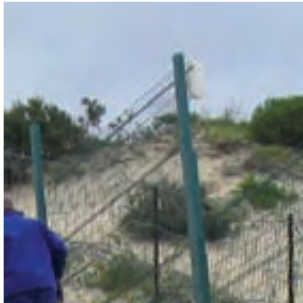


CITY OF CAPE TOWN ENVIRONMENTAL MANAGEMENT PROGRAMME

SPECIFICATION: ENVIRONMENTAL MANAGEMENT

DETAILED REVEGETATION SPECIFICATION

Revision 2007



CITY OF CAPE TOWN | ISIXEKO SASEKAPA | STAD KAAPSTAD

THIS CITY WORKS FOR YOU

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PSER REVEGETATION. (SPEC ER)

Note: This document is compiled as a generic specification and requires editing prior to application within any specific Environmental Management Plan.

PSER1 SCOPE

This Specification covers the requirements for the planting and establishment of vegetation on Site following construction activities.

PSER2 INTERPRETATIONS

PSER2.01 Definitions

For the purposes of this Specification the following definitions shall apply: *{Delete or include any relevant definitions.}*

Acceptable cover – An acceptable cover shall mean that not less than 75% of the area planted or hydroseeded shall be covered with grass or indigenous perennials and that there shall be no bare patches of more than 500 mm in maximum dimension. In the case of sodding, acceptable cover shall mean that the full area shall be covered with live grass at the end of any period not less than 3 months after sodding.

Container plants – Container plants include all vegetation which are bought or supplied in acceptable containers from nurseries or vegetation lifted out of their natural position and placed in containers.

Contractor – For the purposes of this specification, the Contractor refers to the party responsible for the revegetation of the site.

Ecotype – In this context, a plant species that is broadly distributed across a variety of habitats, that may, for example, span mountain to coast; and/ or clay to sandy soils; and/ or deep sands to rocky outcrops; and/ or moist to dry soils; etc., may have inherent, genetic traits that enable representatives of that species – known as ecotypes – to thrive on alkaline soils at the coast (alkaline sand, low altitude ecotype) yet be less successful at a higher altitude on clay soils (clay soil, middle to upper slope ecotype). These ecotypes are, taxonomically, the same species, yet may have significantly different habitat tolerances in order to thrive. It is thus critically important, particularly during restoration of a natural, or semi-natural, area – where plants will eventually be totally dependent upon natural climatic conditions (rainfall, wind, etc.) that the correct ecotypes are propagated for revegetation purposes.

Endemic species – Those that occur naturally within a specific area.

Establishment of grass – All procedures necessary to produce an acceptable cover of grass on an area.

Establishment Period – A contractual period commencing from planting, seeding or placement of vegetation until a contractually specified date, by which time acceptable cover by desirable plant species shall have been attained.

Exotic – In this context, a plant that is introduced to the City of Cape Town from another region.

GPS – A Geographical Positioning System (GPS) provides an accurate reading of latitude and longitude under many, if not most, field conditions.

Hydroseeding – The application of seed in a slurry with water (plus other materials to enhance growth) by means of a spraying device.

Indigenous – In this context, a plant that naturally occurs within the City of Cape Town.

Invasive plants – Invasive alien plant species that are able to establish themselves in a natural or semi-natural habitat. They are generally habitat transformers, germinating rapidly in response to disturbances and eliminating indigenous species.

Maintenance Period - A contractual period following the establishment period that includes those activities that are required to ensure the survival of all plant material until such time as the contract ends.

Nursery conditions - These are the necessary conditions to maintain healthy growth of container plants. This includes protection of container plants against wind, frost, direct sunlight, pests, diseases and drought. It also includes the provision of suitable water, fertilizer and any other measures required to maintain the container plants. *{Storage and protection of seeds, mulch and other materials harvested from the site and/ or site locality may also fall within this definition.}*

Rehabilitation – Activities that seek to repair previously disturbed areas to their former uses or other productive uses. This definition may include restoration.

Restoration – The process of restoring site conditions to a state that closely resembles that before the land disturbance.

Revegetation – The re-establishment or regeneration of vegetation through either natural or mechanical means.

Scarifying - To roughen the surface of soil as a preparation for seeding.

Topsoil - refers to the surface layer of soil which is usually more fertile and better structured than underlying layers. The surface layer may vary in depth depending on soil forming factors, including parent material, location and slope, but generally is not greater than about 300 mm in depth from natural surface. The definition of suitable topsoil should be based on soil chemical and physical properties

Trimming - To neatly round off the levels of existing or previously shaped earthworks to blend in with the levels of other earthworks, constructed works, or natural landforms.

PSER3 MATERIALS

PSER3.01 Plant materials

The attached plant list (below) has been selected as those species commonly found in the Cape Town region and encompasses a range of different plant types. All species on this list are relatively easy to propagate from seed and/ or cuttings. All plants in this specification are indigenous, except those marked with (*). Wherever possible, the Contractor should use species which occur naturally in the area of the site and which have been identified by a suitably qualified botanical specialist. Material should be sourced locally if possible, e.g. from the site, prior to, and during, clearing. No invasive alien species should be used. Refer to regulations published under the Conservation of Agricultural Resources Act (Act 43 of 1983) (CARA) and the National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEMBA).

When using this list to guide planting programmes, note that where species on this list are listed as being widely distributed, or span across a range of soil types and/ or altitudes, it is critical to use ecotypes appropriate to the habitat conditions on the site.

Labelling of plant materials

All harvested plant materials, including all living propagation materials (e.g. runners, sods, cuttings, whole plants, bulbs and rhizomes); harvested seed; and, harvested indigenous mulch, shall be labelled with:

- i. the name of the project;

- ii. The genus and species of plant; and,
- iii. The specific location (section of site, aspect, etc.) and habitat (e.g. wetland edge, rocky outcrop) from which the material was harvested, including GPS co-ordinates where possible, in order to ensure correct placement during planting.

Plant material shall be {give details of required materials}

Recommended Plant species list

{Note: This list serves as a guide to a selection of plant species that naturally occur within the City of Cape Town. Many species are hardy and will grow in a wide range of soil types. However, in order to revegetate an area as accurately as possible to its original flora, plant species used should be those that occur naturally on site, or in the nearest site with a similar geology, soil type and aspect. A suitably qualified specialist shall be consulted in this regard}.

Growth form / habit	Species (Synonym)	Habitat and vegetation type	Flowering time	Soil type	Propagation method
Ground covers					
Annual	Arctotheca calendula	Widespread on lowlands and lower slopes; renosterveld; sand fynbos	Winter-Spring	Most soil types	Seed
Ground cover perennial	Arctotis acaulis	Clay soils on lower slopes; renosterveld	Late Winter-Summer	Clay soils	Cuttings/ seed
Annual	Arctotis hirsuta	Sandy soils on lowlands; sand fynbos	Spring-early Summer	Acid sands	Seed
Ground cover perennial	Arctotis stoechadifolia	Dunes and sandy flats, mostly coastal	Spring-Summer	Alkaline sands	Cuttings/ seed
Ground cover perennial	Chrysocoma ciliata	Clay soils; renosterveld	Winter-early Summer	Clay soils	Seed
Ground cover perennial	Chrysocoma coma-aurea	Renosterveld and lower slopes	Spring	Acid sands and clay	Seed
Ground cover perennial	Cineraria geifolia	Dunes and sandy flats, mostly coastal	Spring-early Summer	Acid sands	Seed
Ground cover perennial	Cliffortia ferruginea	Moist soils near rivers and wetlands; lowland, and mountain fynbos	Summer-Winter	Moist acid and alkaline sands	Cuttings
Annual	Cotula turbinata	Sandy soils on lowlands; sand fynbos	Autumn-early Summer	Most soil types	Seed
Annual	Dimorphotheca pluvialis	Sandy soils on lowlands; sand fynbos	Winter-Spring	Most soil types	Seed
Annual	Dorotheanthus bellidiformis	Sandy soils on lowlands; strandveld and sand fynbos	Late Winter-early Spring	Alkaline to acid sands	Seed
Ground cover perennial	Falkia repens	Moist sandy soils on lowlands; strandveld and sand fynbos	Late Winter-Summer	Moist acid and alkaline sands	Cuttings
Ground cover perennial	Felicia aethiopica	Sandy soils on lower slopes; mountain fynbos	All year	Acid sands	Cuttings, seed
Small shrub	Felicia amoena	Stony soils on lowlands, sand fynbos	All year	Rocky sandy soils	Cuttings, seed
Annual	Felicia bergerana	Sandy soils on lowlands; sand fynbos	All year	Acid sands	Seed
Small shrub	Felicia filifolia subsp. filifolia	Rocky soils on upper slopes of Hottentots-Holland; mountain fynbos	Late Autumn-Spring	Rocky sandy soils	Cuttings, seed
Ground cover perennial	Gazania krebsiana	Widespread; renosterveld and sand fynbos	Late Winter-Summer	Most soil types	Cuttings, seed
Ground cover perennial	Geranium incanum	Damp sandy soils on lowlands; sand fynbos	Late Winter-Summer	Moist sandstone soils	Cuttings, seed

Growth form / habit	Species (Synonym)	Habitat and vegetation type	Flowering time	Soil type	Propagation method
Ground cover perennial	<i>Helichrysum crispum</i>	Sandy soils on lowlands; occasionally renosterveld and sand fynbos	Spring-Summer	Alkaline to acid sands	Cuttings
Ground cover perennial	<i>Helichrysum cymosum</i>	Sandy soils on lowlands; renosterveld and sand fynbos	Spring-Summer	Most soil types	Cuttings
Small shrub	<i>Helichrysum niveum</i>	Coastal sands	Summer	Alkaline sands	Cuttings
Ground cover perennial	<i>Helichrysum odoratissimum</i>	Slopes; mountain fynbos	Early Spring-Summer	Acid sands	Cuttings
Ground cover perennial	<i>Helichrysum patulum</i>	Sandy flats and slopes, often coastal	Summer	Alkaline to acid sands	Cuttings
Ground cover perennial	<i>Helichrysum teretifolium</i>	Sandy soils on lowlands; sand fynbos	Spring-early Autumn	Alkaline to acid sands	Cuttings
Annual	<i>Heliophila coronopifolia</i>	Loamy soils on lowlands; sand fynbos and renosterveld	Late Winter-Spring	Most soil types	Seed
Ground cover perennial	<i>Hermannia pinnata</i>	Sandy soils on lowlands; dunes and sand fynbos	Spring	Alkaline to acid sands	Cuttings
Ground cover perennial	<i>Lobelia anceps</i>	Wet soils near water; coast and mountain fynbos	Late Spring-Autumn	Acid sands	Seed
Herbaceous perennial	<i>Lobelia comosa</i>	Sandy coastal slopes	Early Spring-Summer	Acid sands	Seed
Small shrub	<i>Lobelia pinifolia</i>	Rocky slopes and flats	Summer-Autumn	Rocky sandy soils	Cuttings, seed
Ground cover perennial	<i>Monopsis lutea</i>	Sandy and damp soils on lowlands; sand fynbos	Late Spring-Autumn	Moist sandstone soils	Cuttings
Small shrub	<i>Oedera imbricata</i>	Widespread on lower slopes; sand fynbos	Winter-Spring	Acid sands	Cuttings, seed
Annual	<i>Osteospermum clandestinum</i>	Lower slopes; Renosterveld	Winter-Spring	Most soil types	Seed
Ground cover perennial	<i>Osteospermum fruticosum</i>	Coastal dunes and rocks	Winter-Spring	Alkaline sands	Cuttings, seed
Ground cover perennial	<i>Otholobium virgatum</i>	Lower slopes and flats, fynbos and renosterveld, often damp soils	Early Summer	Most soil types	Seed
Ground cover perennial	<i>Pelargonium suburbanum</i> subsp. <i>bipinnatifidum</i>	Coastal dunes and lowlands	Winter-Summer	Alkaline to acid sands	Cuttings, seed
Small shrub	<i>Pelargonium tomentosum</i>	Sandy, moist soils in Hottentots-Holland; forest margins	Spring-Summer	Loamy soils	Cuttings, seed
Small shrub	<i>Plecostachys serpyllifolia</i>	Sandy soils on lowlands; sand fynbos	Autumn-early Winter	Moist sandstone soils	Cuttings, seed
Herbaceous perennial	<i>Scabiosa columbaria</i>	Sandy soils on lowlands and lower slopes; sand fynbos	Late Winter-early Autumn	Acid sands	Seed
Herbaceous perennial	<i>Scabiosa incisa</i>	Sandy soils on lowlands; sand fynbos	All year	Acid sands	Seed
Herbaceous perennial	<i>Senecio burchellii</i>	Sandy and stony slopes	Autumn-Winter	Most soil types	Seed
Annual	<i>Senecio elegans</i>	Sandy soils on lowlands and lower slopes; sand fynbos	Spring	Most soil types	Seed
Ground cover perennial	<i>Stachys aethiopica</i>	Rocky soils on lower slopes; mountain fynbos	All year	Acid sands	Cuttings
Annual	<i>Ursinia anthemoides</i>	Sandy soils; sand fynbos	Late Winter-early Summer	Most soil types	Seed
Geophytes, bulbs, corms, rhizomes and tubers					
Rhizome	<i>Agapanthus africanus</i>	Rocky soils on upper slopes; mountain fynbos	Summer-Autumn	Acid sands	Rhizome, seed
Bulb	<i>Albuca flaccida</i>	Sandy soils on lowlands and lower slopes, often coastal	Spring	Alkaline to acid sands	Bulb, seed

Growth form / habit	Species (Synonym)	Habitat and vegetation type	Flowering time	Soil type	Propagation method
Bulb	<i>Amaryllis belladonna</i>	Loamy soils on lowlands; sand fynbos and renosterveld	Late Summer-Autumn	Clay and sandy loam soils	Bulb, seed
Rhizome	<i>Aristea africana</i>	Sandy flats and slopes	Spring-Summer	Acid sands	Leafing rhizome, seed
Rhizome	<i>Aristea major</i>	Sandy soils on lower slopes	Spring-early Summer	Acid sands	Leafing rhizome, seed
Corm	<i>Babiana ambigua</i>	Sandy flats and lower slopes	Spring	Acid sands	Corm, seed
Corm	<i>Babiana stricta</i>	Clay or granite soils	Winter-early Spring	Clay or granite soils	Corm, seed
Corm	<i>Babiana tubulosa</i>	Sandy flats and lower slopes	Spring	Alkaline to acid sands	Corm, seed
Rhizome	<i>Bobartia indica</i>	Widespread on lower and upper slopes; renosterveld and mountain fynbos	Spring-early Autumn	Acid sands	Rhizome, seed
Bulb	<i>Brunsvigia orientalis</i>	Sandy soils on lowlands; sand fynbos	Autumn-early Winter	Acid sands	Bulb, seed
Tuber	<i>Bulbine alooides</i>	Sandy soils on lower slopes; sand fynbos	Late Autumn-early Spring	Acid sands	Tuber, seed
Corm	<i>Chasmanthe aethiopica</i>	Damp soils; mountain fynbos	Late Autumn-Winter	Acid sands	Corm, seed
Corm	<i>Chasmanthe floribunda</i>	Damp soils on lower slopes; mountain fynbos	Winter-early Spring	Acid sands	Corm, seed
Corm	<i>Gladiolus carinatus</i>	Sandy soils on lowlands and lower slopes; sand fynbos	Winter	Acid sands	Corm, seed
Corm	<i>Gladiolus carneus</i>	Sandy or wet soils on lower and upper slopes; mountain fynbos	Spring-Summer	Acid sands	Corm, seed
Corm	<i>Gladiolus tristis</i>	Damp soils near water; mountain fynbos	Winter-early Spring	Acid sands	Corm, seed
Bulb	<i>Haemanthus coccineus</i>	Coastal scrub and rocky slopes	Late Summer-Autumn	Acid sands	Bulb, seed
Rhizome	<i>Kniphofia uvaria</i>	Wet soils near water; lowland wetlands	Spring-Autumn	Moist sandstone soils	Rhizome, seed
Bulb	<i>Lachenalia alooides</i> var. <i>alooides</i>	Rocky soils; mountain fynbos	Winter-Spring	Acid sands	Bulb, seed
Bulb	<i>Lachenalia alooides</i> var. <i>quadricolor</i>	Rocky soils on granites; mountain fynbos	Winter-Spring	Acid sands	Bulb, seed
Corm	<i>Micranthus alopecuroides</i>	Moist sandstone soils	Late Spring-Summer	Moist acid sands	Corm, seed
Corm	<i>Micranthus tubulosus</i>	Moist clay soils in renosterveld	Summer	Clay soils	Corm, seed
Corm	<i>Moraea (Homeria) collina</i>	Sandy soils on lowlands and lower slopes; sand fynbos; renosterveld	Winter-Spring	Acid sands and clay	Corm, seed
Corm	<i>Moraea fugax</i>	Deep sands and rocky sandstone and granitic soils	Spring-early Summer	Acid sands	Corm, seed
Corm	<i>Moraea tripetala</i>	Rocky sandstone and clay soils	Late Winter-Spring	Acid sands and clay	Corm, seed
Bulb	<i>Nerine sarniensis</i>	Rocky soils on upper slopes; mountain fynbos	Late Summer-early Autumn	Acid sands	Bulb, seed
Bulb	<i>Ornithogalum suaveolens</i>	Rocky soils on lower slopes and sandy soils on lowlands; sand fynbos	Late Spring-Summer	Acid sands	Bulb, seed
Bulb	<i>Ornithogalum thyrsoides</i>	Sandy and clay soils on lowlands and lower slopes; sand fynbos; renosterveld	Late Winter-Spring	Most soil types	Bulb, seed
Geophyte	<i>Oxalis flava</i>	Sandy soils on lowlands; sand fynbos	Late Autumn-early Winter	Acid sands	"Bulb", seed

Growth form / habit	Species (Synonym)	Habitat and vegetation type	Flowering time	Soil type	Propagation method
Geophyte	<i>Oxalis pes-caprae</i>	Sandy or clay soils; sand fynbos	Winter-early Spring	Clay and acid sands	"Bulb", seed
Geophyte	<i>Oxalis purpurea</i>	Rocky soils on lower slopes; mountain fynbos and renosterveld	Autumn-early Spring	Clay and acid sands	"Bulb", seed
Tuber	<i>Pelargonium triste</i>	Sandy soils; sand fynbos	Late Winter-Summer	Alkaline to acid sands	Tuber, seed
Corm	<i>Sparaxis bulbifera</i>	Sandy and damp soils on lowlands; sand fynbos	Spring	Acid sands	Corm, seed
Rhizome	<i>Trachyandra ciliata</i>	Damp sandy coastal flats	Winter-Spring	Alkaline sands	Rhizome, seed
Rhizome	<i>Trachyandra divaricata</i>	Sandy soils on lowlands; sand fynbos	Winter-early Spring	Alkaline to acid sands	Rhizome, seed
Rhizome	<i>Trachyandra muricata</i>	Clay soils; renosterveld	Winter-Spring	Clay soils	Rhizome, seed
Bulb	<i>Tulbaghia alliacea</i>	Sandy soils on lowlands; sand fynbos	Autumn	Most soil types	Bulb, seed
Rhizome	<i>Wachendorfia paniculata</i>	Widespread on lowlands; sand fynbos and renosterveld	Winter-Spring	Moist sandstone soils	Rhizome, seed
Rhizome	<i>Wachendorfia thyrsiflora</i>	Wet soils near water; sand fynbos	Spring-early Summer	Moist sandstone soils	Rhizome, seed
Corm	<i>Watsonia borbonica</i>	Sandy and damp soils on slopes; mountain fynbos	Spring	Acid sands	Corm, seed
Corm	<i>Watsonia marginata</i>	Widespread on sandy and damp soils	Spring-Summer	Acid sands	Corm, seed
Corm	<i>Watsonia meriana</i>	Sandy or granitic soils, often vleis and streambanks	Spring-early Summer	Acid sands	Corm, seed
Rhizome	<i>Zantedeschia aethiopica</i>	Wet soils on lowlands; sand fynbos	All year	Alkaline to acid sands	Rhizome, seed
Restios, ferns, grasses, sedges					
Fern	<i>Blechnum capense</i>	Streambanks; forest	n/a	Moist sandstone soils	Plants, spores
Fern	<i>Blechnum punctulatum</i>	Sheltered rocky areas and streambanks; forest	n/a	Moist sandstone soils	Plants, spores
Fern	<i>Blechnum tabulare</i>	Wet and exposed slopes; mountain fynbos	n/a	Moist sandstone soils	Plants, spores
Grass	<i>Chaetobromus dregeanus</i>	Sandy slopes	Spring-early Summer	Alkaline to acid sands	Sods, seed
Fern	<i>Cheilanthes viridis</i>	Semi-sheltered areas; forest margins	n/a	Moist sandstone soils	Plants, spores
Restio	<i>Chondropetalum tectorum</i>	Sandy and wet soils on lowlands; sand fynbos	Late Winter-Spring	Moist sandstone soils	Sods, seed
Fern	<i>Cyathea capensis</i>	Forest	n/a	Moist sandstone soils	Plants, spores
Grass / Ground cover	<i>Cynodon dactylon</i>	Widespread, often near wetlands and watercourses	Spring-early Autumn	Moist soils in sand and clay	Sods, runners, seed
Sedge	<i>Cyperus textilis</i>	Wet soils and streambanks; strandveld and sand fynbos below 150m	Late Spring-early Autumn	Moist sandy soils	Division
Grass	<i>Ehrharta calycina</i>	Widespread	Winter-Summer	Most soil types	Sods, seed
Grass	<i>Ehrharta villosa</i>	Coastal sands and sandy lowlands near the coast	Spring-Autumn	Alkaline to acid sands	Sods, seed
Restio	<i>Elegia capensis</i>	Damp soils; mountain fynbos	Variable	Moist sandstone soils	Sods, seed
Grass	<i>Eragrostis curvula</i>	Widespread, disturbed sites and grasslands	All year	Most soil types	Sods, seed

Growth form / habit	Species (Synonym)	Habitat and vegetation type	Flowering time	Soil type	Propagation method
Grass	<i>Eragrostis tef</i> *	Resilient grass, hot and dry environments		Most soil types	Seed
Sedge	<i>Ficinia indica</i>	Flats and lower slopes	Winter-early Summer	Acid sands	Division
Sedge	<i>Hellmuthia membranacea</i>	Coastal sands below 500m	Late Autumn-Late Spring	Alkaline to acid sands	Division
Grass	<i>Hemarthria altissima</i>	Damp soils, streambanks and vleis	Spring-early Winter	Moist sandstone soils	Sods, seed
Grass	<i>Heteropogon contortus</i>	Widespread, hot and dry environments	Late Spring-Winter	Most soil types	Sods, seed
Grass	<i>Hyparrhenia hirta</i>	Widespread, disturbed areas and grasslands	Early Summer-early Winter	Most soil types	Sods, seed
Restio	<i>Ischyrolepis capensis</i>	Mostly clay slopes but also on moist sands	Late Spring-Summer	Acid sands and clay	Sods, seed
Restio	<i>Ischyrolepis eleocharis</i>	Coastal slopes, often on limestone	unknown	Alkaline sands	Sods
Sedge	<i>Juncus kraussii</i>	Damp saline soils in dune slacks, coastal vleis and streambanks	Spring-Summer	Moist sandy soils	Division
Grass	<i>Leersia hexandra</i>	Damp soils, streambanks and vleis	Summer	Moist sandstone soils	Sods, seed
Grass	<i>Lolium multiflorum</i> *	Disturbed lowlands, often coastal	Late Spring-Summer	Most soil types	Seed
Reed	<i>Phragmites australis</i>	Wet soils in streams, estuaries and on streambanks; strandveld; sand fynbos	Summer-early Winter	Moist sandy soils	Division
Restio	<i>Restio multiflorus</i>	Rocky soils on upper slopes; mountain fynbos	unknown	Acid sands	Sods, seed
Fern	<i>Rumohra adiantiformis</i>	Forest and forest margins	n/a	Moist sandstone soils	Plants, spores
Sedge	<i>Scirpoides (Scirpus) nodosus</i>	Moist sandy soils; strandveld and sand fynbos	Summer-early Autumn	Moist sandstone soils	Division
Grass/ Ground cover	<i>Stenotaphrum secundatum</i>	Damp sandy soils on lowlands; sand fynbos and coastal dunes, often a wetland indicator	Spring-Autumn	Alkaline to acid sands	Sods, runners
Restio	<i>Thamnochortus erectus</i>	Hills and flats of coastal plains, mostly in sand	Spring	Alkaline to acid sands	Sods, seed
Restio	<i>Thamnochortus spicigerus</i>	Sandy soils on lowlands; sand fynbos	Winter	Alkaline to acid sands	Sods, seed
Grass	<i>Themeda triandra</i>	Widespread	Spring-Winter	Most soil types	Sods, seed
Fern	<i>Todea barbara</i>	Moist streambanks on upper slopes; mountain fynbos	n/a	Moist sandstone soils	Plants, spores
Reed	<i>Typha capensis</i>	Wet soils in streams and on streambanks; sand fynbos	All year	Moist soils in sand and clay	Division
Restio	<i>Willdenowia teres</i>	Mountain and coastal sandy soils	Spring	Alkaline to acid sands	Sods, seed
Succulents					
Medium shrub	<i>Aloe maculata</i>	Rocky soils on lower slopes; renosterveld	Late Winter-early Spring	Clay and acid sands	Cuttings, seed
Ground cover perennial	<i>Carpobrotus acinaciformis</i>	Sandy soils on lowlands and lower slopes; sand fynbos and renosterveld	Late Winter-Spring	Most soil types	Cuttings, seed
Ground cover perennial	<i>Carpobrotus edulis</i>	Widespread in sandy soils on lowlands and lower slopes	Late Winter-Spring	Most soil types	Cuttings, seed
Annual	<i>Conicosia pugioniformis</i>	Sandy soils on lowlands; sand fynbos	Spring-Summer	Alkaline to acid sands	Seed
Small shrub	<i>Cotyledon orbiculata</i>	Widespread; sandy soils on	Winter-early	Alkaline to acid	Cuttings, seed

Growth form / habit	Species (Synonym)	Habitat and vegetation type	Flowering time	Soil type	Propagation method
		lowlands; strandveld	Summer	sands	
Small shrub	<i>Disphyma crassifolium</i>	Rocky areas on coastline	Winter-Spring	Saline soils	Cuttings, seed
Ground cover perennial	<i>Drosanthemum candens</i>	Coastal rocks and sands; strandveld	Late Spring-Summer	Alkaline sands	Cuttings, seed
Small shrub	<i>Drosanthemum floribundum</i>	Clay and saline soils; strandveld and sand fynbos	Late Winter-early Summer	Clay soils	Cuttings, seed
Small shrub	<i>Drosanthemum hispidum</i>	Pioneer on most soils in dry areas	Spring-Summer	Most soil types	Cuttings, seed
Small shrub	<i>Drosanthemum striatum</i>	Loam to clay soils; renosterveld	Spring	Clay soils	Cuttings, seed
Small shrub	<i>Erepsia bracteata</i>	Rocky slopes to 500m; usually clay soils; renosterveld	Summer-Autumn	Clay soils	Cuttings, seed
Ground cover perennial	<i>Jordaaniella dubia</i>	Coastal sands; strandveld	Early Winter-Spring	Alkaline sands	Cuttings, seed
Small shrub	<i>Lampranthus bicolor</i>	Sandy flats and slopes	Late Spring-Summer	Acid sands	Cuttings, seed
Small shrub	<i>Lampranthus glaucus</i>	Lower slopes and flats, fynbos and renosterveld, often near seasonal wetlands	Winter-early Summer	Acid sands	Cuttings, seed
Ground cover perennial	<i>Phyllobolus canaliculatus</i>	Coastal dunes	Early Summer	Alkaline sands	Cuttings, seed
Ground cover perennial	<i>Ruschia macowanii</i>	Strandveld; sand fynbos	Late Winter-Spring	Alkaline to acid sands	Cuttings, seed
Ground cover perennial	<i>Tetragonia fruticosa</i>	Granite and sandstone slopes and flats; sand fynbos; strandveld	Spring-early Summer	Alkaline to acid sands	Cuttings, seed
Climbers / scramblers					
Climber	<i>Asparagus asparagoides</i>	Widespread	Winter-Spring	Most soil types	Seed
Scrambler	<i>Bolusafrata bituminosa</i>	Mountain fynbos, streamsides	Spring-Summer	Acid sands	Seed
Climber	<i>Cissampelos capensis</i>	Sandy slopes in scrub and thicket; strandveld; sand fynbos	Late Summer-early Winter	Alkaline to acid sands	Seed
Scrambler	<i>Cynanchum africanum</i>	Sandy soils, mainly coastal thicket	Winter-Summer	Alkaline to acid sands	Seed
Scrambler	<i>Cynanchum obtusifolium</i>	Coastal thicket	All year	Alkaline sands	Seed
Climber	<i>Dipogon lignosus</i>	Thicket and forest	All year	Acid sands	Seed
Climber	<i>Kedrostis nana</i>	Coastal thicket	Late Summer	Alkaline sands	Seed
Scrambler	<i>Solanum africanum (quadrangulare)</i>	Coastal dunes	Late Summer-Spring	Alkaline sands	Cuttings, seed
Shrubs					
Small shrub	<i>Agathosma capensis</i>	Slopes and flats on shale, granite or coastal sands, less common on acid sands	All year	Most soil types	Cuttings, seed
Small shrub	<i>Agathosma ciliaris</i>	Coastal flats to lower sandstone slopes and shale bands	Late Autumn-Summer	Most soil types	Cuttings, seed
Small shrub	<i>Agathosma glabrata</i>	Damp sandy plains and dune slacks	Winter-Summer	Alkaline to acid sands	Cuttings, seed
Small shrub	<i>Agathosma serpyllacea</i>	Coastal or inland sand or limestone flats and slopes	Late Autumn-Summer	Alkaline to acid sands	Cuttings, seed
Medium shrub	<i>Anisodonteia scabrosa</i>	Widespread on lowlands, and occasionally coastal slopes	All year	Alkaline to acid sands	Cuttings, seed
Medium shrub	<i>Asparagus capensis</i>	Widespread on rocky slopes	Autumn-early Spring	Most soil types	Seed
Medium shrub	<i>Asparagus rubicundus</i>	Sandy and granite slopes; renosterveld	Autumn-Winter	Most soil types	Seed
Medium shrub	<i>Athanasia crithmifolia</i>	Sandy flats and slopes, often along drainage lines	Late Spring-Summer	Acid sands	Cuttings, seed

Growth form / habit	Species (Synonym)	Habitat and vegetation type	Flowering time	Soil type	Propagation method
Small shrub	<i>Athanasia dentata</i>	Sandy coastal slopes	Late Spring-Autumn	Alkaline to acid sands	Cuttings, seed
Small shrub	<i>Athanasia trifurcata</i>	Clay soils; renosterveld, and sand fynbos	Late Spring-early Autumn	Acid sands and clay	Seed
Medium shrub	<i>Berzelia abrotanoides</i>	Rocky sandstone slopes, seeps	Spring	Moist sandstone soils	Cuttings, seed
Medium shrub	<i>Berzelia intermedia</i>	Wet soils on lower and upper slopes; mountain fynbos	Late Winter-Summer	Moist acid sands	Cuttings, seed
Medium shrub	<i>Berzelia lanuginosa</i>	Damp sandstone slopes, seeps and streambanks	Spring-Summer	Moist sandstone soils	Cuttings, seed
Small shrub	<i>Chironia baccifera</i>	Widespread on sandy flats and slopes	Late Spring-Summer	Alkaline to acid sands	Cuttings, seed
Medium shrub	<i>Chrysanthemoides incana</i>	Sandy soils on lowlands; strandveld	Spring-Autumn	Alkaline to acid sands	Cuttings, seed
Large shrub	<i>Chrysanthemoides monilifera</i>	Sandy soils on lowlands; strandveld	Late Autumn-early Spring	Alkaline to acid sands	Cuttings, seed
Medium shrub	<i>Coleonema album</i>	Rocky soils on coastline; mountain fynbos; sand fynbos	Winter-Spring	Alkaline to acid sands	Cuttings, seed
Small shrub	<i>Diosma hirsuta</i>	Sandstone and clay slopes	Spring-early Summer	Acid sands and clay	Cuttings, seed
Medium shrub	<i>Diospyros glabra</i>	Sandy flats and slopes; thicket and forest margins	Spring-Summer	Alkaline to acid sands	Cuttings, seed
Large shrub	<i>Diospyros whyteana</i>	Forest and forest margins	Late Spring-early Winter	Acid sands	Cuttings, seed
Large shrub	<i>Dodonaea angustifolia</i>	Widespread on lowlands and lower slopes	Winter-Spring	Most soil types	Seed
Medium shrub	<i>Elytropappus rhinocerotis</i>	Clay soils; renosterveld	Autumn-early Spring	Clay soils	Seed
Large shrub	<i>Erica caffra</i>	Streambanks; mountain fynbos	Winter-Spring	Moist sandstone soils	Cuttings, seed
Small shrub	<i>Erica cerinthoides</i>	Sandy flats and slopes	All year	Acid sands	Cuttings, seed
Medium shrub	<i>Erica coccinea</i>	Sandy soils on lower slopes; mountain fynbos	Autumn-Winter	Acid sands	Cuttings, seed
Medium shrub	<i>Erica mammosa</i>	Widespread on sandy soils; sand fynbos and mountain fynbos	All year	Acid sands	Cuttings, seed
Medium shrub	<i>Erica sessiliflora</i>	Wet soils on slopes; mountain fynbos	Autumn-early Spring	Acid sands	Cuttings, seed
Small shrub	<i>Eriocephalus africanus</i>	Clay or granite soils on lower slopes; renosterveld; occasional on acid sands	Late Autumn-Spring	Clay and acid sands	Cuttings
Small shrub	<i>Eriocephalus racemosus</i>	Sandy and limestone soils near coast	Winter-Spring	Alkaline sands	Cuttings
Large shrub	<i>Euclea racemosa</i>	Sandy soils on lowlands; strandveld	Autumn-early Winter	Alkaline sands	Cuttings, seed
Small shrub	<i>Euryops pectinatus</i>	Rocky soils on slopes; mountain fynbos	All year	Acid sands	Cuttings, seed
Large shrub	<i>Gnidia squarrosa</i>	Sandy and limestone soils on coastline	All year	Alkaline sands	Cuttings, seed
Large shrub	<i>Grewia occidentalis</i>	Forest margins	Spring-Summer	Acid sands	Cuttings, seed
Medium shrub	<i>Halleria elliptica</i>	Damp lower slopes and streambanks in Hottentots-Holland; forest margins	Late Winter-Autumn	Moist acid sands and clay	Cuttings, seed
Small shrub	<i>Hermannia hyssopifolia</i>	Damp soils on lower slopes; mountain fynbos; granite and clay slopes; sand fynbos	Late Winter-Spring	Most soil types	Cuttings

Growth form / habit	Species (Synonym)	Habitat and vegetation type	Flowering time	Soil type	Propagation method
Small shrub	<i>Hermannia multiflora</i>	Sandy and rocky flats and slopes	Winter-Spring	Acid sands	Cuttings
Small shrub	<i>Knowltonia vesicatoria</i>	Forest margins and thicket	Late Autumn-Spring	Alkaline to acid sands	Seed
Medium shrub	<i>Leonotis leonurus</i>	Widespread on lowlands; strandveld and sand fynbos	Autumn-Winter	Most soil types	Cuttings, seed
Medium shrub	<i>Leonotis ocymifolia</i>	Rocky slopes	Late Spring-Winter	Clay and acid sands	Cuttings, seed
Small shrub	<i>Lessertia frutescens</i>	Widespread on lowlands and lower slopes; sand fynbos and renosterveld	Winter-early Summer	Most soil types	Seed
Medium shrub	<i>Leucadendron salignum</i>	Widespread; mountain fynbos and sand fynbos; renosterveld	Autumn-early Summer	Most soil types	Cuttings, seed
Medium shrub	<i>Leucadendron xanthoconus</i>	Sandstone slopes	Early Spring	Acid sands	Cuttings, seed
Small shrub	<i>Leysera gnaphalodes</i>	Sandy and clay soils on lowlands; sand fynbos and renosterveld	Spring	Most soil types	Seed
Small shrub	<i>Limonium peregrinum</i>	Sandy soils on lowlands; strandveld	Early Spring-Summer	Alkaline sands	Seed
Small shrub	<i>Linum africanum</i>	Sandy and limestone soils on coastline	Late Winter-Summer	Alkaline sands	Cuttings, seed
Large shrub	<i>Lycium afrum</i>	Mostly dry stony slopes and flats	Winter-Spring	Alkaline to acid sands	Cuttings, seed
Large shrub	<i>Lycium ferocissimum</i>	Dry stony flats and slopes	Winter-Spring	Alkaline to acid sands	Cuttings, seed
Medium shrub	<i>Lobostemon fruticosus</i>	Sandy soils on lowlands; sand fynbos	Winter-Spring	Acid sands	Seed
Medium shrub	<i>Maurocenia frangula (frangularia)</i>	Riverine areas near coast; forest and strandveld	Winter-early Spring	Alkaline to acid sands	Cuttings, seed
Medium shrub	<i>Melianthus major</i>	Damp sandstone slopes, streamsides	Late Winter-Spring	Moist acid sands	Cuttings, seed
Medium shrub	<i>Metalasia muricata</i>	Sandy soils on lowlands; sand fynbos	Autumn-early Spring	Alkaline to acid sands	Cuttings, seed
spreading Medium shrub	<i>Morella (Myrica) cordifolia</i>	Sandy soils on lowlands; strandveld	Autumn-Winter	Alkaline sands	Cuttings, seed
Small shrub	<i>Morella (Myrica) quercifolia</i>	Sandy soils on lowlands and lower slopes; strandveld; sand fynbos	Winter-Spring	Alkaline to acid sands	Cuttings, seed
Medium shrub	<i>Morella (Myrica) serrata</i>	Damp, rocky soils on lower and upper slopes; mountain fynbos	Spring-Summer	Acid sands	Cuttings, seed
Medium shrub	<i>Myrsine africana</i>	Sheltered slopes and flats; mountain fynbos	Late Spring-Summer	Acid sands	Cuttings, seed
Medium shrub	<i>Nylandtia spinosa</i>	Sandy soils on lowlands; sand fynbos	Winter-Spring	Acid sands	Cuttings, seed
Large shrub	<i>Olea exasperata</i>	Sandy soils on lowlands; strandveld	Late Winter-Spring	Alkaline sands	Cuttings, seed
Small shrub	<i>Orphium frutescens</i>	Damp sandy soils on coastline; wetlands; sand fynbos	Autumn	Moist acid and alkaline sands	Seed
Large shrub	<i>Osyris (Colpoon) compressa (compressum)</i>	Widespread on lowlands and lower slopes; mountain fynbos; strandveld. Must be planted with <i>Rhus</i> spp.	Winter-Summer	Alkaline to acid sands	Cuttings, seed
Small shrub	<i>Otholobium bracteolatum</i>	Coastal sands, limestone hills	Summer-Autumn	Alkaline sands	Seed
Medium shrub	<i>Otholobium hirtum</i>	Pioneer, clay and granite soils; renosterveld	Spring-Summer	Clay and granite soils	Seed
Small shrub	<i>Passerina ericoides</i>	Coastal dunes	Late Spring-early Summer	Alkaline sands	Seed

Growth form / habit	Species (Synonym)	Habitat and vegetation type	Flowering time	Soil type	Propagation method
Medium shrub	<i>Passerina rigida</i>	Sandy soils on lowlands; strandveld	Early Summer	Alkaline sands	Seed
Medium shrub	<i>Passerina vulgaris</i>	Sandy flats and slopes; sand fynbos	Late Spring-early Summer	Acid sands	Seed
Small shrub	<i>Pelargonium betulinum</i>	Sandy soils on lowlands; strandveld	Spring-Summer	Alkaline to acid sands	Cuttings, seed
Small shrub	<i>Pelargonium capitatum</i>	Sandy soils on lowlands and lower slopes; sand fynbos; strandveld	Spring-Summer	Alkaline to acid sands	Cuttings, seed
Medium shrub	<i>Pelargonium cucullatum</i>	Widespread on lowlands and lower slopes; sand fynbos; mountain fynbos	Spring-Summer	Acid sands	Cuttings, seed
Small shrub	<i>Pelargonium gibbosum</i>	Coastal thicket	Summer-Autumn	Alkaline sands	Cuttings, seed
Small shrub	<i>Pelargonium myrrhifolium</i>	Open places on stony sands	Early Spring-Summer	Acid sands and clay	Cuttings, seed
Medium shrub	<i>Peucedanum ferulaceum</i>	Slopes; mountain fynbos	Summer-early Autumn	acid sands	Seed
Small shrub	<i>Phylica ericoides</i>	Sandy soils on lowlands and lower slopes; sand fynbos	All year	alkaline to acid sands	Cuttings, seed
Large shrub	<i>Phylica plumosa</i>	Clay and granite soils on lower slopes; renosterveld	Late Autumn-Winter	Clay soils	Cuttings, seed
Small shrub	<i>Phylica pubescens</i>	Lower slopes; mountain fynbos	Late Autumn-Winter	Alkaline to acid sands	Cuttings, seed
Large shrub	<i>Podalyria calyptata</i>	Rocky soils; mountain fynbos	Late Winter-Spring	acid sands	Seed
Small shrub	<i>Podalyria sericea</i>	Lowlands and lower slopes; sand fynbos	Spring	Moist sandstone soils	Seed
Large shrub	<i>Polygala myrtifolia</i>	Lowlands and lower slopes; strandveld and sand fynbos	All year	alkaline to acid sands	Seed
Medium shrub	<i>Protea cynaroides</i>	Rocky soils on slopes; mountain fynbos	All year	acid sands	Cuttings, seed
Large shrub	<i>Protea neriifolia</i>	Rocky soils on slopes in Hottentots-Holland; mountain fynbos	Late Summer-Spring	acid sands	Cuttings, seed
Large shrub	<i>Protea repens</i>	Widespread; mountain fynbos and sand fynbos	Late Autumn-Spring	Acid sands and clay	Cuttings, seed
Small shrub	<i>Pseudoselago serrata</i>	Stony slopes	Spring-early Autumn	Acid sands	Cuttings, seed
Large shrub	<i>Psoralea aphylla</i>	Moist soils; mountain fynbos	Spring-early Winter	Moist sandstone soils	Seed
Large shrub	<i>Psoralea pinnata</i>	Moist soils; mountain fynbos	Spring-Summer	Moist sandstone soils	Seed
Large shrub	<i>Putterlickia pyracantha</i>	Sandy soil on lowlands; strandveld	Spring-Summer	Alkaline to acid sands	Cuttings, seed
Large shrub	<i>Rhus crenata</i>	Sandy soils on lowlands; strandveld	Autumn	Alkaline sands	Cuttings, seed
Large shrub	<i>Rhus glauca</i>	Coastal lowlands	Winter-Spring	Alkaline to acid sands	Cuttings, seed
Large shrub	<i>Rhus lucida</i>	Widespread; forest margins, rocky slopes and strandveld	Late Autumn-early Spring	Most soil types	Cuttings, seed
Large shrub	<i>Rhus tomentosa</i>	Rocky slopes, often on clay	Winter-early Spring	Acid sands and clay	Cuttings, seed
Large shrub	<i>Rhus undulata</i>	Rocky areas; mountain fynbos and forest margins	Autumn-early Winter	Acid sands and clay	Cuttings, seed
Medium shrub	<i>Salvia africana-caerulea</i>	Widespread on lowlands and lower slopes; sand fynbos	Winter-Summer	Acid sands	Cuttings, seed
Medium shrub	<i>Salvia africana-lutea</i>	Widespread; sand fynbos and mountain fynbos	Winter-early Summer	Alkaline to acid sands	Cuttings, seed

Growth form / habit	Species (Synonym)	Habitat and vegetation type	Flowering time	Soil type	Propagation method
Medium shrub	<i>Salvia chamelaeagnea</i>	Widespread; sand fynbos and mountain fynbos	Spring-Autumn	Acid sands	Cuttings, seed
Small shrub	<i>Scabiosa africana</i>	Sheltered slopes; mountain fynbos	Winter-Spring	Acid sands	Seed
Small shrub	<i>Selago corymbosa</i>	Widespread on stony flats and slopes; sand fynbos	Late Spring-early Winter	Acid sands	Seed
Medium shrub	<i>Senecio halimifolius</i>	Sandy and wet soils on lowlands; sand fynbos	Late Spring-Summer	Moist sandstone soils	Cuttings, seed
Small shrub	<i>Seriphium (Stoebe) plumosum (plumosa)</i>	Clay soils on lower slopes; renosterveld	Autumn-early Winter	Acid sands and clay	Cuttings, seed
Small shrub	<i>Tephrosia capensis</i>	Widespread	Spring-Summer	Acid sands	Seed
Small shrub	<i>Trichocephalus (Phylica) stipularis</i>	Sandy flats and lower slopes	Autumn-Spring	Alkaline to acid sands	Cuttings, seed
Small shrub	<i>Zygophyllum flexuosum</i>	Sandy soils on lowlands; strandveld	Spring-early Autumn	Alkaline sands	Cuttings, seed
Trees					
Medium tree	<i>Acacia karroo</i>	Streambanks on lowlands and lower slopes; renosterveld	Spring-Summer	Acid sands and clay	Seed
Large tree	<i>Apodytes dimidiata</i>	Rocky slopes and forest	Spring-Summer	Humic sands	Cuttings, seed
Medium tree	<i>Brabejum stellatifolium</i>	Streambanks in mountain fynbos	Summer	Moist acid sands and clay	Cuttings, seed
Small tree	<i>Brachylaena neriifolia</i>	Streambanks in mountain fynbos	Summer-early Autumn	Moist acid sands	Cuttings, seed
Small tree	<i>Buddleja saligna</i>	Rocky slopes and scrub; forest	Late Winter-Summer	Acid sands	Cuttings, seed
Small tree	<i>Buddleja salviifolia</i>	Streambanks; forest margins	Late Winter-Spring	Moist acid sands and clay	Cuttings, seed
Medium tree	<i>Canthium inerme</i>	Coastal forest	Summer	Humic sands	Cuttings, seed
Medium tree	<i>Canthium mundianum</i>	Coastal forest margin	Spring-early Summer	Humic sands	Cuttings, seed
Medium tree	<i>Cassine peragua</i>	Coastal scrub, woodland and forest	Late Summer-Winter	Most soil types	Cuttings, seed
Medium tree	<i>Celtis africana</i>	Forest	Summer-Autumn	Humic sands	Cuttings, seed
Medium tree	<i>Cunonia capensis</i>	Streambanks; forest	Autumn-Winter	Moist acid sands	Cuttings, seed
Large tree	<i>Curtisia dentata</i>	Forest	Summer	Humic sands	Cuttings, seed
Small tree	<i>Gymnosporia buxifolia (Maytenus heterophylla)</i>	Forest margins	Late Summer-Autumn	Most soil types	Cuttings, seed
Medium tree	<i>Halleria lucida</i>	Forest and forest margins	Winter-Summer	Most soil types	Cuttings, seed
Large tree	<i>Ilex mitis</i>	Riparian forest	Spring-early Summer	Moist humic soils	Cuttings, seed
Medium tree	<i>Kiggelaria africana</i>	Riverine areas; forest; rocky slopes	Spring-early Summer	Most soil types	Seed
Small tree	<i>Metrosideros angustifolia</i>	Streambanks; mountain fynbos	Spring-early Summer	Moist acid sands	Cuttings, seed
Large tree	<i>Ocotea bullata</i>	Coastal forest	Late Spring-early Autumn	Humic sands	Cuttings, seed
Large tree	<i>Olea capensis</i> subsp. <i>macrocarpa</i>	Forest	Spring-early Autumn	Humic sands	Cuttings, seed
Medium tree	<i>Olea europaea</i> subsp. <i>africana</i>	Rocky soils on lower slopes; mountain fynbos; renosterveld	Spring-early Autumn	Most soil types	Cuttings, seed
Large tree	<i>Olinia ventosa</i>	Coastal forest and forest	Late Autumn-Winter	Humic sands	Cuttings, seed
Large tree	<i>Podocarpus latifolius</i>	Forest	unknown	Most soil types	Seed
Small tree	<i>Pterocelastrus</i>	Dune thicket; coastal forest	Autumn-Winter	Humic alkaline	Cuttings, seed

Growth form / habit	Species (Synonym)	Habitat and vegetation type	Flowering time	Soil type	Propagation method
	tricuspidatus			sands	
Medium tree	Rapanea melanophloeos	Forest and forest margins	Late Spring-Summer	Acid sands	Cuttings, seed
Small tree	Salix mucronata	Streambanks in mountain fynbos and renosterveld	Spring	Moist to wet soils	Cuttings, seed
Large tree	Sideroxylon inerme	Sandy soils on coastline; strandveld	Summer-early Winter	Humic alkaline sands	Cuttings, seed
Small tree	Tarchonanthus camphoratus	Widespread on sandy soils; forest margins and strandveld	Summer-Autumn	Most soil types	Cuttings
Medium tree	Virgilia oroboides	Forest margins and streamsides	Summer-Autumn	Most soil types	Seed

Shrubs and trees

[Delete whichever is not applicable]

1. Selected areas or elements (e.g. trees, rocky outcrops) on site shall be maintained *in situ* (as no-go areas). {Specify elements and features. }
2. All plant material shall be obtained either from nurseries; from a phased “Search and Rescue” operation on the Site prior to clearing; or, from an area in close proximity to, and of the same veld type as, the Site, as indicated by the Engineer/ ECO /EO. Living plant material obtained from the site shall include whole plants, cuttings (propagation material), bulbs, corms, runners, rhizomes, grass sods, restio sods, etc. Living plant material, obtained from localities in close proximity to the site, shall include cuttings and runners only. {Refer also to “harvested seed” – below. Note also that phasing the collection of propagation material over the period of several months (preferably a minimum of one full year prior to commencement of revegetation operations), affords the relevant Contractor/s access to the best material for propagating plants, since not all species produce suitable propagules, or propagation material, in the same season}.
3. Indigenous plants shall be obtained either from a “Search and Rescue” operation on the Site prior to clearing or from an area in close proximity to and of the same veld type as the Site, as indicated by the Engineer/ ECO /EO.
4. Plants shall be obtained from nurseries. Nursery plants shall be grown from locally obtained seed unless approved by the Engineer/ ECO /EO. The Contractor shall inform the Engineer/ ECO /EO of the source of his plants
5. Plants and plant materials shall be obtained from their natural habitat, on condition that the necessary authorisations are obtained from the Provincial authorities (and landowners where necessary) and that disturbance to natural areas is negligible. {Provide site-specific detail on exactly where plants may be obtained}.
6. The Contractor shall ensure that each plant is handled and packed in the approved manner for that species or variety, and that all necessary precautions are taken to ensure that the plants arrive on Site in a proper condition for successful growth.
7. Trucks used for transporting container plants shall be equipped with covers to protect the plants from windburn. Containers shall be in a good condition. Plants shall be protected from wind during the transportation thereof.
8. No plants or plants with exposed roots shall be subjected to prolonged exposure to drying winds and sun, or subjected to water logging or force-feeding at any time after purchase.

9. The Contractor shall ensure that the plants are in a good condition and free from plant diseases and pests. The Contractor shall immediately remove plants containing any diseases and/ or pests from the Site.
10. All plants supplied by the Contractor shall be healthy, well formed, and well rooted. Roots shall not show any evidence of having been restricted or deformed at any time, unless these were plants rescued from natural habitats for replanting.
11. The potting materials used shall be weed free.
12. There shall be sufficient topsoil around each plant to prevent desiccation of the root system. Where plants are stored on Site prior to planting they shall be maintained to ensure that the root systems remain moist.
13. All indigenous plants that have been removed from a site prior to clearing, shall be identified and labelled and returned to the same habitat, aspect and, where possible, position from which they were removed. Where possible, GPS co-ordinates shall inform final placement of these plants.

Grass

Sods and runners

1. Grass sods shall be clean of invasive plants or weeds.
2. Sods shall be obtained from a source approved by the Engineer/ ECO /EO. Sods rejected by the Engineer/ ECO /EO shall be removed from the Site immediately.
3. Grass shall have been grown specifically for sod purposes, mown regularly and cared for to provide an approved uniformity to the satisfaction of the Engineer/ ECO /EO. It shall be harvested by special machines manufactured for this purpose to ensure an even depth of cut with sufficient root material and soil.
4. Sods shall be delivered in healthy conditions and be free from weeds and disease.
5. Sods shall be obtained from an approved nursery. Nursery sods shall have been maintained regularly to the required quality. Nursery grass sods shall have at least a 30 mm layer of topsoil.
6. Sods shall be obtained directly from the veld. Veld sods shall contain at least a 50 mm topsoil layer and the roots shall be minimally disturbed. They shall be obtained from the near vicinity of the Site from an area selected by the Engineer/ ECO /EO. The soil shall be compatible with that removed from the area to be revegetated and shall not have been compacted by heavy machinery.
7. Runners shall be of an approved quality and free from disease or weeds.

Basic regrassing seed mix

{These are basic seed mixtures to use when regrassing. When developing site-specific basic regrassing specifications, ensure that all relevant information on mulch; soil binder; fertilisers; application rates; etc. is included}.

1. Summer seed mixture:
 - a. *Cynodon dactylon* {germinates in summer from end September onwards and is widespread}.

- b. *Eragrostis tef* {germinates in summer from September, smaller in stature than *Lolium* and has a very short growing season. Although this species is exotic to the Western Cape, it is not invasive and is good for stabilisation. It is widespread}.
 - c. *Hyparrhenia hirta* {well-drained, stony soils}.
2. Winter seed mixture:
- a. *Lolium multiflorum* {widespread, germinates in winter, grows until November/ December. Don't sow after September since temperatures too high}.
 - b. *Ehrharta villosa* {coastal sand dunes}.
 - c. *Chaetobromus dregeanus* {well-drained sandy soils}.

Indigenous vegetation sods

1. Sods of indigenous vegetation (e.g., rushes, sedges and restios) shall be obtained from areas approved by the Engineer/ ECO /EO, within, or near, the Site.
2. The Contractor shall identify suitable sods, as directed by the Engineer/ ECO /EO.
3. Sods rejected by the Engineer/ ECO /EO shall be removed from the Site immediately.
4. Indigenous vegetation sods shall be clean of weeds or invasive plants in specified areas before planting.

Seed

1. The seed mix quantities and purity levels shall be specified and approved by the Engineer/ ECO /EO.
2. Seed shall be utilised for the cultivation of material for revegetation.
3. Seed shall be utilised for direct sowing.
4. Seed must be pre-dried then stored under cool, dry, insect free conditions until required either for cultivation in the nursery or in the rehabilitation process. Only viable, ripe seed shall be used.
5. A record of all stock {specify plants, seeds, mulch, etc.} relevant to the project that is held in the nursery shall be provided to the Engineer/ ECO /EO on a monthly basis.
6. Seed shall be stored at the Contractor's expense.

Commercial seed

1. All seed used shall be labelled in accordance with the Government Seed Act (Act 28 of 1961) or amendment thereof. The Contractor shall furnish the Engineer/ ECO /EO with signed copies of a statement from the seed merchant certifying that each container of seed delivered is fully labelled in accordance with the Government Seed Act. This certification shall appear on, or be submitted with, all copies of invoices for the seed.
2. Commercial seed shall only be used in previously disturbed areas.

Harvested seed

1. Indigenous seed shall be harvested in an area, or areas, free of alien/ invasive vegetation, either at the Site prior to clearance or from suitable neighbouring sites, as indicated by the Engineer/ ECO /EO.

2. Where seed is harvested from the Site prior to clearing, 100% of seed shall be removed during a phased seed harvesting programme, The programme shall ensure that seed is harvested on a regular {state period – e.g. weekly/ fortnightly.} basis from time of commencement of contract until the Site is cleared. *{Seed availability is not always predictable and allowance must be made for a lead-in period during which seeds may be harvested, this period should ideally be one full year.}*
3. When harvesting from plant communities off-site (with the correct authorisations), no more than 25% of available seed shall be harvested from any individual plant, plant community or locality.
4. Following harvesting, the seed shall be dried under cool airy conditions, or propagated immediately, where appropriate. The seed shall be insect- and pathogen free and shall be stored in containers under cool conditions that are free of rodents or insects. No wet, mouldy or otherwise damaged seed is acceptable.
5. Seed harvested by hand from selected species, should be treated, and stored separately, with appropriate labelling.
6. Seed gathered by vacuum-harvester, or other approved mass collection method, from suitable shrubs or from the plant litter surrounding the shrubs shall be kept apart from individually harvested seed, and labelled appropriately.
7. Harvested seed, obtained by means of vacuum harvesting, shall be free of excessive quantities of organic and/ or substrate material.

PSER3.02 Mulch

Mulch shall be *{give details of required mulch}*.

Brush-cut mulch

1. The stockpiled vegetation from the clearing operations shall be reduced to mulch.
2. Indigenous plant material shall be kept separate from alien material. The vegetative material shall be reduced by either mechanical means (chipper) or by hand-axing to sticks no longer than 100 mm. The chipped material shall be mixed with the topsoil at a ratio not exceeding 1:1.
3. Mulch shall be harvested from areas that are to be denuded of vegetation during construction activities, provided that they are free of seed-bearing alien invasive plants. Where invasive alien cover is <5%, these shall be removed prior to harvesting of mulch.
4. No harvesting of vegetation outside the area to be disturbed by construction activities shall occur. *{Unless undertaken in accordance with specified procedures such as described in (5) below}*.
5. Mulch shall be harvested from areas in close proximity to the site, as approved by the Engineer/ ECO /EO. Any collection of indigenous material from nearby veld that will not be subject to complete denudation shall only be done in mature vegetation, in areas identified by the Engineer/ ECO /EO. Harvesting in these areas shall be performed in a chequer board fashion, cutting the indigenous vegetation down to ± 100 mm above the ground, in 2 m wide strips, leaving 2 m gaps of undisturbed vegetation in between the harvested strips. This shall only be undertaken in areas that are scheduled for planned burns (for vegetation regeneration) within the same year. Should no prescribed burns be planned for the locality then harvesting of indigenous mulch materials shall be limited to the development footprint.
6. The Contractor shall take every effort to ensure the retention of as much seed as possible in mulches made from indigenous vegetation. Mulches shall be collected in such a manner as

to restrict the loss of seed. The timing of mulch harvesting shall, where possible, coincide with the season when most seed is available on the plants on site. *{This is site-specific information that should be furnished through botanical assessment}*.

7. Brush-cut mulch shall be stored for as short a period as possible, and seed released from stockpiles shall be collected for use in the rehabilitation process.
8. Fynbos vegetation, cleared from the site prior to construction activities, that is suitable for mulching, shall be stockpiled for later use. The Contractor shall ensure that no alien species are used to make indigenous vegetation brush cut mulch without the approval of the Engineer/ ECO /EO.

Processed commercial mulches

1. Processed commercial mulch, in the form of a 'roll-on blanket' or fibrous product shall be utilised as mulch during revegetation and rehabilitation of the site.
2. The mulch used shall be weed free, of a reputable make and approved by the Engineer/ ECO /EO.
3. The packaged fibrous mulch shall be processed in such a manner as to contain no growth or germination inhibiting factors. The mulch shall remain in uniform suspension in water under agitation.
4. When packaged fibrous mulch is used together with seed and fertiliser in a hydroseeder, the Contractor shall ensure that it blends with other constituents to form homogenous slurry.

Wood chips

1. Wood chips (including bark) shall be utilised as mulch during revegetation and rehabilitation of the site.
2. The chips shall be no longer than 50 mm in length or breadth and shall be free of seed. The Engineer/ ECO /EO shall approve the source of chips.
3. The wood shall be chipped during winter
4. Chips shall not be made from wood treated with preservatives.
5. Half-composted chips shall be utilised in preference to non-composted chips
6. Indigenous seed shall always be added to wood chip mulches.

Compost

1. Compost shall be utilised as mulch during revegetation and rehabilitation of the site.
2. The compost shall be well decayed, friable and free from weed seeds, dust or any other undesirable materials.
3. Seed free, half-composted material, such as mulled-bark, shall be used as an additive to extend indigenous mulch. No more than 50% compost shall be used under these circumstances.

Alternative products

1. Hydrogel B/ Aquasorb/ Stockosorb or other similar product approved by the Engineer/ ECO /EO shall be utilised as mulch during revegetation and rehabilitation of the site.

PSER3.03 Slope stabilisers and anti-erosion measures

Slope stabilizer and/ or anti-erosion materials shall be {give details of required materials}.

1. Temporary windbreaks (e.g. small shade cloth fences) shall be erected where necessary until such time as the vegetation in between the windbreaks has established.
2. Brush-packing shall be used to stabilise wind-blown sands or slopes. Indigenous vegetation shall be used for brush-packing. No invasive alien species shall be used for brush-packing without the approval of the Engineer/ ECO /EO.

Stabilisation cylinders

1. Stabilisation cylinders shall consist of cylindrical capsules approximately 125 mm in diameter by 1.5 m in length.
2. Stabilisation cylinders shall be manufactured from biodegradable material such as hessian, or of extruded biodegradable plastic netting. The plastic material shall be sufficiently robust to last for a period of not less than 3 years and not more than 10 years before disintegrating under normal service conditions.
3. Stabilisation cylinders shall be filled with shredded or partly compressed pine chips or similar material. Only material passing through a 31 mm sieve with round holes and retained on a 5 mm sieve with square holes shall be used. Wood chips shall be treated with Tanalith E wood preservative (or similar, low-toxicity product). Splinters and flat chips are not acceptable.
4. A seed, or seed mix, approved by the Engineer/ ECO /EO shall be included in the cylinders.
5. Cylinders shall be anchored in position using biodegradable material.
6. Cylinders shall not be used to stabilise any rock faces.

Biodegradable netting/ matting

1. Biodegradable netting/ matting shall be made from jute, sisal, coir or similar material.
2. A 1 m² sample of the geofabric, geogrid or nylon (biodegradable) fabric shall be submitted to the Engineer/ ECO /EO for approval prior to procurement.
3. The netting/ matting shall be sufficiently robust to last for a period of not less than 5 years under normal service conditions.
4. Holes in the netting/ matting shall have a minimum size of 400 mm² and a maximum size of 900 mm² and be made from at least 4-6 mm thick cord.

Logs

1. The Contractor shall ensure that for slopes of less than 1:3, the Site shall be stabilised by means of “geojute” and continuous rows of logs, secured to the slope with timber pegs, parallel to the contour. Logs shall be untreated pine (or gum) poles of not less than 150 mm with a taper of not more than 75 mm over its length. Timber pegs to be treated and not less than 400 mm in length. Timber pegs must be longer if thicker logs than the minimum are used.
2. The slope shall be covered with “geojute” prior to placing the logs. The Contractor shall install Kaytech Soil Saver 292 (or a similar product) as per the manufacturer’s specifications except for the pegging that is replaced by the log stabilization.

3. Logs shall be secured to the slope in such a manner that they will not become dislodged during construction and/ or planting. Logs to be secured to the slope by means of a minimum of two pegs driven into the soil not less than 250 mm deep. For logs longer than 3 m, additional pegs shall be required. Log ends to be butt-jointed and plugged with wood chips or similar to prevent water from washing through at the joint. Logs shall be placed at 2 m intervals with a bottom row parallel to the edge of the road. Logging of the slope to start at the top of the slope to prevent the stretching of the “geojute”.

Hard structures

1. All hard structures used for slope stabilisation shall have finishes consistent with the surroundings, which ensure minimal visual impact and enhanced sense of place. The finishes shall mimic the natural surfaces as far as possible. *{These may include natural pebble face, and rock paint finishes}*.

PSER3.04 Soil stabilisers

1. Flobond/ Hydropam or other product approved by the Engineer/ ECO /EO shall be utilised as mulch during revegetation and rehabilitation of the site.
2. Soil stabilisers shall consist of an organic or inorganic material to bind soil particles together and shall be a proven product able to suppress dust and form an encrustation.
3. Soil stabilisers shall be of such a quality that grass and indigenous seeds may germinate and penetrate the crust. Samples of the proposed material shall be supplied to the Engineer/ ECO /EO before any of the material is delivered to the Site.

PSER3.05 Fertiliser

All fertilizers shall comply with the Fertilizers, Farm Seeds, Agricultural Remedies and Stock Remedies Act (Act 36 of 1947 (as amended)).

All fertilizers shall be safely stored in plastic bags on, and off, the Site and shall not be exposed to weather conditions such as harsh sun, rain, wind, etc. These fertilizers shall be dry, free-flowing and free from lumps and shall be supplied by the Contractor in plastic bags, labelled to indicate weight and content of each, including the proportion of each constituent.

Fertiliser shall be: *{give details of required materials}*.

Hydroseeding

1. Liquid fertiliser shall be used where fertiliser is applied during the hydroseeding process. *{The fertilizer ratio would be dependant on the types of seed used during hydroseeding, as well as the type of substrate to be hydroseeded (i.e. sand, clay, etc.)}*.

Mountain and acid Sand Fynbos

1. In natural areas with acid sandy soils, no phosphorus-based fertiliser shall be used, since these soils are naturally nutrient deficient. Kelpak, or a similar organic fertigant, may be used to reduce transplant shock and very low concentrations of organic fertilizer or ultra-slow release fertilizer (with low or zero phosphorus and potassium, i.e. 3:1:0 or 4:1:0) may be applied to aid rooting should soils be identified as being extremely nutrient deficient.

2. For grassing, or landscaping in built-, or semi-natural areas, the Contractor shall use 3:1:1, 3:1:2, 4:1:1, 8:1:1, or similar in a solid form and 4:1:1 (22) SR, or similar, in a liquid form, as approved by the Engineer/ ECO /EO.

Granite soils

1. The Contractor shall use 3:1:0 and 4:1:0, or similar as approved by the Engineer/ ECO /EO. Note that granite and shale soils, which support fynbos communities, require similar fertilisers used as applied for sandy soils (above).

Sodic and saline soils

1. The Contractor shall use Gypsum (CaSO_4) to reduce sodic or salinity problems where these exist. When gypsum is applied, mulch layers must be lightly dug into the upper (top 100 mm) of soil.

Basic regrassing

1. The Contractor shall use 2:3:2 and super-phosphate.

Cultivated lawns

1. The Contractor shall use 2:3:2, super-phosphate or similar as approved by the Engineer/ ECO /EO.

PSER3.06 Manure

1. The Contractor shall only use well-rotted manure, from a source approved by the Engineer/ ECO /EO.

PSER3.07 Topsoil and subsoil

1. All soil imported to act as bedding material shall be free of alien plant seeds, and their use shall be restricted to 500 mm below the soil surface.
2. No topsoil shall be imported unless topsoil is insufficient (or absent) from the site to be rehabilitated. In this instance the topsoil shall be from a source that has comparable soil characteristics, as approved by the Engineer/ ECO /EO.
3. Topsoil from the site (natural topsoil) shall be stored in piles no higher than 2 m and protected from wind and rain erosion with shade cloth or similar material.
4. Natural topsoil shall not be stockpiled for longer than 6 months (preferably 3 months) prior to redistribution in order to preserve seeds and bulbs within the natural topsoil.

PSER3.08 Boulders and rocks

1. Boulders or rocks used in rehabilitation shall come from comparable geomorphological units to those that they are being utilised to rehabilitate.
2. Where possible, boulders and rocks utilised during rehabilitation, shall be collected from the Site and stockpiled prior to the commencement of construction activities on Site.
3. Boulders and rocks must be partially buried within the topsoil layer (roughly 2/3 emergent) to provide greater soil-holding stability and reduce water erosion.
4. Placement of rocks and boulders shall mimic the natural occurrence of rocks and boulders in the area.

PSER3.09 Rock stains and stabilisers

1. Where required a rock stain or colourant shall be applied. Such stain shall contain no caustic or alkaline chemicals.
2. Permeon, or a similar product, as directed by the Engineer/ ECO /EO, shall be used as a rock stain and shall be applied directly to clean rock surfaces.
3. Care shall be taken to ensure that the rock-colouring material does not inhibit plant growth where plant growth is possible and desirable within a rock face or cliff.
4. Where required cement-based screed, or grout, sprayed onto the rock face shall be used to rehabilitate and stabilise cut rock surfaces.
5. Rock colouring and rock stabilising materials shall be applied only by licensed personnel using applicators recommended by the materials manufacturers.

PSER4 PLANT**PSER4.01 Hydroseeder**

1. The hydroseeder shall be capable of pumping the specified seed mix, fertiliser, soil stabiliser, aqueous smoke solution, mulch and wetting-agent (mixed in water) at specified rates over the areas to be seeded.
2. The hydroseeder shall have an agitation system, which shall be sufficient to agitate, suspend and homogeneously mix the specified slurry.
3. The slurry distribution lines shall be large enough to prevent stoppage. The discharge line shall be equipped with a set of hydraulic spray nozzles suitable for the even distribution of the slurry on the various slopes to be seeded.
4. The slurry tank shall be mounted on a travelling unit, either self-propelled or drawn by a separate unit. The travelling unit shall be capable of placing the slurry tank and spray nozzles within sufficient proximity to the areas to be seeded so as to provide uniform distribution without waste.

PSER4.02 Seed storage

1. Facilities should be available to store seed, collected or required on-site, in rodent- and insect-free, cool (7 - 10°C), and dry conditions.

PSER4.03 Site-specific nursery

1. On-site nursery facilities shall be erected for the holding of rescued plant material and the propagation of appropriate species for revegetation. The nursery shall be suitably located and constructed under the supervision of the Engineer/ ECO /EO. All plant material (e.g. cuttings, bulbs, seed and plants) shall be labelled as specified in Section 3.01.
2. An off-site nursery shall be made available for the holding of rescued plant material and the propagation of appropriate species for revegetation. The plants shall be cultivated and stored separately from other material in the nursery. All plant material (e.g. cuttings, bulbs, seed and plants) shall be labelled as specified in Section 3.01.
3. The site-specific nursery shall be utilised for the cultivation and maintenance of the stocks of living plant material required for the revegetation and rehabilitation of the Site.
4. Where chlorine levels in irrigation water are shown to exceed 0.4ppm, irrigation water shall be de-chlorinated prior to application to container plants.
5. The nursery-, including irrigation, water shall be free of Phytophthora.

6. Soil, and other propagation media, used to cultivate or grow plants shall be weed- and pathogen free.
7. Argentine ants shall be controlled at all times. No plants with Argentine ants, or nests thereof, may be planted into natural, or semi-natural localities, since this species is ecologically detrimental.
8. The area where plants are stored shall be kept free of weeds.
9. A record of stock relevant to the project that is held in the nursery shall be provided to the Engineer/ ECO /EO on a monthly basis.

PSER4.04 Irrigation

1. The design and layout of the irrigation shall be indicated on a plan and approved by the Engineer/ ECO /EO prior to its installation.
2. The 100 mm uPVC sleeves connecting the planters shall be installed by others, but the Contractor shall insure that all sleeves are in the correct position prior to the installation of paving. The irrigation system shall meet the following requirements:
 - a. It shall be connected to an appropriate water supply with a water meter.
 - b. The system shall be semi-automatic.
 - c. Six drippers per tree shall be required (underneath mulch level).
 - d. The system shall be operated by means of a hand-operated stopcock in a lockable metal box.

PSER5 CONSTRUCTION

PSER5.01 Method Statements

The following Method Statements shall be provided by the Contractor 14 days after receipt of the Letter of Appointment (*only Method Statements relevant to the particular project should be selected*):

1. Rehabilitation of disturbed areas and revegetation after construction is complete.
2. Use of herbicides, pesticides and other poisonous and otherwise hazardous substances.

PSER5.02 Preparation of ground surfaces

1. Prior to the application of topsoil, the ground surface shall be ripped or scarified with a mechanical ripper to a depth of approximately 150 mm.
2. Prior to the application of topsoil, the ground surface shall be ripped or scarified by hand tilling to a depth of approximately 150 mm. *{this specification shall be used on small sites}*.
3. Compacted soil shall be ripped to a depth of greater than 250 mm. The ripped area shall be hand-trimmed. Where necessary *{e.g. on steep slopes, or large sites.}*, phased ripping of compacted soil must be undertaken, block by block in order to reduce risk of erosion or slippage.
4. The subsoil shall be thoroughly tilled to a depth of at least 100 mm by means of a plough, disc, harrow or any other approved method until the condition of the soil is acceptable, as approved by the Engineer/ ECO /EO.
5. Where tilling is difficult, the Contractor shall use rotary tillage machinery until no clods or lumps larger than 40 mm in size remain, and the mixing of soil is acceptable to the Engineer/ ECO /EO.

6. In road cuttings, weed-free gravel/ sand/ organic mix shall be utilised as a sub-surface layer.
7. Topsoil shall be applied *{give such details as are required additional to SABS 1200D Cl 5.2.4.2}*.
8. Subsequent to the addition of the sub-soil, topsoil shall be spread evenly over the ripped or tilled surface to a depth of 75-150 mm on flat ground or to a minimum depth of 75 mm on slopes of 1:3 or steeper or as specified in this specification.
9. The final prepared surface shall not be smooth but furrowed to follow the natural contours of the land, with scattered rocks of varying sizes according to the natural condition of the area.
10. Where sodding is required slight scarification shall be carried out to contain the sods. The soil shall be uniformly moist to a depth of 150 mm prior to planting or seeding. If this condition is not met by rainfall, the Contractor, as directed by the Engineer/ ECO /EO, shall carry out irrigation.
11. In artificial wetland areas, topsoil shall be removed to a depth of approximately 200 mm, the wetlands excavated, and topsoil replaced. Wetland areas are then to be selectively composted, as determined by the Engineer/ ECO /EO, and permanent irrigation systems installed where necessary.
12. Prior to any site clearance, the wetland areas, along with minimum 10 m buffer zones [or greater where advised by a Freshwater specialist], as indicated on the Revegetation Plan are to be effectively fenced off to prevent any damage to wetland material on sites prior to transplanting.

PSER5.03 Mulch

Basic regrassing

1. Hydrogel B/ Aquasorb/ Stockosorb or other similar product approved by the Engineer/ ECO /EO, shall be applied according to manufacturer's specifications. The mulch shall be worked into the soil prior to seeding.

PSER5.04 Soil stabilization

Methods for soil stabilisation shall be *{give details of required methods}*.

Straw stabilisation

1. Straw shall be utilised as a binding material in areas with deep sand, only where insufficient indigenous plant material is available as surface mulch.
2. Baled straw shall be placed on the cleared area, opened and spread evenly by hand or machine at a coverage rate of 1 bale per 10 m² over the area to be stabilised. It shall then immediately be rotovated into the upper 100 mm layer of soil. This operation shall not be attempted when the wind strength is such as to displace the straw before it can be rotovated into the sand.

Mulch stabilisation

1. Mulch shall be applied by hand to achieve a layer of uniform thickness. The mulch shall then be lightly worked into the topsoil layer so that it mixes with the soil and serves to bind it.
2. The mulch shall be spread at a coverage rate of 100 kg per 250 m² or 4 t/ha.

3. Where brush-cut material is to be utilised as mulch, this material shall be evenly spread across the area to a uniform depth of 25 mm. The mulch shall then immediately be rotovated into the upper 100 mm layer of soil. This operation shall not be attempted when the wind strength is such as to remove the mulch before it can be rotovated into the topsoil layers.
4. In very rocky areas a layer of mulch shall be added prior to adding the top-material. The mulch must then be worked into the top-material to bind it.
5. Alien vegetation mulch shall be in a non-seed bearing state and shall be chipped prior to application. The preparation of alien vegetation mulch shall be done at source.
6. The Contractor shall cut bush to a height of 400 mm above ground level from designated areas. This vegetation shall then be passed through the chipping machine as above, and be stockpiled for later use as mulch. Preparation of mulch shall be done at source.
7. If the area is exposed to strong wind the mulch stockpile shall be covered with a fine nylon net with 100 mm × 100 mm openings.

Compost stabilisation

1. The soil shall be stabilised by placing and lightly compacting a 75 mm layer of compost over the designated areas or by working a 75 mm layer of compost into the ground to a depth of 150 mm.

Gravel stabilisation

1. The soil shall be stabilised by the placing of a 50 mm layer of gravel wearing course quality material complying with the physical properties specified in sub-clause 3.2.2 of SABS 1200 ME.
2. The material shall be placed, spread, trimmed and compacted by means of three passes of the same compaction equipment used for the bulk earthworks.

Stabilisation of steep slopes

1. The Contractor shall take measures to protect all areas susceptible to erosion by installing all the necessary temporary and permanent drainage works as soon as possible. The Contractor shall take any other measures that may be necessary to prevent surface water from being concentrated in streams and from scouring the slopes, banks or other areas.
2. If runnels or erosion channels develop, they shall be back-filled and compacted, and the areas restored to a proper condition. The Contractor shall not allow erosion to develop on a large scale before effecting repairs.
3. Where artificial slope stabilisers are used, these shall be applied to the slope, preferably before topsoiling, but according to the detailed construction plan and as specified in this specification.
4. Near vertical slopes (1:1 to 1:2) shall be stabilised using hard structures following specifications.
5. Where the slopes are 1.3 to 1:6 they shall be logged or otherwise stepped (using stabilisation cylinders or similar) in order to prevent soil erosion. Logs/ cylinders must be laid in continuous lines following the contours and spaced vertically 0.8-1.2 m apart, depending on the steepness of the slope. These logs/ cylinders must be secured by means of steel pegs and wire in rocky areas, and treated wooden pegs in other areas.

6. In areas where slopes are less than 1:6, horizontal grooves, shallow steps or ledges parallel to contours shall be made on the cut slopes. They shall be made at random to appear natural.
7. In areas where slopes are less than 1:6 these slopes shall be stabilised by using logs in parallel rows following the contours, or stabilisation cylinders fastened randomly into position, or using biodegradable netting. These structures shall hold the top-material on the slopes and serve as erosion prevention structures. {Care must be taken to avoid visual impacts from logs that are too great a diameter.}
8. Shallow slopes shall be stabilised using commercial available and approved anti-erosion compounds.

Basic regrassing

1. Flobond soil binder (or similar product as approved Engineer/ ECO /EO) shall be applied at the manufacturer's recommended rate prior to the application of the grassing seed mixture.

PSER5.05 Slope modification and stabilisation

Cut slopes

1. Cut and fill slopes shall be shaped and trimmed to approximate the natural condition and contours as closely as possible and be undulating. Levels, incongruous to the surrounding landscape, shall be reshaped using a grader and other earthmoving equipment.
2. All cut and fill slopes shall be left as rough as possible, and shall contain ledges to facilitate the accumulation of topsoil. The ledges shall be dug at random to appear natural. Furthermore, the Contractor shall ensure that any embedded rocks that will not pose a danger to traffic, remain on the slopes.
3. Boulders/ rocks, collected on the site before disturbance, shall be scattered at a predetermined density approved by the Engineer/ ECO /EO.
4. Any eroded areas deeper than 50 mm shall be either trimmed down by back cutting the slope face or repaired to the satisfaction of the Engineer/ ECO /EO with boulders and soil or any other approved method.
5. Catch-water, or "cut-off" drains shall be installed above the cut slopes.
6. Where cut slopes are greater than 4 m in height, the Contractor shall construct berms at regular intervals.
7. Natural water flow paths shall be identified and subsurface drains (using riprap or superfluous rock material) or surface drains and chutes {*use water speed control structures where necessary.*}, preferably using cemented natural rock, shall be constructed along the flow paths.
8. Near vertical slopes (1:1 to 1:2) shall be stabilised using natural rock wall structures constructed using conventional building methods or in forms with slurry forced between the structures. All structures shall have a 'natural' look and facilities for plants to grow in.
9. Near vertical slopes (1:1 to 1:2) shall be stabilised using stacked precast concrete terrarforce/ löffel blocks. All structures shall have a 'natural' look and facilities for plant establishment.
10. Near vertical slopes (1:1 to 1:2) shall be stabilised using rock-filled gabion baskets.
11. All areas where the slopes are 1.3 to 1:6 shall be logged or otherwise stepped (using stabilisation cylinders or similar) in order to prevent soil erosion. Logs/ cylinders shall be

laid in continuous lines, following the contours, and spaced vertically 0.8-1.2 m apart, depending on the slope gradient. These logs/ cylinders shall be secured by means of steel pegs and wire in rocky areas, and treated, wooden pegs in other areas.

12. In areas where slopes are less than 1:6, horizontal grooves and shallow steps and ledges parallel to contours shall be made on the cut slopes. They shall be made at random in order to appear natural.
13. In areas where slopes are less than 1:6 horizontal, these slopes shall be stabilised by using logs in parallel rows, or stabilisation cylinders fastened randomly into position shall be utilised. These structures shall hold the top-material on the slopes and serve as erosion prevention structures.

Borrow pits

1. Borrow pits shall be shaped to have undulating, low-gradient slopes (i.e. < 1:4) and surfaces that are rough and irregular, suitable for facilitation of plant growth. Upon completion of rehabilitation these reshaped, and revegetated, areas shall blend into the natural terrain. *{in terms of existing legislation these areas require an approved rehabilitation programme, with sufficient funds available for rehabilitation, on application for use as a borrow pit}*.

Blasted areas

1. Blasted areas shall be landscaped so as to have rough and irregular surfaces that, as far as possible, will facilitate establishment of vegetation.

PSER5.06 Fertilisation

Trees and shrubs

1. One third of the fertiliser shall be scattered at the bottom of the hole, one third dug into the topsoil to be replaced in the hole and the remainder watered into the soil at surface level.

Basic regrassing

1. 2:3:2 fertiliser shall be applied with the seed mix, at the rate of 400 kg/ha. Super phosphate shall be applied post-germination at the rate of 200 kg/ha.

PSER5.07 Timing of planting

1. Reseeding shall occur in autumn (March to May).
2. Replanting shall occur during April/ June. *{Where possible, planting should be timed to fall between the end of May and the end of July}*.
3. Wetland preparation shall occur during autumn, and planting shall occur during early winter after the first rains (May to June). If planting occurs during a dry late autumn (April-May) or early winter (June) season it shall be necessary to irrigate plants to ensure their successful establishment.
4. Plant material shall be planted into the ground within a maximum period of 5 days after delivery to the Site, unless otherwise specified by the Engineer/ ECO /EO.

PSER5.08 Planting guidelines

Planting shall be carried out as follows *{give details of required methods}*.

Reseeding of indigenous species

1. For natural areas a solution of aqueous smoke shall be used and diluted in a ratio appropriate to the plant species used in the seed mix.
2. Aqueous smoke solution (= smoke water) treatment shall be applied before sowing or included in the hydroseeding slurry.
3. For areas that are hand-seeded without pre-treatment of the seed, aqueous smoke solution (= smoke water) treatment shall occur by no later than the first early Winter rains following sowing.
4. If mulching is done at the end of Autumn to Early Winter, aqueous smoke solution (= smoke water) shall be applied as part of the hydromulch mixture.
5. Seed shall not be left exposed to smoke water.
6. Hydroseeding machines shall be thoroughly cleaned after each operation and before different seed mixes of different origins are introduced into it. The mixture shall be kept uniform during the seeding operation by means of a power-driven agitator.
7. The following components shall be added to the hydroseeding slurry:
 - a. Compost;
 - b. Fertiliser;
 - c. Soil binding agents (such as Flobond or similar);
 - d. Wetting agents (such as Actipron Super or similar);
 - e. Seed and growth stimulants;
 - f. Micro-organisms; and/ or
 - g. Anti-erosion compounds.
8. Where broadcast seeding is carried out, the seed shall be sown evenly over the designated area. During sowing, half the seed shall be sown by the sower moving in one direction and the remainder by the sower moving at right angles to the first sowing.
9. In confined areas the seed shall be covered by means of rakes or other approved hand tools. Broadcast seeding shall not be done under windy conditions.
10. For revegetation with grass, drill seeding shall be done in rows not more than 0.25 m apart. The seeding shall be done with an approved grain drill with fine seed attachment or a combination grass planter and land packer or pulveriser. A combine grain and fertiliser drill may be used where appropriate, as directed by the Engineer/ ECO /EO.
11. Reseeding shall only occur during a period approved by the Engineer/ ECO /EO.
12. The Contractor shall demonstrate to the Engineer/ ECO /EO in a trial section that the application of the materials required can be made at the rates specified in this specification.

Basic regrassing

1. Grass seed shall be applied at the following rates {specify applicable grass mix depending on season and nature of soils.}:

Summer mix -	<i>Cynodon dactylon</i>	20 kg/ha
	<i>Eragrostis tef</i>	10 kg/ha
	<i>Hyparrhenia hirta</i>	5 kg/ha
Winter mix -	<i>Lolium multiflorum</i>	10 kg/ha
	<i>Ehrharta villosa</i>	5 kg/ha
	<i>Chaetobromus dregeanus</i>	5 kg/ha

Planting of grass runners

1. *Pennisetum clandestinum* (Kikuyu) and other alien invasive or potentially invasive alien plants shall not be used in any revegetation in, or near, wetlands or any other natural vegetation remnants.
2. The runners shall be planted within 30 hours of being harvested. Storage in the interim period shall be in aerated bags under cool dry conditions. The runners shall be planted at even spacing, by hand or mechanically at a rate of at least 70 grain bags of runners per hectare.
3. Only fresh runners, that are in good condition and have not dried out, shall be accepted. These runners shall be planted in trenches not less than 50 mm deep with leafy ends, and not roots, exposed.
4. The runners shall be well watered after planting and rolled with a light agricultural roller when the soil has dried sufficiently, as directed by the Engineer/ ECO /EO.

Sodding

1. Prior to sodding, the area shall be re-inoculated with microbes contained within natural veld sods. Veld sods of restios or grasses shall be collected, as directed by the Engineer/ ECO /EO, and replanted in shallow hollows excavated for this purpose.
2. Re-inoculation shall be undertaken during or immediately after a rain event. Inoculation sods shall be watered lightly after placement.
3. Revegetation sods shall be planted in strips to reduce erosion.
4. Sodding shall take place on moist, rock free topsoil that has been scarified.
5. Sods, once harvested or delivered from a nursery, shall not be allowed to dry out and shall be planted within 30 hours of being removed from the soil or growing medium. If necessary, they shall be lightly watered prior to planting.
6. Sods shall be planted so they abut tightly against one another. The first row shall be in a straight line with subsequent rows planted so that the joints are staggered. Any gaps shall either be planted with a sod reduced to the gap size or filled with topsoil.
7. Where grass sods are planted on slopes steeper than 1:2, wooden stakes of 500 mm diameter shall be used to anchor the sods in position.
8. In the absence of rain, sods shall be well watered after planting and not be allowed to deteriorate through a lack of moisture.
9. Where grass sods are planted in the floodplain, wooden stakes of 500 mm in diameter shall be used to anchor the sods in position.

Planting trees, shrubs and herbs

1. The Contractor will be provided with an approved planting/ landscaping plan.
2. Where planting is not direct, the plants must be brought to an approved holding area in the intended planting area where they shall be suitably maintained. The Contractor, as directed by the Engineer/ ECO /EO, shall provide sufficient shade and water. The operation of relocation from the nursery to the planting site must occur on the same day so as to minimise losses through death and to maintain or improve their condition at delivery.
3. During transplanting of indigenous plants, care shall be taken to ensure that they are not exposed to the sun. The roots as well as the leaves shall be covered with wet hessian to

limit transpiration during transportation and storage. Plants shall be kept in this state for as short a time as is reasonably possible.

4. Planting shall occur as specified in this specification or planting/ landscaping plan.

Planting guidelines

1. The size of holes shall be sufficiently large to ensure that the entire root system is well covered with topsoil, without having to be compressed. The soil around the roots of the plants being transplanted shall not be disturbed. Topsoil and subsoil from the hole shall be stored nearby to be replaced to the same depth intervals from which it was originally removed.
2. Individual spacing between trees shall be 2-3 m and clumps shall consist of 6-12 trees. The trees in the clumps shall be planted in staggered rows of 5 trees per 6 m² with low to medium tall shrubs planted between the clumps. The clumps shall be spaced at about 8-12 m distance.
3. In the case of transplanted trees up to 3 m tall, the hole size shall be 2 500 mm × 2 500 mm in width and 1 800 mm deep.
4. Shrubs shall be planted 1-2 m apart around the trees, and in the intervening areas between the clumps, or as circumstances dictate.
5. Plugs of herbs shall be planted at densities of up to 12 per 1 m² and no less than 6 per 1 m².
6. Bulbous plants shall be planted as features in selected areas and shall be protected from moles and baboons using rock linings to the holes and surface soil.
7. Before the placement of the plant specimens into prepared holes, the holes shall be watered substantially.
8. For forest species, trees and large shrubs (excluding Proteaceae and all wetland species especially Cyperaceae) one, to two, handfuls of bone meal shall be added to the hole before planting in such a way that the bonemeal is in the vicinity of the roots of the plant and the phosphorus is readily available to the roots.
9. Plants shall be carefully transplanted into holes.
10. Plant holes shall be back-filled using a mixture of two-thirds loamy to sandy topsoil to one-third compost. Where the natural soil is very clayey or heavy, sand shall be added at a ratio of one-third soil, one-third compost and one-third sand. The soil and compost/ sand additives shall be well mixed to the satisfaction of the Engineer/ ECO /EO.
11. The topsoil shall be replaced at the same depth intervals at which it was excavated. The soil shall be lightly compacted and well watered.
12. Care shall be taken to keep root damage to a minimum when transplanting seedlings. Where plants have a taproot this shall not be cut. Excess foliage, flowers and side branches shall be pruned as directed by the Engineer/ ECO /EO.
13. Coarsely chipped bark from pine trees shall be supplied and placed in a 75 mm deep layer at the bases of the trees following planting.
14. Large rocks shall be placed around the base of planted trees in fire-prone environments.
15. Plants planted at the waters edge in wetlands and rivers shall be planted as follows:
 - a. Wetland material harvested from existing wetland areas shall be transplanted directly to the newly created wetland area, along with as much soil, and surrounding material as possible.
 - b. Indigenous shrubs and small trees shall be planted 3 m apart
 - c. Palmiet (*Prionium serratum*) shall be planted 1 - 2 m apart

- d. Bulrushes, reeds, sedges and herbs shall be planted in sods 0.4-0.5 m apart or as circumstances dictate.
16. Plants shall be watered immediately after transplanting to ensure that the soil is wet around the plants. If necessary additional soil must be added after initial watering to fill any subsidence back up to ground level.

PSER5.09 Traffic on revegetated areas

1. Designated tracks shall be created for pedestrian traffic where necessary.
2. Designated tracks shall be created for vehicular traffic where necessary.
3. Newly-planted areas shall be left undisturbed wherever possible.
4. Where necessary, such areas shall be demarcated with temporary fencing in order to exclude pedestrian and vehicular traffic.

PSER5.10 Establishment

Irrigation

1. The Contractor shall be responsible for maintaining the desired level of moisture necessary to maintain vigorous and healthy growth. The quantity of water applied at one time shall be sufficient to penetrate the soil to a minimum depth of 800 mm, where appropriate, and at a rate that will prevent saturation of the soil.
2. Water used for the irrigation of revegetated areas shall be free of chlorine and other pollutants that will have a detrimental effect on the plants.
3. All seeded, planted or sodded grass areas, and all planted perennials, shrubs and trees shall be irrigated regularly at the specified intervals.
4. Grassed areas shall require irrigation coverage of 100% and a permanent watering programme. The watering programme shall be modifiable to accommodate natural climatic variations.
5. Revegetated areas shall require irrigation coverage of 100% and a modifiable watering programme.
6. Where an irrigation system is required, the Contractor shall be responsible for its installation and maintenance.
7. In the event of a delay between the planting programme and installation of the irrigation system, a water truck shall be utilised for watering, according to a programme approved by the Engineer/ ECO /EO.
8. Every effort shall be made to reduce irrigation overspray onto natural patches.
9. The Contractor shall water the planted areas as necessary, using a suitable fine spray which shall not disturb the vegetation and which will not cause any erosion.
10. The Contractor shall ensure that the planted area receives a minimum of 25 mm of irrigation water, including rain, per week, applied uniformly over the whole area.
11. The Contractor shall supply all water required and shall provide all pipe-work, pumps, irrigation equipment and other plant necessary. All of this infrastructure, and its positioning, shall be approved by the Engineer/ ECO /EO.

Fertilising

1. The Contractor shall strictly control the use of fertilisers.

2. Care shall be exercised strict control when using such materials near sensitive natural areas, so as to avoided contamination of these areas.
3. The Contractor shall manage the fertilisation programme for different areas of planting.
4. Additional fertiliser shall be applied at the intervals specified with due regard to favourable climatic conditions and the state of growth of the vegetation. Application shall be by hand or approved mechanical spreader and shall provide uniform distribution.
5. Fertilisers shall be suitably sealed and stored in a location approved by the Engineer/ ECO /EO.

Weeding and mowing

1. The Contractor shall be responsible for controlling all woody alien/ invasive species including kikuyu grass or other invasive species. The Contractor shall ensure that all weeds and alien/ invasive species are removed as specified. *{clause not appropriate in areas infested by kikuyu}*.
2. The Contractor shall be responsible for ensuring that the site remains free of kikuyu during the contract and establishment period.
3. Where seedlings occur sparsely, they should be removed manually.
4. Where dense stands of seedlings are present, a foliar spray of herbicide (e.g. Garlon/ Timbrel/ Confront) registered for use on that species, with a wetting agent such as Actipron Super, and a blue dye (e.g. EcoBlue), to indicate area applied, shall be utilised. All herbicides, adjuvants and dyes shall be approved by the Engineer/ ECO/ EO), prior to application.
5. Larger individuals of alien/ invasive species shall be controlled by cutting or lopping. Freshly cut stumps shall immediately be treated with herbicide (e.g. Garlon/ Timbrel/ Confront) registered for use on that species to prevent regrowth. The herbicide solution or mixture shall be coloured with a red dye (e.g. EcoRed/ Sudan Red or similar product approved by the Engineer/ ECO/ EO) to indicate which stumps have been treated).
6. Alien/ invasive plants and weeds shall not be stock-piled, they should be removed from the Site and dumped at an approved site.
7. If, during the establishment period, any noxious or excessive weed growth occurs, or other undesirable vegetation threatens to smother the planted species in the seeded or planted areas, such vegetation shall be removed.
8. The Contractor shall mow the grass in specified grassed areas or on road verges at intervals ordered by the Engineer/ ECO /EO. Grass cuttings shall be collected and disposed of as directed by the Engineer/ ECO /EO. The grass shall be mown at regular intervals to stimulate lateral growth. The first cutting shall take place when the grass is 50 mm high and thereafter the height shall be maintained at between 30- and 50 mm.
9. If during the establishment period, non-indigenous weeds or other non-indigenous plants are present in the planted areas, such vegetation shall be removed by hand.

Disease and pest control

1. The Contractor shall inspect all plant materials at least once a month *{state period.}* to locate any diseased or insect pest infestation. Once the nature and species of disease/ pest has been identified, the Contractor shall submit a method statement outlining the proposed method of control to the Engineer/ ECO /EO for approval, prior to application of proposed control measure.

Pruning

1. All plant material shall be kept free from dead wood, broken branches, dead flower heads or otherwise harmful or objectionable branches or twigs. All other pruning shall be done only as directed by the Engineer/ ECO /EO. This does not apply to areas being restored to natural vegetation, but may apply to plants being propagated or maintained for revegetation purposes.
2. All pruning wounds greater than 12 mm diameter shall be painted with an approved tree wound-paint.
3. Secateurs and other cutting equipment shall be sterilised regularly to avoid spreading fungal infestations and bacterial infections.

Tree establishment

1. Trees should be watered three times weekly in summer and once weekly in winter unless sufficient rain (i.e. a minimum of 25 mm of rainfall) occurs.
2. All tree guards shall be maintained in good condition. This includes ensuring that tree ties remain taut and the replacement of all such accessories when required. Where the tree ties damage the trees, this shall be rectified immediately.
3. Trees that die or become unhealthy from any cause or appear to be in a badly impaired condition shall be promptly removed and replaced, or as soon as the weather permits, as directed by the Engineer/ ECO /EO. All replacements shall be trees of the same kind and quality as those originally planted.

Erosion control

1. In the case of surface wash-away or wind erosion, the Contractor shall implement remedial measures, as approved by Engineer/ ECO /EO, as soon as possible.
2. Appropriate erosion control/ soil stabilisation measures shall be implemented.

PSER6 TOLERANCES

Void

PSER7 TESTING

PSER7.01 Seed

Commercial seed

1. Each lot of commercial seed shall be subject to sampling and testing at the discretion of the Engineer/ ECO /EO.
2. Sampling and testing shall be in accordance with the latest Rules and Regulations under the Government Seed Act (Act 28 of 1961 (as amended)).

Harvested seed

1. Purification shall be to an agreed standard.
2. The quantities and quality of bulk harvested seed shall be assessed according to seed to volume ratios.

PSER7.02 Responsibility for establishing an acceptable cover

1. Where only indigenous seed, harvested from the site, has been used, acceptable cover shall mean that:
 - a. Not less than 75% of the area seeded shall be covered with an acceptable diversity of perennial and annual plants within one year following planting, of which at least 60 % must be perennials and shrubs and/ or trees; and,
 - b. There shall be no bare patches greater than 500 mm in maximum dimension through the area, except where large rocks or boulders occur, within one year following planting.
2. Where commercial grass seed is used, acceptable cover shall mean that:
 - a. Not less than 85% of the area seeded shall be covered with grass, within one year following planting; and
 - b. There shall be no bare patches greater than 300 mm in maximum dimension within one year following planting.
3. In the case of grass sodding, acceptable cover shall mean that the full area shall be covered with live grass at the end of any period not less than three months after sodding. Where this cover is not achieved, the Contractor shall, at his/ her own expense, plant additional grass and tend it in a similar manner to the original planting until the acceptable cover is achieved.

PSER8 MEASUREMENT AND PAYMENT**PSER8.01 Watering**

1. There will be no separate payment for watering to establish or maintain the vegetation required and the Contractor shall include the costs thereof in the prices tendered for the various operations, which have been scheduled.

PSER8.02 Slope modification

1. Slope modification will be measured and paid according to the applicable items of SABS 1200D or SABS 1200DM.

PSER8.03 Preparation of ground surfaces

By scarifying	Unit: ha
By tilling	Unit: ha

1. The unit rates shall cover the cost of scarifying or tilling the ground, as the case may be, prior to topsoiling, of shaping and finishing off, of analysing soils samples both ground and topsoil, of watering prior to application of seed, of all labour, tools, equipment and transport and of any other item, except trimming, necessary to bring the ground surface to a condition to the satisfaction of the Engineer/ ECO /EO prior to the application of topsoil.

PSER8.04 Commercial seed

Commercial seed	Unit: ha
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1. The unit rate for commercial seed shall cover the cost of the supply of seed to the place of application, of labelling and certification, of sampling and testing, of labour, equipment and transport and of any other item necessary for the proper execution of the work to the satisfaction of the Engineer/ ECO /EO.

PSER8.05 Harvested seed

Harvested seed Unit: ha

1. The unit rate for harvested seed shall cover the cost of harvesting and transfer to place of application or storage, of all labour, tools, equipment, plant and of any other item necessary for the proper execution of the work to the satisfaction of the Engineer/ ECO /EO.

PSER8.06 Fertiliser

Fertiliser (type stated) Unit: t

1. The unit rate for fertiliser shall cover the cost of supply and application of fertiliser whether by hand or mechanical means, of all labour, tools, equipment, plant and of any other item necessary for the proper execution of the work to the satisfaction of the Engineer/ ECO /EO.

PSER8.07 Soil stabiliser

Soil stabiliser Unit: kg

1. The unit rate for soil stabiliser shall cover the cost of supply and transport to the point of application, of all labour, tools, equipment, plant and of any other item necessary for the proper execution of the work to the satisfaction of the Engineer/ ECO /EO.

PSER8.08 Wetting agent

Wetting agent Unit: kg

1. The unit rate for wetting agent shall cover the cost of supply and transport to the point of application, of all labour, tools, equipment, plant and of any other item necessary for the proper execution of the work to the satisfaction of the Engineer/ ECO /EO.

PSER8.09 Brush-cut mulch

Brush-cut mulch Unit: ha

1. The unit rate for brush-cut mulch shall cover the cost of harvesting, clearing, stockpiling and baling, of reducing the mulch to required size, of application by hand, of imprinting into soil, of all labour, tools, equipment, plant, transport and of any other item necessary for the proper execution of the work to the satisfaction of the Engineer/ ECO /EO.

PSER8.10 Commercial and other non-brush cut mulches

Commercial/ non-brush cut mulches Unit: ha

1. The unit rate for commercial and other non brush-cut mulch shall cover the cost of supply to the place of application, of application by hand, 'roll-on' or mechanical means other than by hydroseeding, of all labour, tools, equipment, plant, transport and of any other item necessary for the proper execution of the work to the satisfaction of the Engineer/ ECO /EO.

PSER8.11 Hydroseeding

Hydroseeding Unit: ha

1. Measurement will be by the hectare of grass established by seeding and having acceptable cover.

2. The unit rate for hydroseeding shall cover the cost of mixing and agitating of all the materials including seed, fertiliser, mulch, soil stabiliser and wetting agent required in the seed-cocktail, of applying the mixture, of watering, weeding, rehydroseeding bare patches, of all labour, tools, equipment, plant, transport and of any other item, except mowing of grass, which may be necessary to establish acceptable cover and to maintain the grass during the establishment period to the satisfaction of the Engineer/ ECO /EO.

PSER8.12 Drill or broadcast seeding

Drill of broadcast seeding Unit: ha

1. Measurement will be by the hectare of grass established by seeding and having acceptable cover.
2. The unit rate for drill or broadcast seeding shall cover of drill or broadcast seeding, as the case may be, of watering, weeding, reseeding bare patches, of all labour, tools, equipment, plant, transport and of any other item, except mowing of grass, which may be necessary to establish acceptable cover and to maintain the grass during the establishment period to the satisfaction of the Engineer/ ECO /EO.

PSER8.13 Planting of runners

Planting of runner (type stated) Unit: ha

1. Planting of runner will be measured by the area of grass planted and having acceptable cover.
2. The unit rate for planting of runners shall cover the cost of the supply and planting of runners, of watering and weeding, replanting of bare patches, of all labour, tools, equipment and of any other item, except mowing of grass, which may be necessary to establish acceptable cover and to maintain the grass during the establishment period to the satisfaction of the Engineer/ ECO /EO.

PSER8.14 Sodding

Sodding Unit: ha

1. Measurement shall be by the hectare of sods planted and having acceptable cover.
2. The unit rate for sodding shall cover the cost of procuring, excavating, loading, transporting, off-loading and placing sods, or replanting of bare patches, of watering and weeding the grass, of filling gaps between sods of topsoil, of placing stakes of all labour, tools, equipment and of any other item, except mowing of grass, which may be necessary to establish acceptable cover and to maintain the grass during the establishment period to the satisfaction of the Engineer/ ECO /EO.

PSER8.15 Trees and shrubs

Trees and Shrubs Unit: No

1. Measurement shall be by number of trees of shrubs planted and established.
2. The unit rate for each tree or shrub shall cover the cost of supplying, storing and maintaining it in a transition nursery, of excavating the hole to the specified dimension, of supplying topsoil, wooden stakes, broken rock, manure and compost, of mixing them and other soil, of watering the plants until the end of the establishment period, of supplying and planting substitute plants that have died, of maintaining the plants until the end of the establishment period of all labour, tools, equipment and of any other item which may be

necessary to establish acceptable cover and to maintain the tree or shrub during the establishment period to the satisfaction of the Engineer/ ECO /EO.

PSER8.16 Slope stabiliser

Slope stabiliser

Unit: m²

1. Measurement will be by the square metre of ground stabilised.
2. The unit rate for slope stabilised shall cover the cost of supplying, installing and fixing the stabilising material, of all labour, tools, plant, equipment, transport and of any other item necessary for the execution of the work to the satisfaction of the Engineer/ ECO /EO.

PSER8.17 Mowing grass

Mowing grass

Unit: ha

1. Measurement will be by the hectare measured each time the grass has been cut on the order of the Engineer/ ECO /EO.
2. The unit rate shall cover the cost of mowing, of all labour, equipment, plant and transport required for each cutting of the grass, and disposal of grass cuttings to the satisfaction of the Engineer/ ECO /EO.

PSER8.18 All other requirements of the revegetation specification

1. All other work not measured elsewhere, associated with complying with any requirement of environmental management will be measured in appropriate items and units.
2. The tendered rates shall cover any cost associated with complying with the revegetation specification and shall include for all labour, equipment, plant, transport and any other item required to execute and complete the work as specified, described in the Schedule of Quantities or shown on the drawing(s), to the satisfaction of the Engineer/ ECO /EO.