HOW THE RATINGS CAN BE USED

A Erosion risk associated with land disturbance

The ratings can be used as an input to planning. A method of using this kind of information, which has been successfully used by the Town and Country Planning Board, is as follows:

Nil to low erosion risk (Classes 1 & 2). The Authority will generally have no objections to the land use on the basis of erosion risk. However, other planning considerations may be of concern, such as proximity to water courses or water storages.

Moderate erosion risk (class 3). This land requires careful management and control, as some generalized guidelines for this are contained in the report. Applications for development of and of moderate erosion risk can also be referred to the SCA for advice particularly where more intensive development are planned, e.g. small-lot subdivisions, etc.

High erosion risk (Class 4). Land with a high erosion risk requires significant levels of special management. The Authority should be involved at the earliest possible time, so that advice can be given in the initial planning stage.

Severe erosion risk (Class 5). Land with severe erosion risk has limitations imposed by the land features that are so severe that the special management required to overcome the limitations has either not been developed or is not economically feasible for most projects. Because of the erosion hazard the Authority would object to development of the land unless the limitations were overcome to its satisfaction.

It is *recommended* that, as far as possible, the various forms of development be directed into appropriate areas which have no greater than moderate erosion risk.

B Constraints on construction

The ratings which indicate that degree of limitations imposed key land characteristics, give an indication of the relative difficulty and thus of relative costs of construction activities normally associated with subdivision.

Nil to very low level of limitation (Class 1 & 2). Where lower-cost development is required, land in class 1 and 2 should be considered.

Moderate level of limitation (Class 3). Class 3 usually indicates one or more of such limiting factors as:

> Moderate slopes – causing an increased requirement for excavation and some problems for access and operation, but the land is often more aesthetically pleasant
>
> High shrink-swell soils – causing foundations to move with changes in soil moisture unless suitable design are use, e.g. concrete slabs for house, extra sub-grade for roads
>
> Occasional rock outcrops or moderately shallow soils – possibly causing the need for heavy earth moving equipment or blasting
>
> Seasonally poor drainage – linking access and earthworks to drier periods or necessitation drainage schemes, etc.

The moderate level of limitations, although fairly easy to cope with add extra cost to the price of development.

High level of limitation (Class 4). Class 4 indicates limitations caused by either steep slopes or very shallow soils and surface rock, or combination of many moderate limitations. The land is very expensive by comparison to develop satisfactorily.

Severe level of limitation (class 5). Class 5 represents land with limitation such as flooding, very steep rocky slopes or unstable land-slip prone slopes. The cost of satisfactorily overcoming these limitations for subdivision is normally unacceptable.

C Effluent disposal by soil absorption

The ratings refer to ease of installation and the risk of failure of the soil absorption trenches associated with septic effluent disposal systems. It is assumed town water is or eventually will be supplies and that all-waste systems are to be installed.

The following gives a brief outline of the criteria that were used to put various types of land into the five classes and the kind of special management that may be necessary.

Nil to very low level of limitation (Class 1). Land with food percolation rates (not excessive or too slow) with no drainage problems or difficulties for construction.

Low levels of limitation (Class 2). Land with only minor problems such as slightly –limiting percolation rates or moderate drainage. Few problems are envisaged as long as systems are well sited, well constructed and well maintained. In the urban situation, some blocks may not have sufficiently large areas suitable for the absorption field by the time buildings and hard surface areas are planned.

Moderate levels of limitation (Class 3). This land has moderately serious limitations for absorption fields in wither or both of the following aspects.

(a) Installation – Moderate slopes or stones and boulders in the soil will add to installation costs.

(b) Function of the trenches is limited by:
- *percolation* rates being moderately slow because of heavy sub-soil textures. Trench lengths of 50-120 m are required (site test dependent)

- *Site drainage*. Imperfect drainage will slow percolation rates during wet, cold months. Intercept drains up slope will reduce the effects of run-on. Deep rooted, rapidly transpiring perennial plants on the absorption field will also improve drainage and percolation rates. Normal size urban blocks are unlikely to have sufficient area for the absorption field in most cases. Blocks in flatter areas with low-permeability and with clayey sub-soils should have an area of 500-2000 m2 set aside for the absorption field. This allows for winter storage in the soil. Very poorly drained areas should be avoided.

High levels of limitation (Class 4). The land has serious limitations in either or both the following aspects:

(a) Access and Installation problems such as steep slopes, surface stones or boulders, or shallow soil over hard rock.
(b) Function of the trenches is limited by one or more of the following:

- slow percolation rates caused by heavy soils with low permeability. Trench lengths of 120-250 m are required depending on site tests.

- poor site drainage will practically stop percolation during the colder, wetter months. Allowance for adequate storage in the topsoil should be made during this period. For this purpose, an envelop of 2000 – 300m2 should be reserved exclusively for the absorption field. This can easily be fitted on most 2 ha blocks leaving room for other activities. The absorption field should be free from buildings, hard paving and

trafficking and it should not receive run-on water from other sources. Perennial plants that have high transpiration rates will improve the water disposing capability of the field.

Severe levels of limitation (Class 5). This land has severe limitations to the extent that the systems will not work or that other methods of disposal are cheaper. The problems may be in:

Installation – rock surfaces or extremely shallow soil, slopes in excess of 30%

Pollution risk – flood prone land, drainage lines, landslip areas.

Very poor drainage – waterlogged areas.

Impermeable soil – percolation rate less than 0.05 m/day that require more than 250 m of trenches.