



ATTACHMENTS

ORDINARY MEETING

Thursday 21 July 2022
1.30pm
Council Chambers

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11 ENVIRONMENT AND PLANNING

11.2 DA 36/2022 - 20 Bigga Street, BIGGA - Conversion of Church Building to Dwelling

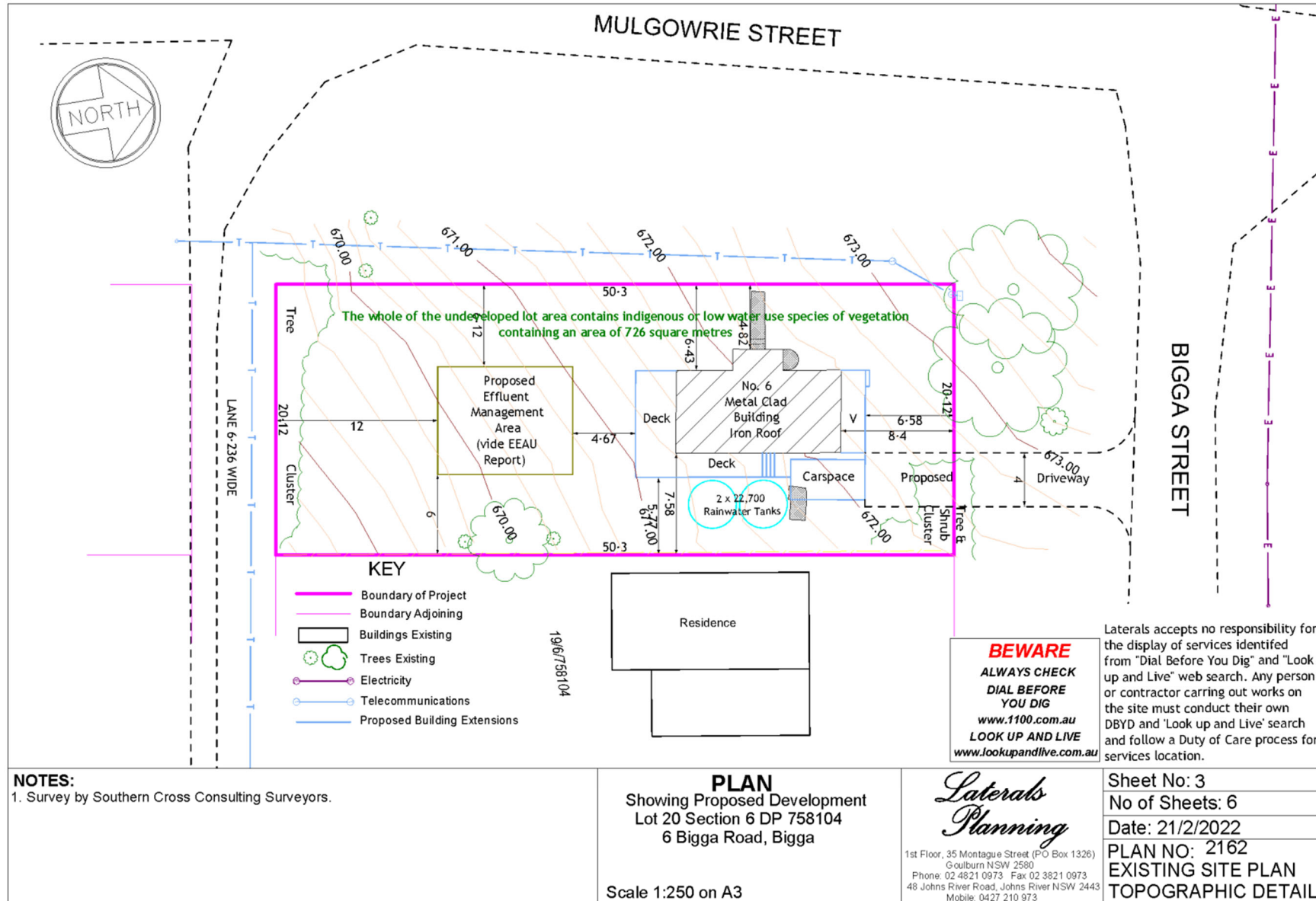
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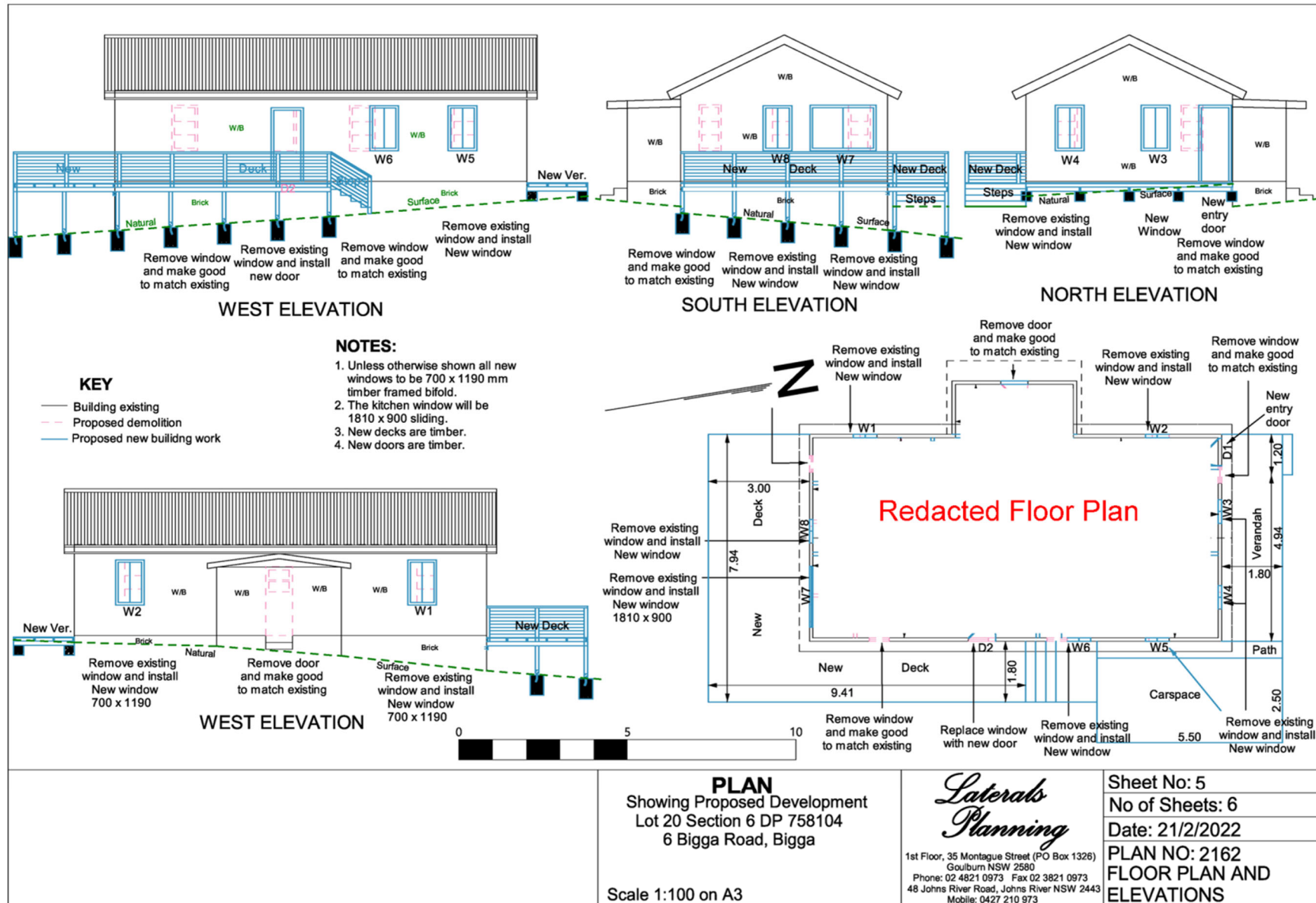














ABOVE: WEST + NORTH ELEVATIONS + AERIAL PHOTOGRAPH OF THE BIGGA TOWNSHIP; SOURCE: LATERALS: BELOW: THE NO 6 BIGGA STREET PROPERTY, SHOWN WITH A RED DOT.

THE 'FORMER OUR LADY OF FATIMA CATHOLIC CHURCH' STATEMENT OF HERITAGE IMPACT

PREPARED FOR LATERALS PLANNING

BY

PETER FREEMAN PTY LTD CONSERVATION ARCHITECTS + PLANNERS

MARCH 2022

FREEMAN FAMILY TRUST TRADING AS PETER FREEMAN PTY LTD ABN 89 471 279 506



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UPPER LACHLAN LEP 2010, HERITAGE MAP HER_001A, SHOWING THE HERITAGE ITEM 16, THE FORMER 'OUR LADY OF FATIMA CATHOLIC CHURCH'. SOURCE: LATERALS PLANNING.

1.0 INTRODUCTION

1.1 THE BRIEF FOR THIS SoHI

Keith Allen of Laterals Planning, the planner for the no. 6 Bigga Street, and Dr Jennifer Lambert Tracey, the Heritage Advisor of the Upper Lachlan Shire, NSW., have requested that a Statement of Heritage Impact (SoHI), setting out the rationale for the proposed alternative use of the no. 6 Bigga Street property, be undertaken. The brief utilised for this Statement is the standard Heritage NSW SoHI brief, and the following extract from that Brief outlines the purpose, content, and accepted format for Statements of Heritage Impact:

WHAT IS A STATEMENT OF HERITAGE IMPACT?

A SoHI, together with supporting information, addresses why the item is of heritage significance, what impact the proposed works will have on that significance, what measures are proposed to mitigate negative impacts, and why more sympathetic solutions are not viable.

WHAT NEEDS TO BE EXPLAINED BY THE STATEMENT?

A SoHI needs to explain how the heritage value of an item is to be conserved, or preferably enhanced, by the proposed development. Where the effect of proposed work is likely to be detrimental to the heritage significance of the item or area, a SoHI needs to argue why such action is the only viable solution and explain why alternatives are not feasible.

1.2 GUIDING DOCUMENTS

Upper Lachlan Shire Council, Local Environmental Plan, Instrument no. 6; and Laterals Planning, showing the proposed development for no. 6 Bigga Street property (2022).

1.3 STRUCTURE OF THIS SOHI

The structure of this SoHI is as follows:

SECTION 2	Introduction
SECTION 2	Historical Overview & Current Condition
SECTION 3	Current Heritage Recognition & Statement of Significance
SECTION 4	The Proposed 'Deemed Exempt' Conservation Works

1.4 AUTHORSHIP & ACKNOWLEDGEMENTS

This Statement of Heritage Impact has been prepared by Peter Freeman, principal of Peter Freeman Pty Ltd: Conservation Architects & Planners.

The assistance of the following people and organisations is gratefully acknowledged: Keith Allen of Laterals Planning, Engineering & Management and Environmental Registered Planner PLUS; and Registered Environmental Assessment Practitioner, Dr Jennifer Lambert Tracey; Archaeologist, Historian & Heritage Consultant; Heritage Advisor Upper Lachlan Shire, NSW.

2.0 HISTORICAL OVERVIEW + RECOMMENDATION

2:1 A HISTORY OF THE FORMER 'OUR LADY OF FATIMA CATHOLIC CHURCH'

The Upper Lachlan Shire Heritage Study, completed by the ULSC Heritage Advisor Dr Jennifer Lambert Tracey in 2010, states that:

Bigga Catholic Church located on the corner of Bigga and Mulgowrie Streets, is considered of local heritage significance by the Bigga community and is recommended for listing on the Heritage Schedule, Local Environmental Plan.¹

Dr Tracey has subsequently observed that:

The ULSC heritage listing was submitted at the request of the residents at the time, based upon its Catholic community associations and social / religious cohesion. The church was part of the Parish of Crookwell and the Diocese of Canberra & Couburn. The building was consecrated on 30th March 1952 although historical information comprising photographs of the church / parishioners / events are sparse. The church was subsequently deconsecrated due to 'lack of interest'. There are no distinctive architectural features that would continue to make the building of heritage value or historically significant. There is no burial ground immediately associated with the former church. It is also possible that the building contains Hardie asbestos sheeting given that the manufacture of asbestos sheeting did not cease completely until March 1987.²

The 2020 NSW Heritage Report has also provided a relatively minimal assessment of the significance (Local) of the former Catholic Church.³

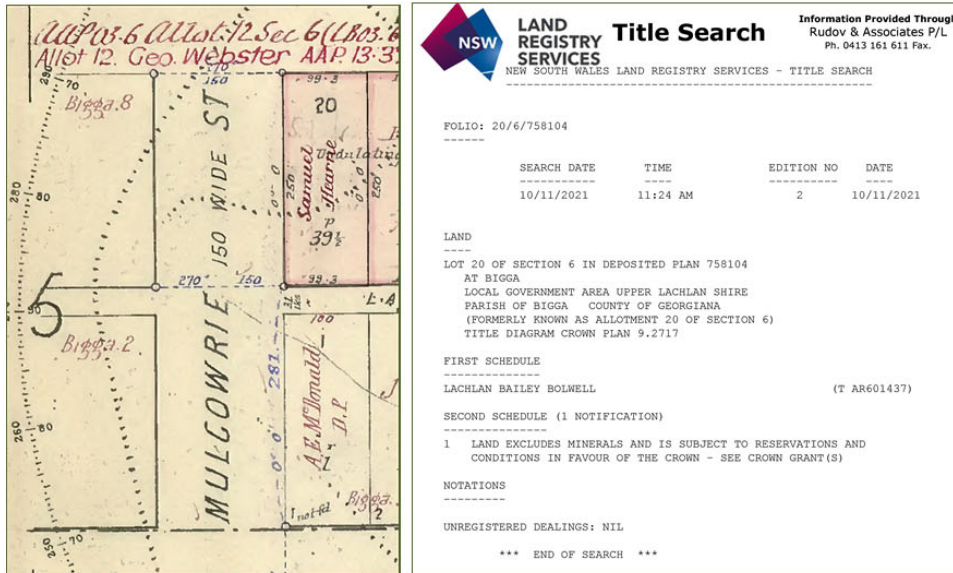
Name				
Catholic Church				
Other/Formal Names				
Address				
Bigga Street BIGGA NSW 2583				
Local Govt Area		Group Name		
Upper Lachlan				
Item Classification				
Item Type	Item Group	Item Category		
Built	Religion	Church		
Statement Of Significance				
Catholic Church, Bigga Street corner Mulgowrie Street, was consecrated 30 March 1952.				
Assessed Significance Type		Endorsed Significance		Date Significance Updated
Local		Local		5/17/2020
Listings				
Listing Name	Listing Date	Instrument Name	Instrument No.	Plan No.
Local Environmental Plan	20/0/2010	Upper Lachlan Local Environmental Plan 2010	6	
Heritage Item ID		Source		
1480222		Local Government		

¹ The Upper Lachlan Shire Community Heritage Study was undertaken for Upper Lachlan Shire Council from October 2007 to December 2008. Funding assistance for the Study was provided by the Heritage Branch, NSW Department of Planning [formerly NSW Heritage Office]. The coordinator of the study was Dr. Jennifer Lambert Tracey.

² Dr. Jennifer Lambert Tracey, letter to Keith Allen, September 2021.

³ NSW State Heritage Report: Bigga Catholic Church.

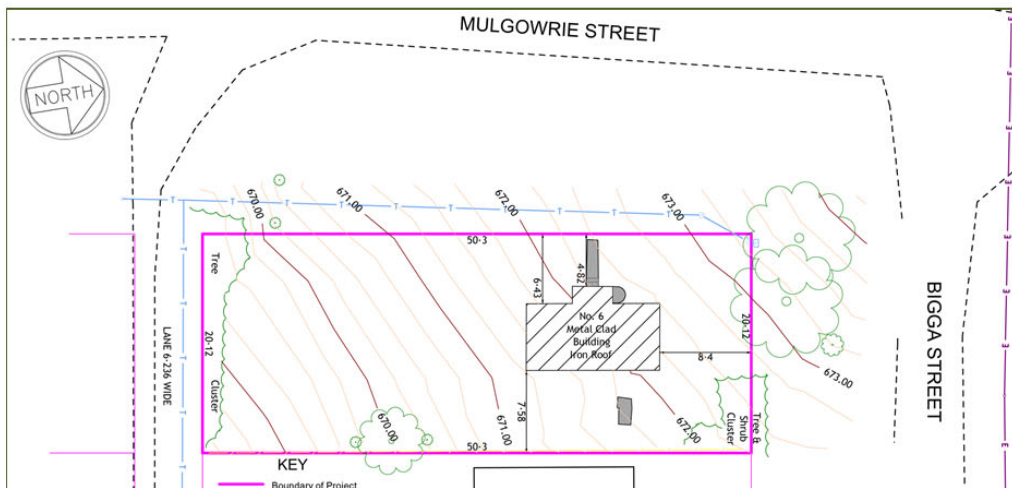
The 1902 Crown Plan 9-2717 of Bigga Bigga indicates that the property at the corner of Bigga and Mulgowrie Streets was owned by one Samuel Hearne and would seem to indicate that the Catholic Church was built sometime after 1902. The 2021 Title Search clearly indicates the purchase of the former Church property by Lachlan Bailey Bolwell, the current owner.



AN EXTRACT FROM THE 1902 CROWN PLAN 9-2717 OF BIGGA BIGGA + NSW LAND REGISTRY SERVICES TITLE SEARCH OF LOT SECTION 6 IN THE DEPOSITED PLAN 759104 AT BIGGA. SOURCE: LATERALS PLANNING.

2:2 CURRENT CONDITION

The property has changed hands several times, including Samuel Hearne, Francis Hearne & John McDonald Marks, Sadie Leumas Webster, the Catholic Church, Kingsley John David Lewis, and the current owner Lachlan Bolwell. The fabric of the building is in poor condition, as can be seen from the cover photographs, and other exterior and interior photographs taken by Laterals Planning, see below.



2022 EXISTING SITE TOPOGRAPHIC DETAILS OF THE FORMER CATHOLIC CHURCH SITE, NOW OWNED BY LACHLAN BAILEY BOLWELL. SOURCE: LATERALS PLANNING.



AN EXTRACT FROM THE PHOTOGRAPHS TAKEN BY LACHLAN BOLWELL. ABOVE: THE EAST + SOUTH ELEVATIONS, NOTE THE RELATIVELY RECENT TIMBER AND BRICK c1920. BELOW: THE UNDERFLOOR WITH CONCRETE STUMPS AND THE CEILING SPACE APPARENTLY WITH ASBESTOS LINING. SOURCE: LATERALS PLANNING.



The fabric of the building is in reasonable condition but given that the building has not been properly cared for, for some time; and given that the original usage as a church is not now relevant, it would appear to be reasonable that the Local Heritage Listing be removed. Dr Tracey has observed late in 2021 that:

The recommendation to remove the Local Heritage Listing of the former 'Catholic Church' Bigga, NSW, from the ULSC Local Environmental Plan (LEP 2010) was submitted to Council earlier this year (2021) and is pending Council consideration. Currently, I have no grounds to support the withdrawal of that recommendation. However, as you would be fully aware, you are entitled to present your client's case to Council for consideration that the current 'heritage listing' remain.

2.3 RECOMMENDATION

My view, as a Heritage Architect involved with many similar Statement of Heritage Impacts documents, is that it would be appropriate to remove the Local Heritage Listing, and allow the owner's proposal, already submitted to Council, to be proceeded with. The building and its site no longer retain the usage or status, for which it was originally given listing. Keith Allen has observed this month that:

The application utilises the LEP clause, as well as applying for a variation to a dwelling house on a lot less than is normally permitted in Bigga (4000 square metres is normally required but the lot is 1000 square metres) and the site is able to manage the disposal of effluent).

3.0 ASSESSMENTS & STATEMENTS OF SIGNIFICANCE

3.1 ASSESSMENTS OF SIGNIFICANCE WITHIN BIGGA

The heritage significance of sites and buildings within the Bigga township, and within other Upper Lachlan Shires townships, has been discussed within the *Upper Lachlan Shire Community Heritage Study 2007-2008*, by Dr Jennifer Lambert Tracey, and published in 2010. Only the Bigga Public School has been regarded as sufficiently significant to be listed in the State and Local Heritage Listings. Dr Lambert has observed that:

Bigga Public School was established in 1884 and remains an integral part of this town's history ... overall the heritage significance of the school lies in its social and contextual relationship with the village of Bigga and those students who have attended during more than a century of education on this site.¹

The first Bigga All Saint's Anglican Church dates from 1884, the foundation stone being laid by Mr. Sarah McGuiness. The existing church was erected in 1906 and is regarded as sufficiently significant to be listed in the Local Heritage Listings.



ABOVE: THE BIGGA PUBLIC SCHOOL AND THE BIGGA ALL SAINT'S ANGLICAN CHURCH; BELOW: THE BIGGA WAR MEMORIAL HALL AND THE BIGGA UNITING CHURCH. SOURCE: *UPPER LACHLAN SHIRE COMMUNITY HERITAGE STUDY 2007-2008*.



Dr Lambert has observed that of the Memorial Hall and the Uniting church:

The Bigga War Memorial Hall is of high local heritage significance for its cultural association with the remembrance of those who gave their lives in the service of their

¹ Dr Jennifer Lambert Tracey, *Upper Lachlan Shire Community Heritage Study 2007-2008*, published 2010.

country. The Hall, erected in 1957 is a striking example of 1950's architecture and is a contributory element in the streetscape ... the Uniting Church [originally the Methodist Church], Bigga, is of local heritage significance for its association with the provision of religious services in Bigga.²

The Memorial Hall has high local heritage significance, but the Uniting Church has not been regarded to be of sufficient heritage significance as to be added in the Local Heritage Listings. The Bigga General Cemetery has also been added in this list. Dr Lambert has observed that:

The Bigga General Cemetery located north-east of the Bigga Township is highly significant to the heritage value of Bigga and considered important to the cultural and social history of the area. Generations of early settler families are buried there and within the McGuinness Private Cemetery in Bigga.



The Bigga General Cemetery, *Find A Grave Cemetery*.

3.2 6 BIGGA STREET: STATEMENT OF SIGNIFICANCE

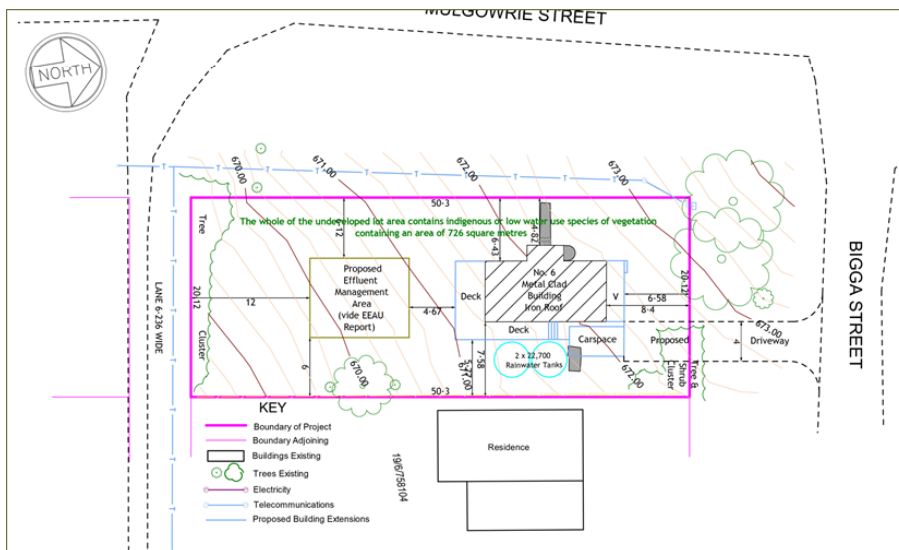
The property at 6 Bigga Street has changed hands several times, including occupancy by Samuel Heame, by the Catholic Church, by Kingsley Lewis, and by the current owner Lachlan Bolwell. The fabric of the building is in poor condition, as can be seen from the cover photographs, and in the other exterior and interior photographs provided by Laterals Planning. The Church has been discarded by the church parishioners, probably during the recent decade, and its heritage significance has been virtually lost.

² *Ibid.*

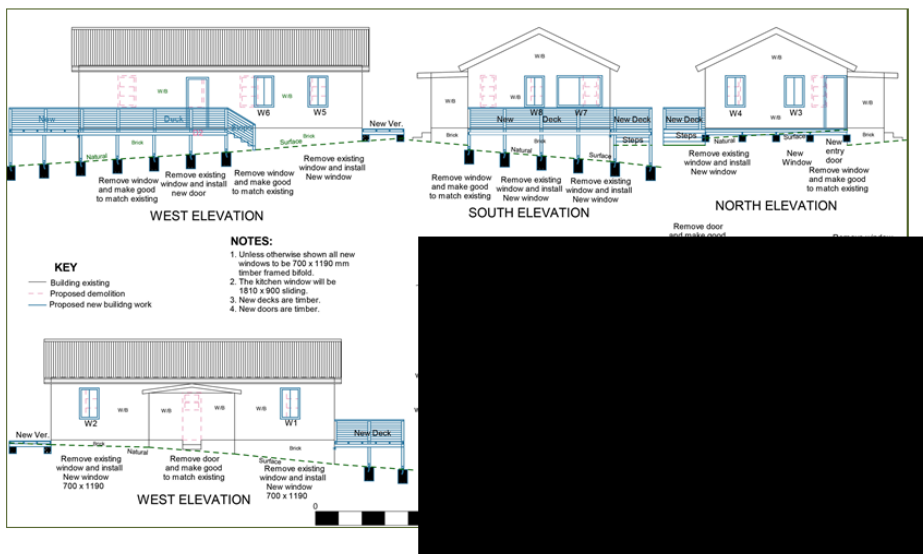
4.0 THE PROPOSED ADAPTIVE-REUSE WORKS + CONSERVATION

4.1 THE PROPOSED ADAPTIVE-REUSE WORKS

The new owner and his planning consultant have put together adaptive reuse works for the former Catholic Church building and property. These external works provide the capacity to promote the indigenous and low water use species of vegetation and have also promoted a proposal to create an effluent management area to the south of the property. To the exterior of the building itself, there will be no dramatic changes to the former church fabric or plan, apart from the creation of decks around the building, and the insertion of rainwater tanks, car space, and entry path from the west. Internally, the owner and planning consultant have partitioned the interior of the building to provide adequate living facilities. It is probable that internal asbestos fabric (if located) will have to be removed from the interior.



ABOVE: SITE DEVELOPMENT AND TOPOGRAPHIC DETAILS; BELOW: PROPOSED FLOOR PLAN & ELEVATIONS. SOURCE: LATERALS PLANNING FEBRUARY 2022.



4.2 THE PROPOSED CONSERVATION WORKS

The owner and the planner have determined that there will be no major physical adjustments to the former catholic church structure, and those remnant components from the original church structure will be retained and conserved, albeit that the building will now be used for personal usage.

Laterals

Planning
Engineering & Management
Environmental

The General Manager
Upper Lachlan Shire Council
PO Box 42
Gunning NSW

Our Ref.: 2162
Your Ref:

Dear Sir,

**Re Adaptive Re-use (Dwelling House) – 6 Bigga Street, Bigga
Lot 20 Section 6 DP 758104**

The owner has engaged Laterals to prepare and lodge an application for the adaptive re-use of a disused Catholic Church on the above land and seek approval for the variation of the minimum lot size provisions of *Upper Lachlan Local Environmental Plan 2010*. The development results in a variation to the minimum lot size for a dwelling house in an RU5 Village zone whereby the applicant herein requests such variation for the following reasons –

Clause 6.10 of *Upper Lachlan Local Environmental Plan 2010* requires the size of a lot to be 4000 square metres to obtain approval for a dwelling house. The size of the lot is 1011 square meters representing 25% of the required minimum lot size.

Compliance with the development standard is unreasonable or unnecessary in the circumstance of this particular case as –

- A. A heritage Impact Statement has been carried out by Peter Freeman which, after reviewing the fabric of the building and site usage, includes the following statements.
- i. In his recommendation
“My view, as a Heritage Architect involved with many similar Statement of Heritage Impacts documents, is that it would be appropriate to remove the Local Heritage Listing, and allow the owner’s proposal, already submitted to Council, to be proceeded with. The building and its site no longer retain the usage or status, for which it was originally given listing.”
 - ii. In his Statement of Significance

1
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“The property at 6 Bigga Street has changed hands several times, including occupancy by Samuel Hearne, by the Catholic Church, by Kingsley Lewis, and by the current owner Lachlan Bolwell. The fabric of the building is in poor condition, as can be seen from the cover photographs, and in the other exterior and interior photographs provided by Laterals Planning, The Church has been discarded by the church parishioners, probably during the recent decade, and its heritage significance has been virtually lost.”

iii. In relation to the proposed adaptive reuse works

“The new owner and his planning consultant have put together adaptive reuse works for the former Catholic Church building and property. These external works provide the capacity to promote the indigenous and low water use species of vegetation and have also promoted a proposal to create an effluent management area to the south of the property. To the exterior of the building itself, there will be no dramatic changes to the former church fabric or plan, apart from the creation of decks around the building, and the insertion of rainwater tanks, car space, and entry path from the west. Internally, the owner and planning consultant have partitioned the interior of the building to provide adequate living facilities. It is probable that internal asbestos fabric (if located) will have to be removed from the interior.”

and

“The owner and the planner have determined that there will be no major physical adjustments to the former catholic church structure, and those remnant components from the original church structure will be retained and conserved, albeit that the building will now be used for personal usage.”

In conclusion it is observed that the site no longer has any heritage significance and that the proposed works to provide for the adaptive reuse would preserve the essential fabric of the old church, notwithstanding its loss of heritage significance.

- B. The land contains a heritage item (Item I6 – Catholic Church) and as discussed in section 4.1.3.3 of the Statement of Environmental Effects the adaptive re-use of the building in permitted pursuant to clause 5.10 (10). Given the loss of heritage significance It would seem unreasonable and un-necessary to allow the building to fall into disrepair and a diseconomy to allow the building to become dilapidated. It would be reasonable to allow for the adaptive re-sue of the building. A heritage Impact Statement is attached to the application.
- C. The loss of the building to any effective use would result in a loss of empathy and Village connection to its history. It would be unreasonable to allow this to happen and an un-necessary action given that the building can be effectively be re-used.
- D. Investigations have established that on-site waste water management can be provided for the proposed use of the building as a dwelling house, indicated as necessary in the Council letter dated 10 September 2021 and included below on page 21 of the Statement of Environmental Effects.
- E. The building has not been used since March 1987 and is in serious danger of becoming dilapidated in the middle of a Village. It would be un-necessary to allow this to continue and to represent a developing harbour for vermin and a fire hazard and site attractive to vandals.

2

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It is considered that there are sufficient planning grounds to justify the variation of the development standard as –

- The development involves the adaptive re-use of an existing building that enables the continuation of a building as a use consistent with uses within the village.
- The ability to use the existing building for a dwelling house where there is the ability to provide for on-site waste water management as evidenced in the report by Enviro Engineers Australia.
- Improving the amenity by the restoration of a building that is becoming dilapidated from non-use as a church (now deconsecrated) and prevention of it from becoming a worse harbour for vermin and eyesore in the middle of a small rural village.
- The adaptive re-use will conserve the existing building that is falling into disrepair, and improve the streetscape by the renovation of the building. the dwelling would not distract from the character and identity of the village which is occupied mainly for residential purposes.
- The quality of watercourses is protected by the safe and efficient design of an on-site waste water management system designed by Enviro Engineers Australia.
- The development would involve the removal of small shrubs for a new driveway with trees and other shrubs being retained.

Yours faithfully,

Keith Allen RPIA
Laterals Planning
2 March 2022
Registered Planner PLUS (EIA)
Registered Environmental Assessment Practitioner



3

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On-site Wastewater Management Report

20 Bigga Street,
Bigga, NSW

CLIENT:

Bolwell

REFERENCE:

REF-210291.1-A

DATE:

16th December 2021

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1 INTRODUCTION

ENVIRO ENGINEERS AUSTRALIA Pty. Ltd. (EEAU) has been engaged by the client to undertake an 'Wastewater Management Report' (WMR). This WMR was prepared by Daniel Mathew. Daniel, the Principal Environmental Engineer at EEAU, holds a Bachelor of Environmental Engineering from the University of Wollongong (1999) and has authored /reviewed thousands of WMR's across NSW in the last 20 years.

1.1 Regulatory Background

Local Government Act 1993 ('The Act')

The Act requires a person may operate a "system of sewage management" only with the prior approval of Council (Section 68) and an application must be accompanied by such matters prescribed in relevant regulations and specified by Council Local Policy (where available) (Section 81). In determining an application, the Council must not approve an application where the activity does not comply with the relevant regulation and must also take into consideration the Local Policy and the principles of ecologically sustainable development (Section 89).

Local Government (General) Regulation 2005 ('The Regulation')

The Regulation lists the matters that must accompany an application to install a "sewage management facility" (Section 26). The Regulation also lists matters Council must take into consideration in determining an application (Section 29) which includes guidelines or directions issued and whether the proposed sewage management facility makes appropriate provision for the following:

- Protection of the Environment
- Protection of Public Health
- Re-use of Resources (including nutrients, organic matter, and water)
- Minimisation of Adverse Impacts on Land Amenities

The Regulation also states it is a condition of an approval that the activity approved, and any associated work, comply with any applicable standards established by The Regulation or The Act (Section 31).



1.2 Objective

Pursuant to the above, the objective of this WMR document is to accompany an application to *'install or construct a sewage management facility'*, and include matters taken into consideration by Council when determining the application. To that end, this WMR has been undertaken with reference to the following documents:

- Environment & Health Protection Guidelines: On-site Sewage Management for Single Households (Dept. of Local Government, 1998) ('The NSW Guidelines')
- AS1547: 2012" On-site Domestic Wastewater Management" ('The Australian Standard')

1.3 Scope of Works

- Desktop Study
- On-Site Land Survey
 - Identification of the most suitable 'Landform Element' for Effluent Disposal
 - Measurement of 'Landform Element' parameters:
 - Borehole excavations up to 1.5m depth
- Off-Site Soil Survey
 - Borehole core logging and analysis of undisturbed samples
 - Measurement of physical chemical soil parameters
- Wastewater System Design & Reporting
 - Evaluation of survey results and identification of any limitations
 - Recommendations of any land or soil mitigation required.
 - Calculation of wastewater characteristics (quantity & quality)
 - Effluent Disposal Area (EDA) sizing calculations:
 - Qualitative Risk-Based Determination of Buffer Distances
 - Wastewater System Layout Plan (CAD) & Standard Drawings
 - Conclusions & Recommendations



2 DESKTOP STUDY

Site Area	≈ 9175 m ²	
Council	Upper Lachlan Shire	
Proposed Development(s)	Wastewater System to Service: <ul style="list-style-type: none"> • Primary Residence 	
Potable Water Supply	Town Water	
Soil Landscape	Garland	
Nearest Water-Supply Bore	GW064434.1.1	2470 m

Climate

Weather Station¹		070025		CROOKWELL POST OFFICE								
Median Rainfall (mm)												
Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Annual
56.6	48.4	44.6	47.3	54.6	78.9	77.8	84.7	71.8	70.5	58.9	55.4	868.4
Weather Station¹		063005		BATHURST AGRICULTURAL STATION								
Mean Daily Evaporation (mm)												
Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Annual
6.8	5.7	4.5	2.9	1.7	1.1	1.2	1.9	2.8	4.1	5.3	6.5	3.7

¹ Data selected from a shortlist of three weather stations after consideration of elevation, operational period, proximity, and data outliers.



Marked Survey Perimeter Track, Waypoints & Photos





3 ON-SITE LAND SURVEY & OFF-SITE SOIL SURVEY

Landform	Slope Class (%) ²	Gently Inclined (3 - 10)
	Morphological Type	S - Simple Slope
	Relative Inclination ²	Linear Planar

Vegetation	Element	A
	Photo(s)	-
	Life Form	NW - Non-Woody
	Height Class (Code)	NW - Low (1)
	Foliage Cover Class (%) ³	D - Closed or Dense (>70)
	Growth Form	Grass (g4.0)

Land Surface	Elevation (m)	≈ 674 m
	Aspect	South East
	Disturbance	4 - Complete Clearing, Pasture, but Never Cultivated
	Coarse Fragments Abundance (%)	0 - No Coarse Fragments
	Coarse Fragment Size	N/A
	Rock Outcrop Abundance (%)	0 - No Bedrock Exposed
	Run-Off	1 - Very Slow
	Run-On	1 - Very Slow

² Evaluation Means: Google Earth

³ Evaluation Means: Figure 1



Erosion State	S - Stabilised
Erosion Type	N/A
Erosion Presence	N/A
Exposure	Excellent
Surface Dampness	No Visible Signs



Borehole #	1	Excavation Date	10/12/2021	Bedrock (mm)	-	Termination Reason	End of Driver	Topsoil Erodability (K-factor)	0.030
Tube	D	Surface Condition	Firm	Water Table (mm)	-	Parent Material	-	Soil Erosion Hazard Class	Very Low
Layer I.D	Horizon	Depth (mm)	Colour	Coarse Particles (%) (>2mm)	Texture	pH	EC (µS/cm)	Soil Category	P-sorp (kg/Ha)
1	A	420	Dark Yellowish Brown	<10	Clay Loam Sandy	5.85	78	4	2400
2	B1	690	Red	<10	Light Clay	-	-	5	1950
3	B2	1430	Yellowish Red	<10	Light Clay	-	-	5	4875
TOTAL									9225

Borehole #	2	Excavation Date	10/08/2021	Bedrock (mm)	-	Termination Reason	End of Driver	Topsoil Erodability (K-factor)	0.030
Tube	J	Surface Condition	Firm	Water Table (mm)	-	Parent Material	-	Soil Erosion Hazard Class	Very Low
Layer I.D	Horizon	Depth (mm)	Colour	Coarse Particles (%) (>2mm)	Texture	pH	EC (µS/cm)	Soil Category	P-sorp (kg/Ha)
1	A	380	Dark Brown	<10	Clay Loam Sandy	5.50	37	4	2400
2	B1	740	Red	<10	Light Clay	-	-	5	2275
3	B2	1510	Reddish Yellow	<10	Light Clay	-	-	5	4875
TOTAL									9550



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4 SITE CAPABILITY ASSESSMENT

The objective of the Site Capability Assessment is to evaluate results and identify an limitation, followed by recommendations of any land or soil mitigation required.

Methodology

The assessment methodology used follows that prescribed in DLG (1998), whereby the restriction imposed by a site/soil features are categorised by severity, and their impact forms the basis for subsequent system selection, design, and recommendations (Table 1).

Limitation	Description
Minor	This feature has been assessed and deemed to pose no obstacle to OSSM, given the recommended system and measures are implemented.
Moderate	This feature requires consideration. It may typically be overcome by site modifications or by appropriate selection, design, and sizing of treatment / application systems.
Major	This feature precludes the use of a given treatment, land application method, or Effluent Management Area (EMA). Major Limitations may prevent OSSM entirely, require an off-site management approach, or re-evaluation of the development scope.

Table 1: Site / Soil limitation assigned per DLG (1998)



Outcomes - Site

Feature	Description	Limitation
Climate	Monthly evaporation exceeds rainfall for majority of year	Minor
Temperature	Annual mean daytime maximum > 15°C.	Minor
Flood Potential	EDA is above the 5% AEP (https://water.dpie.nsw.gov.au/_data/assets/pdf_file/0011/417818/upper-lachlan-shire-council-area-inundation-map.pdf)	Minor
Exposure	Good wind and solar exposure.	Minor
Slope %	Gently Inclined	Minor
Landform	Linear Planar	Minor
Run-on / Seepage	Low potential of stormwater run on interacting with the proposed EDA.	Minor
Erosion Potential	No erosion in proposed EMA identified. The soil surface is grass covered thus protected from erosion	Minor
Site Drainage	No significant signs of ongoing surface moisture or ponding.	Minor
Fill	None Observed	Minor
Rocks / Rocky Outcrops	<2 % Observed	Minor
Comments	Nil	



Outcomes – Soil

Feature	Relevant System	Observation	Limitation
Depth to Bedrock	Irrigation	>1.0	Minor
Depth to High Water Table	Irrigation	>1.0	Minor
Soil Permeability Category (0 – 600mm)	Irrigation	2a, 5	Moderate
Coarse Fragments	All	0-20%	Minor
pH (topsoil)	All	4.5-6.0	Moderate
Electrical Conductivity (dS/m)	All	<4	Minor
Exchangeable Sodium Percentage (%)	Irrigation (0-40cm)	N/A	N/A
Phosphorus Sorption (kg/Ha)	All	>6000	Minor
Dispersiveness (EAT Class)	All	N/A	N/A
Erosion Hazard Class	All	Very Low	Minor
Surface Dampness	All	No visible signs	Minor
Comments <ul style="list-style-type: none"> - Soil permeability limitations are addressed through EDA sizing. - Soil pH within the range of 4.5 – 8.5 should pose no issues for the EDA. 			



5 ON-SITE WASTEWATER SYSTEM DESIGN

The design process adopted here involves an evaluation of the climate, site capability assessment and wastewater generated to select, size, and position a waste treatment unit and land application system that will provide the best practical option.

5.1 Wastewater Generation

<i>Source</i>	<i>Primary Residence</i>
<i>Habitable Rooms</i>	Up to 4
<i>Equivalent Population (EP)</i>	N/A
<i>Allowance (L /Room /Day)</i>	200
<i>Design Daily Flow (L/d)</i>	800

5.2 Wastewater Treatment Unit Selection

a) Septic Tank

Treatment Process

A septic tank is a waterproof tank usually located below ground level. Septic tanks provide preliminary treatment for the entire wastewater stream by allowing solids to settle to the base of the tank, and oils and fats to float to the top to form a scum layer. Anaerobic (in the absence of oxygen) bacterial digestion of the stored solids produces sludge, which accumulates in the bottom of the tank. Partly treated odorous effluent flows from the septic tank to either further on-site treatment, a common effluent system, a holding tank for pump out, or directly to a soil absorption system. Septic tanks do not remove nutrients. The wastewater is not disinfected, and because it is highly infectious it must be applied to land below ground level.



Effluent Quality

The expected 'generic' effluent quality values from a NSW Health accredited domestic septic tank are shown below. Where available, effluent quality values for the specific system to be installed (where available) is also shown and will replace the 'generic' values at the discretion of the environmental engineer.

<i>Characteristic</i>	<i>Septic Tank Effluent (Typical Domestic Wastewater)</i>	<i>Site Specific Effluent Values</i>
Biochemical Oxygen Demand (BOD)	150mg/L	-
Suspended Solids (SS)	50mg/L	-
Total Nitrogen (TN)	50 – 60 mg/L	-
Total Phosphorus (TP)	10 – 15 mg/L	-
Faecal Coliforms	10 ⁵ – 10 ⁷ cfu//100ml	-

NSW Health Certification

Under the provisions of Clauses 40 and 41, Local Government (General) Regulation 2005, a local council must not approve of the installation of septic tank unless they have been accredited by the NSW Health. A register of accredited products can be found on the NSW Health website:

- <https://www.health.nsw.gov.au/environment/domesticwastewater/Pages/stcw.asp>

Operation

- Enzyme additives have been promoted for reducing odour and preventing blockages in septic tank systems. However, there is a possibility that emulsified fats may be transferred to the land application system and cause problems. Properly designed and operated systems should not persistently rely on the use of enzyme additives.



Maintenance

- Annual servicing should include assessment of the sludge and scum levels and checking of the outlet and inlet square junctions for blockages.
- Septic tanks should be desludged as required, and generally at a minimum every three years. Desludging is required when:
 - The scum layer is within 100 mm of the bottom of the inlet square junction, or the sludge layer is within 200 mm of the bottom of the outlet square junction,
 - The sludge occupies the basic allowance (1550 L) of the septic tank, or
 - The total depth of sludge and scum is equal to one-third of the depth of the tank.
- The desludging procedure should ensure that 400 - 500 mm of liquid is retained in the tank, and that the tank is immediately refilled with water to the outlet level to prevent the tank from being lifted by soil hydrostatic pressure.

Advantages

- No moving parts
- Low maintenance effort
- Low energy requirement
- Long lifespan (>20 years)
- Low capital cost

Limitations

- Effluent is highly infectious and highly polluting
- Subsoil (below ground surface) application is required
- Many soils are not suitable for effluent absorption
- Groundwater and surface water can become polluted or contaminated
- Water conservation is essential.



a. Septic Tank Sizing

Background

The tank is sized to allow firstly for the detention of 24 hours daily flow for a minimum of five persons and to a maximum of ten persons. The tank capacity is then increased to allow for the accumulation of digested sludge which must be removed at about three yearly intervals for separate disposal off site. The liquid component, commonly referred to as effluent, then flows by displacement of incoming sewage to a land application system or some other form of utilisation or disposal, or to a collection well from where the effluent is pumped to a sewer or removed by a road tanker.

Square junctions are placed at the inlet and outlets of the tank to minimise disturbance of the tank contents at the inlet and to minimise scum carryover at the outlet. A range of effluent filters, which can be inserted in the outlet of the septic tank,

The minimum capacities for septic tanks, collection wells, septic closets, greywater tanks, CED pre-treatment tanks, and sewage ejection pump stations applicable in New South Wales, are specified in Annexures 2 and 3 of the SEPTIC TANK AND COLLECTION WELL ACCREDITATION GUIDELINE (NSW Health, 2001).

- Design Wastewater Flowrate: 200 L/ day (maximum)
- Sludge Allowance: 1550 L/ day
- Minimum Septic Tank Capacity: 1750 L

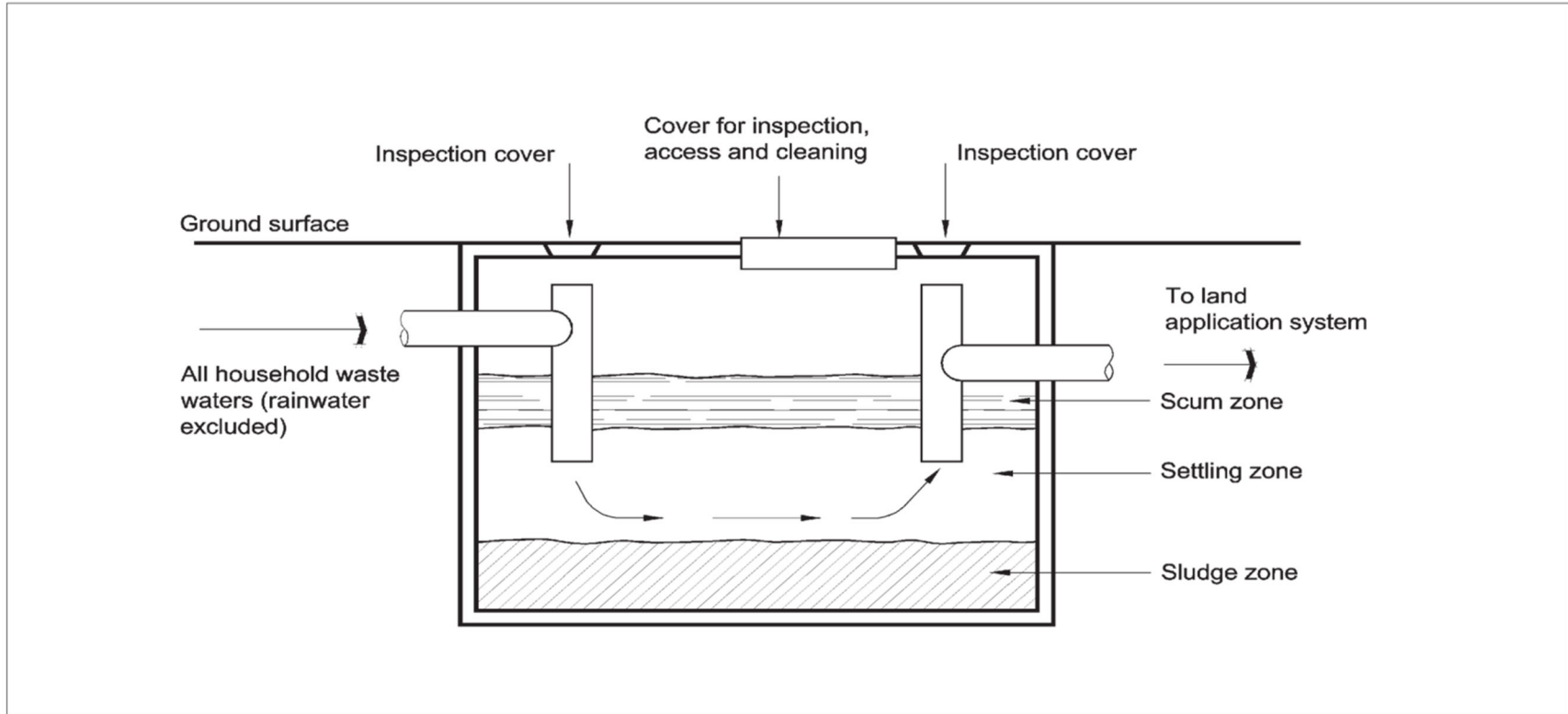


Figure 1: Typical Schematic of an Septic Tank



b. Effluent Land Application Selection

We recommend effluent be applied at a specific loading rate to vegetated land comprising existing (or imported) soil and subsoil. Selection of an appropriate type of Effluent Land Application System considers the following:

- Site Capability Assessment results
- Life Cycle Costs (capital, operational, maintenance)
- Impact on vegetation & land amenity
- Health risk to humans and animals
- Contamination of, and barriers to, sensitive receiving environments

Appropriate effluent land application technologies include the following:

- a) Effluent Irrigation (Surface & Subsurface)
- b) Evapotranspiration Absorption Beds & Trenches
- c) Mounds
- d) Residential Reuse

Evapotranspiration Absorption Beds & Trenches

Evapotranspiration and Absorption relies on the physical, chemical, and biological processes that occur between effluent and soil, vegetation, and micro-organisms to incorporate effluent volume into an existing hydrologic water cycle, while also attenuating effluent contaminants in the surrounding soil.

Installation

- The determined minimum area should be designated for this use only.
- Effluent should be evenly distributed over the entire designated area.
- Stormwater run-on should be diverted from the designated area.
- Signs should be erected to advise people of the designated area use.
- Surrounding nutrient assimilation areas should be appropriately vegetated.



- The system must be fully installed and landscaped before the treatment system is commissioned.
- Construction and installation of beds or trenches should only be undertaken by experienced persons and/or those familiar with of Appendix L of 'The Standard including the following clauses:
 - L7 Construction Techniques,
 - L8 Installation – Pipe Laying
 - L9 Inspection
 - L10 Pre-Commissioning Tests
 - L11 Commissioning
 - L12 Marking
 - L13 Reporting

Operation and Maintenance

- The system should be regularly checked as working satisfactorily.
- The annual service contract for the wastewater treatment unit also the effluent disposal area.

Advantages

- Relatively small development 'footprint'
- Low Operational and Maintenance costs
- Low impact on receiving environments and land amenity
- Low health risk to humans and animals
- Long lifespan (>20 years)

Limitations

- High Capital Cost (construction and commissioning)
- Not easily relocated for outdoor reuse / watering purposes.
- Decommissioning the area for '*unrestricted use*' is subject to biosolid treatment requirements under EPA guidelines.
- On-going electricity costs (irrigation pump)
- Reliable products backed by manufacturer warranties.

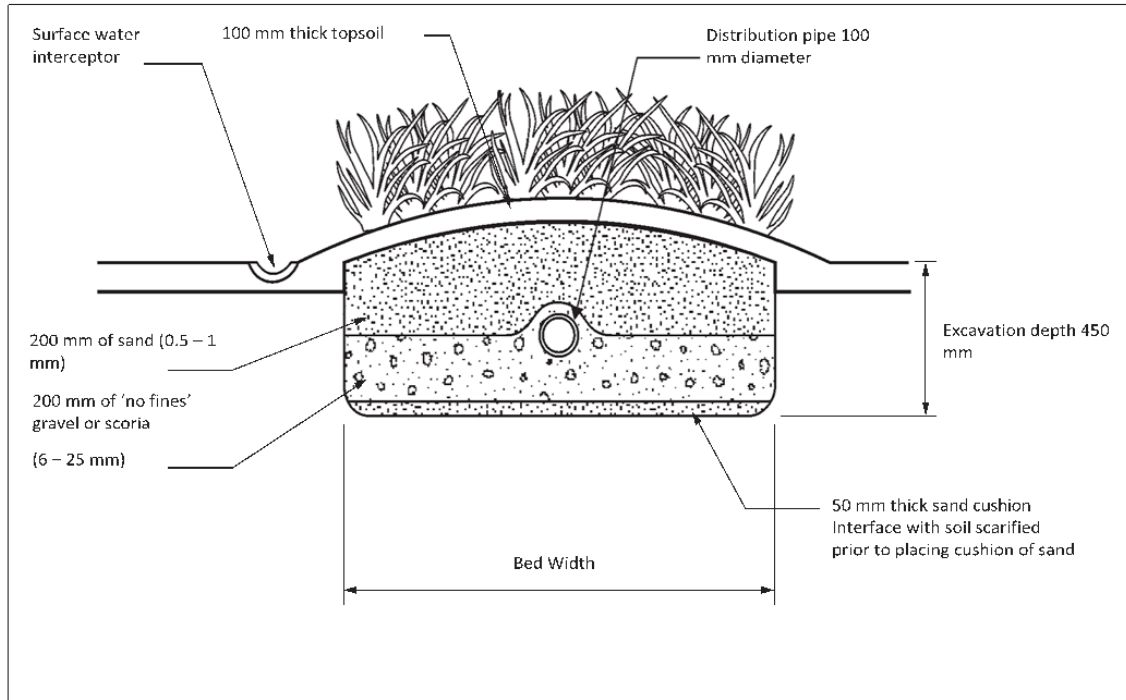


Figure 2: Typical Schematic of an ETA Bed



c. Effluent Disposal Area Sizing

Adopted Methodology

This Standard Wastewater Management Report adopts the following methodology:

The selected design loading rate (DLR) for an adsorption system is chosen in accordance with the soil permeability category at 600mm of soil depth. This value is also directly related to limiting factors identified on site and is selected to account for any restrictive features which may be imposed. The soil profiles from the EDA have shown the soil categories of light clay at both boreholes 1 and 2, hence a conservative DLR value of 10.0 mm/day was selected for this report to account for the lower permeability of the soil profile. The area is obtained from the following relationship:

$$A = Q / DLR$$

Where:

A = required area for effluent disposal (m²)

Q = design daily flow (L/day)

DLR = design loading rate (mm/day)

Results

Preliminary	80 m ²
Adjustment(s) - 0% Reserve Area	0 m ²
FINAL	80 m²



5.6 Buffer Distances

Buffer distances between an Effluent Disposal Area (EDA) and surrounding features are a cost-effective risk reduction measure in the protection of public health and the environment. The buffer distances necessary to prevent downslope and off-site impacts vary considerably from one site to the next and depend on the sensitivity of the receiving environment.



Adopted Methodology

Site-Specific Qualitative Risk-Based Determination⁴

Buffer I.D	Site Feature Type	Buffer Range (m)	Site Constraint Assessment (following design & mitigation)				Overall Constraint Value	Proposed Buffer (m) (Downslope : Upslope)			
Horizontal Buffer Distance (m)											
001	Property Boundary - South	0.5 – 12	A	D	E	J	LOW	≥12			
002	Property Boundary – West	0.5 – 12	A	D	E	J	LOW	≥6			
003	Property Boundary - East	0.5 – 12	A	D	E	J	LOW	≥6			
004	Open and Roofed Structures – Primary Residence	2 – >6	A	D	E	J	LOW	≥6			
005	Designated Thoroughfares (e.g. footpaths, driveway)	2 – >6	A	D	E	J	N/A	N/A			
006	Watercourses – Standing (within 100-m)	15 – 100	A	B	D	E	F	G	J	N/A	N/A
007	Watercourses – Flowing (within 100-m)	15 – 100	A	B	D	E	F	G	J	N/A	N/A
008	Stormwater Infrastructure – Channel	15 – 100	A	B	D	E	F	G	J	N/A	N/A
009	Groundwater Bore (within 50-m)	15 – 50	A	C	H	J	N/A	N/A			
010	Designated Recreational Areas - Pool	3 – 15	A	E	J	N/A	N/A				
011	Designated Recreational Areas - Patio	3 – 15	A	E	J	N/A	N/A				
012	In-Ground Potable Water Tank	4 – 15	A	E	J	N/A	N/A				
013	Rock/ Soil Wall Edge	3 or 45°	D	C	H	N/A	N/A				
Vertical Buffer Distance (m)											
014	High Water Table	0.6 – >1.5	A	C	H	I	J	LOW	0.6		
015	Bedrock	0.5 – >1.5	A	C	J	LOW	0.5				
Comments											
Nil											

⁴ Source: 'The Australian Standard': Appendix R



Buffers Have NOT Been Applied to the Following Site Features

001	Designated Storage Areas (e.g. vehicle parking, material & waste stockpiles)	004	Grassy Courses / Open Drainage Depressions
002	Designated Animal Enclosures (e.g. paddock, arena, kennel)	005	Other land uses or easements
003	Designated Garden and Landscaped Areas	006	Native Ecological Communities, Rocky Outcrops, Site Disturbance



5 SPECIFICATIONS

8.0	Wastewater Generation & Collection
8.01	All wastewater generated from the specified proposed development shall be collected by a 'sanitary plumbing system' and the discharge conveyed via the 'sanitary drainage system' and to a treatment unit.
8.02	Design average wastewater flowrate: 800 L/d
8.1	Wastewater Treatment Unit
8.11	Wastewater will be treated to a secondary standard (with disinfection);
8.12	A NSW Health Accredited Aerated Wastewater Treatment System (AWTS) will treat the specified design flowrate.
8.2	Effluent Disposal Area (EDA)
8.21	An area has been designated as the EDA
8.22	Disposal Method: Absorption Bed
8.23	Primary Area: 80 m ²
8.24	This area is to be 'managed' (i.e. clippings removal is necessary).
8.25	Dense grass vegetation cover is to be maintained within the EDA.
8.26	Grazing animals are not permitted within the EDA
8.27	Stormwater run-on must be directed away from the EDA
8.28	In the event of a failure, halt all effluent flow operations, remediate the soil and repair/replace the trench



6 LIMITATIONS

ENVIRO ENGINEERS Pty Ltd has prepared this report for the exclusive use of our client, for this project only and for the purpose(s) described in the report. It should not be used for other projects or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of ENVIRO ENGINEERS, does so entirely at its own risk and without recourse to ENVIRO ENGINEERS for any loss or damage.

In preparing this report ENVIRO ENGINEERS has necessarily relied upon information provided by the client and/or their Agents. The results provided in the report are indicative of the sub-surface conditions only at the specific sampling or testing locations, and then only to the depths investigated and at the time the work was carried out. Under no circumstances can it be considered that these findings represent the actual state of the site at all points. Subsurface conditions can change abruptly due to variable geological processes and because of anthropogenic influences. Such changes may occur after ENVIRO ENGINEERS 's field testing has been completed.

ENVIRO ENGINEERS 's advice is based upon the conditions encountered during this investigation. The accuracy of the advice provided by ENVIRO ENGINEERS in this report may be limited by undetected variations in ground conditions between sampling locations. The advice may also be limited by budget constraints imposed by others or by site accessibility.

Should any site conditions be encountered during construction that vary significantly from those outlined and discussed in this report, ENVIRO ENGINEERS should be advised and a plan outlining the need for potential action developed accordingly.

This report must be read in conjunction with all the attached notes and should be kept in its entirety without separation of individual pages or sections. ENVIRO ENGINEERS cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome, or conclusion given in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by ENVIRO ENGINEERS. This is because this report has been written as advice and opinion rather than instructions for construction.



7 APPENDICES

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Appendix A

Wastewater Layout Plan



EFFLUENT DISPOSAL AREA NOTES:
 - MAINTAIN AS GRASSED AREA (MOW N' REMOVE)
 - MAINTAIN GOOD SUN EXPOSURE
 - PROHIBITED LAND USES INCLUDE: STRUCTURES, PLAYGROUNDS, MATERIAL STORAGE, PARKING, THOROUGHFARES, STORMWATER TRENCHES, PITS



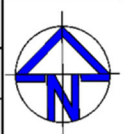
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 W: ee-au.com.au
 Sydney / Bowral
 Canberra / Newcastle
 Nowra / Wagga Wagga
 Orange

- KEY:**
- Site Boundary
 - Other Fences
 - Contours
 - Watercourses, Dams
 - Survey Boundary
 - Soil Borehole
 - Structures (To Be Removed)
 - Structures (Existing)
 - Structures (Proposed)
 - Proposec OSSM System

TITLE:
WASTEWATER SYSTEM LAYOUT PLAN

REV	DATE	DES	DRN	APP	REVISION DETAILS
A-01	16/12/21	DM	JP	DM	

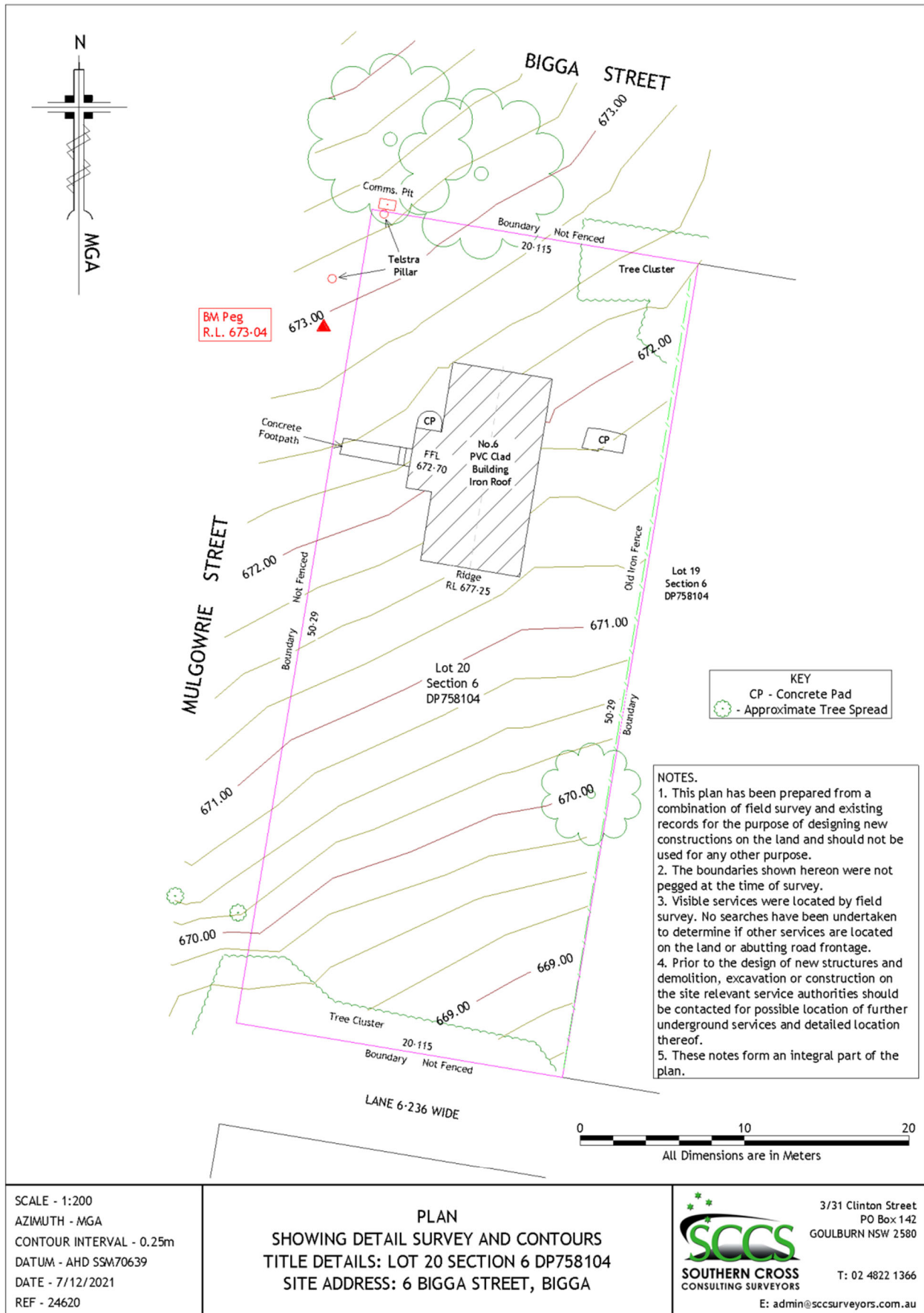
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Appendix B

Site Plan

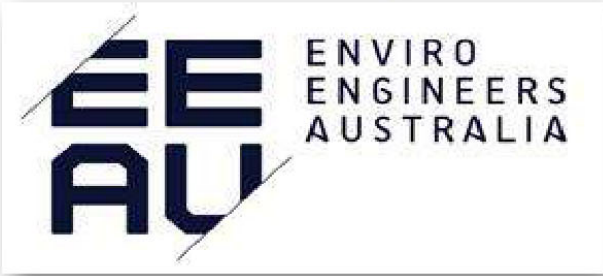




Appendix C

Balance Tables

R			u													
M	fi	210292.1 - A														
u			fi E 1													
Design Wastewater Flow		1,200	L/day													
Design Irrigation Rate ₁		3.0	mm/day													
Nominated Land Application Area		□ □	m ²													
Crop Factor ₂		0.7	unitless													
Retained Rainfall Coefficient		0.75	unitless													
Weather Station #		70025														
Weather Station #		63005														



Mfi	R				f	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Tc	
Days in month	D	days	31.0	28.0	31.0	30.0	31.0	30.0	31.0	31.0	30.0	31.0	30.0	31.0	365.0	
Median Rainfall	R	mm/month	56.6	48.4	44.6	47.3	54.6	78.9	77.8	84.7	71.8	70.5	58.9	55.4	868.4	
Mean Evaporation	E	mm/day	6.8	5.7	4.5	2.9	1.7	1.1	1.2	1.9	2.8	4.1	5.3	6.5		
Crop Factor	C	unitless	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70		
fi																
Evapotranspiration	ET	mm/month	147.6	111.7	97.7	60.9	36.9	23.1	26.0	41.2	58.8	89.0	111.3	141.1	945.2	
Percolation	B	mm/month	93.0	84.0	93.0	90.0	93.0	90.0	93.0	93.0	90.0	93.0	90.0	93.0	1095.0	
Outputs	O	mm/month	240.6	195.7	190.7	150.9	129.9	113.1	119.0	134.2	148.8	182.0	201.3	234.1	2040.2	
u			f													
Retained Rainfall	RR	mm/month	42.5	36.3	33.5	35.5	41.0	59.2	58.4	63.5	53.9	52.9	44.2	41.6	562.1	
Applied Effluent	W	mm/month	56.2	50.8	56.2	54.4	56.2	54.4	56.2	56.2	54.4	56.2	54.4	56.2	661.6	
Inputs	I	mm/month	98.6	87.1	89.6	89.9	97.1	113.6	114.5	119.7	108.2	109.1	98.6	97.7	1223.8	
fi			gM													
Storage for the month	S	mm/month	-141.9	-108.7	-101.0	-61.0	-32.7	0.5	-4.5	-14.5	-40.6	-72.9	-102.7	-136.3		
Cumulative Storage	M	mm	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0		
Maximum Storage for Nominated Area	N	mm	□													

1: Reference D
2: Reference A

			□ u □ R □
M	fi	210,292	
u fi E fi			
Design Wastewater Flow	1200	L/day	
Effluent Nitrogen Concentration ₄	22.7	mg/L	
Nitrogen Lost to Soil Processes ₃	0.2	Decimal	
Effluent Phosphorus Concentration ₄	10	mg/L	
Design Life of System ₁	50	ear:	
Nitrogen Crop pta ' managed' lawn	240	g/ a/y	
Phosphorus Crop pta e ' managed' ₂	30	g/ a/y	
Phosphorus Sorption Capacity ₅	9388	g/ a	
of Predicted P-sorp ₁	0.5	Decimal	
ME		fi	
Nitrogen	331	m ²	
Phosphorus	354	m ²	
Nutrients	□ □	m ²	



- 1: Reference A
- 2: Reference B
- 3: Reference C
- 4: Reference E
- 5: The average value determined using corehole log analysis :



Appendix D

Standard Inclusions

ON-SITE SEWAGE MANAGEMENT SYSTEMS

If you live in or rent a house that is not connected to the main sewer then chances are that your yard contains an on-site sewage management system. If this is the case then you have a special responsibility to ensure that it is working as well as it can.

The aim of this pamphlet is to introduce you to some of the most popular types of on-site sewage management systems and provide some general information to help you maintain your system effectively. You should find out what type of system you have and how it works.

More information can be obtained from the pamphlets:

Your Septic System
Your Aerated Wastewater Treatment System
Your Composting Toilet
Your Land Application Area

You can get a copy of these pamphlets from your local council or the address marked on the back of this pamphlet.

It is important to keep in mind that maintenance needs to be performed properly and regularly. Poorly maintained on-site sewage management systems can significantly affect you and your family's health as well as the local environment.

What is an on-site sewage management system?

A domestic on-site sewage management system is made up of various components which - if properly designed, installed and maintained - allow the treatment and utilisation of wastewater from a house, completely within the boundary of the property.

Wastewater may be blackwater (toilet waste), or greywater (water from showers, sinks, and washing machines), or a combination of both.

Partial on-site systems - eg. pump out and common effluent systems (CES) - also exist. These usually involve the preliminary on-site treatment of wastewater in a septic tank, followed by collection and transport of the treated wastewater to an off-site management facility. Pump out systems use road tankers to transport the effluent, and CES use a network of small diameter pipes.

How does an on-site sewage management system work?

For complete on-site systems there are two main processes:

1. treatment of wastewater to a certain standard
2. its application to a dedicated area of land.

The type of application permitted depends on the quality of treatment, although you should try to avoid contact with all treated and untreated wastewater, and thoroughly wash affected areas if contact does occur.

Treatment and application can be carried out using various methods:

Septic Tank

Septic tanks treat both greywater and blackwater, but they provide only limited treatment through the settling of solids and the flotation of fats and greases. Bacteria in the tank break down the solids over a period of time. Wastewater that has been treated in a septic tank can only be applied to land through a covered soil absorption system, as the effluent is still too contaminated for above ground or near surface irrigation.

AWTS

Aerated wastewater treatment systems (AWTS) treat all household wastewater and have several treatment compartments. The first is like a septic tank, but in the second compartment air is mixed with the wastewater to assist bacteria to break down solids. A third compartment allows settling of more solids and a final chlorination contact chamber allows disinfection. Some AWTS are constructed with all the compartments inside a single tank. The effluent produced may be surface or sub-surface irrigated in a dedicated area.

Composting Toilets

Composting toilets collect and treat toilet waste only. Water from the shower, sinks and the washing machine needs to be treated separately (for example in a septic tank or AWTS as above). The compost produced by a composting toilet has special requirements but is usually buried on-site.

These are just some of the treatment and application methods available, and there are many other types such as sand filter beds, wetlands, and amended earth mounds. Your local council or the NSW Department of Health have more information on these systems if you need it.

Regulations and recommendations

The NSW Department of Health determines the design and structural requirements for treatment systems for single households. Local councils are primarily responsible for approving the installation of smaller domestic septic tank systems, composting toilets and AWTSs in their area, and are also responsible for approving land application areas. The NSW Environment Protection Authority approves larger systems.

The design and installation of on-site sewage management systems, including plumbing and drainage, should only be carried out by suitably qualified or experienced people. Care is needed to ensure correct sizing of the treatment system and application area.

Heavy fines may be imposed under the Clean Waters Act if wastewater is not managed properly.

Keeping your on-site sewage management system operating well

What you put down your drains and toilets has a lot to do with how well your system performs. Maintenance of your sewage management system also needs to be done well and on-time. The following is a guide to the types of things you should and should not do with your system.

DO

- ✓ Learn how your sewage management system works and its operational and maintenance requirements.
- ✓ Learn the location and layout of your sewage management system.
- ✓ Have your AWTS (if installed) inspected and serviced four times per year by an approved contractor. Other systems should be inspected at least once every year. Assessment should be applicable to the system design.
- ✓ Keep a record of desludgings, inspections, and other maintenance.
- ✓ Have your septic tank or AWTS desludged every three years to prevent sludge build up, which may 'clog' the pipes.
- ✓ Conserve water. Conservative water use around the house will reduce the amount of wastewater which is produced and needs to be treated.
- ✓ Discuss with your local council the adequacy of your existing sewage management system if you are considering house extensions for increased occupancy.

DON'T

- ✗ Don't let children or pets play on land application areas.
- ✗ Don't water fruit and vegetables with effluent.
- ✗ Don't extract untreated groundwater for cooking and drinking.
- ✗ Don't put large quantities of bleaches, disinfectants, whiteners, nappy soakers and spot removers into your system via the sink, washing machine or toilet.
- ✗ Don't allow any foreign materials such as nappies, sanitary napkins, condoms and other hygiene products to enter the system.
- ✗ Don't put fats and oils down the drain and keep food waste out of your system.
- ✗ Don't install or use a garbage grinder or spa bath if your system is not designed for it.

Reducing water usage

Reducing water usage will lessen the likelihood of problems such as overloading with your septic system. Overloading may result in wastewater backing up into your house, contamination of your yard with improperly treated effluent, and effluent from your system contaminating groundwater or a nearby waterway.

Your sewage management system is also unable to cope with large volumes of water such as several showers or loads of washing over a short period of time. You should try to avoid these 'shock loads' by ensuring water use is spread more evenly throughout the day and week.

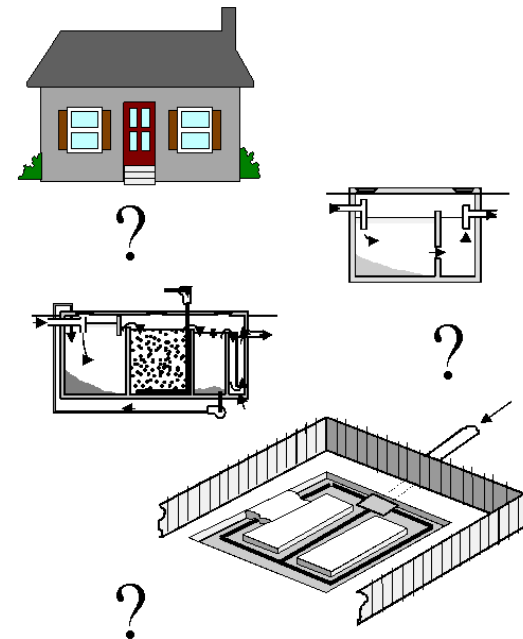
HELP PROTECT YOUR HEALTH AND THE ENVIRONMENT

Poorly maintained sewage management systems are a serious source of water pollution and may present health risks, cause odours and attract vermin and insects.

By looking after your management system you can do your part in helping to protect the environment and the health of you and your community.

For more information please contact:

Managing Wastewater In Your Backyard



Aerated Wastewater Treatment Systems (AWTS)

In unsewered areas, the proper treatment and utilisation of household wastewater on-site is critical in preserving the health of the public and the environment. AWTS have been developed as a way of achieving this.

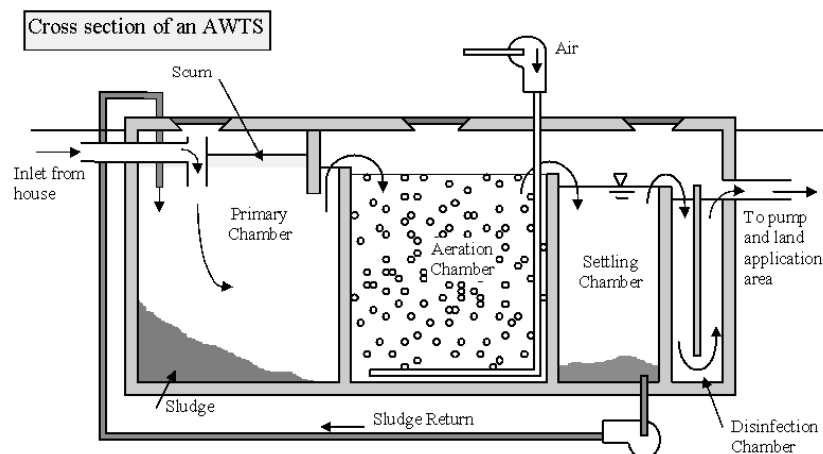
What is an AWTS?

An AWTS is a purpose built system used for the treatment of sewage and liquid wastes from a single household or multiple dwellings.

It consists of a series of treatment chambers combined with an irrigation system. An AWTS enables people living in unsewered areas to treat and utilise their wastewater.

How does an AWTS work?

Wastewater from a household is treated in stages in several separate chambers. The first chamber is similar to a conventional septic tank. The wastewater enters the chamber where the solids settle to the bottom and are retained in the tank forming a sludge layer. Scum collects at the top, and the partially clarified wastewater flows into a second chamber. Here the wastewater is mixed with air



to assist bacteria to further treat it. A third chamber allows additional clarification through the settling of solids, which are returned for further treatment to either the septic chamber (as shown) or to the aeration chamber. The clarified effluent is disinfected in another chamber (usually by chlorination) before irrigation can take place.

Bacteria in the first chamber break down the solid matter in the sludge and scum layers. Material that cannot be fully broken down gradually builds up in the chamber and must be pumped out periodically.

Regulations and recommendations

Local councils are primarily responsible for approving the smaller, domestic AWTSs in their area. The Environment Protection Authority (EPA) approves larger units, whilst the NSW Department of Health determines the design and structural requirements for all AWTSs.

At present AWTSs need to be serviced quarterly by an approved contractor at a cost to the owner. Local councils should also maintain a register of the servicing of each system within their area.

AWTSs should be fitted with an alarm having visual and audible components to indicate mechanical and electrical equipment malfunctions. The alarm should provide a signal adjacent to the alarm and at a relevant position inside the house. The alarm should incorporate a warning lamp which may only be reset by the service agent.

Maintaining your AWTS

The effectiveness of the system will, in part, depend on how it is used and maintained. The following is a guide on good maintenance procedures that you should follow:

DO

- ✓ Have your AWTS inspected and serviced four times per year by an approved contractor. Assessment should be applicable to the system design.
- ✓ Have your system service include assessment of sludge and scum levels in all tanks, and performance of irrigation areas.
- ✓ Have all your tanks desludged at least every three years.
- ✓ Have your disinfection chamber inspected and tested quarterly to ensure correct disinfectant levels.
- ✓ Have your grease trap (if installed) cleaned out at least every two months.
- ✓ Keep a record of pumping, inspections, and other maintenance.
- ✓ Learn the location and layout of your AWTS and land application area.
- ✓ Use biodegradable liquid detergents such as concentrates with low sodium and phosphorous levels.
- ✓ Conserve water.

DON'T

- ✗ Don't put bleaches, disinfectants, whiteners, nappy soakers and spot removers in large quantities into your AWTS via the sink, washing machine or toilet.
- ✗ Don't allow any foreign materials such as nappies, sanitary napkins, condoms and other hygiene products to enter the system.
- ✗ Don't use more than the recommended amounts of detergents.
- ✗ Don't put fats and oils down the drain and keep food waste out of your system.
- ✗ Don't switch off power to the AWTS, even if you are going on holidays

Reducing water usage

Reducing water usage will lessen the likelihood of problems such as overloading with your AWTS. Overloading may result in wastewater backing up into your house, contamination of your yard with improperly treated effluent, and effluent from your system entering a nearby river, creek or dam.

Conservative water use around the house will reduce the amount of wastewater which is produced and needs to be treated.

Your AWTS is also unable to cope with large volumes of water such as several showers or loads of washing over a short period of time. You should try to avoid these 'shock loads' by ensuring water use is spread more evenly throughout the day and week.

Warning signs

You can look out for a few warning signs that signal to you that there are troubles with your AWTS. Ensure that these problems are attended to immediately to protect your health and the environment.

Look out for the following warning signs:

- ⚠ Water that drains too slowly.
- ⚠ Drain pipes that gurgle or make noises when air bubbles are forced back through the system.
- ⚠ Sewage smells, this indicates a serious problem.
- ⚠ Water backing up into your sink which may indicate that your system is already failing.
- ⚠ Wastewater pooling over the land application area.
- ⚠ Black coloured effluent in the aerated tank.
- ⚠ Excess noise from the blower or pumping equipment
- ⚠ Poor vegetation growth in irrigated area.

Odour problems from a vent on the AWTS can be a result of slow or inadequate breakdown of solids. Call a technician to service the system.

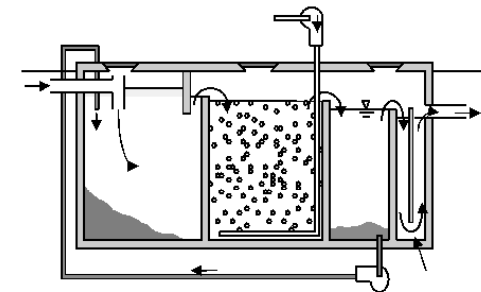
HELP PROTECT YOUR HEALTH AND THE ENVIRONMENT

Poorly maintained AWTSs are a serious source of water pollution and may present health risks, cause odours and attract vermin and insects.

By looking after your treatment system you can do your part in helping to protect the environment and the health of you and your family.

If you would like more information please contact:

Your Aerated Wastewater Treatment System



LAND APPLICATION AREAS

The reuse of domestic wastewater on-site can be an economical and environmentally sound use of resources.

What are land application areas?

These are areas that allow treated domestic wastewater to be managed entirely on-site.

The area must be able to utilise the wastewater and treat any organic matter and wastes it may contain. The wastewater is rich in nutrients, and can provide excellent nourishment for flower gardens, lawns, certain shrubs and trees. The vegetation should be suitably tolerant of high water and nutrient loads.

How does a land application area work?

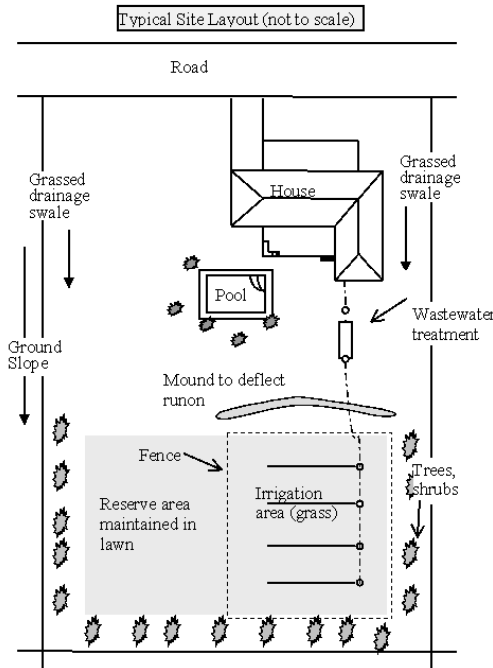
Treated wastewater applied to a land application area may be utilised or simply disposed, depending on the type of application system that is used. The application of the wastewater can be through a soil absorption system (based on disposal) or through an irrigation system (based on utilisation).

Soil absorption systems do not require highly treated effluent, and wastewater treated by a septic tank is reasonable as the solids content in the effluent has been reduced. Absorption systems release the effluent into the soil at a depth that cannot be reached by the roots of most small shrubs and grasses. They rely mainly on the processes of soil treatment and then transmission to the water table, with minimal evaporation and up-take by plants. **These systems are not recommended in sensitive areas as they may lead to contamination of surface water and groundwater.**

Irrigation systems may be classed as either subsurface or surface irrigation. If an irrigation system is to be used, wastewater needs to be pre-treated to at least the quality produced by an aerated wastewater treatment system (AWTS).

Subsurface irrigation requires highly treated effluent that is introduced into the soil close to the surface. The effluent is utilised mainly by plants and evaporation.

Surface irrigation requires highly treated effluent that has undergone aeration and disinfection treatments, so as to reduce the possibility of bacteria and virus contamination.



The effluent is then applied to the land area through a series of drip, trickle, or spray points which are designed to eliminate airborne drift and run-off into neighbouring properties.

There are some public health and environmental concerns about surface irrigation. There is the risk of contact with treated effluent and the potential for surface run-off. Given these problems, subsurface irrigation is arguably the safest, most efficient and effective method of effluent utilisation.

Regulations and recommendations

The design and installation of land application areas should only be carried out by suitably qualified or experienced people, and only after a site and soil evaluation is done by a soil scientist. Care should be

taken to ensure correct buffer distances are left between the application area and bores, waterways, buildings, and neighbouring properties.

Heavy fines may be imposed under the Clean Waters Act if effluent is managed improperly.

At least two warning signs should be installed along the boundary of a land application area. The signs should comprise of 20mm high Series C lettering in black or white on a green background with the words:

**RECLAIMED EFFLUENT
NOT FOR DRINKING
AVOID CONTACT**

Depending on the requirements of your local council, wet weather storage and soil moisture sensors may need to be installed to ensure that effluent is only irrigated when the soil is not saturated.

Regular checks should be undertaken of any mechanical equipment to ensure that it is operating correctly. Local councils may require periodic analysis of soil or groundwater characteristics

Humans and animals should be excluded from land application areas during and immediately after the application of treated wastewater. The longer the period of exclusion from an area, the lower the risk to public health.

The householder is required to enter into a service contract with the installation company, its agent or the manufacturer of their sewage management system, this will ensure that the system operates efficiently.

Location of the application area

Treated wastewater has the potential to have negative impacts on public health and the environment. For this reason the application area must be located in accordance with the results of a site evaluation, and approved landscaping must be completed prior to occupation of the building. Sandy soil and clayey soils may present special problems.

The system must allow even distribution of treated wastewater over the land application area.

Maintaining your land application area

The effectiveness of the application area is governed by the activities of the owner.

DO

- ✓ Construct and maintain diversion drains around the top side of the application area to divert surface water.
- ✓ Ensure that your application area is kept level by filling any depressions with good quality top soil (not clay).
- ✓ Keep the grass regularly mowed and plant small trees around the perimeter to aid absorption and transpiration of the effluent.
- ✓ Ensure that any run off from the roof, driveway and other impermeable surfaces is directed away from the application area.
- ✓ Fence irrigation areas.
- ✓ Ensure appropriate warning signs are visible at all times in the vicinity of a spray irrigation area.
- ✓ Have your irrigation system checked by the service agent when they are carrying out service on the treatment system.

DON'T

- ✗ Don't erect any structures, construct paths, graze animals or drive over the land application area.
- ✗ Don't plant large trees that shade the land application area, as the area needs sunlight to aid in the evaporation and transpiration of the effluent.
- ✗ Don't plant trees or shrubs near or on house drains.
- ✗ Don't alter stormwater lines to discharge into or near the land application area.
- ✗ Don't flood the land application area through the use of hoses or sprinklers.
- ✗ Don't let children or pets play on land application areas.
- ✗ Don't water fruit and vegetables with the effluent.
- ✗ Don't extract untreated groundwater for potable use.

Warning signs

Regular visual checking of the system will ensure that problems are located and fixed early.

The visual signs of system failure include:

- ⚠ surface ponding and run-off of treated wastewater
- ⚠ soil quality deterioration
- ⚠ poor vegetation growth
- ⚠ unusual odours

Volume of water

Land application areas and systems for on-site application are designed and constructed in anticipation of the volume of waste to be discharged. Uncontrolled use of water may lead to poorly treated effluent being released from the system.

If the land application area is waterlogged and soggy the following are possible reasons:

- ⚠ Overloading the treatment system with wastewater.
- ⚠ The clogging of the trench with solids not trapped by the septic tank. The tank may require desludging.
- ⚠ The application area has been poorly designed.
- ⚠ Stormwater is running onto the area.

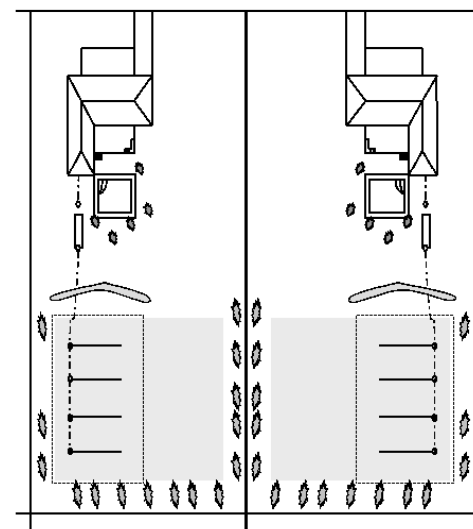
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By looking after your sewage management system you can do your part in helping to protect the environment and the health of you and your family.

For more information please contact:

Your Land Application Area





Planning circular

PLANNING SYSTEM

Varying Development Standards

Circular	PS 20-002
Issued	5 May 2020
Related	Revokes PS 18-003 (February 2018), PS 19-005

Variations to development standards

This circular is to advise consent authorities of arrangements for when the Secretary's concurrence to vary development standards may be assumed (including when council or its Independent Hearing and Assessment Panel are to determine applications when development standards are varied) and clarify requirements around reporting and record keeping where that concurrence has been assumed.

Overview of assumed concurrence

This circular replaces Planning Circular PS 18-003 and issues assumed concurrence, governance and reporting requirements for consent authorities. It also advises that council reports are to come through the Planning Portal, and of the repeal of SEPP 1.

All consent authorities may assume the Secretary's concurrence under:

- clause 4.6 of a local environmental plan that adopts the *Standard Instrument (Local Environmental Plans) Order 2006* or any other provision of an environmental planning instrument to the same effect, or
- *State Environmental Planning Policy No 1 – Development Standards* for land included in an old Interim Development Order (IDO) or Planning Scheme Ordinance (PSO).

However, the assumed concurrence is subject to conditions (see below).

The assumed concurrence notice takes effect immediately and applies to pending development applications.

Any existing variation agreed to by the Secretary of Planning, Industry and Environment to a previous notice will continue to have effect under the attached notice.

Assumed concurrence conditions

Lot size standards for dwellings in rural areas

The Secretary's concurrence may not be assumed for a development standard relating to the minimum lot size required for erection of a dwelling on land in one of the following land use zones, if the lot is less than 90% of the required minimum lot size:

- Zone RU1 Primary Production, Zone RU2 Rural Landscape, Zone RU3 Forestry, Zone

RU4 Primary Production Small Lots, Zone RU6 Transition

- Zone R5 Large Lot Residential
- Zone E2 Environmental Conservation, Zone E3 Environmental Management, Zone E4 Environmental Living
- a land use zone that is equivalent to one of the above land use zones

This condition will only apply to local and regionally significant development.

Numerical and non-numerical development standards

The Secretary's concurrence may not be assumed by a delegate of council if:

- the development contravenes a numerical standard by greater than 10%; or
- the variation is to a non-numerical standard.

This restriction does not apply to decisions made by independent hearing and assessment panels, formally known as local planning panels, who exercise consent authority functions on behalf of councils, but are not legally delegates of the council (see section 231).

The purpose of the restriction on assumed concurrence for variations of numerical and non-numerical standards applying to delegates is to ensure that variations of this nature are considered by the council or its independent hearing and assessment panel and that they are subject to greater public scrutiny than decisions made by council staff under delegation.

In all other circumstances, delegates of a consent authority may assume the Secretary's concurrence in accordance with the attached written notice.

Independent hearing and assessment panels

From 1 March 2018, councils in Sydney and Wollongong were required to have independent hearing and assessment panels that will determine development applications on behalf of councils (see section 23I).

The attached notice allows independent hearing and assessment panels to assume the Secretary's concurrence because they are exercising the council's functions as a consent authority.

Independent hearing and assessment panels established by councils before 1 March 2018 also make decisions on behalf of councils. The attached notice applies to existing panels in the same way as it applies to panels established after 1 March 2018.

Regionally significant development

Sydney district and regional planning panels may also assume the Secretary's concurrence where development standards will be contravened.

The restriction on delegates determining applications involving numerical or non-numerical standards does not apply to all regionally significant development. This is because all regionally significant development is determined by a panel and is not delegated to council staff.

However, the restriction on assuming concurrence to vary lot size standards for dwellings in rural areas will continue to apply to regionally significant development. The Secretary's concurrence will need to be obtained for these proposals in the same way as it would for local development.

State significant development and development where a Minister is the consent authority

Consent authorities for State significant development (SSD) may also assume the Secretary's concurrence where development standards will be contravened. This arrangement also applies to other development for which a Minister is the consent authority for the same reasons.

Any matters arising from contravening development standards will be dealt with in Departmental assessment reports.

The restriction on assuming concurrence to vary lot size standards for dwellings in rural areas will not apply to SSD or where a Minister is the consent authority for the same reasons.

Notification of assumed concurrence

Under clause 64 of the *Environmental Planning and Assessment Regulation 2000*, consent authorities are notified that they may assume the Secretary's concurrence for exceptions to development standards for applications made under clause 4.6 of the SILEP (or any other provision of an environmental planning instrument to the same effect).

The notice takes effect on the day that it is published on the Department of Planning, Industry and Environment's website (i.e. the date of issue of this circular) and applies to pending development applications.

Procedural and reporting requirements

In order to ensure transparency and integrity in the planning framework the below Departmental monitoring and reporting measures must be followed when development standards are being varied:

- Proposed variations to development standards cannot be considered without a written application objecting to the development standard and dealing with the matters required to be addressed by the relevant instrument.
- A publicly available online register of all variations to development standards approved by the consent authority or its delegates is to be established and maintained. This register must include the development application number and description, the property address, the standard to be varied and the extent of the variation.
- A report of all variations approved (including under delegation) must be submitted through the NSW Planning Portal at <https://www.planningportal.nsw.gov.au/reporting/online-submission-planning-data> within four weeks of the end of each quarter (i.e. March, June, September and December) in the form provided by the Department.
- A report of all variations approved under delegation from a council must be provided to a meeting of the council meeting at least once each quarter.

Councils are to ensure these procedures and reporting requirements are carried out on behalf of Independent Hearing and Assessment Panels and Sydney district or regional planning panels.

Audit

The Department will continue to carry out random audits to ensure the monitoring and reporting measures are complied with. The Department and the NSW Independent Commission Against Corruption will continue to review and refine the audit strategy.

Should ongoing non-compliance be identified with one or more consent authorities, the Secretary will consider revoking the notice allowing concurrence to be assumed, either generally for a consent authority or for a specific type of development.

Repeal of *State Environmental Planning Policy No 1 – Development Standards (SEPP 1)*

The repeal of SEPP 1 came into effect from 1 February 2020 as part of the SEPP Review Program to update and simplify the NSW Planning system.

SEPP 1 is repealed in circumstances where a standard instrument LEP applies in a local council

Department of Planning, Industry and Environment – Planning Circular PS 20-002

area. The amendments included the insertion of two clauses into the *SEPP (Concurrences and Consents) 2018*. Clause 6 provides for the continued operation of SEPP 1 where an Interim Development Order (IDO) or a Planning Scheme Ordinance (PSO) is in effect. Clause 7 is a savings provision which continues to apply SEPP 1 for applications that were made prior to the repeal but are yet to be determined.

Further information

A Guide on Varying Development Standards 2011 is available to assist applicants and councils on the procedures for managing SEPP 1 and clause 4.6 applications to vary standards.

Links to the Standard Instrument can be found on the NSW Legislation website at: www.legislation.nsw.gov.au

For further information please contact the Department of Planning, Industry and Environment's information centre on 1300 305 695.

Department of Planning, Industry and Environment circulars are available at: planning.nsw.gov.au/circulars

Authorised by:

Marcus Ray
Group Deputy Secretary,
Planning and Assessment
Department of Planning, Industry and Environment

Important note: This circular does not constitute legal advice. Users are advised to seek professional advice and refer to the relevant legislation, as necessary, before taking action in relation to any matters covered by this circular.

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ENVIRONMENTAL PLANNING AND ASSESSMENT REGULATION 2000**Assumed concurrence notice**

I, Carolyn McNally, Secretary of the Department of Planning and Environment, give the following notice to all consent authorities under clause 64 of the *Environmental Planning and Assessment Regulation 2000*.

Notice

All consent authorities may assume my concurrence, subject to the conditions set out in the table below, where it is required under:

- clause 4.6 of a local environmental plan that adopts the *Standard Instrument (Local Environmental Plans) Order 2006* or any other provision of an environmental planning instrument to the same effect, or
- *State Environmental Planning Policy No 1 – Development Standards*.

No.	Conditions
1	<p>Concurrence may not be assumed for a development that contravenes a development standard relating to the minimum lot size required for the erection of a dwelling on land in one of the following land use zones, if the variation is greater than 10% of the required minimum lot size:</p> <ul style="list-style-type: none"> – Zone RU1 Primary Production, Zone RU2 Rural Landscape, Zone RU3 Forestry, Zone RU4 Primary Production Small Lots, Zone RU6 Transition – Zone R5 Large Lot Residential – Zone E2 Environmental Conservation, Zone E3 Environmental Management, Zone E4 Environmental Living – a land use zone that is equivalent to one of the above land use zones <p>This condition does not apply to State significant development or development for which a Minister is the consent authority</p>
2	<p>Concurrence may not be assumed for the following development, if the function of determining the development application is exercised by a delegate of the consent authority:</p> <ul style="list-style-type: none"> – development that contravenes a numerical development standard by more than 10% – development that contravenes a non-numerical development standard <p>Note. Local planning panels constituted under the <i>Environmental Planning and Assessment Act 1979</i> exercise consent authority functions on behalf a council and are not delegates of the council</p> <p>This condition does not apply to State significant development, regionally significant development or development for which a Minister is the consent authority</p>

This notice takes effect on the day that it is published on the Department of Planning's website and applies to development applications made (but not determined) before it takes effect.

The previous notice to assume my concurrence contained in planning system circular PS 17-006 *Variations to development standards*, issued 15 December 2017 is revoked by this notice. However, any variation to a previous notice continues to have effect as if it were a variation to this notice.

Dated: 21 February 2018



Carolyn McNally
Secretary, Department of Planning and Environment