

Wastewater Management Report

10-18 Fourth Road Berkshire Park

January 2022

Report Completed by	Craig Thomas Plumber Drainer Gasfitter 71433C/L7243
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Version	Original – no amendments

Wastewater – Stormwater – Hydraulic Design – Gas Applications – Fire Systems

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Cover Letter

Thomas Contractors was engaged to conduct a site inspection of 10-18 Fourth Road Berkshire Park.

The purpose of the inspection was to investigate the current installed Onsite Wastewater Management System (OWMS) effectiveness, and suitability to service both the existing approved 4-bedroom and unapproved 2-bedroom dwellings onsite.

The scope of works included site investigation, soil analysis, wastewater management assessment and proposed modification/upgrade of existing system.

The site inspection involved visual assessment of the site, soil sampling, and inspection of the existing onsite AWTs system, Effluent Disposal method (EDM), and effluent Disposal Area (EDA).

It is noted that an application was made to Penrith City Council (PCC) in 2003 for the installation of an AWTs system onsite. It is noted that a quarterly maintenance inspection report of the existing system has been supplied to the author of the report, however no current Approval to Operate has been supplied to the author of the report.

It is further noted that the existing system onsite EDA and EDM are not in accordance with the original approval, and due to works to the site cannot be modified to be in accordance with the original approval.

Whilst it is noted that PCC recommend separate systems for dual occupancy where possible, this report recommends, based on Penrith City Councils Onsite Sewerage Management and Grey Water re-use Policy 2018, clause 2.1.6 Dual Occupancy and Secondary Dwellings, with the recommended modifications, and the site capacity to manage effluent effectively, the existing system can support both dwellings and comply with PCC guidelines.

The recommended system design modifications EDA and EDM have been based on the hydraulic and nutrient loading rate of the wastewater of the existing 4 bedroom and 2-bedroom dwellings, with consideration to site constraints, the environment, and long-term management options.

The recommend OWMS design is with consideration and review of Local Government (General) Regulation 2005, DLG 1998 Onsite Sewerage Management for Single Households, Australian Standard 1547:2012 – On-site Domestic Wastewater Management; and compliance with Penrith City Councils Onsite Sewerage Management and Grey Water re-use Policy 2018.

The results of the site investigation and the recommended system design modifications and upgrades details are in this report.

This report recommends that an application to modify the existing OWMS is lodged to Penrith City Council for approval.

Site Assessment and Investigation

Address	10-18 Fourth Road Berkshire Park NSW
Property Size	5 Acres
Council	Penrith City Council
Current Site Features	Existing 4-bedroom primary dwelling and 2-bedroom secondary dwelling located in shed
Water Supply	Town Water
Existing OSSM	AWTS ENC 10-2

Key Site Characteristics

- The site is 5 acres of rural land with mixed areas predominately cleared grass areas
- The land is predominately level with minimal grade of fall.
- No evident rock areas.
- The site is not subject to flood.
- There is an existing 4- bedroom dwelling currently serviced by a AWTS system with ineffective EDA and EDM.
- Multiple areas are available to service a new Effluent Disposal Area compliant to buffer zone requirements.
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Site and Soil Assessment Summary

Site investigation was completed to determine the suitability of the existing AWTS Effluent Disposal Method (EDM) and Effluent Disposal Area (EDA). The EDA and EDM require modification and upgrade.

- The proposed EDA area is a broad grassed plain.
 - The proposed area does not include any rock escarpment.
 - The proposed EDA is well exposed to sun and wind for excellent evaporation.
 - The nominated proposed EDA is well drained, without evidence of soakage areas or risk of run off or run on.
 - There were no visual disturbances or fraction to the EDA or evidence of erosion.
 - Refer to *Table 1 – Summary Site Features for the available Effluent Disposal Area (EDA)*.
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- A Soil sampling test conducted at the time of the inspection concluded the soil type was Category 3 Loam.
 - Refer to *Table 2 – Soil Type Classification for the available Effluent Disposal Area (EDA)*.
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- The nominated EDA meets all required buffer zones requirements.
 - Refer to *Table 3 – Buffer Distances for the available Effluent Disposal Area (EDA)*.

Table 1 – Summary Site Features for the available Effluent Disposal Area (EDA).

Slope	0-1%
Landform	Broad grassed plains
Soil Type	Loam category three
Exposure	Excellent winds and solar exposure
Site Drainage	No ponding or saturation identified in the proposed EDA
Native Vegetation	Non-existent
Flood Potential	EDA area not subject to flooding
Climate	Excellent evaporation

Table 2 – Soil Type Classification for the available Effluent Disposal Area (EDA).

Soil category	3
Soil Texture	Loam
Soil Structure	Moderate Structure
Soil Depth	>500mm

Table 3 – Buffer Distances for the available Effluent Disposal Area (EDA).

Site Feature	EDA Upslope	EDA Downslope	Proposed Setback
Dwellings	15 m	15 m	>15 m
Boundaries	6 m	3 m	6 m
Pools	6 m	6 m	NA
Intermittent Waters (dams, waterways, drainage channels)	40 m	40 m	>40 m
Permanent Surface Waters (rivers, streams, lakes etc.)	100m	100m	NA
Domestic Groundwater Well	250m	250m	>250m
Ancillary Structures	6m	3m	>6m
Driveways	6m	3m	>10m
Pathways/Walkways	3m	3m	NA

Wastewater Management Assessment

An Evaluation of the site features and soil type, with consideration to the wastewater loading of the existing 4-BDR primary dwelling combined with existing 2-BDR secondary dwelling, concludes the existing AWTs is sufficient to service both dwellings with modifications and upgrades to the EDA and EDM as follows –

- Aerated Wastewater Treatment System (AWTS) ENC 10-2
- EDA 800 sqm (primary 400 sqm and reserve 400 sqm)
- EDM Mobile Spray Irrigation

Table 4 – Existing 4-Bedroom Primary Dwelling and Existing 2-Bedroom Secondary Dwelling Wastewater Loading

Dwelling	Total persons	Water Supply	Wastewater Usage (L/Person/Day)	Total Wastewater Flow (L/Day)
6 BDR	8	Town	150	1200

Table 5 - Effluent Disposal Area Formula

Effluent Disposal Method (EDM)	EDA Calculation Formula
Spray Irrigation	Q/DIR

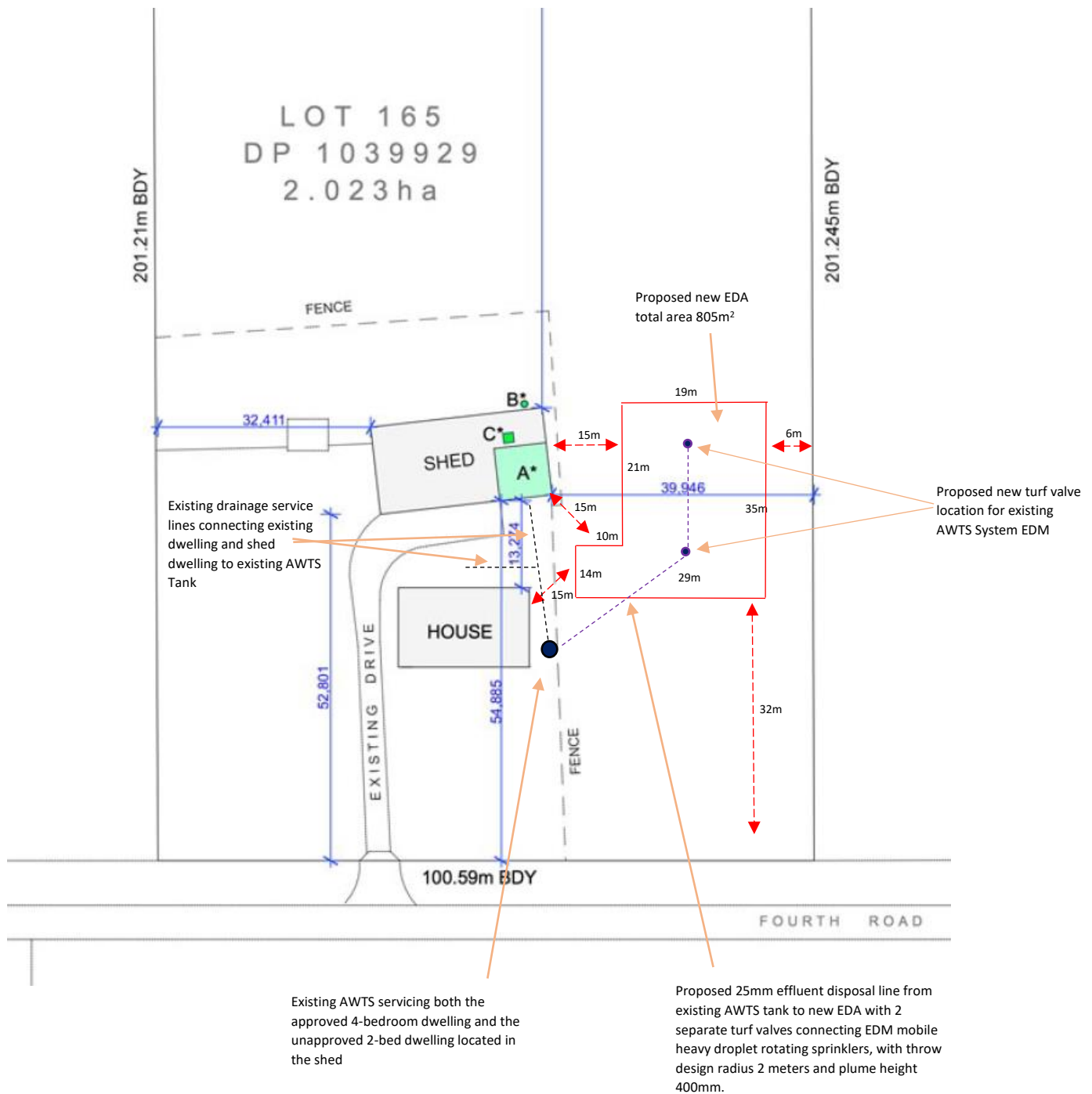
Table 6 - Effluent Disposal Area Calculation

Daily Wastewater Flow	Design Irrigation Rate	Required EDA (sqm)
Q = 1200 litres	DIR = 4	1200/4 = 300sqm

Summary Effluent Disposal Area Specifications and Calculations for **Proposed dwelling**

- PD1 4 bedrooms + SD2 2 bedrooms = 6 bedrooms
- Town water
- 150 litres per day per person
- Total 8 persons per day
- 1200 litres per day
- Loam Soil
- Spray Irrigation EDM
- DIR 4mm per day 28mm per week
- 400 sqm Primary EDA required
- 400 sqm wet weather reserve EDA required
- **800 sqm Total EDA**

System Modification/Upgrade Design Site Plan



Recommendation for New System

- This report recommends that the existing OWMS at 10-18 Fourth Ave Berkshire, be retained to service both the primary and secondary dwellings.
- This report recommends that the ENC 10-2 AWTS is sufficient for all 6 bedrooms in both dwellings.
- This report recommends a new EDA and EDM is required to effectively manage the load from both the primary and secondary dwelling with the existing AWTS.
- This report recommends an EDM of spray irrigation with heavy droplet rotating sprinklers with throw design radius 2meters and plume height 400mm.
- This report recommends that based on calculations of the daily flow that a minimum of 300 sqm of primary EDA and 300 sqm of reserve EDA is required.
- This report further recommends, based on hydraulic and nutrient loading rate of the wastewater of the existing 4-bedroom primary dwelling and 2-bedroom secondary dwelling, with consideration to site constraints, the environment, and long-term management options, the primary EDA is 400sqm and the wet weather reserve EDA is 400sqm is recommended with a total of 800sqm for EDA.
- The Primary and Reserve EDA will be located southeast of the primary dwelling – see *System Modification/Upgrade Design Site Plan* – page 7.
- The recommended modifications and upgrades to the existing system have been designed with consideration and review of Local Government (General) Regulation 2005, DLG 1998 Onsite Sewerage Management for Single Households, Australian Standard 1547:2012 – On-site Domestic Wastewater Management; **and compliance with Penrith City Councils Onsite Sewerage Management and Grey Water re-use Policy 2018.**
- The proposed system complies with PCC Effluent Disposal Policy guidelines for buffer zones – see *System Modification/Upgrade Design Site Plan* – page 7 and *Table 3 – Buffer Distances for the available Effluent Disposal Area (EDA).*
- It is further recommended that the occupants of the property should use low phosphorus, low nitrogen and sodium washing detergents, AAA rated water saving shower heads and WELS rated appliances should be used in both dwellings.
- This report recommends that an application to modify the existing OSMS based on the recommended system design is lodged to Penrith City Council for approval.
- Post approval, the system modifications and upgrade, and commission, should be completed by a suitability qualified specialist and inspected by Penrith City Council.