NOTE: This Chapter should not be read in isolation. You may need to consider other chapters of this DCP when preparing your application.

CHAPTER G8: ONSITE SEWAGE MANAGEMENT
Chapter G8: Onsite Sewage Management

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<th>Date Adopted by Council</th>
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<th>Amendment Type</th>
</tr>
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<tr>
<td>1</td>
<td>14 October 2014</td>
<td>22 October 2014</td>
<td>New</td>
</tr>
<tr>
<td>2</td>
<td>23 June 2015</td>
<td>1 July 2015</td>
<td>Amendment</td>
</tr>
</tbody>
</table>
Chapter G8: Onsite Sewage Management

1 Purpose

The purpose of this Chapter is to set out the environmental and public health requirements for the on-site storage, processing, re-use or discharge of sewage or by-products of sewage.

Note: Sewage includes any effluent of the kind referred to in paragraph (a) of the definition of ‘waste’ in the dictionary to the Local Government Act 1993.

2 Application

This Chapter applies to all land in Shoalhaven or as specified under the various controls.

Note: This Chapter does not apply to land where the following exemptions apply:

1. Activities identified in clause 48 of the Local Government (General) Regulation 2005:
   (a) The installation, construction or alteration of a waste treatment device, if that installation, construction or alteration is done:
      (i) under the authority of a licence in force under the Protection of the Environment Operations Act 1997, or
      (ii) in a vessel used for navigation, or
      (iii) In a motor vehicle registered under the Roads Transport (Vehicle Registration) Act 1997 that is used primarily for road transport.
   (b) To operate a system of sewage management so that much of the operation of a system of sewage management is limited to an action carried out:
      (i) under the authority of a licence in force under the Protection of the Environment Operations Act 1997, or
      (ii) in a vessel used for navigation, or
      (iii) In a motor vehicle registered under the Roads Transport (Vehicle Registration) Act 1997 that is used primarily for road transport.

2. Lands reserved or dedicated under the National Parks and Wildlife Act 1974, with the exemption of karst conservation reserves (Clause 163B of the National Parks and Wildlife Act 1974).

3. The diversion of domestic grey water in accordance with the requirements detailed in clause 75A(2) of the Local Government (General) Regulation 2005.

4. An exemption from this section approved by Council resolution.
Chapter G8: Onsite Sewage Management

3 Context

This Chapter outlines the provisions that must be addressed in an application for a sewage management system.

A sewage management system also includes grey water systems. The whole on-site sewage management system is comprised of three phases using:

- **Phase 1** drains capturing wastewater from the fittings and conveying the wastewater to the storage or treatment device. Drains may be absent for a waterless composting toilet.
- **Phase 2** a human waste storage facility or treatment device.
- **Phase 3** drains representing the method of application or disposal of treated wastewater.

If not managed properly, the on-site application of effluent has the potential to degrade the environment and create a public risk. Waterways may not only suffer environmental degradation from a large individual point source, but also as a result of incremental pollution from multiple sources.

Note: As an example of the above, a subdivision or development proposal need not be located adjacent to waterways to be impacted upon by effluent. Physical features such as poor soils, steep slopes and fractured bedrock can aid the rapid transmission of effluent to a waterbody, even though the site may be quite distant. It is therefore important that such features are identified and managed so that effluent cannot pollute the natural environment.

4 Objectives

The objectives are to:

i. Minimise the risk to public health. Contact with effluent, particularly by children, the elderly and immune-compromised members of our community, is to be minimised or eliminated. The application of effluent and its by-products is to be managed carefully.

ii. Prevent the deterioration of land and decline in vegetation quality through soil structure degradation, salinisation, waterlogging, chemical contamination or soil erosion.

iii. Protect surface waters from contamination from any flow from treatment systems and land application areas.

iv. Protect ground waters from contamination from any flow from treatment systems and land application areas.

v. Conserve water resources and reuse domestic wastewater (including nutrients, organic matter and water) where possible and within the constraints of other performance objectives.
vi. Protect community amenity by not unreasonably interfering with quality of life and by giving consideration to aesthetics, odours, dust, vectors and excessive noise which may impact on the local amenity.

5 Controls

5.1 General

The following controls apply to all applications to install or construct whole or part of a sewage management system, including:

- Applications associated with a dwelling house, tourist/commercial developments and subdivisions.
- Applications for temporary facilities.
- Applications to alter an existing sewage management system.

<table>
<thead>
<tr>
<th>Performance Criteria</th>
<th>Acceptable Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>A1.1 A minimum buffer distance of 100 metres is provided between effluent application areas (particularly land application areas) and any perennial watercourse or water body.</td>
</tr>
<tr>
<td></td>
<td>A1.2 A minimum buffer distance of 40 metres is provided between effluent application areas and any intermittent watercourse or water body.</td>
</tr>
<tr>
<td>Note: A buffer distance is measured as a ground surface flow line and is not based on the closest measured distance.</td>
<td></td>
</tr>
<tr>
<td>P2</td>
<td>A2.1 The minimum depth to ground water is 1.2 metres (absorption trenches) or 0.6 metres (application of secondary quality effluent with disinfection and from the base of a mound system).</td>
</tr>
<tr>
<td></td>
<td>A2.2 The minimum soil depth to bedrock (of low strength or harder) or other confining layer is 1.2 metres (for absorption trenches) or 0.5 metres (for application of secondary quality effluent with disinfection and from the base of a mound system).</td>
</tr>
<tr>
<td>Note: AS/NZS 1547:2012 gives a range of acceptable depths depending on a number of factors, including, but not limited to, soil type, quality of the effluent and application method.</td>
<td></td>
</tr>
</tbody>
</table>
## Performance Criteria

<table>
<thead>
<tr>
<th>Performance Criteria</th>
<th>Acceptable Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>P3</td>
<td>A3.1 A minimum horizontal setback distance from the perimeter of any application area is provided in accordance with Table 1.</td>
</tr>
<tr>
<td></td>
<td>A3.2 In the case of allotments being generated through subdivision, an additional horizontal setback distance applies where a plan has been submitted showing the proposed location of on-site systems. A minimum buffer distance between potential effluent application areas and proposed diversion drains on separate allotments is to be 40 metres.</td>
</tr>
<tr>
<td>P4</td>
<td>A4.1 All wastewater treatment systems and application areas are located above the 1 in 20 year flood level. Systems with electrical components are located above the 1 in 100 year flood level.</td>
</tr>
<tr>
<td></td>
<td>Note: Sealed submerged pumping facilities may be located below the 1 in 100 year flood levels with appropriate flood protection.</td>
</tr>
<tr>
<td>P5</td>
<td>A5.1 Irrigation areas are to be as level as possible, with a maximum slope of 12% in areas used for spray irrigation. Sub-surface irrigation systems are to be utilised on steeper slopes where site stability is not compromised and surfacing of effluent will not occur.</td>
</tr>
<tr>
<td></td>
<td>A5.2 Sites are to be contoured to direct surface water flow away from application areas.</td>
</tr>
<tr>
<td></td>
<td>A5.3 The construction of a sewage management system is to be in accordance with AS/NZS 1546.1 – “On-Site Domestic Wastewater Treatment Units”.</td>
</tr>
<tr>
<td></td>
<td>A5.4 The minimum size of septic tanks and holding tanks are to be in accordance with AS/NZS 1547 and Water NSW’s requirements, where the property is located within Sydney’s Drinking Water Catchment.</td>
</tr>
<tr>
<td></td>
<td>A5.5 Effluent application areas (in a location where they can meet the objectives) are to be designed and constructed in accordance with the provisions of AS/NZS 1547 and this policy. Textural classification...</td>
</tr>
<tr>
<td>Performance Criteria</td>
<td>Acceptable Solutions</td>
</tr>
<tr>
<td>----------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>of the soil profile is to be examined to determine the long-term acceptance rate and to assist in the design of the sewage management system.</td>
<td>A5.6 Where soils exhibit a high permeability (greater than 3.5 m/day) the applicant is to demonstrate through further investigation that pollution of groundwater will not occur.</td>
</tr>
<tr>
<td>A5.7 A reserve (secondary) area of 100% of the design area is to be identified upon the site for expansion and contingencies. The reserve area is to be protected from any development that would prevent its use in the future.</td>
<td>Note: Reserve area is based upon hydraulic calculations.</td>
</tr>
<tr>
<td>A5.8 On small allotments it may not be possible to provide a reserve area. The designer, in consultation with Council, is to assess the options available for the site. The designer is to propose an appropriate design that provides security in the case of unsatisfactory performance.</td>
<td>A5.9 The proposed and future developments of the allotments can be accommodated. For example, a proposal may include a dwelling, outbuildings, driveways, sealed areas and primary recreation area in addition to the on-site sewage management area. More than one type of effluent application system can be achieved for each allotment.</td>
</tr>
<tr>
<td>P6 Sufficient area is provided for sub-surface absorption and irrigation of effluent so that effluent is not transported off the site.</td>
<td>A6.1 To determine suitable application areas, a minimum available irrigation area is calculated utilising water balance and nutrient balances, as specified within the Environmental Health Protection Guidelines (1998) and AS/NZS 1547.</td>
</tr>
</tbody>
</table>
### Performance Criteria

| P7 | Appropriate provision is made for wet weather storage of treated effluent during wet weather periods when it is inappropriate to spray irrigate. Assessment of the need for wet weather storage is based upon an accepted standard and criteria. Population, rainfall, evaporation, soil permeability, soil depth and effluent quality must be used. |
| P8 | Effluent is wholly contained within the boundaries of the site. The application area is designed to ensure that ponding of effluent or waterlogging of the soil profile does not occur. |
| P9 | People, their pets or other objects to which people may be exposed are not to come into contact with non-disinfected wastewater, including grey water. |

### Acceptable Solutions

| A7.1 | Wet weather storage is provided for surface irrigation systems for periods of wet weather and when soils in the application area will become saturated. Wet weather storage is provided in accordance with the recommendations of the *Environment and Health Protection Guidelines* (1998). |

**Note:** Systems designed for wet weather storage may range from impervious storage either above or below ground, to subsurface storage/disposal systems. Details of the wet weather storage are to be submitted to Council for approval.

| A8.1 | Irrigation areas are designed in accordance with this Chapter and/or AS/NZS 1547 and may be either surface or sub-surface systems, where sub-surface systems are generally preferable. |
| A8.2 | In the case of allotments being generated through subdivision, the minimum size for an allotment is 2500m². |

**Note:** The minimum lot size has been determined after considering areas required for elements such as buildings, outbuildings, set-back distances and unimpeded open space for private recreation. Allotments located in Sydney’s drinking water catchment area that are proposed to be subdivided, are to be referred to Water NSW.

| A9.1 | Land application and treatment systems are installed in accordance with the former NSW Health *Advisory Note 4 Sewage Management Facility Accreditation Criteria Based on the Final Application of Treated Effluent and Risk of Disease Transmission* (April 2008). |
| A9.2 | Wastewater, that has not been disinfected, is not applied to the ground surface. |
| A9.3 | Effluent application areas are not used as the primary recreation areas for a property. |
### Performance Criteria

<table>
<thead>
<tr>
<th><strong>P10</strong></th>
<th>Areas used for spray irrigation are not used for recreation purposes or the growing of vegetables.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A10.1</strong></td>
<td>Where effluent is applied via spray irrigation, the application area is to be isolated so as not to be used for passive or active recreation purposes (fenced off, delineated garden etc.). Such areas are also to be stock proof, during and immediately after application.</td>
</tr>
<tr>
<td><strong>A10.2</strong></td>
<td>The application area is not used to grow vegetables for human consumption. Use of effluent for fruit trees complies with the recommendations of AS/NZS 1547.</td>
</tr>
</tbody>
</table>

**Note:** Effluent disposal under trees is not prohibited.

<table>
<thead>
<tr>
<th><strong>P11</strong></th>
<th>Surface application/reuse areas are adequately signposted.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A11.1</strong></td>
<td>Warning signs are erected within the effluent application area in accordance with the provisions of AS/NZS 1547 and AS 1319.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>P12</strong></th>
<th>Designs that incorporate alternative technology demonstrate best practice.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A12.1</strong></td>
<td>System designs (new or existing) that incorporate alternative technology do not prejudice the integrity of the system.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>P13</strong></th>
<th>Where permissible, each dual occupancy site includes a separate system that is designed to incorporate best practice and adequate separation between systems.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A13.1</strong></td>
<td>A separate on-site sewage management system is to be provided for each occupancy/dwelling and information provided in accordance with section 6.2 of this Chapter.</td>
</tr>
</tbody>
</table>

**Note:** For application submission requirements for proposals involving **less** than 12 persons capacity or subdivisions involving the creation of 4 lots or less refer to Section 6.2.

For application submission requirements for proposals involving **more** than 12 persons capacity or subdivisions involving the creation of more than 4 allotments or developments in environmentally sensitive locations refer to Section 6.2.

### Table 1 – Required minimum buffer distances for on-site systems

<table>
<thead>
<tr>
<th><strong>System</strong></th>
<th><strong>Minimum buffer distances</strong>¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>All land application systems</td>
<td>- 100 metres to permanent surface waters (eg river, streams, lakes, etc)</td>
</tr>
<tr>
<td></td>
<td>- 100 metres to any groundwater bores ²</td>
</tr>
</tbody>
</table>

¹ The buffer distance is measured as a ground surface flow line and is not based on the closest measured distance.
² Where a bore is within 100 metres of a proposed effluent management area the application is to include a statement from the owner that the bore is not used for potable domestic water supply. Alternatively, a ground water drawdown
### System | Minimum buffer distances
--- | ---
All land application systems located on land within Sydney’s drinking water catchment. | • Refer to the buffer distances within the Sydney Catchment Authorities Neutral or Beneficial Effect on Water Quality Assessment Guidelines

#### Surface spray irrigation
*Secondary treated effluent with disinfection or higher* (irrigation systems to conform to AS/NZS 1547)\(^3\)

**Note:** Secondary treatment means anaerobic and aerobic biological processing and settling or filtering of effluent received from a primary treatment unit. Effluent quality following secondary treatment is expected to be equal to or better than 20 mg/L five-day biochemical oxygen demand and 30mg/L suspended solids.

- 6 metres if area\(^4\) up-gradient and 3 metres if area\(^4\) down-gradient of driveways and property boundaries
- 15 metres to dwellings
- 3 metres to paths and walkways
- 6 metres to swimming pools and buildings

#### Surface drip and trickle irrigation
*Secondary treated effluent with disinfection or higher*

- 6 metres if area\(^4\) up-gradient and 3 metres if area\(^4\) down-gradient of swimming pools, property boundaries, driveways and buildings, including dwellings.

#### Sub-surface irrigation
*Secondary treated effluent or higher*

- 6 metres if area\(^4\) up-gradient and 3 metres if area\(^4\) down-gradient of swimming pools, property boundaries, driveways and buildings, including dwellings.

#### Absorption system
*Primary treated effluent or higher*

**Note:** Primary treatment is the separation of suspended material

- 12 metres if area\(^4\) up-gradient and 6 metres if area\(^4\) down-gradient of property boundary
- 6 metres if area\(^4\) up-gradient and 3 metres if area\(^4\) down-gradient of swimming pools, driveways and buildings

Analysis is to be completed using an appropriate methodology such as Cromer, Gardner and Beavers’, 2001 “An improved viral die-off method to estimate setback distances”\(^3\)

Irrigation systems must conform to AS/NZS 1547, in particular:

- Bury distribution lines to a minimum depth of 100mm
- Use sprinklers that throw no more than 2m and produce coarse droplets, with a maximum plume height of 400mm above finished ground level (commercial systems will need to demonstrate method of compliance)
- Do not use standard household hose tape and garden fittings
- Signpost surface irrigation areas with at least two signs, clearly visible to occupants and visitors stating: Recycled Water Avoid Contact DO NOT DRINK

Subsurface systems are to comply with Appendix M of AS/NZS 1547

\(^1\) Area’ means ‘effluent disposal area’
### System

<table>
<thead>
<tr>
<th>Minimum buffer distances(^1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>from wastewater by settlement and/or flotation in septic tanks, primary settling chamber, anaerobic process of treatment, prior to effluent discharge to either a secondary treatment process, or to a land application system.</td>
</tr>
</tbody>
</table>

### 5.2 Development in the Sydney Drinking Water Catchment

Note: From 1 January 2015, the Sydney Catchment Authority ceased to exist and the concurrence powers under the State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011 were transferred to Water NSW, as specified in the Water NSW Act 2014.

Water NSW manages and protects the Sydney drinking water catchment through the regulation of developments in the catchment, consistent with State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011 (SEPP). Development requiring consent in the Sydney drinking water catchment must have a neutral or beneficial effect on water quality in accordance with the requirements of the SEPP.

Note: A map of the Sydney Drinking Water Catchment area, including Kangaroo Valley and parts of Sassafras can be found here.

The SEPP aims to:

- Provide for healthy water catchments that will deliver high quality water, while permitting development that is compatible with that goal; and
- Provide that a consent authority must not grant consent to a proposed development unless it is satisfied that the proposed development will have a neutral or beneficial effect on water quality; and
- Support the maintenance or achievement of the water quality objectives for the Sydney drinking water catchment.

### 5.2.1 Requirements under the SEPP

Under the SEPP, Council cannot grant development consent unless it is satisfied the development will have a neutral or beneficial effect on water quality. A neutral or beneficial effect on water quality is satisfied if the development:

- has no identifiable impact on water quality, or
- will contain any water quality impact on the development site and stop it from reaching any watercourse, waterbody or drainage depression on the site, or
- will transfer any water quality impact outside the site where it is treated and disposed of to standards approved by the consent authority.
5.2.2 Neutral and Beneficial Effect Guidelines and Tool

The Neutral or Beneficial Effect on Water Quality Assessment Guidelines (NorBE Guideline) and accompanying software application the Neutral and Beneficial Effect on Water Quality Assessment Tool (NorBE Tool) assists councils in their assessment of whether a development has a neutral or beneficial effect on water quality.

The consent authority must refer more complex development applications to Water NSW for concurrence before it can approve the development. The developments that require concurrence are determined by applying the NorBE Tool.

5.2.3 Water Cycle Management Study

All developments in the drinking water catchment must be accompanied by a Water Cycle Management Study. The level of information contained in the Water Cycle Management Study will vary depending on the complexity and the risk to water quality. The NorBE Guidelines and publication Developments in the Sydney Drinking Water Catchment – water quality information requirements categorise development into five modules according to the complexity and risk to water quality posed by a development. Applicants and consultants should refer to these publications for further information and modelling required.

5.3 Effluent pumpout

Pumpout services are made available in towns and villages in Shoalhaven where reticulated sewerage services are not available. Council may approve of pumpout services in other circumstances, for example for protection of the environment.

Pumpout services are not cost effective or efficient compared to on-site sewage management or reticulated sewerage. Transportation of effluent by truck (tanker) creates traffic and pollution issues. In addition the transport of tradewaste prevents Council from entering and implementing good management practices outlined in Council’s Liquid Tradewaste Discharge to the Sewerage System Policy.

The following is required to ensure that the installation of pumpout systems is environmentally and economically efficient:

- New pumpout services must be generally allowed on existing lots within unsewered residential or commercially zoned land within Shoalhaven that was existing before the adoption of Council’s former Effluent Pumpout Policy on 28 August 2007.
- New pumpout services are not to be provided to new subdivisions or new rezonings.
- Pumpout services are not to be provided to multi-unit housing in villages not designated for future reticulation services. Future reticulation services are identified in Council’s adopted 20 year financial and capital works forward plan.

Further to the above, in regard to the provisions of new pumpout services, Council resolved on 19 December, 1995 that:
• If Council resolves to allow a new effluent pumpout service for a particular circumstance which is not in accordance with policy then the pumpout service be at the full cost of providing the pumpout service and this will be noted on the Section 149 Certificate and Title Deeds.

5.4 Other effluent disposal codes and requirements

From time to time site-specific studies are conducted to determine capability to accept development. These studies examine all aspects of a site and its receiving environment and establish site-specific effluent disposal criteria. These criteria may be outlined in further detail in this DCP (for example, Chapter N11: Nowra Hill – Cabbage Tree Land and Chapter G20: Jerberra Estate), as conditions of development consent or listed as “restrictions-as-to-user” pursuant to Section 88B of the Conveyancing Act, 1919. These sources should be checked to determine if specific effluent disposal criteria apply to a parcel of land.

6 Advisory Information

6.1 Other legislation or policies you may need to check

<table>
<thead>
<tr>
<th>Council Policies &amp; Guidelines</th>
<th>Liquid Tradewaste Discharge to the Sewerage System Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>On-site Sewage Management Local Approvals Policy.</td>
</tr>
<tr>
<td></td>
<td>Council brochures and pamphlets</td>
</tr>
<tr>
<td>Council approvals and other sections of this DCP</td>
<td>Area Specific Chapters of this DCP, for example - Chapter N11: Nowra Hill – Cabbage Tree Land and Chapter G20: Jerberra Estate</td>
</tr>
<tr>
<td></td>
<td>Conditions of development consent: listed as “restrictions-as-to-user” pursuant to Section 88B of the Conveyancing Act, 1919.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>External Policies &amp; Guidelines</th>
<th>AS/NZ 1547 On-site domestic wastewater management.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AS/NZ 1546 On-site domestic wastewater treatment units.</td>
</tr>
<tr>
<td></td>
<td>Designing and Installing On-site Wastewater Systems. A Sydney Catchment Authority Recommended Practice, Sydney Catchment</td>
</tr>
</tbody>
</table>

Note: This section is not exclusive and you may be required to consider other legislation, policies and other documents with your application.
6.2 Additional Information to be submitted with Applications

6.2.1 Applications – roles and responsibilities

The key stakeholders identified in the application process for approval to install or construct a sewage management system are defined below. Definitions of other persons who may have a role to play in managing and implementing processes that lead to the effective and sustainable performance of on-site systems are given in AS/NZS 1547.

<table>
<thead>
<tr>
<th>Person</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulatory authority</td>
<td>Reviews all stages of the process and ensures compliance with this policy and relevant guidelines and standards.</td>
</tr>
<tr>
<td>Site evaluators and soil assessors</td>
<td>Complete a site assessment and recommend a proposed treatment system(s) and application area(s) as well as identifying any constraints.</td>
</tr>
<tr>
<td>Designers and installers</td>
<td>Complete a detailed design and effluent disposal field layout plan. Install the system in accordance with the design and provide a certificate of compliance where required.</td>
</tr>
<tr>
<td>Property owners</td>
<td>Consent to the application and confirm which system is to be installed</td>
</tr>
</tbody>
</table>
6.2.2 Additional information to be submitted with applications

Where development consent is required, a development application is to be made in accordance Shoalhaven LEP 2014 and this DCP.

An application for approval to install or construct a sewage management system is to accompany a development application and is also to be submitted for the construction or alteration of any on-site sewage management system. Documents to accompany an application are specified in Clause 26 of the Local Government (General) Regulation 2005. The documents listed under Clause 26 are also to be used as a guide for applications to alter a sewage management system and when the applicant declares in the application that the facility will remain on the premises for no more than 12 months.

In order for Council to be able to evaluate a proposed on-site sewage management system and its potential impact on the environment, the information listed in section are also to accompany any application for:

- Development (including new dwellings, dual occupancy and where there is either; a proposed change to the type of sewage management system; or there is a proposed increase in the occupational capacity of the building);
- Subdivision;
- Rezoning proposal; or
- A sewage management system that proposes the use of alternative technology.

Upon request by Council, the information listed in Section 6.3.4 and 6.3.5 is required for any application to install, construct or alter a sewage management system.

Any report required to be submitted to Council in accordance with these controls, any other SEPP or Deemed SEPP is to be prepared by a suitably qualified practising person or persons.

6.2.3 Plan details

In accordance with Clause 26 of the Local Government (General) Regulation 2005, the plan must be to scale and show the location of:

a) The sewage management facility proposed to be installed or constructed on the premises; and

b) Any related effluent application areas; and

c) Any existing buildings or facilities and any environmentally sensitive areas located on land within 100 metres of the sewage management facility or related effluent application areas; and

d) Any related drainage lines or pipework (whether natural or constructed).
In addition, an effluent disposal field layout plan that has been prepared by the system designer (which may be combined with the detail above to form one plan), is to be submitted with the application. The effluent disposal field layout plan must include the following details:

- A hydraulic balance of effluent application components (for example balance between pump size and number of sprinklers for an aerated waste treatment system);
- All components of the system, including, but not limited to; the treatment tank, irrigation lines, the exact number of sprinklers proposed, absorption trenches, diverter valves, rotor valves and moisture sensors;
- Areas of land on which effluent will be applied;
- Reserve area(s);
- Detail of any proposed levelling of the site;
- Slope direction and gradient;
- Buffer distances; and
- Water courses and drainage lines (including stormwater diversion drains/berms).

6.2.4 Standard dwelling/smaller subdivision applications

Applications for proposals involving less than 12 persons capacity or subdivisions involving the creation of 4 allotments or less in areas that are not environmentally sensitive, are to be submitted with the following information. Please also refer to G10 – Subdivision of this DCP.

a) **Hydraulic estimation** for the development;

b) **Water balance calculation**;
   - Risk of run-off/percolation outside the site.
   - Relevant calculations must be included within the report and conform to the requirements of “Environmental & Health Protection Guidelines” (1998).

c) **Description of climate**

   Rainfall Median (5 Decile) figures must be utilised. Actual figures from the nearest Bureau of Meteorology Recording Station should be used where possible.

   Representative data for a number of suitable stations within the Shoalhaven are listed in Appendix 1 of Council’s On-site Sewage Management Local Approval Policy.

d) **Evapotranspiration** – calculated utilising pan evaporation multiplied by the representative crop factor.

e) **Flood potential** – note the location of the projected 2050 1:20 year and 1:100 year flood level on the contour plan, if appropriate.
f) **Details of soil suitability** for the proposed method of application, including soil composition pH – many soils in the Shoalhaven have a low pH (are acidic). pH levels lower than 6.0 or 6.5 may limit the ability of plants to take up nitrogen and phosphorous; **Details of soils and geology (soil profile)** – types and description of soil horizons are necessary. Sufficient bore holes are to be constructed to provide a representative picture of the soil horizons that exist across the site. Bore logs are to be submitted with the application and each soil horizon is to be classified according to its texture, eg sandy clay. See AS 1547 Section 4.1 A4.

g) **Permeability** – is to be determined using the procedure specified in AS/NZS 1547. The standard specifies the circumstance when the procedure is to be adopted.

h) **Cation exchange capacity/phosphorous sorption capacity** (mg/kg) and an assessment made as to the suitability of the soil for removing pollutants like phosphorous. Refer to Section 6.2.5 for further detail.

i) **Sodicity assessment** to determine the suitability of the soils to accept effluent in the long term. Test holes are to be used to specify ground water depth. The estimated depth of water table in the vicinity may only be utilised to confirm depth within high permeable soils. Refer to Section 6.2.5 for further detail.

j) **Depth to bedrock** is to be determined after field tests. The minimum soil depth to bedrock (of low strength or harder) or other confining layer is 1.2m (for absorption trenches) or 0.5 m (for application of secondary quality effluent with disinfection and from the base of a mound system);

k) **Location of any bores** within 100 m of the disposal field;

l) **Topography and slope**;

m) **Details of compliance/performance of existing systems** upon the development site and subdivided land including the residue;

n) **Identification of existing vegetation**;

o) **Position of tanks and application areas** and their proximity to boundaries, rivers, watercourses, dwellings and recreation areas;

p) **The type of wastewater treatment and effluent application system** together with details of the system including tanks, pumps, valves, timers etc;

q) **Proposed wet weather storage facilities** and management procedures;

r) **The treatment/construction of the application area** including materials, size and ground preparation;

s) **Landscaping treatment of application areas** including plants, shrubs and ground cover;

t) **Proposed maintenance contracts and servicing**;

u) **Details outlining how the proposal complies with Section 16.2 of this Chapter**
A thorough assessment of the potential impact of nutrients and a site nutrient balance from the proposed development must therefore be undertaken. A soil chemical analysis is required to analyse the ability for phosphorus and nitrogen to be removed from the soil. Refer to Section 6.2.5 for further detail.

Should the site display extraordinary topographic, geological or other characteristics, or drain to a sensitive receiving environment (eg. Wetland), Council may seek further information.

Specific details regarding the SEPP (Sydney Drinking Water Catchment) 2011 requirements are also to be detailed Section 5.2.

### 6.2.5 Larger dwelling/subdivision applications or other applications

Applications for subdivisions of more than 4 lots, tourist developments, dual occupancy, developments of more than 12 person capacity and any development or subdivision application located in an environmentally sensitive area are to be submitted with the following information. Please also refer to G10 – Subdivision of this DCP.

a) **Costing analysis** - where a development proposal is located within close proximity (relative to the size of the development) of a reticulated sewerage system, costing analysis is to be made. The costing analysis is to compare the total cost to install, run and maintain the on-site effluent application option compared to the cost of providing reticulated sewerage to the proposal (over a substantial period eg. 20 years).

b) **Proposed wastewater treatment and application system.**

c) **Details of compliance/performance of existing systems** upon the development site and subdivided land including the residue.

d) **Site information** including areas unsuitable for effluent application and possible area(s) suitable for effluent application purposes (display area in square metres (m\(^2\)) and show setback distances).

e) **Details of soils and geology (soil profile)** - types and descriptions of soil horizons are necessary. Sufficient bore holes are to be constructed to provide a representative picture of the soil horizons that exist across the site. Bore logs are to be submitted with the application and each soil horizon must be classified according to its texture, eg sandy clay. See AS/NZS 1547.

f) **Permeability** – is to be determined, when appropriate, using the recognised testing procedures specified in AS/NZS 1547. The standard specifies the circumstance when the procedures are to be adopted.

g) **Cation exchange capacity/phosphorous sorption capacity** and an assessment made as to the suitability of the soil for removing pollutants, such as phosphorous. The cation exchange capacity (CEC) is the total number of cations a soil can retain on its adsorbent complex at a given pH, and is therefore a good measure of a soil's
ability to retain specific pollutants. The most abundant cations in soil are calcium, magnesium, potassium and sodium, and hydrogen and aluminium in acid soils.

A CEC of 15cmol+/kg or less creates limitations for land application systems.

The capacity of a soil to absorb phosphorus is determined from its phosphorus sorption capacity. P sorption (mg/kg) is used to calculate the P balance using the procedure specified in the “Environment and Health Protection Guidelines (1998)”. Phosphorus sorption by the soil is expected to occur up to about a quarter to a half of the phosphorus sorption capacity. Beyond this, leaching of phosphorus not utilised by vegetation uptake may occur. A soil having a phosphorus sorption ability of 50 years (in terms of mg P/g soil), based upon the expected phosphorus load, is required for land application areas. Rayment and Higginson (1992) provides a simple test to distinguish soils on the basis of low and high phosphorus retention.

**h) Sodicity** is an assessment made as to the suitability of the soils to accept effluent in the long term. Each soil horizon must be tested to determine if it is prone to dispersion. This testing must be quantitative and must be conducted as per Appendix F of AS/NZS 1547. Please note that as well as the classification of dispersive given in AS/NZS 1547, Northcote and Skene (1972) note that the exchangeable sodium percentage at which Australian soils tend to disperse is as low as 6 units (reported in Patterson (1993)). Northcote and Skene (1972) give the following classifications:

- Non-Sodic  < 6.0 me %
- Sodic 6–14 me %
- Strongly Sodic  > 14 me %

**i) pH** – many soils in the Shoalhaven have a low pH (are acidic). pH levels lower than 6.0 or 6.5 may limit the ability of plants to take up nitrogen and phosphorous. Where acidic soils are encountered in a proposed effluent disposal area their pH should be raised so that it falls within the range of 6.0 to 7.5. The effect of acidic soils on infrastructure, such as concrete tanks, is also to be considered.

**j) Depth to ground water** – this will be determined after field tests or by local knowledge. For example, mottling of the soil can indicate the existence of a high water table from time to time.

**k) Depth to bedrock** – as determined after field tests or by general knowledge. Sometimes rock may be of extremely low strength and act like a soil, considerations such as depth to bedrock may be estimated to ensure adequate depth is achieved for a particular method of effluent disposal.

**l) Underlying geology and extent of fracturing** – based on field examination and relevant geology text.

General Information about soils and geology particular to the site should be noted, eg Hazelton, 1992.
m) **Topography** - ground slope including contour plan – hatch areas greater than 12%. The contours must be at such intervals so as to allow a thorough assessment of the site. In many cases the 10 metre contours from the 1:25,000 topographical map will not be sufficient. The topography of the land surrounding the effluent disposal area should be evaluated for its potential to add stormwater runoff to the site.

n) **Flood potential** – note the location of the projected 2050 1:20 year and 1:100 year flood level on the contour plan, if appropriate.

o) **Erosion potential** – an assessment needs to be made of the potential of the soils to erode. This must include both an assessment of the soil’s properties as they relate to erosion (see Hazelton, 1992) as well as landscape properties such as slope gradient and rainfall characteristics.

p) **Description of climate**
   - Rainfall Median (5 Decile) figures must be utilised. Actual figures from the nearest Bureau of Meteorology Recording Station should be used where possible.
   - Representative data for a number of suitable stations within the Shoalhaven are listed in Appendix 1 of Council’s *On-site Sewage Management Local Approval Policy*.

q) **Evapotranspiration** – calculated utilising pan evaporation multiplied by the representative crop factor.

r) **Assessment of native vegetation** – Proximity of native vegetation to effluent application areas and areas downstream of the site (particularly riparian vegetation).

s) **Presence of environmentally sensitive vegetation types:**
   - Species which are sensitive to moisture or nutrients;
   - Threatened flora species;
   - Proximity of native vegetation to effluent disposal areas.

l) **Location of ground water recharge areas** – application of effluent in such areas should be avoided.
   - Location, environment and impact at local ground water discharge points.
   - Depth to ground water.
   - Location of existing wells on site and adjacent to the site.
   - Current use of ground water.

u) **Current status of regional ground water** (for example, is it potentially high yielding with low salinity – details may be obtained from NSW Office of Water. **Surface waters**
   - Proposed surface water management.
• Proximity
• Current Use
• Flow characteristics
• Presence of wetlands with conservation significance

v) Water Balance
• Risk of run-off/percolation outside the site.
• Relevant calculations must be included within the report and conform to the requirements of “Environmental & Health Protection Guidelines” (1998).

w) Effluent load (related to population loads at 100% occupancy. Tourist facilities may demonstrate seasonal variations if appropriate)
• Precipitation
• Evapotranspiration
• Percolation through to soil (if any)
• Run-off (if any)

Used to determine the size of effluent disposal areas and volume of wet weather storage.

x) Impact of Nutrients
The escape of nutrients from effluent disposal areas is a major concern as nutrients pose perhaps the biggest threat to our local waterways. The main nutrients of concern are nitrogen and phosphorous. Both of these nutrients are in high concentrations in treated effluent.

Nitrogen will be in a number of forms in effluent. Unless it can be removed, it will enter the ground water system and eventually surface waters. The main removal mechanisms are:
• Ammonia volatilisation (which is pH dependant and will be significantly less in acidic conditions – as is the case with many Shoalhaven soils).
• Denitrification
• Plant uptake

Removal, however is dependant upon the vegetation being removed from the site as, if the vegetation is cut and left on the irrigation area, it will merely cycle back to the soils and thus the ground water and surface waters. Calculations have shown that unless the vegetation is removed from the site (which is extremely difficult to police) more nitrogen will be applied to the “system” than can be removed and thus the siting of a development will need particular care to ensure nutrient pollution is not a problem.

Phosphorous will be removed from the effluent via:
• Chemical precipitation
• Adsorption onto soil particles
• Plant uptake

A thorough assessment of the potential impact of nutrients and a site nutrient balance from the proposed development must therefore be undertaken. This will require a soil chemical analysis to analyse the ability for phosphorus and nitrogen to be removed from the soil.

A nutrient assessment is not required for proposed septic absorption and septic pumpout systems.

y) Details outlining how the proposal complies with Section 5 of this Chapter.

Should the site display extraordinary topographic, geological or other characteristics, or drain to a sensitive receiving environment (e.g. wetland) Council may seek further information. Specific details regarding the State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011 requirements must also be detailed.

After all of the abovementioned issues have been taken into consideration, you may propose to include measures aimed at improving the quality of the site for the application of effluent. This may include importing suitable soil or other material for the effluent application area due to the poor ‘in-situ’ soils or the sensitivity of the receiving environment.

The effectiveness of such measures is difficult to quantify. In these situations, a much reduced scale of development or alternatively the “do nothing” option may be the best option for the receiving environment. Where site works such as those noted above are proposed, so as to make the proposal acceptable, such works should be installed at subdivision stage.

This will allow quality control to be maximised (being and important issue for successful operation.

z) Wet Weather Storage

Details of wet weather storage. Alternatively if wet weather storage is not provided, supporting documentation must be supplied which indicates the soils have the ability to remove pollutants without adverse impact on the receiving environment. Details of methods to calculate storage are obtained in “Environmental Guidelines for Industry - The Utilisation of Treated Effluent by Irrigation” EPA (1995).

6.2.6 Site Assessment

After all of the abovementioned issues have been taken into consideration, you may propose to include measures aimed at improving the quality of the site for the application of effluent. This may include importing suitable soil or other material for the effluent application area due to the poor “in-situ” soils or the sensitivity of the receiving environment. The effectiveness of such measures is difficult to quantify. In these
situations, a much reduced scale of development or alternatively the “do nothing” option may be the best option for the receiving environment.

Where site works such as those noted above are proposed, so as to make the proposal acceptable, such works should be installed at subdivision stage. This will allow quality control to be maximised (being an important issue for successful operation).

Should the site display extraordinary topographic, geological or other characteristics, or drain to a sensitive receiving environment (eg. Wetland) Council may seek further information.

Specific details regarding the *State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011* requirements must also be detailed in accordance with subsection 16.2.2.

### 6.2.7 Climate data

Representative climate data for a number of suitable weather stations within Shoalhaven are listed in Appendix 1 of Council’s *On-site Sewage Management Local Approval Policy*.

### 6.2.8 Reuse of Effluent

To treat the waste as a resource, please consider opportunities for the reuse of treated effluent.

### 6.3 Post approval Effluent Treatment/Application Issues

#### 6.3.1 Installation

Installation must be considered and approved in conjunction with development/sewage management applications.

Effluent application systems are not to be used until the effluent application area /irrigation area has been inspected and approved by Council.

#### 6.3.2 Operation

Householders must have approval from Council to operate a system of sewage management and maintain the renewal of this approval. Please refer to Chapter 7 of the *Local Government Act*, 1993 for details on the legal requirements for operating a system of sewage management: [www.legislation.nsw.gov.au](http://www.legislation.nsw.gov.au).

All systems must be serviced and maintained in accordance with the conditions of approval to install and operate a sewage management system. Good operation and use of the system is important for protecting the overall condition of the system.

All domestic effluent treatment/disposal systems rely on natural decomposer micro-organisms to break down the effluent. These organisms can be adversely affected by certain chemicals, such as bleaches, in some cleaning agents.
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The washing powders and detergents used can also influence how an effluent disposal system works and the potential pollution which is generated. In this regard, Council encourages the use of readily biodegradable low sodium content washing powders and detergents.

Details on how to ensure that a domestic effluent treatment and disposal system works satisfactorily are contained in Council’s pamphlet Septic Tanks – Hints for their Efficient Operation.

In relation to water conservation measures, Council supports and recommends the installation of the following devices and maintenance procedure.

a) Toilets to be fitted with a 6/3 litre dual flush system.

b) Devices to Australian Water Conservation Rating ‘AA’ or better, including shower flow restrictors, tap aerators, water-conserving washing machines

6.3.3 Council monitoring

Council will undertake routine inspections of all sewage management systems as part the process of obtaining approval to operate a system of sewage management. Council will notify the owner, or occupier of the property where the system is operated, the result of the inspection. Any defect or non conformance with NSW Health accreditation of an on-site sewage management system may be reported by Council to NSW Health.