# GUIDELINES FOR SELECTION, ESTABLISHMENT AND MAINTENANCE OF RECREATION VEHICLE AREAS.

Soil Conservation Service of N.S.W.

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## Soil Conservation Guidelines for Selection Establishment and Maintenance of Recreation Vehicle Areas

#### INTRODUCTION 1.

The Recreation Vehicles Act, 1983 gives all owners, occupiers and managers of land the right to have their land declared a Recreation Vehicle Area on payment of a \$100 fee provided that such person has obtained any necessary development consent under the Environmental Planning and Assessment Act, 1979 and does not contravene any environmental planning instrument.

As active use of Recreation Vehicle Areas will result in significant surface disturbance, consideration must be given in planning and development of these areas to the effective control of erosion and sedimentation.

Failure to provide for control of soil erosion and sediment movement will:

- (i)lead to changes in water quality, sedimentation of streams and general environmental deterioration.
- reduce the ability of Recreation Vehicle Areas to (ii) sustain long term use.
- cause serious safety problems to users of these areas. (iii)

It is essential that officers of the Soil Conservation Service of N.S.W. be consulted with regard to the implementation of these guidelines. Reference should also be made to various sections within the References listed on page 11 of this document.

#### 2. PLANNING

To ensure long term landscape stability and safety to users of recreation vehicles, the development of a plan which is compatible with site conditions and which provides for soil conservation measures, is essential.

The following is considered necessary;

- evaluation of geological, soil, landform and surface (i)hydrological conditions.
- (ii) assessment of land capability.

## 2.1 Land Capability

A detailed knowledge of the physical potential of land to sustain recreation vehicle use is an essential prerequisite to the balanced planning and development of a Recreation Vehicle Area. Land is a limited resource, particularly good agricultural and pastoral land and it should be used wisely and carefully, to ensure its protection from soil erosion and declining productivity. Sound land use planning requires that the best agricultural and pastoral lands be devoted to rural production, as far as is possible, and that other forms of land use (e.g., recreation vehicle areas, forestry, urban) be located on less productive lands, but physically suitable to the purposes intended. In this regard, planning must be carried out using a land capability assessment prepared for each land use alternative to be considered. The capability classification must also identify the limitations to the use of the land as a result of the interaction between the physical resources and the specific land use. For the purpose of these guidelines, the Service's 8 class rural land capability system is applied to recreation vehicle use, and the descriptions provided in Section 2.2 generally outline the relationship between various land classes and maintenance of land stability with use of the land for recreation vehicle activities.

The principal limitation in the 8 class rural land classification system developed by the Soil Conservation Service is the stability of the soil mantle, i.e., maintaining the physical and chemical characteristics of the soil, and the avoidance of soil erosion. Built into the capability classification is a series of land management recommendations for the prevention and control of soil erosion.

Land management factors are applied, based upon an understanding of the interactions between the environmental factors of climate, soils, landform, susceptibility to erosion and past and present land use practices. Where land is used beyond its capability there is a loss of the soil resources due to soil erosion and general deterioration of the physical environment.

Users of these quidelines should consult the Service's publication "Rural Land Capability Mapping" (1985), for background information for each particular land class. Appendix I provides a general description of each land class and officers of the Service should be consulted for interpretation and/or classification of the land.

## 2.2 Land Classification

CLASSES I, II Land in these classes is capable for use as Recreation Vehicle Areas and sustaining long term use with minimum soil conservation practices. However, as class I and II lands have the highest potential for agricultural production they should be retained for agricultural use where possible. Low slope gradient and flat to gently undulating terrain may limit track design and reduce enjoyment by recreation vehicle users.

(Note: Provisions under Section 26D of the Water Act, 1912, may apply in relation to the destruction of any tree situated within, or within 20 metres of, the bed or bank of any river or lake or section of a river to which this section applies.)

CLASS III

Land in class III is capable for use as Recreation Vehicle Areas, with the following requirements:

- recreation vehicles must be constructed or defined tracks, confined to
- . track rotation should be practised,
- structural soil conservation and drainage works should be constructed to maintain land stability,

As class III land is suitable for sustained agricultural production, on a rotational basis, consideration should be given to retaining class III land for agricultural production.

(Note: Provisions under Section 26D of the Water Act, 1912, may apply in relation to the destruction of any tree situated within, or within 20 metres of, the bed or bank of any river or lake or section of a river to which this section applies.)

CLASS IV

Class IV land is capable for use as Recreation Vehicle Areas, with the following requirements:

- recreation vehicles must be confined constructed or defined tracks, to
- track rotation should be practised,
- . intensive structural soil conservation and drainage works should be constructed to maintain land stability.

As this land class represents the better class of grazing land, suitable for occasional cultivation, consideration should be given to retaining this land class for agricultural production.

(Note: Provisions under Section 26D of the Water Act, 1912, may apply in relation to the destruction of any tree situated within, or within 20 metres of, the bed or bank of any river or lake or section of a river to which this section applies.)

CLASSES V, VI Land in these classes is capable for use as Recreation Vehicle Areas. The terrain and slope range would allow varied track layout, resulting in more enjoyment for users of recreation vehicles, but the following will be required:

recreation confined to vehicles must constructed or defined tracks, intensive structural soil conservation and drainage works should be constructed to maintain land

4.

- stability,
- minimum.

(Note: Provisions under Section 21C of the Soil Conservation Act, 1938, relating to damage or destruction of trees on Protected Land, may apply.)

(Note: Provisions under Section 26D of the Water Act, 1912, may apply in relation to the destruction of any tree situated within, or within 20 metres of, the bed or bank of any river or lake or section of a river to which this section applies.)

Class VII land is capable for Recreation Vehicle Areas, requirements:

CLASS VII

CLASS VIII

CLASS U

- stability (steepness construction of stable earthworks),
- movement.

(Note: Provisions under Section 21C of the Soil Conservation Act, 1938, relating to damage or destruction of trees on Protected Land, may apply).

(Note: Provisions under Section 26D of the Water Act, 1912, may apply in relation to the destruction of any tree situated within, or within 20 metres of, the bed or bank of any river or lake or section of a river to which this section applies.)

Class VIII land is not capable for use as Recreation Vehicle Areas, due to extreme erosion hazard.

Where areas of open space within urban areas are selected for use as Recreation Vehicle Areas, structural soil conservation works and associated erosion control measures should be installed as required.

3.

· hazard areas (see Section 2.3) should be avoided, clearing for track construction should be kept to a

> limited use as following with the

 tracks must be carefully sited on steep terrain and rotation will be essential to maintain land may prevent of slope

tracks should avoid areas susceptible to mass

• as class VII lands are best suited to green timber, clearing of trees should be kept to a minimum,

### 2.3 Hazard Areas

The following specific soil, hydrological or terrain features should be excluded from use by recreation vehicles;

- coastal dunes
- land with an existing or potential mass movement hazard.
- drainage lines, gully heads, stream beds and banks.
- areas with poor surface drainage and/or subject to seasonally high watertables.
- areas with existing severe sheet and gully erosion.
- highly erodible and shallow soils.
- steep slopes (above 12°) on which soil conservation earthworks are difficult to construct.
- saline areas.

#### General Planning Requirements 2.4

The following should be considered when planning Recreation Vehicle Areas and can be used as a checklist for assessing proposals:

- sufficient information should be provided to allow effective evaluation of geological, soil, landform and hydrological limitations. (The development plan should be compatible with these site conditions.)
- a land capability map should be prepared.
- the type of vehicle/s which will be using the area and their potential impact on soil stability should be considered.

Construction of tracks for four wheel drives will result in significantly more disturbance than for motor cycles. Trial/trail bikes can negotiate steeper slopes and travel to more inaccessible places than four wheel drives. Enduro motor cycles with higher power bands are more prone to wheel spin resulting in greater surface disturbance. For safety reasons, motor cycles should either be allocated separate tracks to four wheel drive vehicles, or operate on the same track but at different time intervals.

- hazard areas (see Section 2.3) within Recreation Vehicle Areas should be sign-posted and all vehicles excluded by fencing.
- sediment basins should be located on drainage lines below proposed Recreation Vehicle Areas. Sediment basins can also provide water for use in dust control.
- legal requirements relating to tree destruction must be observed, viz:
  - (i) Section 26D of the Water Act, 1912, provides that a person shall not, except with the permission of the Catchment Areas Protection Boards

- or otherwise destroyed or,
- lopped removed or injured.

any tree situated within, or within 20 metres of, the bed or bank of any river or lake or section of a river to which this section applies.

6.

- that a person shall not:
  - or otherwise destroyed or
  - lopped removed or injured

any tree on any protected land, except in accordanc with an authority issued by the Catchment Areas Protection Board under Section 21D in relation to the land.

#### 3. OTHER AREAS WHICH MAY BE SUITABLE FOR RECREATION VEHICLE AREAS

3.1 Disused Gravel Pits and Quarries

These areas can provide varying track layouts and enjoyment to recreation vehicle users. Soil conservation structural works should be implemented, where necessary, to maintain land Sediment basins should be constructed to reduce stability. sediment movement off these sites.

## 3.2 Filled Areas such as Garbage Tips

These areas may be suitable for use as Recreation Vehicle Areas. However, low slope range would limit track design and enjoyment by recreation vehicle users. May be suitable as minibike areas.

#### 4. THE DEVELOPMENT PLAN

The development plan should show the following information;

- topographic restrictions (features) and slope gradients.
- initial field inspections.)
- control measures.\*

(a) ringbark, cut down, fell, poison or otherwise destroy or cause to be ringbarked, cut down, felled, poisoned

(b) top, lop remove or injure, or cause to be topped,

(ii) Section 21C of the Soil Conservation Act, 1938 provides

(a) ringbark, cut down, fell, poison or otherwise destroy or cause to be ringbarked, cut down, felled, poisoned

(b) top, lop remove or injure, or cause to be topped,

track location and erosion control measures.\* (These should also be marked on the ground for easier identification during

amenity and car parking areas with the appropriate erosion

- fencing to prevent entry into hazard areas as well as illegal 1188
- permanent fireplaces to reduce location of potential fire hazard.
- access tracks to the area, with appropriate erosion control measures.\*
- method of track rotation.\*
- drainage lines
- location and type of sediment basins.\*
- Protected Lands and Prescribed Streams.
  - supplementary written and design information must also be provided.

#### USE OF RECREATION VEHICLE AREAS 5.

Uncontrolled use of Recreation Vehicle Areas will result in significant reduction of ground cover and serious erosion problems on land classes III, IV, V, VI and VII with minor erosion and drainage problems on land classes I. II.

To reduce this loss of ground cover, track proliferation should be discouraged. Drivers/riders of recreation vehicles should be required to keep to designated trails as a condition of entry and by sign-posting and constant supervision.

A number of tracks should be provided to allow effective track rotation and closure for track rehabilitation and maintenance. Use of Recreation Vehicle Areas should be restricted during extended periods of wet weather.

#### TRACK LOCATION AND DESIGN 6.

Track location and design should be determined in consultation with landholders, recreation vehicle users and relevant government authorities, with the aim to:

- minimise the risk of soil erosion and sedimentation. Adequate vegetative buffer zones should be retained adjacent to all drainage lines. avoid hazard areas.
- reduce the area of ground disturbance by keeping the height of cut and fill batters to a minimum.
- maintain the grade of the track to less than 12° so that cross banks can be constructed if required.
- allow adequate surface drainage from the track surface; tracks should be located on ridgelines where possible. reduce the number of drainage line crossings to a minimum.
- cross drainage lines (where necessary) at right angles, to prevent stream bed and bank erosion.
- avoid users going into drainage lines (which will initiate stream bed and bank erosion).

- numbered and degrees of difficulty sign-posted.
- and signs.
- the tracks are in use.
- track area for repairs.
- vers to use in safety.
- tour and is drained by crossbanks.

## 6.1 Track Grade

Generally, grades on tracks should not exceed 12 degrees. Above this grade, effective trafficable crossbanks are difficult to construct. It is generally recognised that grades which limit effective track drainage are reached well before those which limit use by recreation vehicles.

Steep grades for short distances to take advantage of favourable terrain are acceptable and will provide a challenge to drivers of recreation vehicles. Where steeper grades are unavoidable, special track drainage measures may be required.

## 6.2 Track Surface Drainage

- 6.2.1 Crossfall drainage control of runoff.

  - should be removed.
  - or track failure.

encourage the continued use of tracks by participants. This can be done by constructing a number of tracks with varying degrees of difficulty and on various types of terrain. Tracks should be

prevent track use whilst under repairs/maintenance. This can be achieved by keeping tracks separate and by the use of barriers

allow safe and effective entry by participants from the tracks to amenity areas (including vehicle maintenance areas) whilst

allow vehicles which break down to be safely removed from the

provide flatter areas for younger/inexperienced riders or dri-

avoid long lengths of slope, unless the track follows the con-

is often sufficient to ensure This form of drainage reduces runoff along the track to a minimum, as runoff is directed across the track surface and over the road batter. There are two forms of crossfall drainage:

· • Outfall drainage is where water flows away from the hillside and over the fill batter and is often satisfactory for control of runoff and prevention of soil erosion. To ensure effective drainage of the crossfall, any earth windrow which develops at construction on the downslope side of the track

. Infall drainage is where water flows into the toe of the cut batter and should be used where fill batters exeed 1.5 m in height or are unconsolidated and likely to erode. Adequate table drains, dropdown drains and culverts will be required, without which soil erosion will occur resulting in a safety hazard

- Cross banks are used where runoff cannot be controlled 6.2.2 solely by crossfall drainage. Trafficable cross banks can usually only be constructed on track grades less than 12 degrees. Cross banks should be constructed with sufficient height to avoid overtopping and are more effective and easier to cross if constructed at right angles to the track. Channel grade of cross banks should be 1:20 to prevent ponding and they should outlet onto stable disposal areas. Where tracks are frequently used, maintenance of cross banks is required to ensure their effectiveness. The use of cross banks can also improve the recreational quality of the tracks but the spacing is dependent on track grade, soil type and frequency of use. Once the track is constructed, rilling or gully erosion of the track will indicate the need for the location of additional cross banks.
- Track Construction 6.3
- Track construction should take place with minimum surface disturbance.
- Tracks should follow the contour of the land as much as possible and cut batters (preferably not more than 1.5m in height) should be constructed vertically to minimize the area of disturbed soil Also, vertical batters will prevent drivers from exposed. using the batter whilst cornering and from diverging from the formed tracks.
- Fill batters should be no steeper than 1:2 (vertical:horizontal) to aid revegetation and respreading of topsoil. Batters higher than 1.5m may require specialised stabilization works such as drop downs, hay mulching, etc.
- Where "borrow" areas are required, they should not be located near drainage lines. Size of borrow areas should be restricted and all topsoil should be stripped prior to disturbance. "Borrow" areas must be re-topsoiled and revegetated as soon as possible after use or on a progressive basis.
- Topsoil should be retained where possible from track sites for use on critical areas. Cross banks should be located as required during track construction.

#### DRAINAGE LINES 7.

Tracks should cross drainage lines at right angles where possible. Cross banks immediately above crossings may be required to ensure their long term stability.

Unstable crossings may require lining with rip-rap or other suitable erosion control techniques to ensure long term stability. Rip-rap should be installed in a manner that ensures the gully floor is not obstructed, by excavating beforehand to a depth equal to the depth of the stone being used. To prevent damage resulting from loss of traction by recreational vehicles, rip-rap should be extended along the access track to the top of the sides of the gully.

If culverts are used, they should be laid as close as possible to the natural alignment of the drainage line to avoid diverting the flow of water and causing stream bank erosion. Head walls should also be constructed to prevent undermining of the culvert and track failure.

#### 8. REVEGETATION

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- growing season.
- cover. (couch or kikuyu should be used where applicable).
- maintain good vegetative cover.

#### 9. MAINTENANCE

- be avoided, to minimize soil disturbance.
- bank overtopping and gully erosion of the track surface will result.
- required, tracks should be closed off until they are fully stabilized.

At the commencement of construction, all topsoil should be stripped and stockpiled for later respreading. All bare areas should be topsoiled and sown with a suitable seed/fertilizer mixture while the soil is still loose, irrespective of the

Where topsoil is not available, bare areas should be sown and fertilized, then covered with pasture hay at a rate of 2-3 tonnes/ha. Perennial grass and legume species (including couch or kikuyu where applicable) should be used to provide long term Critical or specialised situations should be sodded

Regular applications of a complete fertilizer should be used to

Frequent maintenance of all tracks and disturbed sites is essential to ensure erosion control measures are performing effectively and track stability is commensurate with safety requirements. Due to the intensive use of Recreational Vehicle Areas they should be inspected at least monthly, to determine maintenance requirements. Unnecessary grading or blading should

The location, height and spacing of crossbanks should be assessed during maintenance inspections. Rilling of the track surface will indicate if additional crossbanks are required. At all times, cross bank height should be maintained, otherwise

Outlets of crossbanks and culverts should be examined carefully during maintenance inspections. Where major track repairs are 11.

Regular rotation of tracks will reduce maintenance requirements.

Areas where recreation vehicles have deviated from the main track should be fenced off and signposted.

- Maintenance applications of fertilizer should be applied to maintain vegetative cover and stability on batters, drains, water spreading areas and other poorly vegetated areas subject to water flow and soil erosion.
- Maintenance programmes should also provide for education and supervision of recreation vehicle users to ensure they respect the function of vegetative cover and erosion control works.

## REFERENCES

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- EMERY, K.A. (1985) . Rural Land Capability Mapping Scale 1:100 000. Soil Conservation Service of N.S.W.
- QUILTY, J.A., HUNT, J.S. and HICKS, R.W. (1978) Urban Erosion and Sediment Control. Soil Conservation Service Technical Handbook,
- SOIL CONSERVATION SERVICE OF N.S.W. Environmental Impact Statements/Studies - Guidelines and Requirements - Urban and Associated Developments. (Provisional Issue)
- SOL CONSERVATION SERVICE OF N.S.W. (1985) Planning, Construction and Maintenance of Trails. Guidelines for the

No secol sed conservation works or proctices 5 CL REGULAR Soil conservation practices such as strip cropping 0 Structural sail conservation works such as graded banks sterways and diversion banks. together ABLE rvation practices such as conservation idequate crep retetion 113 4.6 improvement, steck control, application of fertilizer and minimal cultivation for the establishment or ş oblishment of permanent pasture Cultival GRAZING 3 Occes Į0 absorptio banks, diversion banks and conti practices as in Class IV. SUITABLE conservation practices including limitation of stock, broodcasting of used and fertilizer, prevention 1 3 of fire and destruction of vermin. some isolated structural works ž Chilfs, lakes or swamps and other lands OTMER egricultural and postarol preduction Urban erem אהוחם מול שופיזיהם מורסו

LAND CLASSIFICATION AND SOIL CONSERVATION PRACTICES

NOTE - ALL CLASSES MAY NOT OCCUR ON THIS MAP

## APPENDIX 1

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## LAND CAPABILITY

INTERPRETATIONS AND IMPLICATIONS	
Land suitable for a wide variety of uses. Where sails are fartile, this is land with the highest potential for agriculture, and may be cultivated for vegatable and fruit production, cereal and other grain crops, energy crops, fadder and fareign crops, and uger cane in specific areas, includes "prime agriculture! lend".	
Usually ge Has a higi but increas agriculturat	ntly sloping land suitable for a wide variety of agriculturel uses. In potential for production of crops on fertile soits similar to Cless I, ling limitations to production due to site conditions, includes "prime lond".
Sloping land suitable for cropping on a rotational basis, Generally used for the production of the same type of crops as listed for Class I. elthough productivity will very depending upon soil fertility, individual yolds may be the same as for Classes I and II. but increasing restrictions due to the erosion hozard will reduce the latal yield over time. Sail erosion problems are often severe. Generally four to good agricultural land.	
Land net suitable for cultivation on a regular basis awing to ismitations of slope, gradient soil erosion, shallowness or rackiness, climate, or a combination of these factors. Comprises the better classes of grazing land of the Serie and can be cultivated ter an occasional crop, particularly a fodder crop, or to pasture renewal. Not wired to the range of agricultural uses listed for Classes I to IAI. If used for "hobby forms", adequate provision should be made for water supply, effluent disposal and selection of sale building sites and access roads.	
Land not suitable for cultivation on a regular basis awing to considerable limitations of slope gradient, soil erosion, shallowness or rackiness, climate, or a combination of these factors. Soil erosion problems are often severe. Production is generally lower than for grazing lands in Class IV Can be cultivated for an occasional crop, particularly a todder crop or for pasture renewal. Not suited to the range of agricultural uses listed for Classes to III. If used for hobby forms a adequate provision should be made for water supply, efficient disposal and selection of sele building sites and occess roads.	
Productivity will vary due to the soil depth and the soil fertility. Comprises the less productive grazing lands. If used for "habby forms", adequate provision should be made for water supply, effluent disposal, and selection of sofe building sites and access roads.	
Generally comprises areas of steep slopes shallow soils and/or rock evitrap Adequate ground protection must be maintained by limiting grozing and minimising damage by fire. Destruction of frees is not generally recommended, but partial clearing for grazing purposes under strict management controls can be practised on small areas of low erosion hazard. Where clearing of these lands has accurred in the past unstable soil and terrain sites should be returned to timber cover.	
Land unusable for agricultural or pastoral uses Recommended uses are those compatible with the preservation of the natural vegetation, namely; water supply catchments, wildlife refuges, national and state parks and scenic areas.	
CLASS SUBSCRIPTS	SPECIAL USES
	Terrain developed for a specific crop (capability class range IV to VII) as a result of the combination of perficuler kall terrain climatic and economic conditions. The class includes such crops as grapes, bananas, evocados and pineopples, *
đ	Terrain developed for intensive agricultural production and associated with flood irrigation. The class includes land developed for cottan and rice production.