Government of **Western Australia**
Department of **Health**

Guidance on Site-and-soil evaluation for on-site sewage management

Site-and-soil evaluation (SSE) requirements for the design and management of on-site sewage systems in areas that are not connected to reticulated sewerage have now been incorporated into the *Government Sewerage Policy* 2019 (GSP). The GSP uses the SSE approach of the *Australian Standard AS/NZS1547:2012 On-site Domestic Wastewater Management* (AS/NZS 1547).

This document explains SSE requirements to ensure that unsewered development only proceeds on land that has an acceptable capacity for sustainable on-site sewage management, and where constraints have been identified and addressed.

What is a Site-and-soil evaluation (SSE)?

An SSE is a written report that examines the various aspects of a site in relation to sewage collection, treatment and on-site disposal to ensure adequate management over time.

The assessment is to be in accordance with *AS/NZS 1547 On-site domestic wastewater management* reviewing all relevant constraints and the risks to public health and the environment potentially posed by an on-site sewage system. Whilst AS/NZS 1547only applies to domestic wastewater management, the guidance for SSE is also relevant to non-residential development.

The overall objectives of the SSE process are to:

- assess the capacity of the site to sustainably manage sewage within lot boundaries;
- identify public and environmental health risks of on-site sewage management especially the effect on groundwater and surface water on the site;
- identify the most appropriate on-site system in consideration of site conditions and the nature of the proposed development; and
- identify and implement a management program to minimise these risks if required.

Why is an SSE required?

An SSE ensures that the property is large enough to accommodate an appropriately-sized treatment system, land application (irrigation, disposal or reuse) system for the size and location of the development and infrastructure that the property owner wishes to build. Where there is insufficient land to sustainably manage the proposed volume of wastewater, the size of the proposed development will need to be reduced.

When is an SSE required?

The GSP requires site and soil evaluations in support of planning and development applications in unsewered areas, including local planning scheme amendments, subdivision, and commercial and industrial developments and subdivisions and multi-unit residential developments.

An SSE may also be required to determine whether an existing development can sustainably contain all treated wastewater as part of an application to install an on-site sewage system in accordance with the *Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974*.

The SSE should be undertaken as early as possible in the planning phase of the development or subdivision.

The table below shows the stages in the planning process and scale of development and determines the timing and the level of detail of investigation and reporting.

Stages in Planning Process	**Scale of Proposal**	**Level of Assessment Required**	**Purpose**
Sub-regional/district plans and local planning strategies	• catchment-wide (multiple local government areas) • one local government area • part of an local government area	• broad SSE to determine areas which are most favourable for new developments • desktop analysis based on soil landscape maps, GIS (geographic information systems), reports, studies and local knowledge • representative testing of different soil landscape types (if necessary)	• review practicability of sewered versus unsewered option for wastewater management • determine broad suitability for on-site sewage management • eliminate areas not suitable for on-site sewage management or where technological solutions are cost prohibitive or ecologically unsustainable • evaluating environmental and public health risks • identify local government resourcing requirements to monitor on-site sewage management
Rezoning and local structure plan	• one local government area • part of an local government area • specific site	• detailed SSE for site-specific rezoning	• determine minimum lot sizes • identify appropriate treatment technologies and on-site sewage management system (e.g. disposal, reuse) • establish performance standards/criteria • determine management and monitoring options
Subdivision	• specific site	• detailed SSE if not done at the earlier planning stage	• determine capacity of proposed lots to contain sewage on-site without compromising environmental and public health outcomes • select and size treatment/on-site sewage management system, including land application area • identify management and monitoring

			options • define adequate on-site sewage management locations
Development	• individual lot	• site specific SSE if not done at the earlier planning stage	• determine capacity of site to contain proposed development and sewage on-site, without compromising environmental and public health outcomes • design precise treatment/on-site sewage management system • implement management and monitoring options
SSE – Site and Soil Evaluation			

Who should undertake an SSE?

Individual landowners or developers are responsible for engaging a suitably qualified and experienced professional to undertake an SSE for unsewered developments and subdivisions.

What are the competencies of SSE assessors?

The assessor should either possess an appropriate tertiary-level qualification or specific knowledge and practical experience of soil science, in particular soil hydrological and soil chemical processes.

An SSE professional should possess technical expertise and experience with the broader, inter-disciplinary fields of on-site sewage management, including skills in the interpretation of site, soil and climate conditions, undertaking water and nutrient balances, selection and design of appropriate wastewater treatment systems, disposal and reuse options, and other relevant skills.

What are the stages of an SSE?

After clarifying the property owner's objectives, an SSE has the following stages:

- a desk top study,
- an on-site and surrounding area field check and,
- land capability testing and evaluation.

What risks are to be considered in an SSE?

Australian Standard AS/NZS 1547 takes a risk management based approach in the assessment, design, installation, operation and monitoring of on-site sewage management systems. This includes the identification, assessment, reduction and monitoring of risks to public health, the environment and local amenity. The extent of the evaluation should be proportionate to level risk associated with on-site sewage disposal. It is expected that in areas where health and environmental risks are minimal, the extent of the SSE can be scaled down. Risks need to be well managed to avoid:

- contamination of drinking water supplies,

- contamination of groundwater or recreational waters,
- exposure to wastewater,
- negative impacts on aquatic and terrestrial ecosystems,
- reduction in the amenity value of land, water and air through odours, bogginess, ponding, scums and algae overgrowth,
- contamination of food sources.

What are the reporting requirements of an SSE?

The desk top study and the field visit must identify features on and adjacent to the property in accordance with AS/NZS 1547. This may include, but is not limited to:

- water and nutrient balance
- topographical features including slope and aspect
- underlying geology, soil types, rocky outcrops, presence of restrictive soil horizons and bedrock and shallow soils
- potentially poorly drained areas, drainage lines, seepage, watercourses and flood frequency
- legal and planning information including boundaries and existing and proposed infrastructure, landuses
- location, depth, nature and value of aquifers and bores, depth to shallow perched or seasonally high water table
- potable water supply catchments, dams and waterways
- risks from stormwater flows and flooding
- rainfall and pan evaporation readings
- vegetation type and density
- the degree of previous soil disturbance, contamination, compaction and imported fill
- risk of erosion and land slippage
- distance to surface waters, road cuttings, embankments, retaining walls, fence and buildings
- soil surface conditions – stoniness, dampness, hardness, soil cracks
- salinity
- sodic and dispersive soils
- soil permeability (constant head) test in accordance with AS/NZS 1547
- sensitive environments inside and around the lot boundaries

As an SSE must be carried out in accordance with the AS/NZS 1547 please refer to the Standard for full details.

The scale and nature of the reporting requirements will be proportionate to the level of risk associated with the scale and nature of future development and the physical and environmental conditions of the site.

Are there any other relevant documents?

This factsheet supplements a number of documents for on-site sewage management in the WA, including the following:

- Department of Health – *Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974*
- Government of Western Australia - *Government Sewerage Policy 2019*
- Standards Australia - AS/NZS1547:2012 *On-site Domestic Wastewater Management*

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