  - Non-potable – supply can be sourced either via rainwater tank or bores.
  - Potable – The Development Sites are outside of Water Corporation's catchment. Limited supply should be available from Muchea Water (Aqua Ferra), the balance water supply requires individual tenancy to manage.

    This can by means of treating water using Reverse Osmosis, ultraviolet disinfection, or chlorine treatment.
- Wastewater
  - The Development Sites are outside of Water Corporation's catchment. Recommended approach is by means of an Aerobic Treatment Unit.
  - A centralised wastewater management approach is not recommended.
- Power
  - Western Power forecast shows adequate capacity.

- Communication
    - Telstra service is available and NBN service is due to be available July – September2021.
- Gas
    - No service available.

The following additional studies are recommended (related to Civil):

- Feature Survey
- Environmental study for waterways to determine if they can be removed. Not required if drain is retained and rehabilitated.

2. BACKGROUND

Peritas Consulting Pty. Ltd. (Peritas) was engaged by Tallangatta Beef Pty. Ltd. (Developer) to review the Engineering constraints and servicing requirements associated with the development of Lot 50 & Lot M1456 (No. 3488) Great Northern Highway, Muchea (Development Sites).

The Development Sites are in Muchea, approximately 45km north-east of Perth, within the Shire of Chittering (SoC). Refer to Annexure A sketch PC20171.SKT.001 for site locality plan.

Lot 50 Great Northern Highway occupy a land area of 21.588ha while the larger Lot M1456 (No. 3488) occupy a 190.5646ha. The Developer proposes for the site to be subdivided into 55 industrial properties, ranging in size from 0.9-12ha. Refer to Annexure B for proposed development layout.

2.1 Planning Context

The Development Sites are zoned as “Agricultural Resources” under the SoC Local Planning Scheme No.6 (LPS 6).

In June 2016, the SoC endorsed a “Muchea Employment Node Special Control Area”. The special control area is also known as the Muchea Industrial Precinct (MIP), comprising of approximately 1,150ha of land area, divided into 4 precincts (Refer to Annexure A sketch PC20171.SKT.003 for planning context plans). The Development Site represents approximately 75% of Precinct 2 of the MIP. Refer to Annexure A sketch PC20171.SKT.003 for planning context diagrams.

The creation of the MIP complements the Main Roads Western Australia (MRWA) Northlink project, linking Morley to Muchea. The Northlink project commenced mid-2016 completed April 2020 with the intent to shift 80% of traffic from Great Northern Highway to the newly constructed road, which is noted to be the safer road.

2.2 Relevant Documents & Previous Studies

Further to the formalisation of the MIP, as part of LPS6, the Shire of Chittering also adopted the “Shire of Chittering Local Planning Policy No.33” (LPP 33). The LPP33 was developed and adopted in Aug 2019 to provide design guidelines for the MIP area.

A scheme amendment was prepared by Urbis in Oct 2019. The “Muchea Industrial Park Scheme Amendment Precinct 3” (Precinct 3 Report) was prepared for Tomahawk Property for Precinct 3 of the MIP. Within the documentation are studies in support of the scheme amendment which is also relevant to Precinct 2. Refer to Annexure A sketch PC20171.SKT.003 showing location of Precinct 3 relative to Precinct 2 (Development Sites).

3. PRE-DEVELOPMENT ENVIRONMENT

This section outlined the pre-development condition of Lot 50 & Lot M1456 (No. 3488) Great Northern Highway, Muchea (Development Sites). The information is compiled in consideration of the studies requirements noted in Local Planning Scheme No.6 (LPS 6) and Shire of Chittering Local Planning Policy No.33 (LPP33).

It should be noted that the information presented in this section is intended for a high-level overview of the site. The findings also briefly mentioned data relating to disciplines such as environmental, hydrology, geotechnical, etc. The developer has commissioned other studies concurrent with this servicing report. When completed, these reports sha take precedence over the findings noted in this document.

3.1 Topography

Annexure A sketch PC20171.SKT.004 shows an overlay of contour and aerial imagery for the Development Site. The contours are sourced from Landgate with 1m interval. Geoscience Australia National Elevation Data Audit 2011 noted elevation in this region to have an accuracy level ranging from 0.1m to 0.15m

The Development Site falls from 90m Australian Height Datum (m AHD) to the east to approximately 55m AHD to the west, over approximately 1.3km distance. There is a consistent grade from east to west of approximately 3% (1:33), elevation increasing to the east, parallel with the Great Norther Highway (GNH).

A 3% grade is within the ideal range for road and gravity services design, assuming the infrastructure is perpendicular to the fall. However, roadways or services running parallel with the GNH will have difficulties in obtaining fall (same level north-south direction).

Feature survey of the site are recommended to confirm site topography.

3.2 Geology & Geotechnical

Annexure A sketch PC20171.SKT.005 shows Geoscience Australia 1:50,000 geology map. The Development Site consisted of 4 types of geology as follow:

- Mgs1 Pebbly Silt
- ST1 Siltstone
- S5 Sand
- Msg Sandy Silt

Most of the site appear to comprise of gravelly silty geology. This indicates potentially plastic material with low to medium permeability.

3.2.1 Precinct 3 Geotechnical Summary

Structerre Consulting undertook geotechnical investigation in 2018 for Precinct 3 of the Muchea Industrial Precinct (MIP). The investigation was carried out between the 26th and 27th of November 2018, comprising of 37 boreholes, 7 permeability tests and 37 Dynamic Cone Penetrometer.

The Structerre geotechnical report noted Precinct 3 geology consisting of pebbly silt (Mgs1). This is the same geology to 50% of Precinct 2 Development Site (west side). The bore logs by Structterre (upon site investigation), identified typical Guildford formation - sand cover overt plastic clay & silt. The sand cover is typically shallow but does extend to 1.0m in some bore logs. Plasticity index tested from 0.1-1.3m depth is in the range of 19% to 32% and permeability rates ranging from 0.3m/day to 1.2m/day.

3.2.2 Precinct 2 Geotechnical Summary

Brown Geotechnical undertake site investigation in November 2020 for Precinct 2 of the MIP. The report "Preliminary Geotechnical Investigation for Local Structure Plan – Lots 50 and M1456 Great Northern Highway Muchea, Western Australia" noted 40 boreholes, 3 permeability tests and 14 Perth Sand Penetrometer.

The Brown Geotechnical report noted Precinct 2 consisted mainly of sand and gravel underlain with clayey subgrade to majority of site except for the north west where sand pockets appear to exceed 2m depth. Site classification, in accordance with AS2870 mainly divided into Class A and Class S.

Plasticity index tested from 0.5m-2.0m depth range from 6% to 21% and permeability rates range from negligible to 43m/day.

The findings within the geotechnical report differ from the geology map.

3.3 Groundwater

There are several data sources available to estimate the groundwater level across the sites. All data indicated shallow groundwater table (close to surface) west of the Development Sites.

The data sources noted high variance in groundwater level as tabulated on Table 3-1. Typically the adopted groundwater level is dictated within a Local Water Management Strategy (LWMS).

Table 3-1 Groundwater Summary

Source	Precinct 2 west	Precinct 2 east
Groundwater Atlas	Surface[A]	25m bgl
Long Term Bores	1.3m bgl[B]	-18.9m bgl[C]
Precinct 3 report	0.6m bgl	1.8m bgl
Precinct 2 AAMGL	0.0m bgl	6.0m bgl

A Inferred information (refer to Section 3.3.1)
B bgl below ground level
C -ve Data indicated artesian bore.

Refer to Annexure A sketch PC20171.SKT.006 for groundwater level information.

3.3.1 Department of Water and Environmental Regulation – Groundwater Atlas

There is no maximum historical Groundwater Level (GWL) data recorded on Department of Water and Environmental Regulations (DWER) groundwater atlas. However, minimum groundwater level of 50m AHD (west) to 55m AHD (east) was recorded.

The closest maximum historical groundwater information is approximately 5km to the west, noting minimum and maximum groundwater variation of approximately 10m. It can be inferred that the maximum groundwater level over the Development Site is approximately 60m ADH (west) – 65m AHD (east).

Landgate contours suggest that elevations west of the Development Site is approximately 55m Australian Height Datum (AHD) and 90m AHD to the east (Annexure A sketch PC20171.SKT.004). Therefore, indicating that groundwater is at surface level to the west, dropping to around 25m depth to the east of Precinct 2.

3.3.2 Department of Water and Environmental Regulation – Long Term Monitoring Bores

There are several DWER long term monitoring bores around the site with recorded data ranging from 8years to 43 years, data from 1978 to 2020.

Bore 61611180 indicated that the groundwater level near the intersection of GNH and Muchea East Road to be approximately 53.7m AHD. Bore 61611188 indicated artesian system to the east of the site.

The long-term monitoring bores and Landgate contours (Annexure A sketch PC20171.SKT.004) suggest groundwater levels ranging from 1.3m below ground to the west and going up to 18.9m above the ground (artesian bore).

3.3.3 Bayley Environmental Services – Precinct 3

Bayley Environmental Services measured groundwater levels across 9 monitoring bores as part of Precinct 3 Local Water Management Strategy (LWMS). The calculated Average Annual Maximum Groundwater (AAMGL) data are shown below on Figure 3-1, which extend into Precinct 2.

It should be noted that the Precinct 3 LWMS indicated perched groundwater systems. The AAMGL would refer to the actual groundwater level. Perched groundwater would still be an issue during wetter winter periods.

The AAMGL calculated by Bayley Environmental Services noted groundwater levels to range from 0.6m(west) to 1.8m (east) below ground.

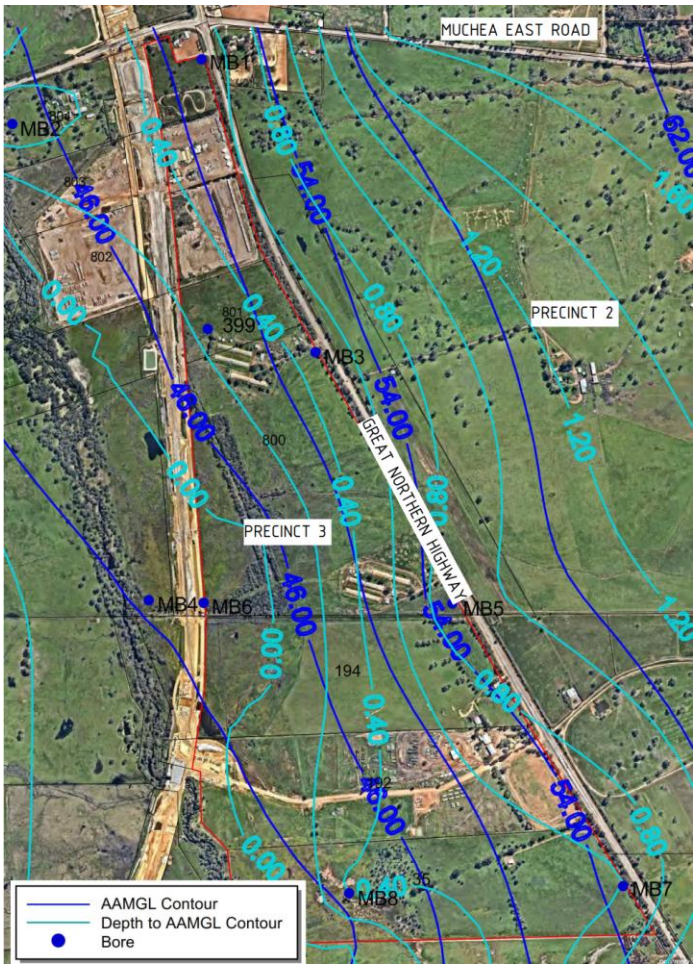

Figure 3-1 Extract from Bayley Environmental Services Muchea Employment Node Precinct 3 Local Water Management Strategy.

3.3.4 Bayley Environmental Services – Precinct 2

As noted in Section 3, this servicing report was undertaken concurrent with other studies. At the time of initial reporting, the AAMGL specific to Precinct 2 was not available.

Bayley Environmental Services has since installed 9 groundwater monitoring bores within Precinct 2 sites and re-calibrated the AAMGL noted in Section 3.3.3. The revised AAMGL is included in Annexure C.

The AAMGL is noted to be 0m below the surface, west of GNH and up to 6m deep to the east of the site.

3.4 Water Resources

Annexure A sketch PC20171.SKT.007 shows information from DWER database, showing availability of two groundwater resources for extraction as follow:

- Gingin, Eclipse Hill, Perth - Superficial Swan Aquifer and
- Gingin, Chandala Confined, Perth - Yarragadee North.

A third, Cowalla confined, Perth – Leederville – Parmelia aquifer was noted to be fully allocated.

Currently, 13 licenses are issued for the Perth-Superficial Swan aquifer as summarised on Table 3-2.

Table 3-2 Current Perth - Superficial Swan aquifer allocation

WRI No.	Issue Date	Expiry Date	License Allocation	License Holder
63704	20/02/2015	19/02/2025	113265 KL	Larussa Assets Pty. Limited
110168	09/07/2015	08/07/2025	20950 KL	Mackey, Craig Vincent, Mackey, Collette
110833	28/01/2014	27/01/2024	64025 KL	Harley, Gary Thomas
153393	16/05/2014	15/05/2024	84800 KL	Grant, Karen, Grant, Paul
158431	21/04/2020	20/04/2025	54000 KL	Curran, John Lawrence
164435	11/09/2014	11/09/2024	15000 KL	Wright, Wayne Colin
167085	03/03/2015	15/08/2021	245940 KL	Gratte, Bethwyn Irene Brooke
167566	11/08/2017	10/08/2027	90450 KL	Cocking, Brian James
168103	04/12/2019	03/12/2029	82200 KL	Ross Maitland Love
180394	03/03/2015	02/03/2025	50000 KL	Hall, Tricia Verdell, Peter John Hall
181940	02/02/2016	01/02/2026	24280 KL	Temma Nominees Pty Ltd
202022	12/10/2018	11/10/2020	52000 KL	Sirona Capital Management Pty Ltd
203543	01/11/2019	31/10/2020	20000 KL	Perkins (WA) Pty Ltd
Total			**916,910 KL**	

The Gingin, Chandala Confined, Perth - Yarragadee North aquifer has 2 groundwater extraction licenses issued, as summarised on Table 3-3.

Table 3-3 Current Perth - Yarragadee North aquifer allocation

WRI No.	Issue Date	Expiry Date	License Allocation	License Holder
104858	21/12/2015	20/12/2025	6,000 KL	Iluka Resources Limited
200411	08/06/2020	23/10/2027	850,000 KL	Stavros Trandos, Arthur Trandos; Dimitrios Trandos
Total			**856,000 KL**	

According to Department of Water's Gingin groundwater allocation plan, the following licensable allocation limit applies:

- Gingin, Eclipse Hill, Perth - Superficial Swan aquifer 980,000 KL/yr
- Gingin, Chandala Confined, Perth - Yarragadee North 1,050,000 KL/yr

The Department of Water noted salinity levels in the vicinity of 250-500mg/l. Salinity levels less than 500mg/l are considered fresh, suitable for drinking and all irrigation.

Availability of groundwater for water resource will be critical for this development, refer to Section 4.3.2. Further studies on water balance will be necessary.

3.5 Environmental Consideration

With reference to Annexure D, Table 3-4 summarised environmental constraints.

Table 3-4 Current Perth - Yarragadee North aquifer allocation

Sketch No.	Environmental Constraint	Applicable to Site
PC20171.SKT.008	Black Cockatoo Roosting and Breeding Site	No
PC20171.SKT.009	Carnabys Cockatoo Confirmed Breeding Areas	Yes
PC20171.SKT.010	Carnabys Cockatoo Feeding Habitat	Small area to north-east
PC20171.SKT.011	Geomorphic Wetland	Multiple Use
PC20171.SKT.012	Bush Forever	No
PC20171.SKT.013	Acid Sulfate Soils	No Data
PC20171.SKT.014	Clearing Regulations	Small area
PC20171.SKT.015	Public Drinking Water Source Areas	No
PC20171.SKT.016	Surface Water Management Areas	Yes

The Carnabys Cockatoo breeding area is perhaps the most significant environmental element to be considered. It should be noted that the Urbis "Muchea Industrial Park Scheme Amendment" also highlighted 3 threatened Fauna and one Priority Fauna species, which included the Carnaby'sc Cockatoo and the Red-tailed Black Cockatoo.

Bayley Environmental Services completed a site surveys. Refer to "Tallangatta Farm, Lots 50 and 1456 Great Northern Highway, Muchea, Environmental Assessment and Strategy.

3.6 Existing Services

Peritas undertook Dial Before You Dig (DBYD) investigation for the site. The following services are available within close vicinity to the Precinct.

- Power
- Communication

No other services are available. Refer to Annexure E for DBYD summary.

It should be noted that the DBYD indicated Telstra and Power services encroaching within the site boundary. It is recommended for underground service locating to be undertaken to confirm services position.

3.7 Other Notable Features

Figure 3-2 shows power infrastructure located south of Lot 50. There is a land parcel set aside specifically for this infrastructure and according to DBYD, there appear to be below High Voltage (HV) ground cable linking the infrastructure to Western Power overhead transmission line. This is outside of the Development Site however cables leading and out of the infrastructure should be located.

Figure 3-3 shows a compound that is located immediately opposite of Gulliente Road and Muchea East Road intersection. Warning signs are noted on the fences, its function cannot be determined based on desktop assessment.

Figure 3-4 shows non-perennial waterways flowing from east to west of the site and eventually under the GNH. Preliminary consultation with the DWER (Refer to Annexure F) indicated that the drain will need to be retained and rehabilitated. The DWER also require for a reserve to be created over the drain for conservation purposes.

Hydrological study is recommended to determine the environmental value of the drainage network and determine if retention and rehabilitation is necessary.

Figure 3-2 Existing power infrastructure.

Figure 3-3 Unknown Compound

Figure 3-4 Non-perennial waterway

4. INFRASTRUCTURE AND SERVICING

The following sections outlined recommended servicing approach for Lot 50 & Lot M1456 (No. 3488) Great Northern Highway, Muchea (Development Sites), which forms part of Muchea Industrial Precinct (MIP) Precinct 2.

4.1 Road Network

Precinct 2 can be reached either via the Great Northern Highway (GNH) or the New Northlink (Tonkin Highway) extension.

It is envisaged that the new Northlink will divert 80% of traffic volume from the Great Northern Highway. Traffic count data are included in Annexure G sketch PC20171.SKT.017, showing mostly data from 2015-2016. New data from 2020-2021 are available only for the Tonkin Highway extension.

In general, approximately 7,500-7,700 vehicles per day would be heading in the direction of Precinct 2 from either Tonkin Highway or Great Northern highway, comprising of 28-30% trucks.

Porter Consulting Engineers prepared a "Road and Drainage Guidance Note Muchea Industrial Park", which is incorporated as part of the Shire of Chittering Local Planning Policy No. 33. Figure 4-1 shows an extract from the Porter Consulting report, noting the below proposed circulating road within Precinct 2.

The Eastern Loop Road (solid red line) is a proposed Register of Approved Vehicles (RAV) 10 road, which is designed for vehicles up to 53.5m long with a total mass of 147.5kg. A secondary RAV 10 road may be requested for Precinct 2, this is shown as the Precinct 2 Access Road (dashed red).

However, it should be noted that the RAV 10 road network loops from the southern extent of Precinct 2 to Precinct 1, outside of Tallangatta Beef Pty Ltd (Developer) land holding. Therefore, temporary roadway may need to be considered within Precinct 2.

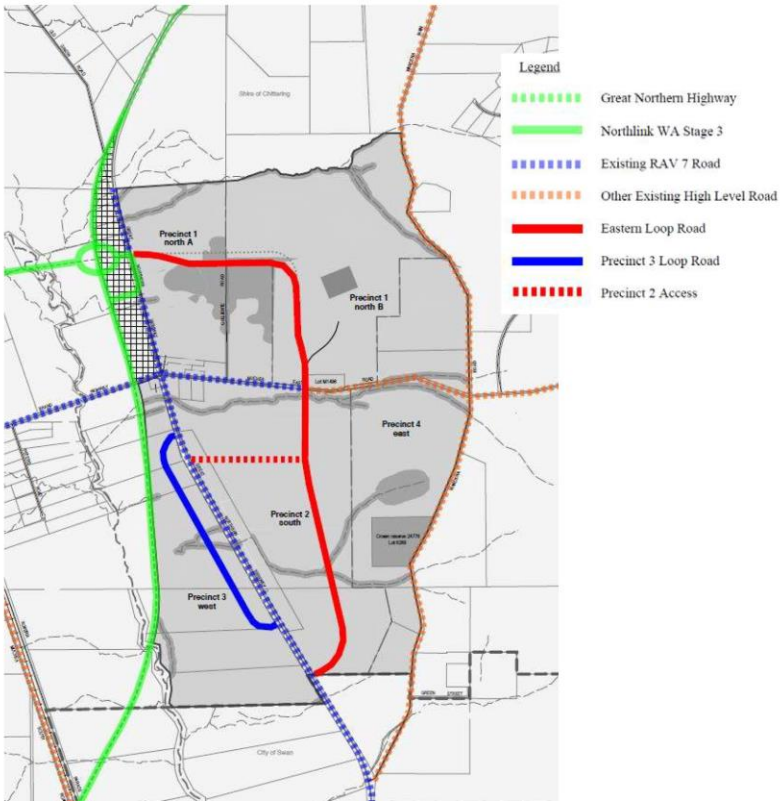

Figure 4-1 Extract from Road and Drainage Guidance Note Muchea Industrial Park.

4.2 Earthworks

Based on the information on "Preliminary Geotechnical Investigation for Local Structure Plan – Lots 50 and M1456 Great Northern Highway Muchea, Western Australia" (Precinct 2 Geotechnical Report), the site is suitable to be subdivided with no further earthworks required by the developer (except for road construction and associated drainage). The Developer may choose to clear the land and undertake earthworks (level site) for the purpose of marketing and sales.

The future lot owners may choose to fill the lots to meet their own development requirements. Various factors influence earthworks required for the site. On larger lots, it is likely that only select areas within the development footprint will be filled as the lot footprint is relatively large. Considerations for fill requirements included:

4.2.1 Road network

The Developer will need to undertake earthworks on road reserve to ensure that roadways are adequately drained.

As discussed in Section 3.1, the site has good grade from east to west. However, the site is relatively flat in the north-south direction. Fill will be required to create falls to drain water within roadways.

Austroads publication "Rural Road Design A guide to the Geometric Design or Rural Roads" noted minimum desirable longitudinal grade of 1.0% and an absolute minimum of 0.3% to drain water. However, the Austroads does allow 0% longitudinal grade if water can drain away from the road (the road must have a crossfall). Maximum longitudinal grades are dictated by vehicle performance and design speed. As an example, a 6-8% grade area considered "mountainous" for a design speed of 100km/hr but considered "flat" for a design speed of 60km/hr.

Austroads range from crossfall on straight road is limited to 2.5-3%.

As noted above, given the 3% fall from east to west, more than likely road network will match this grade. However, in the north-south direction, more than likely the road will utilise minimum grades to minimise fill required.

Fill within roadway will also be linked with the drainage network, ensuring adequate pipe cover at the upstream most extent of the network while allowing the pipe to discharge above the groundwater level at the downstream end.

4.2.2 Lot Site Classification

AS 2870 provided guidance for site classification. Site prone to shrinkage and swelling has high surface movement and therefore require sturdier building foundation.

Precinct 2 Geotechnical Report noted site classification to range from Class A to Class S. Class A being a site with little or no surface movement while Class S site has approximately 20mm of surface movement. The geotechnical report provided advise to fill the site from 0.7m up to 1.8m to convert a Class S site to a Class A.

The site is developable as a Class S. The future lot owners may choose to fill the site to Class A to reduce building slab thickness and reinforcement requirements.

The above is associated with a cost assessment between importing sand material to site relative to the expense incurred in a sturdier footing.

4.2.3 Lot Separation to Groundwater

There is no known guidelines advising the minimum separation required to groundwater in an industrial development.

The document "Specification for Separation Distances for Groundwater-Controlled Urban Development" by the Institute of Public Works Engineering Australasia (IPWEA), recommended 0.15m-0.65m separation to the 20% AEP (5YR ARI) and 50% (1.5YR ARI), depending on the functionality of the site. However, the above are not associated with engineering requirements, they are for amenity reasons.

Separation to groundwater ranging from 1.2m to 1.5m is typically proposed for the purpose of infiltration. The above would allow either 0.9m or 1.2m soakwells to be installed.

However, if the stormwater management adopted is a detention system, no infiltration consideration is necessary.

4.2.4 Lot Wastewater Serviceability

Wastewater management recommendation is discussed in Section 4.2.4. Each lot will more than likely adopt an Aerobic Treatment Unit (ATU).

Fill may be required to provide minimum separation to groundwater. This is only in limited areas as most locations as reasonable separation.

Further to the above sewer internal plumbing are dictated by AS3500.2 for "Plumbing and drainage part 2: Sanitary plumbing and drainage". Plumbers are required to adhere to specific falls depending on the unit fixture loading.

The fixture unit loading are different for each development and therefore it is up to the future lot owners to determine if fill is required (and how much) to ensure sewer serviceability. They may also choose to use other systems such as vacuum sewer or pump system to avoid fill.

4.2.5 Lot Drainage

Drainage management for the development is discussed in Section 4.3.1 The site is not known to be at risk of flooding and therefore no requirement to fill the site for it to be developable.

However, future lot owners will be required to grade their site to drain water away from critical infrastructures.

The grading of the site depends on site layout and functionality. As an example, an unsealed hardstand is recommended to be grade at 4% minimum while a concrete hardstand can be graded as low as 1%. Some facilities designed specifically for washdown may require steeper grades to mobilise washed material, etc.

4.3 Water Management Framework

With reference to the Western Australian Planning Commission (WAPC) "Better Urban Water Management" publication, Figure 4-2 shows planning framework and relevant water management strategies. Like the planning framework, water strategies are tiered from state level down to development scale.

In context of the Development Site, at Local Structure Plan (LSP) Level, a Local Water Management Strategy (LWMS) will be required. This is followed by Urban Water Management Plan (UWMP) at subdivision level, typically to be completed post WAPC conditional approval.

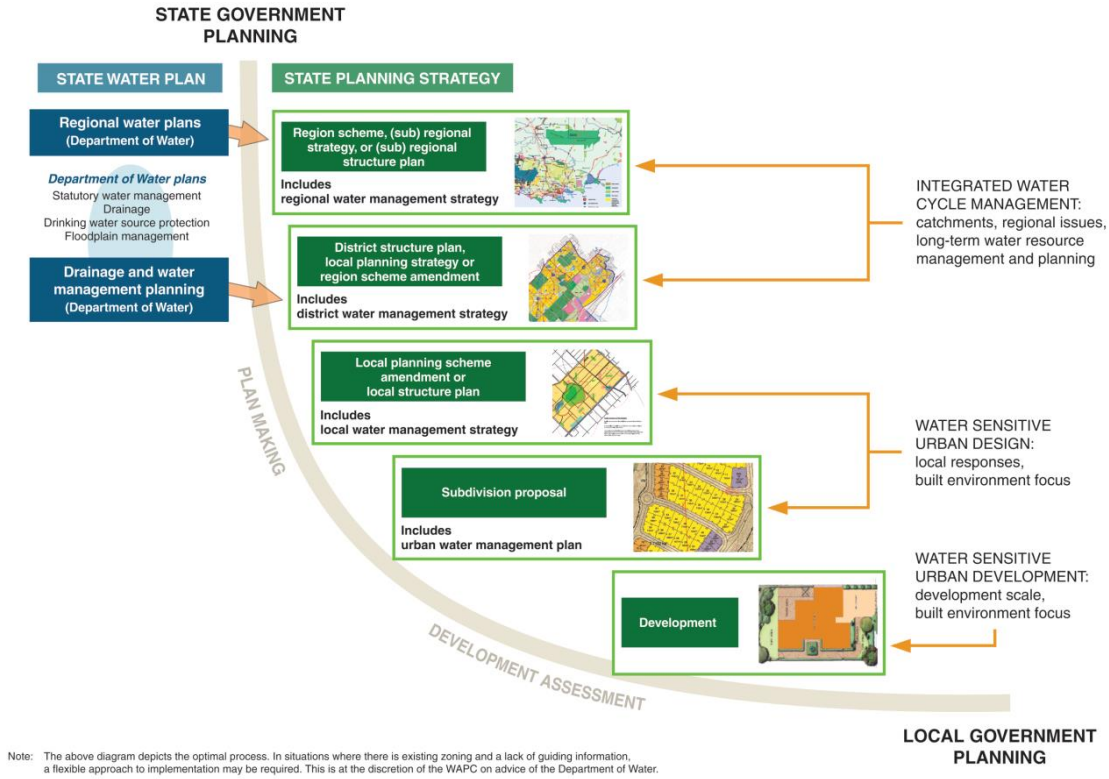

Figure 4-2 Extract from Western Australian Planning Commission Better Urban Water Management.

4.3.1 Surface Water Management

The proposed concept surface water management noted in Sections 4.3.1.1 to 4.3.1.4 is in accordance with Department of Water and Environmental Regulation (DWER) "Decision Process for Stormwater Management in Western Australia".

Simplifying the intent of the Better Urban Water Management, it highlighted two different water management study scales:

- Regional water management, which included surrounding areas outside of the Development Sites.
- Local water management, which is the management of water within the Development Sites.

4.3.1.1 Regional Stormwater Management

Peritas liaised with the DWER (Annexure F) who noted that there is no known flood information in the site vicinity. Therefore, flood management are predominantly local to the site (further discussed in Section 4.3.1.4).

As noted on Section 3.7 and Annexure F, the DWER has also noted a Perennial drain requiring to be retained and rehabilitated. The DWER initially requested to retain only the northern drain. However, the DWER later confirmed that the southern drain will also require retention and rehabilitation unless it can be shown that this drain does not perform any environmental and hydrological functions.

The Precinct 2 site grades from east to west, the topography continue to grade down to the west (Refer to Section 3.1). The "Muchea Industrial Park Scheme Amendment Precinct 3" (Precinct 3 Report) by Urbis noted a series of culvers across Great Northern Highway (GNH), refer to Annexure H. These culverts will need to remain operational to convey water from Precinct 2 to Precinct 3, maintaining pre-

development flow regime. The flow rates limitation will need to be assessed on a LWMS and further refined in a UWMP.

4.3.1.2 Local Stormwater Management – Small Rainfall Events for Ecological Protection (15mm Management)

Runoff generated from the first 15mm of rainfall (over constructed impervious surfaces) shall be retained at source for treatment. The above is in consideration that the 15mm first flush can mobilise soluble substances such as silts, dust, oils, organics, hydrocarbons, nutrients, etc. This excluded runoff from roof as they can be considered as "clean, not requiring further treatment.

The most economical approach of stormwater treatment is by means of bio-retention/biofiltration infrastructures. Bio-retention infrastructures shall be constructed in accordance with Facility for Advancing Biofiltration (FAWB) "Stormwater Biofiltration Systems Adoption Guidelines" and planted in accordance with Monash University "Vegetation guidelines for stormwater biofilters in the south-west of Western Australia. Refer to Figure 4-3 for a typical bio-retention infrastructure profile.

It is noted that the plant species guidelines is perhaps not suitable for the site. However, there has been no known studies for plant species recommended in the wheatbelt region. Therefore, more than likely irrigation infrastructures will need to be installed to maintain the vegetation. The criteria for bio-retention are typically specified in the LWMS and refined in the UWMP.

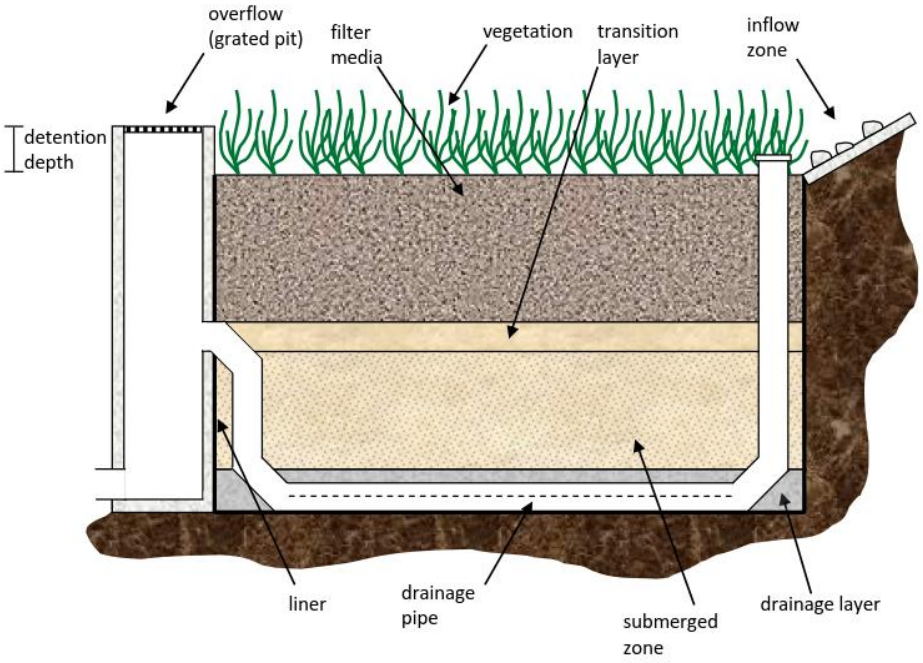

Figure 4-3 Extract from FAWB "Stormwater Biofiltration Systems Adoption Guidelines" – Main Components of biofiltration systems that have to be specified.

4.3.1.3 Local Stormwater Management – Minor Rainfall Events for Serviceability, Amenity and Road Safety (20% Annual Exceedance Probability Event)

The Institute of Public Works Engineering Australasia (IPWEA) "Local Government Guidelines for Subdivisional development" recommended the management of 10% Annual Exceedance Probability Event (AEP) for commercial and industrial areas.

However, the "Muchea Employment Node Precinct 3 Local Water management Strategy" by Bayley Environmental services (precinct 3 LWMS), mentioned 20% AEP (5YR ARI) serviceability design and therefore Pertias recommend adopting the same philosophy as Precinct 3 for consistency purposes.

Existing site conditions pertaining to drainage management were discussed in Sections 3.2 and Section 3.3, noting low permeability site with seasonal high groundwater. Therefore, it is recognised that the site has restricted potential for infiltration at source.

The recommended approach for the serviceability management is a combination of swale network and a detention system. Stormwater exceeding the first 15mm first flush shall be conveyed via drainage swales into a detention infrastructure. The conveyance swale can also be integrated with the bio-retention system discussed in Section 4.3.1.2 as a living stream. Detention infrastructure can range from an open basin (integrated as part of soft landscaped areas), rainwater tank, underground storage modules, etc. Open basin is recommended, in consideration of construction cost and ease of maintenance.

It is recommended for piped stormwater conveyance and culverts to be minimised due to high silt content in the ground. Silts are easily mobilised by surface runoff, causing clogging issues.

The detention basin shall be designed in accordance with the principles noted in Department of Water "Stormwater Management Manual for Western Australia, Structure Controls". Given low infiltration potential of the pre-developed site, high surface runoff is expected and therefore the detention system will more than likely be relatively modest in size.

Note that it is also possible for the detention structure to allow infiltration to assist in the stormwater disposal process. However, the predominant mode of stormwater management is by allowing off-site discharge at pre-development flow rates. The detention system sizing, flow rates and infiltration parameters will need to be assessed on a LWMS and further refined in a UWMP with the assistance of geotechnical site investigation.

4.3.1.4 Local Stormwater Management – Major Rainfall Events for Flood Protection (1% Annual Exceedance Probability Event)

Storm event exceeding 10% AEP up to 1% AEP are considered as major flood events. As noted on Section 4.3.1, storm events can typically be classed as regional and local. Regional refers to flood from the greater catchment and cannot be controlled by local stormwater management. Local flood management refer to runoff generated within the site and this can be managed by structural Best Management Practices (BMP).

It is not practical to size stormwater conveyance infrastructures for these events, as these would result in excessively large infrastructures. It is a common practice to allow conveyance of major rainfall event to be my means of surface runoff.

Typical major rainfall event management approach in areas non-conductive to infiltration, included the provision of a detention BMP (allowing pre-development discharge) and the provision of 0.3m of freeboard to habitable spaces for asset protection reasons.

Flood levels, flood protection, flow rates and conveyance mechanism will need to be assessed on a LWMS and further refined in a UWMP.

4.3.2 Groundwater Management

Groundwater separation less than 3m-5m from infiltration infrastructures are considered shallow. The 15mm retention proposed in Section 4.3.1.2 shall be appropriately modelled to consider the effects of shallow groundwater to infiltration systems.

Subsoil pipes, if proposed shall be positioned above the AAMGL.

4.3.3 Water

Peritas liaised with the Water Corporation (Annexure I) who advised that Precinct 2 is well beyond the Water Corporation reticulation area. The nearest Water Corporation asset is located approximately 11km south east of Muchea, in Bullsbrook. Due to restricted potable water supply, fit for purpose water supply will be critical.

4.3.3.1 Non-Potable Water

Non-potable water supply can be sourced either via groundwater bores or by means of rainwater tanks. Non-potable water usage included, toilets, irrigation, vehicle washing, process water, etc.

Peritas preliminary due diligence noted that there are groundwater resources available for Precinct 2 (refer to Section 3.4). However, water quality and sustainable yield will need to be assessed. This assessment is recommended to be undertaken at LWMS level, alongside with the groundwater level monitoring recommended in Section 3.3.4. It is generally not recommended to undertake these studies at UWMP stage as inadequate water resource will impact on the feasibility of the subdivision.

Rainwater tanks may be installed on site to capture water during rainy season. The Bureau of Meteorology recorded an annual mean rainfall of 652mm at Pierce airbase (in Bullsbrook).

To assist in placing the rainwater tank requirement in context, as a rule, irrigation of turf area will consume approximately 7,500 kL/ha/a. Therefore, a lawn area of 500m² require 375m³ (375 kL) of water, which in turn will require 580m² of roof area to collect (excluding losses). A 375 kL tank is approximately 8m in diameter and 8m high. From the above scenario, it can be demonstrated that rainwater tank is best used as a supplement to the groundwater bore, as opposed to being the primary mode of non-potable water source.

The water requirements shall be assessed by individual future tenancies as this depends on the type of activities conducted on site.

4.3.3.2 Potable Water

Muchea Water (Aqua Ferre) is an independent water service provider in Muchea, located approximately 7km north or Precinct 2 (refer to Figure 4-4). Muchea Water currently has a groundwater license allocation of 651ML/a (sourced from DWER).

Peritas have liaised with Muchea Waters to confirm potable water availability. The correspondence records are attached in Annexure J.

Muchea water have advised that 142ML/a is currently allocated to a residential development at Reserve Road and a further 50ML/Pa with additional 50ML/a option is committed to Harvis Capital. Correspondence records in “Muchea Industrial Park Scheme Amendment Precinct 3” (Precinct 3 Report) indicated that Harvis Capital have sought the allocation for Precinct 1 North A of the MIP.

Precinct 3 also have had similar discussions with Muchea Water, requesting for 203mL/a to be allocated for their 139ha site (net site area).

Without hydraulics consultant’s input, Peritas have estimated Precinct 2 potable water consumption based on Precinct 3 assumptions. Precinct 3 assumed potable water consumption of 4kL/ha/day (in contrast to Water Corporation estimate of 17kL/ha/day).

Assuming 30% of Precinct 2 is dedicate to drainage and road reserves, the net industrial land use is 212ha, requiring an estimate potable water allocation of 309ML/a.

Based on the allocated water, Muchea Water currently have 409ML/a available. However, this allocation is not adequate to service both Precinct 2 and 3 (Total requirement of 512ML/a). There will

be a shortfall of approximately 100ML/a.

As a contingency measure, should Precinct 3 formalise an agreement with Muchea Water earlier than Precinct 2, potable water can either be sourced by treating bore water using technologies such as Reverse Osmosis (RO), ultraviolet disinfection or by means of chlorine treatment. Water servicing license is generally not required if treatment is for the purpose of self-supply.

It should also be noted that water supply via Muchea Water may not have adequate flow rate or pressure for industrial application or firefighting purposes. Muchea Water have chosen not to disclose their current level of supply, indicating that this cannot be provided until an agreement is in place with Precinct 2.

Therefore, it will not be unusual for each property to require infrastructures such as booster pumps and storage tanks, especially for fire water purposes.

Further to the above, there are also capital works and cost required to extend distribution and reticulation pipework into and within Precinct 2. Muchea Water have estimated distribution water main extension to cost approximately $150,000/km. The current extent of Muchea Water distribution water main is to the new BP station at Precinct 1, approximately 1000m from Muchea East road.

The internal reticulation system within Precinct 2 will have to be funded fully by the Developer and handed over at no cost to Muchea Water. All works to comply with Muchea Water specification.

Figure 4-4 Aqua Ferre Reserve St Facility Relative to Precinct 2.

4.3.4 Wastewater

Peritas liaised with the Water Corporation (Annexure H) who advised that Precinct 2 is well beyond the Water Corporation reticulation area. The nearest Water Corporation asset is located approximately 11km south east of Muchea, in Bullsbrook.

The recommended wastewater management approach is by on-site treatment using an Aerobic

Treatment Unit (ATU). The ATU shall be in compliance with Department of Health's "Code of Practice for the Design Manufacture, Installation and Operation of Aerobic Treatment Units".

Hydraulic loading rates are provided by the Department of Health as a guide. However, these loading rates are associated with residential and commercial application. Loading rates are as shown on Table 4-1.

Industrial loading rates may vary substantially, depending on the Industry and therefore needed to be assessed separately. A hydraulics consultant will need to be involved at detail design stage.

Table 4-1 Extract from Department of Health Hydraulic Loading

Type of residential premises	Number of bedrooms	Volume of wastewater (L/day)
Standard residential dwelling	2 or less	564
	3	761
	4-5	829
	6 or more	150L/day
Ancillary accommodation sharing a common system with the main residential dwelling	The combined hydraulic loading is based on the total combined number of bedrooms (ancillary dwelling PLUS main residential dwelling) and sized as a "Standard residential dwelling" (as above). Example: 3 bedroom main dwelling PLUS 2 bedroom ancillary accommodation = 5 bedroom system (829L/day) 4 bedroom main dwelling PLUS 2 bedroom ancillary accommodation = 6 bedroom system (150L/person/day)	
Aged home accommodation	2 or less	564
	3	761
	4-5	829
	Developments with communal system	Hydraulic calculation basing on actual occupancies can be permitted if local government planning approval sets occupancy limits for the entire development.

Type of premises (Regulation 29)	Equivalent Use	Combined Flow (L/person/day)
Hotel	Minesite accomodation camp units	180
Motel		140
School (boarding)		140
Public Building (Frequent use)	Bakery sit in customers (per sitting) Café sit in customers (per sitting)	30

Type of premises (Regulation 29)	Equivalent Use	Combined Flow (L/person/day)
	Place of worship (with cooking and catering facilities) Health centre staff (non-showering) Minesite office facilities Offices (non-showering staff) Restaurants sit in customers (per sitting) Winery sit in customers – Café and food catering facilities (per sitting)	
Public Building (Infrequent use)	Airport (Non-staff) Place of worship (with no cooking facilities) Community hall Hardware stores Health centre patients (non-showering) Library Petrol station customers	10
Caravan Parks	3 persons / caravan park bay	140
	2 persons / tent site	140
	Park homes / chalets / Standard short-stay holiday houses 2 or less bedrooms/dwelling 3 bedrooms/dwelling 4 or more bedrooms/dwelling	 564/dwelling 761/dwelling 829/dwelling
	Large short-stay holiday houses (>6 persons) / Eco-tourism accommodation facilities	140
Swimming Pool		15
Drive-in theatres	2 persons per car	10
Factories & shops (an 8 hour day)	Bakery Staff Café staff Caravan park staff member (not living onsite Gym (with showers) Health centre patients (using shower facilities) Office staff (using shower facilities) Restaurant staff Warehouse staff Workshop staff	70
Construction camps (temporary)		45
Clubs	Men's shed	15
Clubs (licensed)		35

The ATU effluent (post ATU treatment) can be managed by either below ground dripper system or above ground irrigation. Either option require 0.5m minimum separation to groundwater. The dripper system imply separation from the invert of the discharge pipe while the above ground spray system require separation from finished level.

Peritas does not recommend the use of a centralised treatment system as this will complicate the

structure of the development. The following issues will need to be addressed:

- Land must be dedicated for central sewer management system, reducing developable lot yield.
- Water Service licence needed to be obtained, via the DWER, in order to provide sewerage collection service.
- An organisation will need to be formalised to manage the sewer collection, including collection of tariffs, maintenance of constructed asset, ensuring constant compliance with updated health standards, upgrading of old systems, etc.

4.4 Power

Dial Before You Dig (DBYD) data (Annexure E) indicated a 3 phase 1kV-33kV overhead High Voltage (HV) distribution line along Great Northern highway. It would appear that the overhead cables are located within the property boundary of Precinct 2.

Extract from Western Power Network Capacity Forecast 2026 in included in Annexure K. The forecast indicate up to 30MVA remaining capacity in 2026, more than adequate to service the entire Precinct 2.

Each industrial property will have different power requirements. Therefore, it is difficult to forecast the power draw required for the entire Precinct. At the time of detail design for each lot, an application will have to be made to Western Power to confirm connection location and capacity.

The overhead power line is a High Voltage distribution main, therefore switch gears and step-down transformers are to be expected to be required.

4.5 Communication

Dial Before You Dig (DBYD) data (Annexure E) indicated Telstra fibre optics along the western verge of Great Northern Highway. The data is schematic but also appear to indicate that some cables are within the Precinct 2 lot boundary.

NBN network is scheduled for the area, when the report was originally drafted, NBN noted availability of service by December 2020. Currently the latest forecast is for NBN to be available from July – September 2021.

4.6 Gas

Dial Before You Dig (Annexure E) did not identify gas services within the vicinity. Precinct 2 tenancies will be required to install their own gas storage tank if gas supply is required.

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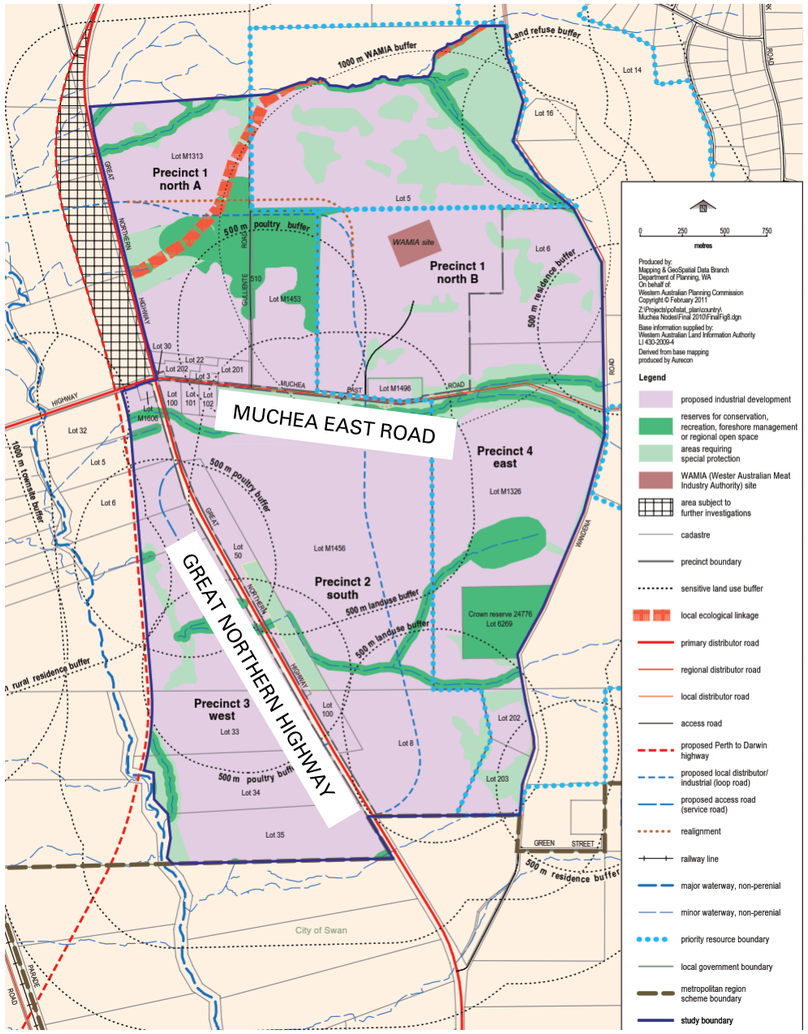
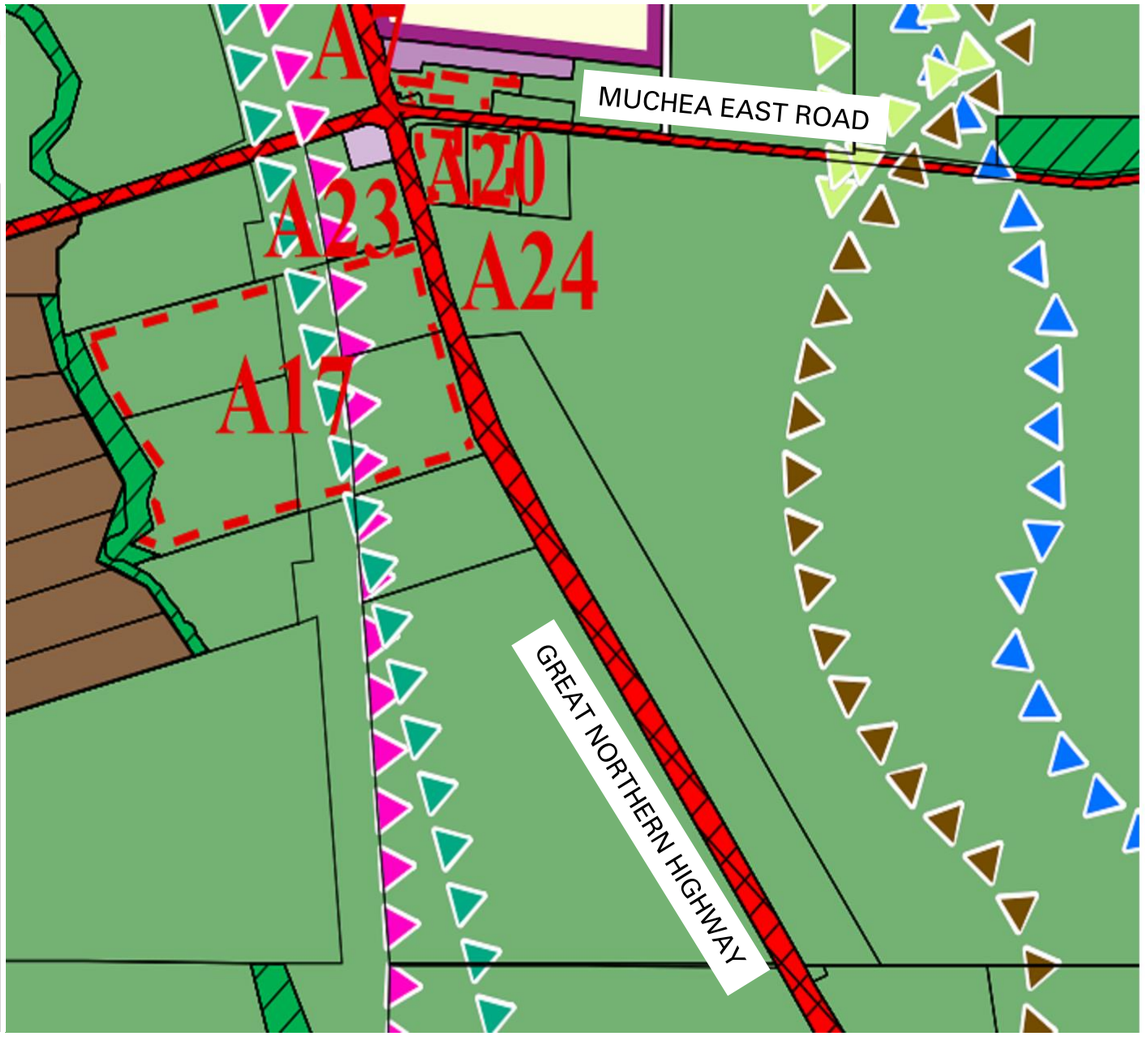
Annexure A – Sketches

Sketch No.	Title
PC20171.SKT.001	Locality Plan
PC20171.SKT.003	Planning Context
PC20171.SKT.004	Topography
PC20171.SKT.005	Geology
PC20171.SKT.006	Groundwater Level
PC20171.SKT.007	Water Resources

	PROJECT	3488 (LOT M1456) & LOT 50 GREAT NORTHERN HIGHWAY	**Scale:**	N.T.S	
	CLIENT	IPARKS	**Drawn:**	HW	
	LOCATION	3488 (LOT M1456) & LOT 50 GREAT NORTHERN HIGHWAY	**Date:**	20.10.20	
	TITLE	LOCATILY PLAN	**Reference:**	PC20171.SKT.001	Rev. **A**



EXTRACT FROM SHIRE OF CHITTERING
LOCAL PLANNING POLICY NO.33



EXTRACT FROM SHIRE OF CHITTERING
TOWN PLANNING SCHEME NO.6

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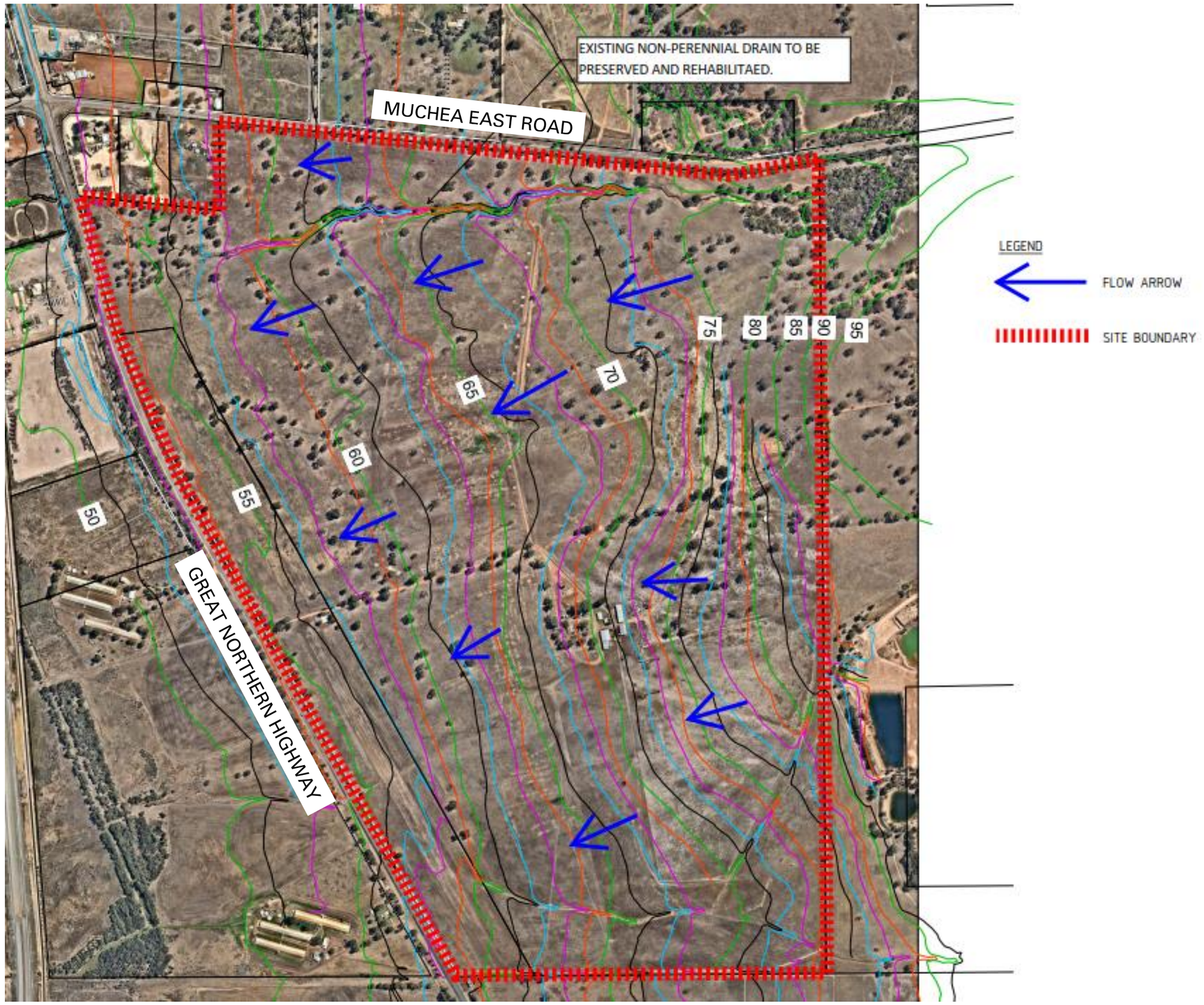

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TITLE	TOPOGRAPHY	**Reference:**	PC20171.SKT.004 Rev. **A**

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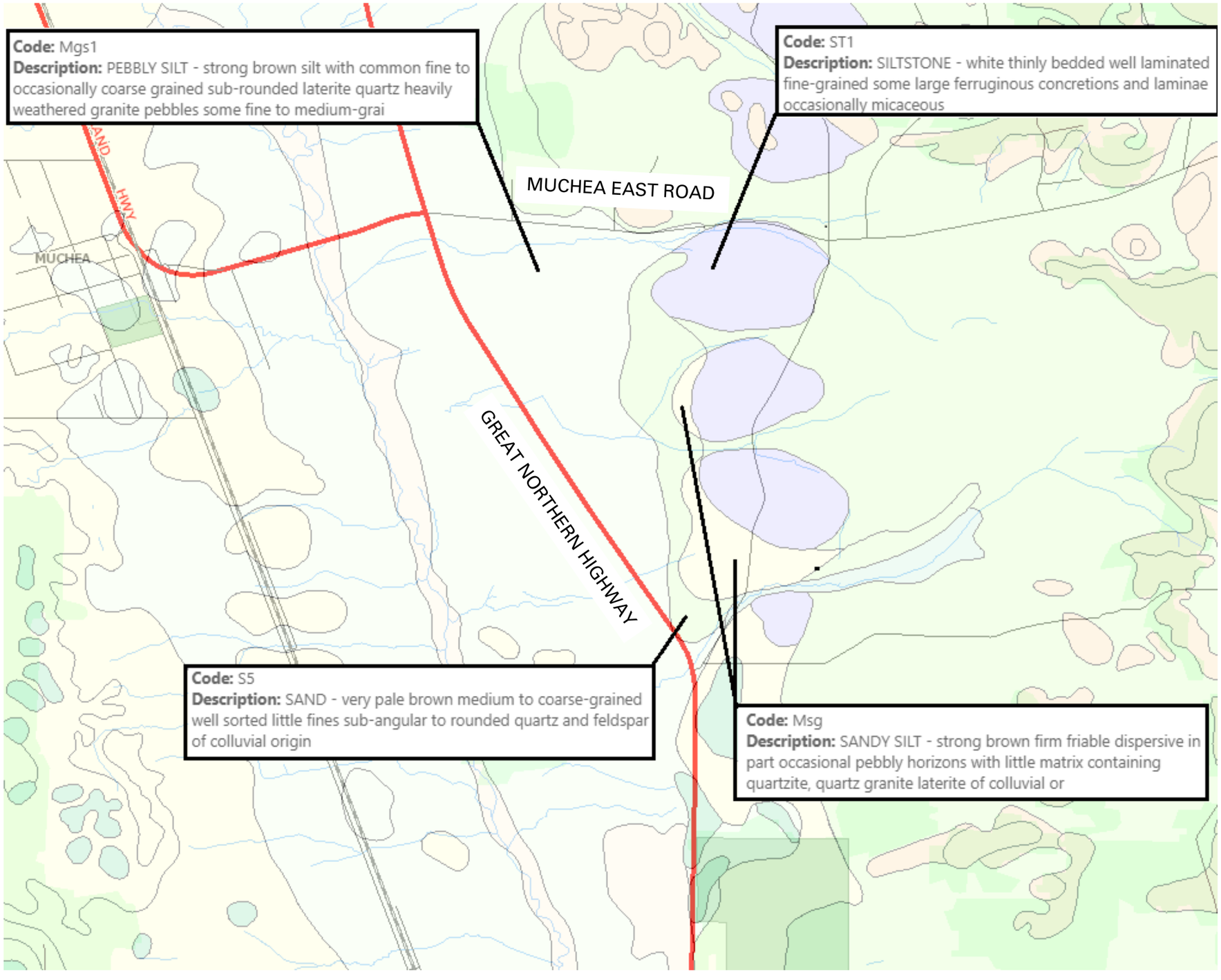

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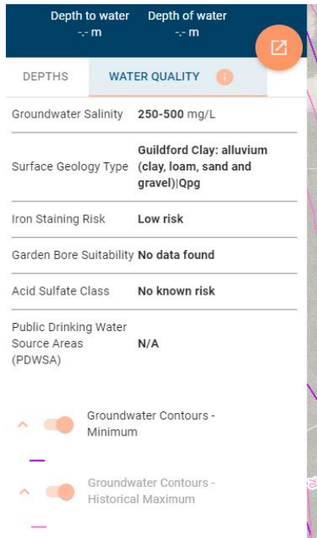
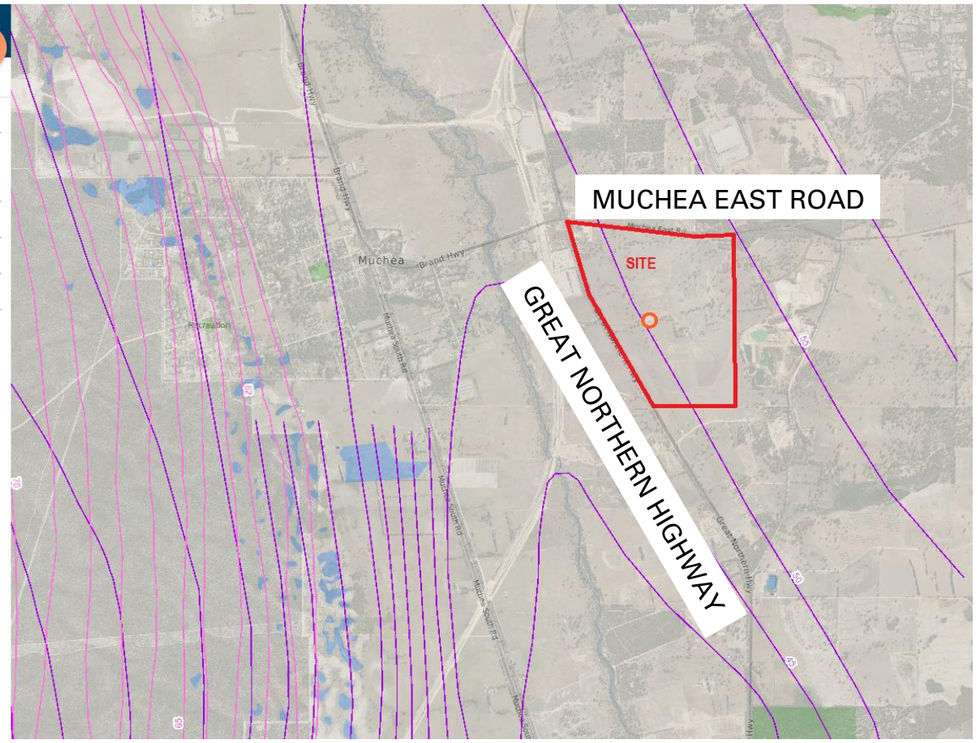
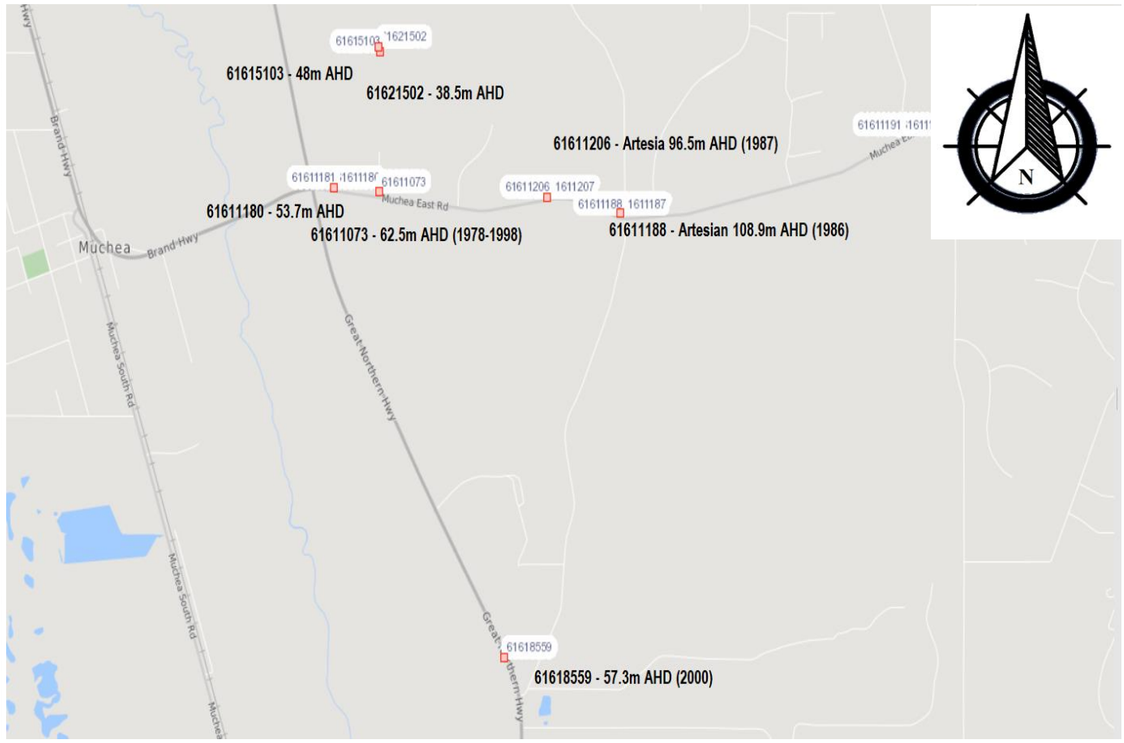
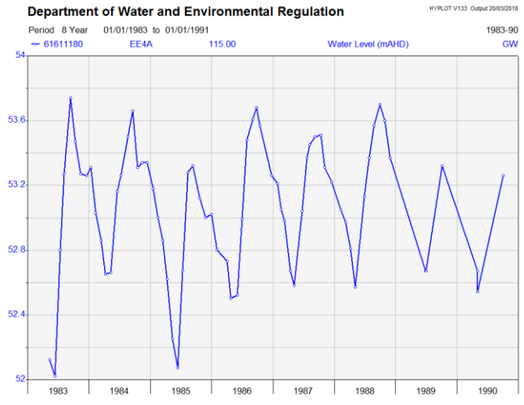


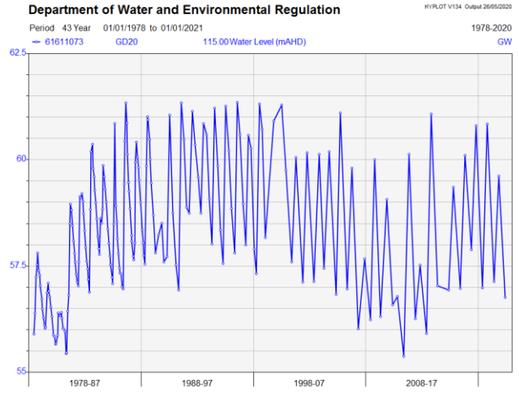


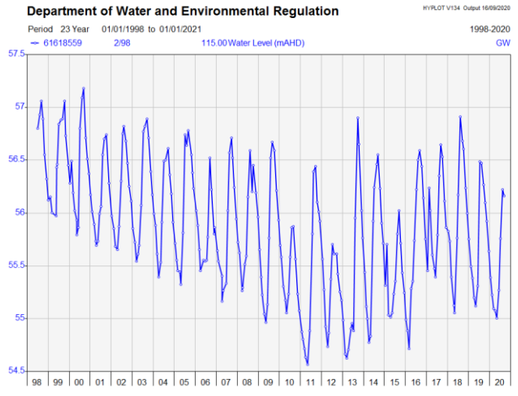


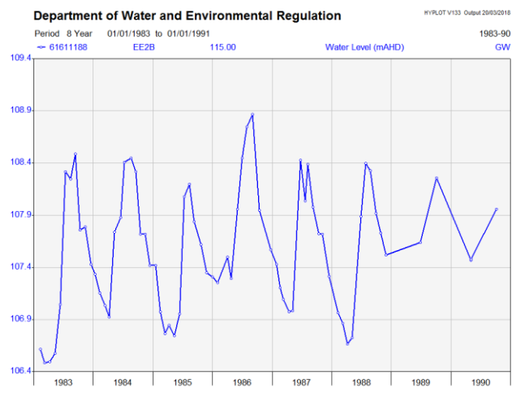
DEPARTMENT OF WATER AND ENVIRONMENTAL REGULATION GROUNDWATER ATLAS

DEPARTMENT OF WATER AND ENVIRONMENTAL REGULATION LONG TERM MONITORING BORES









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TITLE	GROUNDWATER LEVEL	**Reference:**	PC20171.SKT.006	Rev. **A**

Resources 4 | Licences 0

RESOURCES | LICENCES

Surface Water Area: **Swan River and Tributaries**
Subarea: **Ellen Brook**
Resource: **Ellen Brook**

Area: **Gingin**
Subarea: **Eclipse Hill**
Aquifer: **Perth - Superficial Swan**
Level: **1**

Area: **Gingin**
Subarea: **Cowalla Confined**
Aquifer: **Perth - Leederville - Parmelia**
Level: **2**

Area: **Gingin**
Subarea: **Chandala Confined**
Aquifer: **Perth - Yarragadee North**
Level: **3**

Resource Legend

Water availability is shown as a combination of resource type and colour:

Surface water | Groundwater

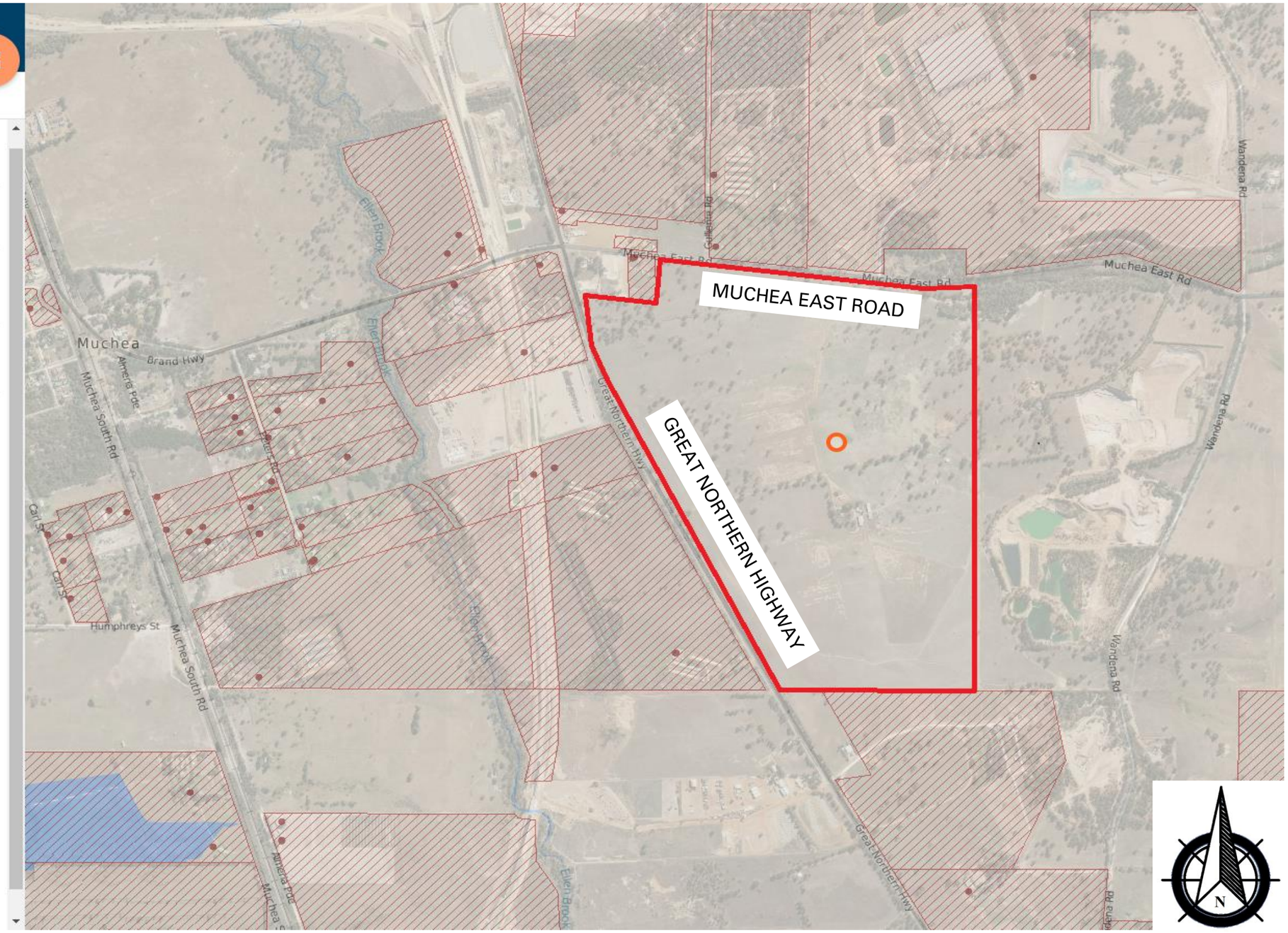
- Allocation Available
- Fully Allocated
- Limited Information

Water Availability Disclaimer

Water availability gives a general indication as to whether water is still available in a resource for licensing. It is determined from the amount of water that may be available to take sustainably from a resource, minus water that has already been allocated or committed to licensed users.

However, additional applications may already be under assessment to access the remaining water, and water availability ***does not*** reflect the water that may be assigned to these applications until they are finalised.

This information changes on a daily basis. To discuss water availability for your resource, please contact your regional licensing office.



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TITLE	WATER RESOURCES	**Reference:**	PC20171.SKT.007	Rev. **A**

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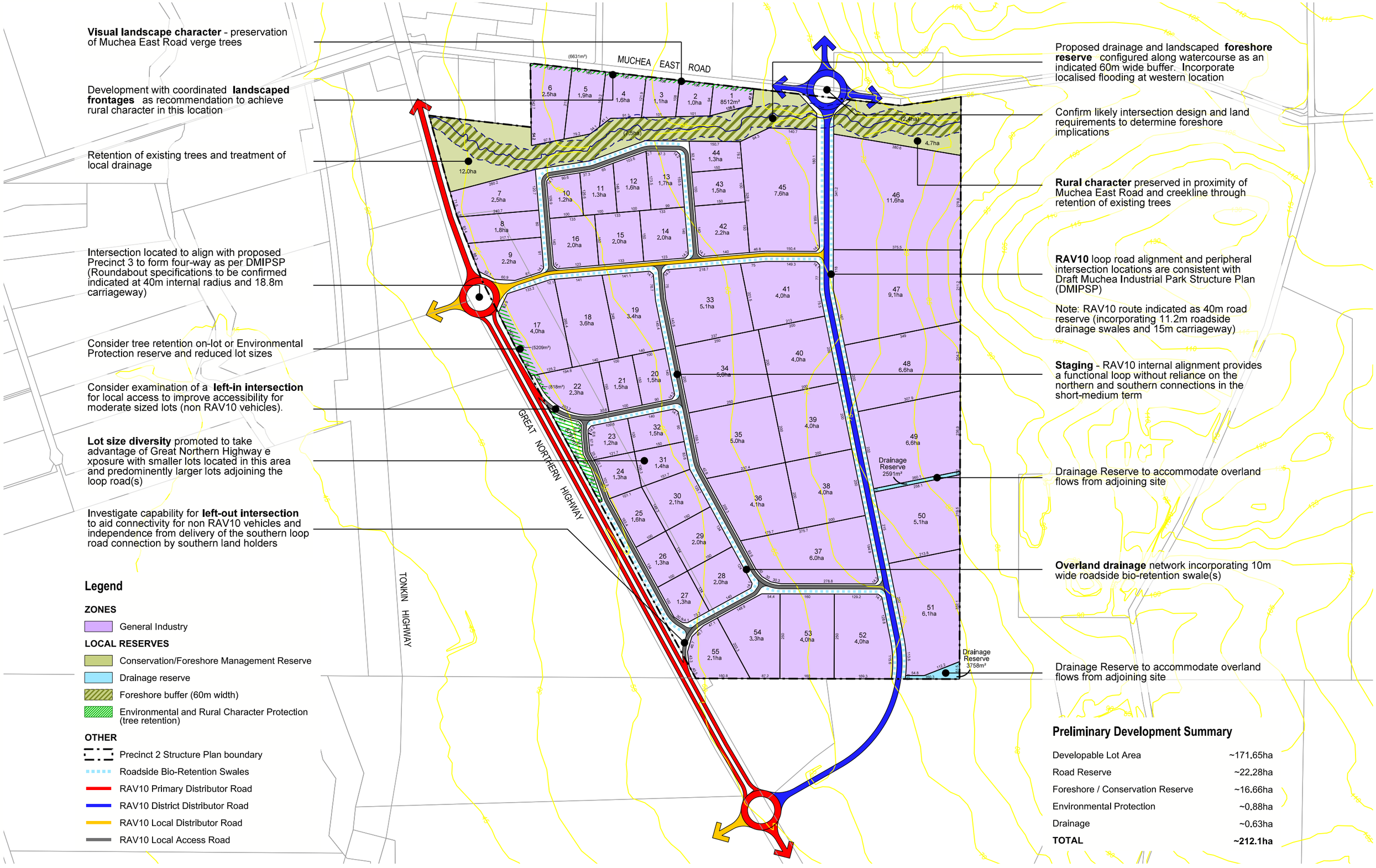
Annexure B – Concept Structure Plan



Visual landscape character - preservation of Muchea East Road verge trees

Development with coordinated **landscaped frontages** as recommendation to achieve rural character in this location

Retention of existing trees and treatment of local drainage

Intersection located to align with proposed Precinct 3 to form four-way as per DMIPSP (Roundabout specifications to be confirmed indicated at 40m internal radius and 18.8m carriageway)

Consider tree retention on-lot or Environmental Protection reserve and reduced lot sizes

Consider examination of a **left-in intersection** for local access to improve accessibility for moderate sized lots (non RAV10 vehicles).

Lot size diversity promoted to take advantage of Great Northern Highway e xposure with smaller lots located in this area and predominently larger lots adjoining the loop road(s)

Investigate capability for **left-out intersection** to aid connectivity for non RAV10 vehicles and independence from delivery of the southern loop road connection by southern land holders

Proposed drainage and landscaped **foreshore reserve** configured along watercourse as an indicated 60m wide buffer. Incorporate localised flooding at western location

Confirm likely intersection design and land requirements to determine foreshore implications

Rural character preserved in proximity of Muchea East Road and creekline through retention of existing trees

RAV10 loop road alignment and peripheral intersection locations are consistent with Draft Muchea Industrial Park Structure Plan (DMIPSP)

Note: RAV10 route indicated as 40m road reserve (incorporating 11.2m roadside drainage swales and 15m carriageway)

Staging - RAV10 internal alignment provides a functional loop without reliance on the northern and southern connections in the short-medium term

Drainage Reserve to accommodate overland flows from adjoining site

Overland drainage network incorporating 10m wide roadside bio-retention swale(s)

Drainage Reserve to accommodate overland flows from adjoining site

Legend

ZONES
- General Industry

LOCAL RESERVES
- Conservation/Foreshore Management Reserve
- Drainage reserve
- Foreshore buffer (60m width)
- Environmental and Rural Character Protection (tree retention)

OTHER
- Precinct 2 Structure Plan boundary
- Roadside Bio-Retention Swales
- RAV10 Primary Distributor Road
- RAV10 District Distributor Road
- RAV10 Local Distributor Road
- RAV10 Local Access Road

Preliminary Development Summary

Developable Lot Area	~171.65ha
Road Reserve	~22.28ha
Foreshore / Conservation Reserve	~16.66ha
Environmental Protection	~0.88ha
Drainage	~0.63ha
TOTAL	**~212.1ha**

Preliminary Structure Plan Development Concept

LOT 50 & M1456
GREAT NORTHERN HIGHWAY, MUCHEA
An IParks Property Group Project

DRAFT

scale 1:10,000@A3 | 1:5,000@A1
0 100 200m
plan 20/034/011
date 21 Dec 2020

Taylor Burrell Barnett Town Planning & Design
Level 7, 160 St Georges Terrace, Perth WA 6000
e: admin@tbbplanning.com.au
p: (08) 9226 4276

Taylor Burrell Barnett

Annexure C –Average Annual Maximum Groundwater Level

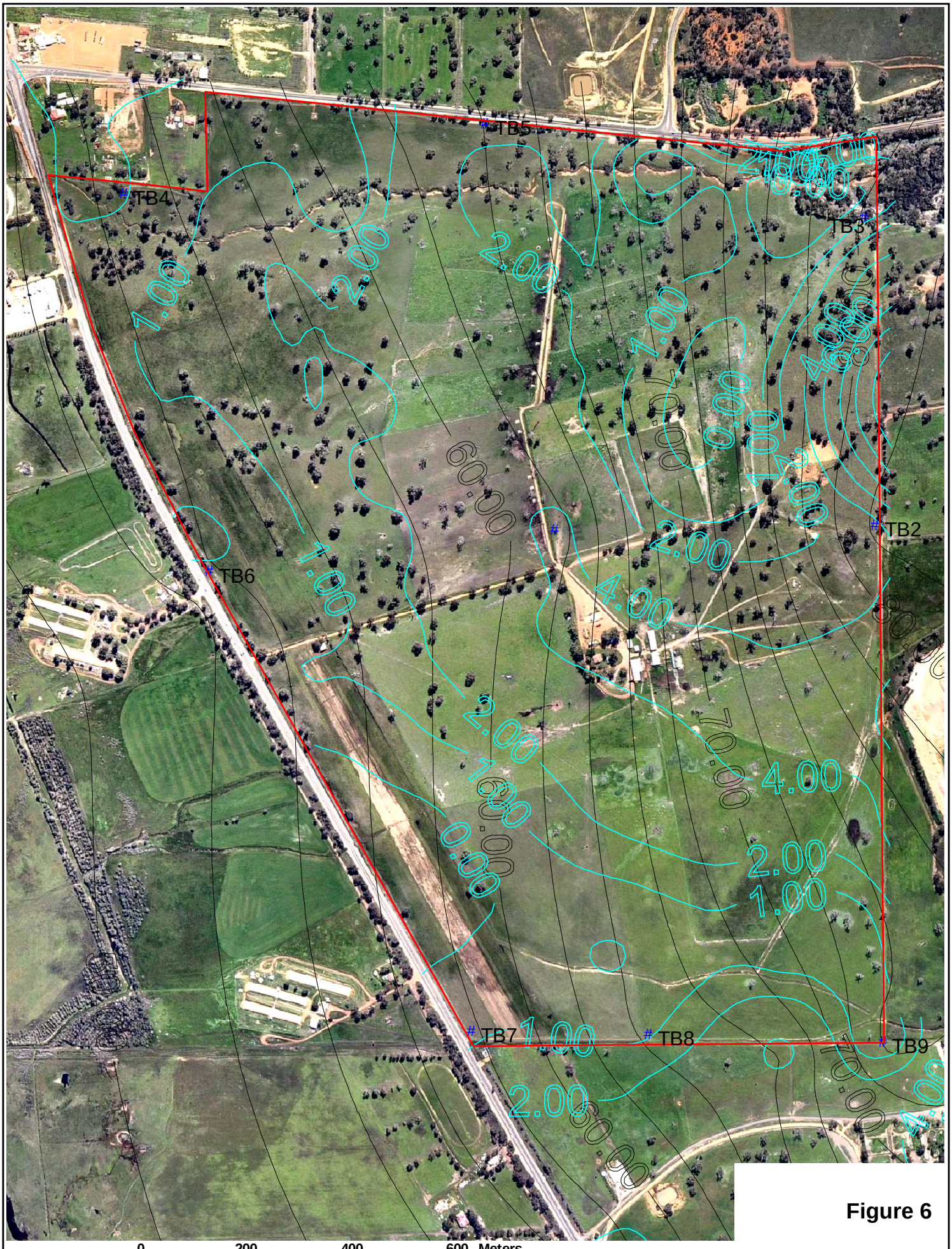


Figure 6

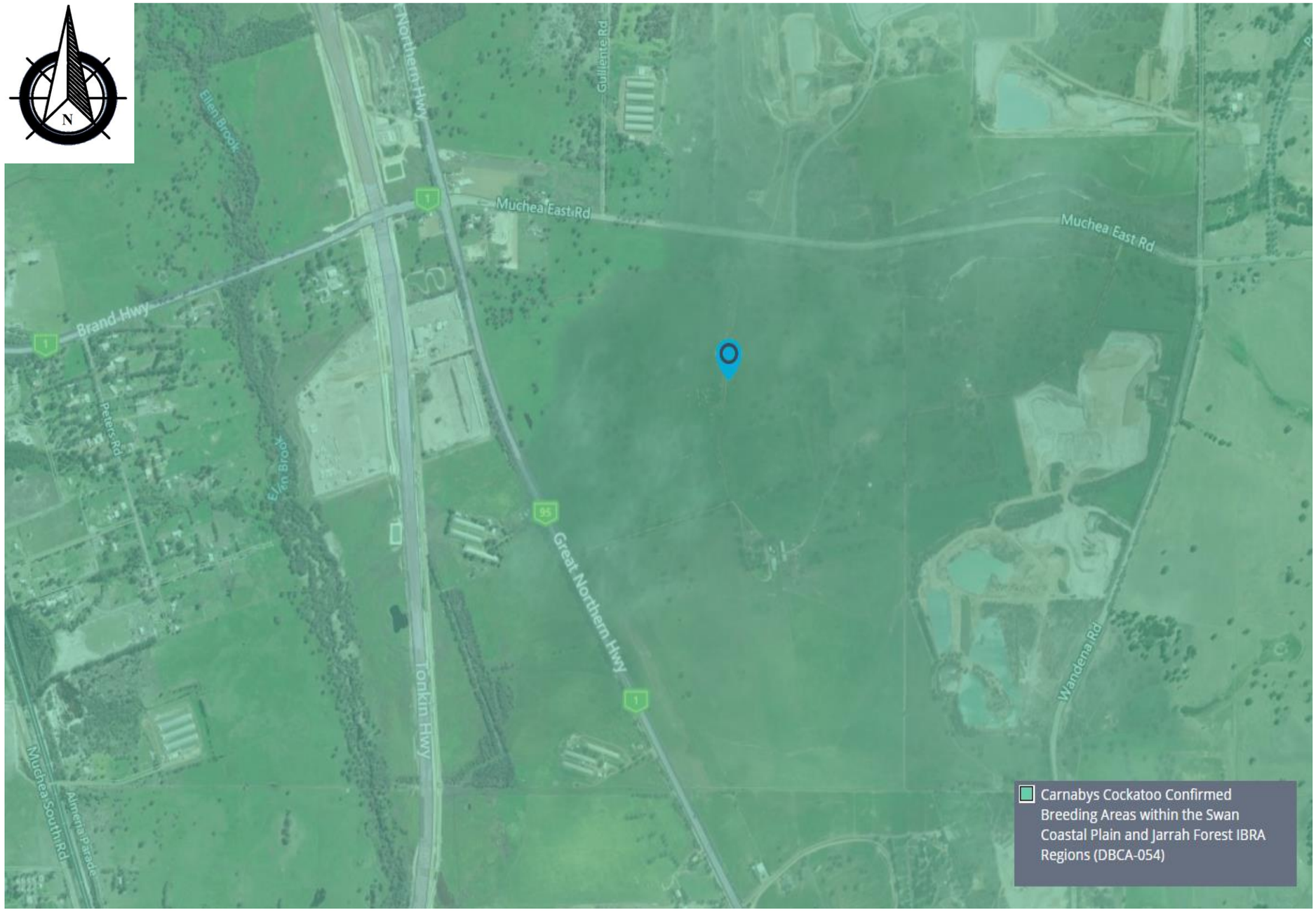
GROUNDWATER HYDROLOGY

bayley environmental services

Annexure D – Environmental

Sketch No.	Title
PC20171.SKT.008	Black Cockatoo Roosting and Breeding Sites
PC20171.SKT.009	Carnabys Cockatoo Confirmed Breeding Areas
PC20171.SKT.010	Carnabys Cockatoo Feeding Habitat
PC20171.SKT.011	Geomorphic Wetland
PC20171.SKT.012	Bush Forever
PC20171.SKT.013	Acid Sulfate Soils
PC20171.SKT.014	Clearing Regulations
PC20171.SKT.015	Public Drinking Water Source Areas
PC20171.SKT.016	Surface Water Management Areas

peritas group / iPARKS Design • Develop • Deliver • Maintain	**PROJECT**	3488 (LOT M1456) & LOT 50 GREAT NORTHERN HIGHWAY	**Scale:**	N.T.S	
	CLIENT	IPARKS	**Drawn:**	HW	
	LOCATION	3488 (LOT M1456) & LOT 50 GREAT NORTHERN HIGHWAY	**Date:**	20.10.20	
	TITLE	BLACK COCKATOO ROSSTING AND BREEDING SITES	**Reference:**	PC20171.SKT.008	Rev. **A**



	PROJECT	3488 (LOT M1456) & LOT 50 GREAT NORTHERN HIGHWAY	**Scale:**	N.T.S	
	CLIENT	IPARKS	**Drawn:**	HW	
	LOCATION	3488 (LOT M1456) & LOT 50 GREAT NORTHERN HIGHWAY	**Date:**	20.10.20	
	TITLE	CARNABYS COCKATOO CONFIRMED BREEDING AREAS	**Reference:**	PC20171.SKT.009	Rev. **A**

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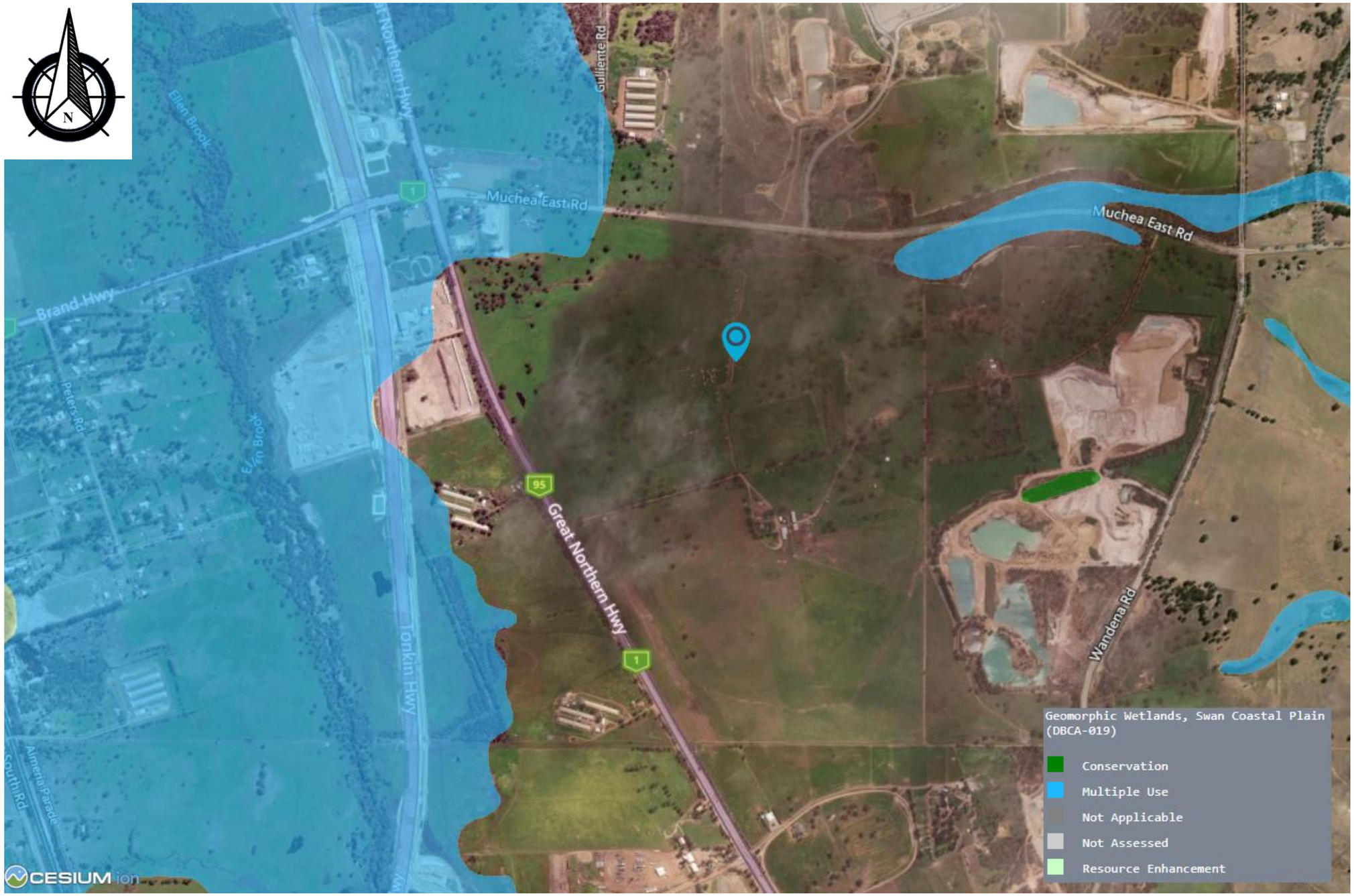
PROJECT	3488 (LOT M1456) & LOT 50 GREAT NORTHERN HIGHWAY	**Scale:**	N.T.S	
CLIENT	IPARKS	**Drawn:**	HW	
LOCATION	3488 (LOT M1456) & LOT 50 GREAT NORTHERN HIGHWAY	**Date:**	20.10.20	
TITLE	CARNABYS COCKATOO FEEDING HABITAT	**Reference:**	PC20171.SKT.010	Rev. **A**



PROJECT	3488 (LOT M1456) & LOT 50 GREAT NORTHERN HIGHWAY	**Scale:**	N.T.S	
CLIENT	IPARKS	**Drawn:**	HW	
LOCATION	3488 (LOT M1456) & LOT 50 GREAT NORTHERN HIGHWAY	**Date:**	20.10.20	
TITLE	GEOMORPHIC WETLAND	**Reference:**	PC20171.SKT.011	Rev. **A**

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PROJECT	3488 (LOT M1456) & LOT 50 GREAT NORTHERN HIGHWAY		**Scale:**	N.T.S	
CLIENT	IPARKS		**Drawn:**	HW	
LOCATION	3488 (LOT M1456) & LOT 50 GREAT NORTHERN HIGHWAY		**Date:**	20.10.20	
TITLE	BUSH FOREVER		**Reference:**	PC20171.SKT.012	Rev. **A**

PROJECT	3488 (LOT M1456) & LOT 50 GREAT NORTHERN HIGHWAY	**Scale:**	N.T.S
CLIENT	IPARKS	**Drawn:**	HW
LOCATION	3488 (LOT M1456) & LOT 50 GREAT NORTHERN HIGHWAY	**Date:**	20.10.20
TITLE	ACID SULFATE SOILS	**Reference:**	PC20171.SKT.013 Rev. **A**

PROJECT	3488 (LOT M1456) & LOT 50 GREAT NORTHERN HIGHWAY	**Scale:**	N.T.S	
CLIENT	IPARKS	**Drawn:**	HW	
LOCATION	3488 (LOT M1456) & LOT 50 GREAT NORTHERN HIGHWAY	**Date:**	20.10.20	
TITLE	CLEARING REGULATIONS	**Reference:**	PC20171.SKT.014	Rev. **A**

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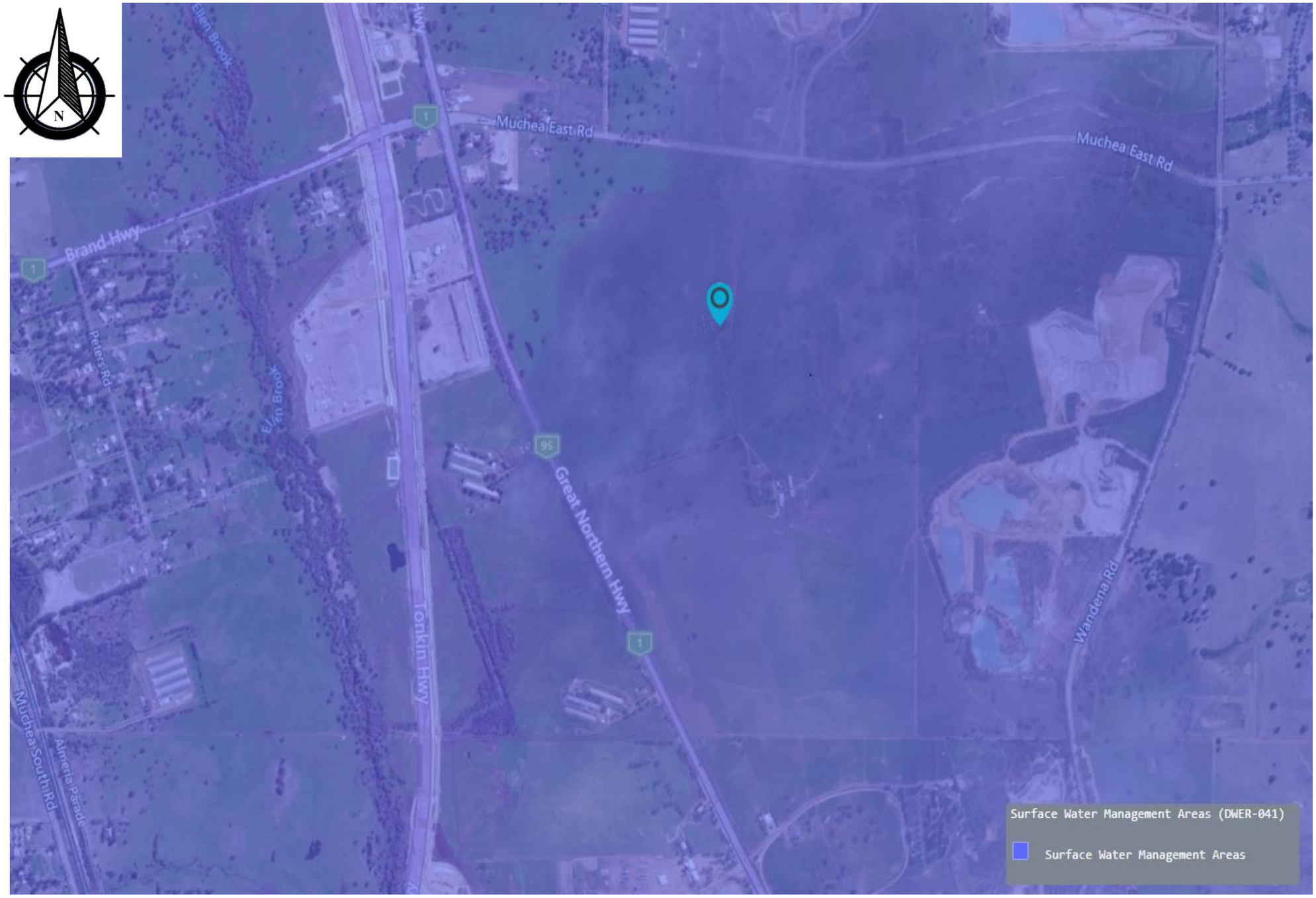
peritas group / iPARKS Design • Develop • Deliver • Maintain	**PROJECT**	3488 (LOT M1456) & LOT 50 GREAT NORTHERN HIGHWAY	**Scale:**	N.T.S	
	CLIENT	IPARKS	**Drawn:**	HW	
	LOCATION	3488 (LOT M1456) & LOT 50 GREAT NORTHERN HIGHWAY	**Date:**	20.10.20	
	TITLE	PUBLIC DRINKING WATER SOURCE AREAS	**Reference:**	PC20171.SKT.015	Rev. **A**



	PROJECT	3488 (LOT M1456) & LOT 50 GREAT NORTHERN HIGHWAY	**Scale:**	N.T.S	
	CLIENT	IPARKS	**Drawn:**	HW	
	LOCATION	3488 (LOT M1456) & LOT 50 GREAT NORTHERN HIGHWAY	**Date:**	20.10.20	
	TITLE	SURFACE WATER MANAGEMENT AREAS	**Reference:**	PC20171.SKT.016	Rev. **A**

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Annexure E – Dial Before You Dig Summary

ATCO GAS AUSTRALIA UNDERGROUND ASSET DETAILS
NO GAS ASSETS RECORDED

GAS DIVISION

NO ATCO GAS AUSTRALIA ASSETS RECORDED

Mr Hendrik Wijaya
Peritas Group
74 Goodwood Parade
Burswood
WA, 6100

Job No: **20304128**
Sequence No: **102126190**
Date of Issue: 23/09/2020
Phone: 0863369262
Mobile: 0403886278
Fax: Not Supplied

DBYD Utility Registration Name: **70852 - ATCO Gas Australia**
DBYD Location: **Great Northern Highway, Muchea, WA, 6501**

Our records indicate that there are NO ATCO Gas Australia underground Assets / Pipes present in the vicinity of the above enquiry, however please read all the information and conditions below.

ATTENTION: This response to your inquiry has been interpreted from details in your requested DBYD picture location request only (not any street address you gave). It is your duty to ensure the accompanying plan/s match your geographical area of works.

IF YOU SEE, HEAR, SMELL OR OTHERWISE DETECT GAS,
LEAVE THE IMMEDIATE AREA AND THEN CALL 13 13 52

Our records indicate that ATCO Gas Australia Pty Ltd gas infrastructure ***IS NOT PRESENT*** in the vicinity of and/or surrounding area of the above enquiry. This response relates only to ATCO GAS AUSTRALIA assets. Your Duty of Care requires that personnel must at all times comply with, and have on site, this information sheet and the accompanying plan(s). All plans are subject to this information sheet. You should also refer to the "Questionnaire for works near ATCO Gas Australia gas infrastructure" on page [5] of this document, which must be read and all questions answered. If you answer "**yes**" to any of the questions you must contact ATCO Gas Australia during business hours on 1300 926 755.

All information provided is to be used as a guide only (see Disclaimer item 5). It does not absolve you or third parties from your Duty of Care obligations, including to take additional precautions where work has the potential to impact on gas assets, public safety or the environment, or from your duties at law (including Reg 3.21 of the Occupational Safety and Health Regulations 1996).

WARNINGS

- No works of any type within 15 metres of any **HIGH PRESSURE** gas infrastructure without prior approval from ATCO Gas Australia.
- **NO HOT WORK** within 15 metres of any gas infrastructure except in compliance with applicable laws & *Australian Standard 1674.* **DO NOT** let heat sources or hot works impact on gas infrastructure and take into consideration that the ground or adjacent structures may also be capable of transmitting heat so as to circumvent protection afforded by a heat shield or barrier.
- **DANGER** Gas can cause asphyxiation and is flammable. Keep all ignition sources well away (e.g., flames, matches/lighters, sparks, electrical devices, vehicles or engines, mobile phones, cameras).
- Gas pipes must not be unsupported or left without adequate cover or protection without prior approval from ATCO Gas Australia.
- Damage to the pipe coating or pipe itself can be very dangerous if not given immediate attention. Report any damage to ATCO Gas Australia immediately on 13 13 52. Do not attempt to repair any damaged gas infrastructure.
- No alteration or removal of live or abandoned gas infrastructure without prior written approval from ATCO Gas Australia.
- Any abandoned or proposed gas infrastructure indicated on the gas plans must be treated as live.
- Never assume the location or depth of any gas infrastructure. Pipes may not follow straight lines or maintain a constant depth. Always check carefully (e.g., by careful hand digging of potholes).
- Unauthorised repairs or tampering with gas infrastructure may result in prosecution under the *Energy Operators (Powers) Act 1979*. ATCO Gas Australia reserves all rights to recover compensation for loss or damage to its gas infrastructure or other property including for indirect or consequential losses.

PLANS:

Plans provided are current for **30 days only** from date of request. You must use current plans at all times.

Plans do not show all gas service lines (which connect gas mains to individual meter positions). See condition 3(c) below.

Plans (including the location of pipes, services, infrastructure and boundaries) are **approximate only**. You must use safe and proper procedures – including **potholing** (see condition 4 below).

Plans are not a guide as to gas availability for connection purposes.

To call ATCO Gas Australia: **Weekdays from 8am to 4pm, call – 1300 926 755**
After hours, weekends and emergencies, call – 13 13 52

CONDITIONS FOR WORKS IN THE VICINITY OF ATCO GAS AUSTRALIA ASSETS

1. Compliance with Warnings

You must comply with the Warnings contained in this information sheet and the accompanying plan(s).

2. Compliance with 'Additional Information for Working around Gas Pipelines' (AGA-O&M-PR24), applicable laws and duty of care

All work (including but not limited to using Excavator's Augers, Directional, drilling machines, 'Ditch Witch' type trenching machine, Loader, Dozer, Skid Steer (Bob Cat)) must comply with all applicable requirements in the 'Additional Information for Working around Gas Pipelines' (AGA-O&M-PR24) and with all applicable laws and Australian Standards. All due care must be exercised to locate any gas infrastructure in the vicinity and when conducting any works near them.

3. All Gas Infrastructure

All work that may have any impact upon any gas infrastructure (see 3(a), (b) and (c) below for examples) should be carefully planned with notification to ATCO Gas Australia well in advance of commencement. Contact ATCO Gas Australia Engineering Services on (08) 1300 926 755 or email engineering.services@atcogas.com.au. Amongst other things, this includes excavation of or near gas pipelines, boring/drilling, crossings of pipelines (including by other underground infrastructure e.g. drains, power cables, etc.), road works and structural installations. In addition:

a) High Pressure Pipelines (HP, PEHP > 110, CHP)

No works of any type are permitted within 15 metres of these pipelines without prior approval from ATCO Gas Australia. For approvals contact ATCO Gas Australia on 1300 926 755.

You must ascertain the location of any high pressure pipeline, in relation to your proposed work by:

- Locating a straight line between two high pressure warning signs, and
- Assessing the distance from this line to your proposed work area.

ATCO Gas Australia may require stand-by supervision during your works and will advise of attendance requirements.

b) Medium (MP), Medium-Low (MLP), Low (LP) and other Pipeline Pressures

These pipelines are installed in most streets throughout the Perth metro area and several country centres. Main valves, regulator sets and test points also exist at intervals along these pipelines. Where work may impact upon these pipelines or assets then ATCO Gas Australia must be contacted as per item 3 above.

c) Gas Services and Meters

If a gas meter is installed on a property, an underground gas service pipe will run from the meter position to the gas main in the street. Plans do not show all gas service lines, but their presence must be anticipated. Most gas meter boxes installed since 1996, most gas meter boxes will include a sticker giving approximate guidelines for the gas service line location. All due care must be exercised to locate any gas services in the vicinity and when conducting any works near them.

4. Compliance with Safe Work Practices

It is your responsibility to have and comply with adequate safe work practices and procedures.

Without limiting your obligations:

PLAN The complete Dial Before You Dig documentation and plans must always be on site and referred to for the duration of work. Refer to regulation 3.21 of the *Occupational Safety and Health Regulations 1996* and the Utility Providers "Code of Practice" for further useful information.

POTHOLE Using current Dial Before You Dig plans, all gas pipes should be located (including any deviation in the direction of a gas pipe) by exposing them by careful digging using a HAND SHOVEL. Where the proposed work is parallel to a gas pipeline, pothole every 5 metres along the entire route. Damage to the pipe coating or to the pipe itself can create a very dangerous situation if not given immediate attention. If damage does occur, it must be reported to ATCO Gas Australia immediately on Ph. 13 13 52.

PROTECT Supervise and monitor all excavations near gas infrastructure using a dedicated spotter. Where any gas infrastructure is required to be exposed, adequate protection of the gas infrastructure is required to prevent potential damage. Also implement appropriate controls when conducting 'hot work' (in accordance with AS 1674) in the vicinity of the ATCO GAS AUSTRALIA GDS such as; isolation; separation distance; the placement of an effective non-combustible barrier of sufficient size and thermal resistance for the intensity, type and duration of heat exposure; gas monitoring; monitoring the environment surrounding the ATCO GAS AUSTRALIA GDS to ensure it is not being impacted by the work, and other controls as necessary.

5. Disclaimer and Further Terms

a) Nothing in this document, any accompanying plan or the 'Additional Information for Working around Gas Pipelines' (AGA-O&M-PR24) (together called "**Documents**") purports to exclude or modify any term, condition or warranty to the extent that by law it cannot lawfully be excluded or modified by agreement or notice, including but not limited to those contained in Schedule 2 of the *Competition and Consumer Act* 2010 (Cth) and corresponding provisions of state legislation.

b) If any of ATCO Gas Australia Pty Ltd, or their respective related entities, officers, employees, agents, contractors or advisers (together called "**Associates**") is liable for a breach of a term, condition or warranty described in paragraph 5(a) above, its liability is, to the fullest extent permitted by law, limited to any one or more of the following as it determines in its absolute discretion:

i) in relation to goods supplied by them, replacing or repairing the goods, supplying an equivalent item, paying the cost of replacing or repairing the goods or paying the cost of acquiring or hiring an equivalent item; and

ii) in relation to services supplied by them, the re-supply of the services or the payment of the cost of having the services re-supplied.

c) Subject to paragraphs 5(a) and (b), but otherwise despite any other provision in the Documents, no representation or warranty is made or given (whether expressly or by implication) by any of ATCO Gas Australia or their respective Associates in respect of any information contained or referred to in any of the Documents or in any other communication from ATCO Gas Australia concerning any of the Documents or the subject matter of any of the Documents ("Information"). In particular, but without limiting the generality of the foregoing limitation, none of ATCO Gas Australia or their respective Associates makes any warranty or representation as to the truth, accuracy, completeness, reliability, currency, timeliness, quality or fitness for any purpose of or the standard of care taken in the preparation of any Document or Information (including, but not limited to, the accuracy of the scale of, or the location of anything or symbol shown on, any plan or diagram).

d) Subject to paragraphs 5(a) and (b), to the maximum extent permitted by law, none of ATCO Gas Australia or their respective Associates is liable to any person or other body ("**Recipient**") who receives or otherwise obtains access to all or any part or parts of the Documents or Information, in any way (including, but not limited to, liability for negligence, breach of statutory duty or lack of care) in respect of any cost, expense, damages, loss or liability, including, but not limited to:

i) any financial or economic loss, cost, expense or damage, including but not limited to loss of production, loss of profit, loss of revenue, loss of use, loss of contract, loss of goodwill or loss of business opportunity;

ii) any new or increased costs or expenses, including but not limited to financing or operating costs;

iii) any failure to achieve any actual or anticipated saving in respect of any cost or expense;

iv) any cost, expense, damage or loss resulting from any liability of the Recipient to any other person or body howsoever and whensoever arising, suffered or incurred by the Recipient in relation to, or in connection with, the disclosure to them of, or use of, or reliance on, all or any part or parts of the Documents or Information.

e) By using any Document or Information, each Recipient is taken to represent and warrant to ATCO Gas Australia that the Recipient will comply with the conditions and other terms referred to in the Documents or Information, including but not limited to conditions that:

i) the Recipient must comply with the conditions in numbered paragraphs 1 to 4 above and this paragraph 5;

ii) as between ATCO Gas Australia and each Recipient, ATCO Gas Australia owns the Information and all rights and title in and to the Information are to remain vested in ATCO Gas Australia;

iii) no Recipient has any right, title or interest in the Information or, except as expressly provided for in the Documents, any licence or right to copy, alter, modify, publish or otherwise use or deal with the Information without prior written approval from ATCO Gas Australia;

iv) ATCO Gas Australia makes no representation and gives no warranty as to its right to disclose any Information;

v) the Recipient relies on any Information entirely at its own risk and expense;

vi) the Recipient must undertake its own independent due diligence and investigations in relation to the Information;

vii) none of ATCO Gas Australia or their respective Associates owes the Recipient any duty of care in respect of the Information; and

viii) none of ATCO Gas Australia or their respective Associates is under any obligation to correct, update or revise any Documents or Information.

GAS MAIN AND SERVICE IDENTIFICATION

LEGEND

1. Pipe Diameter (Millimetre's)
2. Pipe Material
   CI = Cast Iron PE = Polyethylene
   GI = Galvanised Iron PVC = PVC
   ST = Steel
3. Alignment (in metres from property line)
4. Pressure in main (MP 70Kpa = Medium Pressure and MAOP(Maximum Allowable Operating Pressure).
5. Off Line Service – service may not be straight line to meter. (**<u>WARNING</u> – OLS may not always be shown on plan**. See item 3c above).
6. Service Valve in the vicinity.

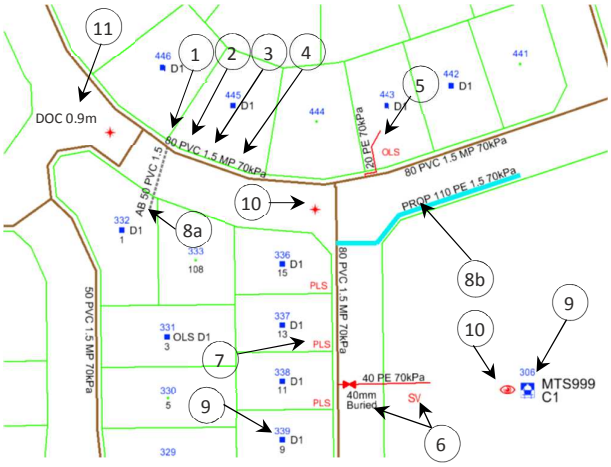
(Note: Service Valve may be **"BURIED"**).

7. Pre-Laid Service laid in Common Trench.
8. Main Status: (See WARNINGS page 1).

8a. AB = Abandoned Mains

8b. PROP = Proposed Mains

9. Customer Connection: Does not indicate actual location of Meter Position.
   D1 = Domestic
   C1 = Commercial
10. **Additional detail available and must be obtained if within area of proposed works – see page 2 above.**
11. Depth of Cover (DOC) in metres.



QUESTIONNAIRE FOR WORKS NEAR ATCO GAS AUSTRALIA GAS INFRASTRUCTURE

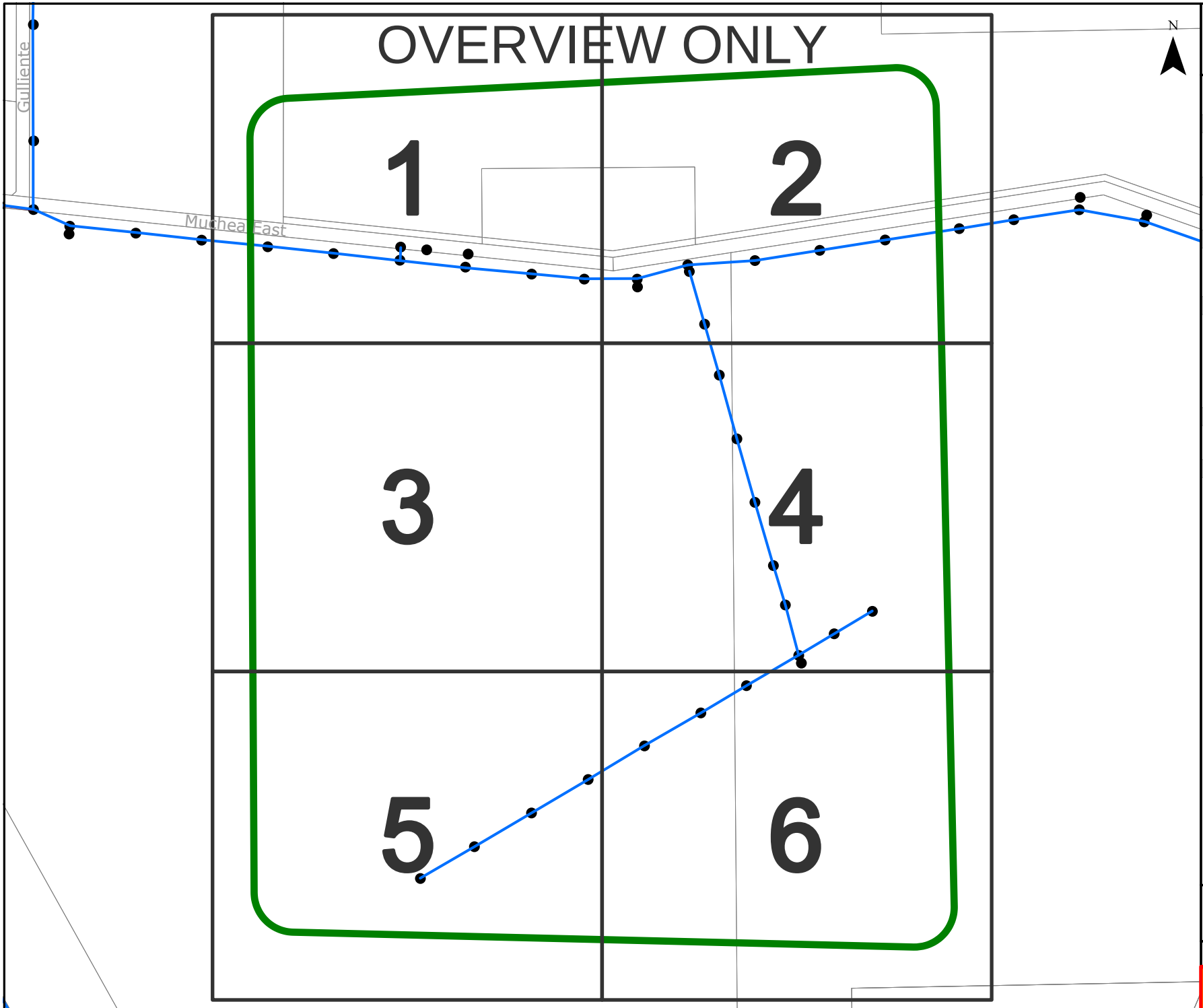
The accompanying documentation must be read and the following questions answered and instructions followed when planning and **before commencing any work**.

Questions		Yes	No
1	Will any works be within 15 metres of any High Pressure gas infrastructure?	☐	☐
If answered ***Yes*** you must contact the ATCO Gas Australia **High Pressure Coordinator** to seek prior approval on ***1300 926 755*** between 08:00 hours – 16:00 hours (Monday – Friday***,*** except public holidays).			
If you answer ***Yes*** to any of the following questions you must contact ATCO Gas Australia **Engineering Services** to seek prior approval on ***1300 926 755*** between the above hours. Plan ahead and allow sufficient time for ATCO Gas Australia Engineering Services to consider your request.			
Question		**Yes**	**No**
2	Will any works require the use of a vibrating roller within 15 metres of any gas mains?	☐	☐
3	Will any works involve boxing the ground out to a depth of 300mm or more for the construction of a road/car park or crossover/driveway over a gas main?	☐	☐
4	Will any works affect water flows or drainage, e.g., surface drainage, within 15 metres of any gas mains?	☐	☐
5	Will any works involve traversing any gas infrastructure with any heavy vehicle or plant (e.g., cranes, agitators or trucks)?	☐	☐
6	Will any works involve stockpiling of spoil, dangerous goods or any other materials over any gas infrastructure?	☐	☐
7	Will any works or structure (e.g., fencing) obstruct access to gas infrastructure?	☐	☐
8	Will any works involve placing infrastructure e.g., cable, pipes etc. that will not comply with the minimum separation distances to the gas infrastructure: 300mm crossing, 500mm parallel?	☐	☐
9	Will any works involve blasting that could affect any gas infrastructure?	☐	☐
10	Will any works involve the installation of electrical infrastructure to operate above 22kV in the vicinity of any steel gas infrastructure?	☐	☐

If unsure, please contact ATCO Gas Australia Engineering Services on ***1300 926 755***.

IMPORTANT*:** It is your responsibility to ***TAKE CARE to comply with all requirements of ATCO Gas Australia Engineering Services (including their 'Additional Information for Working around Gas Pipelines' (AGA-O&M-PR24)), the ATCO Gas Australia Dial Before You Dig cover sheets and maps and all applicable laws and standards.

IF YOU SEE, HEAR, SMELL OR OTHERWISE DETECT GAS, LEAVE THE IMMEDIATE AREA AND THEN CALL 13 13 52



westernpower

OVERHEAD LEGEND

Structures

- Power Pole
- Transmission Poles

Transmission Overhead Powerline

- Transmission (33kV - 330kV)

Distribution Overhead Powerline

- High Voltage (1kV - 33kV)
- Low Voltage (< 1kV)

Proposed Construction Assets

- Design Area *
- High Voltage Overhead Powerline
- Low Voltage Overhead Powerline
- Power Pole

Communications Assets

- Overhead Pilot Cable

Feature

- Area of Interest

*** Please refer to coversheet**

Privately owned cables NOT SHOWN (including house services)

This map is INDICATIVE ONLY. Check that you have enough clearance from the DANGER ZONES near overhead powerlines.

Telephone Support: 1300 769 345
Mon to Fri - 08:00 to 16:30

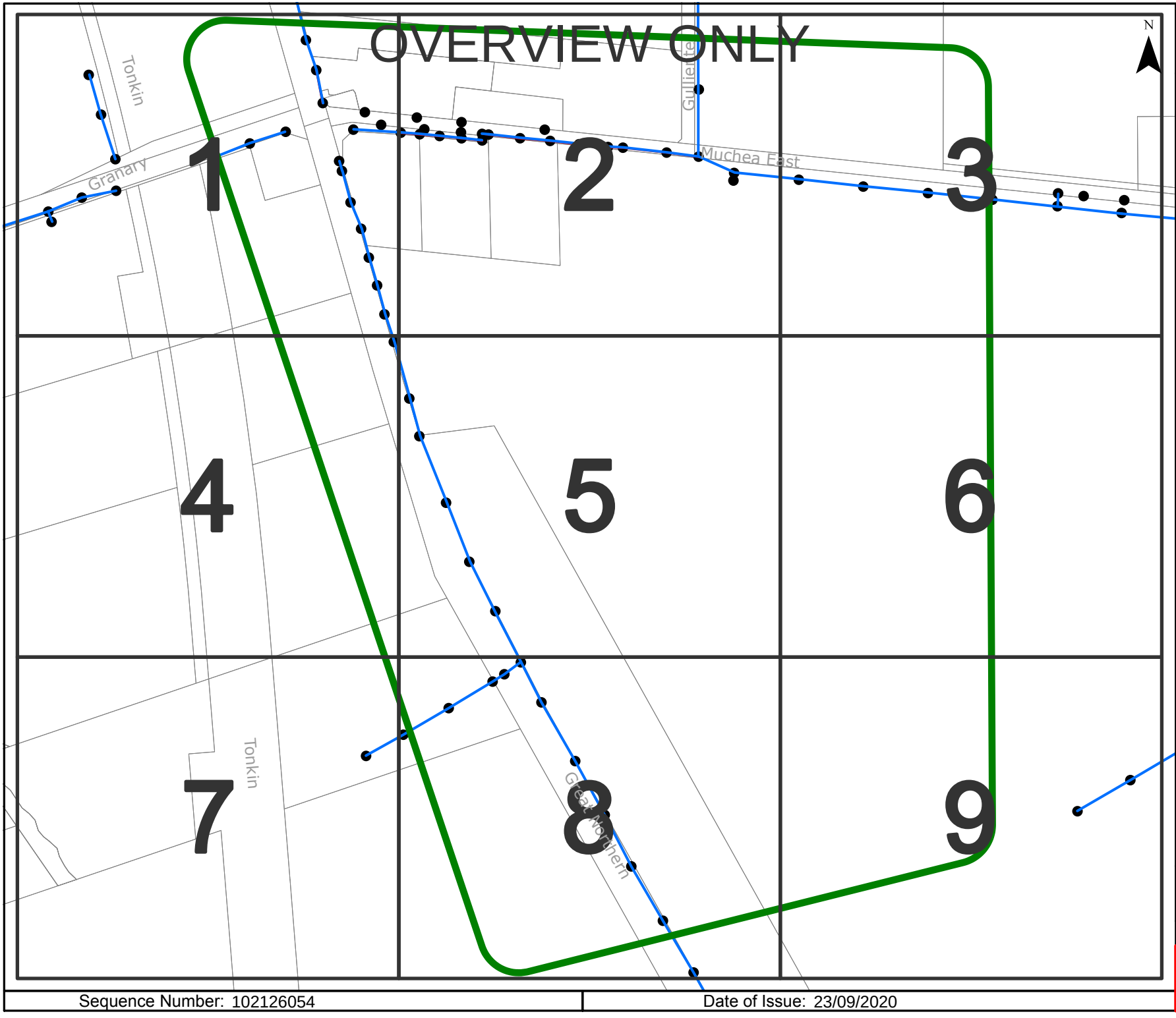
Information valid for 30 days from date of issue

A4	Scale : 1:7687

WARNING! Look out for overhead power lines

Sequence Number: 102126188

Date of Issue: 23/09/2020



westernpower

OVERHEAD LEGEND

Structures

- Power Pole
- Transmission Poles

Transmission Overhead Powerline

- Transmission (33kV - 330kV)

Distribution Overhead Powerline

- High Voltage (1kV - 33kV)
- Low Voltage (< 1kV)

Proposed Construction Assets

- Design Area *
- High Voltage Overhead Powerline
- Low Voltage Overhead Powerline
- Power Pole

Communications Assets

- Overhead Pilot Cable

Feature

- Area of Interest

*** Please refer to coversheet**

Privately owned cables NOT SHOWN (including house services)

This map is INDICATIVE ONLY. Check that you have enough clearance from the DANGER ZONES near overhead powerlines.

Telephone Support: 1300 769 345
Mon to Fri - 08:00 to 16:30

Information valid for 30 days from date of issue

A4	Scale : 1:7687

WARNING! Look out for overhead power lines

Sequence Number: 102126054

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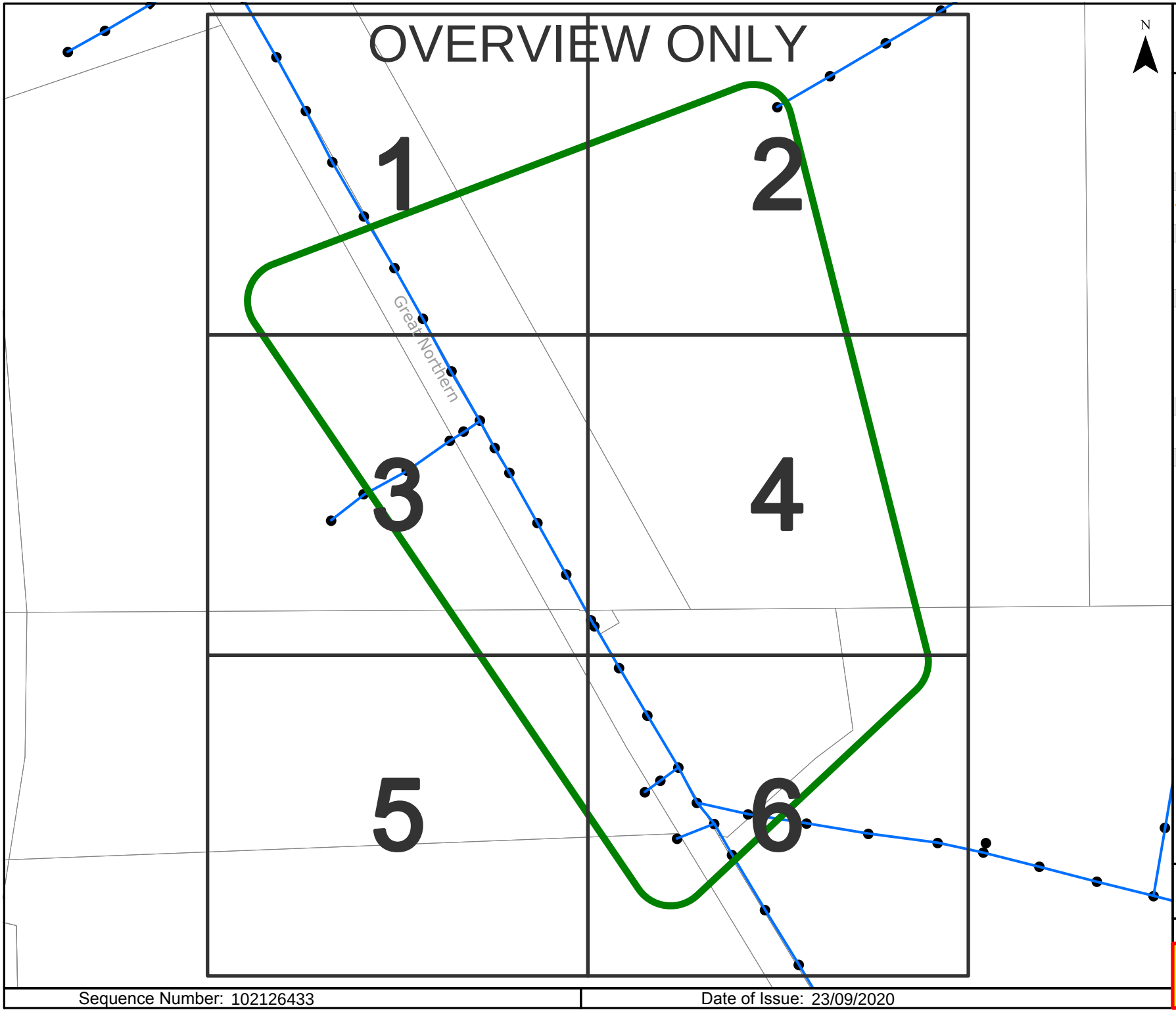


westernpower

OVERHEAD LEGEND

Structures

- Power Pole
- Transmission Poles

Transmission Overhead Powerline

- Transmission (33kV - 330kV)

Distribution Overhead Powerline

- High Voltage (1kV - 33kV)
- Low Voltage (< 1kV)

Proposed Construction Assets

- Design Area *
- High Voltage Overhead Powerline
- Low Voltage Overhead Powerline
- Power Pole

Communications Assets

- Overhead Pilot Cable

Feature

- Area of Interest

*** Please refer to coversheet**

Privately owned cables NOT SHOWN (including house services)

This map is INDICATIVE ONLY. Check that you have enough clearance from the DANGER ZONES near overhead powerlines.

Telephone Support: 1300 769 345
Mon to Fri - 08:00 to 16:30

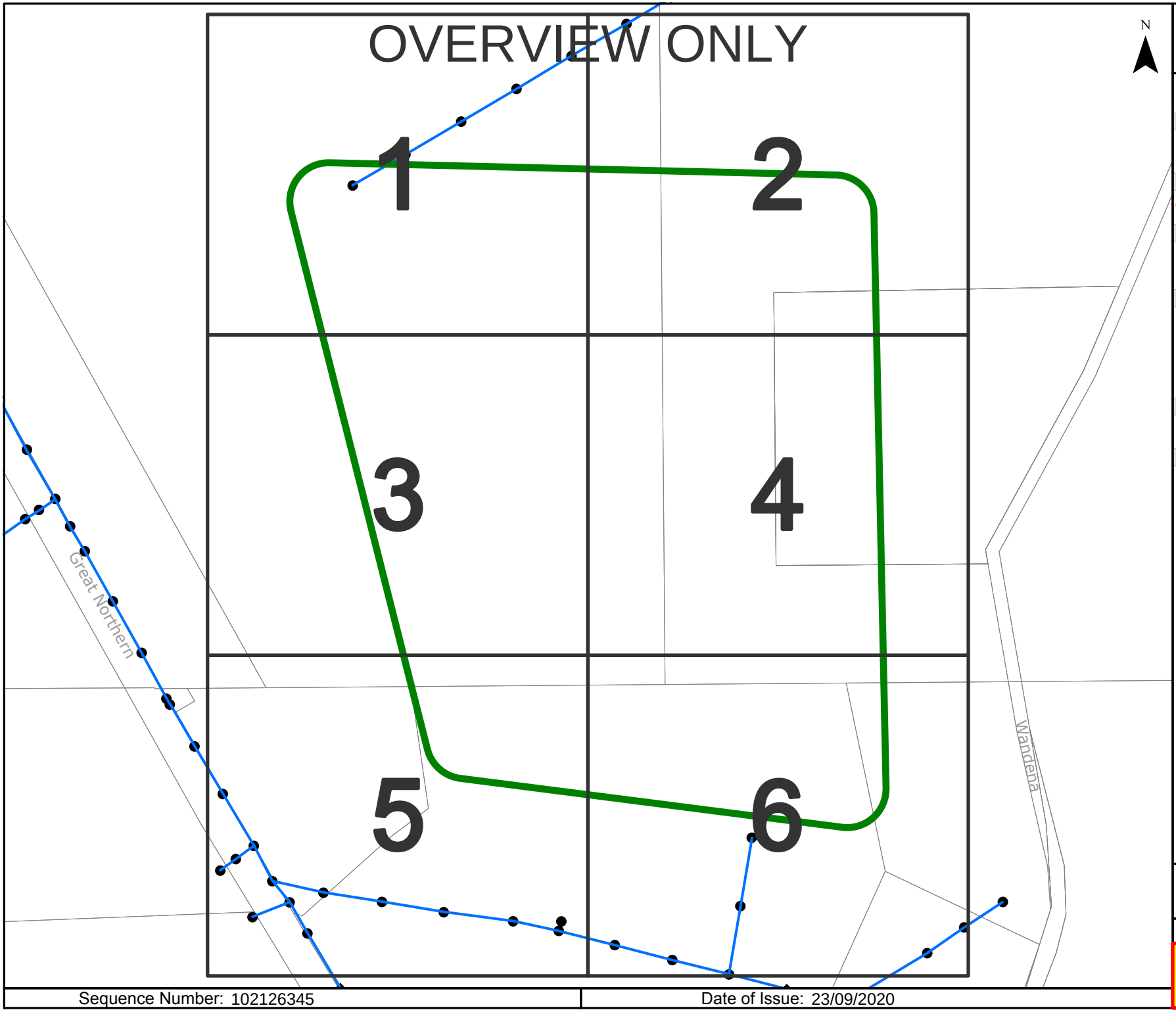
Information valid for 30 days from date of issue

A4	Scale : 1:7687

WARNING! Look out for overhead power lines

Sequence Number: 102126433

Date of Issue: 23/09/2020



westernpower

OVERHEAD LEGEND

Structures

- Power Pole
- Transmission Poles

Transmission Overhead Powerline

- Transmission (33kV - 330kV)

Distribution Overhead Powerline

- High Voltage (1kV - 33kV)
- Low Voltage (< 1kV)

Proposed Construction Assets

- Design Area *
- High Voltage Overhead Powerline
- Low Voltage Overhead Powerline
- Power Pole

Communications Assets

- Overhead Pilot Cable

Feature

- Area of Interest

*** Please refer to coversheet**

Privately owned cables NOT SHOWN (including house services)

This map is INDICATIVE ONLY. Check that you have enough clearance from the DANGER ZONES near overhead powerlines.

Telephone Support: 1300 769 345
Mon to Fri - 08:00 to 16:30

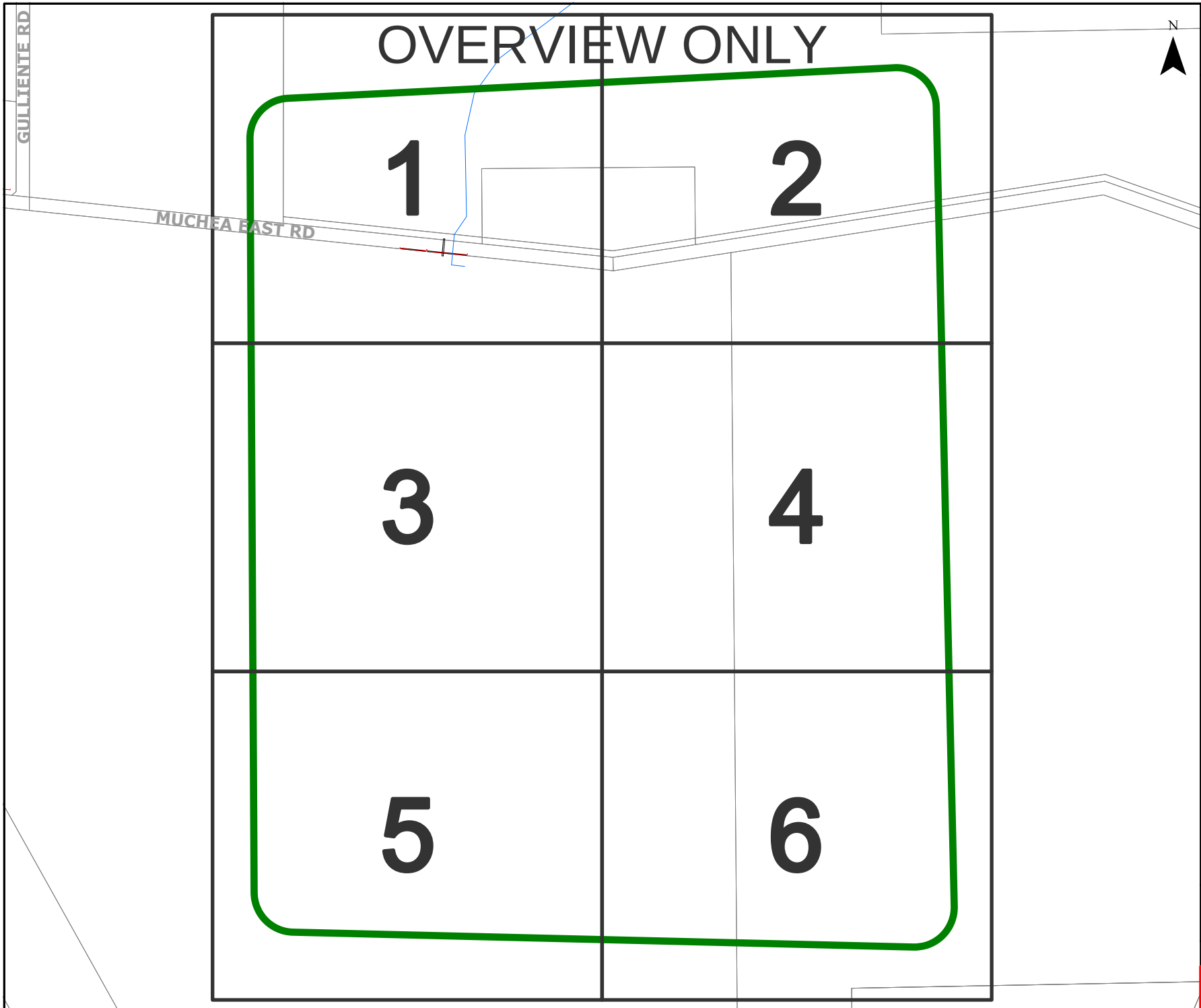
Information valid for 30 days from date of issue

A4	Scale : 1:7687

WARNING! Look out for overhead power lines

Sequence Number: 102126345

Date of Issue: 23/09/2020



westernpower

UNDERGROUND LEGEND

Structures

- Pillar
- Metal Pole
- Transformer Site
- UG Crossing *
- Ring Main Unit
- LV Distribution Frame

Distribution Cables

- High Voltage Cable (1kV - 33kV)
- Low Voltage Cable (< 1kV)
- Street Light Circuit (< 1kV)
- Street Light Pilot (< 1kV)
- Earth Wire

Cable Pole Terminations

- HV Termination
- LV Termination

Proposed Construction Assets

- Design Area *
- High Voltage Underground Cable
- Low Voltage Underground Cable
- Metal Pole
- Pillar
- Transformer site
- HV Termination
- LV Termination

State Underground Power Project

- CURRENT Work Area *
- COMPLETED Area *

Feature

- Area of Interest

*** Please refer to coversheet**

Privately owned cables NOT SHOWN (including house services)

This map is INDICATIVE ONLY. Hand exposure via pothole method is MANDATORY.

Telephone Support: 1300 769 345
Mon to Fri - 08:00 to 16:30

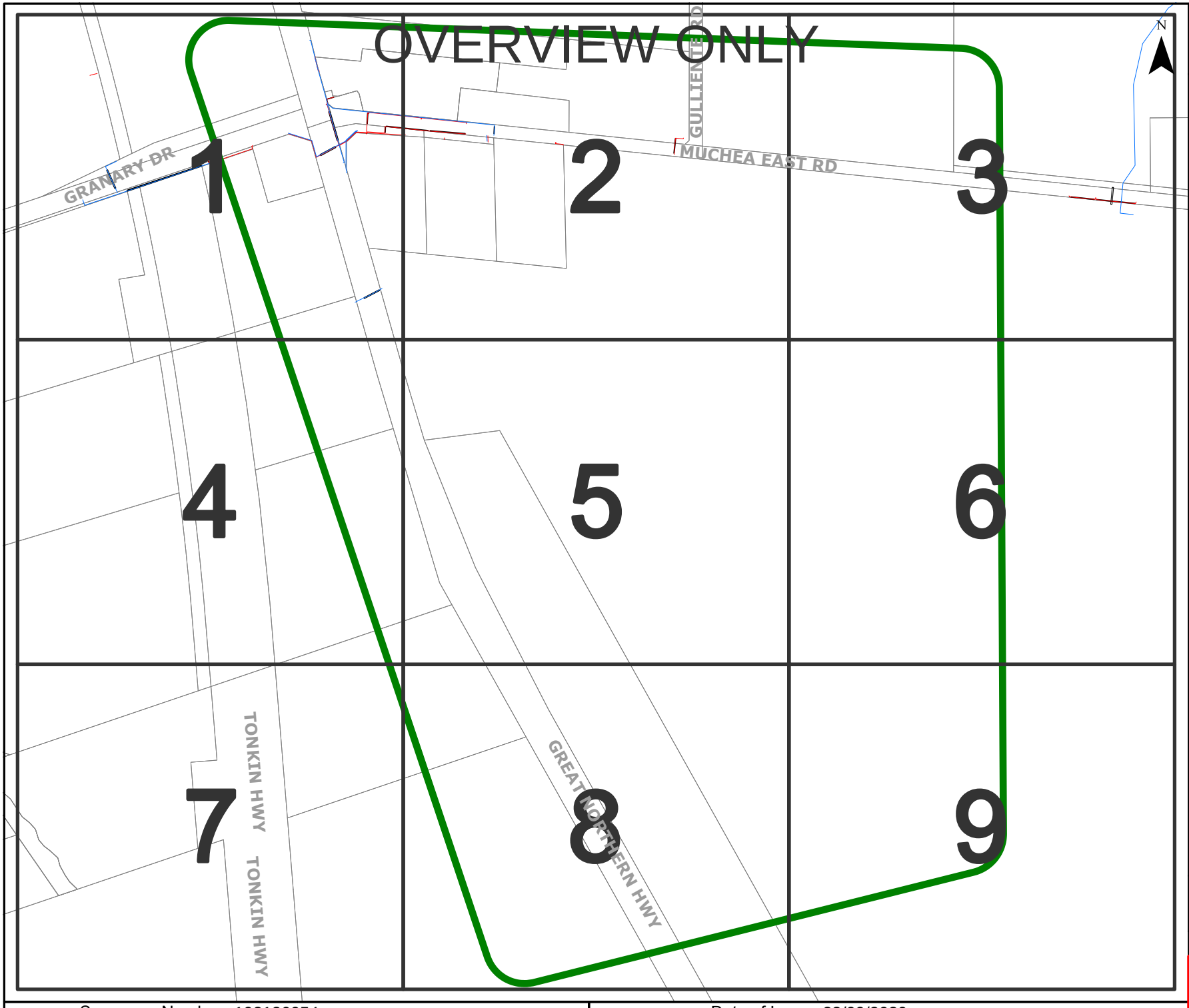
Information valid for 30 days from date of issue

A4	Scale : 1:7687

WARNING! Look out for overhead power lines

Sequence Number: 102126188

Date of Issue: 23/09/2020



westernpower

UNDERGROUND LEGEND

Structures

- Pillar
- Metal Pole
- Transformer Site
- UG Crossing *
- Ring Main Unit
- LV Distribution Frame

Distribution Cables

- High Voltage Cable (1kV - 33kV)
- Low Voltage Cable (< 1kV)
- Street Light Circuit (< 1kV)
- Street Light Pilot (< 1kV)
- Earth Wire

Cable Pole Terminations

- HV Termination
- LV Termination

Proposed Construction Assets

- Design Area *
- High Voltage Underground Cable
- Low Voltage Underground Cable
- Metal Pole
- Pillar
- Transformer site
- HV Termination
- LV Termination

State Underground Power Project

- CURRENT Work Area *
- COMPLETED Area *

Feature

- Area of Interest

*** Please refer to coversheet**

Privately owned cables NOT SHOWN (including house services)

This map is INDICATIVE ONLY. Hand exposure via pothole method is MANDATORY.

Telephone Support: 1300 769 345
Mon to Fri - 08:00 to 16:30

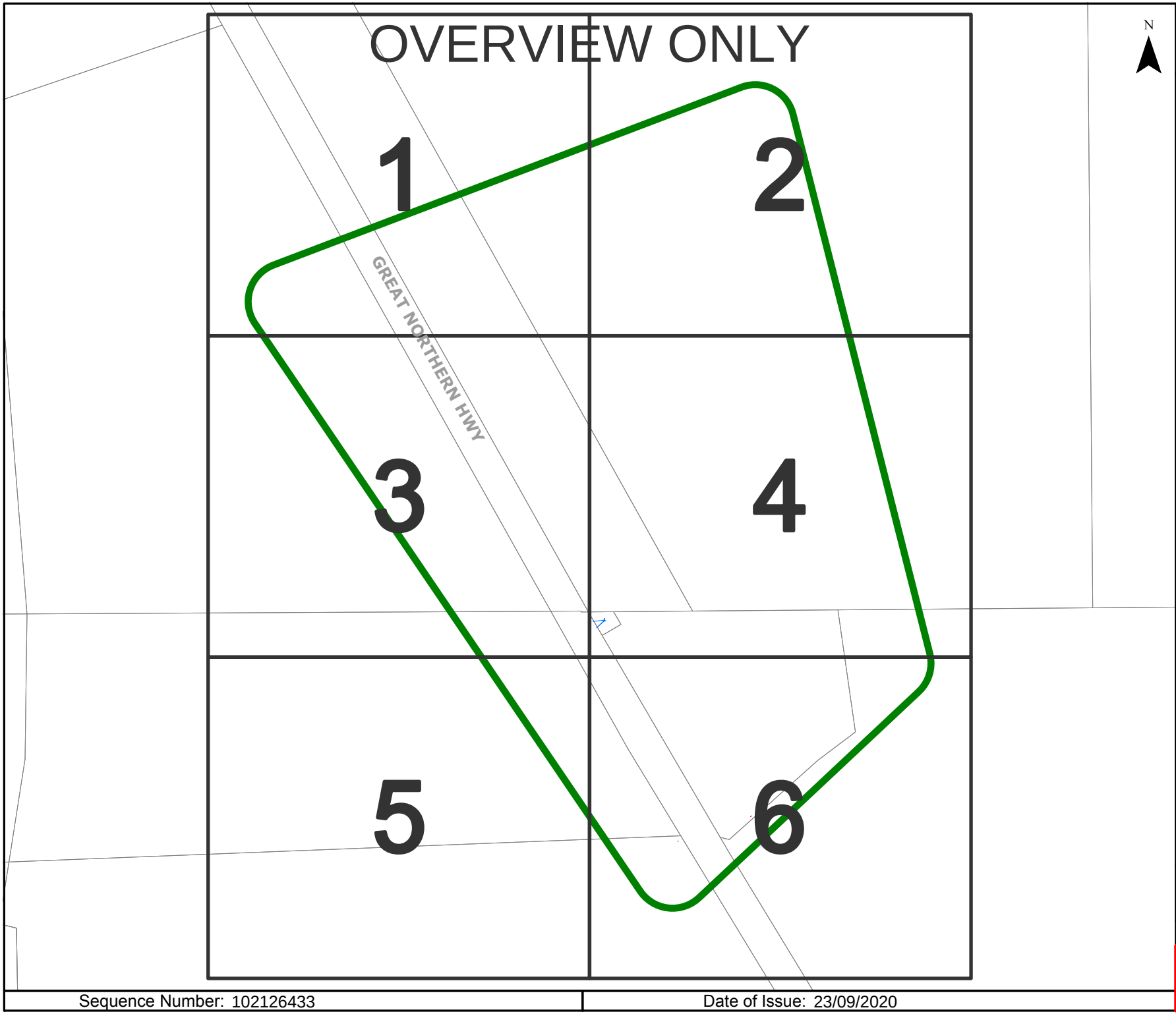
Information valid for 30 days from date of issue

A4	Scale : 1:7687

WARNING! Look out for overhead power lines

Sequence Number: 102126054

Date of Issue: 23/09/2020



westernpower

UNDERGROUND LEGEND

Structures

- Pillar
- Metal Pole
- Transformer Site
- UG Crossing *
- Ring Main Unit
- LV Distribution Frame

Distribution Cables

- High Voltage Cable (1kV - 33kV)
- Low Voltage Cable (< 1kV)
- Street Light Circuit (< 1kV)
- Street Light Pilot (< 1kV)
- Earth Wire

Cable Pole Terminations

- HV Termination
- LV Termination

Proposed Construction Assets

- Design Area *
- High Voltage Underground Cable
- Low Voltage Underground Cable
- Metal Pole
- Pillar
- Transformer site
- HV Termination
- LV Termination

State Underground Power Project

- CURRENT Work Area *
- COMPLETED Area *

Feature

- Area of Interest

*** Please refer to coversheet**

Privately owned cables NOT SHOWN (including house services)

This map is INDICATIVE ONLY. Hand exposure via pothole method is MANDATORY.

Telephone Support: 1300 769 345
Mon to Fri - 08:00 to 16:30

Information valid for 30 days from date of issue

A4	Scale : 1:7687

WARNING! Look out for overhead power lines

Sequence Number: 102126433

Date of Issue: 23/09/2020

Annexure F – Department of Water Correspondence

Hendrik Wijaya

From: Flood <flood@dwer.wa.gov.au>
Sent: 30 September 2020 13:26
To: Hendrik Wijaya
Cc: Oleg Omelchuk
Subject: Floodplain management advice - 3488 (Lot M1456) & Lot 50 Great Northern Highway, Muchea - Hendrik Wijaya - 30092020
Attachments: 50gnh.pdf

Hendrik

We have no information on flooding or flood levels at this location. The available contour information indicate the presence of a waterway feature in the north of the Lot and the entire Lot may be subject to shallow overland flow from the east towards Great Northern Highway during major rainfall events.

Regards

Simon Rodgers
Supervising Engineer
Surface Water Assessment and Flood Risk Science

Department of Water and Environmental Regulation
Prime House, 8 Davidson Terrace, JOONDALUP WA 6027
Locked Bag 10, Joondalup DC, WA 6919
T: (08) 6364 6923 M: 0429 080 517
E: simon.rodgers@dwer.wa.gov.au | www.dwer.wa.gov.au

From: Hendrik Wijaya <hwijaya@peritasgroup.com.au>
Sent: Thursday, 24 September 2020 12:13 PM
To: Flood <flood@dwer.wa.gov.au>
Cc: Oleg Omelchuk <oleg@peritasgroup.com.au>
Subject: 3488 (Lot M1456) & Lot 50 Great Northern Highway, Muchea - Flood data request

Hi Simon,
Can I please have a quick check if this site is influenced by flood.

Government of Western Australia
Department of Water and Environmental Regulation

Lot 30 Great Northern Highway, Muchea

Legend

- FPM Flood Level Points (m AHD)
- FPM Historical Flood Levels (m AHD)
- Cadastre

Notes

0.5 0 0.23 0.5 Kilometers

WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

Author: SR

Recipient:

Hendrik Wijaya

From: Jim MacKintosh <jim.mackintosh@dwer.wa.gov.au>
Sent: 02 February 2021 13:21
To: Hendrik Wijaya
Cc: Bree Lyons; Oleg Omelchuk
Subject: RE: Floodplain management advice - 3488 (Lot M1456) & Lot 50 Great Northern Highway, Muchea - Hendrik Wijaya - 30092020

Dear Hendrik,

I have review the site on our GIS and within the Draft Regional Water Management Strategy (RWMS) produced by DPLH – Did you get a copy of this RWMS like I suggested?

The waterway is mapped as a waterway and tributary of the Ellenbrook River. Therefore the DWER would expect that it would be retained and rehabilitated to a more natural waterway. This is consistent with the information in the RWMS which also requires its retention and it performs an important hydrological, environmental and flood control function.

This position may be negotiated if it can be demonstrated that the waterway was a former drain and does not perform any environmental or hydrological function.

I hope this answers your query. I strongly recommend obtaining a copy of the Draft RWMS from DPLH as this document has a lot of information on both waterways at that site.

Regards

Jim Mackintosh

Department of Water and Environmental Regulation

Program Manager

Swan Avon Region

Planning Advice Section

T 08 6250 8043 |
E jim.mackintosh@dwer.wa.gov.au
Visit our website www.dwer.wa.gov.au

From: Hendrik Wijaya <hwijaya@peritasgroup.com.au>
Sent: Tuesday, 2 February 2021 12:20 PM
To: Jim MacKintosh <jim.mackintosh@dwer.wa.gov.au>
Cc: Bree Lyons <bree.lyons@dwer.wa.gov.au>; Oleg Omelchuk <oleg@peritasgroup.com.au>
Subject: RE: Floodplain management advice - 3488 (Lot M1456) & Lot 50 Great Northern Highway, Muchea - Hendrik Wijaya - 30092020

Hi Jim,
Hope you are keeping well. Time flies and the break is over and we are into another crisis!

Have you had a chance to look at the below?

Thank you

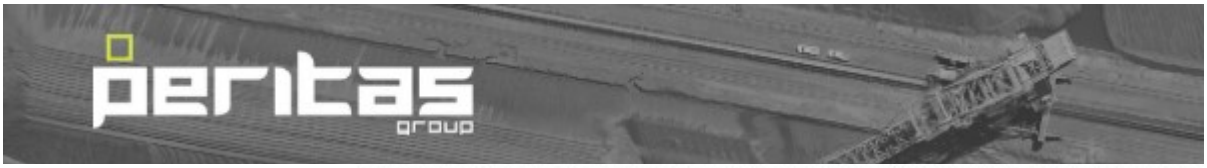
Kind Regards,

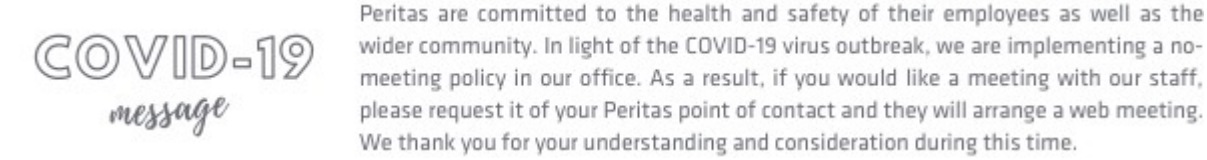
Hendrik Wijaya

SENIOR CIVIL ENGINEER

Peritas Consulting Pty Ltd

Perth | Melbourne
E: hwijaya@peritasgroup.com.au
M: 0403 886 278
P: + 61 8 6109 6514





From: Hendrik Wijaya
Sent: Wednesday, 16 December 2020 1:43 PM
To: Jim MacKintosh <jim.mackintosh@dwer.wa.gov.au>
Cc: Bree Lyons <bree.lyons@dwer.wa.gov.au>; Oleg Omelchuk <oleg@peritasgroup.com.au>
Subject: RE: Floodplain management advice - 3488 (Lot M1456) & Lot 50 Great Northern Highway, Muchea - Hendrik Wijaya - 30092020

Hi Jim,
Thank you for getting back to me with the timeframes, look forward to hearing back from you mid next year.

have a Merry Christmas and Happy New Year.

thank you

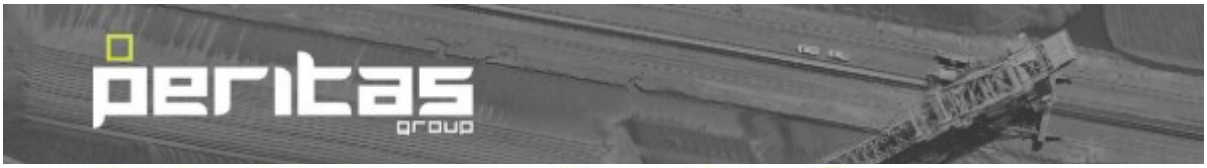
Regards,

Hendrik Wijaya

SENIOR CIVIL ENGINEER

Peritas Consulting Pty Ltd

Perth | Melbourne
E: hwijaya@peritasgroup.com.au
M: 0403 886 278
P: + 61 8 6109 6514



Merry Christmas & Happy New Year

Please be advised that the Peritas office will be closed during the festive season.
The closure will commence Thursday 24th December 2020, returning to the office Monday 4th January 2021.

From: Jim MacKintosh <jim.mackintosh@dwer.wa.gov.au>
Sent: 16 December 2020 13:41
To: Hendrik Wijaya <hwijaya@peritasgroup.com.au>
Cc: Bree Lyons <bree.lyons@dwer.wa.gov.au>; Oleg Omelchuk <oleg@peritasgroup.com.au>
Subject: RE: Floodplain management advice - 3488 (Lot M1456) & Lot 50 Great Northern Highway, Muchea - Hendrik Wijaya - 30092020

Dear Hendrik,

The Department's position/advice is related to the northern waterway as that was the question you had previously asked. I would need to check the District Water Management Strategy (DWMS) and our GIS mapping to determine if this requirement applies to the southern waterway (even if it is a drain as it is performing a hydrological function and potentially an environmental function). The DWMS should have some information and direction on this waterway so I hope you have obtained a copy from DPLH.

I cannot attend to this query at this time due to our substantial queue of other referrals and queries. A response would likely be provided by mid to late January 2021.

Regards

Jim Mackintosh

Department of Water and Environmental Regulation

Program Manager

Swan Avon Region

Planning Advice Section

T 08 6250 8043 |
E jim.mackintosh@dwer.wa.gov.au
Visit our website www.dwer.wa.gov.au

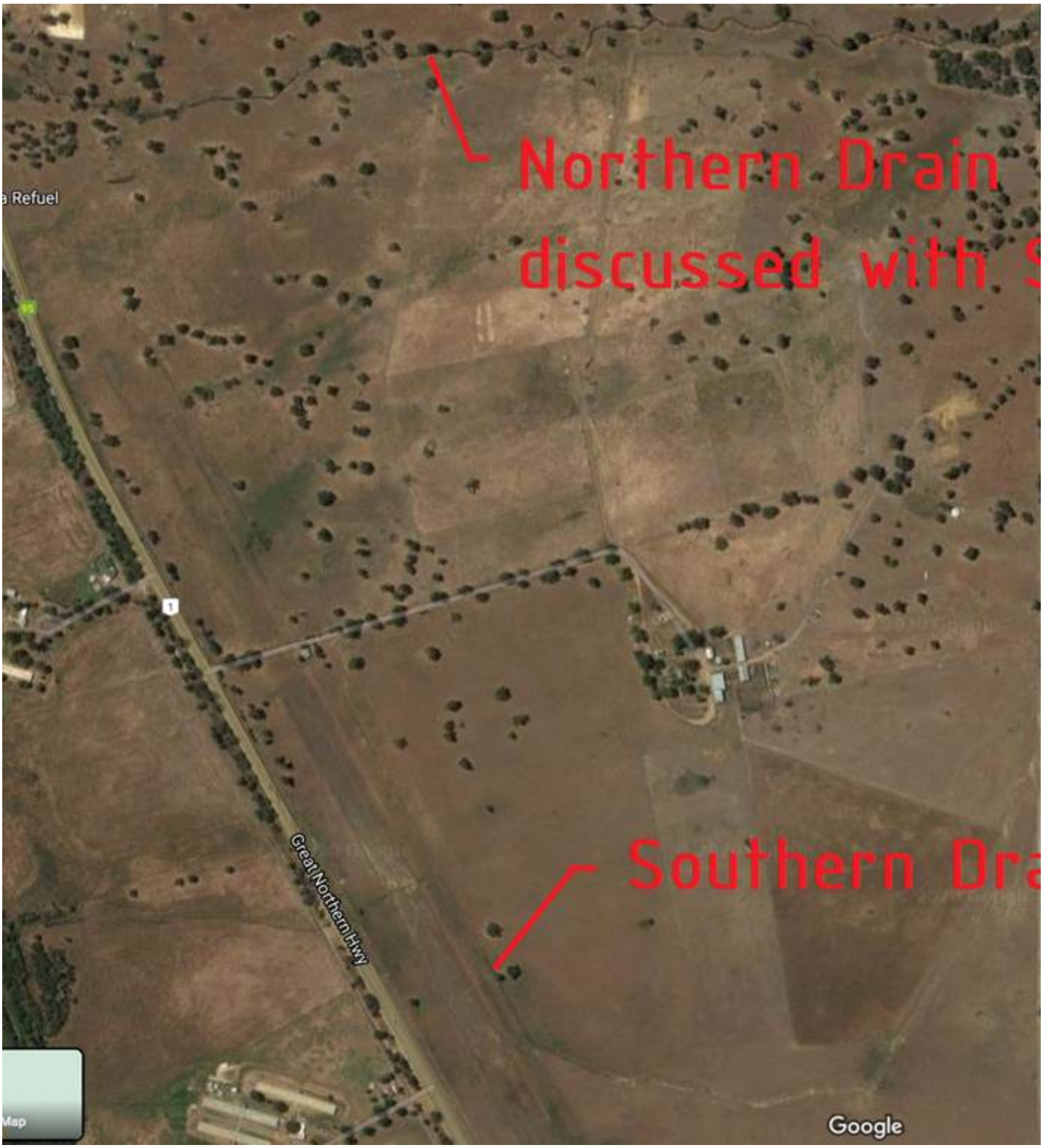
From: Hendrik Wijaya <hwijaya@peritasgroup.com.au>
Sent: Wednesday, 16 December 2020 12:22 PM
To: Jim MacKintosh <jim.mackintosh@dwer.wa.gov.au>
Cc: Bree Lyons <bree.lyons@dwer.wa.gov.au>; Simon Rodgers <simon.rodgers@dwer.wa.gov.au>; Oleg Omelchuk <oleg@peritasgroup.com.au>
Subject: RE: Floodplain management advice - 3488 (Lot M1456) & Lot 50 Great Northern Highway, Muchea - Hendrik Wijaya - 30092020

Hi Jim,
We just had a team discussion on site constraints and the client wanted confirmation if your comments below (preserving and rehabilitating drain from east to west) is associated with all of the drains traversing the site or is it just for the northern drain?

The initial discussion with Simon Rodgers was to do with the norther drain, which led to referral to yourself. I didn't specifically consider the southern drain until it was raised at the meeting yesterday.

The northern drain looks natural and I can appreciate the need to preserve it. The southern drain on the other hand looks man made (not meandering, straight with distinct angles). This looked to me more like a farmers drain.

can you please get back to us. Thank you



Regards,

Hendrik Wijaya

SENIOR CIVIL ENGINEER

Peritas Consulting Pty Ltd

Perth | Melbourne
E: hwijaya@peritasgroup.com.au
M: 0403 886 278
P: + 61 8 6109 6514

From: Jim MacKintosh <jim.mackintosh@dwer.wa.gov.au>
Sent: 13 October 2020 15:09
To: Hendrik Wijaya <hwijaya@peritasgroup.com.au>
Cc: Bree Lyons <bree.lyons@dwer.wa.gov.au>
Subject: RE: Floodplain management advice - 3488 (Lot M1456) & Lot 50 Great Northern Highway, Muchea - Hendrik Wijaya - 30092020

Dear Hendrik,

The subject site contains a mapped non-perennial waterway (see below) that flows east to west across the site (from the property to the east, under Great Northern Hwy and Tonkin Hwy to the Ellen Brook). The Department of Water and Environmental Regulation (DWER) require that the waterway is retained, rehabilitated and reserved in a foreshore reserve (or similar) for conservation purposes. The foreshore reserve should be determined based on the DWER's *Operational P:olicy 4.3 – Identifying and establishing waterways foreshore areas* (DWER, Sept 2012).

The Department of Planning, Lands and Heritage (DPLH) has prepared a District Water Management Strategy (DWMS) to guide future development. It is recommended that you contact DPLH (Matthew.Burnett@dplh.wa.gov.au or Cath.Meaghan@dplh.wa.gov.auor) or the Shire of Chittering to obtain a copy of this DWMS.

Regards

Jim Mackintosh

Department of Water and Environmental Regulation

Program Manager

Swan Avon Region

Planning Advice Section

T 08 6250 8043 |
E jim.mackintosh@dwer.wa.gov.au
Visit our website www.dwer.wa.gov.au

From: Flood <flood@dwer.wa.gov.au>
Sent: Thursday, 1 October 2020 11:32 AM
To: Hendrik Wijaya <hwijaya@peritasgroup.com.au>
Cc: Swan Avon Land Use Planning <swanavon.landuse@dwer.wa.gov.au>
Subject: RE: Floodplain management advice - 3488 (Lot M1456) & Lot 50 Great Northern Highway, Muchea - Hendrik Wijaya - 30092020

Hi Hendrik

I have forwarded your query to our land use planning group at the Vic park office who should be able to provide some comment on this matter.

Regards

Simon Rodgers
Supervising Engineer
Surface Water Assessment and Flood Risk Science

Department of Water and Environmental Regulation
Prime House, 8 Davidson Terrace, JOONDALUP WA 6027
Locked Bag 10, Joondalup DC, WA 6919
T: (08) 6364 6923 M: 0429 080 517
E: simon.rodgers@dwer.wa.gov.au | www.dwer.wa.gov.au

From: Hendrik Wijaya <hwijaya@peritasgroup.com.au>
Sent: Thursday, 1 October 2020 11:18 AM
To: Flood <flood@dwer.wa.gov.au>
Cc: Oleg Omelchuk <oleg@peritasgroup.com.au>
Subject: RE: Floodplain management advice - 3488 (Lot M1456) & Lot 50 Great Northern Highway, Muchea - Hendrik Wijaya - 30092020

Hi Simon,
Thank you for getting back to me promptly.

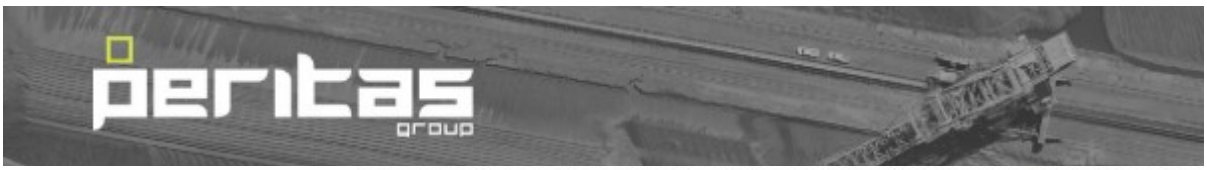
Looking at google, it does not look like the stream goes anywhere once it gets to GNH. If the site were to be developed as an industrial area, will there be a requirement to retain a drainage path?

Thank you

Regards,

Hendrik Wijaya
SENIOR CIVIL ENGINEER

Peritas Consulting Pty Ltd
Perth | Melbourne
E: hwijaya@peritasgroup.com.au
M: 0403 886 278
P: + 61 8 6109 6514



Peritas are committed to the health and safety of their employees as well as the wider community. In light of the COVID-19 virus outbreak, we are implementing a no-meeting policy in our office. As a result, if you would like a meeting with our staff, please request it of your Peritas point of contact and they will arrange a web meeting. We thank you for your understanding and consideration during this time.

From: Flood <flood@dwer.wa.gov.au>
Sent: 30 September 2020 13:26
To: Hendrik Wijaya <hwijaya@peritasgroup.com.au>
Cc: Oleg Omelchuk <oleg@peritasgroup.com.au>
Subject: Floodplain management advice - 3488 (Lot M1456) & Lot 50 Great Northern Highway, Muchea - Hendrik Wijaya - 30092020

Hendrik

We have no information on flooding or flood levels at this location. The available contour information indicate the presence of a waterway feature in the north of the Lot and the entire Lot may be subject to shallow overland flow from the east towards Great Northern Highway during major rainfall events.

Regards

Simon Rodgers
Supervising Engineer
Surface Water Assessment and Flood Risk Science

Department of Water and Environmental Regulation
Prime House, 8 Davidson Terrace, JOONDALUP WA 6027
Locked Bag 10, Joondalup DC, WA 6919
T: (08) 6364 6923 M: 0429 080 517
E: simon.rodgers@dwer.wa.gov.au | www.dwer.wa.gov.au

From: Hendrik Wijaya <hwijaya@peritasgroup.com.au>
Sent: Thursday, 24 September 2020 12:13 PM
To: Flood <flood@dwer.wa.gov.au>
Cc: Oleg Omelchuk <oleg@peritasgroup.com.au>
Subject: 3488 (Lot M1456) & Lot 50 Great Northern Highway, Muchea - Flood data request

Hi Simon,
Can I please have a quick check if this site is influenced by flood.

Thank you

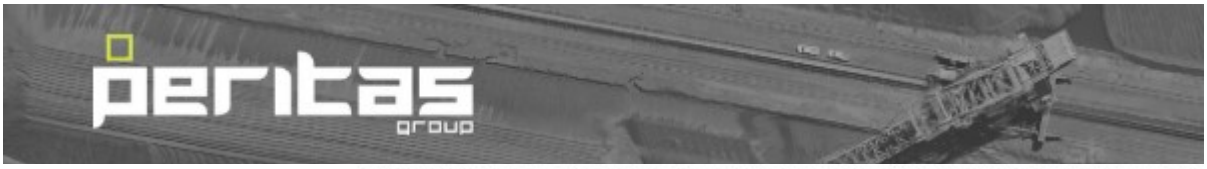
Regards,

Hendrik Wijaya

SENIOR CIVIL ENGINEER

Peritas Consulting Pty Ltd

Perth | Melbourne
E: hwijaya@peritasgroup.com.au
M: 0403 886 278
P: + 61 8 6109 6514



COVID-19 *message*

Peritas are committed to the health and safety of their employees as well as the wider community. In light of the COVID-19 virus outbreak, we are implementing a no-meeting policy in our office. As a result, if you would like a meeting with our staff, please request it of your Peritas point of contact and they will arrange a web meeting. We thank you for your understanding and consideration during this time.

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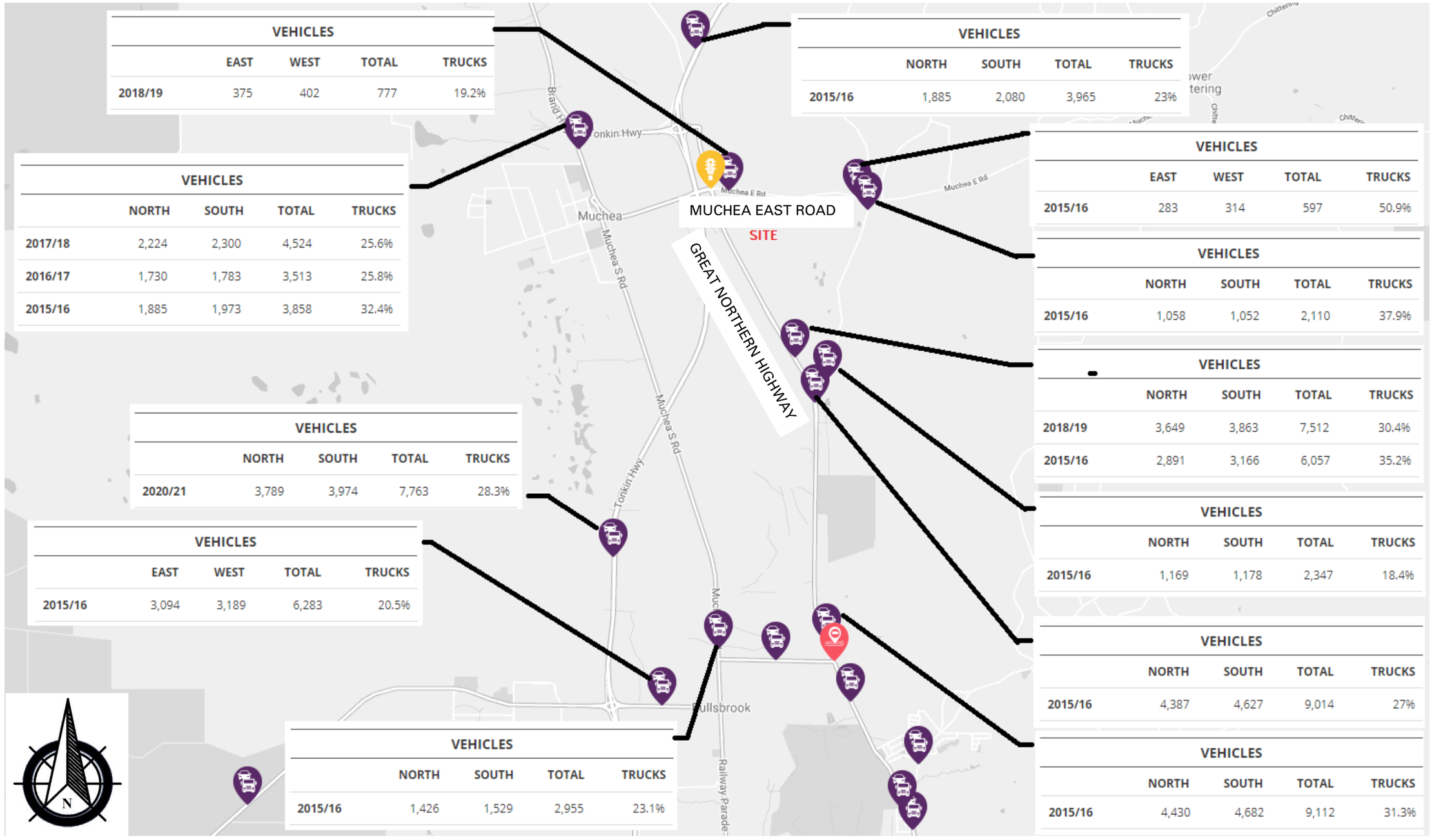
Disclaimer: This e-mail is confidential to the addressee and is the view of the writer, not necessarily that of the Department of Water and Environmental Regulation, which accepts no responsibility for the contents. If you are not the addressee, please notify the Department by return e-mail and delete the message from your system; you must not disclose or use the information contained in this email in any way. No warranty is made that this material is free from computer viruses.

Annexure G – Traffic Count



VEHICLES

	EAST	WEST	TOTAL	TRUCKS
2018/19	375	402	777	19.2%

VEHICLES

	NORTH	SOUTH	TOTAL	TRUCKS
2015/16	1,885	2,080	3,965	23%

VEHICLES

	NORTH	SOUTH	TOTAL	TRUCKS
2017/18	2,224	2,300	4,524	25.6%
2016/17	1,730	1,783	3,513	25.8%
2015/16	1,885	1,973	3,858	32.4%

VEHICLES

	EAST	WEST	TOTAL	TRUCKS
2015/16	283	314	597	50.9%

VEHICLES

	NORTH	SOUTH	TOTAL	TRUCKS
2015/16	1,058	1,052	2,110	37.9%

VEHICLES

	NORTH	SOUTH	TOTAL	TRUCKS
2020/21	3,789	3,974	7,763	28.3%

VEHICLES

	NORTH	SOUTH	TOTAL	TRUCKS
2018/19	3,649	3,863	7,512	30.4%
2015/16	2,891	3,166	6,057	35.2%

VEHICLES

	EAST	WEST	TOTAL	TRUCKS
2015/16	3,094	3,189	6,283	20.5%

VEHICLES

	NORTH	SOUTH	TOTAL	TRUCKS
2015/16	1,169	1,178	2,347	18.4%

VEHICLES

	NORTH	SOUTH	TOTAL	TRUCKS
2015/16	4,387	4,627	9,014	27%

VEHICLES

	NORTH	SOUTH	TOTAL	TRUCKS
2015/16	1,426	1,529	2,955	23.1%

VEHICLES

	NORTH	SOUTH	TOTAL	TRUCKS
2015/16	4,430	4,682	9,112	31.3%

peritas group

iPARKS Design • Develop • Deliver • Maintain

PROJECT	3488 (LOT M1456) & LOT 50 GREAT NORTHERN HIGHWAY	**Scale:**	N.T.S
CLIENT	IPARKS	**Drawn:**	HW
LOCATION	3488 (LOT M1456) & LOT 50 GREAT NORTHERN HIGHWAY	**Date:**	20.10.20
TITLE	TRAFFIC COUNT	**Reference:**	PC20171.SKT.017 Rev. **A**

Annexure H – Main Roads Western Australia Drainage Culverts

CH	Chainage (MRWA)
1.2x0.45 x 2 (eg)	Rectangular culvert (width x height x no. barrels)
0.5 o x 2 (eg)	Round culvert (diameter x no. barrels)

GN Hwy Culverts

bayley environmental services

Annexure I – Water Corporation Correspondence

Hendrik Wijaya

From: Brett Coombes <Brett.Coombes@watercorporation.com.au>
Sent: 01 October 2020 10:37
To: Hendrik Wijaya
Subject: M1456 Great Northern Highway Muchea

Good morning Hendrik,

Lot M1456 is located well north of the Water Corporation's planning areas for water and wastewater. The Water Corporation does not have any infrastructure in the area.

Regards

Brett Coombes
Senior Planner
Development Services
Tel. 9420-3165

Annexure J – Muchea Water Correspondence

Hendrik Wijaya

From: Peter Fogarty <pf@pendulumgroup.com.au>
Sent: 17 February 2021 09:36
To: Hendrik Wijaya
Subject: RE: Tallanga Beef Pty Ltd - Lot 50 & Lot M1456 (No. 3488) Great Northern Highway - Muchea Industrial Precinct (Precinct 2) Potable water

Hendrik,
In answer to your email we advise as follows:

1. The current connection to Muchea Industrial Precinct extends to where the new BP service station is located.
   Our mains pipe joins the Harvis Stage 1 reticulation behind and slightly North of the BP site.
2. The internal reticulation is designed constructed and paid for by the Developer and legal ownership is transferred to Muchea Water on connection and as part of Development and water supply agreement.
   Harvis worked with our engineers to conform with specification.

Regards
Peter

Peter Fogarty
Chairman
Muchea water
PO Box 1982 West Perth WA 6872 Australia
Level 1, 5 Ord Street West Perth WA 6005
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Email: pf@pendulumgroup.com.au

From: Hendrik Wijaya <hwijaya@peritasgroup.com.au>
Sent: Friday, 12 February 2021 11:28 AM
To: Peter Fogarty <pf@pendulumgroup.com.au>
Subject: RE: Tallanga Beef Pty Ltd - Lot 50 & Lot M1456 (No. 3488) Great Northern Highway - Muchea Industrial Precinct (Precinct 2) Potable water

Hi Peter,
Thank you for the information below and my apologies for not getting back to you sooner. There are transport network and planning items that needed to be resolved and hence the rest of the discipline are just waiting.

Can you please advise extent of Muchea Water current asset – this will give us an indication on how far we need to extend the asset to Precinct 2 and the contribution amount.

Are the internal reticulation within the precinct to be constructed by the developer or will Muchea Water have the same arrangement as per the trunk service – i.e constructed by Muchea Water with Developer contribution?

Thank you

Regards,

Hendrik Wijaya
SENIOR CIVIL ENGINEER

Peritas Consulting Pty Ltd

Perth | Melbourne
E: hwijaya@peritasgroup.com.au
M: 0403 886 278
P: + 61 8 6109 6514

From: Peter Fogarty <pf@pendulumgroup.com.au>
Sent: 15 January 2021 14:43
To: Hendrik Wijaya <hwijaya@peritasgroup.com.au>
Subject: FW: Tallanga Beef Pty Ltd - Lot 50 & Lot M1456 (No. 3488) Great Northern Highway - Muchea Industrial Precinct (Precinct 2) Potable water

Dear Hendrik

It is just come to my attention that this email was sent to the cc address from your email and not directly to you – my apologies.

Please see the email below from Peter in response to your email.

Regards

Sue

Sue Hancock

Pendulum Capital Pty Limited
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AFSL No 280970

From: Peter Fogarty
Sent: Monday, 21 December 2020 12:13 PM

To: oleg@peritasgroup.com.au
Subject: FW: Tallanga Beef Pty Ltd - Lot 50 & Lot M1456 (No. 3488) Great Northern Highway - Muchea Industrial Precinct (Precinct 2) Potable water

Dear Hendrik

We refer to your email of 13 November 2020 and apologise for not responding sooner but your email was delayed in re-direction from our Muchea Water address.

Your information on the water available and allocations is incorrect. We do have 651ML pa of water licence and hold an ERA Service Provider Licence WL51. The water allocations to date are to Riverside Investments (WA) No 2 Pty Ltd for its Reserve Road residential area (142ML pa) and 50ML and 50ML option to Harvis.

We do not have any arrangement with Precinct 3 for 203ML pa. Several developers have requested water supply but no firm agreements have been entered into.

Accordingly, we have 409ML pa available, subject to final agreement and payment for the allocation agreed. There is no future demand of 75ML pa currently committed. Some parties have expressed interest but no binding agreements are in place. We do not allocate water unless a binding supply agreement is entered into. Precinct 3 has not done this.

Accordingly, in answer to your questions we respond as follows:

- Muchea Water is willing to negotiate for the supply of potable water to your client.
- The main pipe to Muchea is already installed and operational. Extending the network to Stage 2 is relatively straight-forward. We can't give timeframes until we have clear specifications and a contribution to our costs of investigating your requirements.
- Any developer will be required to meet the cost of constructing the infrastructure to deliver the water from the existing mains and make a "mains pipe" network contribution. We expect this will be approximately $150,000 per kilometre depending on the pipe size and pressure requirements. In addition, an extension to the network will require a developer contribution to the existing pipeline that delivers to any connecting network.
- Information on the flow rate and level of supply will only be provided once heads of agreement are in place and we have more information on usage rates.

Regards

Peter Fogarty
Chairman

Muchea Water

Aqua Ferre (Muchea) Pty Ltd t/as Muchea Water (WL51)
PO Box 1982 West Perth WA 6872
Level 1, 5 Ord Street West Perth WA 6005
T 08 9282 5401 **F** 08 9282 5484
E pf@pendulumgroup.com.au

From: Hendrik Wijaya
Sent: 13 November 2020 14:06
To: accounts@mucheawater.com.au
Cc: Oleg Omelchuk <oleg@peritasgroup.com.au>
Subject: Tallanga Beef Pty Ltd - Lot 50 & Lot M1456 (No. 3488) Great Northern Highway - Muchea Industrial Precinct (Precinct 2) Potable water

Hi,
I am currently undertaking a servicing report on Precinct 2 of the Muchea Industrial Precinct. It is my understanding that you have considered supplying water to Precinct 3.

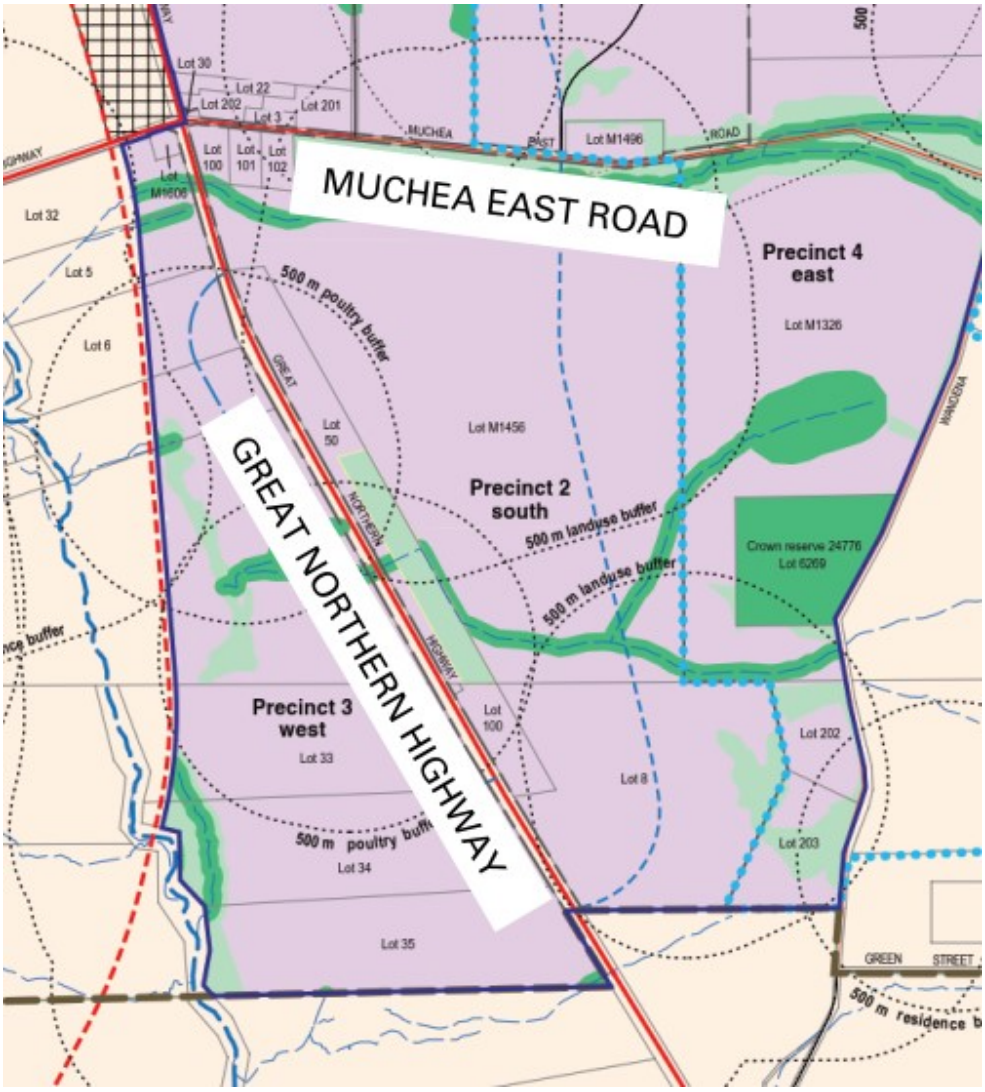
Our client represents approximately 75% of Precinct 2, their sites are Lot 50 & Lot M1456 (No. 3488) Great Northern Highway. The total industrial land area is approximately 210ha. We have not been supplied with water demand by hydraulics consultants. However, Precinct 3 estimated their potable demand to be approximately 203ML/a over a land area of 139ha. Accordingly, we should expect our potable demand to be in the vicinity of 306ML.

It is our understanding that Aqua Ferre will have access to 651MLpa and out of these the following are "allocated"

- Reserve road residential & MEN Industrial 153MLpa
- Future Demand 75MLpa
- Precinct 3 Water demand 203MLpa

Based on these figures, Aqua Ferre does not have adequate allocation to fully supply Precinct 2 development. Can you please advise:

- If Aqua Ferre is interested or will be able to source additional water allocation to meet Precinct 2 requirements.
- Forecasted timeframes of when the infrastructures will be completed.
- It would appear that over 3.5km of pipeline will be required to bring water supply to Precinct 2 and 3. Is the intent for Aqua Ferre to construct the infrastructure at their own cost or a cost share or cost contribution is required by Precinct 2?
- Please also advise the level of supply – flow rate and pressure (mainly to gauge the infrastructure required by the commercial tenancy – if they are required to provide fire water tanks and booster pump assembly, etc)



Regards,

Hendrik Wijaya

SENIOR CIVIL ENGINEER

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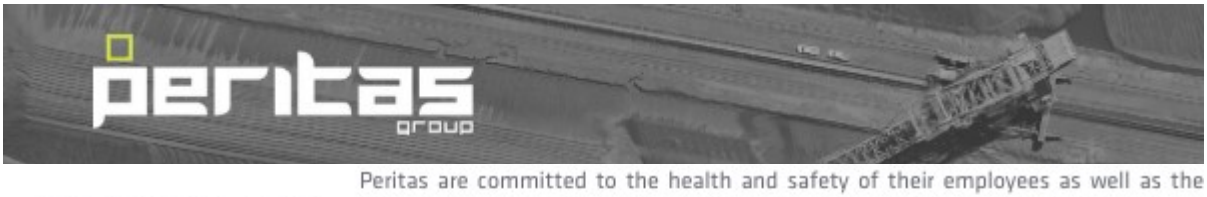

COVID-19 message

Peritas are committed to the health and safety of their employees as well as the wider community. In light of the COVID-19 virus outbreak, we are implementing a no-meeting policy in our office. As a result, if you would like a meeting with our staff, please request it of your Peritas point of contact and they will arrange a web meeting. We thank you for your understanding and consideration during this time.

Annexure K – Western Power Network Capacity Forecast 2026

PROJECT	3488 (LOT M1456) & LOT 50 GREAT NORTHERN HIGHWAY	**Scale:**	N.T.S	
CLIENT	IPARKS	**Drawn:**	HW	
LOCATION	3488 (LOT M1456) & LOT 50 GREAT NORTHERN HIGHWAY	**Date:**	20.10.20	
TITLE	WESTERN POWER NETWORK CAPACITY FORECAST 2026	**Reference:**	PC20171.SKT.018	Rev. **A**