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APRIL 21, 2023



PUMP-OUT FOR ONSITE WASTEWATER MANAGEMENT

731-733 GREAT WESTERN HIGHWAY, FAULCONBRIDGE, NSW

LGA: Blue Mountains

Lot 9 DP 656879

Prepared for: Antonio Todarello

HARRIS ENVIRONMENTAL CONSULTING
6/1 MEMORIAL DRIVE, SHELLHARBOUR CBD
TEL: (02) 4236 0954
info@harrisenvironmental.com.au
ABN 54128740549

VERSION CONTROL

Title	Pump-out for Onsite Wastewater Management			
Site address	731-733 Great Western Highway, Faulconbridge, NSW			
Description	Proposal to manage wastewater using pump out for proposed alterations and additions to existing fruit shop which also includes the sale of plants pots and landscape supplies.			
Client	Antonio Todarello c/- Brydie Hand <i>Holding Redlich</i> Brydie.hand@holdingredlich.com 0402 461 957			
Date Created	Tuesday, 18 April 2023			
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Limitations

The findings and recommendations in this report are based on the objectives and scope of work outlined above. Harris Environmental Consulting performed the services in a manner consistent with the normal level of care and expertise exercised by members of the environmental assessment profession. The report and conclusions are based on the information obtained at the time of the assessment. Changes to the site conditions may occur subsequent to the investigation described herein, through natural processes or through the intentional or accidental addition of contaminants, and these conditions may change with space and time. The results of this assessment are based upon site assessment conducted by HEC personnel and information provided by the client and site management. All conclusions regarding the property are the professional opinions of the HEC personnel involved with the project, subject to the qualifications made above. While normal assessments of data reliability have been made, HEC assumes no responsibility or liability for errors in any data obtained from regulatory agencies, information from sources outside of HEC, or developments resulting from situations outside the scope of this project.

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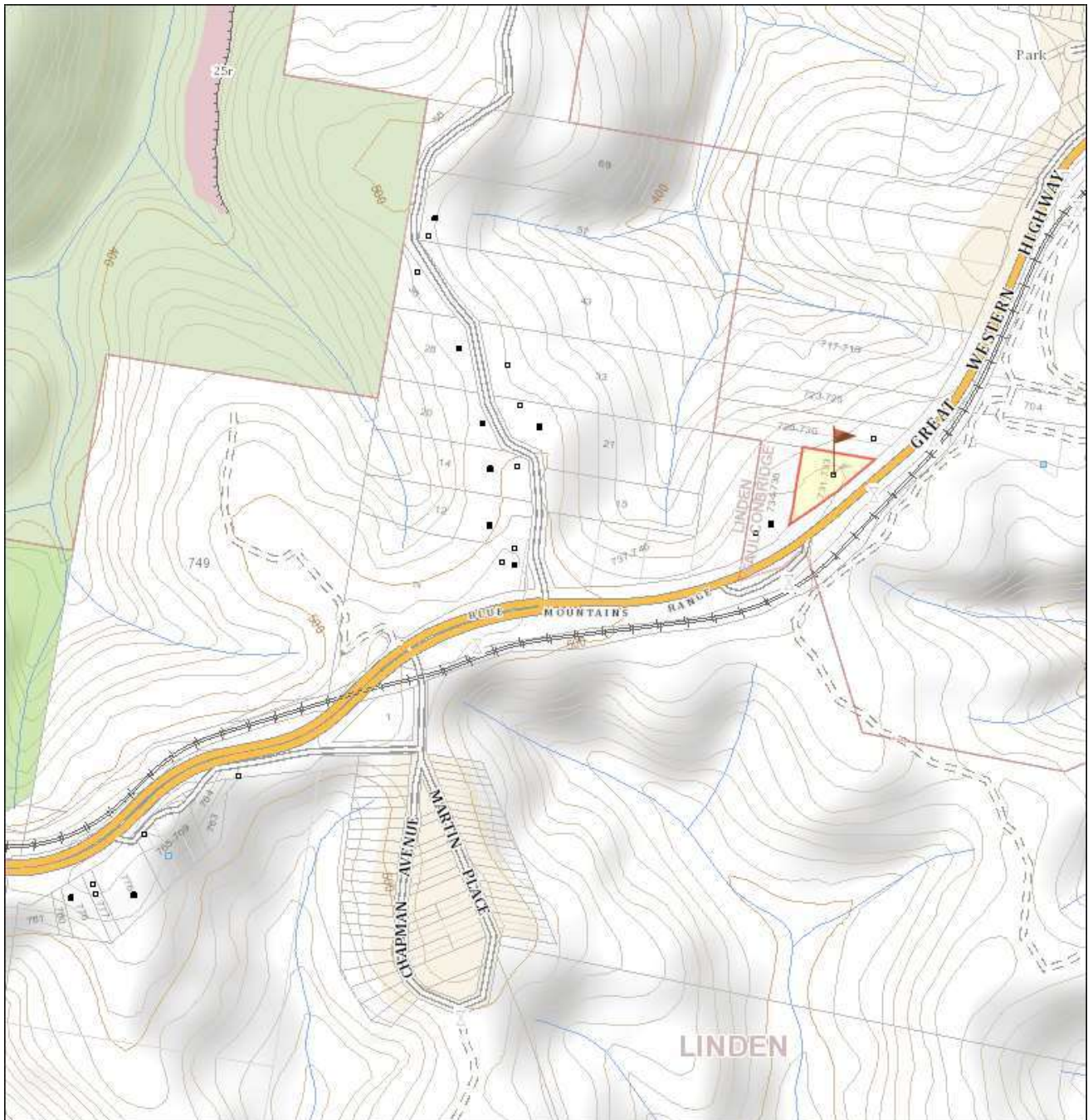
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1. INTRODUCTION

This application for pump-out wastewater management was prepared by Harris Environmental Consulting (HEC) for the owners of 731-733 Great Western Highway, Faulconbridge, NSW, also known as “Todarellos Fruit House”. The location of the property is shown in Figure 1. There is an existing fruit shop which also includes the sale of ‘plants, pots and landscape supplies on the property to which a development application proposes additions and alterations to be used as staff areas and storage.

This report proposes to install a pump out wastewater management system as an onsite wastewater disposal system is not possible on the property.

FIGURE 1 LOCATION OF PROPERTY



Source: NSWSixmaps

2. JUSTIFICATION FOR PUMPOUT

Blue Mountains City Council's Development Control Plan, Part E1.2 C18 and C19 outlines the requirements for effluent pumpout.

FIGURE 2 EXTRACT FROM PART E1.2, C18 AND C19

Pump out systems	
C18.	New and replacement pumpout systems will only be considered in relation to a dwelling-house and only in circumstances where a Site and Soil Assessment Report prepared in accordance with ASI547 justifies to the Council's satisfaction that this is the only option available.
C19.	Pumpout systems are to be designed so as to: <ul style="list-style-type: none"> (a) locate the septic tanks and collection wells together, and (b) ensure tanks and collection wells are at least 3m from buildings and boundaries, and (c) locate tank lids above ground level to avoid surface water from entering the tank, and (d) ensure that any decking or any other structures are not erected over the tanks unless there is a means of access to the septic tank and collection well, and (e) use plastic tanks only where it is impractical to use concrete tanks because of access and delivery constraints, and (f) concrete the tanks into the ground and key them together to avoid differential movement and pipe breakage, and (g) ensure the holding or collection well has the capacity to accommodate a minimum of 7 days' daily flow for a weekly pumpout service, and (h) include a suction line that is to be 50mm in diameter, Class 12 pressure pipe, with the last 1.5m to the property boundary and the upstand being 50mm galvanised iron pipe. The upstand and elbow is to be concreted to the ground to prevent movement and damage when the pump is operational, and (i) provide an all-weather access and parking at the pumpout line for pumpout tankers.

- Due to the extent of concrete hardstand areas on the property, there is little land available for onsite effluent disposal.
- The proposed development includes stormwater infrastructure located on the northern property boundary. Typically, a 40m buffer is required between stormwater infrastructure and onsite effluent disposal fields, which is not attainable on this site.
- The property slopes relatively steeply to the north, which would render most onsite disposal options extremely difficult without significant landscaping and earthworks being undertaken.
- The property currently has a pump out arrangement, and we proposed that this arrangement be maintained on an ongoing basis.

3. SEPTIC TANK AND COLLECTION WELL

An effluent pump-out system utilises a collection tank (collection well) that receives and stores liquid effluent once it has passed through a septic tank. A road tanker removes the stored liquid effluent on a frequency dependent on the hydraulic loading from the buildings connected to the system.

Collection tanks used to store domestic wastewater prior to pumpout are not covered by AS/NZ1547(2012). Their sizing requirements in accordance with local regulatory requirements and in all other ways, compliance with AS/NZS 1546.1.

Septic tanks must be designed according to 'AS/NZS 1546.1:2008 On-site Domestic Wastewater Treatment Units Septic Tanks'. In NSW, any proprietary septic tank under 10,000 litres must be accredited by NSW Health. Larger tanks may be designed and produced on location but they must comply with AS/NZS 1546.1:2008. NSW Health requires all tanks more than 2,500 litres to be baffled. Accredited tanks are listed on the NSW Health website www.health.nsw.gov.au/publichealth/environment/water/waste_water.asp.

3.1. SIZING OF SEPTIC TANK

AS/NZS 1547 (2012) sets out the minimum size septic tanks required for dwellings and design flows of varying sizes (Figure 3). Given that the property has a commercial nature, the septic tank will be sized using the design flow rate, which is calculated as follows:

TABLE 1 DESIGN FLOW RATE

Design Wastewater load: (As per NSW Health (2001) and SA Health (2013)):	Number of Staff	6	29L/pp/day = 174L/day
	Number of daily visitors who would use bathrooms	5	12L/pp/day = 60L/day
	Design Wastewater Load		234 L/day

As per the standard and Figure 3, the design wastewater load would require a minimum of **3000L** for an all-waste septic tank for the fruit shop. However, as a conservative approach, a **4000L** septic tank is proposed in this assessment.

NSW Health (2001) requires the septic tank to have the capacity for 1550 litres of sludge allowance plus 24-hour detention of daily influent wastewater. A 4000L septic tank would have capacity for this required sludge allowance, with **2450L** of detention capacity for daily influent wastewater, which is more than sufficient for the design wastewater load.

FIGURE 3 TABLE J1 ASNZ1547(2012) SEPTIC TANK CAPACITY

**TABLE J1
ALL-WASTE SEPTIC TANK OPERATIONAL CAPACITIES**

Population equivalent (persons)	Number of bedrooms	Design flow (L/day)	Tank capacity (L)
1 – 5	1 – 3	1000	3000
6 – 7	4	1000 – 1400	3500
8	5	1400 – 1600	4000
9 – 10	6	1600 – 2000	4500

3.2. COLLECTION WELL CAPACITY

NSW Health (2001) suggests **seven (7)** days storage, but states that *local authorities may require larger minimum capacities to allow for peak flows from higher loadings from visitors (ie. parties)*. Blue Mountains City Council Development Control Plan stipulates a minimum of 7 days of effluent storage be installed.

The minimum size collection well for 7 days storage from the premises would be 1638L. As a conservative approach, and to reduce the frequency of pump outs from the premises, a 15,000L collection well is proposed, which provides 9 weeks of effluent storage.

3.3. PROPOSED TANKS TO BE INSTALLED

The proposed septic tanks shall drain to into the collection well. Tanks should be located as shown on the attached Site Plans in the Appendix. This assessment acknowledges that the location of the tanks may need to be slightly altered upon installation due to the slope of the property and the landscaping requirements.

The proposed tanks will need to be located downslope of the proposed dwellings to achieve gravity drainage.

The septic tank and collection well should also be fitted with a high water alarm that is both audible and visual, that will sound well before the collection well is full so as to provide the owners sufficient time to organise a pump out event before the tank fills to capacity. The gooseneck standpipe should also be fitted with a small spillage well with a valve for the pump out pipe. See the below image for an example of this.

FIGURE 4 **EXAMPLE OF SPILLAGE PIT UNDERNEATH A PUMPOUT STANDPIPE**



Accreditations for a septic tank and collection well that could be installed that would have adequate capacities are attached in the Appendix of this report. Should the owner wish to select a different combination of tanks, this can be done in consultation with a licensed plumber. Any tank chosen should be concrete, as per Blue Mountains City Council DCP.

4. GENERAL INFORMATION ON TANK INSTALLATION

4.1. GENERAL REQUIREMENTS

The location of the holding tanks and pumpwells should meet the requirements from 2.3.3 ASNZ 1546 (2008) shown below:

2.3.3 Holding tanks and pump wells

Holding tanks and pump wells shall be designed and constructed:

- (a) To avoid the likelihood of foul air and gases creating an odour nuisance and entering buildings;
- (b) To avoid contamination of soils, groundwater, and waterways;
- (c) So that the entire structure of the tank and its associated inspection and access covers and/or extensions are integrally sound;
- (d) So that penetration by roots, entry of groundwater and stormwater, and entry of insects are avoided;
- (e) From materials which are resistant or impervious both to the waste contained in the tank and to groundwater for the serviceable life of the tank;
- (f) To retain structural integrity for their serviceable life;
- (g) To prevent the likelihood of damage from superimposed loads or normal ground movement;
- (h) To be able to resist hydrostatic uplift pressures;
- (i) To be able to perform adequately with only normal maintenance over their serviceable life.
- (j) With access for installation and maintenance of the pump; and
- (k) To reduce the likelihood of unauthorised access by people.

2.3.4 Serviceable life

The serviceable life of a septic tank and associated fittings shall be a minimum of 15 years provided the tank is used and installed in accordance with the manufacturer's recommendations. See Appendix B for recommended installation requirements.

4.2. SEWER PIPE

The sewer pipes between the plumbing amenities and septic tank must conform with 'AS/NZS 3500(Set):2018 Plumbing and Drainage Set' specifying the nominal pipe sizes and respective minimum grades. Table 2 contains these specifications.

In addition, where a sewer carrying untreated wastewater to a treatment system is longer than 60 metres, the minimum grade should be doubled, and inspection ports should be installed at least every 30 metres or at an angle or change of grade.

TABLE 2 MINIMUM PIPE DIAMETER AND GRADE CALCULATIONS

Nominal pipe size (DN)	Minimum grade %	Minimum grade ratio
65	2.5	1:40
80	1.65	1:60
100	1.65*	1:60
125	1.25	1:80
150	1.00	1:100
* Except for drains from septic tanks, sewage treatment plants and unvented discharge pipes from tundishes, which may have a minimum grade of 1%, Source: 'AS/NZS 3500.2:2018 Plumbing and drainage Part 2 Sanitary plumbing and drainage' Table 3.4.1. NB: pipe grades are expressed as a percentage of vertical to horizontal distances.		

The sewer pipes must be buried at a depth that provides protection against mechanical damage or deformation, in accordance with 'AS/NZS 3500.2:2018 Plumbing and Drainage Set'. Table 3 shows the minimum pipe depth for trafficable areas.

TABLE 3 MINIMUM PIPE DEPTH FOR TRAFFICABLE AREAS

Location	Minimum depth of cover (mm) for all materials other than cast iron
Where subject to vehicular traffic	500
Elsewhere	300
Source: 'AS/NZS 3500 (Parts 0-4):2018 Plumbing and drainage Set'. Table 3.7.2 Minimum Cover for Buried Pipes'	

4.3. STANDPIPE

The standpipe will be located adjacent to the collection well, mounted on the edge of the final concrete hardstand and new landscaped area.

The pipe from the collection well consists of a 50mm diameter galvanised iron pipe. A 50mm camlock fitting is installed for connection by pumpout contractor. The service pipe should be clear from obtrusions and within easy access for the contractor to connect the hose from their tanker. Provided access should be all-weather and space allocated for the tanker to park or pull aside.

4.4. EXCAVATION FOR TANKS

The depth of the hole for the tank depends on the fall of the pipe to the tank and the distance from the installed tank to the wastewater source. The tanks need to be installed so that the lid remains at least 100 millimetres above final ground level to stop stormwater entering the tank.

Upon installation of the tanks, an upslope diversion bank will need to be installed as shown on the site plans in the Appendix. This bank will act to divert any overland stormwater flow arising from the hardstand area and prevent freshwater ingress into either the septic tank or collection well.

4.5. BUFFER TO PROPERTY BOUNDARY

A 1.5m buffer is required between the tanks and structures and 3m from property boundary.

The buffer is related to whether there are structural elements that could be undermined, as described in ASNZ 1546 (2008). This standard recommends the minimum distance from a building to an inground septic tank or collection well to be based on the structural elements of the buildings. The relevant standard pertaining to the distance between the tank to the base of a building's footings is found in Appendix B2.1 of the standard, and reads;

B2.1 Siting of tanks

The siting of tanks may be subject to regulatory authority approval and may require the submission of a certified engineering design to allow construction close to buildings and in trafficable areas.

Siting may be constrained by minimum clearances from building and property boundaries specified in by-laws and regulations.

Tanks should be installed clear of any buildings so as not to affect any structural elements of buildings. An angle of elevation of at least 45° between the bottom of the footing and the base of the tank is generally sufficient.

The possible escape of noxious, flammable gases from septic tanks should be considered in designing the installation.

4.6. MAINTENANCE

The septic tank is subject to sludge build-up and would require desludging every 3-5 years (dependent upon usage). The audible and visual alarm should also be checked on a regular basis to ensure it remains in good working order. This could be done at the same time as a pump out.

4.7. LANDSCAPING

The area surrounding the proposed tanks is to be landscaped as part of the development. Any vegetation that is planted should be an appropriate distance (~1.5 metres) to ensure that roots cannot grow into the proximity of the tanks and risk damage. Furthermore, access will need to be maintained to the tanks, and vegetation should be planted to ensure that this is the case.

5. SECTION 68 APPLICATION

A Section 68 application is required. The owner is required to provide Council with the septic tank and collection well manufacturer's specifications. The NSW Health Accreditation for other tanks to those provided in the Appendix can be obtained from the manufacturer or NSW Health Register of Accredited Sewage Management Systems at

http://www.health.nsw.gov.au/publichealth/environment/water/waste_water.asp.

Council does not require this report to include the accreditation details of the proposed septic tank and collection well. However, for this assessment, examples of accredited tanks that could be installed have been provided. These will need to accompany the Section 68 application.

6. SUMMARY

This assessment was carried out and report prepared to propose and design a effluent management system using tanker pump out as the disposal method. The design has sought to accommodate the requirements of Blue Mountains City Council set out in this report, as well as the site constraints that are present. The assessment recommends the following:

- A 4,000L septic tank should be installed that received gravity-drained effluent from the premises
- A 15,000L collection well should be installed to collect primary treated effluent from the septic tank to hold until pump out is required.
- The collection well will provide 9 weeks of effluent storage
- The pump out stand pipe and camlock fitting should be installed in an accessible location as described in this report.

7. REFERENCES

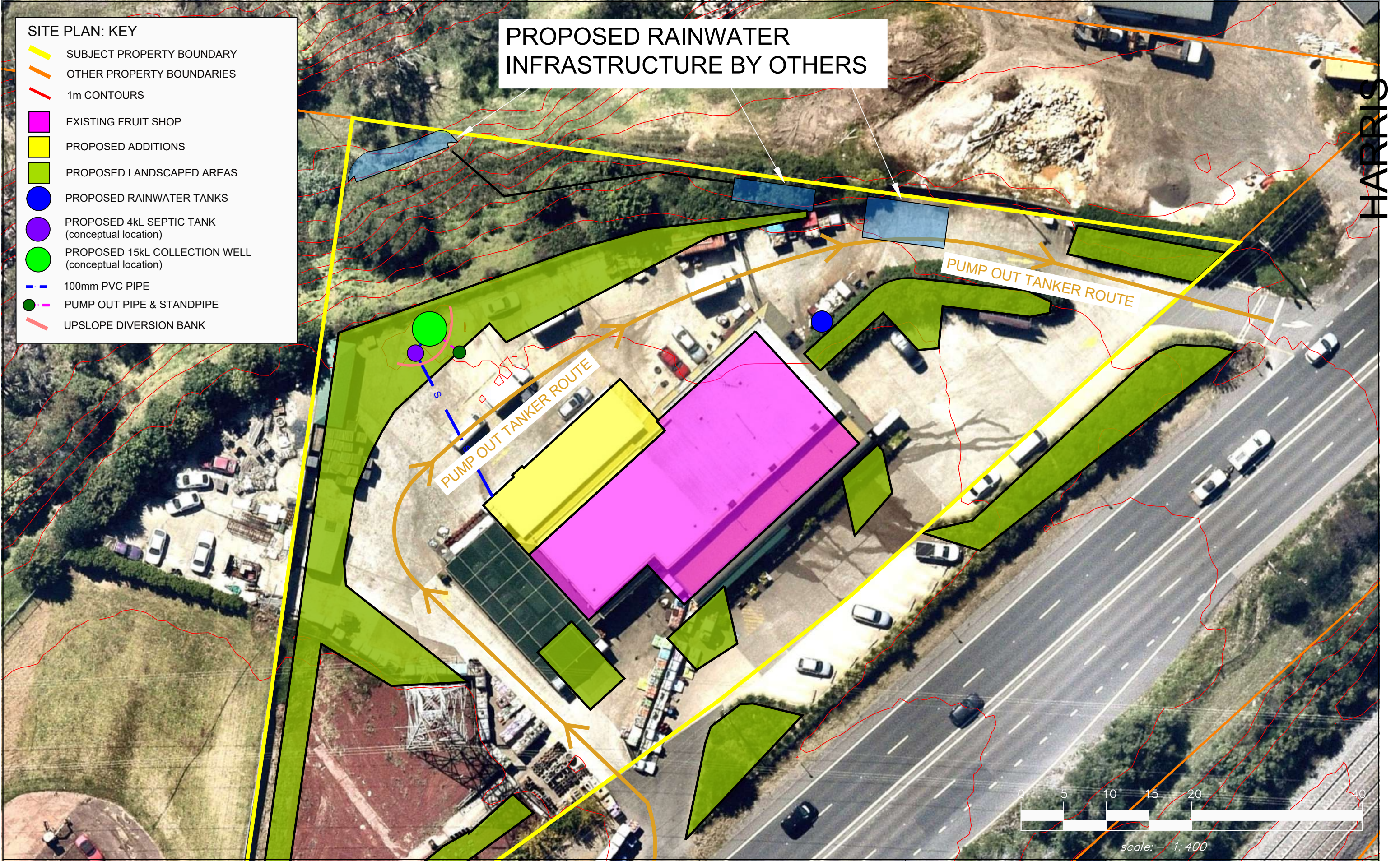
Standards Australia (2012) Australian/New Zealand Standard 1547:2012 *On-site* domestic wastewater management. Standards Australia.


AS/NZS 1546.1 (2008), On-site domestic wastewater treatment systems

NSW Health Septic Tank Accreditation Guidelines (2001).

Blue Mountains City Council DCP

Government of South Australia: SA Health *Onsite Wastewater Systems Code* April 2013



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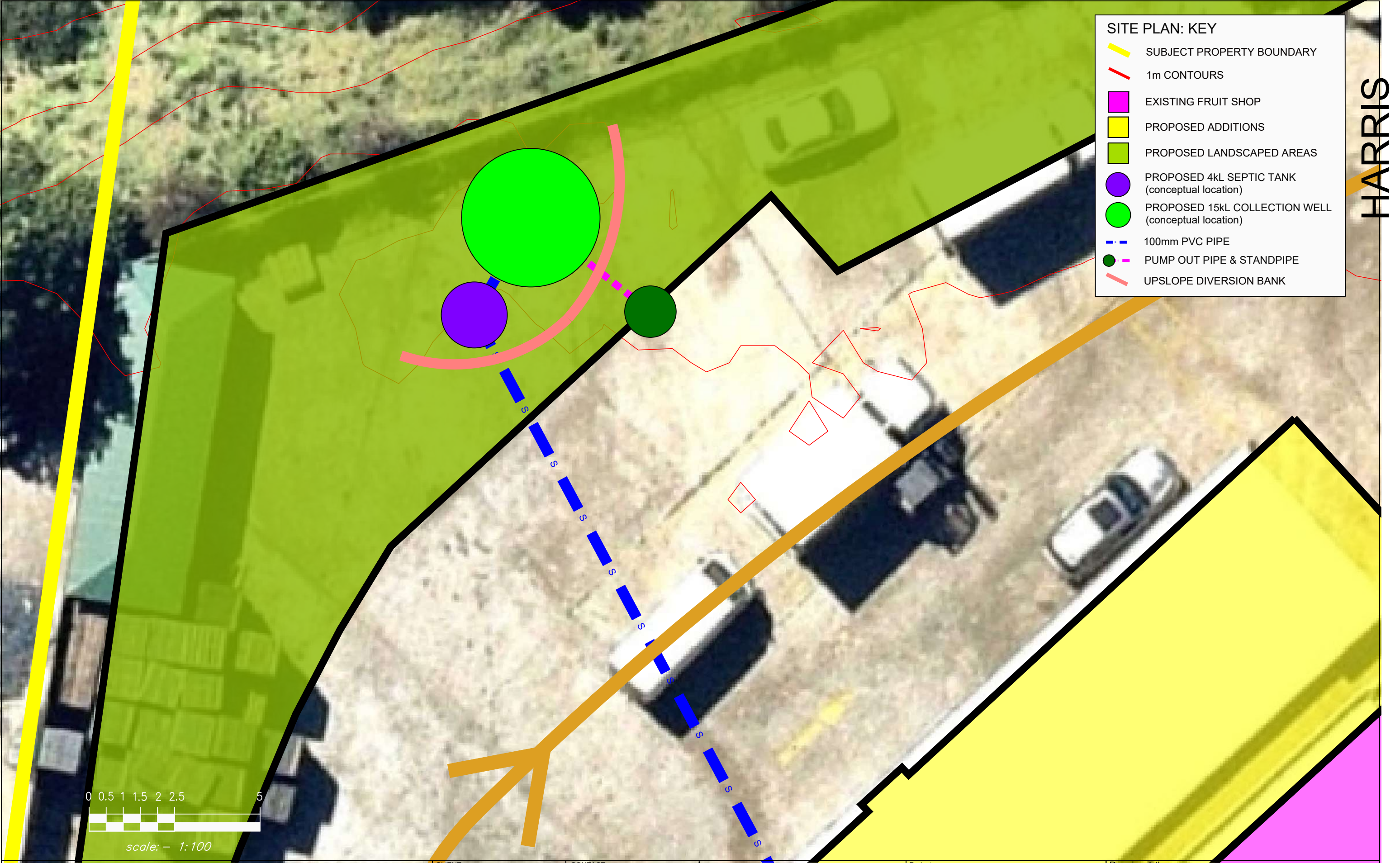
CONTACT
BRYDIE HAND
HOLDING REDLICH

E: brydie.hand@holdingredlich.com
P: 0402 461 957


Harris Environmental Consulting
PO Box 70,
Jamberoo, NSW 2533
T: +61 2 4236 0954
E: info@harrisenvironmental.com.au
ABN: 54128740549
Wastewater | Bushfire | Stormwater

Project:
PROPOSED ADDITIONS TO EXISTING FRUIT SHOP
LOT 9 DP 656879
731 GREAT WESTERN HIGHWAY, FAULCONBRIDGE
LGA: BLUE MOUNTAINS

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Certificate of Accreditation

Sewage Management Facility


Septic Tanks & Collection Wells

This Certificate of Accreditation is issued by the Secretary of the NSW Ministry of Health pursuant to Clause 41(1) of the Local Government (General) Regulation 2005.

Manufacturer: Taylex Australia Pty Ltd

Of: 56 Prairie Road, Ormeau, QLD, 4208

The Taylex Australia Septic Tank, Collection Wells and Pump Well as described in the following Schedule have been accredited as sewage management facilities for use in single domestic premises in NSW.



*A/Director, Environmental Health
for Secretary (delegation PH335)*

Issued: 10 / 11 / 2021
Certificate No: STCW027
Expires: 31 December 2025



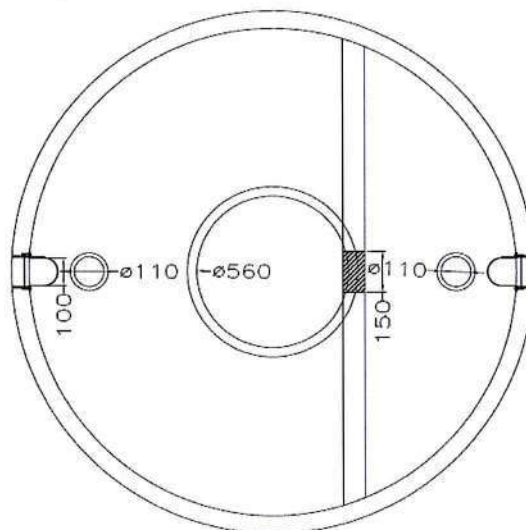
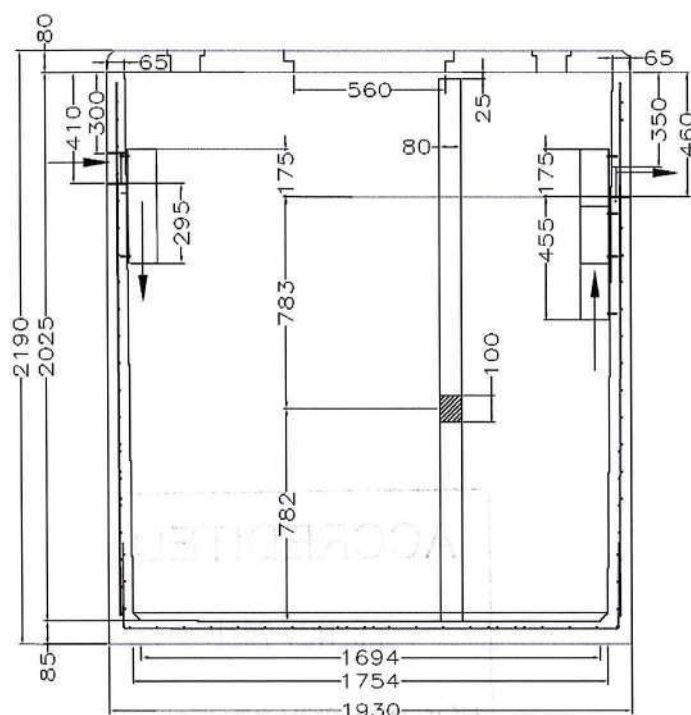
Accreditation Schedule

*The Certificate of Accreditation applies to the following
Septic Tank, Collection Wells and Pump Well which may be installed
in ground or above ground:*

Model	Description	Nominated Capacity (Operational Capacity)
Septic Tank	Vertical axis type cylindrical precast steel reinforced concrete with lid, internal partition, access cover, inlet and outlet fittings. Burial depth of the tank lid is restricted to 0 mm	4,000L (3650L)
Collection Wells	Vertical axis type cylindrical precast steel reinforced concrete. Certification applies only to the construction of the tank, lid, access cover and inlet fitting. It does not include the internal fittings or partitions.	4,000L (4750L) 5,000L (5,580L) 10,000L (10,450L) 15,000L (15,050L) 22,00L (21,560L)
Pump Well	Burial depth of the tank lid is restricted to 0 mm	800L (800L)
ABS Collection Well		9,320L (5,900L)

Product Information Sheet

Number: 040/1 - Collection Well – 5,040 Lt



Septic Tank Data

Model	4,000 L Baffle Walled Septic
Weight	4,200 Kg
Total Capacity	4,748 Litres
Operating Capacity	3,638 Litres
Load Rating	NonTrafficable
Lid Thickness	80mm
Anti-flotation	Non

Recommended Installation Notes

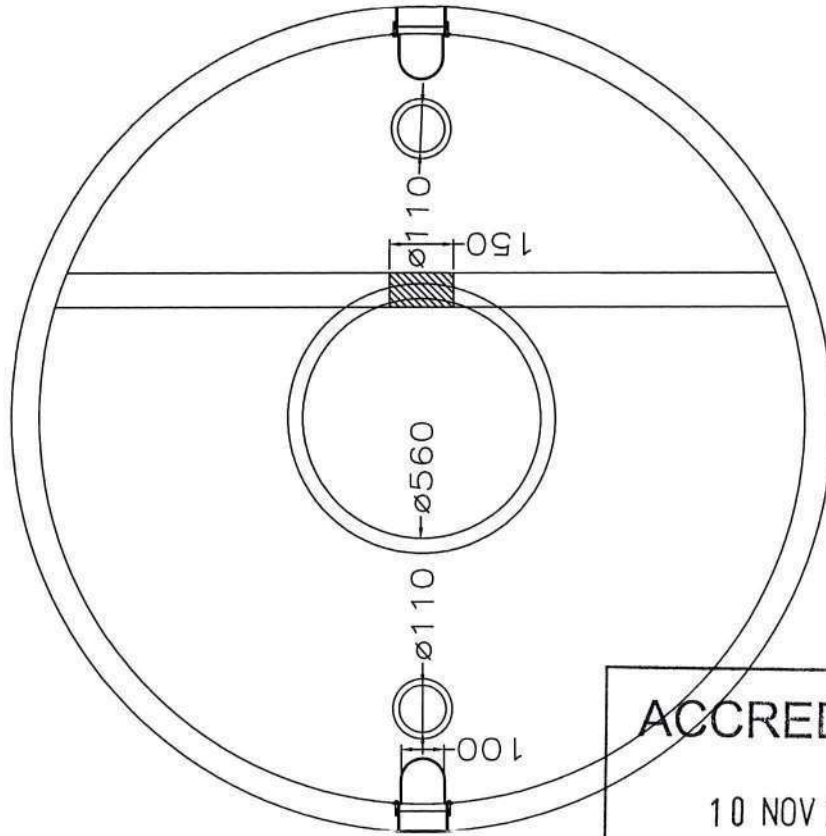
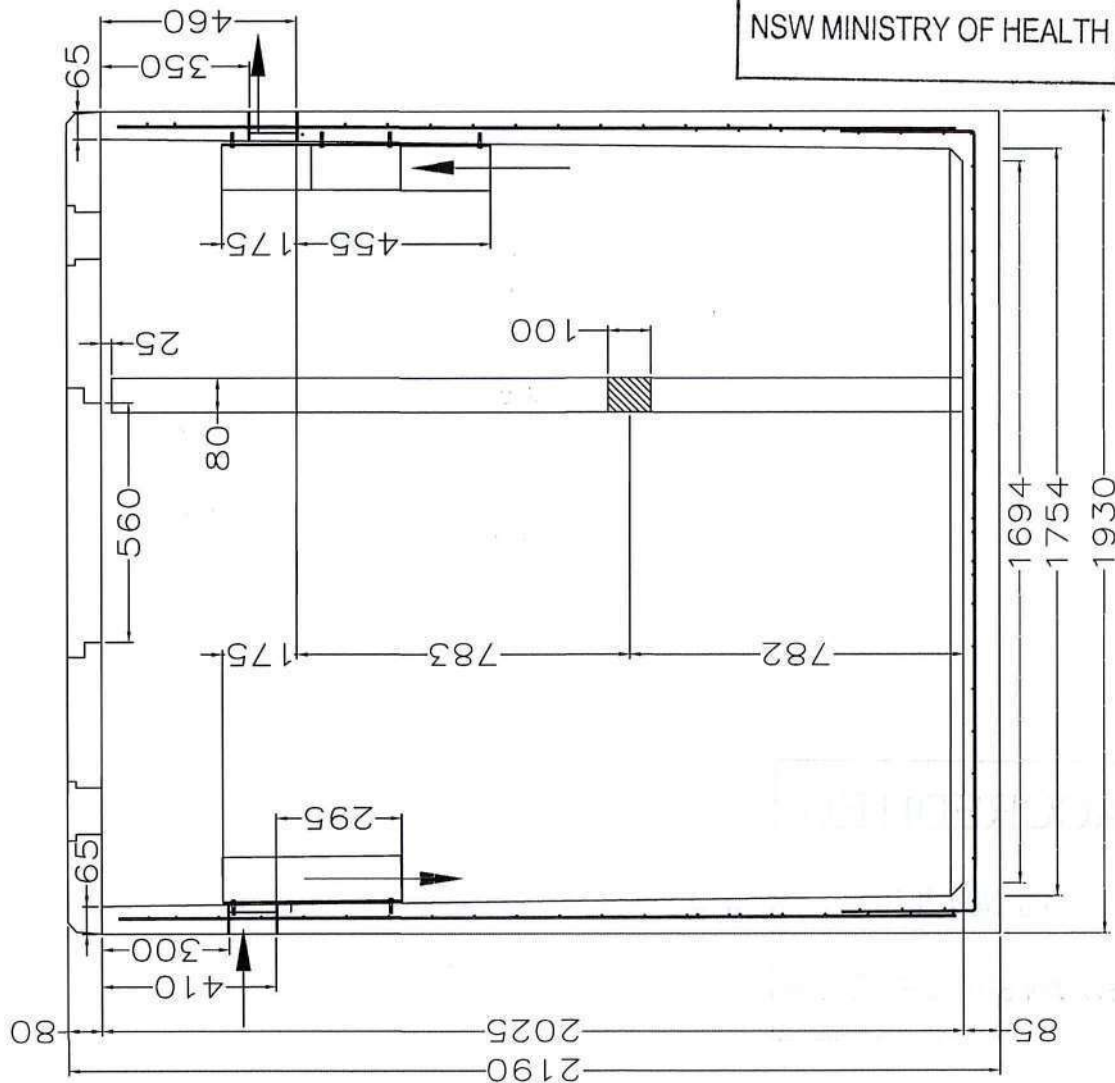
1. Connection in accordance with AS3500 and local government authority
2. All tanks have 100mm PVC DWV SOE couplers for connection to 100mm PVC sewer pipe. A flexible coupler is recommended
3. Lids are designed for pedestrian traffic only. Lids are not designed to carry any extra load from soil, fill or any type of vehicle traffic
4. All tanks are to be bedded on 100mm of 5 - 7mm drainage metal, Do Not use sand or metal dust
5. Backfill with excavated material as long as any rocks over 75mm are removed
6. During back filling it is recommended that tanks are filled with water to operating capacity. If ground water may become an issue then a concrete flange should be cast around the base of the tank to prevent floatation.
7. Tank lids or Risers are to be sealed with Sikaflex Pro
8. The tanks are manufactured to comply with Above Ground - AS 3735:2001, In Ground - AS/NZS1546.1:2008

CONTACT YOUR LOCAL DISTRIBUTOR

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10 NOV 2021

NSW MINISTRY OF HEALTH



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10 NOV 2021
NSW MINISTRY OF HEALTH

Taylex 4,000 Litre Baffle Walled Septic Tank
Total Capacity 4,748 litres
Working Capacity 3,638 litres

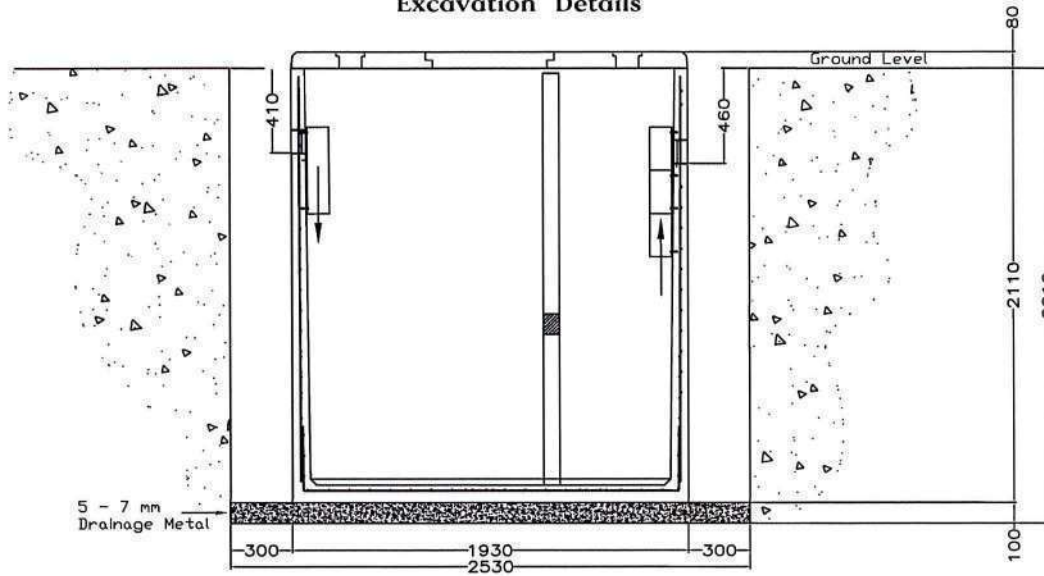
Taylex Australia Pty Ltd
56 Prairie Road Ormeau
Qld 4208
Ph: 07 3441 5200
www.taylex.com.au



DATE: 07/11/2018	SCALE: 1:10	DESIGN: NTS
BY: 07/11/2018	SCALE: 1:10	DESIGN: NTS
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BY: 07/11/2018	SCALE: 1:10	DESIGN: NTS

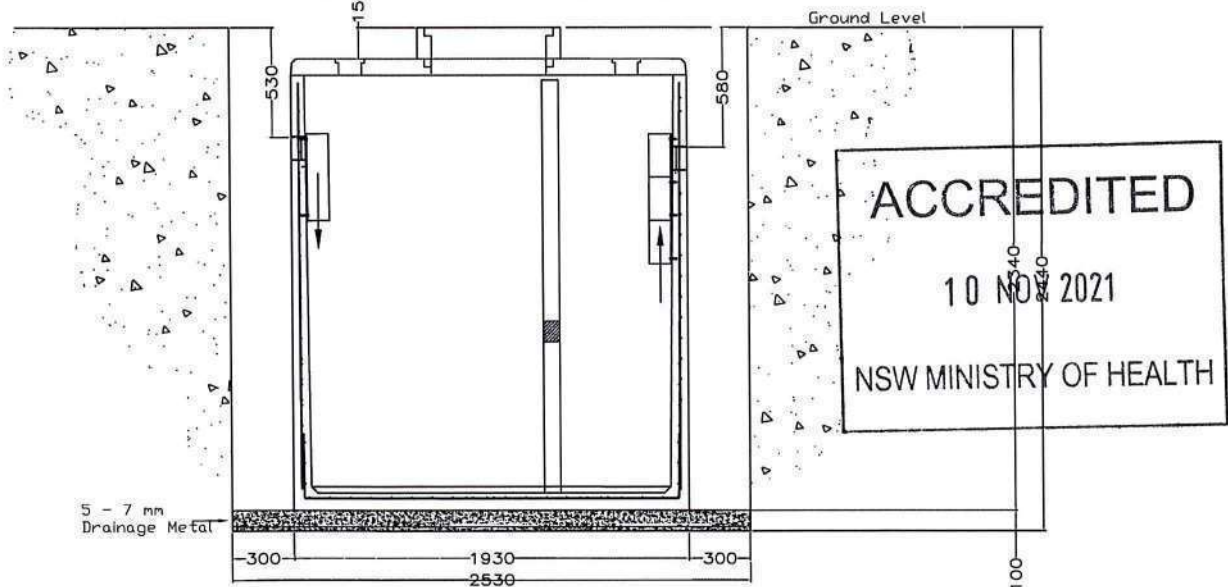
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**4,000 Litre Baffle walled
Septic Tank
Excavation Details**



1. Dig hole 600mm wider than the diameter of the tank.
2. Dig the hole 100mm deeper than the depth of the tank from the base to the bottom of the lid. (The lid will be exposed and above ground level).
3. Cover base of hole with 100mm of 5-7mm Drainage Gravel ensuring base is finished perfectly level.
4. Do not leave exposed rocks in the base as this will Void Warranty.
5. Do not use sand.
6. Backfill with sand/soil - NOT ROCKS.
7. To prevent flotation, fill tank to at least 70%. Failure to fill tank may cause the tank to float.

**4,000 Litre Baffle walled
Septic Tank
Excavation Details (with riser)**



1. Dig hole 600mm wider than the diameter of the tank.
2. Dig the hole 100mm deeper than the depth of the tank from the base to the bottom of the lid. (The lid will be exposed and above ground level).
3. Cover base of hole with 100mm of 5-7mm Drainage Gravel ensuring base is finished perfectly level.
4. Do not leave exposed rocks in the base as this will Void Warranty.
5. Do not use sand.
6. Backfill with sand/soil - NOT ROCKS.
7. To prevent flotation, fill tank to at least 70%. Failure to fill tank may cause the tank to float.



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Sewage Management Facility


Septic Tanks & Collection Wells

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*A/Director, Environmental Health
for Secretary (delegation PH335)*

Issued: 10 / 11 / 2021
Certificate No: STCW027
Expires: 31 December 2025



Accreditation Schedule

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Septic Tank	Vertical axis type cylindrical precast steel reinforced concrete with lid, internal partition, access cover, inlet and outlet fittings. Burial depth of the tank lid is restricted to 0 mm	4,000L (3650L)
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Pump Well	Burial depth of the tank lid is restricted to 0 mm	800L (800L)
ABS Collection Well		9,320L (5,900L)

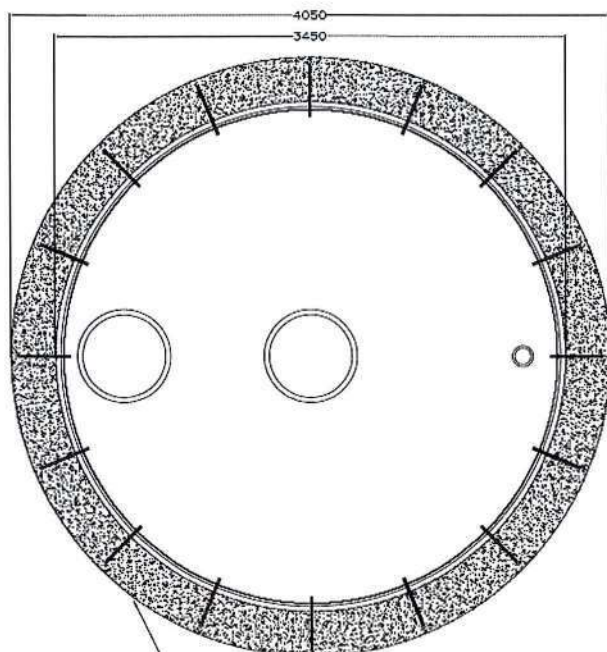


Taylex
WASTEWATER

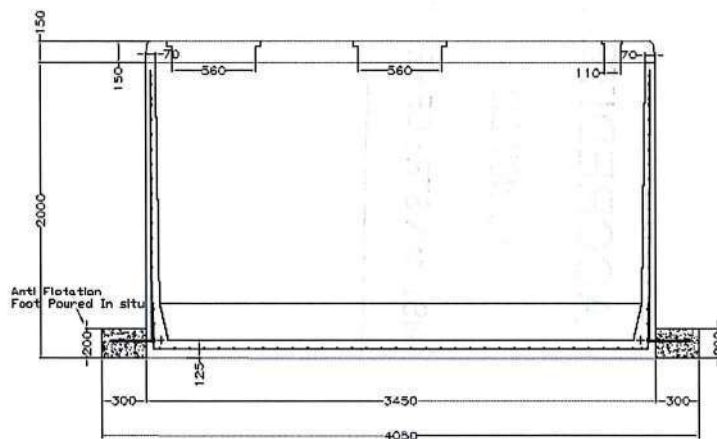
Taylex Australia Pty Ltd
56 Prairie Road Ormeau
Qld 4208
Ph: 07 3441 5200
www.taylex.com.au

Product Information Sheet

Number: 040/1 - Collection Well – 15,000 Lt



Anti Flotation Foot
Ready-mix concrete
supplied by others
and cast onsite by
others



Septic Tank Data

Model	15,000 Litre Pump Well
Weight	10,000 Kg
Total Capacity	15,890 Litres
Operating Capacity	Maximum 15,040
Load Rating	Non Trafficable
Lid Thickness	150mm / 100mm
Anti-flotation	Non

Recommended Installation Notes

1. Connection in accordance with AS3500 and local government authority
2. All tanks have 100mm PVC DWV SOE couplers for connection to 100mm PVC sewer pipe. A flexible coupler is recommended
3. Lids are designed for pedestrian traffic only. Lids are not designed to carry any extra load from soil, fill or any type of vehicle traffic
4. All tanks are to be bedded on 100mm of 5 - 7mm drainage metal, Do Not use sand or metal dust
5. Backfill with excavated material as long as any rocks over 75mm are removed
6. During back filling it is recommended that tanks are filled with water to operating capacity. If ground water may become an issue then a concrete flange should be cast around the base of the tank to prevent floatation.
7. Tank lids or Risers are to be sealed with Sikaflex Pro
8. The tanks are manufactured to comply with Above Ground - AS 3735:2001, In Ground - AS/NZS1546.1:2008
9. Tank certification accredited by Global Certification Pty Ltd Number 040/1
10. A maximum of 150mm risers may be added to the access covers.

CONTACT YOUR LOCAL DISTRIBUTOR

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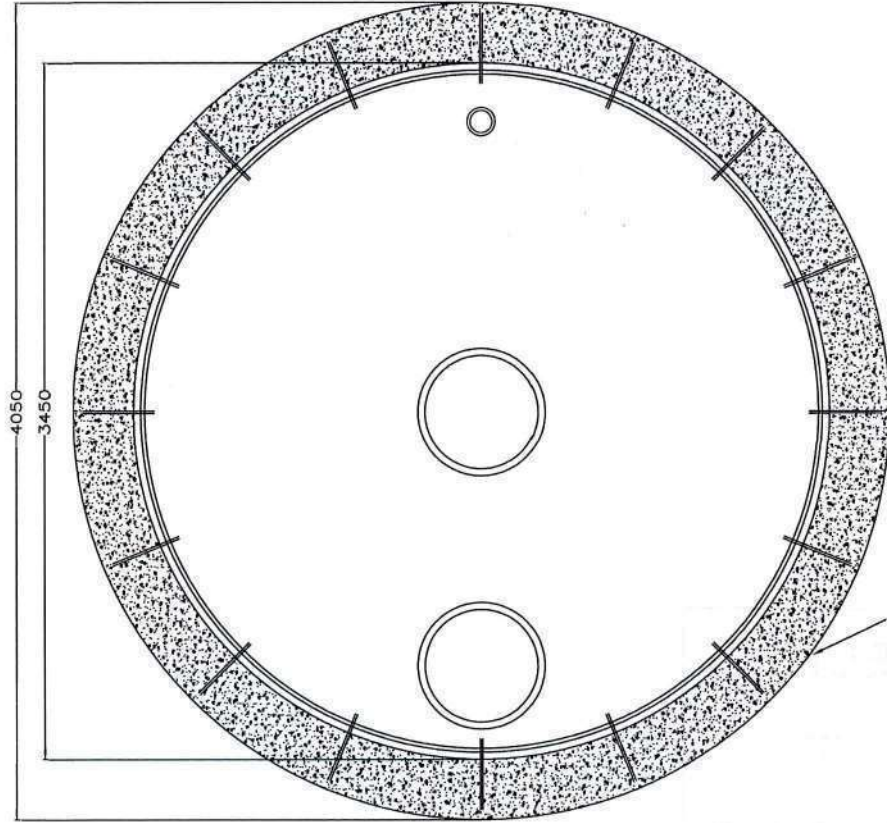
10 NOV 2021

NSW MINISTRY OF HEALTH

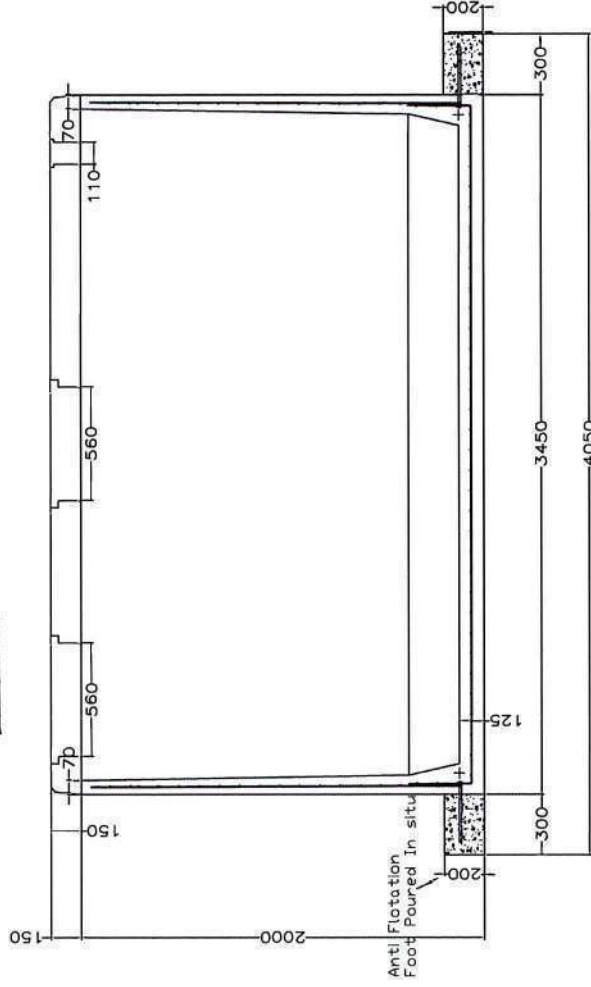
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Anti Flotation Foot
Ready-mix concrete
supplied by others
and cast onsite by
others



Taylex Australia Pty Ltd
56 Prairie Road Ormeau
QLD 4208
Ph: 07 3441 5200
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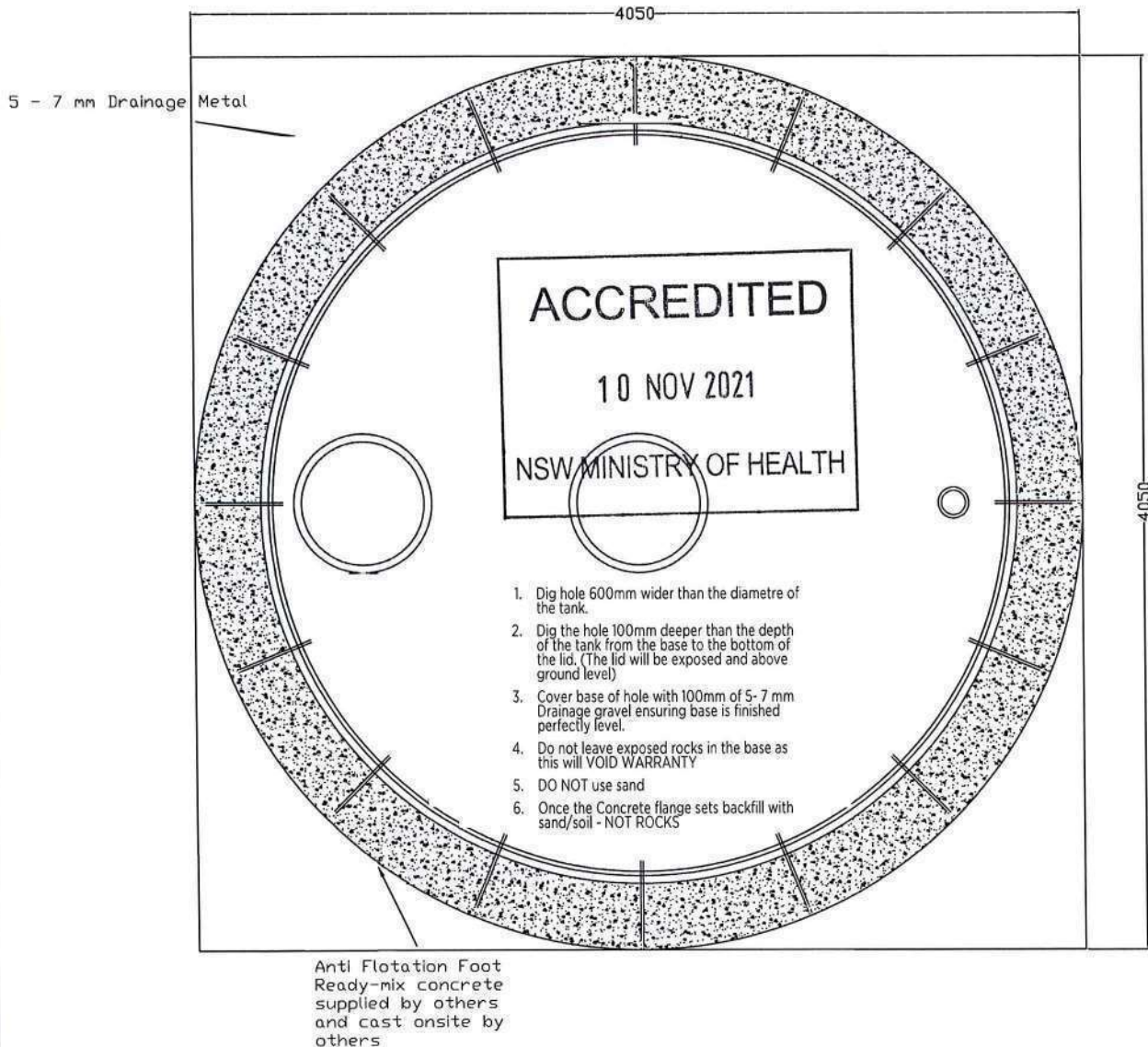
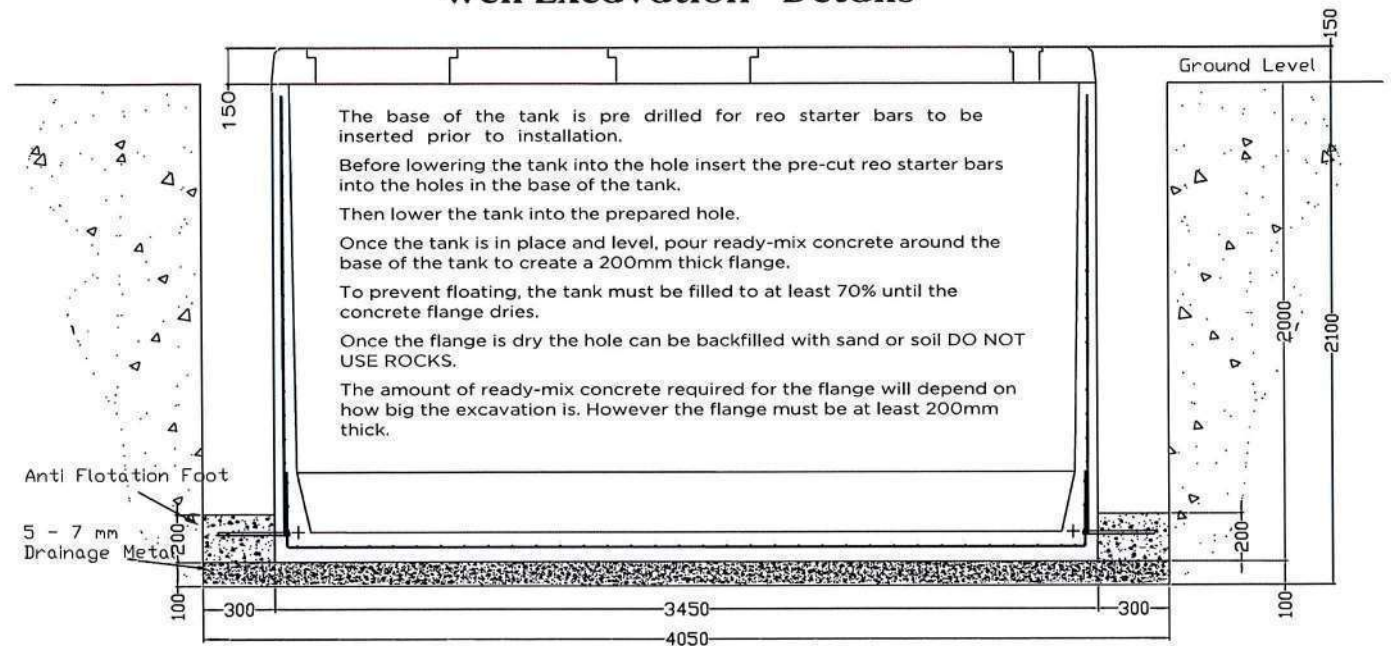


Taylex 15,000 Litre Steel reinforced
Precast Concrete Collection Well Tank
Total Capacity: 15,890 litres

REVISION	DATE	BY	CHKD	APPD
01	01/11/2018	01/11/2018	01/11/2018	01/11/2018
02	01/11/2018	01/11/2018	01/11/2018	01/11/2018
03	01/11/2018	01/11/2018	01/11/2018	01/11/2018

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15,000 Litre Collection well Excavation Details



Taylex
WASTEWATER

Taylex Australia Pty Ltd
56 Prairie Rd, Ormeau QLD 4208
ABN 43 646 051 989

Date:

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Title:
Taylex 15,000 Litre
Collection well Excavation
details