

Hon Simon O'Brien MLC
Chair, Standing Committee on Environment and Public Affairs
Parliament House, Perth WA 6000
Email: env@parliament.wa.gov.au

29 December 2014

Dear Mr. O'Brien,

Submission regarding Petition No. 74 – Mowen Forest Logging

Thank you for the opportunity to provide a submission regarding the petition to cease logging in Margaret River's Mowen Forest. This complaint has not been taken to the Parliamentary Committee for Administrative Investigations.

Mowen Forest is 7,600 ha of jarrah/marri forest in the Shire of Augusta-Margaret River (AMR). It is within one of only 34 internationally recognised biodiversity hotspots in the world and only terrestrial biodiversity hotspot in Australia. The WA Government's Forest Products Commission (FPC) plans to log 1,610 hectares of Mowen Forest in 2014/15. In June 2014, the community group Save Mowen Forest (SMF) was formed. On 27 November 2014, AMR Shire Council voted 6:1 to endorse the community petition to the Legislative Council to cease logging in Mowen Forest (Attachment 1). **On behalf of the Augusta-Margaret River community and 1,596 petitioners, SMF requests that the WA Government places a moratorium on logging operations in Mowen Forest until all relevant guidelines have been finalized, necessary surveys (including on-ground fauna survey and heritage survey) have been completed, and a comprehensive public inquiry has been conducted.**ⁱ

Threatened species: FPC's fauna desktop surveys identified twenty threatened and priority species likely to occur in Mowen Forest coupes 01 and 02 (Attachment 2). Of these, ten are threatened species with one being critically endangered (the White-bellied Frog), two being endangered (EN) (Baudin's Cockatoo and Western Ringtail Possum) and eight being classed as vulnerable (VU) (Balston's Pygmy Perch, Brush-tailed Phascogayle, Chuditch/Western Quoll, Forest Red-tailed Black Cockatoo, Orange-bellied Frog, Quokka and Western Mud Minnow). Of these, the species thought highly likely to inhabit the areas identified are:

- Baudin's cockatoo (EN, 12,500 adults remaining in Australia, numbers have declined due to habitat loss, especially trees with hollows, which begin to develop from about 120 years);ⁱⁱ
- Forest red-tailed black cockatoo (VU, 15,000 adults remaining, numbers declined from habitat loss);ⁱⁱⁱ
- Orange-bellied frog (VU, 2,000 frogs remaining, wholly distributed in State forests);^{iv} and,
- Brush-tailed phascogales (VU).^v

Mowen Forest may also have aquatic fauna such as the critically endangered locally endemic Burrowing Freshwater Crayfish, which lives its entire life underground and is extremely difficult to identify^{vi}. Research shows adverse impacts of logging on threatened and endangered fauna species,^{vii} including impacting local hydrologies. Logging and dieback (exacerbated by logging)^x reduce habitat of threatened species, driving them closer to extinction. Only a desktop fauna survey was conducted for Mowen Forest prior to logging. Desktop information regarding species numbers and habitat requirements is outdated and inadequate. No on-ground fauna survey was conducted regarding Mowen 01 and 02, and no comprehensive flora or fauna survey has ever been conducted in Mowen Forest so it not possible that FPC has sufficient information to ensure threatened species are not adversely affected by logging. Recent loss of habitat for threatened fauna in AMR Shire (constructing Margaret River bypass, 2011 bushfires, clearing of native forest on private land for housing developments) were not considered in the *Forest Management Plan 2014-2023*. Significant forest logging can only be conducted if adequate on-ground surveys are undertaken and strategies are implemented to lessen threats and ensure further endangerment or loss of populations does not occur. **We request a moratorium until an on-ground fauna survey is conducted.**

Climate change and water: The Intergovernmental Panel on Climate Change^{xi} shows current and projected impacts of climate change in South West of higher temperatures, decreased average annual rainfall, decline in freshwater resources and significant loss of biodiversity. The South West is considered a global warming hotspot. Mowen Forest is in part located over the Leederville and hydraulically interconnected Yaragadee aquifer, an important water system that feeds into Margaret and Blackwood Rivers. Rainfall has decreased by some 25 percent in AMR Shire since the mid-1970s,^{xii} which adversely affects local water resources.

Logging of native forests is correlated with reduced rainfall.^{xiii} Native forests such as Mowen are also necessary for carbon storage and mitigating impacts of climate change. Research shows that large old trees (those logged by FPC) accumulate the most carbon.^{xivxv}

Aboriginal heritage: Mowen Forest is within Wardandi Aboriginal country. No comprehensive heritage survey has been conducted in Mowen One and Two. FPC is unaware of the impacts of logging on sacred Wardandi sites, songlines and dreaming in Mowen Forest, and a possible corroboree site adjacent to Mowen One was recently identified by a Piblemen elder. South West Land and Sea Council and Department of Aboriginal Affairs have notified FPC of heritage concerns in Mowen Forest. **We request a moratorium until a comprehensive heritage survey is conducted by Wardandi elders.**

Economic loss of logging Mowen Forest: FPC has not adequately estimated income from logging Mowen Forest in 2014/15.^{xvi} In Parliament, the WA Government disclosed an estimated yield of 7,300 m³ of 1st and 2nd grade jarrah sawlogs from Mowen One and Two.^{xvii} At base rate of \$42.67/ m³ for bole sawlog jarrah, FPC will receive \$306,500 for this timber. FPC has not disclosed anticipated income from sale of charcoal logs, firewood and sawdust or marri. The WA Government also disclosed costs of logging Mowen One and Two of \$216,500^{xviiiix} for road construction, dieback surveys and flora surveys but many significant costs have not been disclosed.^{xx} On available figures, FPC will receive a net income of approximately \$90,000 from logging Mowen Forest. However, it is more likely that FPC will have a loss from logging Mowen Forest, due to extent of undisclosed costs and reduction in quality timber. Peter Lane's submission to the Committee shows that South West native forests are logged at a substantial loss. In a period of economic austerity, it is irresponsible for WA Government to subsidise logging of Mowen Forest. Furthermore, AMR community will not economically benefit from logging Mowen Forest: logs from Mowen Forest will be taken out of AMR Shire, and the few jobs generated by logging Mowen Forest are mostly outside the AMR Shire. **We request a moratorium until a cost-benefit analysis of logging Mowen Forest is conducted.**

Reduced quality of jarrah and marri timber: Since 2002, quality and quantity of jarrah sawlogs have catastrophically declined in WA (see Attachment 3). Production of all sawlogs - species and grade - has materially declined, and FPC is searching for buyers of low grade jarrah. Furthermore, allowable cut of jarrah logs has never been achieved. It is unlikely logging in Mowen will yield substantial quality timber.

Social importance of Mowen Forest: AMR Shire heavily relies on natural environment for its tourism industry, and Mowen Forest is an important tourist destination. Mowen Forest is on a recently completed road between Margaret River and Nannup, an increasingly popular tourist route. The Margaret River Offroad Cycle Association survey of mountain-biking in the AMR Shire reports more than 20,000 mountain-bike trail passes each year^{xxi}. Mowen Forest is a recreation area for this important tourism sub-sector.

Community concerns: The Augusta-Margaret River community and the AMR Shire Council have voiced their opposition to the logging of Mowen Forest, reflected in extensive media coverage.^{xxii} SMF collected 1,596 signatures on our written petition to the WA Legislative Council, which was endorsed by the AMR Shire. An online petition^{xxiii} also has more than 1,120 additional signatures. We have currently raised more than \$8,000 in donations and \$15,000 in pledges in a crowdfunding campaign to offer the WA Government its \$90,000 anticipated net income from logging Mowen Forest in order to protect our forest. A forest protectors' camp has been established at Mowen Forest, supported and attended by AMR Shire residents. Representatives of SMF met with Hon. Barry House, President of the Legislative Council, on 30 October 2014 to voice our concerns about logging Mowen Forest. On our behalf, Mr. House requested a meeting between SMF and the Minister for Forestry, Mia Davies. The Minister rejected our request for a meeting.

It is environmentally, economically, socially and culturally unsustainable to log Mowen Forest. We urge the Committee to conduct a comprehensive public inquiry regarding the logging of Mowen Forest, and SMF representatives request a hearing at the inquiry. **We request a moratorium on logging in Mowen Forest until all relevant guidelines are finalised and necessary surveys and inquiries are conducted.**

Yours' sincerely,

Naomi Godden, on behalf of Save Mowen Forest

Email: savemowenforest@gmail.com

Attachment 1: Letter from AMR Shire Council CEO to Hon. Barry House regarding Mowen Forest



15 December 2014

B House
President of the Legislative Council, WA
157 Bussell Hwy
MARGARET RIVER WA 6285

To the Hon. Barry House

SHIRE OF AUGUSTA MARGARET RIVER COUNCIL DECISION - SUPPORT TO CEASE LOGGING IN THE MOWEN FOREST

At the Ordinary Meeting of Council 26 November 2014, the Shire of Augusta Margaret River Council considered the logging of the Mowen Forest and resolved the following:

MOTION / COUNCIL DECISION

CR HAYNES, CR SERVENTY, OM2014/252

That Council supports and endorses the community petition to the WA Legislative Council to cease all logging operations in Mowen Forest.

CARRIED 6/1

CR SMART VOTED AGAINST THE MOTION

The Council agreed that further logging of the Mowen is neither environmentally nor economically sustainable, and that the protection of the forest will bring greater returns to the community both now and into the future.

The Margaret River region is the most visited region in the state, attracting high volumes of interstate and overseas visitors who come here to enjoy the benefits of the great outdoors in our pristine environment. The Mowen Forest has great potential to be one of our region's valuable tourism assets as it provides a setting for activities such as mountain biking, bush walking, Aboriginal tourism, Safari-style camping holidays, retreats and other eco-tourism opportunities.

The Council's decision also reflects how highly the local community values the natural environment and their strong desire to protect forests and wild places within the Shire's boundaries for the benefit of our future generations.

Mr Peter Lane and Ms Naomi Godden presented deputations to the Council outlining the financial and employment implications of logging, and discussed the social, cultural and environmental benefits resulting from the protection of the Mowen Forest. Notes from these presentations have been attached for your information.

Thank you for taking the time to consider the Council's decision. Please contact me if you require any further information regarding this matter.

Yours faithfully

 **GARY EVERSLED**
CHIEF EXECUTIVE OFFICER

Cc: The Hon Colin Barnett
The Hon Mia Davies
The Hon Terry Redman
The Hon Libby Mettam
The Hon Adele Farina

Attachment 2: Threatened and Priority Fauna of Mowen Forest

There are twenty threatened and priority species identified in desktop surveys as being likely to occur in Mowen Forest coupes 01 and 02. Of these, ten are threatened species with one being critically endangered (the White-bellied Frog), two being endangered (Baudin's Cockatoo and Western Ringtail Possum*) and eight being classed as vulnerable (Balston's Pygmy Perch, Brush-tailed Phascogayle, Chuditch/Western Quoll, Forest Red-tailed Black Cockatoo, Orange-bellied Frog, Quokka and Western Mud Minnow). Of these, the species thought highly likely to inhabit the areas identified are Baudin's Cockatoo (EN), Brush-tailed Phascogayle (VU), Forest Red-tailed Black Cockatoo (VU) and the Orange-bellied Frog (VU).

Common Name	Scientific name	Conservation status	Likelihood
MOWEN 01 (List compiled 23rd January 2014)			
Balston's Pygmy Perch	Nannatherina balstoni	VU	M
Barking Owl	Ninox connivens	P2	L
Baudin's Cockatoo	Calyptorhynchus baudinii		
Brush-tailed Phascogale	Phascogale tapoatafa ssp. WAM M434	VU	H
Carpet Python	Morelia spilota imbricata	P4	L
Chuditch (Western Quoll)	Dasyurus geoffroii	VU	M
Common Brushtail Possum	Trichosurus vulpecula		L
Crested Shrike-tit	Falcunculus frontatus	P4	L
Forest Red-tailed Black Cockatoo	Calyptorhynchus banksii naso	VU	H
Masked Owl	Tyto novaehollandiae	P3	L
Orange-bellied Frog	Geocrinia vitellina	VU	H
Peregrine Falcon	Falco peregrinus	P4	L
Quenda (Southern Brown Bandicoot)	Isoodon obesulus fusciventer	P5	MH
Quokka	Setonix brachyurus	VU	M
Western Brush Wallaby	Macropus irma	P4	M
Western Falspistrelle	Falsistrellus mackenziei	P4	H
Western Mud Minnow	Galaxiella munda	VU	M
White-bellied Frog	Geocrinia alba	CR	L
White-browed Babbler	Pomatostomus superciliosus	P4	L
MOWEN 02 (List compiled 6th December 2012)¹			
Balston's Pygmy Perch	Nannatherina balstoni	VU	
Barking Owl	Ninox connivens	P2	
Baudin's Cockatoo	Calyptorhynchus baudinii	EN	
Brush-tailed Phascogayle	Phascogale tapoatafa ssp. WAM M434	VU	
Carpet Python	Morelia spilota imbricata	P4	
Chuditch (Western Quoll)	Dasyurus geoffroii	VU	
Common Brushtail Possum	Trichosurus vulpecula		
Crested Shrike-tit	Falcunculus frontatus	P4	
Forest Red-tailed Black cockatoo	Calyptorhynchus banksii naso	VU	
Masked Owl	Tyto novaehollandiae	P3	
Orange-bellied Frog	Geocrinia vitellina	VU	
Peregrine Falcon	Falco peregrinus	P4	
Quenda (Southern Brown Bandicoot)	Isoodon obesulus fusciventer	P5	
Quokka	Seretonis brachyurus	VU	
Western Brush Wallaby	Macropus irma	P4	
Western Falspistrelle	Falsistrellus mackenziei	P4	
Western Mud Minnow	Galaxiella munda	VU	

¹ Likelihood status of these species in Mowen 02 is unknown by SMF at this stage

Western Ringtail Possum*	<i>Pseudocheirus occidentals</i>	VU EN	
White-bellied Frog	<i>Geocrinia alba</i>	CR	?
White-browed Babbler	<i>Pomatostomus superciliosus</i>	P4	

Notes:

- Both lists are identical except for the addition of the Western Ringtail Possum in Mowen 02.
- **Bold** = Threatened
- **Bold and Italic** + EPBC Species checked by Forestcheck

Source: Department of Parks and Wildlife Desktop fauna surveys, Mowen 01 and Mowen 02.

Explanatory Notes of Table Headings etc.

Conservation Status	CR - Critically Endangered (Declared Threatened Fauna) - considered to be facing an extremely high risk of extinction in the wild.
	EN - Endangered (Declared Threatened Fauna) - considered to be facing a very high risk of extinction in the wild.
	VU - Vulnerable (Declared Threatened Fauna) - considered to be facing a high risk of extinction in the wild.
	X - Presumed Extinct (Declared Threatened Fauna)
	S - Specially Protected Fauna
	D - Conservation Dependent Fauna (also ranked as P5)
	P1 - Priority 1 Fauna (See below for explanation)
	P2 - Priority 2 Fauna
	P3 - Priority 3 Fauna
	P4 - Priority 4 Fauna
P5 - Priority 5 Fauna	
Timber 'Harvest' (Area)	Harvesting Sensitive Species not all included on above lists
Likelihood Score	A probability rating on occurrence in a Fauna Habitat Type
	High (H) = High probability of species occurrence in the Fauna Habitat Type
	Moderate (M) = Moderate probability of species occurrence in the Fauna Habitat Type
	Low (L) = Species could possibly occur in the Fauna Habitat Type
PRIORITY CODES	
Priority One: Poorly-known species	
Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.	
Priority Two: Poorly-known species	
Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.	
Priority Three: Poorly-known species	
Species that are known from several locations, and the species does not appear to be under imminent	

threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.

Priority Four: Rare, Near Threatened and other species in need of monitoring

(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These species are usually represented on conservation lands.

(b) Near Threatened. Species that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable.

(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

Priority Five: Conservation Dependent species

Species that are not threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years.

Source: http://www.dpaw.wa.gov.au/images/documents/plants-animals/threatened-species/Listings/Conservation_code_definitions.pdf

Attachment 3: Jarrah log production 2001-02 - 2013-14

(compiled by Beth Schultz, December 2014 based on *FPC Annual Reports 2001-2 to 2013-14*).

Jarrah log production (m³)

Year	High quality sawlogs	1 st and 2 nd grade sawlogs	Bole sawlogs	Other sawlogs	Total sawlogs	Firewood logs ¹	Charcoal logs ¹	Total fuelwood logs	Total logs
2001-02	3,917	241,116	98	18,226	263,357	39,430	36,822	76,252	339,609
2002-03	1,439	162,527	11,576	11,917	187,459	34,773	53,731	88,504	275,963
2003-04	1,130	123,830	14,725	17,898	157,583	43,526	46,917	90,443	248,026
2004-05	418	108,952	17,978	23,303	150,651	53,680	61,436	115,116	265,767
2005-06	929	117,559	25,368	17,584	161,440	69,903	61,194	131,097	292,537
2006-07	794	91,521	15,389	16,213	123,917	41,258	66,279	107,537	231,454
2007-08	1,156	128,730	25,532	35,754	191,172	38,384	67,745	106,129	297,301
2008-09	535	89,974	36,421	20,229	147,149	54,327	73,539	127,866	275,015
2009-10	633	53,534	68,924	11,100	134,191	50,070	54,551	104,621	238,812
2010-11	599	34,722	49,303	9,427	94,051	49,478	94,971	144,449	238,500
2011-12	841	41,693	71,000	17,036	130,570	44,163	117,240	161,403	291,973
2012-13	843	33,955	94,260	18,487	147,545	55,026	84,140	139,166	286,711
2013-14	552	910	78,143	1,288	80,893	71,819	64,412	136,231	217,124

Average annual allowable cut of jarrah logs:

Forest Management Plan

1st and 2nd grade sawlogs:

Bole logs other than 1st and 2nd grade sawlogs: 534,000 m³

Total jarrah logs:

2004-2013

131,000 m³

665,000 m³

2014-2023

132,000 to 160,000 m³

292,000 to 521,000 m³

424,000 to 681,000 m³

Jarrah log production (tonnes)

Year	High quality sawlogs	1 st and 2 nd grade sawlogs	Bole sawlogs	Other sawlogs	Total sawlogs	Firewood logs	Charcoal logs	Total fuelwood logs	Total logs
2001-02	5,116	317,069	129	22,599	344,913	48,893	45,659	94,552	439,465
2002-03	1,865	213,723	15,222	14,778	245,599	43,119	66,627	109,746	355,345
2003-04	1,415	162,836	19,364	22,192	206,807	53,972	58,127	112,099	318,906
2004-05	518	143,272	23,640	28,896	196,326	66,563	76,181	142,744	339,070
2005-06	1,152	154,589	33,359	21,805	210,905	86,680	75,981	162,661	373,566
2006-07	984	120,351	20,237	20,105	161,677	51,160	82,186	133,346	295,023
2007-08	1,433	169,280	33,575	44,334	248,622	47,998	84,004	132,002	380,624
2008-09	664	118,315	47,880	25,083	191,942	67,366	91,188	158,554	350,496
2009-10	786	79,397	90,635	13,764	175,582	62,087	67,643	129,730	305,312
2010-11	742	45,658	64,834	11,690	122,924	61,353	117,764	179,117	302,041
2011-12	1,042	54,825	93,362	21,124	170,353	54,762	145,378	200,140	370,493
2012-13	1,045	44,651	123,952	22,924	192,572	62,032	104,334	166,366	358,938
2013-14	684	1,197	100,804	1,598	104,283	89,056	79,871	168,927	273,210

Average annual allowable cut of jarrah logs:

Forest Management Plan

1st and 2nd grade sawlogs:

Bole logs other than 1st and 2nd grade sawlogs: 662,000 tonnes

Total jarrah logs:

2004-2013

170,000 tonnes 171,600 to 208,000 tonnes

832,000 tonnes

533,680 to 854,000 tonnes

2014-2023

171,600 to 208,000 tonnes

362,080 to 646,000 tonnes

854,000 tonnes

Sources: *Forest Products Commission Annual Reports 2001-02 – 2013-14*

Endnotes

- ⁱ Incomplete guidelines, surveys and events that are relevant to the logging of Mowen Forest include: Goals for Understorey Structural Diversity, due 31 December 2005, now due 30 June 2016; Department of Parks and Wildlife FORM, FEM016 Checking of disturbance activities, last updated 28 August, 2013; Department of Parks and Wildlife Indigenous Heritage Management Guidelines; comprehensive heritage survey to be conducted by Wardandi elders; on-ground fauna survey; comprehensive cost-benefit analysis of logging Mowen Forest; meeting between SMF and Forestry Minister, Mia Davies.
- ⁱⁱ Department of the Environment 2014, *Calyptorhynchus baudinii* in Species Profile and Threats Database, Department of the Environment, Canberra. Accessed at: http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=769 [25 October 2014].
- ⁱⁱⁱ Department of the Environment 2014, *Calyptorhynchus banksii naso* in Species Profile and Threats Database, Department of the Environment, Canberra. Accessed at: http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=67034 [25 October 2014].
- ^{iv} Department of the Environment 2014, *Geocrinia vitellina* in Species Profile and Threats Database, Department of the Environment, Canberra. Accessed at: http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=26172 [25 October 2014].
- ^v Rhind, S. G. 2004, Direct impacts of logging and forest management on the brush-tailed phascogale *Phascogale tapoatafa* and other arboreal marsupials in a jarrah forest of Western Australia in D. Lunney (ed.), *Conservation of Australia's Forest Fauna (second edition)*, Royal Zoological Society of New South Wales, Sydney.
- ^{vi} Burnham, Q., Koenders, A., and Horwitz, P. 2012, The status of the critically endangered freshwater crayfish *Engaewa pseudoreducta* (Crustacea: Parastacidae) in south-western Australia, *Records of the Western Australian Museum*, vol.45, iss. 54, pp.45-54.
- ^{vii} Lindenmayer, D.B. and Gibbons. P. 2004, On charcoal, the increased intensity of logging and a flawed Environmental Assessment process in D. Lunney (ed.), *Conservation of Australia's Forest Fauna (second edition)*, Royal Zoological Society of New South Wales, Sydney;
- ^{viii} Garnett, S. (ed.) 1992, *Threatened and Extinct Birds of Australia 1992*, Royal Australasian Ornithologists Union, Australian National Parks and Wildlife Service. RAOU Report 82 shows that forestry operations are identified as possibly the main threat to forest red-tailed black cockatoos.
- ^{ix} Department of the Environment 2014, *Pseudocheirus occidentalis* in Species Profile and Threats Database, Department of the Environment, Canberra. Accessed at: http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=25911 [25 October 2014]. See also Gatry, L. 2014, Western ring tailed possum now on endangered species list, *ABC News online*. Accessed at: <http://www.abc.net.au/news/2014-12-16/western-ringtail-possum-now-on-endangered-list/5971646> [16 December 2014].
- ^x On 1 December 2014, a Department of Parks and Wildlife representative was finalizing the dieback survey review for FPC in Mowen One. He said that an estimated 75% of Mowen One is infested with dieback.
- ^{xi} Intergovernmental Panel on Climate Change 2014, *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
- ^{xii} Breatly, A 2013, *Revisiting the Blackwood River and Hardy Inlet - 40 years of change. An environmental review of the Blackwood River estuary Western Australia*, Ernest Hodgkin Trust for Estuary Education and Research.

^{xiii} Andrigh, M. A., & Imberger, J. 2013, The effect of land clearing on rainfall and fresh water resources in Western Australia: a multi-functional sustainability analysis. *International Journal of Sustainable Development & World Ecology*, vol.20 ,iss.6, pp.549-563.

^{xiv} Stephenson, N. L., Das, A. J., Condit, R., Russo, S. E., Baker, P. J., Beckman, N. G., ... and Zavala, M. A. 2014, Rate of tree carbon accumulation increases continuously with tree size, *Nature*, vol.507, iss.7490, pp.90-93.

^{xv} Pan, Y., Birdsey, R. A., Fang, J., Houghton, R., Kauppi, P. E., Kurz, W. A., ... and Hayes, D. (2011). A large and persistent carbon sink in the world's forests, *Science*, vol.333, iss.6045, pp.988-993.

^{xvi} The WA Government has not disclosed its anticipated income from the sale of jarrah for charcoal, firewood and sawdust, nor the anticipated yield or income from marri.

^{xvii} Parliament of Western Australia 2014, *Question On Notice No. 1483 asked in the Legislative Council on 19 August 2014 by Hon Lynn Maclaren. Question Directed to the: Minister for Agriculture and Food representing the Minister for Forestry. Minister responding: Hon M.J. Davies.* Accessed at:

<http://www.parliament.wa.gov.au/parliament/pquest.nsf/3b051e205914713c4825718e00186cc2/996da6257fc6e87c48257d39001ea914?OpenDocument> [10 November 2014].

^{xviii} Parliament of Western Australia 2014, *Question On Notice No. 1459 asked in the Legislative Council on 14 August 2014 by Hon Lynn Maclaren. Question Directed to the: Minister for Agriculture and Food representing the Minister for Forestry. Minister responding: Hon M.J. Davies.* Accessed at:

<http://www.parliament.wa.gov.au/parliament/pquest.nsf/3b051e205914713c4825718e00186cc2/980c821f4a4554fa48257d34001976c8?OpenDocument> [10 November 2014].

^{xix} Parliament of Western Australia 2014, *Question On Notice No. 1458 asked in the Legislative Council on 14 August 2014 by Hon Lynn Maclaren. Question Directed to the: Minister for Agriculture and Food representing the Minister for Forestry. Minister responding: Hon M.J. Davies.* Accessed at:

<http://www.parliament.wa.gov.au/parliament/pquest.nsf/3b051e205914713c4825718e00186cc2/8c2d4d8d64336b1548257d34001975f5?OpenDocument> [10 November 2014].

^{xx} WA Government has not disclosed significant costs of logging Mowen Forest including stakeholder liaison, production of Coupe Base Map, development of Hygiene Management Plan, development of Traffic Management Plan, production of plot map, initiation of an informal reserve, amendment request, development of Basic Raw Material Pit Management Plan, development of Coupe Concept Plan, completion of a Planning Checklist for Disturbance Activities for implementation and approval (DECSFM019), traditional owner consultation, dieback demarcation, road access planning, old-growth forest assessment, old-growth forest boundary demarcation, coupe demarcation, fallers block level plan, basic raw material pit development, road construction and maintenance, and treemarking for retention.

^{xxi} This figure was shared in correspondence from the Margaret River Offroad Cycle Association.

^{xxii} Some media stories regarding the logging of Mowen Forest include:

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^{xxiii} Please see <http://mrrec.org.au/mowen.html>