

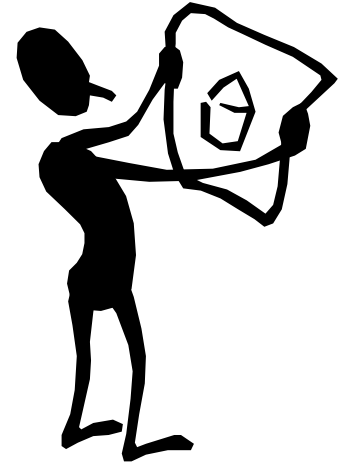
# Assessment Tools for the Onsite Wastewater Code

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# Overview of Presentation

- Assessment Guide for Onsite Wastewater System Applications (Individual Lots)
  - with examples
- Council Audit Checklists
  - Site Audit
  - Desktop Audit
- Questions / Discussion



# Assessment Guide

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- Implementation tool for the Onsite Wastewater Code
- Intended for use as an example



# Overview

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- Initial Assessment
- More detailed assessment
  - Site and Soil Evaluation
  - Wastewater System selection and design
- Refers to sections of Code and AS/NZS 1547:2000



# Initial Assessment

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- Application should contain:
  - Detailed site plan
  - Site and Soil assessment
  - Detailed design drawing
  - Design report and recommendations
- System capacity (<20EP, 50EP)
- Underfloor plumbing
- Approved product



# What to look for in a Site Plan

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- Scaled plan, sufficient detail
- Locations of system components
  - treatment system, irrigation area, reserve area
- Borelog / soil assessment locations
  - Should be at effluent disposal site
- Slope / topography



# Site Plan continued

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- Locations of vegetation, buildings, roadways, boundaries
- Locations of watercourses, bores
- Setbacks specific to type of soils and system
- Modified land
  - Levelled areas / imported soil
- Neighbouring properties and facilities
- Coastal Areas - MHWS



# Design Report

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- Results of soil assessment
- Design Loading Rate (DLR) using AS 1547 terminology
- Design calculations for soakage/irrigation area
- Reserve area
- Recommendations
- Appropriate detailed drawings



# Design Report continued

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- Check soil DLR against tables in AS 1547
  - Separate tables for different systems
- For example,
  - Septic tank soakage system
  - Soil category 3 (Loams) at disposal site
  - Design Loading Rate = 10mm/day
- Check calculations



# Trench and Bed Design Loading Rates

Soil category	Soil texture	Structure	Indicative permeability ( $K_{sat}$ ) (m/d) (see Note 6)	Design loading rate (DLR) (see Notes 1, 2 and 3)			Indicative drainage class (see Note 9)
				Primary-treated effluent (see Note 4)		Secondary-treated effluent (see Note 5)	
				Conservative rate (mm/d) (see Notes 4 & 7)	Maximum rate (mm/d) (see Notes 4 & 8)	(mm/d)	
3	Loams	High/moderate structured	1.5 – 3.0	15	25	50	Moderately well drained
		Weakly structured or massive	0.5 – 1.5	10	15	30	

# Design Calculations

Flow = 900 L/day

DLR = 10 mm/day

W = 2.5 m

$$L = \frac{\textit{Flow}}{(\textit{DLR} \times \textit{W})}$$

$$L = \frac{900}{10 \times 2.5} = 36m$$



# Design Calculations continued

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- Length less than 20m
- Therefore 2 x 18m long
- Only base area is calculated
- Check design drawing for compliance
  - Spacing, depth, width
  - Surface water diversion
  - Aligned along contours
  - Reserve area



# Trench and Bed Site / Soil Limitations

Land application system	Slope gradient (%)	Soil depth (see Note 1)) (m)	Soil category number	Depth to seasonal water-table (see Note 2) (m)	Duration of continuous seasonal soil saturation (see Note 3)	Dispersive (sodic) soil (as defined)	High content of stones, cobbles or boulders	Climatic factors	Lot size
Conventional absorption trenches	<p><b>System:</b> Trenches can be more difficult to install on slopes &gt; 25 %</p> <p><b>Environment:</b> More soil disturbance and erosion during construction on steep slopes</p>	<p><b>System:</b> Depth must be adequate for final effluent treatment; preferably &gt;1.2 m for trenches of 0.6 m depth</p> <p><b>Environment:</b> Must be deep enough to store effluent during periods of wet weather and low evapo-transpiration</p>	<p><b>System:</b> Category 5-6 soils require large trench systems per unit volume effluent</p> <p><b>Environment:</b> Categories 1 and 2 can cause ground-water pollution; minimize risk by effluent dosing by a pumped distribution system</p>	<p><b>System:</b> Depth must be adequate for sufficient path length of seepage under unsaturated conditions; ≥1.2 m is desirable</p> <p><b>Environment:</b> &lt;1.2 m may cause increased soil wetness if lateral groundwater flow is slow</p>	<p><b>System:</b> Prolonged saturation of upper soil impedes treatment and hinders absorption</p> <p><b>Environment:</b> Increased risk of polluted surface run-off</p>	<p><b>System:</b> Soil may lose permeability during life of system, causing failure; large trench lengths required</p> <p><b>Environment:</b> Increased risk of polluted surface run-off</p>	<p><b>System:</b> Stones and boulders have no or little water storage capacity and reduce water storage in the soil around trenches; also increases difficulty of excavation</p> <p><b>Environment:</b> High proportion of stones, cobbles and boulders increases risk of trench overflows</p>	<p><b>System:</b> Not significant; will operate in high or low rainfall areas. Surface and groundwater controls required in wet areas</p> <p><b>Environment:</b> N/A</p>	<p><b>System:</b> Small lot size unfavourable as absorption trench system is relatively inefficient in distributing effluent over the land-application area</p> <p><b>Environment:</b> Setback distances to water resources, water bodies and watercourses</p>

•Refer AS 1547:2000 Table 4.2B1



# Site Limitations for Trenches and Beds

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- Maximum Slope
- Soil Depth
- Suitability of Soil Type
- Depth to seasonal watertable
- High proportion of stones / boulders
- Climatic factors
- Lot size



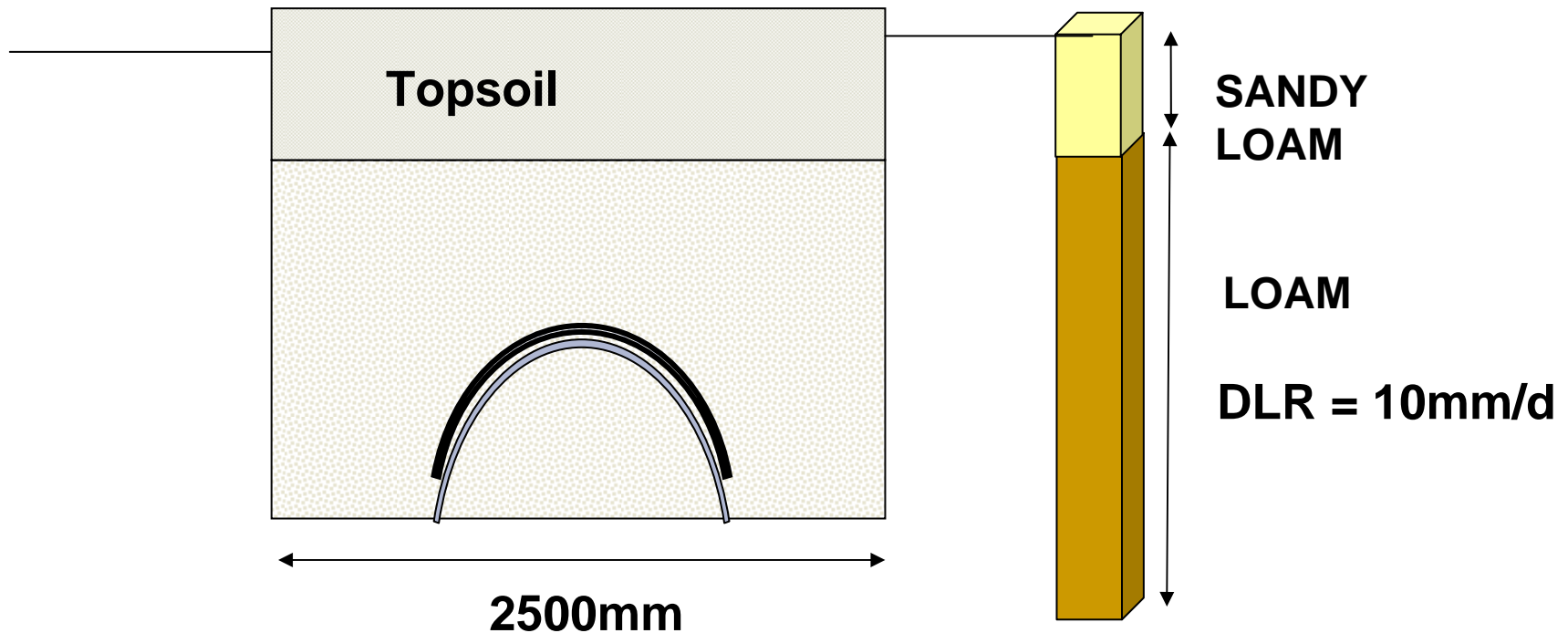
# Consider Setbacks

- Water Protection area
  - Primary effluent disposal not permitted
- Coastal Area
  - 70m from MHWS; or
  - >70m if required by the Coast Protection Board Policies, or Council DP
- Watercourses
  - Required setback is 50m (not sandy soil)
- Vertical setback from rock or watertable
  - >0.6m
- Buildings, boundaries

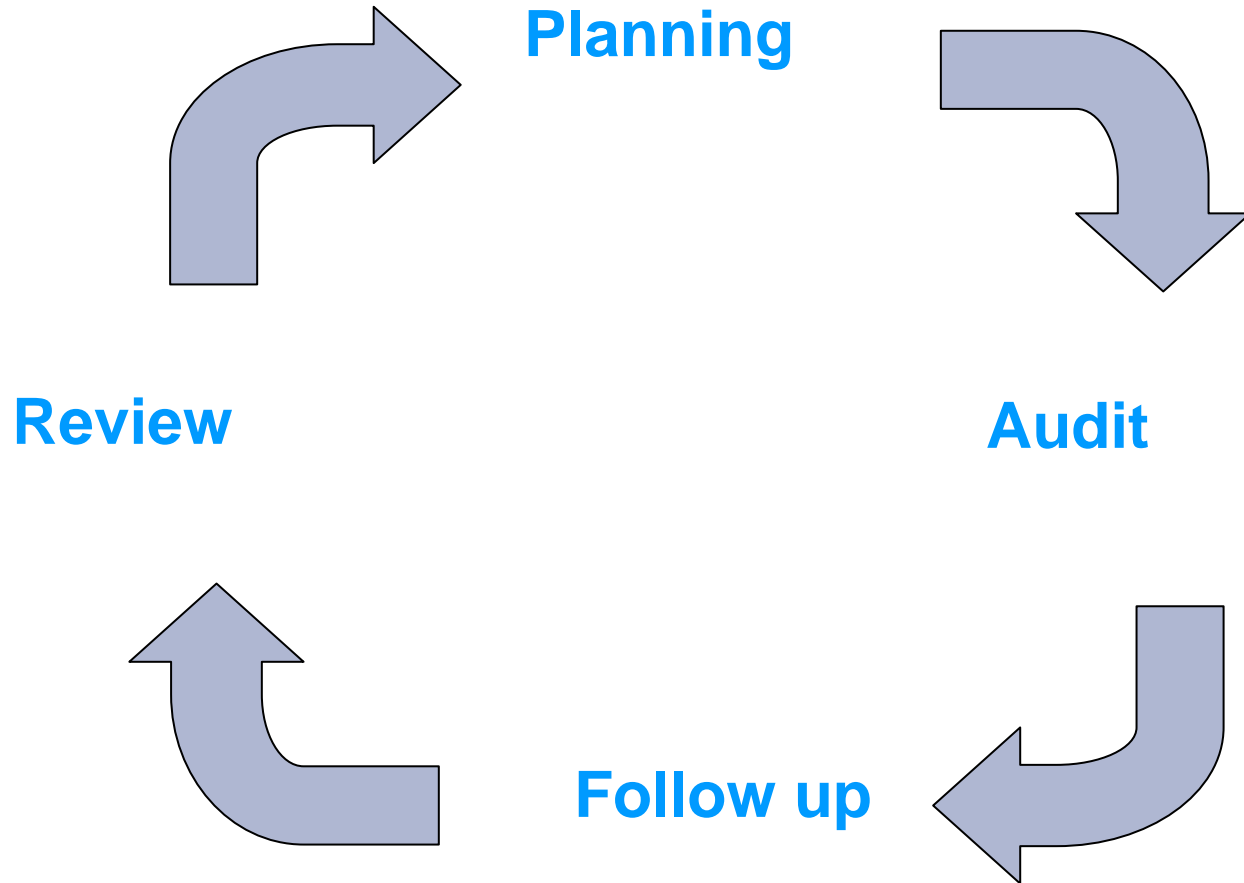


# Match System to Soil Profile

- Ensure DLR matches the soil layer of the trench



# Council Audits



# Council Audits

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- Councils recommended to undertake audits of onsite systems
- Information obtained can be used to identify high risk areas
- Resource issues



# Audit Stages

## 1. Planning

- Random vs high risk areas (large densities, water protection areas)
- On-site audits vs desktop audits
- Timing – eg during ‘worst case’ situation
- Frequency
- Range of system types and models



# Council Audits cont.

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## 2. Undertake audits

- Audit form for site audit inspections
- Questionnaire for owners (desktop audit)

## 3. Follow-up

- Approval conditions not followed (eg Servicing not up to date)
- More frequent audits required.



# Council Audits cont.

## 4. Recording:

- Date of inspection
- Completed Checklist
- Actions taken
- Further actions required e.g. another audit required in 6 months.





**Irrigation Area**

Location: .....

Slope:..... Setbacks to buildings and boundaries (m):.....

Approximate setbacks to watercourses and bores (m): .....

Is the pipework buried: .....Drippers or sprays: .....

Is there appropriate signposting? .....

Is there pedestrian access to the area (eg entertainment areas)? .....

Is there any spray drift: YES / NO if yes, where is it to: .....

Does the plantation area look established: YES / NO

Are the plants suitable for effluent irrigation? YES / NO

If no, what plants are being used.....

Design Irrigation area: .....m<sup>2</sup> Actual Irrigation area: .....m<sup>2</sup>

Design Reserve area: .....m<sup>2</sup> Actual Reserve area: .....m<sup>2</sup>

Odours present YES / NO what part of system is it from: .....

Signs of pooling / runoff YES / NO

Does irrigation area comply with approval: YES / NO

Does reserve area comply with approval: YES / NO

**Actions Taken:**

.....  
.....

**Further Actions Required:**

.....  
.....

# Desk Top Audits

- Assessment of service records
- Customer surveys
- Analysis of reported failures
- Determine whether site audit is required
- Ongoing customer satisfaction



# Customer Questionnaire

**Address:** \_\_\_\_\_

**Owners Name:** \_\_\_\_\_

**1. When did you move in to the premises?** \_\_\_\_\_

**2. When was the treatment system installed?** \_\_\_\_\_

**3. What brand of system has been installed?** \_\_\_\_\_

**4. Do you hold a service contract for the maintenance of your aerobic unit? YES / NO**

**5. Who is your service provider?** \_\_\_\_\_

**6. How often is your aerobic unit maintained?** \_\_\_\_\_

**7. What sort of maintenance is provided to the aerobic unit?** \_\_\_\_\_

**8. Do you have an alarm system for your aerobic system? YES / NO**

**If yes, is it audible or visual?** \_\_\_\_\_

**Where is it located?** \_\_\_\_\_

**9. Has the alarm system ever been activated? YES / NO**

**If yes, what action was taken?** \_\_\_\_\_



# Customer Questionnaire cont

1. Have you ever required emergency service for your treatment system since installation? YES / NO    If yes, what was the problem? \_\_\_\_\_

2. When was your septic tank last pumped out? \_\_\_\_\_

3. Do you have any of the following items in your home?

a. A Spa bath attached to the treatment system YES / NO

if yes, what capacity (L)? \_\_\_\_\_

b. A food waste disposal system? YES / NO

4. Please explain any difficulties you have experienced with the irrigation area attached to your treatment system:

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Other comments:

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