

Guide for On-site Wastewater Management System Applications

The operation of any On-site Wastewater Management System requires approval from Council under Section 68 of the Local Government Act. Approval is also required to install, construct or Modify any system.

Muswellbrook Shire Council Application Forms

- **Form OSMS 1:** On-site Sewage Approvals - s 68 of the Local Government Act. Application to Install, Modify and or Operate an On-site Wastewater Management System
- **Form OSMS 2:** On-site Sewage Approvals - s 68 of the Local Government Act. Supplementary Information. Install / Modify On-site Wastewater Management System – Residential or Commercial

Suggested Reading

- Muswellbrook Shire Council - On-site Sewage Management Strategy (**OSMS**)
- Muswellbrook Shire Council - DCP Section 23 On-site Wastewater Management Systems
- Environment and Health Protection Guidelines. On-site Sewage Management for Single Households (Department of Local Government) 1998 (**The Guidelines**)
- Australian Standard/ New Zealand Standard AS/NZS 1547:2000 On-site Domestic Wastewater Management (**AS/NZS 1547:2000**)

The Guidelines and the AS/NZS 1547:2000 provide specific details on how to assess and design On-site Wastewater Management Systems for safe and effective operation. Council strongly advises that any person designing systems be familiar with these documents. Council can provide a list of professionals in the area that can assist with design of systems and applications.

Glossary

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|-------------------------------|---|
| AWTS | Aerated Wastewater Treatment System – Treatment system providing aerobic, secondary treatment and disinfection of sewage. |
| Biological Filter (biofilter) | Treatment System that uses other biological means to achieve secondary treatment. |
| Black Water | Sewage from toilet and kitchen sinks |
| Effluent | Liquid wastewater discharged from a treatment system |
| Effluent Disposal Area (EDA) | Land where effluent is applied for disposal. Includes absorption trench, evapo-transpiration bed, sub-surface and surface irrigation |
| Grey Water | Sewage from laundry, shower. Kitchen wastewater is not classified as Grey Water due to high suspended solids |
| Land Application Area | Another name for EDA. |
| Septic Tank | Concrete or plastic tank (complying with AS/NZS 1546.1) used for primary treatment of sewage prior to disposal. |
| Sewage | Water discharged from toilets, baths, showers, kitchen sink and washing machines. |
| Sub-soil Disposal | Used for non-disinfected effluent disposal. Must be >300mm below the soil surface. Includes absorption trench & Evapo-transpiration Area (ETA). Can include deep sub-surface irrigation for secondary treated effluent. |
| Sub-surface Irrigation | Used for disinfected, secondary treated effluent. Disposal method allowed up to 100m of soil surface. Usually 100-300mm deep. |
| Surface Irrigation | Used for disinfected, secondary treated effluent. Disposal method allowed within the top 100mm of soil or above ground. |
| Wastewater Treatment System | The facility that treats the wastewater to a primary or secondary level may include a septic tank, AWTS, bio-filter, sand filter, etc |
| Wastewater | Sewage or Effluent, can include black water and grey water. |

Applications

All applications will require Form OSMS 1. This form will provide the basic details for the property and the system. For installation or modification of systems Form OSMS 2 will also be required.

Form OSMS 1

1. & 2. Owner & Applicant Details

The property owner and the applicant must be noted. The applicant may be the installer for installation and modification applications. For approval to operate applications, the applicant may be a tenant or lessee, however the term of the lease must be greater than five years. Details of lease should be provided.

The owners' consent is requested for all applications. Please note the reference to inspections in the consent.

3. Property Details

Lot and DP numbers are available on any Rates Notice for the property. If the property consists of more than one lot, the lot the system is installed on should be identified.

- Commercial/ Industrial use will include:
 - Any system treating more than 2000L per day,
 - Any system not attached to a domestic dwelling

For commercial or industrial systems determine if the system is a Scheduled or Designated Development. These applications must be made to the appropriate government body.

- *Water supply* refers to water used in the premises that will flow into the treatment system.

4. Treatment System

The manufacturer of any model of any treatment system should be provided. For systems that require regular servicing, the name of the Service Agent is required.

5. Disposal Method

The total disposal area, such as irrigation area or trench length must be specified.

Form OSMS 2

Where development is proposed on a single lot and is likely to generate sewage, reference to a site and soil report for the site will be required. If no site and soil report is available for the land, the applicant should provide the relevant information as set out in The Guidelines and AS/NZS 1547:2000.

1. OWMP Details

An *Onsite Wastewater Management Plan (OWMP)* is required to be submitted for all Single lot developments. The OWMP should include:

1. Details of the sewage generating development including:
 - equivalent population
 - wastewater flow rate;
 - composition of wastewater (i.e. blackwater, greywater, or any non-domestic characteristics)
2. Site and Soil Assessment
3. Design details of the proposed treatment system including the relevant Department of Health Accreditation
4. Design details of the Effluent Disposal system
5. Site plan including the dimensions of the Effluent Disposal Area

- Maintenance protocols (eg, servicing, pump out, drain field maintenance, emergency repair procedure)

Council has provided an Excel spreadsheet to calculate the size of the Effluent Disposal Area. Correct use of this calculator may provide some details needed in the OWMP. The Calculator can be found at:

www.muswellbrook.nsw.gov.au/

2. Effluent Details

Equivalent population (EP) is not related to the number of people proposed to initially occupy the dwelling, but to the potential maximum occupancy generating wastewater to be treated by the proposed system. For domestic dwellings the EP shall be based on the number of bedrooms. Please note, a rumpus room, study, guest rooms etc may be classified as bedrooms for determining EP.

$$EP = \text{Number of bedrooms} * 2 \text{ (Minimum EP =5)}$$

Daily Wastewater Flow rate. Appendix 4.2D of AS/NZS 1547:2000 provides details for calculating daily flow rates for various sewage generating premises. The table provides for reticulated and non-reticulated water supplies. Developments that may potentially utilise bore water for the dwelling must use reticulated water supply values.

The table also provides reduced flow rates for two levels of water saving fixtures. Standard water saving fixtures are assumed where BASIX requirements are met. Where the Full Water savings are nominated:

“Full water-reducing fixtures include the combined use of reduced flush 6/3 litre water closets, shower-flow restrictors, aerated faucets, front-load washing machines and flow/pressure control valves on all water-use outlets.” AS/NZS 1547:2000 p141.

Wastewater characteristics.

The Guidelines detail typical composition of main components of domestic black and grey water. For developments that are likely to have a significantly different mix of water sources, (e.g. commercial kitchens, bath houses, schools, public toilets, trade waste components) details of the wastewater composition are required.

Where the sewage generating development is not a single domestic dwelling, the wastewater should be characterised such that typical concentrations of TSS, BOD, N, P are provided. Where wastewater includes any other trade waste components, details of the treatment system's capacity to adequately treat the sewage will be required.

3. Site and Soil Assessment

The *Site and Soil Assessment Limitation Checklists (6 & 7)* should be completed and mitigation methods for moderate or major limitations addressed at this question. The Guidelines outline the factors that should be considered for Site and Soil Assessment.

It is strongly advised that assistance of professionals in the field of site and soil assessment be engaged to undertake the Site and Soil Assessment. It is recommended that consultants preparing Site and Soil Assessments have completed the Centre for Environmental Training's On-Site Wastewater Management Training Course or equivalent.

Soil data should also include an assessment of the dispersiveness using the Modified Emerson Aggregate Test using water with EC 1 mS/cm and SAR 5 (sodium adsorption ratio). (CET On-Site Wastewater Management Training Course provides training and guidance in conducting field soil assessment for On-Site systems.)

Emerson Classes of 1 and 2 shall be excluded from EDA's.

4. Treatment System

Details of the design of the proposed system shall include the NSW Department of Health Accreditation Certificate, Schedules and the system plans provided in the certification. Where multiple system configurations are approved the system configuration proposed must be nominated and clearly identified in the application.

Department Health Approval Exemption clause 41(2) Local Government (General) Regulation 2005.

Where proposed system does not require NSW Department of Health accreditation, complete design plans must be submitted to council. Council will also require a description of how the proposed system will meet the performance outcomes required in c 44 of the Regulation.

Where regular servicing is required, details of the proposed serving regime should be outlined, this will include the details of the Service Agent. A copy of a Service Agreement or Contract with an approved service agent should be included with the application.

Most NSW Health accreditations require a commissioning certificate from the manufacturer or manufacturer's agent and Owner's Manual to be provided to Council and the owner. These should be held on the OWMP.

5. Effluent Disposal System

Calculations of EDA sizing shall incorporate soil permeability classes from The Guidelines Table 8 and AS/NZS 1547:2000 Tables 4.2A1 to 4.2A4 (DIR, DLR etc.)

Council's Simplified Sizing Spreadsheet may be used to calculate the EDA size. Please note that the simplified model produces conservative results. To nominate a smaller size, a fully documented water balance with detailed calculations must be provided.

Hydraulic loading will use the minimum area method outlined in the Guidelines. Where the minimum area method produces excessive wet weather storage the wet weather storage method shall be used to demonstrate suitable design parameters.

Climate data for the Muswellbrook LGA are provided.

Climate data acceptable for Muswellbrook LGA include:

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual |
|---|------|------|------|------|------|------|------|------|------|------|------|------|--------|
| Score (SCS) Weather Station | | | | | | | | | | | | | |
| Mean rainfall (mm) | 84.7 | 78.4 | 50.9 | 40 | 47.5 | 44.7 | 35.9 | 39.6 | 39.1 | 59.7 | 60 | 68.7 | 647.9 |
| Decile 5 rainfall (mm) | 71.5 | 67.2 | 44.4 | 33 | 36.2 | 32 | 27 | 37 | 34.4 | 56 | 53 | 62.5 | 653.6 |
| Mean daily evaporation (mm) | 7 | 6.2 | 5 | 3.6 | 2.2 | 1.6 | 1.8 | 2.7 | 3.9 | 5.1 | 6.1 | 7.1 | 4.4 |
| Jerry's Plains Weather Station (BOM) | | | | | | | | | | | | | |
| Mean rainfall (mm) | 76.9 | 72.5 | 59.1 | 44.7 | 40.4 | 47.5 | 43.6 | 36.7 | 41.7 | 52.2 | 59.9 | 67.6 | 643.2 |
| Decile 5 monthly rainfall (mm) | 64.7 | 46.2 | 46 | 32.3 | 28.7 | 29.6 | 35.4 | 30.6 | 34 | 48 | 49.8 | 56 | 644.2 |
| Mean daily evaporation (mm) | 7.1 | 6 | 5 | 4 | 2.9 | 2 | 2.3 | 2.6 | 3.7 | 5.3 | 6.5 | 6.6 | 4.5 |
| Data Drill for Muswellbrook Township | | | | | | | | | | | | | |
| Mean rainfall (mm) | 66.9 | 68.9 | 64.7 | 40.2 | 51.5 | 46.6 | 41.6 | 37.0 | 44.1 | 52.3 | 63.7 | 68.5 | |
| Mean daily | 6.7 | 5.9 | 4.7 | 3.4 | 2.1 | 1.7 | 1.9 | 2.8 | 3.9 | 5.1 | 5.9 | 6.8 | |

evaporation (mm)

Data used for any water balance should specify data source.

Estimations of wet weather storage shall be included in the effluent disposal area design.

Acceptable parameters for hydraulic modelling will include

- Run off Factor 0.2 turf 0.1 shrubs trees
- Crop Factor 0.7 turf 0.5 shrubs

Nutrient loading

Nutrient loading shall be assessed for the EDA. Nitrogen and Phosphorus concentrations should be based on per person basis and not assumed concentrations. Where loading rates can not be estimated for a particular development the following may be used.

- Nitrogen 3.2 kg per EP per year
- Phosphorous 0.6351 kg per EP per year

Effluent Disposal system

The effluent disposal system should meet the requirements of the NSW Department of Health Accreditation and Health Advisory Note 4, unless otherwise superseded. Undisinfected primary and secondary treated effluent should be disposed of at a minimum of 300mm below the soil surface. Only disinfected, secondary treated effluent can be disposed of by sub-surface (100-300mm below the surface) or surface irrigation (<100mm below surface or above ground).

Surface irrigation is not permitted on high risk sites in Muswellbrook Shire.

Subsurface irrigation should specify the type of irrigation line, number of irrigation lines, lateral spacing and overall wetted dimensions. The design should not result in stripped patterns in the EDA.

All outlets should include filtering to trap fugitive solids capable of blocking part of the effluent disposal system. The filter shall be easily accessible for cleaning. Where the filter relies of biofilm, any biofilm should be retained during maintenance. If irrigation lines are to be regularly back flushed, details on how this is achieved should be provided in the OWMP.

The EDA is not to incorporate recreational areas, that is the area that is readily used for children's play or pet exercise. Signage is required to meet Australian Standard 1319 for all surface irrigation.

Grazing of stock on the EDA is strongly discouraged due to the compaction and the recycling of nutrients through animal waste. Dairy cattle are prohibited from grazing EDA's and meat production stock that have grazed on an EDA must only be slaughtered at an abattoir where meat inspection by Authorised Meat Inspectors is carried out.

8. Site Plan

Site plans may utilise the resources of the Lands Dept Spatial Information Exchange (SIX) (www.maps.nsw.gov.au). Use of any publicly available resources should be appropriately referenced and should not breach any copyright regulations.

Maintenance Protocols – To be included in OWMP

All system maintenance protocols should outline the manufacturer's requirements along with the requirements of the NSW Department of Health Accreditation. Maintenance protocols should also include details of what substances are not suitable for disposal in the system.

Regular maintenance of any filtering systems or backwashing of irrigation systems must be detailed in the Maintenance Protocol including time intervals and methods.

The approved OWMP should be held at the dwelling or facility where the system is installed.

The property owner will be held responsible for the ongoing operation of the system and should make any tenant aware of their responsibilities.

The OWMP shall be made available for any inspection by Council Officers. Where the person responsible for an on-site wastewater management system changes (such as through sale or transfer of ownership of the site) all documents must be transferred to the new person responsible and the OWMP retained on the site.