



**DEVELOPMENT CONTROL PLAN  
NO 32**

**ON-SITE SEWAGE  
MANAGEMENT STRATEGY**

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# ON-SITE SEWAGE MANAGEMENT STRATEGY

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## Executive Summary

The On-Site Management Strategy outlines the principles and objectives related to the treatment and disposal of wastes within the Kempsey Shire area.

The Shire area is over 3,300km<sup>2</sup> and the Macleay River traverses the area from the elevated regions west of Bellbrook to the river entrance at South West Rocks. Many watercourses enter the Macleay River. Smaller catchments are on the Maria River system and the Korogora and Killick Creeks. Fishing and Oyster Industries are established in the Lower Macleay area, particularly in the South West Rocks/Stuarts Point areas. Tourism is a major industry with tourists being attracted to the coastal and estuarine areas and the rugged hinterland.

The State and Environment Report acknowledges the impacts on water quality and aquatic ecosystems from septic systems and that there is a large data gap in respect to the number and method of operation of Septic Systems and other On-Site Sewage Systems. The response to that pressure is seen as inspection of installed systems and requiring remediation works, where necessary. The Macleay Total Catchment Management Committee has expressed its concern about septic effluent contamination of the land and waterways.

In preparing the Strategy, it has been acknowledged that considerable data gaps exist in respect to the number, type, location and operational efficiency of existing installed systems. Council has decided that an audit inspection of each system is necessary to establish baseline data in respect to existing systems.

The Strategy proposes that to meet the Statutory requirements related to registration, a registration fee will be charged. Inspections will also be at a cost as established and adopted in Council's Management Plan each year. Once registered, no further registration will be necessary. Any approval to operate will be subject to a condition that a re-inspection (Audit) be undertaken in a three or five year period.

## The Principles

The environmental and health principles supporting the management of on-site sewage management systems include:

- Ecologically Sustainable Development (ESD)
- Water Cycle Management
- Total Catchment Management
- Protection of public health and the prevention of public health risk

The inappropriate use and disposal of wastes from on-site systems can have a number of adverse impacts which would include:

- Spread of disease
- Contamination of ground and surface water
- Degradation of soil and vegetation
- Decrease in amenity due to odours, noise and insects

## Objectives

- Protection of Groundwater
- Protection of Surface Water
- Protection of Land and Vegetation
- Prevention of Public Health Risk
- Maintaining and Improving Community Amenity
- Ensuring Maximum Use of Resources Consistent with Other Objectives
- Ecologically Sustainable Development

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## INTRODUCTION

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### Regulatory Status

The Local Government (Approvals) Regulation 1993, as amended by the Local Government (Approvals) Amendment (Sewage Management) Regulation 1998 was published in the Gazette on 6 March, 1998.

The amendments do not fundamentally alter the existing powers and duties of the Council to regulate the installation and operation of on-site sewage management systems under Section 68 and Section 124 of the Local Government Act 1993.

## **Background**

Approximately 250,000 households in NSW have On-Site Sewage Management Systems (OSMS) and recent enquiries suggest a failure rate of up to 90% - a survey in Kempsey Shire Council similarly high failure rates. No doubt part of the impetus for the development of the Regulation was the outbreak of Hepatitis A linked to the consumption of Wallis Lake oysters. That situation has now developed into a Class action Court case. Sewage management is not restricted to coastal areas and there is increasing concern about the potential impact of contaminated water in areas affecting groundwater as a source for water supply.

## **Scope**

The On-Site Sewage Management Regulations and Guidelines provide a framework for implementation of ecologically and socially sustainable on-site sewage management practices over the next two to five years. It is intended that this should be achieved, as far as possible, by a process of community and user education and by gradual implementation of appropriate operating requirements. Strategic management of existing septic systems and attention to address sewage management issues in new release areas will be important tasks for Council.

## **Purpose**

New Regulations gazetted on 6 March, 1998 require owners of relevant premises to apply to Council for approval to operate a system of sewage management. The Council is able to grant a renewable approval. The grant of a renewable approval allows the Council to monitor performance on a regular basis and to recover fees to cover reasonable costs. When site inspections are undertaken, Council is able to levy an inspection fee.

The first role of Council is to obtain registration of existing systems and then complete an initial assessment of on-site sewage management activities in its area.

## ***PROGRAMS AND RESOURCES***

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### **Programs**

The commencement date of the Sewage Management amendments is 6 March, 1998 (date of the gazettal) but transitional provisions mean that:

- New performance standards for approval to install, construct or alter an on-site sewage management facility apply from 6 March, 1998.
- Landowners who install new on-site systems after 6 April, 1998, must obtain Council approval to operate a system of sewage management prior to the intended date of occupation of the premises (a time limited conditional approval with annual renewal is recommended - approval must specify performance standards).
- Councils must adopt an approved fee for applications for approval to operate a new system installed after 6 April, 1998 by resolution and public notice. Council in its 1998/99 Management Plan - Schedule of fees and charges, set a \$30.00 registration fee and a \$70.00 inspection fee.
- Councils will need to address "sewage management" (including on-site and reticulated services) in the draft Council Management Plan in 1999 and will need to specify fees for initial applications for approval to operate and for inspections of on-site systems.
- Landowners with on-site sewage management facilities installed prior to 6 April, 1998, must apply to the Council for approval to operate a system of sewage

management on or before 30 June, 1999 (Council has notified landowners of the requirements). Those systems approved by Council and installed from 1/1/98 until 6/4/98 will not require a new or separate registration. Once an application is lodged, the landowner is entitled to operate the system until the matter is finally determined.

## **Actions**

### Short-Term

- 1) To establish and maintain a data base of all on-site sewage systems.
- 2) To undertake audit inspections to ascertain the operating conditions of existing systems.
- 3) To consult with the householder on the development and implementation of a strategy to eliminate illegal discharges or other matters of concern.
- 4) Establish procedures and requirements for low and high risk criteria.
- 5) To support continual improvement of on-site sewage management.
- 6) Promote water conservation issues and provide educational material.

### Long-Term

- 1) To ensure that all land application areas comply with environmental and health protection standards and Council operating requirements.
- 2) To ensure that all septic tanks are inspected by qualified people at regular intervals and are desludged and maintained as required.
- 3) In co-operation with householders, to develop a site specific sewage management plan for each household using an on-site sewage management system.
- 4) To review Council development standards and approval criteria for subdivision, development and building to ensure that appropriate provision is made for sustainable on-site management when residential development occurs in non-sewered areas.
- 5) Prepare a strategy for the training and recognition of persons being able to provide Council with Audit Inspection Certificates.
- 6) Council to review both the on-site sewage management strategy and the overall sewage strategy for each catchment.

## **Resources**

*Environment and Health Protection Guidelines: On-Site Management for Single Households* have been issued by the Department of Local Government to assist Council to regulate the installation and use of on-site sewage management systems. The Guidelines address the regulatory framework; the development of local sewage management strategies; administration and operational issues; site assessment principles; and principles for selection and operation of on-site sewage management systems.

The Guidelines explain the prescribed environment and public protection standards for septic tanks and on-site sewage management facilities and provide advice on site assessment and the selection and operation of small sewage management systems and effluent application areas receiving up to 2,000 litres of wastewater per day. The Guidelines recommend that sewage management issues should be addressed at the earliest stage of Council land use planning.

A range of useful appendices are included with the Guidelines covering:

- Model site reports and conditions of approval for pump-out systems, aerated wastewater treatment system (AWTS) devices and composting toilets;

- A Council sewage management strategy checklist;
- A recommended methodology for estimating provision for effluent disposal;
- A schedule of vegetation suitable for planting in land application areas; and
- A set of standard information brochures which may be released by Council

The legislation requires Council to ensure that the strategy is in place and that an ongoing monitoring program accompanies that strategy (annual inspections and regular monitoring or watercourses).

Australian Standard 1547 - Disposal Systems for Effluent from Domestic Premises. The objective of the Standard is to provide designers of disposal systems with requirements for the design and location of such systems.

### **Performance Standards**

Council must not approve an application which would not comply with performance standards prescribed in the Regulation and must also take into consideration, relevant guidelines and directions which have been issued by the Director General of Local Government (Local Government (Approvals) Regulation).

The Guidelines specify that on-site sewage management systems should be designed, installed and operated to ensure that the following environmental and health performance objectives will continue to be met over the long-term:

- Prevention of public health risk
- Protection of lands
- Protection of surface waters
- Protection of groundwaters
- Conservation and reuse of resources
- Protection of community amenity

The Regulation also requires that a system of sewage management must be operated in a manner that achieves the following specific performance standards:

- The prevention of the spread of disease by micro-organisms
- The prevention of the spread of foul odours
- The prevention of the contamination of water
- The prevention of the degradation of soil and vegetation
- The discouragement of insects and vermin
- Ensuring that persons do not come into contact with untreated sewage or effluent in their ordinary activities or premises concerned
- The minimisation of adverse impacts on the amenity of the premises and surrounding lands and, if appropriate, provision for the re-use of resources (including nutrients, organic matter and water).

The Regulation does not apply to the following sewage management facilities:

- Facilities which are licensed by the NSW Environment Protection Authority
- Facilities installed in a vessel used for navigation
- Facilities installed in a motor vehicle registered under the Traffic Act 1909 that is used primarily for road transport

Council, in formulating its On-Site Sewage Management System audit form, included matters to be examined to assess the performance of the installed system(s). Apart from using those criteria for the individual system environmental monitoring, by way of water sampling and analysis will be utilised.

### ***ENVIRONMENTAL AND HEALTH RAMIFICATIONS OF FAILING ON-SITE SEWAGE SYSTEMS***

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#### **1) Groundwater Contamination**

Where septic and aerated systems are located on soils of high permeability land disposal results in the rapid infiltration of effluent. Permeable soils such as sand produce rapid effluent disposal, but the potential for groundwater contamination is increased because of low treatment times by soil micro-organisms. Soils with low permeability, particularly clays, offer protection to groundwater but large disposal areas are required to accommodate effluent discharges because of low effluent infiltration rates.

Groundwater contamination can occur when a system is placed poorly in relation to:

- Soil depth to a bedrock or an impermeable layer such as a clay horizon
- Aquifer recharge areas
- Seasonally and naturally high water tables
- Permeable soils with direct path to groundwater

## 2) **Surface Water Contamination**

Surface water contamination may result from surface and sub-surface migration of effluent. Steep slopes (greater than 15%) facilitate the rapid downslope migration of effluent by shallow through-flow processes. If land disposal areas become overloaded the expulsion of effluent at the ground surface is likely. This effluent may then contaminate streams and surface water storage areas such as farm dams. Streams and dams polluted in this way are susceptible to algal blooms, contaminated with pathogens and unsuitable for human use.

During increased rainfall and peak household water use the potential for surface-effluent seepage is increased. Treatment time is reduced, resulting in the discharge of poor quality effluent to water resources. Wet weather storage areas may be required to overcome these problems. However, other methods should be firstly utilised, such as diversion banks, landscaping, diversion drains and increased sub-soil water storage.

Pump-out systems are prone to illegal discharges which result in untreated effluent being discharged to stormwater systems which flow directly to streams and to neighbours land, posing a health risk. Neglected pump-out systems may result in overflow of primary effluent.

## 3) **Vegetation Degradation**

Partially treated effluent that is allowed to contaminate bushland by surface or sub-surface migration will result in bushland degradation. Increase phosphorus will cause the death of native plants through phosphorus toxicity and increase the survival rates of weeds. Waterlogging of soils because of high effluent application or land treatment system failure can kill plants through fungal diseases and exclusion of air to plant roots.

Although effluent pH is generally neutral, if acidic effluent is irrigated onto soils, aluminium and manganese toxicity of the soil may result. Manganese toxicity is of particular concern in frequently waterlogged soils.

Irrigation of chlorinated effluent may be toxic to plants and soil microflora.

## 4) **Soil Degradation**

Where soil is used for treating effluent, it is important to understand the changes that occur over time in response to effluent disposal. Two major changes that can occur relate to sodium concentrations within the soil and the presence of the "clogging layer".

## 5) **Health Issues**

Disease can be transmitted where systems fail and there is a risk of human contact with partially treated effluent. Spray irrigation with high pressure sprays can result in the airborne spread of contaminants and pathogens. Coarse droplet, low pressure sprays or sub-surface irrigation ideally should be used.

Failing systems may contaminate surface and groundwater resources used for primary contact recreation, as a source of drinking water, or for irrigation. Increase nitrate concentrations in drinking water may be particularly toxic to humans and other animals.

## ***IMPLEMENTATION***

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Council has a huge task before it in assessing and undertaking Audit inspections to ascertain whether systems are operating in accordance with the various requirements. With that objective in mind, it is intended to rate systems and the area in which they are located into high or low risk areas - risk in this context being associated with environmental sensitivity and health issues. The Council area includes many waterways which mainly drain to the Macleay River. The lower reaches of that river, support an Oyster Growing Industry. Council has not undertaken "follow-up" inspections as a normal procedure. Inspections have basically been complain driven. Consequently within the Shire there is very little information on existing systems. In a large area of the Shire, where building consent was not required, prior to 1995 many systems would have been installed without reference to Council. Recent inspections of installed systems indicate that it is likely many units will have concerns related to public health and/or environmental issues.

A Draft Audit Inspection form has been developed which outlines the risk characteristics and site assessment procedures. (Schedule 1)

An on-site sewage management system will be assessed by Council to ensure that it:

- Prevents the spread of disease by micro-organisms;
- Prevents the spread of foul odours;
- Prevents the contamination of water;
- Prevents the degradation of soil and vegetation;
- Discourages insects and vermin;
- Ensures that persons do not come into contact with untreated sewage or effluent (whether treated or not) in their ordinary activities on the premises; and
- Minimises the adverse impacts on the amenity of the land

Council is aware of difficulties experienced in a number of villages and is actively pursuing alternate methods of treatment and disposal of wastes.

With regards to new subdivision for rural residential settlement, geotechnical reports for wastewater management are required.

It is not considered that many properties would need or be subjected to annual inspections. There may be an area of high environmental risk or health risk that will require follow-up inspections to correct problems.

It is envisaged that renewal dates for registration will be in the three to five year range. Approvals to operate issued for systems installed since 6 April, 1998 have generally been on a three year basis.

## ***AERATED WASTEWATER TREATMENT SYSTEMS (AWTS)***

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These systems rely on electrical pumps and chlorination systems and are approved subject to regular maintenance and reporting by currently manufacturer approved service agents on a three monthly basis.

Landowners with AWTS have questioned the need for an inspection.

As reported to Council previously, a Department of Health (North Coast) survey indicated greater than 75% of those inspected, failed to meet the requirements. A Coffs Harbour report suggests up to a 92% failure rate. Two recent situations with Kempsey Shire suggest that maintenance reports have been incorrectly issued. In that regard one system was altered with an extra collection tank installed and irrigation system altered. The other had no irrigation system and effluent was discharging off-site.

AWTS at the least require an initial inspection to Audit the system against the maintenance/installation requirements.

### ***MATTERS TO BE SURVEYED AND INSPECTED DURING A SITE VISIT***

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Inspection procedures will vary depending on a number of factors, the most important of which is the management methods used on the site for treatment and disposal of on-site wastes. Initially, discussion will be held with the owner/occupier regarding the on-site sewage management procedures.

- 1) Septic tank matters to be addressed will include:
  - Position of tank
  - Do all wastes go into the tank for treatment? IF NOT - what is the method of treatment and disposal of other wastes?
  - Determine the size of the tank in relation to wastes connected or to be connected
  - Is the tank airtight/watertight?
  - Ascertain when the tank was last pumped out
- 2) Other systems to manage on-site wastewater (including Aerated Wastewater Treatment):
  - Does that system comply with standard and/or approval?
  - What is final method of disposal of wastes?
  - Is system operating satisfactorily?
- 3) Absorption area:
  - Establish where the absorption areas are located
  - Are they discharging or overflowing?
  - Approximate length of the trench
  - Are syphons or similar drains connected to the absorption trench
  - Are all irrigation systems for Aerated Wastewater Systems installed, above ground and in accordance with Australian Standard 1547 (ie in landscaped areas with sufficient surface area)
  - Is the area overgrown?
- 4) Site specific considerations will be:
  - Flooding impacts
  - Location of watercourse, gullies, boundaries
  - Sufficient area for an alternate disposal area or method
  - Slope of the land
  - Erosion
  - Surrounding vegetation
  - Groundwater depth
  - Diversion of stormwater
  - Number of persons capable of using system (ie number of bedrooms)
  - Buffer zones to
    - sensitive areas
    - swimming pools
    - dwellings
  - Town water/tank water
  - Soil assessment
  - Risk classification for site on environmental and health criteria
- 5) Other matters:
  - Is there a noticeable odour present? IF SO what is the source?
  - Is a grease trap installed? IF SO how is it maintained?
- 6) Greywater (sullage) disposal:
  - Is there a separate system for greywater disposal?

- Is greywater treated?
- Is greywater disposal satisfactory?

At the completion of the inspection, discussions will be held with the owner/occupier on matters which may require attention.

Initially, a letter will be sent confirming any work required and the period in which the work would need to be completed. In relation to the time period, a number of factors will be considered to determine the period work must be completed in. No inspection fee will be charged in respect to a re-inspection where work is required. However, if more than one additional inspection is necessary, fees will apply.

An approval to operate will be issued if the system is operating satisfactory or upon completion of any outstanding work. The approval will be subject to a number of conditions relating to the operation of the unit and when the next inspection will be required. In most cases it is envisaged that the re-inspection period will be three to five years.

Once an approval to operate has been issued, no further registration fee will be applicable, however an inspection when required will be charged out in accordance with Council's fees and charges at that time.

### ***REVIEW***

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As with any management strategy, a review of the strategy will be necessary. In that regard a review every four years is appropriate as it would commence with the preparation of the comprehensive State of Environment Report.

### ***GLOSSARY***

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- 1) AWTS - Aerated Wastewater Treatment System
- 2) ESD - Ecologically Sustainable Development
- 3) OSMS - On-site Sewage Management System



ON-SITE SEWAGE MANAGEMENT SYSTEM AUDIT FORM

SUMMARY: Insp. Code: ..... Risk Classification ..... (from overleaf) GPS Points Taken 
Card left  Letter : .....

Land Information

Lot:.....DP.....Street No..... Street..... Suburb.....

Tick if applicable

Water Supply Reticulated  Tank  Bore  Water reduction fixtures  .....

Water Usage Occupants ..... Bedrooms ..... Owner living on site  Q Flow ..... L/day

External Plumbing

OK

Yard Gully OK  Grease Trap OK  Vent  Other  .....

Treatment Unit (Tick if applicable)

OK

Septic  Aerated  Composting Dry  Composting Wet  Spilt  .....

Augmented  Other  .....

Detail: .....

Capacity: .....L Desludged:  ..... (year) Maintenance reports received:  .....

Fixtures connected: All  Seals: lid OK  Other OK  .....

Disposal

OK

Pump Out (offsite)  L (Tank) Records current  .....

Onsite Application

Trench/ ETA  Irrigation: Surface  Subsurface  Other  .....

Dimensions: ..... m (length) x ..... m (width) x ..... (quantity) = ..... m<sup>2</sup> ; Depth: ..... m

+

Irregular/ spilt: ..... (detail) =  m<sup>2</sup> (TOTAL)

Condition: Overgrown  Malodour  Fenced  .....

Saturated  Surcharge  Overflow pipe  Other: .....

Site Assessment

COMPLETE

Exposure  Aspect ..... Slope ..... % Run on waters / seepage  .....

Buffers: > 99m to river/ creek  ..... m >39 m to dam  ..... m >39 m to ephemeral watercourse  ..... m

> 1.2m to watertable  Boundaries: ..... Other: .....

Sufficient land available, including reserve area:  .....

Table 1: DRAFT Existing System Risk Classification Given Site and System Conditions									
Property	LA	FL	Owner	Address					
	Parameter	3	2	1	0.5	0	Observed Score		
	System Condition							Notes	
	Application area	No sign of stress, well maintained		Moist or subsurface plumage <2m		Overflow Pipe, pooling water or plumage >2m			
	Unit	Structurally sound Adequately sealed	-	Lid join not sealed / cap missing	-	- dangerous or leaking			
	System								
	Age of application area (yrs)	<5	5 to 15	15 to 25	>25				
	Last desludging (yrs)	<3	3 to 5	6 to 10	>10	Urgent desludging required		consider requirement given connected fixtures and occupancy	
	System Capacity (% of requirement)	>90	70 to 89	60 to 69	50 to 59	<50		Consider actual and potential occ.	
	Block Size (m2)	> 3000	2000 to 3000	1000 to 1999	<1000	-			
	System Density (units per km2)	<16	16 to 25	26 to 35	36 +	-			
	Site								
	Soil at 600mm	Loam	Light Clay	Clay or sand	Sodic or massive soil or coarse fragments > 20%			consider soil at effective application depth	
	Waters (downslope)	Permanent >99m Ephemeral >39m Groundwater >1.5m	-	40 to 99 10 to 39 1 to 1.5	-	<40 <10 <1			
						<b>TOTAL</b>		consider current and potential occupancy scores	
Table 2: Guide to basic approval conditions									
		Score	Risk Category	Max Approval Renewal	Renewal Inspection Req				
		25 to 27	Very Low Risk	5	n				
		22 to 24	Low Risk	4	n				
		19 - 21	Moderate risk	3	Y				
		12 - 18	High Risk	2	y	max 1yr where Waters score "0" for existing OSMS			
		< 12	Unacceptable Risk	No approval	No approval				
		Issue no approval where a score of zero "0" is recorded for any parameter							

Draft Risk Assessment August04.xls



FIGURE 1: If GPS points not taken prepare a diagram. Show the position of the Unit and disposal area, giving distances (m) to buildings, boundaries, waters

<b>SYSTEM: PASS / FAIL :</b> ..... <b>OFFICER:</b> ..... <b>SIGNED:</b> ..... <b>DATE:</b> .....
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