DOCUMENT CONTROL SHEET

The purpose of this form is to ensure that documents are reviewed and approved prior to issue. The form is to be bound into the front of all documents released by the CDC.

PROJECT NAME: COEGA INDUSTRIAL DEVELOPMENT ZONE AND PORT
DOCUMENT TITLE: STANDARD VEGETATION SPECIFICATION FOR CONSTRUCTION
DOCUMENT No.: CDC/SHE/4233/SHESD 4.4.6.0.3

SIGNING OF THE ORIGINAL DOCUMENT

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REVISION CHART

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## Document Title

**Standard Vegetation Specification for Construction**

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1 SCOPE

This Standard Vegetation Specification for Construction (SVS) covers the requirements for site clearance including the translocation of rare and endangered plant species, planting for stabilisation and the clearing of alien vegetation in an environmentally sensitive manner.

The SVS is applicable to all activities involving vegetation undertaken within the Coega IDZ and Coega Development Corporation construction projects that are undertaken outside the IDZ.

2 INTERPRETATION

2.1 Supporting specifications

Where the SVS is required for a project the following supporting specifications shall, where applicable, form part of the Contract Documents:

(a) Project Specification for Vegetation;
(b) Standard Specification for Construction;
(c) Project Specification for Construction;
(d) SABS 1200 A or SABS 1200 AA; and
(e) Colto or Fidic equivalent Specification.

2.2 Application

This SVS contains clauses that are generally applicable for the translocation of the indicated rare and endangered plant species before site clearance, the planting and establishment of vegetation to stabilise slopes, fills, cuts, borrow pits, road reserves or any other specified area that does not fall within the open space system or environmentally sensitive buffer areas as well as the control of alien invasive vegetation. Interpretations and variations of the SVS are set out in the Project Specification.

In the event of any difference or discrepancy between the provisions of this Specification and the provisions of the Project Specification then the provisions of the Project Specification shall prevail.

2.3 Definitions

For the purpose of this SVS, the definitions and abbreviations given in the applicable specifications listed in 2.1 and the following definitions and abbreviations shall apply:

2.3.1 Establishment

Establishment implies the maintenance of rehabilitated /re-vegetated areas by adhering to principles of good horticultural practice with the aim to achieve acceptable vegetative cover of the rehabilitated areas.

2.3.2 Hydro-seeding

Adding specified seed mix into a slurry containing water and other approved materials to enhance plant growth potential. This mixture is then applied by means of spraying device onto the prepared ground areas to be seeded.
2.3.3 Mulch

A layer of material spread over the bare surface of soil to reduce the loss of moisture and to discourage the growth of weeds.

2.3.4 Sods

Clumps of plant material usually of grasses, sedges or restios which includes the plant, its roots and soil bound by the roots.

2.3.5 Rehabilitation

To restore areas cleared or disturbed for construction purposes that are to be incorporated into the open space or buffer zones as identified in the proposed development framework by the Coega Development Corporation with appropriate indigenous vegetation including preparation of planting areas, the planting of all plant material including seed, runners, sods and grown plants and the initial maintenance of these areas.

2.3.6 Runners

Horizontal stem sections with roots at the nodes, used for propagation of plant material.

2.3.7 Translocation

The removal of plant material, usually threatened by construction activities, the temporary storage and maintenance thereof and the subsequent replanting of the same plants in another designated position.

2.3.8 Topsoil

Means the top strata of soil to a depth as indicated by the Engineer and may include top material e.g. vegetation and rocks.

3 MATERIALS

3.1 Mulch

Mulch shall be of a type as detailed in the Project Specification.

Mulch material shall not contain viable seed of declared weeds, alien invasive species or any other species, which through their invasive or other deleterious qualities are ecologically undesirable or threaten adjacent agricultural land.

Mulch material which is fresh or excessively brittle or which is in such an advanced stage of decomposition as to smother or retard growth will not be acceptable.

3.2 Compost

Compost shall be of a type as detailed in the Project Specification.

The compost shall be well decayed, friable and free from weed seeds, dust or any other undesirable materials.
3.3  Fertiliser

Fertiliser shall of a type as detailed in the Project Specification.

The fertiliser shall be uniform in composition, free flowing and suitable for application with approved equipment. It shall be delivered to the Site in bags or other convenient containers, each of which shall be fully labelled and bear a clear indication of the contents, the trade name or trade mark, the producer's name and a warranty about the contents by the producer.

The Contractor shall provide the Engineer with copies of invoices for all fertilisers used on the Project. Invoices for fertilisers shall show the grade furnished.

3.4  Manure

Manure shall be pure sterilised kraal manure free from soil, noxious weed seed or other undesirable material. It shall not contain any particles that will not pass through a 50 mm sieve and shall be approved by the Engineer before being delivered to the Site.

3.5  Topsoil and subsoil

Topsoil that is imported shall be fertile, friable and loamy in character with 10-50% organic matter. It shall be free from refuse, roots, clay lumps, stones larger than 50 mm in size, weeds, noxious seed, propagules or other biotic materials (including flora and fauna), pathogens and any toxic or germination inhibiting substance.

A representative sample of the material, which the Contractor intends using, shall be submitted to the Engineer at least one week before any of the material is delivered to the Site.

Wherever possible, topsoil shall be delivered directly to the target site and spread immediately. Where stockpiling is unavoidable, topsoil shall preferably be stockpiled for no longer than one month and the contractor should try and achieve this by planning the works accordingly.

Topsoil shall not be compacted in any way, especially by vehicles riding over it. Where it is essential to drive a vehicle over the topsoil (once it has been re-spread), as approved by the Engineer, the contact pressure shall not be greater than 1500kg/m2.

3.6  Poisonous substances

All herbicides, pesticides or any other poisons to be utilised on Site must be approved by the Provincial Department of Agriculture.

3.7  Plant Material

3.7.1  Seed

All commercial seed used shall be labelled in accordance with the Government Seed Act No. 28 of 1961 or amendment thereof. The Contractor shall furnish the Engineer 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.
Particular attention must be paid to Regulation 15 of the Conservation of Agricultural Resources Act No. 43 of 1983, as amended, concerning weeds and invader plants. No such weeds or plants may be introduced onto the Site.

Only viable, ripe seed shall be used.

3.7.2 Sods and Runners

The Contractor shall inform and obtain authorisation from the Engineer as to the source of his sods and runners. It shall be harvested by special machines manufactured for this purpose to ensure an even depth of cut with sufficient root material and soil.

Sods and runners shall be delivered in a healthy condition and be free from weeds and disease.

4 PLANT

4.1 General

Before any work commences, the equipment necessary for the proper handling and placing of all required materials shall be on hand, in good condition and to a standard approved by the Engineer.

5 CONSTRUCTION

5.1 Method Statements

The following Method Statement, as well as any required by the Project Specification, shall be provided by the Contractor and submitted with the tender for reviewing prior to the awarding of a Contract.

5.1.1 Removal of rare, endemic or endangered species (Clause 5.2.1)

Detail the name and qualifications of the sub-contractor undertaking this, the timing, methodologies, equipment, storage, maintenance procedures, transport and any other relevant information.

5.1.2 Stockpiling of Topsoil (Clause 5.2.2)

Location of topsoil stockpiles, methods to prevent erosion of these stockpiles and rehabilitation of stockpile sites.

The following Method Statements, as well as any required by the Project Specification, shall be provided by the Contractor and submitted within 20 days prior to commencement of the works or activities to which they apply (no work can commence on an activity requiring a Method Statement until the Method Statement for that activity has been approved):
5.1.3 **Rehabilitation (Clause 5.4)**

Restoration of areas that have been cleared or disturbed for construction purposes, which are going to be incorporated into the open space system or buffer zones including plant species, sources and types, seeding/planting methods, timing of planting, fertilization, irrigation and maintenance procedures.

5.1.4 **Planting for stabilization (Clause 5.5)**

Stabilization by means of planting of areas that have been cleared or disturbed for construction purposes, which are not going to be incorporated into open space or buffer zones and not being immediately developed including plant species, sources and types, seeding/planting methods, timing of planting, fertilization, irrigation and maintenance procedures.

5.1.4 **Erosion and sedimentation control (Clause 5.6)**

The type of stabilization methods to be implemented for exposed soils and slopes as well as drainage works and earth shaping measures to manage the erosive effects of stormwater on the site.

5.1.6 **Herbicides, Insecticides and Poisonous Substances (Clause 5.7)**

The type of substance, product name, application method, application rates, emergency measures for accidental spills or leakages and contact with people, and material safety data sheet.

5.2 **Site Clearance**

5.2.1 **Removal of rare, endemic or endangered species**

The Contractor shall contact a botanical specialist with previous experience of the vegetation on the site and approved by the Engineer at least three weeks before Site clearance to provide this specialist with the opportunity to visit the Site. The appointed specialist shall advise the Contractor within one week if it is necessary to remove endemic or rare plant species prior to Site clearance.

The following plant species, if identified on the site, must be removed to the Coega Development Corporation central holding nursery prior to Site clearance for translocation into an area identified by the Engineer for this purpose:

- Aloe striata
- Haworthia translucens
- Cyrtanthus clavatus
- Cyrtanthus spiralis
- Bergeranthus addoensis
- Bergeranthus longisepalus
- Bergeranthus scapiger
- Trichodiadema bulbosum
- Cotyledon orbiculata var. flanaganii
- Euphorbia globosa
• Euphorbia meloformis
• Euphorbia stellata
• Ceropegia dubia

In addition, should any plant species that are rare, endangered or vulnerable be found that have not been reported previously from the Coega IDZ, these should be reported to the Engineer and CDC and upon their instruction, translocation should proceed as for the listed species.

If no response confirming the presence of any of these species is received from the specialist within one week, the Contractor may proceed with the clearance of the Site. If plants are identified for removal, an appropriately qualified specialist approved by the Engineer must then be appointed by the Contractor to remove and subsequently maintain the species at the central holding nursery for the duration of the project until such time that they can be re-planted elsewhere in the Coega Industrial Development Zone (IDZ) as directed by the Engineer.

Translocation of these species shall take place strictly in accordance with the translocation procedure detailed for each species in the Project Specification. If the Project Specification does not detail how to translocate the specific species, then the Contractor must get instructions from the Engineer as to how the species are to be translocated.

Suitable plant species, other than those stipulated in the above list and identified by the Engineer for general re-vegetation purposes, must be relocated prior to clearing of the vegetation to a suitable holding site or directly to areas being landscaped.

Except to the extent necessary for the carrying out of the Works, existing vegetation on site shall not be removed, damaged or disturbed.

A Method Statement detailing the removal of rare, endemic or endangered species including the name and qualifications of the suitably qualified sub-contractor proposed to undertake this must be submitted to the Engineer for his approval.

5.2.2 Removal of topsoil

Where topsoil will be disturbed during bulk earthworks activities, topsoil shall be removed (up to a maximum of 300 mm depth) and moved to a new area requiring topsoil or stockpiled for re-use in subsequent activities. Attempts should be made wherever possible to deliver topsoil directly to its destination rather than stockpiling it.

Where topsoil must be stockpiled, the stockpiles shall not be higher than 2 m in order to minimize composting. The stockpiles of topsoil shall be located in an area agreed with the Engineer. Stockpiles shall be marked to indicate the origin of the topsoil in the stockpile to facilitate accurate replacement in the same area of origin. The stockpiled soil must also be protected from erosion.

Stockpile sites must be fully rehabilitated after the removal of the stockpile and excess material disposed of in an appropriate manner. The Contractor must provide the Engineer with a Method Statement detailing the location of topsoil stockpiles, methods to prevent erosion of these stockpiles and methods of rehabilitation of stockpile sites.
5.2.3 Stabilization of steep slopes

The disturbance of steep slopes, for example by the removal of vegetation, may result in slope instability and erosion by rain and surface run off. The Contractor shall ensure that slopes that are disturbed during construction are stabilised in a manner as stipulated by the Project Specification to prevent erosion occurring or if not detailed in the Project specifications in a manner approved by the Engineer.

Slopes that are susceptible to accidental damage during construction shall be protected to reduce the risk of disturbance.

If runnels or erosion channels develop, they shall be back-filled and compacted, and the areas restored to a proper condition at the Contractor’s cost. The Contractor shall not allow erosion to develop on a large scale before effecting repairs.

5.3 Removal of alien vegetation

The Contractor shall appoint a suitably qualified or experienced contractor, able to distinguish between invasive alien plant species and indigenous species to clear all alien invasive vegetation as defined in Table 3 of the Regulation 15 of Conservation of Agricultural Resources Act No. 43 of 1983 from areas within the demarcated Site that are to be landscaped or which fall within the open space or buffer zones.

The contractor shall remove alien invasive vegetation as per the methodology specified for each respective plant species in the Project Specifications or if not detailed in the Project specifications in a manner approved by the Engineer. Care is to be taken during the alien clearing operations to ensure that vegetation that is to be retained on site, is not damaged in any way. The Contractor shall ensure that the Site remains free of all scheduled alien invasive plant species for the duration of the works contract.

5.4 Rehabilitation

Any areas that are disturbed during construction that are not part of the construction footprint, occur in environmentally sensitive areas and/or form part of the official IDZ Open Space System shall be rehabilitated with appropriate vegetation indigenous to the area to the satisfaction of the Engineer at the Contractors cost. The Contractor shall appoint an appropriately qualified botanical specialist with experience of the vegetation at hand, approved by the Engineer, to prepare the proposed method of rehabilitation. The Contractor shall also appoint an appropriately qualified sub-contractor, approved by the Engineer, to undertake the rehabilitation work. Where rehabilitation is necessary a Method Statement must be submitted to the Engineer for his approval.

5.5 Planting for stabilisation

5.5.1 Scope

The Contractor shall stabilise all areas that have been cleared or disturbed for construction purposes, which are not going to be incorporated into open space or buffer zones (i.e. areas that will be subsequently developed by another party). Stabilisation methods shall be indicated in a method statement and these shall be long term stabilisation methods that shall ensure the areas remain stable after the contractor has left the site.
All construction equipment and excess aggregate, gravel, stone, concrete, bricks, temporary fencing and the like shall be removed from the Site upon completion of the Works. No discarded materials of whatsoever nature shall be buried on the Site without the written approval of the Engineer.

5.5.2 Preparation of ground surfaces for planting

Areas that require reshaping shall be cut, filled and compacted as necessary so as to blend with the surrounding landscape. Topsoil removed from the area initially shall be replaced. Before placing topsoil, the Contractor shall remove all visible weeds from the placement area and from the topsoil. Care must be taken not to mix the topsoil with the subsoil during shaping operations.

Should a crust form on the soil before planting is commenced, the Contractor shall, at his own cost, loosen the crust by scarifying to a depth of 150 mm.

5.5.3 Fertilization

Where specified in the Project Specification or if not detailed in the Project specifications in a manner approved by the Engineer, fertiliser shall be added to the soil on seeding or planting. The rate of application shall be recommended by the producer and approved by the Engineer after the Engineer has had the opportunity of testing the requirements of the soil material in which the vegetation is to be planted. The Contractor shall allow a period of two weeks between advising the Engineer of the intended soil material to be fertilised and receipt of the spread rate details.

5.5.4 Timing of Planting

The Contractor shall not begin planting work until all construction activities in the local area to be vegetated have been completed. Progressive planting will be applied, in that areas no longer required for construction activities will be planted as soon as they become available to do so.

Correct planting dates for seeds are critical to germination success and are detailed in the Project Specifications. Where these are not detailed in the Project Specifications, the Engineer shall provide the Contractor with these.

Prevailing climatic conditions shall be taken into account to ensure optimum planting conditions for young plants. Planting during very hot times of the day and in very windy conditions must be avoided.

5.5.5 Seeding

A seeding method shall be included in the method statement. The method statement shall cover but not be limited to the seed mix, seed purity levels, seed application methods (e.g. hydro seeding), binding agents, soil improvement material, fertilisation, and irrigation when rainfall proves inadequate.

The use of anti-erosion compounds should be considered on slopes where there is a risk of erosion.
5.5.6 **Planting of sods and runners**
Where the planting of sods or runners is proposed for stabilization this shall be as detailed in the Project Specification or if not detailed in the Project specifications in a manner approved by the Engineer.

5.6 **Erosion and sedimentation control**

An Erosion and Sedimentation Control Method Statement shall be prepared by the Contractor and submitted to the Engineer for approval.

During construction the Contractor shall protect areas susceptible to erosion by installing necessary temporary and permanent drainage works and implementing stabilisation measures as soon as possible and by taking other measures necessary to prevent the surface water from being concentrated in streams and from scouring the slopes, banks or other areas.

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.

5.7 **Use of Herbicides, pesticides or other poisonous substances**

A method statement shall be submitted to the Engineer for approval regarding the type of poison, the product name, method of application, method of cleaning application equipment, rate of application, material safety data and method of storage of such substances.

Only suitably qualified personnel approved by the Engineer will be allowed to apply poisons. Persons applying poisons shall always wear appropriate protective clothing and masks to prevent contamination of the skin or inhalation.

Sprayed poisons shall only be applied in wind free conditions on clear days where there is no sign of rain.

Disposal of unused poisons and empty poison containers shall be according to the specifications of the manufacturer and the Engineer and may not be disposed of on the site.

5.8 **Acceptable cover**

Acceptable cover shall be deemed to have been achieved when, in the opinion of the Engineer, 75% of the area to be vegetated has been covered with mature plants, with no bare areas exceeding one meter in maximum dimension except where rocks prevent such coverage.

5.9 **Traffic over vegetated areas**

No construction equipment, vehicles, unauthorised personnel or domestic livestock shall be allowed onto areas that have been vegetated. Only persons or equipment required for the preparation of areas, application of fertiliser and spreading of topsoil shall be allowed to operate on these areas.
5.10 Establishment

Establishment shall consist of maintaining the surface to the required slopes and levels without erosion or sedimentation, watering, fertilising, disease control and any other procedure consistent with good horticultural practice necessary to ensure normal, vigorous and healthy growth of the plant material on Site, together with such other operations as are detailed in the Project Specification.

Establishment shall commence immediately after planting and shall continue until a satisfactory cover, as detailed in the Project Specification, has been achieved and the Certificate of Completion has been issued.

The Contractor shall ensure that irrigation, fertilisation and any other specified activities do not impact unreasonably upon adjacent natural areas.

5.11 Maintenance of vegetated areas

The Contractor’s liability with regard to maintenance of the vegetated areas shall coincide with the 12 month Defects Notification Period. If acceptable cover has not been established over all vegetated areas on Site during that period the relevant clauses of the General Conditions shall apply. This includes working and accommodation areas.

The vegetated areas shall be regularly monitored by the Contractor at a frequency dictated by the Project Specifications, or if not included in the Project Specifications, by the Engineer. Regular monitoring of the area and subsequent removal of unacceptable seedlings should control the spread of alien species, especially declared weeds and invader plants. Regular monitoring of the area will also allow modifications to be made to the planting programme, for example to irrigate, sow more seed or fertilise as necessary. This programme should be flexible enough to allow for these modifications.

6 TESTING

6.1 Responsibility for establishing an acceptable cover

Notwithstanding the fact that the method of planting, the type of seed, grass or plant used, the rate of application of seed or planting density and the frequency of mowing are specified, the Contractor shall be solely responsible for establishing and maintaining an acceptable plant cover and for the cost of replanting or re-hydro-seeding where acceptable cover is not obtained or maintained.

7 MEASUREMENT AND PAYMENT

7.1 Basic principles

Except as noted below and in the Project Specification as Scheduled Items, no separate measurement and payment will be made to cover the costs of complying with the provisions of this Specification and such costs shall be deemed to be covered by the
rates tendered for the items in the Schedule of Quantities completed by the Contractor when submitting his Tender.

### 7.2 Scheduled items

7.2.1 **Removal of topsoil (Clause 5.2.2)**

Removal of topsoil  
Unit: m³

Topsoil removed (up to a maximum of 300 mm depth) and either transported directly to destination or stockpiled in stockpiles that shall be a maximum of 2m high shall be measured per cubic meter. This shall include the marking of stockpiles to indicate the origin of the topsoil, protection from erosion of stockpiles and rehabilitation of stockpile sites after the removal of the stockpile and disposal of excess material of in an appropriate manner.

7.2.2 **Removal of rare, endemic or endangered species (Clause 5.2.1)**

Removal of rare, endemic or endangered species  
Unit: No

The identification and removal of all rare, endemic or endangered species on site are for the Contractors Cost. This will include the removal, transport, upkeep and replanting of the species in areas identified by the Engineer or Coega Development Corporation. The removal of species shall be measured per item.

7.2.3 **Slope stabilisation (clause 5.2.3)**

Slope stabilisation  
Unit: m²

The stabilisation of steep slopes after site clearing shall be measured by m².

7.2.4 **Removal of alien vegetation (clause 5.3)**

Removal of alien vegetation  
Unit: Ha

The clearing of all alien invasive vegetation as defined in Table 3 of the Regulation 15 of Conservation of Agricultural Resources Act No. 43 of 1983 from areas within the demarcated Site that are to be landscaped or which fall within the open space or buffer zones is to be measured per hectare.

7.2.5 **Rehabilitation (Clause 5.4)**

Rehabilitation  
Unit: m²

Rehabilitation of all areas unavoidably cleared or disturbed for construction purposes that are to be incorporated into the open space system or buffer zones, including reshaping to blend with the surrounding landscape, replacement of topsoil, soil preparation, fertilisation, irrigation, planting with appropriate indigenous vegetation and maintenance of planted areas for a period of one year, is to be measured per square meter.
7.2.6 Planting for stabilization *(Clause 5.5)*

Planting for stabilization  
Unit: m²

Stabilization in the form of planting of all areas that have been cleared or disturbed for construction purposes, which are not going to be incorporated into open space or buffer zones (i.e. areas that will be subsequently developed by another party), including reshaping to blend with the surrounding landscape, replacement of topsoil, soil preparation, fertilisation, irrigation, supply and planting with appropriate vegetation and maintenance of planted areas for a period of one year, is to be measured per square meter.

7.2.7 Erosion and sedimentation control *(Clause 5.6)*

Erosion and sedimentation control  
Unit: m²

Stabilization of exposed soils and slopes on newly vegetated areas including necessary drainage works and earth shaping measures to manage the erosive effects of stormwater on the site shall be measured by m².

7.2.8 Work "required by the Project Specification"

Where a clause in this Specification includes a requirement as "required by the Project Specification", measurement and payment for compliance with that requirement shall be in accordance with the relevant measurement and payment clause related to the Project Specification.