



Clarence Valley Council

On-site Wastewater Management Strategy 2019



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Submissions and Comments

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Executive Summary

The Clarence Valley Council Local Government Area (LGA) covers an area of approximately 10 500 square kilometres and contains approximately 9500 on-site wastewater management systems. This area is one of the largest Regional LGA's in NSW and includes unsewered villages and rural settlements from the hinterland to the coast. The main factors affecting on-site wastewater management such as soil type and rainfall vary dramatically over the vast Council area.

This On-site Wastewater Management Strategy (Strategy) aims to provide a document which will provide consistency for managing existing and new on-site wastewater systems in the Clarence Valley, now and into the future.

To support this Strategy there are five technical support documents which provide additional information not included in this document. These technical support documents are referred to in the Strategy and a list of them may be found in Section 10 of this strategy.

This Strategy document will evolve and be reviewed regularly as part of Council's approach to Integrated Water Cycle Management.

Summary of Major Outcomes Contained in the On-site Wastewater Strategy

Inspection Program

- Council will continue the inspection program for all on-site wastewater systems within the Clarence Valley Council LGA in accordance with all regulations, standards and guidelines. All of the OSM systems within the CVC LGA have now been inspected with the exception of some unregistered and remote areas that continue to be targeted as part of the inspection program.
- To provide consistency with neighbouring Council's in our region our inspection program will change from the previous risk based system to a targeted system where high risk On-site Sewerage Management Systems (OSM Systems) will still be inspected annually and all other OSM Systems will be targeted for inspection.
 - Previous Inspection Program: All properties with OSM Systems were inspected on a 1, 3, 5 and 10 year risk based inspection cycle and "Approvals to Operate" were issued based on a pass/fail report.
 - Revised Inspection Program: All high risk areas will continue to be inspected annually and all other properties will be targeted for inspection based on; development pressure, environment and public health compliance reporting, historical data, change of owner and Pre-purchase inspections. Approvals to Operate will be issued to every property with an OSM system which will remain valid until change of owner of that property.
- Cradle to grave responsibility of OSM systems will rest with Council's Environmental Unit. That unit will issue approvals for the installation of all new systems, approvals to operate new and existing systems, carry out the risk based inspection program, undertake any

necessary enforcement actions and oversee the decommissioning of redundant systems. This will enable a consistent approach to be applied with only specialised technical/environmental staff being involved in the overall management of OSM systems.

- The OSM inspection program will continue to be self funding; all properties that have an OSM system will be charged an annual fee. The fee for the 2019/20 period is \$38 and is included on the rates notice of all properties with OSM systems. Fees will be set annually as outlined in Council's Management Plan. Further details of the revenue policy can be found in Section 5 of this Strategy.

Effluent Quality/ Effluent Disposal Areas

- Effluent Treatment - Effluent quality for new or upgraded on-site wastewater systems on properties under 1 hectare [10,000m²] must meet a minimum standard of secondary treatment (BOD < 20mg/L & SS < 30 mg/L) before land application on-site. Primary treated effluent is permitted only in rural areas with a property size of greater than 1 ha. Refer to Section 4.4 for details.
- On lots smaller than 1 hectare land application areas shall be either evapotranspiration absorption trenches (ETA trenches for class 3,4,5 and 6 soils as defined in *AS/NZS1547(2012)*), subsurface drip irrigation, Dripper under mulch, Surface spray irrigation or mound systems. On larger lots greater than 1 hectare with suitable soil, standard trenching may be permitted. Polishing ponds may be permitted in heavy clay soils on lots larger than 40 hectares. Refer to Section 4.4 for details.
- The wastewater application process has been simplified by including a checklist in the application (Technical Support Document No 1). If applicants can meet all requirements of the checklist they may select one of a number of wastewater systems on the application without the need to engage a wastewater consultant.

New Development

- This Strategy considers that a minimum lot size for subdivisions in soil classes 4, 5 or 6 can be no less than 4,000m². This lot size assumes no other site constraints. Refer to Section 4.9.1 for further details of this requirement.
- For all new subdivision Council will require a reserve wastewater application area to be provided as required in the Environmental Health Protection Guidelines. Refer to Technical Support Document No 3.
- Regulations for development and/or redevelopment of existing lots include;
 1. For development or redevelopment on existing lots where there is an increase in density, Council will require a high quality of effluent (secondary treatment) and a Primary and Reserve LAA. Refer to Section 4.8 for further details.
 2. Where it is proposed to; replace an existing dwelling with a new dwelling, add habitable rooms to an existing dwelling or construct any structure that affect the existing OSM

system Council will require upgrading of the on-site wastewater system in accordance with the requirements for a new dwelling on that lot. Existing water fixtures must also be upgraded [eg dual flush toilets, low flow shower heads].

3. For subdivisions which include existing dwellings it is a requirement to upgrade the wastewater systems of the existing dwelling/s in accordance with the requirements for a new dwelling on that lot.

NB: Changes to these development regulations may be allowed if justified by a wastewater consultant.

Other Key Requirements in the Strategy and Technical Support Documents

- To ensure consistency when consultants' reports are provided, Council has specified requirements for consultants to follow in Technical Support Document No 3.
- Due to the complex nature of subsurface drip irrigation systems Council may require SDI designs to be verified by an accredited irrigation designer.
- Council has available example standard designs of land application areas that include minimum design requirements for; subsurface drip irrigation, evapo-transpiration absorption beds (ETA trenches), arch trenching [where permitted], Mound systems and Surface Spray Irrigation. Refer to Technical Support Document No 4 for example standard designs.
- Council has provided an OSM Wastewater design Model, User Manual and all relevant information for the design of on-site wastewater management systems.

PART 1 – Introduction

1.1 Introduction

The aim of this Strategy is to develop in consultation with the community and industry, a management system that provides both a short and long term approach to on-site wastewater management in the Clarence Valley.

The Strategy will provide a framework for Clarence Valley Council to regulate and manage the selection, design, installation, operation, maintenance and approval of on-site wastewater management systems. This will ensure Council meets both its statutory obligations and duty of care in its role as regulator to provide sustainable development while protecting the environment, public health and community amenity.

1.2 Aims

This strategy aims to;

- Provide a standard approach to managing new and existing on-site wastewater management systems in the Clarence Valley Council area
- To provide a framework to manage and regulate the impact of on-site wastewater management systems in the Clarence Valley Council area, and to ensure user accountability
- To provide appropriate education information to the general community, plumbers and consultants to improve on-site wastewater management
- To provide an OSM Wastewater design Model, User Manual and all relevant information to the general community, plumbers and consultants to aid and improve the design of on-site wastewater management systems
- To assist in the assessment of proposed on-site wastewater systems design
- To provide for sustainable development
- Ensure Council meet all regulations/ guidelines and standards in undertaking this strategy.

1.3 Objectives

The main objective of this strategy is to provide a consistent approach in accordance with all regulations, standards and guidelines to manage new and existing wastewater systems in the Clarence Valley Local Government Area (LGA).

The general objectives are to:

- ensure the protection of the surrounding environment including groundwater, surface water, land and vegetation through the selection of a wastewater management system suitable for that particular site
- prevent public health risk from on-site wastewater disposal
- maintain and improve community amenity
- ensure maximum re-use of resources
- ensure ecologically sustainable development
- update guidelines as new knowledge and technology is developed
- recognize the value of wastewater as a resource for reuse

- aid public recognition of on-site wastewater treatment systems
- ensure on-going maintenance and monitoring programs involving both the land owner/resident and Council
- create a framework for improved management of on-site wastewater disposal systems

1.4 Goals

To achieve the above objectives Council has set the following goals:

- To maintain partnerships with the local community including representatives from service agents, developers, residents associations and environmental groups.
- To ensure that all on-site wastewater applications consider the relevant regulations, standards and guidelines
- To maintain a database of all on-site wastewater systems including a risk based classification
- To enhance information from the existing data bases to a GIS system
- Maintain and regularly update an on-site wastewater site on Councils web page
- To ensure that all on-site wastewater systems are inspected by qualified people at regular intervals determined by the risk classification and are maintained as required
- To inform and create an awareness for owners of on-site wastewater management systems on the appropriate operation and maintenance of systems
- To consult with service agents to ensure that both the treatment system and land application areas are maintained and operating effectively
- To determine the cumulative impacts of on-site wastewater management systems in village areas throughout the LGA. Then if necessary review Council development standards and approval criteria for rezonings, subdivision, development and construction processes to ensure that appropriate provision is made for sustainable on-site wastewater management for development in non-sewered areas.
- Develop sustainable methods of wastewater disposal in coastal villages with high development pressure and significant environmental constraints.
- Where new or existing dwellings are located in close proximity to an existing reticulated sewerage system Council will require these dwellings to be connected to the existing sewage scheme.

1.5 Legislative Background

In 1998 the NSW Government introduced changes to its on-site wastewater management regulations in response to the need for improved health and environmental outcomes. The introduction of these changes increased Council's statutory obligation in regard to regulation of on-site wastewater management and this On-site Wastewater Management Strategy has been developed in response to those reforms.

Council require application under Section 68 of the Local Government Act 1993 from persons seeking approval for the connection of a premises to its sewer or for approval to install, construct or alter an on-site wastewater system. An amendment to the regulation also requires that owners of land with an on-site wastewater system must also obtain the approval of Council to operate their on-site wastewater management system.

It is also a requirement that;

- all Councils have an on-site wastewater management strategy suitable for its own area, and
- Council maintain a register of on-site wastewater management systems and
- Council's must report in the annual State of the Environment Report the performance of on-site wastewater systems throughout the LGA.

As a result of the Regulations and the increasing concern for management of on-site wastewater systems Council will continue to update this strategy which will form part of its management plan.

1.6 Legislative Framework

- Local Government Act 1993
- Local Government (General) Regulation 2005
- AS1546:1998 - On Site Domestic Wastewater Treatment Units
- *AS/NZS1547(2012)* - the Australian/New Zealand Standard: On-site domestic- wastewater management
- Protection of The Environment Operations Act 1997
- Public Health Act 1991
- Council's Local Environmental Plan (LEP)
- ANZECC Australian and New Zealand Guidelines for Fresh and Marine Water Quality
- Environment & Health Protection Guidelines: On-site Wastewater management for Single Households (1998)
- Relevant Council DCP's

1.7 Additional Reference Information

There is a large amount of literature regarding on-site wastewater management. For further details than is provided in this strategy refer to the following web sites.

NSW Department of Local Government at www.dlg.nsw.gov.au. This site has a large amount of information about current and past on-site wastewater management programs and documents such as the On-site Wastewater Risk Assessment System (OSRAS).

NSW Department of Health at www.health.nsw.gov.au/public-health/ehb/general/. Information on the accreditation of wastewater management facilities by NSW Health is also available on the NSW Health web site.

PART 2 – Background

2.1 Current Status

Clarence Valley Council LGA has approximately 9500 on-site wastewater management systems and covers an area of approximately 10 500 km². The LGA has over 50 000 residents of which it is estimated that 20 000 people are serviced by on-site wastewater systems.

The inspection of existing systems throughout the Clarence Valley highlights any failing systems and constraints to sustainable management of effluent on-site.

PART 3 - Management of Existing On-site Wastewater Systems in the Clarence Valley

3.0 Overview - Management of Existing Systems

Of approximate 9500 on-site wastewater systems in the Clarence Valley Council there are approximately 1000 high risk systems in the drinking water catchment, oyster growing areas and commercial properties. It is considered that for Council to fulfill its duty of care these high risk areas will continue to be inspected annually and all other OSM systems will be targeted for inspection based on; development pressure, environment and public health compliance reporting, historical data, change of owner and Pre-purchase inspections. Approvals to operate will be issued to every property with an OSM system which will remain valid until change of owner of that property or compliance action is taken.

Under Council's inspection program Council's Technical Officers will aim to inspect all high risk systems annually and all other systems by targeted areas, compliance reporting and when application is made (refer to Technical Support Document No. 2). Currently two fulltime Technical Officers are required to undertake the inspection program plus inspections for compliance and development.

The inspection program is self funding and further details can be found in the revenue policy in Section 5.

3.1 Council's General Approach to the Inspection Program

- Council will continue the inspection program for all on-site wastewater systems within the Clarence Valley Council LGA in accordance with all regulations, standards and guidelines. All of the OSM systems within the CVC LGA have now been inspected with the exception of some unregistered and remote areas that continue to be targeted as part of the inspection program.
All high risk areas will continue to be inspected annually and all other properties will be targeted for inspection based on; development pressure, environment and public health compliance reporting, historical data, change of owner and Pre-purchase inspections. Approvals to Operate will be issued to every property with an OSM system which will remain valid until change of owner of that property.
- Following every inspection the OSM system will be given a pass/fail result by the Technical Officer.
 - Pass: An Approval to Operate will be issued for that OSM system which will remain valid until change of owner of that property or further inspections or compliance action is taken.
 - Fail: An Improvement Notice will be issued outlining the required action and timeframe to upgrade the failing OSM system; or if the required works are minor an Approval to Operate may be issued with conditions and timeframes for the repair.

- If an Improvement Notice or conditions of an Approval to Operate are not complied with in the time frame allowed, Council may issue Orders under the Local Government Act or a Prevention Notice under the Protection of the Environment Operations Act (POEO Act). If there is urgent work to be undertaken to prevent an emergency (health or environmental risk) immediate directions under the POEO Act or Local Government Act will be given to repair the failing wastewater system. Failure to comply with any of these Orders or Notices will result in fines or legal action.

3.2 Requirements for the Inspection Program

This Strategy aims to provide the following general structure for the inspection of on-site wastewater systems.

- **Staffing the Supervision Program** - In order to continue the inspection program throughout the Clarence Valley two fulltime Technical Officers and one administration staff member are required to support the technical officers by issuing “approvals to operate” and maintaining the on-site wastewater database.
- **Fee structure** - The inspection regime is self funded for all properties with on-site wastewater systems as outlined in Council’s annual Fees and Charges document. The fee/s fund the inspection program and approval to operate process. A full description of revenue policy for owners and operators of on-site wastewater systems can be found in Section 5.
- **Requirements for Upgrading On-site Wastewater Management (OSM) Systems** - Technical Support Document No 1 provides an application to install or upgrade wastewater systems. This application is required to be submitted for major alterations to the wastewater management facility. The application contains a checklist for applicants and provides a number of systems which may be installed without the need for a consultants report. Council has also developed an OSM Design Model that is available to the Public on Council’s website www.clarence.nsw.gov.au to aid in the design of OSM Systems.

3.3 Identify problem villages and sites

Problem villages and sites include environmentally sensitive coastal villages under increasing development pressure and problem areas that are identified through the OSM inspections. This may involve identifying areas where the only viable solution is a centralised wastewater management system or common effluent system. Problem areas shall then be reported back to Council with recommendations to be addressed in the strategic planning process and Council’s management plan.

Some examples which will require further investigation include;

- The unsewered towns with small lots and older OSM systems (Ulmarra, Tucabia, Copmanhurst Palmers Island, Glenreagh etc.)

- Environmental and health implications of effluent disposal in coastal villages with sandy soil, high groundwater, sensitive waterways and wetlands i.e. Minnie Water, Wooli, Brooms Head, Sandon, Diggers Camp etc. Subject to funding it is proposed to engage a wastewater consultant to assess villages with high development pressure to determine a sustainable level of effluent disposal and the most suitable wastewater management methods for these specific areas. This strategy will then be updated to reflect those findings to allow sustainable development without wastewater causing health or environmental risks.

3.4 Managing premises with a large wastewater volume

Sites which are large generators of wastewater such as Commercial premises, Large residential premises, Caravan parks and schools operating OSM systems will be inspected annually as high risk (refer to Technical Support Document No. 2) determined by potential to cause health or environmental issues. Systems which are found to be causing problems will require upgrading. As these sites are not considered “Domestic” or “Single Dwellings” under the Standards and Guidelines, any required OSM work or upgrades will require a Wastewater Consultant

3.5 OSM Systems within the Drinking Water Catchment

The Nymboida River and Shannon Creek Dam are vital sources of drinking water, supplying water to people throughout the Clarence Valley and Coffs Harbour City Council areas.

Maintaining and preserving the high quality of water in the catchment areas is essential. OSM systems are recognised as one of the most significant risks to water quality in the River and Dam. Poorly designed or maintained OSM systems in the catchment have the potential to impact on the entire community and must be strictly managed.

As such, Council has recently reviewed its inspection frequency of OSM systems located within the drinking water catchment area and some properties have changed classification dependent on their proximity to the River or Dam.

Within the drinking water catchment areas, OSM systems within the inner catchment will be inspected on an annual basis and OSM systems within the outer catchment will be inspected on a three yearly basis.

Any application made to Council to upgrade an existing or install a new OSM system in the drinking water catchment must be supported by a consultant’s report and will be referred to the local Water Authority to be reviewed against all relevant standards, guidelines and policies.

PART 4 - Management of New Development in Unsewered Areas

4.1 Background

Many Clarence Valley Council villages are subject to development pressure. The Clarence Valley Settlement Strategy was developed to control the growth in population in the area. Many of the small villages are in environmentally sensitive areas with limitations such as flooding, high water tables, small lots and provision of services posing major limitations for on-site wastewater disposal.

Council will continue to review the priorities for its water and sewer infrastructure. Findings from the ongoing program of inspection of existing on-site wastewater systems will identify priority areas for upgrade options. One option may be provision of centralised wastewater schemes but the nature of some villages may mean that upgrade of OSM systems may be a more viable option.

Many of the problems with existing on-site wastewater management systems have come about by development of properties that are either too small, have poor soil types, insufficient buffers to environmentally sensitive areas and/or have poor system design. The isolated nature of the villages, travel costs and type of systems in place mean that in most villages the option of a full pump out system is not possible. On that basis Council will not consider this option as a sustainable option unless it is used as an interim measure while centralised sewerage is provided.

To ensure that effluent can be sustainably managed on-site, criteria have been adopted in this strategy to guide installation of new systems on vacant/new lots, existing lots, redevelopment of existing lots, or subdivision of new lots and release of new land for rezoning.

Reference to the objectives, goals and guiding principles in Part 1 of this Strategy are fundamental to assessment of land suitability for development purposes.

4.2 Regulations

All new and upgraded on-site wastewater systems are assessed with regards to the Local Government Act 1993, the Local Government (General) Regulation 2005, Australian Standards, relevant guidelines, this strategy and other supporting information.

The information applicants are to supply to Council when applying to install an on-site wastewater system are detailed in the Technical Support Document Number 1.

4.3 Council Guiding Principle When Approving New Development in Un-sewered Areas

There is increasing pressure on land to be developed and re-developed. Where it is deemed that there is insufficient information to make a decision if the proposal is sustainable in the long term (issues such as protection of surface and groundwater, public health, aquaculture and adequate area for nutrient disposal) the “precautionary principle” as stated in the *Local Government (Ecologically Sustainable Development) Act 1997* shall prevail and the

application will be rejected. This precautionary principle aims to conserve biodiversity and maintain inter-generational equity.

The onus is on the proponent to ensure all environmental and public health issues have been addressed and adequately managed.

4.4 Development or Redevelopment of Single Dwellings

Where it is proposed to build a new dwelling, replace an existing dwelling with a new dwelling, increase the load on an existing wastewater system or increase the density of the property (i.e addition habitable rooms, duplexes, dual occupancy etc), Council will require upgrading of the on-site wastewater system in accordance with current regulations and this strategy unless a wastewater consultant can justify otherwise. Water saving devices must also be installed [eg dual flush toilets, low flow shower heads]. The design of the new dwelling and/or addition must consider the constraints wastewater management pose at the particular site. In some cases certain constraints may limit the size of potential dwellings.

Council requires submission of an application form for approval to install and for approval to operate an on-site wastewater system together with the adopted fee. This application is then assessed with regard to the current legislation, standards, guidelines and this strategy. Technical Support Document No 1 outlines the requirements for selecting, obtaining approval and upgrading or installing a new on-site wastewater management system.

A checklist is provided with the application to upgrade or install an on-site wastewater management system for a single dwelling. If the applicant can answer “yes” to all the questions and this is confirmed by an Environmental Health/ Building Surveyor of Council, one of the systems shown in the application may be installed.

Council has developed and made available on our website (www.clarence.nsw.gov.au) an OSM Wastewater design Model, User Manual and all relevant information for the general community, plumbers and consultants to aid and improve the design of on-site wastewater management systems

A full summary of typical effluent treatment systems and land application areas is provided in Technical Support Document No 3. This is provided as basic information to the public about the options of each type of wastewater management system.

The objectives in Part One of this Strategy are critical to selecting an appropriate wastewater management system. While there may be exceptions for innovative designs or exceptional lots Council will require that the following minimum standards are to be met with all new systems:

Primary treated effluent is permitted only on lots greater than 1 hectare (10,000m²) with suitable soils and where the checklist in Technical Support Document Number 1 can be met. Lots smaller than 1 ha shall be required to meet a secondary treatment standard;

- B.O.D. not greater than 20mg/litre
 - N.F.S. not greater than 30mg/litre
 - Free chlorine not less than 0.5mg/litre
 - Faecal coliforms not more than 30/100ml.

- Wastewater disposal areas shall be either evapotranspiration absorption trenches (ETA trenches), pressurised subsurface drip irrigation, dripper under mulch, surface spray irrigation or mound systems. The key to an effective disposal area is to evenly distribute the effluent throughout the land application area. This is why pressurised subsurface and surface irrigation systems are preferred and ETA beds, standard arch trenching and mound systems should be fed either by a dosing siphon or pressure fed through the use of a pump. The example designs of ETA trenches, mound systems and subsurface/surface irrigation systems are shown in Technical Support Document Number 4. Polishing ponds will be considered in areas with heavy clay soils and where the lot size is greater than 40 hectares.
- On Lots greater than 1 hectare with suitable soil, standard arch trenching may be approved. However Council supports the NSW EHP Guidelines 1998 page 119 [silver bullet] which states “that systems which rely on soil absorption as the principle mechanism do not comply with current guidelines because there is little opportunity for reuse or treatment through plant uptake” and therefore recommends alternate wastewater disposal methods, such as ETA trenches.”
- Where it is proposed to replace an existing dwelling with a new dwelling, increase the load on an existing wastewater system or increase the density of the property (i.e addition habitable rooms, duplexes etc), Council will require upgrading of the on-site wastewater system in accordance with the requirements for a new dwelling on that lot. Water saving devices must also be installed [eg dual flush toilets, low flow shower heads]. The design of the new dwelling and/or addition must consider the constraints wastewater management pose at the particular site. In some cases certain constraints may limit the size of potential dwellings.
- Where Council has deemed a system to have failed, that system will be required to be upgraded. Council may consider these systems being upgraded based on hydraulic design. This allowance has been made in consideration of the existing lot sizes and approvals. This option will not be permitted in highly permeable soils (sand, sandy/loam) or if buffer distances cannot be achieved. The hydraulic design must be based on 150L/person/day from *AS/NZS1547(2012)* and use the CVC OSM design model.
- Septic tanks for single households must have a minimum capacity of 3000 litres and comply with APPENDIX J *AS/NZS1547(2012)*.
- Greywater and septic tanks must have an effluent filter fitted to the outlet to reduce total suspended solids entering the LAA.
- On small lots (i.e. lots constrained by limited area for wastewater land application) Council will require a consultants report supported by Councils OSM Model when designing a sustainable OSMS.
- Subsurface Drip Irrigation – Council will require detailed designs of subsurface drip irrigation systems to be provided if it is proposed to use sub surface drip irrigation. This is considered a specialised field in which designers and installers need to have suitable experience and qualifications. CVC requires that Sub-surface irrigation systems must be

designed and/or certified, installed and maintained by CID (Certified Irrigation Designer) or suitably qualified persons.

- Buffer Zones – The buffer zones shown in the Environmental Health and Protection Guidelines (Table 1 below) are adopted in this strategy. If there is any deviation from these buffers full justification by a consultant is required.

Table 1 Buffer Distances for Land Application Systems

System	Recommended Buffer Distances
All land application systems	100 metres to permanent surface waters (e.g. river, streams, lakes etc) 250 metres to domestic groundwater well 40 metres to other waters (e.g. farm dams, intermittent waterways and drainage channels, etc)
Surface spray irrigation	6 metres if area up-gradient and 3 metres if area down-gradient of driveways and property boundaries 15 metres to dwellings 3 metres to paths and walkways 6 metres to swimming pools
Surface drip and trickle irrigation	6 metres if area up-gradient and 3 metres if area down-gradient of swimming pools, property boundaries, driveways and buildings
Subsurface irrigation	6 metres if area up-gradient and 3 metres if area down-gradient of swimming pools, property boundaries, driveways and buildings
Absorption system	12 metres if area up-gradient and 6 metres if area down-gradient of property boundary 6 metres if area up-gradient and 3 metres if area down-gradient of swimming pools, driveways and buildings

Recommended buffer distances for various systems are shown above. The values given are a minimum based on ideal site and soil conditions. If these conditions are less than ideal, the minimum buffer distances should be increased.

4.6 Consultant Report Requirements

Consultants are to follow the requirements detailed in Technical Support Document No 3 as well as the requirements below;

- For full details of what is to be incorporated into a wastewater report for a dwelling, refer to; The Australian Standard *AS/NZS1547(2012)* (Appendix D Site and Soil Evaluation for Single Lots), The Environment and Health Protection Guidelines: *On-site Wastewater Management for Single Households* and this Clarence Valley Council On-Site Wastewater Management Strategy must also be met.
- Any deviation from the standard, guidelines, strategy or Technical Support Document No 3 must be justified by the consultant.
- Clarence Valley Council encourages wastewater consultants to use the CVC OSM Wastewater Design Model (which is available on the Clarence Valley Council Web Site (www.clarence.nsw.gov.au)). Please see the OSM Model user manual, also available on the website. Any changes to the models parameters or results must be justified accordingly.

- In coastal villages where there is high groundwater and permeable sand soils Council will require that consultants address this constraint. Council recommends that in such circumstances a high quality of effluent is required and good quality sandy loam/loam topsoil is imported to the LAA to prevent rapid draining of the wastewater and provide an addition depth of soil to groundwater.

4.7 Details to Accompany On-site Wastewater Applications

The following details are to accompany the wastewater application:

- Site plan indicating location for wastewater management system (tank, disposal area) and distances to buildings, boundaries, adjoining properties, water courses, drains, dams etc.
- Details of the numbers of persons expected to reside in the dwelling.
- Specifications for on-site wastewater system ie make/model etc.
- Maintenance requirements
- Owners signature
- Fees
- Plumbers details
- A cross section of the proposed method of disposal in the ground and layout of irrigation lines.
- Site assessment indicating any possible constraints and issues
- Hydraulic assessment
- CVC OSM Model Sizing

An approval to operate must be issued prior to occupation of the dwelling or commissioning of an aerated wastewater treatment system.

4.8 Existing Dwellings and Existing Lots

Increased load or density

- Where it is proposed to replace an existing dwelling with a new dwelling, increase the load on an existing wastewater system or increase the density of the property (i.e addition habitable rooms, duplexes etc), Council will require upgrading of the on-site wastewater system in accordance with the requirements for a new dwelling on that lot. Water saving devices must also be installed [eg dual flush toilets, low flow shower heads etc]. The design of the new dwelling and/or addition must consider the constraints wastewater management pose at the particular site.
- Applicants (through a consultant) will need to demonstrate that wastewater can be managed sustainability on site and will meet the objectives outlined in this strategy. Applicants considering redevelopment of sites should consider wastewater management early in the process. Where requirements of this strategy cannot be met Council should be consulted early in the process.

- Council may consider LAA's based on hydraulic design with designated Nutrient areas available on the proposed lot/s. This option will not be permitted in highly permeable soils (sand, sandy/loam, loam) or if buffer distances cannot be achieved. The hydraulic design must be based on 150L/person/day from *AS/NZS1547(2012)* and the CVC OSM design model.

Failed OSM Systems

- Where Council has deemed a system to have failed, that system will be required to be upgraded.
- Council may consider existing failed systems being upgraded based on hydraulic design. This allowance has been made in consideration of the existing lot sizes and approvals. This option will not be permitted in highly permeable soils (sand, sandy/loam, loam) or if buffer distances cannot be achieved. The hydraulic design must be based on 150L/person/day from *AS/NZS1547(2012)* and use the CVC OSM design model.
- Water saving devices must be installed [eg dual flush toilets, low flow shower heads etc].

4.9 General Requirements for Subdivision of Land

With regard to subdivisions, OSM systems shall be designed in accordance with the requirements of this strategy, Australian/New Zealand Standard *AS/NZS1547(2012)* On-site domestic-wastewater management, Environment & Health Protection Guidelines On-site Wastewater Management for Single Households, Land and Water Conservation Soil Landscapes of Woodburn, where applicable, and current best practice.

It should be noted that certain subdivisions in unsewered areas within the Coastal Zone may be *State Significant* Development under State Environmental Planning Policy (State Significant Development) 2005, and require the submission of a Development Application directly to the Department of Infrastructure Planning & Natural Resources for the consent of the Minister.

4.9.1 Specific Council Requirements for Subdivision

- In unsewered areas where the prevailing Local Environmental Plan permits further subdivision, apart from the minimum lot size applicable, the limiting factor is the ability to safely and adequately dispose of domestic wastewater within the area of the proposed allotment. In these instances, the Consultant's Effluent Management Report should address the issues raised in Section 4.8 and the cumulative impact of the systems on the environment. Where the wastewater disposal area required for the development exceeds that available within the proposed allotment, (taking into account buffers, building envelopes, impermeable surfaces, etc), larger allotment areas will be required and minimum lot sizes will not be possible.
- On-site wastewater inspections have revealed that on unsewered lots smaller than 4,000m² with a class 5 or 6 soil (medium-heavy clay) the disposal of effluent becomes a major constraint and failure rates increase. For this reason this strategy considers that a

minimum lot size for subdivisions in soil classes 5 or 6 are unlikely to be below 4,000m². This limited lot size assumes no other site constraints and where there are other site constraints (e.g. groundwater sensitivity, poor phosphorus sorption capacity of soils, gullies and watercourses) the lot sizes will be required to be larger than the 4,000m² minimum. Applicants are also referred to the relevant Local Environment Plans (LEP) that may require minimum lot sizes for small holdings of in excess of 4,000m².

- Council's Environmental services will not support approvals of subdivisions where monitoring programs or other recognised studies indicate that the cumulative impact of on-site wastewater systems in a specific area is posing a significant risk to the local environment or significant risk to the health of local residents.
- Council may consider subdivisions with smaller lot sizes where common effluent collection, treatment and disposal systems are proposed. Common effluent treatment systems will be considered by Council however the applicant will need to demonstrate with a management plan that the wastewater system can be adequately operated and maintained and clearly outline the operating and maintenance requirements of the system supported by adequate financial arrangements to provide for the ongoing maintenance, unexpected failures and capital upgrade works. Applicants who wish to look at common effluent treatment systems are advised to discuss this with Council's Environment and Planning and Engineering Services Departments. Treatment would need to be to a level suitable for the land application site. Application of effluent on agricultural land may be considered where there are reuse benefits and a viable ongoing management plan can be provided.
- Council will not operate common effluent treatment systems or private systems.
- For subdivisions which include existing dwellings it is a requirement to upgrade the wastewater systems of the existing dwelling/s in accordance with the requirements for a new dwelling on that lot.
- Council will require reserve areas equal to the primary disposal area for all subdivision applications. These areas are to be protected from building and access usage.

4.10 Rezoning in Non Sewered Areas

Any expansion of Council's designated rural residential areas will require detailed environmental assessments including the management of wastewater, and in accordance with the legislative requirements of the Environmental Planning and Assessment Act 1979 and regulation.

While the broad scale at which plans are prepared means it is unreasonable to do a detailed analysis, the following steps are required as a minimum:

- Desktop analysis based on available information such as soil landscape maps, GIS information, reports, studies and local knowledge.

- Representative testing of different soil types (as identified using soil landscape maps or other larger scale mapping).
- Identification of environmental climate constraints.
- An analysis of opportunities for connecting to some form of centralised sewerage scheme.

Although on-site wastewater management is only one of the issues to be addressed in a rural residential release strategy, it is an issue that will have major implications for the amount and location of land release and the resultant minimum lot sizes.

5.0 Revenue Policy

The Council inspection program will be self funded by owners/operators of properties that operate on-site wastewater systems. Fees and revenue collected will be allocated to the program accordingly;

- Inspection Staff – This will fund two full time Technical Officers to inspect and manage on-site wastewater systems as required. It is expected that the Technical Officers could undertake approximately 1800-2000 inspections annually, including the high risk annual inspections
- Environment and Administration Staff – A percentage of the Environmental Officer's position will be funded from the program for specialist advice and supervision. A full time administration assistant will also be funded from the program to manage administration of the program including processing of applications, approvals, compliance and servicing reports and developing and maintaining the Onsite Sewage Management Databases.
- Vehicle running expenses (2 x dedicated vehicles)
- Communication field equipment: phones, handheld data recorders for the inspectors to simplify data recording and improve administration, GPS and personal EPIRB for remote location inspections.
- Maintenance and Upgrades of OSM Design Model for Sizing Effluent Disposal Areas.
- An environmental assessment program – This will fund the some of the monitoring of problem sites and areas to determine impacts and solutions from current effluent disposal systems.

The levying of fees is to be set annually in conjunction with Council's annual budget based on the costs of maintaining an efficient system to implement the Strategy. The current fee is \$38 for the 2019/20 period.

Staff resources to develop this Strategy have been provided from within the staff of Council's Division of Environment, Development and Regulated Services.

6.0 Emergency System Improvement Program

Systems that are causing significant risks to the environment or public health will be required to undertake work to minimize the problems identified. Use of either the provisions of *the Protection of the Environment Operations Act 1997*, Council's Orders powers under the Local Government Act, or conditions of approval to operate systems will be used to address the issues. Information from the data base and inspections will be readily available to address any outbreaks of disease in the LGA that may be associated with failing systems.

7.0 Review

Council will review the technical material of the strategy as required and undertake a detailed revision of the strategy within 5 years of the time of adoption. An annual report covering the number of systems inspected and summary of results will be provided in the State of the Environment Report update and will be available as a public document.

8.0 Glossary of Terms

Absorption: absorption and/or uptake of effluent into soil by gravity and capillary action.

Absorption area/trench/bed: a land application system which uses soil absorption and gravity to distribute and dispose of effluent.

Adsorption: physical or chemical attachment of substances to the surface of soil particles.

Aerobic/Anaerobic: In the presence/absence of oxygen. Biological break-down occurs by different micro-organisms adapted to the aerobic or anaerobic conditions.

Aerated Wastewater Treatment System (AWTS): an oxygenated sewage treatment process typically involving: settling of solids and flotation of scum; oxidation and consumption of organic matter through aeration; clarification - secondary settling of solids, and disinfection of wastewater before irrigation.

Bedroom: In Clarence Valley Shire, the calculations for number of persons for which an OSMS is expected to cater for is 1.5 per bedroom. For the purposes of this strategy a "bedroom" is a room in a house which is specified on the Council-approved plans as being one built for the purposes of sleeping within it.

Best Management Practice: practices currently employed and recommended by government and industry as preferred and affordable approaches. In domestic on-site sewage management, current best management practice generally includes partial-secondary treatment and broadly dispersed application of effluent to soils in the root zone.

Biochemical Oxygen Demand (BOD): the amount of oxygen required for the biological decomposition of organic matter, usually measured over a period of 5 days (BOD₅).

Blackwater: human excreta and water grossly contaminated with human excreta, for example toilet wastewater.

Certified Irrigation Designer (CID): An individual who holds a current certified irrigation designer (CID) certificate as issued by Irrigation Australia Ltd, and who can provide evidence of design work completed using treated wastewater in landscape, horticultural and/or agricultural projects.

Compost Toilet: a treatment unit which breaks down faeces and organic material into a compost like material through the action of micro-organisms and invertebrates. See AS/NZS1547, 2000.

Constructed wetland: also known as **Reed Beds**, these comprise a constructed basin in which water or effluent is kept at or near the surface of the gravel substrate. The effluent is treated as it moves slowly through the root zone of densely planted water-plants (usually reeds).

Crop factor: a value utilised in water balance modeling to estimate variations in evapotranspiration due to crop type, seasonal conditions and age of crop.

Design Loading Rate: the rate at which effluent is to be applied, based on the Long Term Acceptance Rate (LTAR) (see definition below), reduced by a factor of safety.

Dispersive soil: a soil that tends to disperse and erode, especially in presence of high-sodicity effluent.

Durable aggregate: aggregate, metal or stones which are graded to AS 2758.1 for single size coarse aggregate for nominal sizes, usually ranging from 20mm to 50mm,

Effluent filter: a device placed in the outlet of septic or greywater tanks to prevent or reduce solids entering the effluent dispersal area or next treatment step. Effluent filters are not considered “partial-secondary treatment” and do not provide secondary treatment (defined below).

Effluent: Liquid which has passed through a treatment system.

Evaporation: the transfer of water from a liquid to a gas

Evapotranspiration: natural process transfers water from soil by evaporation and from plants by transpiration

Evapotranspiration/absorption (ETA) bed: a specially prepared bed or area which promotes evaporation, transpiration and absorption of effluent.

Faecal Coliforms: a type of bacteria that live only in the gut of warm-blooded animals. Can be detected in the general environment if that environment is contaminated with mammalian excreta, and therefore can act as an indicator of recent faecal contamination, possibly by humans.

Geotextile: a water-permeable fabric used mainly to retain and stabilise soils. Care must be taken to ensure that suitable geotextile spacing sizes and thickness are selected for the particular task.

Greywater: the component of domestic sewage which excludes toilet and urinal wastes.

Groundwater: the body of water held in the soil and rock pores; includes water above (unsaturated conditions) and below (saturated conditions) the water table and seepage from springs etc.

Indexing Valve: a device (also called a K-rain valve) which allows for up to 6 separate land application areas to irrigated in sequence.

Irrigation Systems: pressurised effluent dispersal systems, such as proprietary Wasteflow or Netafim, which deliver treated effluent to the sub-surface (typically 100 mm depth) of the application area via valves, pipes and emitters.

Infiltration: the downward passage of water into the soil.

Land Application Area: the land area over which treated sewage is applied

Long Term Acceptance Rate (LTAR): the average sustainable rate effluent can be absorbed over the long term into a particular soil, expressed in litres per square metre per day. This rate is influenced by effluent water quality, method of dosing, the soil permeability and by the slime layer which builds up at the interface with the receiving soil.

Nutrients: chemical elements that are essential for sustained plant or animal growth. The major nutrients essential for plant growth are nitrogen, phosphorus and potassium; in excess, nitrogen and phosphorus are potentially serious pollutants encouraging nuisance growths of algae and aquatic plants in waters and (in the case of nitrate) posing a direct human health risk.

On-site sewage management system (OSMS): includes all types of human waste storage and treatment facilities, e.g. septic tanks, cesspits, compost toilets, urinals. Also includes the wastewater application (dispersal) area, e.g. absorption trenches, irrigation fields.

Pan Evaporation: the loss of water by evaporation measured in a “Class A” pan. The nearest weather station collecting Pan Evaporation data is at Alstonville.

Pathogens: micro-organisms that may potentially cause disease or sickness. These include, but are not limited to bacteria, protozoa and viruses.

Percolation: a general term describing the downward rate of water movement through a soil or through a biological mat within an effluent dispersal system.

Permeability: a calculated value derived from the rate at which a head of liquid is absorbed into soil, usually measured in m/d as Saturated Hydraulic Conductivity (K_{sat}).

Primary Treatment: In on-site sewage management, primary treatment is taken to mean the initial reduction of suspended solids and organic matter from the household by means of settlement, anaerobic digestion and/or floatation in septic tanks or the primary settling chambers of AWTS.

Reed-beds: see Constructed Wetlands

Run-on: surface water flowing on to an irrigation area because of run-off occurring higher up the slope.

Secondary Treatment: For the purposes of this strategy, the term “secondary treatment” applies to systems which can produce effluents containing no more than: 20mg/L BOD

30mg/L Total Suspended Solids

Septage: The semi-liquid material that is pumped out of septic (or interceptor) tanks, consisting of liquid, scum, and sludge.

Septic Tank: effluent storage container in which primary treatment of household effluent occurs under anaerobic conditions. Septic-tank treatment process comprise sedimentation of settleable solids, flotation of oils and fats and anaerobic digestion of sludge.

Sewage: Untreated or partially treated human wastes generated from toilets, baths, sinks, lavatories, laundries, and other plumbing fixtures in places of human habitation, employment, or recreation.

Sewage management facility: a human waste storage facility, or a waste treatment device intended to process sewage, including a drain connected to such a facility or device.

Sewerage: The network of collection drains carrying domestic wastewater or effluent away from properties for off-site treatment.

Sludge: mainly organic semi-solid product produced by wastewater treatment processes

Sub-surface Irrigation: pressurised effluent dispersal system. Irrigation lines are buried 100mm below the ground surface and effluent is emitted slowly and widely.

Sullage: another term for greywater (see definition above)

Tertiary treatment: For the purpose of this strategy, tertiary treatment involves disinfection of secondary treated effluent, but may also include further post-secondary treatment, filtration, and nutrient removal.

Transpiration: the transfer of water to the atmosphere through plants.

9.0 References

1. AS/NZS1547 2012. *Australian/New Zealand Standard: On-site domestic-wastewater management*. Standards Australia & Standards New Zealand, Strathfield NSW 2135 & Wellington NZ 6020.
2. E&HP Guidelines 1998. *On-Site Sewage Management for Single Households*. Dept. of Local Govt, Environmental Protection Authority NSW, NSW Health, Dept. Land and Water Conservation, Dept. of Urban Affairs and Planning.
3. Morand, D.T. 1994. Soil Landscapes of the Lismore-Ballina 1:100000 Sheet. DCLM, Sydney.
4. NDLG 2000. *The Easy Septic Guide*. Developed by Social Change Media for the NSW Department of Local Government

10.0 List of Technical Documents which Support this On-site Wastewater Strategy

To support this on-site sewage management strategy there have been a number of technical support documents produced. These technical support documents are called up in the strategy and are as follows.

- Technical Support Document for OSMS Number 1 – On-site Wastewater Application and Site Assessment Checklist
- Technical Support Document for OSMS Number 2 – Description of Risk Categories
- Technical Support Document for OSMS Number 3 – On-site Wastewater Design Guidelines
- Technical Support Document for OSMS Number 4 – Example Standard Designs of Wastewater Disposal Systems
- Technical Support Document for OSMS Number 5 – Drip Irrigation Maintenance Checklist