Assessing A20 permit applications for onsite wastewater management systems

Training for Council Officers

Land Capability Assessments

What they should contain

EP Regulations 2021

- Impose obligations for land managers (Councils) relating to onsite wastewater management (OWM) systems (<5,000L/day)
- Council (A20) permit and condition the construction, installation, alteration and validation of OWM systems
- If required, the permit application must be supported by a Land Capability Assessment

LCA Definition

- Environmental Protection Regulations 2021 (EPR) defines LCA as:

"an assessment of the risks of harm to human health and the environment of the proposed or existing on-site wastewater management system at the site, taking into account the proposed or existing use of the system"

- Regulation 26(2)(e) lists a LCA as prescribed information for an A20 Permit application "if required by the council or Victorian Planning Provisions"

Reference Material

- Guideline for Onsite Wastewater Management (GOWM) (EPA, 2024)
- Guideline for Onsite Wastewater Effluent Dispersal and Recycling Systems (EDRS Guideline) (EPA, 2024)
- Code of Practice (CoP) – Onsite Wastewater Management, Publication 891.4 (superseded)
- Victorian Land Capability Assessment Framework (2nd Edition, MAV, DEPI & EPA 2014), or as amended

Victorian LCA Framework

- Model LCA Report (MAV & DSE, 2006 as amended)

Document and water balances from *www.mav.asn.au*

- Victorian Land Capability Assessment Framework (Word - 1.1MB)
- VLCAF irrigation area sizing spreadsheet (Excel – 42.0KB)
- VLCAF trench and bed sizing spreadsheet (Excel – 27.9KB)

The Model Land Capability Assessment Report

Land Capability Assessment
Lot 585 Bundalaguah Road, Maffra

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LCA Framework

- Recommended report structure
- Recommended content based on the current guidelines (2014)
- Standard calculation spreadsheets (irrigation and trench)

LCA Purpose

Intended to:

- Identify locality, landscape and soil characteristics significant to the selection, location and size of an OWMS
- Assess capability to sustainably manage all wastewater within allotment boundaries (containment)
- Quantify risk and gather relevant information to inform the design process and formulate a sustainable Wastewater Management Plan
- Enable 'authority' to make informed decision on viability of an unsewered development proposal

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When is LCA required?

- Recommended for all unsewered development
- May not be required by Council if site is considered low risk or if adequate information is already available
- In many LGA's OWMP will inform 'risk' status of unsewered land
- Currently LCA is mandatory for unsewered development in Special Water Supply Catchment areas (Ministers Guideline: Policy 1); where, dwelling density >1:40 ha or non-residential development proposed

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Who should complete an LCA?

- Must be completed by a person that Council considers is "suitably qualified and to a standard acceptable to the Council"
- Generally, a person who has appropriate technical expertise and experience in site and soil assessment and onsite wastewater design
- Councils may require written verification of qualifications, experience, professional affiliations and professional indemnity (PI) insurance

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LCA Framework procedure

- Site Details
- Desktop Assessment
- Field Investigation (Site and Soil assessment) and Interpretation
- Constraint (Risk) Analysis
- OWMS (Treatment and EDS) Design
- Risk Mitigation
- Management and Maintenance
- Detailed Site Plans

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Site Details

- Setting the scene:
  - Site description including context, location (property ID, street address), township details
  - Development type, including existing and proposed development (scale and scope)
- Consultation:
  - Understand authority (Council or WA) requirements for LCA (e.g. OWMP)
  - Other agencies (DEECA, CMA etc.)
  - Land owner expectations and responsibilities

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Desktop Assessment

- Property boundaries, roads, land zoning and planning specifications
- Topographic information (contours, landscape position and surface hydrology)
- Imagery (current and historic)
- Soil mapping
- Climate data (rainfall and evaporation)
- Groundwater resources (domestic and public supply)
- Location of services (water, sewer, gas, electricity etc.)

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Desktop Assessment

- Land use mapping (adjacent and regional context e.g. agriculture)
- Environmental Overlays (Flooding, Bushfire, Ecology and Special Water Supply Catchment Area)
- Strategic Plans (development strategies, lot size requirements, backlog sewer areas etc.)
- Known OWMS limitations (poor soils, shallow rock or GW in locality
- Owner resourcing / capacity and understanding

Constraints Mapping

- The desktop assessment is used to develop a preliminary overview of the Site (Constraints Map), identifying:
  - constraints and opportunities for implementing an OWMS
  - unsuitable ground conditions
  - data gaps for further investigation
  - suitable areas for EDRS installation, and
  - target locations for soil boreholes or test pits

Field Investigation

- Desktop site and soil assessment must be supported by on-ground confirmation and observation of key site and soil features in accordance with Table 1 and 2 of the LCA Framework (MAV, 2014)
- 'Level of Investigation' based on development scale (single-lot or subdivision / rezoning)
- Site walkover
- Take photos and fieldnotes of observations

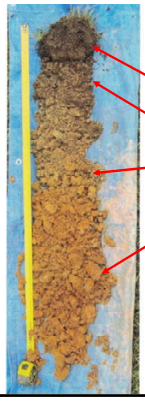
Site Assessment

- Aspect
- Climate
- Erosion and landslip
- Fill
- Flooding
- Groundwater
- Suitable land
- Landform
- Rock outcrops
- Setback distances
- Site drainage
- Run-on and run-off
- Seepage
- Slope
- Surface hydrology
- Vegetation and cover

Soil Assessment

- Minimum 2-3 excavated (pits) or augered (holes) to a depth of at least 1.5m within potential land application areas (LAA)
- More test holes may be necessary if the soil varies widely within the LAA
- Physical and chemical testing of collected soil samples (in field or lab conditions)
- Detailed bore-logs of each soil test location, describing key characteristics of each horizon
- Soil bore-logs and testing results should be included in the appendices

Soil Profile Description



Depth (m)	Horizon (Layer)	Texture	Structure	Colour	Mottle
0.1	A_1	SCL	Moderate	Dark Grey	Nil
0.4	A_2	SCL	Moderate	Grey Brown	Nil
0.9	B	LC	Weak	Strong Yellow	Red and Gley
> 1.2	C	Weathered Parent Material			

Soil **horizons or layers** can be distinguished from those above and below e.g. topsoil and subsoil

Soil Assessment

- Physical
  - Texture
  - Structure
  - Mottling
  - Coarse Fragments
  - Soil Moisture
  - Soil Stability
  - Soil Category
  - Design Loading Rate (DLR)
- Chemical
  - pH
  - Sodicity (ESP) or Dispersion
  - Salinity (EC)
  - Cation Exchange Capacity (CEC)
  - P-sorption

Constraint Analysis

- Table 3 (Site) and Table 4 (Soil) of the LCA Framework provide semi-quantitative risk assessment methodology (MAV, 2014)
- Level of 'constraint' documented for site and soil characteristics, based on observed field conditions
- Moderate and Major constraints to OWMS should be addressed to the extent that the design can reasonably be expected to meet appropriate public health, environmental and amenity requirements
- Suitable mitigation measures explored

OWMS Design

- Assess suitable OWMS design (treatment and effluent dispersal) against the most limiting site and soil features
- Demonstrate hydraulic and contaminant loads can be adequately assimilated
- Confirm OWMS can achieve effluent quality and performance objectives for the site
- Management Plan to ensure ongoing compliance
- Demonstrated consultation with the owner (expectations, costs, management, servicing availability, future contingency planning)

Design flow

- Design flows from the GOWM (EPA, 2024) are calculated based on multiplying the household occupancy by the appropriate design flow rate (Table 4-1)
- Household occupancy is based on the number of bedrooms
- Allowance for 'potential' bedrooms (rooms that could be converted to bedroom), at the discretion of the council
- Consider expected use of the premises (i.e. holiday homes) or available water usage data

Household Water Usage

- Average residential usage across regional Victoria in 2021/22 (Essential Services Commission)
  - Geelong – 160kL/yr (440L/day)
  - Ballarat – 151kL/yr (413L/day)
  - Shepparton – 261kL/yr (713L/day)
  - Warrnambool – 141kL/yr (385L/day)
  - Bairnsdale – 146kL/yr (399L/day)
- Sewer discharge ~80% of water usage (70%-90% seasonal)
- Calculate = average 376L/day household wastewater generation (equivalent ~2.5EP @ 150L/day)

Design flow - commercial

- Design hydraulic flowrates and organic loads for commercial premises (sewage component only) should use Table 4-4 of the GOWM (EPA, 2024)
- Premises not generating sanitary wastes (sewage) or >5,000L/day are excluded from the guidelines
- Actual metered water usage or wastewater flow data may be used to support proposed flow rates for commercial designs
- High 'organic load' premises must be addressed
- All new OWMS should include flow metering

Risk Mitigation

- The entire OWMS design and approval process aims to mitigate risk (LCA preparation, constraint assessment, design solution and installation and inspection requirements)
- GOWM Section 4.5 – application of setbacks
- GOWM Section 4.6 – considers other constraint responses (flooding, small lots, challenging soils, shallow soils and salinity)
- EDRS Sections 4.5 and 4.7 – detail setbacks and other risk reduction measures (modified DLR, stormwater control, raised EDS, pathogen and nutrient management, additional modelling and reserve areas)

Management and Maintenance

- OWMS design should detail how the system is to be operated and maintained to ensure effective ongoing performance, based on the particular design processes
- GOWM (Chapter 6) and EDRS (Table 47 and 48) provide suggested operation and maintenance measures (see Tables 47 and 48)
- Advice should include appropriate maintenance intervals
- As required, monitoring guidance should be included (sludge measurement, component operation and process efficiency etc.)

Checklists

- Checklists for application assessments allow for a repeatable and consistent assessment process, that can be analysed for sufficiency
- The EDRS Guideline includes a checklist (Table 70) for:
  - permit application assessment
  - OWMS suitability
  - regulatory assessment to Part 3.3 of the EPRs
- The EDRS Guideline checklist relies on cross-reference to the Regulations, GOWM and EDRS Guideline

Checklists

- Councils should develop their own localised assessment checklist from the EDRS example to generate a template ‘Application Assessment Report’
- Suggested detail:
  - details of the report and assessor;
  - an explanation and reference for each point;
  - the priority of the information (critical, relevant, supporting);
  - space for comments

Checklists

- A copy of the EDRS Guideline permit application assessment checklist for is included in the notes
- An example ‘Application Assessment Report’ checklist is also provided for future reference
- We will be using the checklist as part of an exercise in the next session….

Example LCA assessment

- An example LCA Report is included in the notes. It has been de-identified, but reflects a typical LCA assessor approach using previously accepted methodology
- Individually, or in groups, review the LCA Report using the checklist provided, considering:
  - prescribed minimum standard of information
  - suitability of information
  - priority of information
- If presented with the example LCA report, what additional information might you request?