Nambucca Shire Council

ON-SITE SEWAGE MANAGEMENT PLAN 2013

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1 EXECUTIVE SUMMARY

This On-Site Sewage Management Plan (strategy) was prepared in accordance with the requirements of the Local Government (General) Regulation, 2005.

The plan relates to domestic wastewater (non-commercial/industrial activities) for on-site systems treating up to 2000 litres per day.

The Local Government Act 1993 requires all on-site sewage management systems to be inspected by Council and have an Approval to Operate. Councils issues the Approval to Operate through a licensing/register system.

On-site sewage management systems (which include septics, aerated wastewater treatment systems, composting toilets, reedbeds, sand filters, biological filters, membrane reactors, greywater systems, etc) are required in all non-sewered areas.

These systems treat wastewater from a premise before being disposed of to an on-site land application area. Land application areas may include absorption/evaporation beds, subsurface irrigation or drip irrigation.

The Plan provides information to applicants and the community about On-Site Sewage Management Systems and what must be included in an application to install, modify or operate such a system.

On-site systems that are not performing satisfactorily may lead to significant environmental and public health issues. As such the long term viability and satisfactory performance of the system is fundamental in minimising any potential adverse impacts.

2 LOCAL CONTEXT

Nambucca Shire Council is a medium sized coastal/rural Shire located on the Mid North Coast of New South Wales. It comprises a mix of towns, villages, rural residential and rural areas.

The Shire is bounded generally to the north by Bellingen Shire and on the south and west by Kempsey Shire. It is roughly triangular in shape, being 1,433km^2 in area with a coastline of approximately 20km. The Shire geographically represents the catchment units for the Nambucca River and its tributaries.

The Shire can be divided topographically into two (2) broad areas. The western part comprises the rugged topography of the eastern edges of the New England Plateau, dominated by steep hill slopes and valleys with a significant area having slopes in excess of 33%. The eastern part of the Shire is characterized by the gentle slopes of the Nambucca River and Taylors Arm flood plains and adjacent undulating lands.

From the elevation of 0.0 metres at the mouth of the Nambucca River to approximately 900 metres in the western part of the Shire.

Much of the Shire comprises steep land (60%), with the remaining areas undulating (20%) or flat (20%). The most productive rural land is on the alluvial flats of the Nambucca River and its tributaries with some grazing on undulating slopes. Agricultural production comprises 19% of the total Nambucca area. Tourism and aquaculture make up a significant portion of the economy of the area. The principle type of aquaculture within the shire is oyster farming with leases along the Nambucca River.

As at 19 November 2008 there were 2897 On-Site Sewage Management Systems registered with the Nambucca Shire Council.

3 SCOPE

The Local Government (General) Regulation, 2005, the State Government document entitled *Environment & Health Protection Guidelines – On-site Sewage Management for Single Households* (which is currently under review) and the *Australian/New Zealand Standard 1547 - On-Site Domestic Wastewater Management (2012)* provide a framework for implementation of ecologically and socially sustainable On-Site Sewage Management practices. It is intended that this should be achieved, as far as possible, by a process of community and user education and by implementation of appropriate operating requirements in a manner that is sensitive to the local circumstances. Strategic management of existing septic systems and attention to address sewage management issues in new release areas is an important task for Council. Sewage management strategies need to be linked with related strategies for urban sewer services, and a greater emphasis placed on storm water and pollution control.

Regulations were gazetted on 6 March 1998 requiring owners of relevant premises to apply to Council for approval to operate and amend a system of sewage management. The Council is required to grant an operating approval (eg, a sewer management license). The granting of any such approval allows the Council to monitor performance on a regular basis and to levy an inspection fee (frequency will depend on area sensitivity) to cover reasonable costs.

4 AIMS

This management plan is intended to:

- Provide a framework to manage and regulate the impact of On-Site Sewage Management Systems in the Nambucca Shire Local Government area and to ensure community accountability.
- Assist Nambucca Shire Council in prioritising resources for efficient regulation and monitoring of On-Site Sewage Management Systems within the shire area.
- Co-ordinate environmental assessment, data collection and monitoring which is related to On-Site Sewage Management.
- Allow for site assessment on risk management basis and consideration of alternate solutions on environmentally sensitive sites.
- Provide opportunity for education of system users through ongoing auditing programs.

5 OBJECTIVES

This plan has been designed to achieve the following objectives:

- The protection of surface water and ground water.
- The protection of land and vegetation.
- Minimise the health risk associated with On-Site Sewage Management facilities.
- Encourage the re-use of resources eg the reuse of grey water after treatment through a council approved system.
- Promote ecologically sustainable development.
- Healthy river system.

6 GOALS

- To continue building and maintaining a database of all On-Site Sewage Management Systems.

- To map and maintain details of soil and site conditions and suitability for On-Site Sewage Management Systems. The mapping overlay being placed on Council's GIS and use of this information in conjunction with site specific soil reports should provide beneficial data for all new systems being installed.

- To ensure that all land application areas comply with environmental and health protection standards and Council operating requirements.

- To adopt a partnership approach with householders and service agents to support continual improvement of On-Site Sewage Management systems.

- To determine the structures and facilities needed to support On-Site Sewage Management Systems.

- To ensure that all On-Site Sewage Management Systems are inspected by qualified people at regular intervals and are maintained as required.

- In co-operation with householders, to develop a site specific Sewage Management Plan for each household using an On-Site Sewage Management System.

- To review Council's development standards and approval criteria for subdivision, development and building works to ensure that appropriate provision is made for sustainable On-Site Sewage Management when residential development occurs in non-sewered areas.

- To consult all wastewater treatment system agents to ensure that maintenance reports certify that the system's operation and land application of effluent is being done in compliance with the site requirements and constraints.

- To promote the use of suitably qualified service contractors and consultants that are acceptable to council. Such contractors/consultants may be recognised on a regional basis.

- To ensure appropriate land investigation and design of on-site sewage treatment and disposal systems.

7 REVIEW PROCESS

A review process must be undertaken on a regular basis for the following reasons:

- To ensure that the resources, structures and facilities are in place to support On-Site Sewage Management Systems.
- To ensure that references to guidelines, standards and legislative requirements are up to date.
- Compare and review the management plan against the previous years of implementation to asses' community concerns and any improvement that can be made to the plan.
- Refine and enhance Council's regulatory role in the management of On-Site Sewage Management Systems.
- Provide improved assessment standards and techniques.

This current review has the benefit of eight (8) years, of implementation and the following issues are being addressed as part of the review process:

- Upgrading of existing systems that are not performing satisfactorily.
- The phasing out of "long drop" toilets (pit toilets).
- Upgrade of grey water systems on larger rural properties.
- Upgrade access to tanks to ensure good maintenance and operation of the entire on-site system.
- Undertake ongoing education of operators and owners of on-site sewage management systems.
- Identify properties that have unregistered systems.
- Follow up on systems installed with unauthorised land uses.
- Encourage replacement of existing surface disposal systems from AWTS with subsurface irrigation or dripper systems with suitable covering.

8 ADMINISTRATION

8.1 APPROVAL

Under Section 68 of the Local Government Act 1993, Council approval is required for the installation, construction or alteration of a human waste treatment device or storage facility and drains connected to it.

Council approval is also required for the ongoing operation of an On-Site Sewage Management System. Failure to obtain an approval or to comply with the conditions of an approval are offences liable to a maximum penalty of twenty penalty units (currently $2200).

An Approval to Operate must be held by the property owner for any on-site sewage management system. Where a change in ownership occurs, the new owner is required to obtain an Approval to Operate from Council within three months of the change.

Clause 26 of the Local Government (General) Regulation 2005 sets out the details that are to accompany an application for the installation of a sewerage management facility with Clause 29 specifying the matters Council must take into consideration when assessing an application to install or alter an on-site sewage management system.

Council has responsibility under the provisions of the Local Government Act to maintain a register of On-Site Sewage Management Systems within their local government area.

Local Government therefore has responsibility to ensure that each approved system is maintained and serviced correctly. Furthermore, Local Government has a legislative responsibility to ensure that approved systems are installed and operated according to approved specifications and any special conditions.

NOTE: A helpful fact sheet and checklist containing specific details that must accompany an application is available from the council either on-line or from the Council's Administrative Centre

8.2 NON COMPLIANCE

The failure to operate or maintain a system in accordance with a Council approval or the requirements of NSW Health may lead to operating licenses being suspended/withdrawn, Orders issued or penalty notices being served.

8.3 LEGISLATION SCHEDULE

The following Acts and Regulations contain provisions that are applicable to on-site sewage management systems:

- Local Government Act 1993
- Local Government (General) Regulation 2005
- Protection of the Environment Operations Act 1997
- SEPP 62 – Sustainable Aquaculture

The commencement date of the On-Site Sewage Management Legislation was the 6 March 1998 (date of the gazettal). The legislation provides that:

- Land owners with On-Site Sewage Management facilities installed prior to the 6 April 1998 must apply to the Council to register their system and for approval to operate a System of Sewage Management.

- New performance standards for approvals to install, construct or alter an On-Site Sewage Management facility apply from the 6 March 1998.

- Land owners who install new On-Site systems after the 6 April 1998, must obtain Council approval to operate a system of sewage management prior to the intended date of occupation of the premises.

- Council's were required to adopt an approved fee for applications for approval to operate any new system installed from 6 April 1998 by resolution and public notice under Section 612 of the Local Government Act 1993. This fee is included in Council's Annual Management Plan.

8.4 AUSTRALIAN STANDARDS AND GUIDELINES

The relevant Standards and Guidelines are as follows:

- AS/NZS 1546.1:1998 - On-site Domestic Wastewater Treatment Units – Septic Tanks

- AS/NZS 1546.2:2001 – Waterless Composting Toilets

- AS/NZS 1546.3:2001 - Aerated Wastewater Treatment Systems

- AS/NZS 1547:2012 – On-site Domestic Wastewater Management

- AS/NZS 3500:2003 – Plumbing and Drainage

- NSW Department of Health - Certificates of Accreditation for Septic Tanks and Collection Wells

- NSW Department of Health – Greywater Reuse in Sewered Single Domestic Premises, 2008

- Environmental Health Protection Guidelines – On-site Sewage Management for Single Households, 1998

- Nambucca Shire Council On-site Sewage Management Plan, 2013

8.5 PERFORMANCE STANDARDS

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

In 1998 the Local Government Act 1993 was amended to include new regulations for On-site Sewage Management (OSSM) Systems.

The current regulations specify that On-Site Sewage Management Systems should be designed, installed and operated to ensure the following environmental and health performance objectives will continue to be met over the long term:

- Prevention of health risk.
- Protection of land.
- Protection of surface waters.
- Protection of ground waters.
- Conservation and re-use of resources.
- Protection of community amenity.

Clause 44 of the Local Government (General) Regulation 2005, 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 degradation of soil and vegetation,
- the discouragement of insects and vermin,
- ensuring that persons do not come into contact with untreated sewage or effluent (whether treated or not) in their ordinary activities on the premises concerned,
- the minimisation of any adverse impacts on the amenity of the premises and surrounding lands,
- If appropriate, provision for the re-use of resources (including nutrients, organic matter and water).

9 SEWAGE TREATMENT AND DISPOSAL

9.1 TREATMENT

Wastewater requires varying levels of treatment, depending on the method of disposal and the sensitivity of the site. Treatment is generally classified as primary, secondary or tertiary.

Primary treatment is the separation of suspended material from wastewater by settlement and/or flotation in septic tanks, primary settling chambers, etc prior to discharge to either a secondary treatment process or to a land application system.

Secondary treatment is generally an aerobic biological process involving the settling or filtering of effluent from a primary treatment system and provides an improved “quality” effluent.

Tertiary treatment is the disinfection of effluent to destroy or remove pathogenic micro-organisms.

The following table indicates the level of wastewater treatment required for the relevant land application system:

Table 9.1: Treatment Levels for Land Application Systems

TREATMENT	DEVICE TYPE	TYPICAL LAND APPLICATION OR REUSE SYSTEM
Primary	• Septic Tank • Greywater Tank • Waterless Composting Toilet • Wet Composting Toilet • Combustion Toilet	• Soil Absorption system • Burial (compost) • Soil Mound • Evapotranspiration system
Secondary (without disinfection)	• AWTS • Greywater Treatment • Primary Device and Sand Filter • Primary Device and Reed Bed • Biological Filter System • Membrane Reactor	• Subsurface irrigation • Soil Mound • Evapotranspiration
Tertiary (with disinfection)	• AWTS • Greywater Treatment • Primary Device and Sand Filter • Biological Filter System • Membrane Reactor	• Subsurface irrigation • Soil Mound • Evapotranspiration
Greywater Tertiary	• Greywater Treatment Device	• Subsurface irrigation • Toilet Flushing • Washing Machine Use

Source: Environment and Health Protection Guidelines (Modified)

9.2 TYPES OF TREATMENT SYSTEMS

1 Aerated Wastewater Treatment Systems (AWTS)

Aerated wastewater treatment systems provide tertiary treatment of effluent and are accredited by NSW Department of Health. They are essentially a compact treatment plant that processes all domestic wastewater from premises. They contain a primary settling chamber, an aeration chamber, a clarification chamber for the further settling of suspended solids and a chlorination chamber for disinfection. It is a requirement of NSW Health that the systems are inspected and serviced on a quarterly basis.

2 Biological Filter

A biological filter system generally treats all wastes by filtration through various layers of media. The media is inoculated with worms, beetles, mites and other soil fauna that assist with the degradation of the waste material. For tertiary treatment the effluent is disinfected (generally by UV light) prior to discharge to the disposal field.

3 Composting Toilets (Wet & Dry)

Composting toilets use a process of biological degradation by micro-organisms to convert waste material into humus. The compost from compost/humus toilets must be removed on a regular basis and can be disposed of on-site by burial. The design and configuration of the systems vary significantly. (composting toilets have a restricted use in residential zone's)

4 Grey & Black Water Split Systems

These systems provide primary treatment and comprise of two tanks - one receiving wastewater from the toilet, and the other receiving wastewater from the combined laundry, shower & possibly kitchen (depending on proposed method of disposal/reuse). Some systems included a 'grease-trap' in the plumbing between the kitchen and the septic tank, to limit the amount of fats and oils going to the tank.

5 Greywater Diversion/Treatment System

Greywater is wastewater from all fixtures excluding the kitchen, toilet or urinal. Greywater "diversion devices" may be used for subsurface disposal within the property in conjunction with an approved on-site sewage management system. The diversion of greywater should not occur during periods of wet weather or when illness within the premises exists. Where reuse within the home for washing machine or the flushing of toilets is proposed a greywater "treatment system" accredited by NSW Health is required to be installed. NSW Health has various publications available that outline the requirements for diversion and/or reuse.

6 Membrane Filtration

With membrane filtration, the membrane acts as a semi-permeable filter that allows wastewater to pass through whilst trapping bacteria, suspended particles and dissolved solids. There are four main types of membrane filtration-reverse osmosis, nanofiltration, ultrafiltration and micro filtration. The type of filtration system used will depend on a number of factors including surface area, contaminants, pH and end use.

7 Pump out

Due to unsuitable site conditions for wastewater disposal, Council only allows, under extreme circumstances, the installation of pump out systems. This involves the use of a collection well

which stores treated wastewater from the septic tank. The stored wastewater is then pumped out into approved tankers which transport the wastewater to Council sewage treatment works where treatment and disposal occurs

8 Reedbed Systems

Reedbed systems consist of a primary settling unit, secondary treatment module (sub-surface flow wetlands) and final treatment via subsurface irrigation. They treat wastewater through settling of solids within the primary chamber. Biological and physical filtering/treatment of the wastewater is then undertaken in the secondary module via gravel media and selected plants which reduces the levels of pathogens, Biological Oxygen Demand (BOD) and suspended solids. As the wastewater flows through the media, the root system reduces the nutrient load and uptakes moisture via transpiration. Final distribution is to an irrigation area.

9 Sand Filters

With sand/membrane filtration, effluent that has undergone a primary treatment is collected in a sump or holding well and is pumped intermittently for distribution through a bed of coarse sand. A diversion valve is placed in the return line to the sump, and the effluent is directed to a land application system.

10 Secondary/Tertiary Treatment Systems

After the wastewater has undergone primary treatment the effluent may be further refined to secondary or tertiary quality. By this further process pollutant levels within the wastewater can generally be reduced to a level that is readily manageable. However, effluent from some treatment systems may still be biologically active and contain high levels of pollutants. There have been many developments in the area of ancillary on-site sewage management systems. These systems can be added to the main treatment train with the objective of improving the effluent quality, and so enabling the treated wastewater to be managed in a larger number of ways. These ancillary systems are not considered to be treatment systems requiring certification by NSW Health. At this stage they are considered optional, but they are worthy of consideration.

11 Septic Tank

Historically, septic tanks have been the most common method of on-site wastewater treatment in un-sewered areas of the Shire. A septic tank provides primary treatment of effluent and usually comprises two chambers. These chambers can be separate or within the one tank. The first or primary chamber allows some of the solids to settle to the bottom of the tank and oils and fats to rise to the surface to form a scum layer. The solids that settle to the bottom of the primary chamber undergo anaerobic decomposition forming sludge. The second chamber permits further settling of solids and creation of a scum layer before the effluent is discharged to a land application area (usually absorption trenches or Evapotranspiration areas).

Alternative systems to those listed above will be considered by Council where such system is accredited by NSW Dept Health.

9.3 DISPOSAL

Effluent that has been treated may be discharged to a land application area. Application areas vary in their design and method of disposal to suit a range of factors including, type of treatment system, climatic conditions, site constraints, etc.

Note*: *Conventional treatment methods of wastewater cannot remove all bacteria or viral organisms. Exposure or contact may result in adverse health effects and as such the surface disposal of effluent via spray irrigation or other method is not permitted within Nambucca Shire.

Common disposal systems within the Nambucca Shire are:

- Absorption Trenches and Beds

Absorption trenches and beds are designed to dispose of treated effluent by percolation into local soils. As absorption is the primary method of disposal this style is ideally suited to soils with a mid range percolation rate. Soils that are too dense will not permit the migration of the effluent leading to flooding of the trench. Conversely soils that drain too freely (sand, gravel, etc.) may not provide adequate filtration of the effluent and risk contamination of groundwater supplies. Absorption trenches and beds are historically the most widely used on-site disposal systems throughout the Shire. However, under current design guidelines their future use will become less common due to unsuitable soil profiles and a significant increase in the required sizing of the trench/bed to satisfactorily accommodate the wastewater loading. The increase in the required area is likely to result in other forms of treatment/disposal becoming more financially viable.

- Evapotranspiration Area

Evaporation/transpiration areas place effluent into the root zone of plants allowing transpiration and evaporation while sub-soil soakage is maintained. They generally have a large surface to depth ratio in order to maximise effluent infiltration of the vegetation root zone. Climatic conditions are a critical consideration in the design of these systems as wet weather may have a significant adverse affect on the efficiency of the evapotranspiration area. The sizing of the area needs to address the infiltration of rain water and due to high seasonal rainfall of the Nambucca Shire many consultants do not promote the use of these systems.

- Mound Disposal System (Wisconsin Mound)

Although not common within Nambucca Shire a mound system can be considered where alternative methods are not suitable. An elevated mound is typically a large mound of varying height made of sand or other course media. A network of small diameter pipes with small perforations distributes the effluent uniformly over the absorption area of the mound. The effluent infiltrates into and percolates through the media before being absorbed into the natural earth. The mound system is commonly used to receive wastewater from a septic tank or secondary treatment system with its primary function as the land application component where other types of land application are not suitable.

- Subsurface Irrigation

Subsurface irrigation is generally employed with a pressurised system utilised in conjunction with an AWTS or other secondary treatment system. The effluent is typically disposed of via emitters in direct soil contact at depths of 150mm-350mm depending on the system design or in shallow trenches over a large area which can incorporate gardens or the like. The pressurised system permits even distribution of the hydraulic and nutrient load over the disposal area. The area can be located at a higher elevation than the treatment chamber and therefore provides more opportunities to maximise reuse.

Where any disposal area may be subject to vehicular traffic or stock access, fencing or other suitable barriers are to be constructed to protect the disposal area.

9.4 DESIGN

Historically, the design and selection of on-site sewage management systems only received cursory consideration which was reflective of the technical standards and requirements of the time. With the release of Australian Standard 1547-1994 (subsequently superseded in 2012)

and the State Governments Environment and Health Protection Guidelines for On-Site Sewage Management (1998) the standards of design altered to reflect the need for specific site, soil and climatic assessment.

It is also relevant to mention that prior to the Approvals provisions of the Local Government Act, 1993 the NSW Health Department had responsibility for the approval of all sewage management installations in un-sewered areas.

The primary reference documents for the design and installation of on-site sewage management systems within Nambucca Shire are:

1 Local Government (General) Regulation, 2005
2 AS/NZS 1547-2012– On-site Domestic Wastewater Management,
3 Environment and Health Protection Guidelines – On-site Sewage Management for Single Households, and
4 Nambucca Shire Council On-site Sewage Management Plan.
5 National Construction Code Series – Plumbing Code of Australia.

Special note should be made that only under extreme circumstances will an on-site sewage management system be permitted within 100 metres of a permanent waterway or environmentally sensitive area. With such a proposal, the system must include a secondary or tertiary treatment component and be sited to maximise any available buffer.

To assist in the preliminary investigation of suitable on-site sewage management systems, Council has information available for perusal relating to soil profiles and characteristics within the Shire. *Soil Landscapes of the Macksville & Nambucca* (2000) prepared by the Department of Land and Water Conservation contains useful information to assist in the preliminary assessment. The document **is not** to be used as a substitute for site specific soil analysis as variations from the mapping may occur resulting in an inadequate system being proposed.

New Systems

The installation and operation of any new on-site sewage management system requires the prior approval of Council.

An Application to Install an On-site Sewage Management System shall include a written report detailing the type of system proposed and a specific site and soil assessment for the subject property.

Council will assess the application for compliance with the reference documents as listed above.

The application to install an on-site sewage management system shall include:

1 On-site Sewage Management Report
- The report is to be prepared by a suitably qualified and experienced person or organisation with recognised credentials in the design and/or testing of on-site domestic waste water systems,
- The report shall provide a detailed site and soil assessment which addresses climate, topography, geology and vegetation aspects, (see Annexure “A” for acceptable template),
- A recommendation for the most appropriate form of on-site sewage management system,
- A recommendation for the proposed configuration and location of the system along with supporting calculations.

2 Site Plan

- Drawn to a scale of 1:200 or larger,
- Showing the location of the on-site system and disposal area with distances from all buildings, property boundaries, and any drainage lines, culverts or watercourses within 100m.
- Showing a "reserve" disposal area equivalent in size for duplication of the disposal area (Note: the reserve area generally applies to septic tank/absorption trench systems and may be of a lesser size or removed completely where improved treatment/land application systems can justify the reduction/removal),
- Indicating the position of all wastewater drainage lines,
- Indicating the distance to any environmentally sensitive area eg rivers, creeks, farm dams, bores, dry gullies, etc.

3 Manufacturers Specifications and Accreditation Certificates

- Full specifications of the proposed on-site sewage management system,
- Certificate of Accreditation from the NSW Department of Health.

Existing Systems

Existing systems that are failing and require modifications are to be upgraded to comply with the requirements for new systems where possible. A system is considered to have "failed" when it does not satisfactorily address the performance standards identified within this plan.

Where compliance with the new requirements is not possible, Council will consider alternative proposals on a case by case basis. The protection of the environment and public health are dominant considerations in such a circumstance.

A preliminary assessment of the site constraints and soil condition are to be accompanied by the modified design along with supporting calculations. The preliminary assessment may be undertaken by persons with appropriate knowledge and experience (eg a design consultant or suitably trained licensed plumber).

New Subdivisions (Unsewered)

For new subdivision proposals, a land capability assessment is required to be undertaken to demonstrate that each proposed lot is capable of accepting the on-site disposal of wastewater. The assessment does not need to specify the design details of each particular system as the final design will be influenced by criteria set down by the future home builder and such information is generally not available at subdivision stage.

The information submitted (as a minimum) should include:

1 Land Capability Assessment

- The report is to be prepared by a suitably qualified and experienced person or organisation with recognised credentials in the design and/or testing of on-site domestic waste water systems,
- The report shall provide a detailed site and soil assessment in the approved format which addresses climate, topography, geology and vegetation aspects of each lot,
- Recommendations for appropriate systems for different landforms across the subdivision.

2 Site Plan

- Drawn to a scale of 1:200 or other suitable size,
- Showing the location of the effluent disposal envelopes in relation to the building envelopes,

- Showing a “reserve” disposal area equivalent in size for duplication of the disposal area (Note: the reserve area generally applies to septic tank/absorption trench systems and may be of a lesser size or removed completely where improved treatment/land application systems can justify the reduction/removal),
- Indicating the distance to any environmentally sensitive area eg rivers, creeks, farm dams, bores, dry gullies, etc.

9.5 FLOOD PRONE LANDS

New Installations:

The design and installation of new on-site sewage management systems should ensure all 1% AEP (1:100 year flood level and 500mm freeboard) of the system are located above the 1:100 year flood level. Where this cannot be achieved the treatment system components are to be located above the 1:100 year flood level/or sealed to prevent access of flood waters with the disposal area to be assessed in accordance in the type of system proposed.

Electrical components, vents and inspection openings of wastewater treatment devices should be sited above the 1% AEP.

Amendments/modifications to existing systems:

Where existing systems are installed below the 1% AEP for a site, options to ensure the following security of the system are to be implemented:

- Tanks and collection wells are to be sealed to prevent flood water infiltrating the system,
- Overflow Relief Gullies if installed are to be terminated above the 1 in 100 year floor level, provided this level is not above the fixture flood level or floor waste level in the building connected to the system. See AS 3500 for details.
- Where flood free land is available on the site, consideration be given to pumping liquid effluent to a disposal area above the 1 in 100 years flood level.

For land where no established flood levels are held by Council, documented evidence is to be submitted demonstrating the site is unaffected by flooding (eg historical information, photographs, etc).

9.6 REPORTS & CONSULTANT REGISTER

- Only reports from persons or organisations with recognised experience or credentials in the design and/or testing of on-site domestic waste water systems will be accepted.
- Council will keep a register of acceptable persons or organisations.
- Prospective persons or organisations who wish to appear on Council’s register are to apply in writing with details of relevant experience and/or credentials.

10 MANAGEMENT RESPONSE

10.1 RESPONSE

Applications for installation of an on-site sewage management system were not required in rural areas prior to the building regulations being extended to these areas from the 1 March 1982. This has resulted in a variety of standards and type of systems for on-site sewage management being installed within the rural areas of the shire during these unregulated years.

It is therefore considered important that any management response to the issue of On-Site Sewage Management systems and the disposal of waste should seek to achieve a balance between:

a Improving Council's approach to achieving sustainable long term outcomes and;

b Encouraging facility owners to upgrade these older systems to ensure that their systems are operating and being maintained appropriately and also acknowledging the limitation that apply to these older systems.

The situation that exists in un-sewered areas is such that sustainable long term outcomes should be achievable in most cases using On-Site Sewage Management Systems. In order to achieve more sustainable and long term outcomes for on-site wastewater management it is necessary to identify the fundamental principles which apply to wastewater management. For the purposes of this plan the following principles have been adopted:

1 Conservation and Re-Use of Resources

The resources in domestic wastewater (including nutrients, organic matter and water) should be identified and utilised as much as possible within the bounds posed by the other performance objectives and regulatory requirements. Water conservation practices should be encouraged and subsequent wastewater production minimised.

2 Appropriate Treatment And Disposal

The level of wastewater treatment and the methods of disposal required depend not only on the nature and sensitivity of the receiving environment, but also on the potential uses of the treated wastewater and bio-solids.

3 Reliability

All on-site sewage management systems require, to varying degrees, maintenance and servicing to be undertaken. It is inappropriate to install a sewage management system and to expect it to perform adequately without maintenance and performance inspections being carried out. Education of the system user is considered fundamental to the satisfactory performance of an on-site sewage management system.

4 Long Term Impacts

The above principles have been used to identify a range of goals and actions which are considered integral to achieving more sustainable sewage management outcomes in un-sewered areas. These goals and actions have been developed into an action plan.

5 Public Health And Health Impacts On Occupants

Poor maintenance of components of an on-site system can severely impact on health of the surrounding public and that of the tenant or occupier of the premises connected to the system. Both blackwater (toilet waste) and greywater (all other sources) contain high bacterial loads and can be breeding grounds for insects and a vector for disease.

10.2 ACTION PLAN

The objectives and goals have been developed to reflect, in responding to the issue of sewage management in un-sewered areas, a multifaceted approach which requires:

- Education/procedural information – NOTE: procedures may be formulated from time to time to facilitate new information or legislation.
- Service provision.
- Efficient and effective administration.
- Facility provision.
- Appropriate regulation and enforcement.

It is suggested that if the on-site sewage management issue is viewed in this context then regulatory and enforcement mechanisms will be minimised and generally accepted.

The regulatory process has been developed to ensure compliance with both stages of the approval process being Installation and Operation of the system. Aspects of Council's Action Plan have been included in Council's Annual Management Plan for quarterly reporting.

10.3 FUNDING

Council is able to raise revenue for On-Site Sewage Management programs and services through:

- Ordinary rates for general administration and services.
- Special rates levied on particular parcels of land that have access to, benefit from or contribute to the need for particular programs and services.
- Charges for On-Site Sewage Management services.
- Approved fees for service (including regulatory services to individuals).
- Develop a charge under Section 94 and 94A of the Environmental Planning and Assessment Act.

In developing a revenue strategy it is considered important to develop an approach which is:

- Administratively efficient.
- Cost efficient.
- Fair, equitable and minimises financial impact.
- Guarantees implementation.

Having regard to the above it is proposed that actions which involve environmental assessment, monitoring and reporting and community education be funded through charges levied on premises using sewage management facilities.

Provision has been made within Council's Management Plan for the development and ongoing monitoring of the On-site Sewage Management Plan. The legislation requires individual site management plans to be developed.

Accordingly provision has been made within the management plan for annual fees and charges to be adopted for the following activities:

- Approvals to install/modify/upgrade and operate an On-Site Sewage Management System fee (one-off payment).
- Renewal fees for issuing an operating approval for existing systems.
- Pre purchase inspection of on-site sewage management system.
- Registration fee for existing systems installed prior to 1999.
- Issue a copy of an operating approval.
- Application to change ownership details on operating approval.

Note: Council is the only authority who can issue approvals to operate an on-site sewage management system under Section 68 (6) of the Local Government Act 1993.

11 RISK ASSESSMENT

11.1 SITE LIMITATIONS

Prior to the installation of any new on-site sewage management system, a site assessment report is to be undertaken to identify any site limitations. These site limitations can impinge upon the type of system installed and the location of the system. Where the assessment reveals major limitations associated with particular site features additional investigation or design adjustments will be required. This may involve a concession based on measures such as:

- Improved effluent quality through secondary/tertiary treatment.
- Increased margin of safety such as an increase in disposal area or an alternate method of disposal.
- The supplementary maintenance programs such as increased frequency of inspection.
- Landscaping and appropriate tree planting.
- Identification of a reserve area on site for replacement of on-site disposal area in case of a major failure.

The following table depicts both major and minor limiting site features sourced from Environment Health Protection Guidelines (modified).

Table 11.1: Site Limitations

SITE FEATURE	MINOR LIMITATION	MODERATE LIMITATION	MAJOR LIMITATION
Flood potential (new systems)	Total system above 1:100 year flood level	Treatment System above 1:100/or fully sealed tanks. Disposal area options and locations to be assessed on an individual site basis	Treatment system below 1:100 year flood level
Flood potential (existing systems)	Total system above 1:100 year flood level	Treatment System above 1:100/or fully sealed tanks. Disposal area above 1:20 flood	Treatment system below 1:100 year flood
Signs of erosion	None	Some/Slight	Yes
Slope	0 – 10%	10% - 20%	> 20%
Exposure water run-off	Low	Moderate	High
Site Drainage (Surface dampness)	None	Slight	Yes
Exposure to sun	High(not in shadow)	Moderate (some shadow)	Low (no direct sunlight)
Exposure to wind	Moderate	Moderate	Low
Compliance with nominated buffer distances	Yes		No
Filled earth	No fill	Fill present	
Rocks and rock outcrops (% of land surface containing rocks >200mm diameter)	<10%	10-20%	>20%

Source: Environment Health Protection Guidelines (modified)

Each of these site features will be considered on applications to install any on-site disposal system.

Further information should be sourced from AS1547.2012 – Table K1.

11.2 BUFFER DISTANCES

It is necessary, when installing on-site disposal systems, to ensure that sufficient viable land is left for such practices as clothes drying and recreation within the yard as well as a reserve area for future disposal of effluent on each premise. Associated with this are buffer zones around the disposal field to minimise impacts on the surrounding environment and to reduce the potential for human contact with wastewater. The recommended buffer zones under the guidelines for all land application areas are:

- 100 metres to a permanent surface water (eg river, streams, lakes etc).
- 250 metres to domestic ground water wells, bores and spear pumps.
- 40 metres to other waters (eg dams, intermittent waterways and drainage channels, etc).

In addition to the above the following buffer distances apply as appropriate:

Subsurface or Trickle Irrigation:

- Six (6) metres down gradient to swimming pools, property boundaries, driveways and building.
- Three (3) metres to paths and walkways and up gradient to driveways and property boundaries.
- Three (3) metres from edge of disposal area to boundaries at same contour level as the disposal area.

Note: Surface disposal by spray irrigation of effluent within Nambucca Shire is not permitted

Absorption System:

- Twelve (12) metres if area up gradient of property boundary.
- Six (6) metres if area down gradient of property boundary.
- Six (6) metres if area up gradient of swimming pools, driveways and buildings.
- Three (3) metres if area down gradient of swimming pools, driveways and buildings.
- Three (3) metres from ends of trenches to boundaries at same contour level as trenches.

Where compliance with the above buffers is not possible, Council will consider alternative proposals on a case by case basis. The protection of the environment and public health are dominant considerations in such a circumstance. Special note should be made that only under extreme circumstances will an on-site sewage management system be permitted within 100 metres of a permanent waterway or environmentally sensitive area. With such a proposal, the system must include a secondary or tertiary treatment component and be sited to maximise any available buffer.

Note: All Reserve areas for effluent disposal are to be indicated on the plan and this area is to be preserved for future disposal of effluent.

12 RISK EVALUATION

12.1 EVALUATION

Risk assessment and evaluation of on-site disposal systems will be undertaken by Council on a site specific basis. The risk assessment for a system failure will be determined according to the proximity of the environmentally sensitive areas and potential for negative impact upon human health. History of failure will also be a contributing factor in determining risk assessment. The risk evaluation will determine the frequency of inspections undertaken by Council and will vary from one (1) to seven (7) years.

Table 12.1: Risk Evaluation Classifications

RISK EVALUATION	INSPECTION FREQUENCY	RISK ASSESSMENT SCORE
Class 1 (High)	Every year	Considered a high risk Has a score higher than 19
Class 2 (Medium)	Every three (3) years	Considered a medium risk Has a score of 15-19
Class 3 (Low)	Every seven (7) years	Considered a low risk Has a score of less than 15

The Risk Assessment score is determined by a matrix which provides a weighting to the issues considered in undertaking the evaluation. The matrix is represented in Table 12.2.

If a system fails the risk assessment inspection, a direction will be given to improve maintenance, operation or upgrade the system as required. If a system fails two (2) consecutive inspections the risk category will increase one class and further action may be necessary to provide an alternate disposal system on the property. If a particular system is increased in risk classification, an increase in the frequency of inspections will result to ensure that the system poses no adverse impacts to the environment.

12.2 INSPECTIONS

Regular inspections will be undertaken by Council on all on-site sewage management systems. The frequency of the inspection will be determined according to the systems Risk Evaluation and Assessment. The risk evaluation and subsequent inspection frequency is determined from the following matrix. Special Notes at the bottom of the table are to be read in conjunction with the matrix assessment:

Prior to Systematic Inspections Council will notify owners prior to Council Inspectors entering the property. For ease of compliance please unsure all inspection openings are free and easy to access, trench ends are identified by a white peg 50mm x 50mm x 200mm and Distribution Pit lids are not buried.

Table 12.2: Risk Assessment Matrix

FEATURES	RESPONSE			POINTS
Type of Wastewater Treatment	Primary 10 points	Secondary 5 points	Tertiary 0 points	
Environmentally Sensitive Area (Flood prone, high water table, catchment area, etc)	Yes 10 points	Borderline 5 points	No 0 points	
Buffer Distance to Permanent Water (River, creek, etc)	<100m 10 points	101-250 m 5 points	>250m 0 points	
Buffer Distance to Intermittent Water (Intermittent creeks, gullies, farm dams)	<20m 10 points	21-40 m 5 points	>41m 0 points	
Buffer Distance to Any Ground Water Bore	<125m 10 points	125-250 m 5 points	>250m 0 points	
Buffer Setbacks Between System and Property Boundaries/Buildings Comply	Yes 0 points		No 5 points	
Signs of Surface Dampness at Disposal Area	Yes 5 points		No 0 points	
Evidence of Erosion at Disposal Area	Yes 2 points		No 0 points	
Slope	1-10% 0 points	11-20% 1 point	>20% 2 points	
Exposure to Sun/Wind	Good 0 points	Average 1 point	Low 2 points	
Protection From Surface Water Entry to Disposal Area (Swales, Berms)	Yes 0 points		No 2 points	
Fill Present (>300mm)	Yes 2 points		No 0 points	
			TOTAL:	

Class 1 Risk Category (High): **>19 points**
Class 2 Risk Category (Medium): **15-19 points**
Class 3 Risk Category (Low): **<15 points**

Special Notes:

1 *Any system not complying with the minimum buffer distances for permanent water or is located in an environmentally sensitive area (flood prone, high water table, etc) is subject to a Class 1 Risk Category.*

2 *An Aerated Wastewater Treatment System may be reduced one (1) risk classification where a signed service agreement is in place between the system owner and a service contractor acceptable to Council. A copy of the quarterly inspection report undertaken by the contractor is to be submitted to Council. In this circumstance the Council inspection will be undertaken on the expiry or termination of each service agreement.*

3 *All on-site sewage management systems within 100 metres of any permanent waterway must include a secondary or tertiary treatment component.*

13 PLAN REVIEW AND EVALUATION

Council maintains a commitment to the continuing improvement in the regulation and operation of On-Site Sewage Management Systems. The sewage management plan will be a “living” document that is undergoing a process of continual improvement. Council’s resources have been stretched in areas where there are large numbers of on-site sewage treatment facilities and a permanent Plumbing & Drainage Inspector has been employed to undertake the renewal assessment inspections as there is a need to provide and improve treatment and monitoring of the program.

The implementation of this plan will be reviewed and evaluated every four (4) years to ensure:

- That the outcomes being achieved reflect the goals and objectives of the plan.
- That the goals and objectives are still relevant and continue to meet community, council’s and environmental & public health expectations.
- Develop best practice notes and fact sheets and make these available from the council website for property owners to assist with maintaining systems and improving there performance.
- That the plan accommodates changes to legislation and new technology.

14 DEFINITIONS

Absorption: The uptake of effluent into the soil by capillary action.

Aerated Wastewater Treatment System (AWTS): A system which uses the process of aeration followed by clarification and disinfection to treat wastewater.

Biological Filter: A biological filter system generally treats all wastes by filtration through various layers of media inoculated with worms, beetles, mites and other soil fauna that assist with the degradation of the waste material.

Blackwater: Wastewater from a toilet or urinal

Composting Toilet: Composting toilets collect and treat toilet waste only. Water from the shower, sink and washing machine, etc. needs to be treated separately. The compost produced has special disposal requirements but is usually buried.

Disposal Area: An area of land specifically designated for the application of treated effluent.

Effluent: Wastewater discharging from a sewage management system.

Evapotranspiration: Process by which soil moisture is subject to processes of evaporation from the sun and wind and is transpired to the atmosphere by vegetation.

Greywater (or sullage): Domestic effluent, excluding toilet waste and depending upon method of disposal my exclude kitchen waste.

Guidelines: Environment and Health Protection Guidelines – On-site sewage Management for Single Households.

Membrane Filtration: Membrane reactors provide filtration by allowing wastewater to pass through the membrane while trapping bacteria, suspended particles and dissolved solids.

On-site Sewage Management System (OSSM): Any facility that stores, treats and/or disposes of sewage and wastewater and requires an approval to operate issued under the Local government Act 1993.

Pump-out System: A septic system where all accumulated wastewater is removed from site by a purpose built tanker. Such systems generally incorporate both a primary septic tank and a collection well.

Reedbed System: A system consisting of a primary settlement unit (a traditional septic tank), secondary treatment modules (sub-surface flow wetlands) and final treatment (subsurface irrigation). Reedbeds treat wastewater through settling, biological/physical filtering and treatment through gravel media planted with selected plants. Final disposal is generally by subsurface irrigation.

Run-off: The part of precipitated effluent that becomes surface flow because it is not immediately absorbed into the soil.

Septic Tank: A sealed vessel that treats greywater, blackwater or both bur provides only limited treatment through the settling of solids and the flotation of fats and greases.

Wastewater: The combined blackwater and greywater from a domestic premise.

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15 APPENDIX A FORMS AND TEMPLATES

Forms and Templates attached herewith in accordance with AS1547.2012 are designed to assist with assessment and decision making by Council and to provide a uniform process amongst Designers and Wastewater Specialists.

ANNEXURE A – SITE ASSESSMENT FORM

1.0 SITE EVALUATOR(S)

1.1 Name (principal evaluator): ..... Designation: .....
Company/agency: .....
Address:.....
Phone:.....Fax: .....
Email: .....

1.2 Additional staff involved
Name(s): .....
Designation(s): .....
Involvement: .....
Signature of principal evaluator: .....
Date/s: .....

2.0 ON-SITE EVALUATION
2.1 Work undertaken
Details: .....
Date: .....
Weather (on day & preceding week): .....
Photocopy of desktop study attached: YES/NO

2.2 Topography
Slope: ..... Ground cover: .....
Geology confirm: YES/NO Soil landscape confirmed: YES/NO
Drainage patterns: .....
Site plan details attached: YES/NO
Clearance: .....
Boundaries: ..... Allowable minimum: ..... Available: .....
Site plan details attached: YES/NO
Waterways: ..... Stands of trees/shrubs: .....
Well, bores: .....
Embankment: .....
Buildings: .....
Other (specify): .....
Site history (land use): .....

2.3 Site exposure
Site aspect: .....
Predominant wind direction: .....
Presence of shelter belts: .....
Presence of topographical features or structures: .....

2.4 Environmental concerns (such as native plants intolerant of phosphorus load, high water table, swamp, waterway, and so on):

2.5 Site Stability
Is expert assessment necessary? YES/NO (delete one)
If YES, attach stability report and give details here of:
Author: …….. Designation: ……
Company/agency: ..... Date of report:.....

2.6 Drainage controls
Depth of seasonal water table: WINTER SUMMER EPISODIC
Need for cut-off drains/diversion banks? .....
Need for surface water collector/cut-off drains? .....

2.7 Availability of reserve/setback areas (show details on sketch plan)
Reserve area available for extensions: .....
% of design area: .....
Setback distance (between site development and on-site disposal design and reserve areas): .....

2.8 Photographs attached YES/NO (specify details):

3.0 SOIL INVESTIGATION

3.1 Soil profile determination
Method: Test pit/borehole
Other (specify) .....

3.2 Reporting (attach detailed soil/report as appropriate, see soil profile information and data sheet, Figure B1)

3.3 Estimated soil category: (see E4.1 and Table E1)
Summary:
Site test 1 2 3 4 5 6 7
Soil category
Remarks:

3.4 Recommended DLR, see 5.2.3.2
Reasons for DLR recommendations:

4.0 GENERAL COMMENTS

4.1 Groundwater quality issues
Results of desktop study have been confirmed/amended on attached photocopy.
Remaining matters of concern are listed below.

4.2 Type of land-application system considered best suited to site and why

4.3 Overall evaluation of minimum land-application area for the site (comprising absorption area, space between and surrounding the absorption area elements, set-backs, and the reserve area)

4.4 Results of consultation with other interested parties (neighbours**,** environmental agencies, local environmental groups, and so on)

4.5 Other comments, for example special precautions which may be needed