



FORESTRY SOUTH AFRICA™

Code of Good Practice for Managing Alien and Invasive Species in the South African Forestry Industry

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Background and Supporting Documentation

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Background

Biological invasions are a leading cause of global change and a major threat to South Africa's environment and socio-economic development (SANBI and CIB 2020). South Africa's response to this issue has been widespread and substantial. The government has spent in excess of 1 billion ZAR per year since 2013 on biosecurity and control projects and has listed 556 invasive taxa as requiring control (SANBI and CIB 2020).

Before the concept of 'globalisation' (approximately 500 years ago) physical barriers kept species apart and protected ecosystems from disturbance that had not evolved with them (Bromilow, 2018). But since then, the translocation of plants from one continent to another and one country to another country has been significant. Many of these translocations have been deliberate such as ornamental intention (the introduction and cultivation of plants of particular beauty or interest). In exactly the same way, certain food crops have found their way to South Africa but with the intention to improve the current crop gene pool for increased production of food plants.

However, it is only in recent times that many of these imported ornamental plants have been found to be invasive and a possible threat to indigenous vegetation. For example, of the 2779 introduced plant species now known to be established in the Australian environment, 1831 (or 66%) are escaped garden plant species. Furthermore, invasive garden plant species – both introduced and indigenous species outside their natural range – are by far the largest source of environmental weeds (weeds which impact on natural biodiversity), comprising 72% of the 1765 listed environmental weeds. (Source reference: www.environment.gov.au/biodiversity/threatened/key-threatening-processes/escaped-garden-plants). In North America, over 50,000 species have been introduced over the last 500 to 600 years. However, 5000 have become naturalised and compete with some 17,000 native plants (Kaufman and Kaufman, 2018).

In Southern Africa, there are approximately 800 problem plants and alien weeds (Bromilow, 2018), of which 383 are listed as Alien and Invasive, and which must be controlled.

Commercial forestry species in South Africa were first declared as Weeds and Invasive Plants under the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) in Regulations published in 2001. However, they were exempted from these regulations but only within a demarcated area as declared by the Executive Officer and provided the land user concerned had been authorised to use water in terms of the National Water Act, 1998 (Act No. 36 of 1998).

Then in 2004, all commercial forestry species in South Africa were listed as Alien and Invasive Species (AIS) under the National Environmental Management: Biodiversity Act, 2004, (Act No. 10 of 2004). Regulations for the control of AIS were published in 2014 concurrently with the first lists of AIS and again in 2022. The lists were subsequently amended in 2016 with the latest revision published in 2020 and effective March 2021.

All landowners are thus legally responsible for controlling any commercial forestry species on their own land unless:

- I. exempted for existing plantations under the NEMBA (Act No. 10 of 2004) Alien and Invasive Species Regulations of 2004 and Alien and Invasive Species Lists of 2020 and;
- II. exempted under the CARA Regulations of 2001 provided the land user concerned has been authorised to use water in terms of the National Water Act, 1998 (Act No. 36 of 1998)

In general, all commercial plantations are exempted from the need for control when managed as a commercial tree crop, but are required to be controlled outside any area authorized or demarcated as such.

While not an implementing agent, Forestry South Africa (FSA) encourages its members to:

- i. Control the spread of listed AIS and weeds on their own land as prescribed by law.
- ii. Implement best management actions to control and minimise the spread of AIS.
- iii. Where possible, voluntarily assist neighbours and other landowners in the area with the control of AIS.

The Code of Good Practice describes the scope, legal requirements, voluntary actions and best practices to control the spread of AIS for members of Forestry South Africa.

Definitions

Alien species: a species that is present in a site outside its natural range as a result of human action that has enabled it to overcome biogeographic barriers.

Control: any action taken to prevent the recurrence, re-establishment, re-growth, multiplication, regeneration or spreading of an alien species

Impact: the effect of an alien species on the physical, chemical, and biological environment. It can include both negative and positive effects.

Invasive species: alien species that sustain self-replacing populations over several life cycles, produce reproductive offspring, often in very large numbers at considerable distances from the parent and/or site of introduction, and have the potential to spread over long distances.

1. Purpose

The scope of the Code of Good Practice is a formal statement by FSA that promotes:

- i. Legal requirements for the control of the spread of plantation species on member's land.
- ii. Voluntary actions by members for the control of AIS on adjoining land.
- iii. Good land management actions by landowners to control the spread of AIS.

2. Historical context

Globally, both natural and plantation forests make a significant contribution to regional and national economies and provide multiple products and ecosystem services to support livelihoods and biodiversity conservation. Reconciling diverse economic and environmental demands associated with tree planting is a serious challenge in South Africa that lacks commercially viable indigenous forests or tree species (Bennet and Kruger, 2015).

In South Africa, plantation forestry was established in the late 19th century as a timber resource to replace indigenous forest harvesting, firstly in the fynbos surrounding the natural forests in the western and southern regions of the Cape Province and later in the grasslands of the eastern parts of the country. Forestry was seen then as a beneficial land use activity with little to no impact, while government actively encouraged and assisted landowners to establish plantations.

Tree planting was promoted through subsidies and competitions, but legislation and policing made it mandatory for some people to plant trees. At that time and into the mid-1900s, there were no legal restrictions on where plantations or trees could be established.

The development of mining and the subsequent building of railways caused a significant change in tree planting. Eucalyptus plantations for sleepers and firewood were established and the displacement of wagon transport by the railways rendered the extraction of timber from the indigenous forests unprofitable.

South Africa's most pressing forestry problem after 1910 was its severe shortage of softwood (pine). In response to this demand, afforestation expanded rapidly from the 1920s to 1930s.

In many countries, including South Africa, there is considerable conflict between the forest sector, on the one hand, and environmentalists and scientists who are concerned about the impacts of tree planting, on the other (Bennet and Kruger, 2015). Concerns were expressed by a growing number of individuals and groups over the impacts of afforestation on water resources. In response to these concerns, research on the impacts of plantations on streamflow was initiated in the 1950s by the then Department of Forestry. These findings documented the impacts of forest plantations on water resources which ultimately led to regulations under the Forest Act of 1968. From 1972, planting permits were required for afforestation and more recently the National Water Act of 1998 (NWA) required that a water use license be granted before any land may be afforested for commercial purposes.

3. Legal requirements for the control of AIS

Existing commercial forestry plantations and the establishment of any new plantations in South Africa are regulated under the NWA as a stream flow reduction activity. Under this Act, plantations are recognised as an existing lawful water use unless the trees have invaded the surrounding area outside the authorized or demarcated area. Under these circumstances they invaded trees must be controlled and further invasion must be prevented.

Two pieces of legislation control the spread of commercial forestry species from the authorized or demarcated area.

- I. Regulations published under the Conservation of Agricultural Resources Act 43 of 1983 prohibits the occurrence of Category 2 plants (this includes all commercial plantation forestry species) on any land other than a demarcated area and exempts the land user concerned if that user has been authorised to use water in terms of the NWA.
- II. The Alien and Invasive Species Regulations of 2020 and Alien and Invasive Species Lists of 2020 published under the National Environmental Management Biodiversity Act of 2004 exempts existing plantations from a restricted activity (see Appendix B for a definition of a restricted activity)

In summary, all commercial plantations are required to be controlled outside any area authorized or demarcated as such

4. Voluntary collaborative actions with neighbours and interested organisations

In the interest of controlling or reducing current infestations outside the forest plantation estate boundary, voluntary information-sharing systems and collaboration may be undertaken in conjunction with:

- i. Adjoining landowner/s
- ii. National, provincial or municipal alien and invasive species control programmes, such as the Working on Fire (WoF) and Working for Water (WfW) managed by national government and/or
- iii. The establishment of small business operations within communities to assist in the control of AIS

5. Good land management, fire and grazing practices

Good land management practices involve the use of controlled fires (prescribed burning) in grasslands at regular intervals and/or correct livestock grazing (stocking rates and rotational grazing). Failure to comply with such practices can lead to the invasion of alien and invasive plant species. Landowners should ensure:

- i. Reduction in density of AIS, such as a controlled fire programme at the correct time of the year (late winter to spring in moist grasslands in the summer rainfall areas and late summer in the winter rainfall areas) and at an intensity that enables hot fires with the prevailing wind to burn off the above-ground AIS plant material. (Note that any burning operation must be carefully planned and take into consideration factors such as the local fire danger index (FDI) available from the Fire Protection Association and fuel loads in order to comply with conditions of the National Veld and Forest Fire Act, 1998 (NVFFA, Act No.101 of 1998); and
- ii. Grazing practices that are in accordance with accepted grazing intensity and rotational grazing practices, ensuring overgrazing is avoided as this allows for the invasion and spread of AIS due to the damage of natural above-ground vegetation and disturbance of the soil caused by trampling of livestock

6. Best practice for control of AIS

i. Management plan

A management plan should have clear objectives, which can be monitored and measured in terms of outcomes/progress. The management plan should be proportional to the scale and density of infestation (see Appendix C for further details).

ii. Adopt good practices for habitat restoration/rehabilitation

Specific guidelines for the restoration of sites previously occupied by alien plantations should be adopted. The focus should be on the establishment of an indigenous grass cover to minimise soil erosion and to implement a controlled fire regime that enhances, to some extent, the return of some biodiversity elements and suppresses the re-growth of AIS.

Commercially available species such as *Eragrostis curvula* and their various cultivars can be used as soil cover and reduce the potential for excessive soil loss. As an alternative, appropriate grass species can be recommended by pasture scientists. (See also the Environmental Guidelines for Commercial Forestry Plantations in South Africa Chapter 7 page 89)

iii. **Implement early detection and response systems**

The South African National Biodiversity Institute has an early detection and rapid response team that is structured around the activities of early detection of plant invasions, identification and verification of the invasive plants, risk assessments and response planning and immediate response action.

Early detection and initiation of a management response can make a difference between being able to employ offensive strategies (possibly even eradication) or facing the reality of a more expensive defensive strategy (control and many follow-ups).

New invasive species should be targeted with a strategy to achieve four goals:

1. Prevention of spread into new areas.
2. Local eradication of isolated populations.
3. Containment in areas where eradication is not possible.
4. Actions to protect assets where containment is no longer an option.

In the future, there are likely to be many AIS that can be expected to occur over time. The risk of arrival is likely to be exacerbated by climate change and detection of new AIS is important at the est

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SUPPORTING DOCUMENTS

Appendix A

Conservation of Agricultural Resources Act

The Conservation of Agricultural Resource Act, 1983 (Act No. 43 of 1983) (CARA) focuses on soil health through the reduction of human-induced soil erosion, but also regulates weeds and invader plants that pose a threat to the natural resources on the land.

The Act allows for the prohibition of the spreading of weeds and regulations published under the CARA in March 2001 declared certain plants as weeds and invader plants and grouped them into three categories that reflected their threat to the conservation of the natural agricultural resources and vegetation. Note that the regulations came into effect in March 2001 and are likely to be replaced by the National Environmental Management: Biodiversity Act: Alien and Invasive Species Regulations at some time in the future.

Category 1 plants may not occur on any land or inland water surface and a land user is lawfully required to control any category 1 plant by means specified in the regulations. Effectively, no person may establish, plant, maintain, multiply, propagate, import, sell, or acquire any propagating material of any category I plant. Species that fall into this category are *Acacia implexa*, *A. longifolia*, *A. paraloxa*, *A. pynantha*, *A. dealbata* and *Eucalyptus lehmannia*. None of these species are commercial forestry species.

Category 2 plants may not occur on any land or inland water surface other than a demarcated area. The Act allows for an area in respect of which a water use license for stream flow reduction activities has been issued in terms of the NWA, to be deemed to be a demarcated area. By implication, this includes all existing commercial forestry species recognised as a Stream Flow Reduction Activity (SFRA) under the NWA as existing lawful water use.

Commercial forestry species are included as Category 2 species in the regulations and therefore need to be controlled when outside the demarcated area. Control is only lawfully required on the landowner's property.

Species included in this category include *A. cyclops*, *A. dealbata*, *A. decurrens*, *A. mearnsii*, *A. melanoxylon*, *A. saligna*, *Eucalyptus camaldulensis*, *E. cladocalyx*, *E. diversiflora*, *E. grandis*, *E. paniculata*, *E. sideroxylon*, *E. lehmanni*, *Pinus canariensis*, *P. elliotti*, *P. halepensis*, *P. patula*, *P. pinaster*, *P. radiata*, *P. roxburghii*, and *P. taeda*.

Category 3 plants shall not occur on any land or inland water surface other than in a biological reserve. No commercial forestry species are included in Category 3 plants.

Further, the Act allows for the demarcation of an area for the occurrence, establishment and maintenance of a Category 2 plant if:

- a. The category 2 plants in the area are cultivated under controlled circumstances.
- b. The land user has been authorised to use water in terms of the NWA.
- c. The Category 2 plants or products of Category 2 plants in the area are demonstrated to primarily serve a commercial purpose, use as a woodlot, shelter belt, building material, animal fodder, soil stabilisation, medicinal or other beneficial function.
- d. All reasonable steps are taken to curtail the spreading of propagating material of the category 2 plants outside the demarcated areas.

In addition, and unless authorised in terms of the NWA, no land user shall allow Category 2 plants to occur within 30 metres of the 1:50 year flood line of a river, spring, natural channel in which water flows regularly, or intermittently, lake, dam or wetland. Note that this does not apply to forestry species growing within the demarcated areas previously discussed, it only applies to forestry species outside the demarcated area/planted forest.

Note that should a forester wish to establish a woodlot for on-farm use, but not for commercial use, this is permitted in terms of the regulations but must be applied for through the local provincial agricultural affairs office. If authorised, the woodlot will be regarded as a demarcated area. Timber so harvested cannot be sold and must be for consumption on the farm by the landowner and other residents

The regulations specify the methods of control, which include:

- a) Uprooting, felling, cutting or burning. (Note: that uprooting will result in disturbance of the soil which results in conditions favourable to re-invasion or invasion by another AIS or weed).
- b) Treatment with an herbicide (weed killer in the regulations) that is registered for use for the plant species in question and is used in accordance with the directions for the use on the herbicide (weed killer in the regulations) label.
- c) Biological control carried out in accordance with the stipulations of the Agricultural Pests Act, 1983 (Act No. 36 of 1983), the Environment Conservation Act, 1989 (Act No. 73 of 1989) and any other applicable legislation.
- d) Any other method of treatment recognised by the executive officer that has as its objective the control of plants concerned.
- e) A combination of one or more of the methods prescribed in paragraphs a), c) and d), save that biological control reserves and areas where biological control agents are effective shall not be disturbed by other control methods to the extent that the agents are destroyed or become ineffective.

From a practical perspective, it is clear that only herbicides that are registered for the control of the specific weeds or AIS plants can be used lawfully. If in doubt, read the label (See www.tipwg.co.za Standard Operating Procedure. Note: Herbicides can only be used for control of specific species they are registered to be used against. DO NOT use herbicides for the control of species they are not registered for – if unsure, always READ THE LABEL.

Appendix B

National Environmental Management: Biodiversity Act: Alien and Invasive Species Regulations and Listed Alien and Invasive Species

The National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004), known as NEMBA, regulates the conservation of South Africa's biodiversity through, among other things, the control and the growth and spread of Alien and Invasive Species (AIS).

In terms of section 97(1) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004), the Minister is required to publish regulations for the control of Alien and Invasive Species (AIS), as well as a list of AIS.

The Alien and Invasive Species Regulations were first published in 2013 and amended in 2014 and 2020.

The Alien and Invasive Species Lists gazetted in 2013 and came into effect on 1 October 2014. They were subsequently amended in July 2016 with an effective date of 27 September 2016 and again on 18 September 2020 but only came into effect on 1 March 2021.

The AIS List has four categories of Listed Invasive Species, and no person may carry out a "restricted activity" involving a specimen of a Listed Invasive Species without a permit, except when exempted from doing so. The list of commercial forestry species is included in all Categories, depending on the species and the geographic location, but are exempted from the requirements of a permit for existing plantations

The AIS Regulations and the AIS Lists specify "restricted activities" in relation to AIS which are prohibited or may only be undertaken with a permit.

A restricted activity as defined in the Act means:

- I. Importing into the Republic, including introducing from the sea, any specimen of an alien or listed invasive species
- II. Having in possession or exercising physical control over any specimen of an alien or listed invasive species
- III. Growing, breeding or in any way propagating any specimen of an alien or listed invasive species, or causing it to multiply
- IV. Conveying, moving or otherwise trans-locating any specimen of an alien or listed invasive species
- V. Selling, or otherwise trading in, buying, receiving, giving, donating, or accepting or disposing of any specimen of an alien or listed invasive species and
- VI. Any other prescribed activity which involves a specimen of an alien or listed invasive species

In addition to what is defined in the Act, the Regulations define further restricted activities as being:

- a. Spreading or allowing the spread of any specimen of a listed invasive species.
- b. Releasing any specimen of a listed invasive species.
- c. Transfer or release of a listed invasive freshwater species.
- d. Discharging of or disposing into any waterway or the ocean, water from an aquarium.
- e. Catch and release of a specimen of a listed invasive freshwater fish.

- f. Introduction of a specimen of an alien or listed invasive species to offshore islands.
- g. Release of a specimen of a listed invasive freshwater fish species.
- h. Any landowner, occupier of land, person in control of land or any person in control of a listed category 1a, 1b and 3 invasive species must prevent the escape and spread of the species, including its growth or spread of propagules, and must control any specimen that escapes or spreads.
- i. A person entering the Republic, must declare any alien or listed invasive species on their person or in their luggage at ports of entry.

Note that:

- I. A specimen means any living or dead animal, plant or other organisms; a seed, egg, gamete or propagule or part of any animal, plant or other organisms capable of propagation or reproduction or in any way transferring genetic traits; any derivative of any animal, plant or other organisms; or any goods which contain a derivative of an animal, plant or organism; or from an accompanying document, from the packaging or mark or label, or from any other indications, appear to be or contain a derivative of an animal, plant or other organisms.
- II. A derivative in relation to an animal, plant or other organism, means any part, tissue or extract, of an animal, plant or other organism whether fresh, preserved, or processed and includes any chemical compound derived from such part, tissue or extract.
- III. As a general exemption “all dead specimens of any listed species are exempted from requiring a Permit for any restricted activity” (this is important as far as transporting of harvested timber).

Categories of Listed Alien and Invasive Species

Category 1a Listed Invasive Species (LIS)

- 1. Category 1a Listed Invasive Species are those species listed as such by notice in terms of section 70(1)(a) of the Act as species which must be combatted or eradicated.
- 2. A person in control of a Category 1a Listed Invasive Species must
 - a. immediately take steps to combat or eradicate listed invasive species in compliance with sections 75(1), (2) and (3) of the Act; and
 - b. allow an authorised official to inspect a property as provided for in terms of section 31K of the National Environmental Management Act and to monitor, assist with or implement the combatting or eradication of the listed invasive species.
- 3. If an Invasive Species Management Programme has been developed in terms of section 75(4) of the Act, a person must combat or eradicate the listed invasive species in accordance with such programme.

Category 1b Listed Invasive Species

- 1. Category 1b Listed Invasive Species are those species listed as such by notice in terms of section 70(1)(a) of the Act as species which must be controlled.
- 2. A person in control of a Category 1b Listed Invasive Species must control the listed invasive species in compliance with sections 75(1), (2) and (3) of the Act.

3. If an Invasive Species Management Programme has been developed in terms of section 75(4) of the Act, a person must control the listed invasive species in accordance with such programme.
4. A person contemplated in sub-regulation (2) must allow an authorised official to inspect a property as provided for in terms of section 31K of the National Environmental Management Act and to monitor, assist with or implement the control of the listed invasive species, or compliance with the Invasive Species Management Programme contemplated in section 75(4) of the Act.
5. The Minister may require any person to develop a Category 1b Control Plan for one or more Category 1b species, which plan must be submitted to the Minister for approval, and such Control Plan must include the following:
 - a. species identification
 - b. extent of invasion
 - c. control measures to be used
 - d. an action plan or schedule including time-frames for the clearing of each species;
 - e. whether or not any species can be utilised as biomass and
 - f. any other information which the Minister may require

Category 2 Listed Invasive Species

1. Category 2 Listed Invasive Species are those species listed by notice in terms of section 70(1)(a) of the Act as species which require a permit to carry out a restricted activity within an area specified in the Notice or an area specified in the permit, as the case may be.
2. Unless otherwise indicated in the Notice, no person may carry out a restricted activity in respect of a Category 2 Listed Invasive Species without a permit.
3. A person in control of a Category 2 Listed Invasive Species, or person in possession of a permit, must ensure that the specimens of the species do not spread outside of the land, or the area specified in the Notice or permit.
4. Unless otherwise specified in the Notice, any species listed as a Category 2 Listed Invasive Species that occurs outside the specified area contemplated in sub-regulation (1), must, for purposes of these regulations, be considered to be a Category 1b Listed Invasive Species and must be managed according to Regulation 3.
5. Notwithstanding the specific exemptions relating to existing plantations in respect of Listed Invasive Plant Species, any person or organ of state must ensure that the specimens of such Listed Invasive Plant Species do not spread outside of the land over which they have control, or the specified area on such land, where any restricted activity is authorised in respect of any Listed Invasive Plant Species.

Category 3 Listed Invasive Species

1. Category 3 Listed Invasive Species are species that are listed by notice in terms of section 70(1)(a) of the Act, as species which are subject to exemptions in terms of section 71(3) and prohibitions in terms of section 71A of Act, as specified in the Notice.
2. Any plant species identified as a Category 3 Listed Invasive Species that occurs in riparian areas, must, for the purposes of these regulations, be considered to be a Category 1b Listed Invasive Species and must be managed according to regulation 3.

Categories of Plantations

Note: Sections 22(1) and (b) below relate to Permissible Water Use under the NWA. Under section 22(1), a person may only use water without a licence if the water use is a continuation of an existing lawful water use; or, (section 22 (b) with a licence if the water use is authorised by a licence issued under the NWA

The 2020 revised Listed Alien and Invasive Species have included categories of plantations as follows:

“dormant plantation” means a plantation that has not been operational, functioning as a plantation or does not have a valid authorisation in terms of section 22(1)(a) or (b) of NWA for a period of 10 years and where no reasonable attempt has been made to clear any listed invasive species

“exempted from an existing plantation” means an existing plantation is exempted from requiring a permit for that specific species for any restricted activity in terms of NEMBA or the Alien and Invasive Species Regulation, 2014.

“existing plantation” means a plantation which was operational, functioning and authorised to grow a specific listed invasive species in terms of section 22(1)(a) or (b) of NWA as of the date of this Notice and does not include:

- (a) any extension to a plantation
- (b) any new plantations, or
- (c) any dormant plantation,

which is established or recommissioned after the date of this notice.

“extension to a plantation” means the increase of the area of the plantation beyond the limits, area or location specified in-

- (a) a permit issued in terms of NEMBA or the Alien and Invasive Species Regulations, 2014; or
- (b) an authorisation in terms of section 22(1)(a) or (b) of NWA; and
- (c) the size of such extension will trigger the requirement to obtain an environmental authorisation in terms of the NEMA.

In effect, any plantations established up to 1 March 2021 do not require a permit under the AIS Regulations

SPECIAL NOTE: The inclusion of “for that specific species” and “grow a specific listed invasive species” created problems of interpretation for both FSA and the DFFE.

In correspondence dated 27 October 2021, the Deputy Director-General: Environmental Programmes, Department of Forestry, Fisheries and the Environment confirmed that:

- i. where plantations are authorised in terms of section 22(1)(a) of the National Water Act as being an “existing lawful water use”, irrespective of whether or not such plantations are pre-1972 or have forestry permits, that in so far as the AIS Regulations are concerned, any genus or species is authorised under the AIS List
- ii. Approximately 70% of all forestry in South Africa were established prior to 1972 and regarded as authorised under section 22(1)(a) of the National Water Act. They do not have any permits as there was no requirement in the legislation prior to 1972 that required these plantations to be permitted. As such, the definitions are not applicable
- iii. With reference to WULs that do not specify genus at all, that in so far as the AIS Regulations are concerned, any genus or species is authorised

The effect is that definitions that include “for that specific species” and “grow a specific listed invasive species” is that provided these plantations are recognised as an existing lawful water use and do not have a specific species mentioned any genus is authorised

Regulations for Acacia species. (Category 2)

A. decurrens Willd. *A. mearnsii* De Willd. and *A. melanoxylon* R.Br. species and hybrids, varieties and selections are categorised as Category 2 species and are exempted from the requirement to obtain a permit for restricted activities in relation to an existing plantation. If, however, they fall outside an existing plantation they must be managed as if it were a Category 1b species.

Acacia dealbata is categorised as a Category 2 species but is not exempted for an existing plantation. In other words, if established as a plantation it will require a permit to carry out a restricted activity within an area specified under the Act or AIS Regulations or an area specified in the permit, as the case may be. If outside a plantation they must be managed as a Category 1b species. No person may carry out a restricted activity in respect of a Category 2 LIS without a permit

All other Acacia species are categorised Category 1a, 1b, or 3 species and are subject to certain prohibitions and conditions such as:

- prevent the escape and spread of the species, including its growth or spread of propagules, and must control any specimen that escapes or spreads.
- any person or organ of state must ensure that the specimen of such LIS do not spread outside of the land over which they have control.

Regulations for Existing Plantations Eucalyptus species. (Category 2)

E. camaldulensis Dehnh, *E. cladocalyx* F. Muell, *E. conferruminata* (*E. lehmanni*) DJ Carr & SGM Carr, *E. diversicolor* F. Meull, *E. grandis* W. Hill (ex-Maiden), *E. tereticornis* Sm, and hybrids, varieties and selections are a Category 2 species and are exempted from the requirement to obtain a permit for restricted activities in relation to an existing plantation.

Note: *E. camaldulensis* Dehnh, *E. cladocalyx* F. Muell, *E. conferruminata* (*E. lehmanni*) DJ Carr & SGM Carr, *E. diversicolor* F. Meull, *E. grandis* W. Hill (ex-Maiden), *E. tereticornis* Sm are:

- a. Category 1 b within
 - I. Riparian areas
 - II. A Protected Area declared in terms of the Protected Areas Act; or,
 - III. Within and Listed Ecosystem or an ecosystem identified for conservation in terms of a Bioregional Plan or Biodiversity Management Plans published under the Act.
- b. Not listed within Nama-Karoo, Succulent Karoo and Desert Biomes, excluding within any area in (a) above
- c. Category 1 b in Fynbos, Grassland, Savanna, Albany Thicket, Forest and Indian Ocean Coastal Belt Biomes, but –
 - I. Category 2 for plantations, woodlots, bee-forage areas, windrows and lining of avenues¹.
 - II. Not listed within cultivated² land that is at least 50m away from untransformed land³, but excluding within any area in (a) above.
 - III. Not listed within 50m of the main house on a farm but excluding within (a) above.
 - IV. Not listed in urban areas for trees with a diameter of 400mm at 1000mm height at the time of the publishing of this Notice, i.e., 1 March 2021, but excluding in (a) above.

¹**Note:** There are no definitions under the NEMBA or the Regulations for:

- Woodlots: usually regarded as restricted area that is normally privately managed or managed by communities, for growing trees for building material and fuel. They should not be used for commercial purposes as this is then commercial forestry and a water use licence will be required.
- Bee-forage areas: While no definition of a bee-forage area is to be found in any South African legislation, a search for bee-forage area identified a radius of approximately 5km from a hive, but is dependent on the existence of natural vegetation within that 5km radius (see www.beehives.com/honey-bee-forage-map-diameter-hive-coverage-plants-range.html).
- Windrows: a row of hay raked up to dry in the wind before being baled or stored. It is assumed that the term as used in the AIS Regulations means a single row of identical trees planted very close together, tall and narrow – can be multiples rows of up to four rows of different species and established as windbreaks (and not windrows)
- Tree-lined Avenue: a tree lined approach to a farm house or any other building.

These descriptions have therefore been defined using various sources of literature and dictionary definitions.

NEMBA definitions:

- ² “cultivation”, in relation to land, means any act by which the topsoil is disturbed mechanically
- ³ “untransformed land” means land that has not been altered from its natural state, or land that has been used for natural grazing, and including land that has been used for natural grazing, and including land in its natural state that has been degraded by factors such as soil erosion, over-grazing, over-burning, flood, invasive species and bush encroachment

Regulations for Pinus species

Pinus elliotti, *P. patula*, *P. roxburghii*, and *P. taeda* and hybrids, varieties and selections are exempted for existing plantations from the requirement to obtain a permit for restricted activities in relation to an existing plantation

However, all plantations in the Western Cape using *P. pinaster* and *P. radiata* and hybrids, varieties and selections as of 1 October 2016, would have had to apply for a permit to carry out a restricted activity. The requirement for a risk assessment in support of a permit application for existing plantations for these two species and any hybrids, varieties and selections was amended in July 2016 and has been removed from the regulations. Thus, no risk assessment is required for existing plantations.

P. canariensis C.Sm. is a Category 3 species is neither exempted nor prohibited but if in a riparian area is a Category 1b species and must be managed as if it is a Category 1(b) species.

P. elliotti Engelm. and hybrids, varieties and selections are a Category 2 species throughout the country and exempted from the requirement to obtain a permit for restricted activities under the regulations, but only for existing plantations of sterile specimens. The implication is that fertile specimens will require a permit for existing plantations, new plantations exceeding 100ha and extension to existing plantations, but no risk assessment will be required for new plantations and extension to existing plantations if a risk assessment was undertaken as part of the environmental authorisation process under NEMA.

P. halepensis Mill. is listed as a Category 3 species in the Eastern Cape, Free State and Western Cape and must be removed from riparian areas. It is not listed anywhere else in the country, as it is not recognised as a plantation species.

P. patula Schiede ex Schltdl. & Cham. and hybrids, varieties and selections are a Category 2 species throughout the country and is exempted from the requirement to obtain a permit for restricted activities under the regulations.

P. pinaster Aiton and hybrids, varieties and selections are Category 2 species for plantations and windrows and are exempted for an existing plantation from the requirements to obtain a permit for restricted activities outside of the Western Cape. Existing plantations in the Western Cape require a permit but are exempted from undertaking a risk assessment in terms of section 71(2) of the Act prior to applying for a permit (for an existing plantation).

Note: *P. pinaster* is categorised in the following areas as:

- a. Category 2 for plantations and windrows (windrows are not defined under NEM:BA but the DWS “accepts” four rows of trees as a windrow. (See description for windrow above).
- b. Category 1b elsewhere (outside of plantations).
- c. National Heritage Trees or National Monument Trees in terms of the National Heritage Resources Act, 1999, (Act No. 25 of 1999) are not listed.
- d. Except for “a.” above (i.e., plantations and wind rows), specimens with a circumference greater than 1.256 m at a height of 1000mm at the date of the first publication of this notice (August 2014) are not listed for urban areas in Cape Town, the Overberg District Council and Winelands District Council, except
 - I. When in a riparian area, or
 - II. When in a protected area or any property abutting a protected area, or
 - III. Where they are ruled to pose a wildfire risk, where they remain a category 1b.

- e. All specimens with a smaller circumference are Category 1b.

P. radiata D. Don and hybrids, varieties and selections are Category 2 species for plantations and windrows and are exempted for an existing plantation from the requirements to obtain a permit for restricted activities outside of the Western Cape. Existing plantations in the Western Cape require a permit but are exempted from undertaking a risk assessment in terms of section 71(2) of the Act prior to applying for a permit (for an existing plantation).

Note: *P. radiata* is categorised in the following areas as:

- a. Category 2 for plantations and windrows (windrows are not defined under NEM:BA but the DWS “accepts” four rows of trees as a windrow. (See description for windrow above).
- b. Category 1b elsewhere (outside of plantations).
- c. National Heritage Trees or National Monument Trees in terms of the National Heritage Resources Act, 1999, (Act No. 25 of 1999) are not listed.
- d. Except for “a.” above (i.e., plantations and wind rows), specimens with a circumference greater than 1.256 m at a height of 1000mm at the date of the first publication of this notice (August 2014) are not listed for urban areas in Cape Town, the Overberg District Council and Winelands District Council, except
 - I. When in a riparian area, or
 - II. When in a protected area or any property abutting a protected area, or
 - III. Where they are ruled to pose a wildfire risk, where they remain a category 1b.
- e. All specimens with a smaller circumference are Category 1b.

P. roxburghii Sarg. (*P. longifolia* Roxb. Ex Lamb.) and hybrids, varieties and selections are Category 2 species and are exempted for an existing plantation from the requirements to obtain a permit for restricted activities.

P. taeda L. and hybrids, varieties and selections are Category 2 species and are exempted for an existing plantation from the requirements to obtain a permit for restricted activities.

Other Alien and Invasive Species

The AIS Regulations also contain listed alien and invasive mammals, birds, reptiles, fish, invertebrates and microbial species in terrestrial, aquatic and marine environments. The FDSA Code only includes alien and invasive plant species as these are likely to be most relevant. A full list can be found in the Regulations published in the Government Gazette No 1003 of 18 September 2020.

In the forestry landscape, the following species that are likely to be encountered and must be controlled are:

- i. *Acacia dealbata* (silver wattle) – Category 2
- ii. *Acacia saligna* (Port Jackson willow) – Category 1b
- iii. *Caesalpinia decapetala* (Mauritius thorn) – Category 1b
- iv. *Callistemon* spp (bottlebrush) – Category 3
- v. *Cestrum laevigatum* (inkberry) – Category 1b
- vi. *Cotoneaster* spp. - Category 1b
- vii. *Hakea* spp. – Category 1b
- viii. *Lantana* (lantana, tickberry, cherry pie) – Category 1b

- ix. *Melia azedarach* (syringa) – Category 1b but 3 in urban areas
- x. *Morus alba* (wild mulberry) – Category 3 but unlisted if used for human consumption
- xi. *Nerium oleander* (oleander) – Category 1b
- xii. *Populus* spp (whit poplar, grey poplar, matchwood poplar) – Category 2
- xiii. *Psidium* spp (guava) - Category 2 for plantations, 3 if not in plantations, not listed if the fruit is used for human consumption
- xiv. *Pyracantha* spp (red firethorn, yellow firethorn) – Category 1b
- xv. *Ricinus communis* (castor oil tree) – Category 2
- xvi. *Rubus cuneifolius* (American bramble) NOTE: Not to be confused with the indigenous bramble which is white on the under-leaf) – Category 1b
- xvii. *Rubus* spp - Categories 1a, 1b, 2 but if the fruit of the European blackberry is used for human consumption it is not listed
- xviii. *Senna* (Cassia) spp – Category 1b
- xix. *Tipuana tipu* (tipu tree) – Category 3

Many AIS are annuals and should, practically, be left alone. They at least provide a vegetation cover. Removal simply creates a space for further invasion of the same or other species. Roadside verges harvested timber plantations and loading areas are particularly susceptible. Riverbanks are also susceptible since the changing water levels expose disturbed ground.

Control methods include spraying with a registered herbicide applicable to that species. Note that spraying a species for which the herbicide has not been registered is not legal. The only option then is to debark, fell or remove by digging. The latter unfortunately creates an environment that is susceptible to further invasion and not just the same species.

General Exemptions of Listed Invasive Species

1. All dead specimens of listed alien and invasive species are exempted from requiring a permit for any restricted activity. This is important when it comes to the transport and movement of harvested timber.
2. Subject to paragraph 1. above, any person in possession of a listed invasive plant species which is being utilised as biomass (no definition of biomass is provided in the AIS Regulations but is generally regarded as thinnings from commercial forests, listed alien and invasive plant species that have been removed from areas outside plantations, by-products of plantations that would otherwise not be used for higher end products, wood residues, harvested wood products) is exempted from requiring a permit for and may undertake the restricted activities of –
 - (a) conveying, moving or otherwise translocation any specimen of a listed invasive plant species; and
 - (b) selling or otherwise trading in, buying, receiving, giving or accepting as a gift, or in any way acquiring or disposing of any specimen of a listed invasive plant species,
 on the condition that the person complies with any norms and standards relating to biomass, published in terms of NEMBA (no norms and standards currently exist under NEMBA).

3. Any person conveying, moving or otherwise translocating any specimen of a listed invasive plant species for disposal or treatment as waste, is exempted from requiring a permit for and may undertake such restricted activity, provided such person complies with any norms and standard relating to the disposal of listed invasive species, published in terms of NEMBA (no norms and standards currently exist under NEMBA).
4. Any authorised official is exempted from requiring a permit for and may undertake any restricted activity necessary to perform their functions in terms of NEMBA or NEMA.
5. An extension to a plantation is exempted from undertaking a risk assessment in terms of section 71(2) of NEMBA prior to applying for a permit in terms of NEMBA and the Alien and Invasive Species Regulations, 2020, provided the application for an environmental authorisation in terms of NEMA included an invasive species risk assessment. (Note: a risk assessment would not be required if one was already undertaken for an environmental authorisation to extend a plantation by 100 hectares or more. Extensions of less than 100ha to an existing plantation does not require an environmental authorisation or a permit under the AIS Regulations.)

Sale or transfer of alien and listed invasive species

If a permit-holder sells a specimen of an alien or listed invasive species, the new owner of such specimen must apply for a permit in terms of Chapter 7 of NEMBA prior to acquiring such specimen. Note that this would not apply to dead specimens of listed invasive species (i.e., harvested material).

However, a landowner or occupier of land may transfer a permit issued in terms of the AIS regulations, to the new landowner or occupier of the same land specified in the permit. A new owner or occupier of the land must notify the issuing authority within 30 days of such transfer, after which the issuing authority must issue an amended permit in the name of the new landowner or occupier, subject to any other conditions or amendments which may be required. Note: This does not apply to existing plantations, only to extensions to an existing plantation or a new plantation established after 18 October 2020.

Permits (sections 88 to 93B of NEMBA)

Before issuing a permit, the issuing authority may in writing require the applicant to furnish it, at the applicant's expense, with such independent risk assessment or expert evidence as the issuing authority may determine, but only for new afforestation over 100ha. NEMBA also requires a risk assessment for listed commercial forestry using AIS but only for new afforestation in excess of 100ha

An issuing authority may issue a permit under NEMBA for a restricted activity involving a specimen of an alien species or of a listed invasive species only if:

- a. adequate procedures have been followed by the applicant to assess the risks and potential impacts associated with the restricted activity;
- b. the relevant species has been found to have negligible or not invasive potential;
- c. the benefits of allowing the activity are significantly greater than the costs associated with preventing or remedying any resultant damage to the environment or biodiversity; and
- d. it is satisfied that adequate measures have been taken by the applicant to prevent the escape and spread of the species.

A person may apply for a permit by lodging an application on the prescribed form to the authority.

The responsible authority:

- i. May require additional information
- ii. May require compliance with reasonable conditions as it may impose before it grants the application
- iii. May Issue a permit unconditionally or issue it subject to conditions
- iv. Refuse a permit but must give reasons
- v. Defer a decision to issue a permit if the applicant is under investigation for the contravention or failure to comply with any provision of NEMBA
- vi. Must specify the period on the permit for which it will remain valid
- vii. Cancel a permit and claim any reasonable costs incurred by the relevant authority necessitated by the cancellation of the permit from the permit holder
- viii. Suspend a permit

A permit holder may before the expiry date of the permit apply to the issuing authority for the renewal and amendment of the permit. It is likely that permits will be issued for 40 years to align with the duration of a water use licence issued under the NWA.

Appendix C

Implementation of a Management Plan

A management plan is a prerequisite for a professionally managed AIS operation. The plan should cover the following points:

- i. Clear illustration of the extent of infestation. This can be quantified using a four-point scale: high infestation (50-100% of the target area); medium infestation (20-49% of the target area) low (10-19% of the target area) and maintenance phase (less than 5%). These scales of infestation should be mapped
- ii. Monitoring should be done annually to determine the extent of the infestation following the initial control. This can be done using fixed-point photography and rephotographing from the same point each year.
- iii. Calculation of the area that can be treated annually within the limitations of available resources (labour, transport, finances and other relevant matters).
- iv. Calculation of the costs of the control operations which should include transport of labour, direct labour costs, costs of herbicides, any training that may be necessary, personal protective equipment, purchase and maintenance of equipment (knapsack sprayers, etc.). Should there be any form of co-operative agreement between adjoining landowners, or landowners in a catchment, there should be agreement as to how these costs can be shared in a way that is fair and equitable and is proportional to the scale and intensity of the infestation.
- v. Timing – depending on the species to be controlled and other work-related priorities, it is important to use the best opportunities that will result in a successful operation. For example, treating bramble with herbicides will achieve a better kill rate during late summer or early autumn when the plant is trans-locating above ground nutrients (and thus the herbicides) in the leaves into the roots. Note that in some cases, it may be necessary to allow for more than one control operation in the growing season due to the vigorous growth of certain species.
- vi. Catchment approach – in areas of high biodiversity and conservation importance, foresters should initiate control measure at the top of a catchment and work downstream to improve the success rate. This approach is also particularly effective in co-operation with landowners in the catchment.

An AIS control programme consists of three phases:

- i. An initial control is the first attempt to control an invasive species infestation. This may be a dense population of the target species, or simply a few scattered plants. Depending on the type of AIS, this may involve obtaining access with the use of chainsaws, brush cutters, fire or slashing. Initial controls are seldom 100% effective, especially in dense infestations.
- ii. A follow-up control is the second attempt to control an invasive species. Access is normally easier than in the initial control and allows for the easy application of herbicides. If a follow-up is not completed timeously (normally the next growing season), the site can rapidly revert to its original infested state. Follow up operations should be completed before implementing an initial control in another area.

- iii. **Maintenance control** is reached when the follow-up control phase can be completed when, in accordance with the four-point scale, the infestation rate is <5%.

Training for staff or employees specifically involved in AIS control is necessary to ensure an effective and focused work force. Relevant experts or trained foresters can be used.

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