Tanjil River Catchment:

A description of land & its capability for development

Volume 2: Map Atlas

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1. Introduction

A study of the land in the Tanjil River Catchment and its capability to support rural residential development was initiated by the Soil Conservation Authority in mid 1980. The objective of this study was to assist planning authorities by identifying and assessing the severity of constraints to development imposed by the physical characteristics of the land within the catchment area. The Soil Conservation Authority is involved in land use planning through its statutory responsibilities in Proclaimed Water Supply Catchment. Proclamation of the Tanjil River Catchment was made on December 11 1979. The report detailing the methods and results of the study is contained in Volume I.

This document, Volume II, provides a summary in map form of the survey results. It contains maps at 1: 25 000 scale which cover freehold land within the catchment. These areas have been studied in relative detail to enable an assessment to be made of their capability to support further rural residential subdivision and development.

Areas of public land have also been examined but at a lower site intensity and hence mapped at a smaller scale. In order to 'set the scene' for the more detailed studies, and to show a broad characterisation of the landscape which may later be used for regional planning purposes, a 1:50 000 scale map of the land resources of public land in the catchment is presented in this Volume. No interpretation of land capability have been made for areas of public land in this report.

Land Inventory Maps (Section 3) – These maps show the distribution of map units that have been delineated on the basis of characteristic landform and soil features. The maps are shown on photomosaic base to facilitate ease of recognition of land features and locations. A description of the characteristics of each map unit is given in Table 1.

Land Capability Maps (Section 4) – These maps show the interpretations for land capability that have been made for each of the land inventory maps in Section 3. In addition, the assessment of capability of each map unit to support rural residential subdivision, and in particular its capability for general construction activities, for on-site effluent disposal and for the erosion hazard to bared soil, is included in Table 1.

The assessment of land capability for each map unit is represented by a rating varying with decreasing capability form class 1 to class 5. (See Table 2). These ratings are based on assessment of the severity of inherent physical limitations to land use, and on the perceived susceptibility of the land to deterioration, both with respect to its soil and water resources.

Using the Information

The map format employed here should enable users of the information to gain an impression of the nature, location and extent of each of the 27 detailed 'land types' or map units identified in the freehold land areas, and to understand the kind and magnitude of the physical limitations that apply to further rural residential development.

For any area identified on one of the numbered land inventory maps (Section 3), the magnitude of limitations affecting rural residential development is shown on the correspondingly numbered interpretive land capability map (Section 4a).

Although most users are likely to be primarily interested in the overall assessment rating of land capability for rural residential development as shown in Section 4a, interpretive maps have also been provided for general construction activities (Section 4b), on-site effluent disposal (Section 4c) and erosion risk (Section 4d).

This has been done to highlight the areas of consideration that are of particular importance to persons concerned with using the planning process to maintain the quality and quantity of land its runoff water in a developing area; viz.

1. the capability of the land, and by association the development costs, associated with general housing and road construction activities;

2. the capability of the soil to accept sewage disposal on-site, and hence maintain the bacteriological quality of runoff water which may later be used for drinking purposes;

3. the erosion risk associated with bared soil during development, which will affect both development costs and the quality (e.g. turbidity) and quantity of runoff water.

Table 1 – Map Unit Descriptions & Capability Assessment

Map Unit	Description	Limitations	A. Rural – Residential Development	B. General Construction	C. Effluent disposal	E. Erosion Risk
Steep, Hilly Terrain on Devonian Sediments to the North						
CR1	Crests and upper slopes, sometimes undulating, 0-8% slope; moderately deep to deep grey massive earths and less commonly mottled yellow duplex soils; soils moderately well drained.	Soils only moderately deep and dispersible in some areas; effluent disposal limited due to soil permeability and drainage.	3	2	3	2
CR1a	As for CR1 but with moderately deep to deep structured gradational yellow earths which are moderately well drained and sometimes stony.	Soil depth limitation in some areas.	2	3	2	2
SS1a	Steep sideslopes to hills, 25-50% slope; moderately deep to deep structured grey brown or yellowish brown earths; soils moderately well drained.	High erosion hazard due to slope; areas of dispersible subsoils.	5	5	5	5
SS2a	Moderately steep sideslopes to hills, 10-25% slope; deep structured yellowish brown earths and less commonly mottled yellow duplex soils; soils somewhat poorly drained.	Effluent disposal limited by soil permeability and drainage. Slight erosion hazard in steeper areas may be exacerbated by subsoil dispersibility.	4	4	3	4
SS3a	Moderate sideslopes to hills, 5-10% slope; deep structured grey brown or yellowish brown earths, less commonly grey or yellow massive earths; soils somewhat poorly drained.	Effluent disposal limited by soil permeability and drainage. Slight erosion hazard in steeper areas may be exacerbated by subsoil dispersibility.	3	3	3	3
SS4a	Gentle sideslopes to hills, sometimes undulating, 2-5% slope; soils as for SS3a.	Similar to SS3a but decreased erosion hazard due to lesser slopes.	3	3	3	2
Hilly to undulating Terrain Associated with Tertiary Volcanics throughout area						
CR2	Crests and upper slopes, commonly undulating, 0-8% slope; deep structured red earths and less commonly structured brown or yellowish brown earths; soils well drained.	Slight erosion hazard in some steeper areas, subsoils may display moderate shrink-swell behaviour in some areas, earth fill dams likely to be difficult to seal.	2	2	2	1
CR2b	As for CR2 except soils are shallow to moderately deep and commonly stony. This unit occurs only in the higher, northern parts of the study area.	Soils are commonly shallow, limiting effluent disposal and possibly causing construction difficulties although underlying rock is often very weathered.	3	3	3	1
SS1b	Steep sideslopes to hills, 25-50% slope; soils as for CR2, although sometimes more shallow.	High erosion hazard due to slope, landslip hazard in some areas with unstable subsoils.	5	5	5	5
SS2b	Moderately steep sideslopes to hills, 10-25% slope; soils as for CR2.	Moderate erosion hazard in steeper areas, otherwise similar to CR2.	3	4	3	3

Map Unit	Description	Limitations	A. Rural – Residential Development	B. General Construction	C. Effluent disposal	E. Erosion Risk
SS3b	Gentle sidelsopes to hills, 50-10% slope; soils as for CR2.	As for CR2.	2	2	2	2
Hilly to undulating Terrain on Tertiary Sediments to the South						
CR3	Crests and upper slopes, commonly extensive, 0-5% slopes; deep, mottled yellow duplex soils and less commonly weakly structured grey or grey brown earths; soils somewhat poorly drained.	Effluent disposal may be limited by soil permeability and drainage.	3	3	3	2
CR4	Crests and upper slopes, less extensive than CR3, 0-8% slope; deep, variable sandy soils (bleached sands with a pan), commonly gravelly and overlying clay at depth, less commonly duplex yellow or grey brown massive earths; soils moderately well drained.	Slight erosion hazard in some steeper areas where subsoils are dispersive. Effluent disposal may be limited in duplex soils areas.	2	2	1	2
SS1c	Steep sideslopes to hills, 25-50% slope; deep, mottled yellow massive earths and mottled yellow duplex soils; soils moderately well drained.	High erosion hazard due to slope and moderately dispersive subsoils in some areas.	5	5	4	5
SS2c	Moderately steep sideslopes to hills, 10-25% slope; deep, mottled yellow duplex soils and grey massive earths, soils generally somewhat poorly drained.	Moderate erosion hazard due to slope and moderately dispersive subsoils, effluent disposal may be limited by soil permeability and drainage.	4	4	3	3
SS3c	Moderate sideslopes to hills, 5-10% slope; deep mottled grey, grey brown or yellow brown earths, some sands with pan; soils moderately well drained.	Slight erosion hazard in steeper areas may be exacerbated by subsoil dispersibility in some areas.	2	2	2	2
SS4c	Gentle sideslopes to hills, sometimes undulating, 2-5% slope; deep soils similar to SS3c but somewhat poorly drained.	Effluent disposal may be limited by soil permeability and drainage.	2	2	3	1
Hilly to Undulating Terrain on Devonian Metamorphics to the North						
CR5	Crests and upper slopes, commonly undulating, 0-8% slope; moderately deep, uniform friable red brown loam soils which are structured, well drained and commonly stony.	Soil depth limitation in some areas, subsoils are moderately susceptible to slaking.	3	3	3	1
SS1d	Steep sideslopes to hills, 25-50% slope; soils as for CR5 but also including structured, gradational red brown soils, well drained.	High erosion hazard due to slope and slaking subsoils.	5	5	5	5
SS3d	Moderate to gentle sideslopes to hills, 5-10% slope; soils as for SS2d but usually deeper.	Moderate erosion hazard in steeper areas due to slaking susceptibility of subsoil.	3	3	2	2
Drainage Channels and Watercourses throughout Hill Terrain						
DC1	Drainage channels, watercourses for major creeks and streams, generally with low slopes and containing deposited alluvial material; variable soils depending upon nature of adjacent and antecedent terrain; soils generally moderately well drained.	Moderately high erosion hazard due to position as runoff concentration areas, high flood risk areas.	5	5	5	3

Map Unit	Description	Limitations	A. Rural – Residential Development	B. General Construction	C. Effluent disposal	E. Erosion Risk
DC2	Drainage channels, minor watercourses, usually incised, variable slopes and soils depending upon nature of adjacent terrain; soils generally somewhat poorly drained.	Moderately high erosion hazard due to slope and position as runoff concentration areas, effluent disposal and construction limited by soil drainage.	4	4	4	4
Alluvial Terraces Associated with Lower Reaches of Tanjil River						
TR1	Terraces associated with the Tanjil River, generally flat, 0-2% slope; deep, structured grey brown earths; soils somewhat poorly drained.	Effluent disposal and construction likely to be limited by soil permeability and drainage.	3	3	3	1
TR2	Terraces, higher than TR1 and commonly containing sandy colluvial downwash material, undulating with slopes 0-5%; deep sandy soils (bleached and earth sands); soils generally well drained.	Slight erosion hazard due to loose surface soils.	2	2	1	2
Drainage Flats Associated with Lower Reaches of Tanjil River						
DF1	Drainage flats on the Tanjil River flood plain, lowest level, including and adjacent tot eh river; very variable soils depending on the nature of adjacent and antecedent terrain, generally deep and not poorly drained.	High flood risk and erosion hazard due to proximity to major watercourse.	5	5	5	3
DF2	Drainage flats on the Tanjil River flood plain, marginally higher than DF1; deep structured grey brown to yellowish brown earths, some loams; soils somewhat poorly drained.	Similar to DF1 although flood risk is slightly lower due to elevation; effluent disposal limited by soil permeability and drainage.	4	4	4	2

Table 2 – Land Capability Classes

Land Class	Degree of Limitation	General Description
1	None to very slight	Areas with a high capability for the proposed activity or use. The limitations of long term instability, engineering difficulties or erosion hazard do not occur or they are very slight. Standard designs and installation techniques, normal site preparation and/or management should be satisfactory to minimise the impact on the environment.
2	Slight	Areas capable of the proposed activity or use. Slight limitations are present in the form of engineering difficulties and/or erosion hazard. Careful planning and/or the use of standard specifications for site preparations, construction and follow-up management should minimise development impact on the environment.
3	Moderate	Areas with fair capability for the proposed activity or use. Moderate engineering and/or high erosion hazard exist during construction. Specialised designs and techniques are required to minimise development impact on the environment.
4	High	Areas with poor capability for the proposed activity or use. There are considerably engineering difficulties during development and/or a high erosion hazard exists during and after construction. Extensively modified design and installation techniques, exceptionally careful site preparation and/or management are necessary to minimise the impact on the environment.
5	Severe	Areas with poor capability for the proposed activity or use. Limitations, either long term instability hazards, erosion or engineering difficulties, cannot be easily overcome with current technology. Severe deterioration of the environment will probably occur if the activity or use is attempted in these areas.