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ALIEN INVASIVE MANAGEMENT PLAN

DEA National File Reference Number:
14/12/16/3/3/2/998

Project Title:

The proposed development of a 225MW solar photovoltaic (PV) facility on several portions of farms in the Hanover district, Emthanjeni local municipality, Pixley Ka Seme district municipality; Northern Cape province.

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Submission Date: 28th of July 2017

Report Status: Draft 00

1. Acronyms

- **EA** - Environmental Authorisation
- **ECO** – Environmental Control Officer
- **EMPr** - Environmental Management Programme
- **EM** – Environmental Monitor
- **SEO** – Site Environmental Officer

2. Definitions

- **Invader** - invader plant means a kind of plant which has under section 2 (3) of CARA been declared an invader plant, and includes the seed of such plant and any vegetative part of such plant which reproduces itself asexually;
- **Weed** - weed means any kind of plant which has under section 2 (3) of CARA been declared a weed, and includes the seed of such plant and any vegetative part of such plant which reproduces itself asexually;
- **Herbicide or Weed Killer** - weed killer means any substance or remedy or any mixture or combination of any substance or remedy which is registered in terms of the Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act No. 36 of 1947), as an agricultural remedy for use in connection with the combating of weeds or invader plants.

3. Introduction

This document is a method statement for the workforce on how to manage the invasive plant species on site. The Conservation of Agricultural Resources Act (CARA), No. 43 of 1983 as amended, and the National Environmental Management: Biodiversity Act (NEMBA), No. 10 of 2004 – Alien and Invasive Species Regulations (GN 598 of 1 August 2014) and Alien and Invasive Species List (GN 599 of 1 August 2014) sets out the regulations for the control of weeds and invasive plants and provides a list of declared plants, which are divided into three categories based on the degree of their invasiveness. The contractor will remove all invader plant species from the construction site in accordance CARA & NEMBA and/or as instructed by the Engineer.

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4. Key construction & operation management process

Weed and invasive vegetation management plan.

5. Scope of work

In total, there are 200 species of plants that are declared weeds or invaders in South Africa. These include 121 woody species, 16 succulent species, 44 herbaceous species, 9 grasses and reeds, and 10 aquatic species. They are divided up into three categories: Category 1 (e.g. *Lantana camara*) species are declared weeds and are totally prohibited (CARA) as they are generally the worst offenders. NEMBA further splits category 1 plants into Category 1a & 1b which need to be combatted & eradicated and controlled, respectively. As declared weeds, they may not occur on any land or on any inland water surface throughout RSA. No person may sell, advertise, exhibit, transmit, send, deliver for sale, exchange or dispose of any weed. It is also illegal to cause or permit the dispersal of any weed from one place to another.

Category 2 (e.g. pine and gum) are also problematic but are more commonly grown for commercial purposes or any viable and beneficial function, such as woodlots, fire belts, building material, animal fodder and soil stabilisation plants. Permission can be gained to grow them commercially in demarcated areas and after obtaining a Water Use License from the Department of Water & Sanitation (DWS), otherwise they must be removed. NEMBA states that Category 2 plant must not spread outside the land over which they have control. Category 3 invasive plants can be maintained on your land if they are plants that were already growing at the time the regulations were promulgated (CARA – 1 June 1984 & NEMBA – 1 August 2014). All other Category 3 plants must be removed irrespective of the category, all declared plants growing within 30 m of the 1:50 flood line or riparian zone of a river or water body must be removed. Exceptions to these regulations can be gained through obtaining special, written permission.

6. Sub-contractors

All sub-contractors, suppliers and service providers must follow the protocol as set out below.

7. Resources

General workers from site can be utilised when using the manual pulling method. Treatment with a weed killer will only be used where it is registered for use in connection with targeted plants in accordance with the directions for the use of the specific weed killer (extract from CARA), and shall be applied by a registered pest control agent.

8. Technical integration

The Site Environmental Officer (SEO) will consult with relevant herbicide specialists (suppliers & pest control agents), prior to purchase, should there be any suspected weeds or invasive species found on site.

The Contractor will agree with the Specialists on site appropriate any chemical weed control measures to be put in place. This will be dependent on the species encountered and the location of their occurrence. This shall take into account areas where weed infestation is

prolific in areas outside the servitude, which will require additional inputs and efforts within the construction site.

The SEO will monitor all vegetation and will ensure the implementation of the different methods to control weeds and the spread of invasive plant species.

If required, although not encouraged, imported topsoil shall have similar soil properties as the area where it is to be used, in order to not change the local soil properties. The soil shall be free of all invasive weed plant species.

The use of invasive species such as *Pennisetum clandestinum* (kikuyu grass) for vegetation shall be strictly avoided unless where existing kikuyu pasture is being reinstated. Should there be any identified weeds- especially category 1 species- these will be removed controlled and managed. There are different methods which can be utilised and these are:

1. **Manual:** Uproot seedlings and small or shallow-rooted plants in their entirety. Dig out larger plants, including the root systems. Use a pitch fork or weed wrench (e.g. Tree-popper™) for trees or shrubs. If vines are very large and growing up trees, a technique called “window paning” will be utilised. In this case one would cut the vine at the base of the tree and at shoulder height and remove the vines from that area. Then a swath will be removed around the base of the tree. The vines above the cut area on the tree will eventually die and fall off. To prevent spread of seeds of undesirable ornamental plants, the flowers and or seeds will be cut off before they ripen.
2. **Herbicides:** Herbicides should be used in cases where the infestation cannot be controlled through other means. The application shall be according to the product specifications and industry best practise, to be implemented by an accredited pest control agent. The SEO will monitor the application process to ensure the application of the herbicide is in accordance with the industry best practice which will be reviewed once a suitable company has been appointed. The possibility of leaching into the surrounding environment shall be properly investigated and only environmentally-friendly, selective herbicides shall be used.

2.1 Precautions for avoiding injury to non-target plants are:-

Do not permit spraymist to drift or come into contact with sensitive broadleaf crops, including but not limited to lucerne, beans, melons, potatoes, soyabeans, sunflower, tobacco, tomatoes, cotton, fruit trees, grape vines, ornamentals, soil containing roots of these plants, soil in which such plants are to be grown, grain varieties in a susceptible stage of growth or grazing or any other area not under treatment.

Increasing ambient temperatures may result in the volatility and potential for vapour drift of this herbicide thus increasing the risk for off-target injury to sensitive crops such as but not limited to grapes and tomatoes. Avoid the application of herbicides under extremely high ambient temperatures, especially in the presence of a wind or breeze in agricultural areas.

Do not contaminate water intended for irrigation or domestic purposes. To avoid injury to crops or other desirable plants, do not treat or allow spray or spray drift or spray run-off to fall onto banks or bottoms of irrigation ditches, canals, streams, dams, rivers, either dry or containing water that may be used for irrigation or domestic purposes or may carry water to an irrigation facility.

Do not make application when circumstances favour movement from treated site.

Do not apply to areas that may be rotated to any broadleaf crop.

Do not use manure from animals grazing treated areas on land used for growing broadleaf crops, ornamentals, orchards or other susceptible crops. Manure may contain enough herbicide to cause injury to susceptible plants.

Do not use grass or sprayed plants from treated areas for composting or mulching of susceptible broadleaf plants or crops.

Do not transfer livestock from treated grazing areas (or feeding of treated grass) onto sensitive broadleaf crop areas without first allowing 7 days of grazing on an untreated grass pasture. Otherwise, urine and manure may contain enough herbicide to cause injury to sensitive broadleaf plants. The herbicide is classified as a Group II hazardous chemical which is only toxic to fish. The risk concerning animals is the transfer of the herbicide in urine and faeces to broadleaf crops. Access control will have to be maintained in areas where spraying has taken place.

Do not use on flood irrigated land or fields.

Do not move treated soil to areas other than sites for which the selected herbicide is registered for use.

Do not apply through a mist blower.

Do not apply to land NEAR to desirable broadleaved plants or land onto which such plants are to be grown or grain varieties in a susceptible stage of growth. It may, however, be applied in the VICINITY of desirable broadleaved plants, or soil or land onto which such plants are to be grown, or grain varieties in a susceptible stage of growth, PROVIDED THAT ADEQUATE PRECAUTIONARY MEASURES ARE TAKEN TO AVOID SPRAYDRIFT OR CONTAMINATION OF RUN-OFF AREAS.

Apply the product strictly in accordance with the application directions.

It is essential that herbicide be used on invasive weed species which are cut without the full removal of the stem, trunk and root system (cut-stump method). Failure to do so will result in coppicing of these plants causing additional clearing.

When controlling weeds and invaders, damage to the environment will further be limited by ensuring:

1. Eliminate herbicidal damage to non-target plants.
2. The chemical pollution of soil or water or any other threat to non-target organisms.
3. The irresponsible use of fire.
4. The creation of a fire hazard by allowing flammable material to accumulate in fire-sensitive areas.
5. Allow weeds and invasive plants to dry out following either manual or chemical controls.
6. Pull the plant before it has gone to seed.
7. If there's any seeds on the plant, remove the seed bearing "fruit" and place in a suitable "disposal bag". Following the granting of permission from the Engineer, burn all seed-bearing parts of the plants in a controlled manner at a designated spoil site or designated "safe area" in clean 200L drums. This activity will be conducted in accordance with "Prevention and Control of Fire" Management Plan. Specifically, the Contractor shall take adequate precautions to ensure that the fire hazard on and near the Site is reduced to a

minimum. The Contractor shall ensure that basic fire-fighting equipment suitable for the control of veld fires is available on Site at all times; any fires that occur shall be reported to the Engineer immediately.

8. Repetitive follow-up operations are very important and necessary to achieve control.

9. Occupational health and safety

Strict safety standards are to be adhered to at all times as per OHS act 85 of 1993.

10. Environmental

All environmental aspects of this activity will be followed as per the EMPr. Training of all personnel that will be utilizing and applying the herbicide will be undertaken by a certified training provider. Certificates will be issued to all attendees to confirm and as proof of the training.

11. Quality assurance

Quality of the work done will be assessed according to the technical integration of this document.

12. Security

All access gates must be closed and locked when crossing through private farm land as per each landowner's requirements. No vehicular movement is allowed after dark and before sunrise, unless express permission for after-hours work is obtained from the Engineer and notification is given to affected parties.

Speeding is not allowed and all vehicles are to travel with caution when passing through tribal land, villages and farm land.

No firearms are allowed on site unless permission has been granted by the Engineer/landowners/tribal authority. Should a firearm be discharged, this fact must be reported to the local branch of the South African Police Service.

13. General

Modifications to this Management Plan may be required from time to time. In such an event, and amendments must be peer reviewed by a suitably qualified person.