ENVIRONMENTAL HEALTH FACT SHEET NO. 508

LAND CAPABILITY ASSESSMENTS FOR UNSEWERED SUBDIVISIONS

fact sheet

The following information is provided as a general guide to help explain the NT Department of Health and Families' (DHF) requirements for Land Capability Assessments (LCAs) of unsewered residential, commercial and industrial subdivisions. DHF may also elect to apply the requirements for an LCA to significant developments on individual allotments. Further information about LCAs is contained in the following documents:

- Model Land Capability Assessment Report – February 2006 Municipal Association of Victoria http://www.mav.asn.au/CA256C320013CB4B/Lookup/LCA%5fReport/$file/MLCA%20Report.pdf
- AS/NZS 1547:2000 On-site domestic-wastewater management (Part 4)
- Code of Practice for Small On-site Sewage and Sullage Treatment Systems and the Disposal or Reuse of Sewage Effluent in the NT.

WHAT IS A LAND CAPABILITY ASSESSMENT?

A Land Capability Assessment (LCA) is a written report that assesses the various aspects of a site in relation to wastewater collection, treatment and disposal, especially the way it is proposed to be developed without connection to a reticulated sewage system.

An approved onsite or decentralised wastewater treatment system is required for developments wherever reticulated sewerage is not provided. A wastewater treatment system means a system for the bacterial, biological, chemical or physical treatment of sewage, and includes all tanks, beds, sewers, drains, pipes, fittings, appliances and land used in connection with the system.

Historically, wastewater treatment systems have comprised a traditional septic tank with absorption trenches. However composting toilets, domestic sewage treatment plants and greywater treatment systems now also fall under this definition. Onsite wastewater treatment systems also include aerated wastewater treatment systems, which may be useful on constrained sites or in areas with poorly draining soils. All systems must adequately treat, retain and manage effluent within the property boundaries.

The LCA procedure should be applied at the rezoning or subdivision stages of the planning process, however with appropriate changes to scale and data collection requirements, it could also be used to assess the capability of individual allotments particularly multi unit developments and commercial/industrial sites.

The overall objective of the land assessment process is two-fold:

- To assess the capability of the site to sustainably manage wastewater within allotment boundaries; and
- To identify a management program that should be put in place to minimise the public health and environmental impacts of onsite wastewater management.

The DHF Environmental Health Program (Environmental Health Branch) requires that the LCA procedure should be used to ensure that unsewered sites only proceed on land that has an acceptable capacity for sustainable on-site wastewater management.

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The Environmental Health Branch has adopted the LCA Procedure detailed in Municipal Association of Victoria *Model Land Capability Assessment Report – February 2006.* Proponents should take particular note of Chapter 4 "LCA for Planning Scheme Amendments & Subdivisions" that states:

> ***"Regardless of scale, the main objective of all LCAs is the same, that is the determination of the ability of each allotment to contain wastewater within the site boundaries, and the demonstration that the use of onsite domestic water systems would not impact on the surface water and ground water. Additional considerations for strategic level LCAs, for example subdivisions are summarised in Table 1 on Page 7. The information contained in this table, along with the model LCA and AS/NZS 1547:2000 provide good guidance on best practice multiple lot LCA".***

The Environmental Health Branch will not approve the subdivision or a significant development on an individual allotment unless it is satisfied that the proposed management program is practicable. Ensuring that the LCA sufficiently addresses domestic wastewater management requirements before granting approval is an important duty of care obligation.

The potential risks from the use of onsite wastewater management must be identified and adequately addressed to ensure that the development is sustainable. These include but are not limited to the following:

- Impact upon human health both onsite and offsite; this should allow for the potential and future development of neighbouring land in the area as well as the subdivision.
- The suitability of using onsite wastewater treatment and any limitations in accordance with the intended purpose of the allotment (for example pretreatment requirements for trade waste).
- The practicalities of containing the system within the allotment; a reasonable assessment of the area requirements of onsite wastewater treatment systems according to site and soil constraints in accordance with the reasonable use of allotments for the intended purpose.
- The proximity to site features including river/creeks, dams, slopes, waterways, roadways etc.
- The means of water supply for the subdivision including the impact of onsite wastewater treatment on these (for example the additional area requirements to allow the setback distances for bores if required as a water supply).
- Economic and financial impact from the use of onsite wastewater systems to the development of the site.
- The range of onsite wastewater systems that could be utilised on an allotment, including the most preferred system. It should also be highlighted if the use of particular type of systems would be restricted as part of the development.
- Future development constraints from the use of onsite wastewater treatment.
- The ability to connect to reticulated sewerage in the future and the impact of this upon the current development proposal.
- The type of soil located throughout the site and its suitability for use with onsite wastewater disposal systems.
- Other characteristics that limit the use of an onsite system: high water table, rainfall patterns, low lying and boggy areas, and areas subject to flooding.

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WHEN IS AN LCA NEEDED?

A land capability assessment is required for development proposals in unsewered areas.

These include all new subdivision proposals (including those in remote aboriginal communities) that involve more than three allotments and significant developments on individual allotments such as multi-unit residential, commercial and industrial developments. The Environmental Health Branch will make a determination based on risk of what is considered to be a "significant" development.

The Environmental Health Branch encourages potential applicants to discuss their unsewered development proposal with an Environmental Health professional prior to lodging a formal application. This helps to identify any potential risks with the proposal, clarifies the information required and ensures that all necessary documentation is provided in the first instance. It therefore avoids delays being incurred during the approval process instead of applications being returned for further information/clarification.

The feasibility of providing reticulated sewerage should be seriously considered for the development of subdivision proposals when residential development would result in allotments smaller than 4,000m^2 (1 acre) in size.

This concept is to ensure that inappropriate development does not proceed with an expectation that reticulated sewerage will come at a later date to solve problems being incurred. The LCA should therefore seriously explore the viability of providing sewerage if such small lots are proposed as part of any new subdivision. Effectively, the 4,000m^2 specification is not a minimum lot size, but rather, a risk threshold or trigger point. That is, there are significant risks associated with onsite wastewater management on lots smaller than 4,000m^2.

LCAs prepared for subdivision developments that are comprised of allotments less than 4,000m^2 will need to satisfactorily address the identified higher risks, including a detailed ongoing management plan and contingencies to be implemented should a system fail. The approval of sustainable unsewered development effectively indicates that reticulated sewerage is not needed in those locations. This will have important links to the future strategic growth patterns for new residential development, and the associated infrastructure required.

DEVELOPMENT CONSENT AND LCA

The Development Consent Authority (DCA) is established under the *Planning Act*. Divisions of the Development Consent Authority determine development applications within their area. Currently there are 7 division areas, associated with the larger population centres, Alice Springs, Batchelor, Darwin, Katherine, Litchfield, Palmerston and Tennant Creek. Outside of these areas the consent authority is the Minister for Planning.

When a development application is lodged the DCA ensures the public and local authorities are notified, and invited to provide submissions. Service authorities such as the Environmental Health Branch are invited to comment. The Environmental Health Branch advises on those aspects of a development application that could have an impact on human health and this includes land capability assessment and onsite wastewater management.

Response/decision made by the Environmental Health Branch through planning process may include a request for additional information or a decision to allow the development to proceed with conditions; or the development to proceed as stated in accordance with the accepted LCA; or a decision to refuse support for the application. Development consent may be delayed in the event that a developer fails to address issues raised by the Environmental Health Branch during the planning process. Appealing a decision made by the Environmental Health Branch is done via the planning process. The notification process varies outside the DCA division areas.

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WHAT SHOULD AN LCA CONTAIN?

The complexity of information contained in a LCA may vary, depending on the size or nature of the proposed development.

The LCA is a document written in a report format and should contain sufficient details to the enable the Environmental Health Branch to make an informed decision about the proposal. Dot points with minimal detail, risk ratings with no explanation or tick the box reports are considered to be insufficient. It is important that LCA reports are clear, easy to follow and properly structured with appropriate headings and sections to provide the reader with an informed understanding of the proposal, risks identified and methods proposed to be implemented to address those risks.

The following is an example of a format for an appropriately structured LCA that contains suitable headings and sub sections. Some further explanation and comments about the various aspects are also provided:

SUGGESTED FORMAT

1.0 SUMMARY	Provide an overview of the report. Summarise the key aspects.
2.0 INTRODUCTION	Set the scene. Introduce the subject and describe the purpose of the report.
3.0 BACKGROUND 3.1 Proposal Overview 3.2 Report Objectives 3.3 Report Background 3.4 Limitations/Assumptions Made	Explain the reasons for the development proposal and any associated specific information. Mention any discussions/meetings that have previously occurred between relevant stakeholders, including state and local government authorities and who were involved. What information has the owner conveyed to the LCA assessor and what is not known? What assumptions are being made? Sufficient background about the proposal greatly assists Environmental Health staff in assessing the development proposal.
4.0 SITE INFORMATION 4.1 Location 4.2 Property Title 4.3 Area 4.4 Zoning and Overlays 4.5 Land Use - Past History - Existing Land Use 4.6 Use of surrounding land and features	Describe the subject site. Include locality maps, property dimensions and proof of ownership. Provide appropriate orientation details, including the direction of North. Show all land features on the allotment and nearby, such as existing house/s, sheds, driveways, dams, creeks water courses etc. What is the zoning of the land? What planning overlays apply? Discuss the use of the land - past, present and proposed. Is it consistent with surrounding land use?

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5.0 LAND FEATURES 5.1 Topography 5.2 Soil 5.3 Climate 5.4 Vegetation 5.5 Drainage 5.6 Flooding/Flood Levels 5.7 Catchment Area	Assess the land features of the site. Show the slope of the land with contour lines. Discuss soil characteristics and profiles. Do they vary over the site? What density of development/onsite wastewater management can the soils sustainably manage? Identify local rainfall patterns. Discuss site drainage, surface water discharge of site, catchment areas and applicable flood levels.
6.0 INFRASTRUCTURE 6.1 Power 6.2 Telephone 6.3 Water 6.4 Gas 6.5 Sewerage 6.6 Access	What services are available and where are they currently located? What services are to be provided as part of the proposed development? Consider the provision of fully reticulated services, including sewerage, particularly if allotments are less than 1ha. Discuss the proposal with surrounding landowners, is there opportunity to share infrastructure development costs for mutual benefit? Discuss why sewer is not being provided for allotments less than 1ha. What is the basis of creating new lots if less than 1ha proposed?
7.0 PROPERTY USE FEATURES 7.1 Livestock 7.2 Cropping and Horticulture 7.3 Bores and Dams 7.4 Building Envelope 7.5 Water Use	Discuss the capability of other land use features and the impact of the proposed development. Will these be limited/possible given the need and location of onsite wastewater management? Are future dams possible/likely? Where could and could not they be sited? Nominate building envelopes, wastewater management fields (including reserve areas). Suggest how the land could be sustainably developed. Show how the proposed subdivision layout and proposed allotment sizes are in keeping with the natural/existing features of the land.

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8.0 LAND CAPABILITY 8.1 Constraints 8.2 Mitigating Circumstances 8.3 Soil Percolation 8.4 Risk Rating 8.5 Land Capability Assessment Summary Table 8.6 Management Protocols	What is the capability of the soil for onsite wastewater disposal? What constraints and limitations are identified? Conduct percolation tests and discuss the results. Assess the overall data collected, summarise in an appropriate table format. Allocate risk ratings and identify protocols to be implemented to address identified risk.
9.0 EFFLUENT TREATMENT 9.1 Recommended Wastewater Treatment 9.2 Design and Specifications 9.3 Disposal Fields and Reserve Area Allocations	Given the assessment conducted to date, including identified risks, what is the recommended way to treat and manage wastewater onsite? What prescribed standards are to be achieved? Provide details of relevant design specifications and reasons for recommendation. The information is likely to be quite technical and show design calculations and determinations made. The LCA assessor should liaise with the landowner to discuss preferred options. Show the location of disposal field/s and reserve areas. Discuss suitable vegetation to receive wastewater, including nutrient uptake projections where applicable.
10.0 MANAGEMENT AND MAINTENANCE PROTOCOLS 10.1 Sustainability 10.2 Householder 10.3 External Contractors 10.4 Other ongoing management, maintenance and reporting protocols	Develop a management program for the development proposal. This should be readily adaptable to a handbook type format to easily show the responsibilities of the various stakeholders – particularly owner/householder responsibilities, external contracts to be maintained, obligations of external servicing contractors, assessment and reporting/testing mechanisms. Discuss preventative management/maintenance and what to do if things go wrong.
11.0 CONCLUSION	Summarise the findings of the assessment. Bring together the conclusions drawn and findings/recommendations made.
12.0 ABOUT THE AUTHOR	Provide details of those involved in preparing the LCA. Include any other persons/companies used. Show that the author is a suitable person for the preparation of LCAs. Provide details of qualifications and experience, professional memberships, professional indemnity insurance etc.

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APPENDICES	Provide relevant appendices, including aerial photographs, site photographs, further technical supporting documentation, extracts from relevant sources quoted etc. Ensure these are appropriately numbered/correlated and referred to in the body of the main report for ease of reference.
BORELOGS AND SUPPORT DATA	Supporting Soil Classification Data/Percolation test details etc.

MAPS	• Locality: Cadastral approx 1:25,000 and 1:2,000 scale • Site: Applicable for the proposed development – may include specific site assessment and general subdivision such as 1:1000, even up to 1:500 scale. • Land Features and Development • Infrastructure; location of existing water and sewerage • Land Subject to Inundation Overlay approx 1:10,000 • Proposed subdivision layout • Building envelopes • Wastewater Management Areas, incl. reserve areas

WHO SHOULD PREPARE A LCA?

While there is no specific recognised formal qualification or professional affiliation, the Environmental Health Branch must have a high degree of confidence and certainty with regard to the outcomes and conclusions made by assessors. Assessors background, qualifications, professional affiliations and experience are the common means of determining suitable persons. Generally, suitable persons are from a soil, engineering or environmental background. As the findings, recommendations and conclusions made in the assessment carry a degree of risk, appropriate professional indemnity insurance held by the assessor is considered pertinent. This is particularly important as decisions made by the Environmental Health Branch may be based upon the contents of a LCA report.

Details of suitable persons may be sourced via local knowledge, liaison with developers and advertisements placed in appropriate wastewater/environmental journals. The Yellow Pages directory under “Geotechnical Engineers &/or Consultants“, “Environmental and/or Pollution Consultants” or “Soil Testing and Investigation” may also provide details of suitable persons.

CLARIFYING THE ROLE OF THE DHF ENVIRONMENTAL HEALTH BRANCH

The Environmental Health Branch staff are proactive in supporting sustainable unsewered developments and are key players in achieving long term sustainable development in unsewered areas – it is an important statutory role of the Environmental Health Officer.

It is therefore important that LCAs provide adequate information for the Environmental Health Branch or its delegate/s to make a proper determination upon. **It is not the task of the Environmental Health Branch to undertake site and soil assessments for developers.**

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Applicants should arrange for this to be done on their behalf. The assessment should be sufficiently rigorous to allow the Environmental Health Branch to be fully informed in preparing approval conditions for the development.

The Environmental Health Branch will not approve development applications if the proponent's supporting information (including the LCA) is inadequate, or if the proposed management program is impracticable. The onus of proof rests with the proponent to demonstrate that the proposal is environmentally sustainable.

The Environmental Health Branch staff are however pleased to discuss the general requirements of LCAs and options for domestic wastewater management. It is acknowledged that the LCA concept is somewhat new to many landowners looking to develop or subdivide their land. The Environmental Branch staff are available to explain in simple terms, the application process, potential risks that may be incurred and associated aspects of unsewered development proposals.

DOMESTIC WASTEWATER MANAGEMENT PROGRAM

The Environmental Health Branch is currently developing LCA criteria as part of an on-site domestic wastewater management plan for those areas not serviced by reticulated sewerage.

The wastewater management plan concept is a new initiative and Environmental Health staff are in the early planning stages of developing a management plan for unsewered areas in Darwin, Alice Springs and remote areas, based largely on the model MAV document.

This fact sheet is intended to serve as Environmental Health LCA criteria in the interim, pending the development of the wastewater management plan.

Important aspects of the wastewater management program will ensure:

- onsite wastewater is managed so that there is no danger to human health;
- developments using on-site systems only proceed after they have been demonstrated to be environmentally sustainable;
- domestic wastewater treatment occurs via DHF approved on-site systems;
- wastewater is properly confined within the allotment boundaries;
- programs for ongoing management of onsite systems are feasible and achievable; and
- monitoring and inspection programs are carried out.

The Environmental Health Branch will consider both existing and proposed unsewered development. The cumulative impact of nearby septic tank systems on small allotments in unsewered subdivisions will be a key aspect of the plan. Assessing identified problems and determining best practice outcomes will enable appropriate management systems to be established. It will also provide a basis for the future planning of common effluent disposal systems or reticulated sewerage by identifying priority need areas. The Environmental Health Branch resources required for liaison with landowners, site inspections (both new installations and in response to complaints about existing failing systems) and ensuring compliance with permit conditions will also be a key component of the management program.

Upon completion, the wastewater management plan concept may even avoid the necessity of certain development proposals requiring a specific LCA to be prepared, provided that the proposal is consistent with the identified key outcomes.

It is proposed that the wastewater management plan will be prepared during 2009. Liaison with all stakeholders, including community consultation, is an important part of the plan's development.