

Fuzzy Box Woodland on alluvial soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South bioregions

Introduction

These guidelines provide background information to help land managers to identify remnants of the Endangered Ecological Community (EEC): Fuzzy Box on alluvial soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South bioregions. For more detailed information refer to the EEC profile for Fuzzy Box Woodland which includes the Final Determination of the NSW Scientific Committee, on the Department of Environment, Climate Change and Water (DECCW) Threatened Species website: www.threatenedspecies.environment.nsw.gov.au

What is an Endangered Ecological Community?

An ecological community is a unique and naturally occurring assemblage of plants and animals. The presence of an ecological community can be determined by factors such as soil type, position in the landscape, climate and water availability, all of which influence species composition. An EEC is an ecological community listed under the *Threatened Species Conservation Act 1995* as being at risk of extinction, unless the threats affecting it are managed and reduced.

Although most ecological communities are recognised by their typical plant species, these communities include all the organisms that occur in that particular area. The survival of each species relies on complex interactions among all of the inhabitants of an ecological community, through biotic mechanisms such as food webs, mutualisms and pollination, and through abiotic mechanisms such as water, nitrogen and carbon cycles. Consequently, the loss of any species may have detrimental flow-on effects for the ecological functioning of the whole community.

What is a particular area?

The NSW Scientific Committee defines a particular area as the Bioregion and Local Government Area where an EEC may be found. The particular area may be further delineated by using other supplementary factors such as landscape, soil type and climatic variables.



Fuzzy Box Woodland in Weddin Mountains National Park, with low herbaceous and grassy groundcover Photo: M. Porteners

What is Fuzzy Box Woodland?

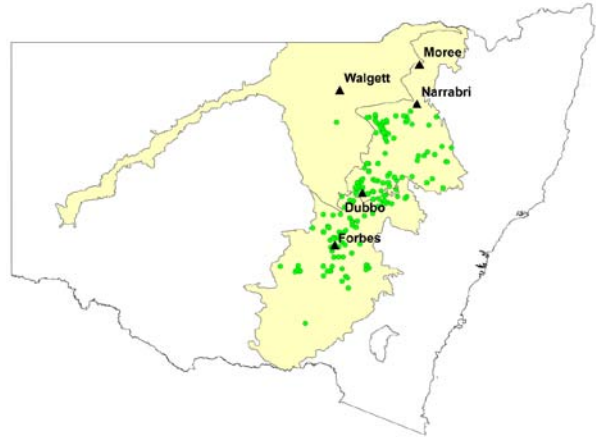
Fuzzy Box Woodland is a plant community recognised by a tall woodland dominated by Fuzzy box (*Eucalyptus conica*), often with inland grey box (*Eucalyptus microcarpa*), yellow box (*Eucalyptus melliodora*), bullock (*Allocasuarina luehmannii*) or kurrajong

(*Brachychiton populneus*). Shrubs are usually sparse, with the groundcover dominated by grasses and low forbs, the density and composition of which will vary considerably from season to season. Fuzzy Box Woodland may form a mosaic of patches with other woodland communities at any one site, but it is recognised by a dominance of *E. conica*, with any other tree species present in lower abundances.

See 'Identifying Fuzzy Box Woodland EEC' below for further help.

Where is Fuzzy Box Woodland found?

Fuzzy Box Woodland is found on alluvial soils of the South Western Slopes, Brigalow Belt South and Darling Riverine Plains Bioregions, mainly in the Dubbo–Narromine–Parkes–Forbes area, (see Map). It is most abundant in the Forbes district but extends north to Narromine, with outliers near Bylong in the east. Less than 5% of the original extent is estimated to remain. The community occurs on a variety of soils on flats, low slopes, prior streams and abandoned channels or slight depressions on the undulating plains, mainly of the western slopes.



Bioregions in NSW where Fuzzy Box Woodland EEC can occur and the locations where fuzzy box as a species has been recorded to date. Fuzzy Box EEC occurs elsewhere in the bioregions.

It is often found upslope from River Red Gum communities, above the more frequently inundated areas of the floodplain. It also occurs on the lower slopes and valley flats, sometimes with other forest types such as the White Box–Yellow Box–Blakely's Red Gum Woodland EEC. Fuzzy box as a species is more widely distributed than the EEC on the western slopes of NSW, and it may occur in association with other eucalypt species to form other communities. Other woodland communities with similar floristic composition but where fuzzy box occurs only sporadically and is not the dominant tree canopy species are not part of the EEC.

Description of the community

The tree layer

The tree or upper canopy layer of Fuzzy Box Woodland EEC is dominated by *E. conica*, often growing with inland grey box (*E. microcarpa*), yellow box (*E. melliodora*) or kurrajong (*B. populneus*). Bullock (*A. luehmannii*) and white cypress pine (*Callitris glaucophylla*) are also common in places.

The understorey: small trees and shrubs

Small trees and shrubs that may be present in the understorey include: wilga (*Geijera parviflora*), Deane's wattle (*Acacia deanei*), hop bush (*Dodonaea viscosa*), hickory wattle (*Acacia implexa*), silver cassia (*Senna artemisioides* sens. lat.), dolly bush (*Cassinia aculeata*), water bush (*Myoporum montanum*), eastern cottonbush (*Maireana microphylla*) and black roly-poly (*Sclerolaena muricata*).



Fuzzy Box Woodland roadside remnant at Emu Creek, south of Grenfell Photo: J. Plaza, RBG Sydney

The Understorey: groundcover plants

Groundcover species that are common across the range of Fuzzy Box Woodland include: native forbs such as purple burr-daisy (*Calotis cuneifolia*), corrugated sida (*Sida corrugata*), berry saltbushes (*Einadia hastata* and *E. nutans*), blue flax-lily (*Dianella revoluta*) and sticky everlasting (*Bracteantha viscosa*), low prostrate shrubs such as amulla (*Eremophila debilis*) and wingless fissure-weed (*Maireana enchylaenoides*), and native grasses, including speargrass (*Austrostipa scabra*), windmill grass (*Chloris truncata*), common wheatgrass (*Elymus scaber*), kangaroo grass (*Themeda australis*) and small-flowered wallaby grass (*Austrodanthonia setacea*).

Characteristic species list

There are over 200 plant species that occur in the Fuzzy Box Woodland environment. A list of plant species that generally characterise a patch of Fuzzy Box Woodland across its range is provided in Table 1. Not all the species listed need to occur in any one site for it to be considered Fuzzy Box Woodland EEC, and sites may include others species not listed as characteristic.

There are a number of variations in floral composition and structure within this community throughout its range, and in some individual cases the species in Table 1 may occur infrequently or not at all. Unseen species may be represented below ground in the soil seed bank or as dormant structures such as bulbs, corms, rhizomes, rootstock or lignotubers. Your final decision should be based on a weight of evidence from the key indicators outlined below. If in doubt refer to the full NSW Scientific Committee determination or seek further help from DECCW or your local catchment management authority.

Identifying Fuzzy Box Woodland EEC

The following are key indicators to look for when determining whether Fuzzy Box Woodland exists on a site:

1. Is the site on the western slopes of NSW and in the South Western Slopes, Darling Riverine Plains or Brigalow Belt South Bioregion? (see Map)
2. Is the site on a prior stream, abandoned channel, slight depression, undulating plain or flat with alluvial or colluvial soils?
3. Is the site a woodland dominated by fuzzy box with a sparse shrubby understorey and/or open forb and grassy groundcover?



Fuzzy Box Woodland roadside remnant
Photo: J. Benson, RBG Sydney

4. Does the site contain a combination of the diagnostic tree species marked in bold in Table 1?
5. Is the site situated on an upper floodplain above the level of frequent inundation and upslope from a River Red Gum community, or on a lower slope or valley flat with other tree species, such as inland grey box, yellow box, white box or Blakely's red gum?
6. Are there any plant species present at the site from those listed as characteristic in Table 1? (See photos in this guideline, check with a local botanist, consult reference books or NSW Flora Online: plantnet.rbgsyd.nsw.gov.au).

If you answered yes to the above questions, your site is likely to consist of Fuzzy Box Woodland.

What does this mean for my property?

As a listed EEC under the *Threatened Species Conservation Act 1995*, Fuzzy Box Woodland has significant conservation value, and some activities affecting the EEC may require consent or approval. Please contact the Department of Environment, Climate Change and Water for further information.

EECs that may adjoin or intergrade with Fuzzy Box Woodland

This community would have previously occurred with the following other western slopes and plains vegetation types that are now also listed as EECs:

1. *White Box–Yellow Box–Blakely's Red Gum Woodland* throughout its range, particularly on the lower landscapes and more fertile soils in eastern areas
2. *Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Penneplain, Nandewar and Brigalow Belt South bioregions*, predominantly on red-brown earths in the south to south-western parts of its range.

Determining the conservation value of remnants

The degree of disturbance (i.e. the site condition) of any remnant of Fuzzy Box Woodland may vary depending on past land use, management practices and/or natural disturbance, and this should be considered at the time of assessment. Although the following list is not exhaustive, it describes a number of variations of Fuzzy Box Woodland you may encounter on your land:

1. as an isolated remnant within heavily cleared country, or as scattered trees within a paddock or confined to narrow roadside corridors
2. modified sites where the main tree species are present but the ground layer is predominantly composed of exotic species with few native grasses, herbs or shrubs remaining
3. a stand of trees of an older age-class or senescent trees, (the result of a lack of natural regeneration of the canopy species)
4. extreme seasonal variation in the density and species composition of the understorey: dense herbaceous groundcover composed largely of annual species in cooler seasons, versus very dry and sparse perennial cover with bare soil patches during the hotter months
5. dense incursions of the weeds Paterson's curse (*Echium plantagineum*), Maltese cockspur (*Centaurea melitensis*), smooth catsear (*Hypochaeris glabra*), capeweed (*Arctotheca calendula*), silvery hairgrass (*Aira cupaniana*), perennial ryegrass (*Lolium perenne*) or great brome (*Bromus diandrus*).

The conservation significance of each remnant should be assessed at each site, noting that even where a remnant is considered to be heavily degraded and in poor condition, it may still have conservation value for a number of reasons, including:

1. as part of a wildlife corridor that has connective importance at local and/or regional scales
2. as an important habitat and food source for birds, small and large mammals, terrestrial invertebrates and insectivorous bats
3. because it contains threatened species of flora in their own right, or rarely seen and elusive plants such as terrestrial orchids, rare herbs and bryophytes, thus contributing to the local biodiversity
4. maintaining a healthy native seed bank, which is crucial for the perpetuation of vegetation communities and individual species in highly cleared and fragmented landscapes.

Any native vegetation remnant has habitat value and contributes to regional biodiversity. It is important to take these factors into account when determining the conservation significance of remnants.



Fuzzy Box Woodland
Photo: J. Plaza, RBG Sydney

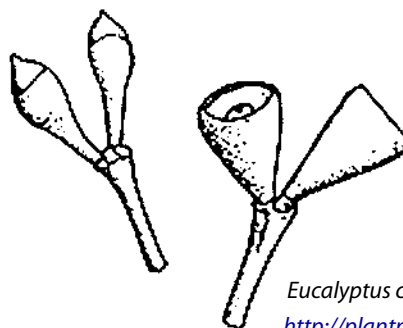
Table 1. Characteristic species recorded in the Fuzzy Box Woodland EEC

Common name	Scientific name
Overstorey – tree or shrub layer species (1.5 m+)	
Deane's wattle ⁺	<i>Acacia deanei</i> subsp. <i>deanei</i>
Ironwood ⁺ (NW)	<i>Acacia excelsa</i>
Western black wattle ⁺	<i>Acacia hakeoides</i>
Hickory wattle ⁺ (SE)	<i>Acacia implexa</i>
Mountain hickory ⁺ (SE)	<i>Acacia penninervis</i> var. <i>longiracemosa</i>
Bullock⁺	<i>Allocasuarina luehmannii</i>
Kurrajong⁺	<i>Brachychiton populneus</i> subsp. <i>populneus</i>
White cypress pine ⁺	<i>Callitris glaucophylla</i>
Belah ⁺	<i>Casuarina cristata</i>
Blakely's red gum ⁺	<i>Eucalyptus blakelyi</i>
Fuzzy box⁺	<i>Eucalyptus conica</i>
Western red box ⁺ (NW)	<i>Eucalyptus intertexta</i>
Yellow box⁺	<i>Eucalyptus melliodora</i>
Western grey box⁺	<i>Eucalyptus microcarpa</i>
Poplar box ⁺	<i>Eucalyptus populnea</i> subsp. <i>bimbil</i>
Wilga ⁺	<i>Geijera parviflora</i>
Needlewood ⁺ (NW)	<i>Hakea leucoptera</i>
Sugarwood ⁺	<i>Myoporum platycarpum</i> subsp. <i>perbellum</i>
Native olive ⁺ (SE)	<i>Notelaea microcarpa</i>
Groundcover/understorey species (0-1.5 m)	
shrubs / forbs	
Lesser joyweed	<i>Alternanthera denticulata</i>
Hairy joyweed ⁺	<i>Alternanthera nana</i>
Slender-fruited saltbush ⁺ (NW)	<i>Atriplex leptocarpa</i>
Creeping saltbush ⁺	<i>Atriplex semibaccata</i>
Sticky everlasting ⁺	<i>Bracteantha viscosa</i>
Purple burr-daisy ⁺	<i>Calotis cuneifolia</i>
Yellow burr-daisy	<i>Calotis lappulacea</i>
Tufted burr-daisy ⁺	<i>Calotis scapigera</i>
Dolly bush ⁺	<i>Cassinia aculeata</i>
Maltese cockspur ⁺	<i>Centaurea melitensis</i> *
Crested goosefoot ⁺	<i>Chenopodium cristatum</i>
Desert goosefoot ⁺	<i>Chenopodium desertorum</i>
Mistletoe ⁺	<i>Dendrophthoe glabrescens</i>
Blue flax-lily ⁺	<i>Dianella longifolia</i> var. <i>longifolia</i>
Blue flax-lily ⁺	<i>Dianella revoluta</i> var. <i>revoluta</i>
Wedge-leaf hopbush ⁺	<i>Dodonaea viscosa</i> subsp. <i>cuneata</i>
Paterson's curse	<i>Echium plantagineum</i> *
Berry saltbush ⁺	<i>Einadia hastata</i>
Climbing saltbush ⁺	<i>Einadia nutans</i> sens. lat.
Amulla ⁺	<i>Eremophila debilis</i>

Common name	Scientific name
Peppergrass	<i>Lepidium pseudohyssopifolium</i>
Wingless fissure-weed ⁺	<i>Maireana enchylaenoides</i>
Small fissure-weed ⁺	<i>Maireana humillima</i>
Eastern cottonbush	<i>Maireana microphylla</i>
Horehound	<i>Marrubium vulgare</i> *
Water bush ⁺	<i>Myoporum montanum</i>
Australian broomrape ⁺	<i>Orobanche cernua</i> var. <i>australiana</i>
Lamb's tails ⁺	<i>Ptilotus semilanatus</i>
Thorny saltbush ⁺ (NW)	<i>Rhagodia spinescens</i>
Slender dock	<i>Rumex brownii</i>
Galvanised burr ⁺ (NW)	<i>Sclerolaena birchii</i>
Black roly-poly ⁺	<i>Sclerolaena muricata</i> var. <i>muricata</i>
Silver cassia ⁺	<i>Senna artemisioides</i> sens. lat.
Corrugated sida ⁺	<i>Sida corrugata</i>
Rock sida ⁺ (NW)	<i>Sida petrophila</i>
London rocket	<i>Sisymbrium irio</i> *
Quena ⁺	<i>Solanum esuriale</i>
Fuzzweed ⁺	<i>Vittadinia cuneata</i> sens. lat.
Herbs / ferns	
Pimpernel	<i>Anagallis arvensis</i> *
Capeweed	<i>Arctotheca calendula</i> *
Small vanilla-lily ⁺	<i>Arthropodium minus</i>
Tarvine ⁺	<i>Boerhavia dominii</i>
Variable daisy	<i>Brachyscome ciliaris</i> var. <i>lanuginosa</i>
Golden lily ⁺	<i>Bulbine bulbosa</i>
Leek lily	<i>Bulbine semibarbata</i>
Blue fairy orchid	<i>Caladenia caerulea</i>
Pink fingers	<i>Caladenia carnea</i>
Small purslane	<i>Calandrinia eremaea</i>
Garland lily	<i>Calostemma purpureum</i>
Caustic weed ⁺	<i>Chamaesyce drummondii</i>
Rock fern ⁺ (SE)	<i>Cheilanthes austrotenuifolia</i>
Rock fern	<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>
Australian bindweed ⁺	<i>Convolvulus erubescens</i>
Dense stonecrop	<i>Crassula colorata</i> var. <i>acuminata</i>
Native carrot	<i>Daucus glochidiatus</i>
Kidney weed ⁺	<i>Dichondra repens</i>
Kidney weed	<i>Dichondra species A</i>
Nodding chocolate-lily ⁺	<i>Dichopogon fimbriatus</i>
Blue crowsfoot	<i>Erodium crinitum</i>
Native geranium	<i>Geranium solanderi</i> var. <i>solanderi</i>
Silky glycine	<i>Glycine canescens</i>
Twining glycine ⁺	<i>Glycine clandestina</i>

Common name	Scientific name
Variable glycine ⁺	<i>Glycine latifolia</i>
Variable glycine	<i>Glycine tabacina</i>
Stinking pennywort	<i>Hydrocotyle laxiflora</i>
Smooth catsear	<i>Hypochaeris glabra</i> *
Burr medic	<i>Medicago polymorpha</i> *
Common onion orchid	<i>Microtis unifolia</i>
Wood sorrel ⁺	<i>Oxalis chnoodes</i>
Yellow wood sorrel	<i>Oxalis perennans</i>
Proliferous pink	<i>Petrorhagia nanteuilii</i> *
Sago weed ⁺	<i>Plantago cunninghamii</i>
Common pigweed ⁺	<i>Portulaca oleracea</i>
Midget greenhood orchid	<i>Pterostylis mutica</i>
Small-flowered buttercup	<i>Ranunculus sessiliflorus</i> var. <i>sessiliflorus</i>
Pink tongues ⁺	<i>Rostellularia adscendens</i> subsp. <i>adscendens</i>
Common sowthistle	<i>Sonchus oleraceus</i> *
Creamy candles ⁺	<i>Stackhousia monogyna</i>
Chickweed	<i>Stellaria media</i> *
Slender sun orchid	<i>Thelymitra pauciflora</i>
Haresfoot clover	<i>Trifolium arvense</i> *
Tufted bluebell	<i>Wahlenbergia communis</i>
River bluebell ⁺	<i>Wahlenbergia fluminalis</i>
Native bluebell ⁺	<i>Wahlenbergia luteola</i>
Native bluebell ⁺ (SE)	<i>Wahlenbergia victoriensis</i>
Grasses / sedges	
Silvery hairgrass	<i>Aira cupaniana</i> *
Bunch wiregrass ⁺	<i>Aristida behriana</i>
Wiregrass ⁺	<i>Aristida muricata</i>
Purple wiregrass ⁺	<i>Aristida ramosa</i> var. <i>speciosa</i>
Ringed wallaby grass	<i>Austrodanthonia caespitosa</i>
Wallaby grass	<i>Austrodanthonia racemosa</i>
Small-flowered wallaby grass ⁺	<i>Austrodanthonia setacea</i>
Plains grass ⁺	<i>Austrostipa aristiglumis</i>
Foxtail speargrass ⁺	<i>Austrostipa densiflora</i>
Feather speargrass ⁺	<i>Austrostipa elegantissima</i>
Stout bamboo grass ⁺	<i>Austrostipa ramosissima</i>
Rough speargrass	<i>Austrostipa scabra</i> subsp. <i>falcata</i>
Rough speargrass ⁺	<i>Austrostipa scabra</i> subsp. <i>scabra</i>
Slender bamboo-grass ⁺	<i>Austrostipa verticillata</i>
Corkscrew grass	<i>Austrostipa setacea</i>
Wakool speargrass ⁺ (SE)	<i>Austrostipa wakoolica</i>

Common name	Scientific name
Pitted bluegrass ⁺	<i>Bothriochloa decipiens</i>
Red-leg grass ⁺	<i>Bothriochloa macra</i>
Shivery grass	<i>Briza minor</i> *
Great brome	<i>Bromus diandrus</i> *
Tall sedge ⁺	<i>Carex appressa</i>
Sedge ⁺ (SE)	<i>Carex incomitata</i>
Windmill grass ⁺	<i>Chloris truncata</i>
Button grass ⁺	<i>Dactyloctenium radulans</i>
Queensland bluegrass ⁺	<i>Dichanthium sericeum</i>
Cotton panic grass ⁺	<i>Digitaria brownii</i>
Finger grass	<i>Digitaria diffusa</i>
Spreading umbrella grass ⁺	<i>Digitaria divaricatissima</i>
Common wheatgrass ⁺	<i>Elymus scaber</i> var. <i>scaber</i>
Bottlewashers ⁺	<i>Enneapogon</i> spp.
Windmill grass ⁺	<i>Enteropogon acicularis</i>
Canegrass ⁺	<i>Eragrostis australasica</i>
Weeping lovegrass ⁺	<i>Eragrostis parviflora</i>
Slender cupgrass ⁺	<i>Eriochloa procerca</i>
Rush ⁺	<i>Juncus flavidus</i>
Rush	<i>Juncus remotiflorus</i>
Umbrella Canegrass ⁺	<i>Leptochloa digitata</i>
Perennial ryegrass	<i>Lolium perenne</i> *
Many-flowered mat-rush ⁺	<i>Lomandra multiflora</i> subsp. <i>multiflora</i>
Meadow rice-grass	<i>Microlaena stipoides</i> var. <i>stipoides</i>
Long-leaved wallaby grass ⁺ (SE)	<i>Notodanthonia longifolia</i>
Native millet ⁺	<i>Panicum decompositum</i>
Pepper grass ⁺	<i>Panicum laevinode</i>
Pale summer-grass ⁺	<i>Paspalidium albovillosum</i>
Tussock grass ⁺	<i>Poa labillardieri</i> var. <i>labillardieri</i>
Kangaroo grass ⁺	<i>Themeda australis</i>



Eucalyptus conica buds and fruits
<http://plantnet.rbgsyd.nsw.gov.au>

Key indicator species from Final Determination are marked + (diagnostic species in **BOLD**). Weed species are marked *. Common names are as per Royal Botanic Gardens, see: <http://plantnet.rbgsyd.nsw.gov.au> Additional species are from Porteners (2007), Benson (2008) and Armstrong, Porteners & Koen (2009) (see references). SE = south to east of EEC range; NW = north to west of EEC range.



For further help

This and other EEC guidelines are available on the DECCW website at threatenedspecies.environment.nsw.gov.au/tsprofile/home_tec.aspx or www.environment.nsw.gov.au/pnf/eecfieldidguidelines.htm

The resources listed below also provide information on NSW plants, native vegetation and EECs.

- Botanic Gardens Trust plant identification help: www.rbgsyd.nsw.gov.au/plant_info/identifying_plants/
- Department of Environment, Climate Change and Water threatened species profiles: www.threatenedspecies.environment.nsw.gov.au/tsprofile/home_species.aspx
- information on bioregions of New South Wales (determinations use IBRA version 4 boundaries): www.environment.nsw.gov.au/bioregions/Bioregions.htm
- NSW Scientific Committee determinations: www.environment.nsw.gov.au/committee/ListofScientificCommitteeDeterminations.htm
- Armstrong, R.C., Porteners, M.F. & Koen, T. (2009) *Identification, Prioritisation and Conservation Management Recommendations for Endangered Ecological Communities in the Narromine, Dubbo and Wellington Local Government Areas*. A report to the Central West Catchment Management Authority. (NSW Department of Environment and Climate Change: Dubbo).
- Benson, J.S. (2009) New South Wales Vegetation Classification and Assessment: Part 2. Plant communities of the NSW South-western Slopes Bioregion and update of the NSW Western Plains plant communities, Version 2 of the NSWVCA database: *Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South-western Slopes Bioregion* (pp. 298–300). *Cunninghamia* 10(4): 599–673.
- NSW Scientific Committee (2004) *Fuzzy Box Woodland on alluvial soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South bioregions—Endangered Ecological Community Listing—Final Determination* (NSW DEC: Sydney).
- Porteners, M.F. (2007) *Weddin Mountains National Park, Fuzzy Box Monitoring Project. Report to the Department of Environment and Conservation (NSW)* (Marianne Porteners Environmental Consulting: Sydney).

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