

On-site Wastewater Management Training Course

Site Assessment: Desktop Study

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Land Capability Assessment or Site and Soil Evaluation (SSE)

Aim:

- Identify and consider site-specific attributes significant in the selection, design, location and sizing of an onsite wastewater management system
- Assess the capacity of the land to sustainably manage sewage within lot boundaries (containment)
- Quantify risk and gather relevant information to inform the design process and formulate a sustainable design solution

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Site and Soil Evaluation (SSE)

- **SSE** (per AS/NZS 1547) required by TAS OWMS Guideline (2017) for all 'new' or 'altered' OWMS
- Should be undertaken by an appropriately qualified ('accredited') person with specific experience in wastewater applications (C3.4 AS/NZS 1547:2012)
- OWMS Guideline (2017) requires certification by:
 - Civil Engineer (with PI insurance)
 - EHO (with PI insurance)
 - Plumber Practitioner (with PI insurance)

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SSE Objectives

- To demonstrate the site has sufficient suitable area to:
 - Safely install the selected treatment system and (effluent) land application system, while
 - Achieving appropriate setbacks (buffers)
- To demonstrate the soil is appropriate and of sufficient depth to:
 - Install the preferred effluent application system, and
 - Treat the quantity and quality of effluent to be applied

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SSE Objectives

- The Site must have sufficient space for:
 - The wastewater treatment unit (WTU)
 - The land application system (LAA), and
 - Appropriate separation distances (setbacks)
- Designs should aim to be:
 - Sustainable (long-term benefit)
 - Achievable (practically constructable)
 - Acceptable (Owner and Regulator)
 - Affordable (value for money)

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Level of Investigation

The guidance (AS/NZS 1547:2012) recommends different 'levels of investigation' depending on project intent, scale or stage of the planning process:

- **Subdivision or Rezoning** – focus on regional or site-wide implications of OWMS (soil characterisation, climate effects, system suitability, minimum lot sizes, natural feature buffers, cumulative impacts, wastewater servicing approach, planning considerations etc.)
- **Single-lot Development** – at this scale investigation will focus on site-specific attributes (site buffers, soil controls, drainage etc.), EAA soil suitability, optimising OWMS (treatment / application) options and considering construction and management issues

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Stages of Data Collection

- Desktop study
- Site and soil check (SSC)
- Soil description and profile assessment
- Calculations
- Collection of additional data
- Identify site and soil opportunities and constraints
- Selection of appropriate system (WTU and LAA)
- Identification of appropriate risk management or mitigation measures

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Desktop Study

- Undertaken in consultation with the Site owner
- Collate previously mapped information to develop a preliminary overview of the site (constraints map)
- Identify data gaps for further investigation
- Identify unsuitable site or soil conditions for OWM
- Target locations for soil boreholes or test pits
- Suitable first step for all levels of investigation for development, from rezoning, to subdivision, to individual lot design

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Site and Soil Characteristics

- AS/NZS 1547:2012 (Appendices B-D) provides a guide to the range of Site and soil characteristics that should be considered in onsite wastewater investigations
- Other matters may also warrant consideration based on site-specific information:
 - planning or sensitivity overlays
 - utility / infrastructure plans
 - legal instruments (e.g. easements)
 - local OWM performance issues

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Site Characteristics

- Exposure
- Slope (%)
- Landform
- Run-on and upslope seepage
- Erosion potential
- Drainage (indicative)
- Flood potential
- Fill
- (Available) Land Area
- Geology and rock outcrops
- Vegetation

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Level of Constraint

- AS/NZS 1547:2012 does not take a 'prescriptive' approach to assessing Site information
- The level of 'Constraint' for each characteristic must be interpreted by the SSE practitioner (evaluator)
- AS/NZS 1547:2012 directs the user to take a systems approach to SSE, incorporating a range of information (research, empirical and anecdotal) to describe the appropriate level of constraint
- Other guidelines (e.g. VIC EPA 746.1) have used a semi-quantitative approach to apply a hazard or constraint 'rating' to Site attributes

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Data of Interest

- Cadastre and planning mapping (lot boundaries, roads, land zoning and planning specifications)
- Topographic mapping (contours, landscape position, landform and surface hydrology)
- Imagery (aerial photos – current and historic)
- Geological and soil mapping (soil landscapes, soil test data)
- Groundwater resources (domestic and public supply bores and wells)

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Data of Interest

- Land use mapping (adjacent and regional context e.g. agriculture)
- Environmental overlays (flooding, bushfire, ecology and drinking water catchments)
- Location of services (water, electricity, gas etc.)
- Local plans or strategies relating to OWM (development strategies, lot size requirements, backlog sewer)
- Site development (existing, approved or proposed)

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Additional Data

- Climate data (rainfall and evaporation) – 30 years
- Local knowledge OWMS limitations (poor soils, shallow rock, groundwater, seasonal inundation)
- Owner discussion:
 - Resourcing / capacity and understanding
 - Existing OWMS (capacity and operability)
 - Existing services or usage patterns, not mapped
 - Future-proofing or planning

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Site Imagery

Information sources include:

- Satellite imagery www.google.com/earth/
 - Free to download and activate
- Nearmap
 - Subscription service
- Provides information on location (latitude/longitude), elevation and has capacity for measurement and historical imagery
- Images can be rotated for different views (including Street View)

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Example - Area of Interest



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Topographic Maps

Can determine:

- Cadastral boundaries
- Shape of land
- Drainage direction
- Water bodies and drainage lines
- Slope
- Relief (difference in elevation)
- Aspect (facing direction)

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Example - Area of Interest



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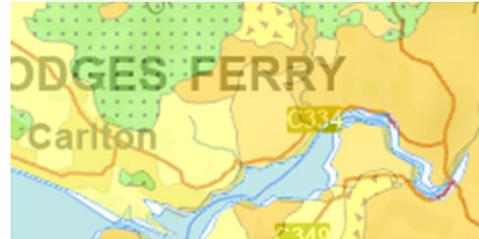
Interactive Spatial Data - Tasmania

- Geoscience Australia www.ga.gov.au
 - GA Portal – Geological, boreholes, minerals, ASRIS (soils), digital elevation
- Elvis – Elevation and Depth – Foundation Spatial Data elevation.fsdf.org.au
 - Digital Elevation Model, Point Cloud and Bathymetry – used to generate contours
 - LIDAR data available to 0.5-1.0m resolution
- Land Information System Tasmania (the LIST) www.thelist.tas.gov.au/app/content/data#

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Geological Maps

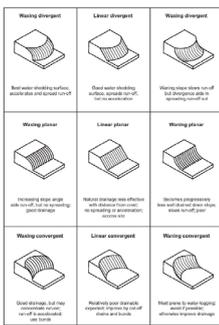


Geology of Dodges Ferry (1:250,000)

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Slope Configuration



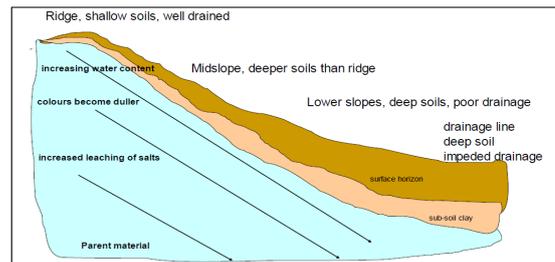
- Slope (gradient and shape)
- Important to understand how surface water will flow in or near LAA
- Waxing / waning / linear
- Converging or diverging

FIGURE 02. SLOPE CONFIGURATION AND SURFACE DRAINAGE

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Soil Properties and Topography



Position in landscape significant in soil profile characteristics

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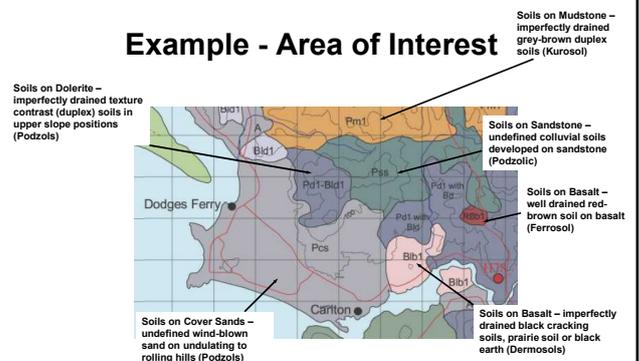
Soil Information Sources

- Reconnaissance Soils Maps of Tasmania (1:100,000) <https://nre.tas.gov.au/agriculture/land-management-and-soils/land-and-soil-resource-assessment/soil-maps-of-tasmania>
- Atlas of Australian Resources, Vol 1 Soils and Land Use (Division of National Mapping, Canberra, 1980)
- TAS www.thelist.tas.gov.au

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Example - Area of Interest



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Soils Data Online

- Australian Soil Resource Information System (ASRIS) - [retired in 2024](#)
 - Metadata and limited file access still available
- Australian National Soil Information System (ANSIS) - TERN soil and landscape grid (90m resolution)

<https://www.csiro.au/en/research/natural-environment/land/Soil/ANSIS>

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Climate Data

- Bureau of Meteorology www.bom.gov.au
- Rainfall
- Evaporation
- Consider data range (years) and location suitability
- Compile local climate data into zones across the council area based on topography
- SILO data drill is available if no suitable or local station

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Rainfall and Evaporation Data

- Use to prepare a preliminary water balance

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Years
Statistics Site name: HOBART AIRPORT WEST Site number: 094008 Commenced: 1955 Latitude: 42.83° S Longitude: 147.50° E Elevation: 4m Operational status: Open														
Mean rainfall (mm)	40.2	34.0	36.3	40.1	37.8	34.2	41.4	47.2	42.2	47.2	44.3	52.1	406.0	64
Highest rainfall (mm)	151.4	188.4	112.4	203.7	137.8	138.2	166.1	118.4	117.6	137.8	103.6	148.8	738.4	64
Lowest rainfall (mm)	2.6	1.6	7.8	7.4	3.4	4.2	4.8	6.8	6.0	7.8	7.8	5.8	207.2	64
Days with rain	20.0	20.0	19.0	19.0	19.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	194.0	64
Days with no rain	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	166.0	64
Days with 1 or more rain events	20.0	20.0	19.0	19.0	19.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	194.0	64
Days with 2 or more rain events	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	166.0	64
Days with 3 or more rain events	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	132.0	64
Days with 4 or more rain events	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	88.0	64
Days with 5 or more rain events	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	32.0	64
Days with 6 or more rain events	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	16.0	64
Days with 7 or more rain events	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	8.0	64
Days with 8 or more rain events	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	4.0	64
Days with 9 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	2.0	64
Days with 10 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 11 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 12 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 13 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 14 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 15 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 16 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 17 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 18 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 19 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 20 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 21 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 22 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 23 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 24 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 25 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 26 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 27 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 28 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 29 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 30 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 31 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 32 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 33 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 34 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 35 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 36 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 37 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 38 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 39 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 40 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 41 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 42 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 43 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 44 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 45 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 46 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 47 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 48 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 49 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64
Days with 50 or more rain events	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	64

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SILO Data Drill

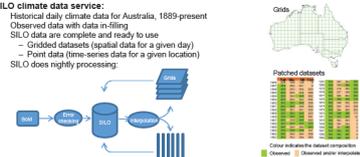
- QLD DNR www.longpaddock.qld.gov.au/silo/

SILO climate data online resource

SILO (Scientific Information for Land Owners) is a Queensland Government database containing point and gridded daily climate data for Australia from 1889 until present. SILO was designed to serve the needs of agricultural and hydrological modelling and bridges the gap between meteorological services and modellers. SILO provides daily point and spatially interpolated data with continuous (no missing days) datasets covering the period of 1889 until present. Consistent long-term climate data-series supports various modelling efforts within the Australian environmental sciences community.

SILO climate data service:

- Historical daily climate data for Australia, 1889-present
- Observed data with data in-filling
- SILO data are complete and ready to use
 - Gridded datasets (spatial data for a given day)
 - Point data (time-series data for a given location)
- SILO does nightly processing

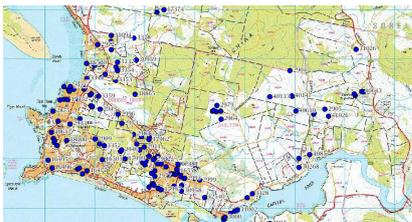


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Groundwater Resources

- The Groundwater Information Access portal <https://wrt.tas.gov.au/groundwater-info/>



Groundwater bores around Dodges Ferry / Carlton

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Planning Resources

Land Information System Tasmania (LIST) <https://maps.thelist.tas.gov.au/listmap/app/list/map>

- Zoning Maps
- Hazard Maps (Flood, Bushfire etc.)
- Protection Maps (Vegetation, drinking water catchments, fisheries etc.)
- Air photographs
- Local studies

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Sensitive Receptors

Land Information System Tasmania (LIST)

<https://maps.thelist.tas.gov.au/listmap/app/list/map>

- Acid Sulfate Soils
- Wetlands and Marine Reserves
- Hydrology and hydrography
- Priority Aquaculture Areas
- Endangered Ecological Communities (EEC)
- Threatened Species

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Example – Area of Interest



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Utility / Services Search

- Before You Dig Australia
www.byda.com.au
- Asset location referral service
- Interactive map to order asset plans
- Protection of people and assets
- Certified locator database (Telstra)

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Desktop Summary

- Tabulate data
- Assessment or rating – assign Level of 'limitation' for OWMS
 - Design on most limiting feature/s,
 - Engineer out limiting features, or
 - Provide mitigation to address limitation
- Designs should aim to reduce all Site limitations to 'low' or 'minor'

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Setbacks (or Buffers)

- Provide mitigation against unidentified or unintended hazards
- Reduce potential pathways for human and environmental exposure
- Valuable and cost-effective risk management strategy for OWMS
- Appropriate buffer selection based on TAS OWMS Guideline (2017) and procedures in AS/NZS 1547:2012

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Setbacks - Acceptable Solution

- Buildings – 6m (upslope) / 3m (downslope) or variation based on degree of slope and effluent quality
- Surface Waters – 100m (up) / 15+m (down)
- Property Boundary – 40m (upslope) or 1.5m + 2m per degree of slope (downslope)
- Water Supply bore/well – 50m and NOT within zone of influence
- Vertical Separation from groundwater / limiting layer:
 - 1.5m (primary)
 - 0.6m / 0.5m (secondary)

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Performance (Risk-based) Solution

- Where acceptable setbacks not achievable - OWMP Guideline (2017) recommends risk-based setback distance selection, using conservative minimum ranges from Table R1 (AS/NZS 1547:2012)
- Adopted setbacks should:
 - be based on local constraints (site, soil and system) to ensure protection of public health, the environment and amenity, and
 - allow reductions in applied setbacks based on the mitigation of identified risks

Risk-based Setbacks

- AS/NZS 1547:2012 Table R1 sets out constraint scale 'ranges' for individual items with respect to relevant Site / system features
 - based on methodology and procedures described in Appendix R
- Further reductions from adopted minimums 'may' be justified by additional information:
 - daily soil-water balance
 - nutrient attenuation modelling
 - viral die-off modelling

AS/NZS 1547:2012 Buffers

TABLE R1
GUIDELINES FOR HORIZONTAL AND VERTICAL SETBACK DISTANCES
(to be used in conjunction with Table R2)

Site Feature	Setback distance range (%) (See Note 1)	Site coverage limits of specific events (See Notes 2, 3)
Property boundary	1.5 - 3.0 (see Note 2)	A, E, J
Building/structure	2.0 - 3.0 (see Note 2)	A, E, J
Surface water (see Note 4)	1.0 - 1.50	A, B, D, E, F, G, J
Bank, wet/dry (see Note 5 and 6)	1.0 - 1.50	A, D, H, J
Recreational areas (E) (see Note 7)	3 - 15 (See Note 8 and 9)	A, E, J
In-ground water tank	4 - 10 (see Note 10)	A, E, J
Existing road and existing assets, encumbrances, setbacks (see Note 11)	3.0 - 10 (2° angle from toe of wall) (See Note 12 and 13)	D, G, H
Groundwater (see Notes 5, 6, and 10)	0.8 - 1.5	A, C, G, H, L, J
Hardcore or bedrock	0.5 - 1.5	A, E, J

NOTES
1. The smallest setback distance should be commensurate with the level of risk to public health and the environment. To reduce the risk, the smallest setback distance should be smaller than otherwise indicated in the high end of the constraint range. The setback distance should be based on an analysis of the potential hazard and appropriate remedial measures. Table R1 is not intended to provide a definitive barrier for residential properties.
2. To apply to the regulatory zone and design to a suitable depth and depth of penetration, the dependent of 0.5m to 1.5m within an unconfined boundary, for release greater than 50%, may be reduced to 0.5m.

TABLE R2
SITE CONSTRAINT SCALE FOR DETERMINATION OF SETBACK DISTANCE
(used in a public 1-dimensional appropriate setback distance from table R1 - Table R1)

Item	Parameter	Constraint Scale	Setback Distance	Setback Features
A	Minimum setback	Minimum of secondary treated effluent	1.5m	Minimum of secondary treated effluent
B	Surface water pollution hazard	Category 1 to 3 soils no surface water down gradient within 100m; low rainfall area	1.0m	Surface water pollution hazard
C	Groundwater	Category 1 to 3 soils no surface water down gradient within 100m; low rainfall area	0.8m	Groundwater
D	Drainage	Down gradient of surface water body property boundary, recreational area	3.0m	Down gradient of surface water body property boundary, recreational area
E	Flood Potential	Above 1 in 20-year flood contour	1.5m	Flood Potential
F	Application Method	Subsurface or subsurface application	1.5m	Application Method
G	Recreational areas	Category 1 to 3 soils no surface water down gradient within 100m; low rainfall area	3.0m	Recreational areas
H	Bank, wet/dry	Category 1 to 3 soils no surface water down gradient within 100m; low rainfall area	1.0m	Bank, wet/dry
I	Existing road and assets	Category 1 to 3 soils no surface water down gradient within 100m; low rainfall area	3.0m	Existing road and assets
J	Property boundary	Category 1 to 3 soils no surface water down gradient within 100m; low rainfall area	1.5m	Property boundary

Risk-based Setback - example

Constraint Item	Constraint Scale	
	Low Risk	High Risk
Effluent Quality	Minimum of secondary treated effluent (with disinfection and contractual service agreement)	Primary treated effluent
Surface water pollution hazard	Category 1 to 3 soils no surface water down gradient within 100m; low rainfall area	Category 4 to 6 soils permanent surface water <50m down gradient; high rainfall; high resource/environmental value
Slope	0-6% (surface effluent application) 0-10% (subsurface effluent application)	>10% (surface effluent application) >30% (subsurface effluent application)
Fall direction	Down gradient of surface water body property boundary, recreational area	Up gradient of surface water body property boundary, recreational area
Drainage	No visible signs of saturation	Visible seepage; moisture tolerant vegetation; low lying area
Flood Potential	Above 1 in 20-year flood contour	Below 1 in 20-year flood contour
Application Method	Subsurface or subsurface application	Surface/above ground application

Risk-based Setback - example

Constraint Item	Constraint Scale		
	Low Risk	Moderate Risk	High Risk
Effluent Quality	Minimum of secondary treated effluent (with disinfection and contractual service agreement)	Secondary treated effluent. No disinfection and/or irregular servicing	Primary treated effluent
Surface water pollution hazard	Category 1 to 3 soils no surface water down gradient within 100m; low rainfall area	Category 1 to 6 no surface water down gradient within 50m; moderate rainfall area	Category 4 to 6 soils permanent surface water <50m down gradient; high rainfall; high resource/environmental value
Slope	0-6% (surface effluent application) 0-10% (subsurface effluent application)	7-10% (surface application) 10-30% (subsurface application)	>10% (surface effluent application) >30% (subsurface effluent application)
Fall direction	Down gradient of surface water body property boundary, recreational area	Cross-gradient of surface water body property boundary, recreational area	Up gradient of surface water body property boundary, recreational area
Drainage	No visible signs of saturation	Misting noted in subsol with no signs of surface saturation	Visible seepage; moisture tolerant vegetation; low lying area
Flood Potential	Above 1 in 20-year flood contour	...	Below 1 in 20-year flood contour
Application Method	Subsurface or subsurface application	...	Surface/above ground application

25.0m 62.5m 100.0m

Risk-based Setback - example

Constraint Item	Constraint Scale		
	Low Risk	Moderate Risk	High Risk
Effluent Quality	Minimum of secondary treated effluent (with disinfection and contractual service agreement)	Secondary treated effluent. No disinfection and/or irregular servicing	Primary treated effluent
Surface water pollution hazard	Category 1 to 3 soils no surface water down gradient within 100m; low rainfall area	Category 1 to 6 no surface water down gradient within 50m; moderate rainfall area	Category 4 to 6 soils permanent surface water <50m down gradient; high rainfall; high resource/environmental value
Slope	0-6% (surface effluent application) 0-10% (subsurface effluent application)	7-10% (surface application) 10-30% (subsurface application)	>10% (surface effluent application) >30% (subsurface effluent application)
Fall direction	Down gradient of surface water body property boundary, recreational area	Cross-gradient of surface water body property boundary, recreational area	Up gradient of surface water body property boundary, recreational area
Drainage	No visible signs of saturation	Misting noted in subsol with no signs of surface saturation	Visible seepage; moisture tolerant vegetation; low lying area
Flood Potential	Above 1 in 20-year flood contour	...	Below 1 in 20-year flood contour
Application Method	Subsurface or subsurface application	...	Surface/above ground application

25.0m 62.5m 100.0m

Preliminary Constraints Mapping

- Undertaken in advance of, and to prepare for, field study
- Guides field study
- Identifies data gaps to be filled by field study
- Most importantly, saves time and money

Into the Field We Go.....

Desktop Study – will have identified potentially suitable effluent management areas (EMAs).

A preliminary constraints map will also identify:

- Appropriate setback areas from natural or built features (existing and proposed)
- Identified physical constraints (e.g. bedrock, fill)
- Data gaps (areas for investigation)
- Regional soil landscapes (including boundaries)
- Recommended soil (test pit/bore) locations
- Indicative groundwater depth

