Form

Referral of a proposal under s. 38 of the EP Act

PART A: PROPONENT AND REFERRER INFORMATION AND PROPOSAL DESCRIPTION			
Referrer information			
Who is referring this proposal?		☐ Proponent ☐ Decision-making authority ✓ Community member/third party	
Name (print) Dr Hugh Finn		**Signature** Hugh Finn Digitally signed by Hugh Finn Date: 2022.06.01 21:13:08 +08'00'	
Position	Lecturer	Organisation	Curtin University
Email	h.finn@curtin.edu.au	Phone	(08) 9266 4553
Address	GPO Box U1987	Curtin Law School, Curtin University	
	Perth	WA	6845
Date	1 June 2022		
Does the referrer request that the EPA treat any part of the proposal information in the referral as confidential? *Provide confidential information in a separate attachment.*		☐ Yes ■ No	
Does the referrer confirm that they consent to receive correspondence electronically?		■ Yes ☐ No	
Referral declaration for proponent and Authorised representative: I, ……. declare that I am authorised to refer this proposal on behalf of ……and further declare that the information contained in this form is true and not misleading. Date:			
Proponent information			
Name of the proponent/s *Include Trading Name if relevant*		This proposal is being referred by a person that is not a proponent to the proposal, pursuant to section 38(1) of the *Environmental Protection Act 1986.* Section 3 of that Act defines a 'proponent', in a relation to a proposal, as 'the person who or which is responsible for the proposal, or the public authority on which the responsibility for the proposal is imposed under another written law'.	

	The persons and public authorities below are set out as the possible proponent (or proponents), with a brief basis for why that person/public authority may be a proponent. Possible proponents **Director General, Department of Biodiversity, Conservation and Attractions**, noting the functions of the CEO under section 33 of the *Conservation and Land Management Act 1984* and the status of the Department as: *(a) the responsible body for managing the State Forest land in which the proposal is located* *(b) a statutory body involved in, or responsible for, the preparation of a management plan for the State Forest land in which the proposal is located* *(c) the decision-making authority that is to ensure all harvesting on State Forest land is carried out in accordance with applicable statutory environmental requirements and therefore obligated under section 38 of the Environmental Protection Act 1986 to refer a proposal to the EPA as soon as it has notice of the proposal if the proposal appears to it to be a significant proposal* *(d) the responsible agency for all activities for State Forest plantation areas that are unavailable for harvesting (see Sustainable Forest Management Framework – Native Forest and Plantations - Table 1: 'Roles and responsibilities of Government agencies for managing areas within the FPC's DFA').* **Director General, Department of Water and Environmental Regulation** noting the status of the Department as: *the statutory body responsible for managing the Gnangara groundwater system* **Forest Products Commission**, as: *(a) a statutory body responsible in relation to harvesting operations for pine and pine replanting on the State Forest land in which the proposal is located, and having harvesting rights to the land for the period that commercial pine is present* *(b) a person concerned with the implementation of the proposal, and doing acts to implement the proposal*

	Conservation and Parks Commission, as: *the statutory body that has vested in it the State Forest land in which the proposal is located* **Minister for Environment** **Minister for Forestry** **Minister for Water**
Australian Company Number(s) ☐ **OR** Australian Business Number(s) ☐	
Pre-referral discussions	
Have you had pre-referral discussions with the EPA (including the EPA Services of DWER)? *If so, provide name, date, and overview of discussions.*	☐ Yes ✓ No
Proposal information	
Proposal name	Change of land use, purpose and condition of land within the Gnangara, Pinjar and Yanchep pine plantations (Gnangara-Moore River State Forest, State Forest 65).
What is the proposal? (Include general description in the *Instructions and template: How to identify the content of a proposal)*	1. For reasons set out below, the proposal described in this referral document: a. constitutes a project, undertaking, development, change in land use, policy, plan, and/or programme that falls within the meaning of 'proposal' in section 3 of the *Environmental Protection Act 1986*; b. proposes to use or alter the condition of the land or the environment in a way that is capable of being a 'significant proposal' within the meaning of section 37B of the *Environmental Protection Act 1986*; c. is sufficiently specific to enable its likely effect on the environment, if implemented, to be assessed; d. has a likely effect on the environment that, if implemented, can be categorised as 'significant'; and e. is a proposal which can now be referred to the EPA for assessment under section 38 of the *Environmental Protection Act 1986*. 2. This proposal involves a change in land use, purpose and condition of land

	within the Gnangara, Pinjar and Yanchep pine plantations, which are located within State Forest 65 (Gnangara-Moore River State Forest). 3. Much of the proposal has already been implemented – as at October 2021, 16 530 ha of the land within the Gnangara, Pinjar and Yanchep pine plantations was classified as 'fallow land', having been completely harvested of pine, as indicated in the figure *Defined Forest and Plantation Areas - Map 1 of 5* (Forest Management Branch – DBCA, October 2021) [link]. This is 72% of the original 23 000 ha extent of the Gnangara, Pinjar and Yanchep pine plantations. 4. As most of the proposal has already been implemented, the environmental impact of the proposal has occurred, and is occurring. 5. It is my understanding that, as at October 2021, c. 3000-4000 ha of mature pine remained to be harvested. This is 13-17% of the original 23 000 ha extent of the Gnangara, Pinjar and Yanchep pine plantations. 6. The Gnangara Mound Harvest Plan 2022/23, dated 5 May 2022 [see Supplementary Materials], indicates a harvest plan for a Clearfell of 1260 ha, and that 5923 ha of pines, remain Standing, with the rest of the plantation system classified as Fallow. 7. It is my understanding, based on the information above, that the 5922 ha 'Standing' might include: ▪ c. 2000 ha of re-planted pine over 10 years (~2008-2018) ▪ c. 3000-4000 ha effectively left to harvest 8. This loosely accords generally with the October 2021 DFA Map indicating 16 530 ha as 'Fallow', as 16 530 + 5922 = 22 452 ha. 9. With a harvest rate of 1000+ha a year, the remaining pine that is Standing and

	available for harvesting would be harvested by 2025 or 2026. 10. The proposal involves a change in the use, purpose and condition of land within the Gnangara, Pinjar and Yanchep pine plantations from commercial pine plantation managed for purpose of timber production to a combination of new uses, purposes and conditions, but principally to a state of 'fallow land'. 11. The ultimate combination of new uses, purposes and conditions for land within Gnangara, Pinjar and Yanchep pine plantations may be determined, at least in part, through current planning for the Gnangara groundwater system. 12. The Strategic Assessment of the Perth and Peel Regions is also a potential relevant process – however, in 2020 the State Government announced that the process has indefinitely deferred. The draft Impact Assessment Report and public submissions are 6+ years old. As discussed in the Supplementary Information, the EPA should decide to assess the proposal, and not allow a State Government proponent to use the Strategic Assessment of the Perth and Peel Regions as a reason not to refer (or a ground to withdraw the proposal). 13. The extended timeframe for Gnangara groundwater system planning and implementation and the indefinite deferral of the Strategic Assessment of the Perth and Peel Regions should not be used as reasons to delay the referral of this proposal or defer the assessment of this proposal. 14. The change in the use, purpose and condition of land within the Gnangara, Pinjar and Yanchep pine plantations occurs through a. the progressive harvesting of pine without replanting; and b. post-harvesting land management. 15. This change in the use, purpose and condition of land: a. was implemented in the early 2000s; and

	b. is on-going, such that all remaining mature pine in the Gnangara, Pinjar and Yanchep pine plantations will be removed by 2025/2026. 16. This change in land use, purpose and condition has occurred without relevant change to the formal status of the land. For example, there has been continued tenure of land as State Forest, and no change to the formal description of the purpose, or combination of purposes, for which the land is reserved. 17. The pine plantations were established on the land between 1932 and 1994 for the purpose of timber production. In 1996, the State Government proposed a change in the use, purpose and condition of land in the Gnangara, Pinjar and Yanchep pine plantations in State Forest 65 (link). 18. Since the early 2000s, the land management approach for the Gnangara, Pinjar and Yanchep pine plantations in State Forest 65 has been to harvest pine without replanting (except for c. 2000 ha of pines replanted over 10 years [~2008-2018] and limited native vegetation replanting including c. 500 ha near Yanchep), so that the harvested (clearfelled) areas convert to fallow land. 19. This change in the use, purpose and condition of land in the Gnangara, Pinjar and Yanchep pine plantations has never been referred to the EPA for assessment under Part IV of the *Environmental Protection Act 1986* as a 'significant proposal'. 20. Further, the EPA has never considered the full environmental impact of the proposal in any previous assessment, including the EPA's assessments of: a. the 2004-2013 or the 2014-2023 *Forest Management Plan* proposals; and b. proposals relating to Gnangara groundwater resources. 21. The *Gnangara Groundwater Allocation Plan: Draft for Public Comment* and *Gnangara Groundwater Allocation Plan:*

	Draft Methods Report (link), released for public consultation in November 2021, indicate that: a. the Department of Water and Environmental Regulation, the Department of Biodiversity, Conservation and Attractions, and the Forest Products Commission are examining post-harvest land use options for the 23,000 hectares of pine and ex-pine plantations in the Gnangara, Pinjar and Yanchep pine plantations; and b. this work anticipates a change in land use and condition to a land use involving a mixture of replanted pines, pine wildings (pine trees that regrow naturally), low native shrubs and grassland, and *Banksia* and other native revegetation areas. 22. Figure 5 in the *Draft Methods Report* (see pages 9-10) shows the 'likely mix of post-harvest land use in the Gnangara, Pinjar and Yanchep pine plantations' to include: a. areas where pines have been replanted to provide habitat and food for Carnaby's Cockatoos/Ngolyenok; b. the Dick Perry Reserve, which is being retained for its old growth pines and for recreational purposes; c. areas where a mix of pine wildings, open *Banksia* woodland and low native shrub and grassland will be managed to provide habitat and food for Carnaby's Cockatoos/Ngolyenok while maximising groundwater recharge, especially in the priority recharge areas (to the east of the North Wanneroo horticultural precinct; to the east of Lake Pinjar; to the north of Whiteman Park); and d. urban and industrial investigation areas as outlined in the Perth and Peel@3.5 million land use planning and infrastructure frameworks. 23. This proposal is currently being implemented, and involves an on-going activity, causing a change in land use and condition, based on a management approach of clearfell harvesting of mature pine trees and converting harvested areas to fallow land. This change of land use and condition occurs – and has a significant effect on the environment – even if the ultimate land use and condition for a particular

	harvested area will be determined at a later time. 24. As such, this proposal is not a proposal that merely sets out a plan for future uses of the land or designates land for a possible use at some time in the future (but which causes no current change to the condition of the land), on the basis that – at some time in the future – a proponent will develop a proposal or proposals to be referred to the EPA for assessment under the *Environmental Protection Act 1986*. 25. As indicated above, this proposal has not been previously fully assessed by the EPA. Previous consideration of the pine plantations within the Gnangara, Pinjar and Yanchep pine plantations in EPA Bulletin 295 (August 1987) (and Condition 6 in Ministerial Statement 21, 8 March 1988) and EPA Report No 904 (*Groundwater resource allocation, East Gnangara*) has not addressed the effect on the environment of the complete removal of pine from all 23,000 ha and the conversion of most of the land to a 'fallow land' use. 26. The proposal, and the current surrounding circumstances that attend the proposal and its environmental impact, are also relevantly different than the situation considered by the EPA for the Gnangara, Pinjar and Yanchep pine plantations in the section 16(j) advice published in *EPA Advice: Carnaby's Cockatoo in Environmental Impact Assessment in the Perth and Peel Region* (May 2019). 27. The *Forest Management Plan 2014-2023* does not address the environmental impact of the proposal. The Plan only states, in a context of maintaining forest area, that: 'Some plantation areas are also important for public recreation and provide an important food source for some native fauna (for example, for Carnaby's cockatoo)' (page 84). 28. The EPA did not consider the environmental impact of the proposal in the assessment of the *Forest*

	Management Plan 2014-2023: *Report and recommendations of the Environmental Protection Authority: Proposed Forest Management Plan 2014-2023* (Report 1483, July 2013). 29. The environmental impact of the proposal was also not addressed in the *Forest Management Plan 2014-2023 Mid-term Review of Performance Report*, although the report notes the presence of 'fallow land at Gnangara that is no longer available to be planted with pines but remains classified as plantation land' (page 48) and discusses evidence of a population decline for Carnaby's Cockatoos/Ngolyenok in the Perth-Peel region. 30. The *Draft Forest Management Plan 2014 – 2023* did refer to 'issues related to the protection of Carnaby's cockatoo, including the progressive removal of the Gnangara, Pinjar and Yanchep pine plantations and subsequent rehabilitation and land use in these areas' (page 31) – however, that text was not retained in the *Proposed Forest Management Plan 2014-2023*. 31. The validity of information from the Strategic Assessment of the Perth and Peel Regions is discussed further in the Supplementary Materials. However, relevantly, since April 2016, the State Government has failed to perform its obligations under clause 7.4 of the section 146(1) agreement with the Commonwealth to prepare a revised draft Impact Assessment Report or a supplementary report to the draft Impact Assessment Report, taking account of the comments received. 32. As a consequence, the State Government has not prepared, and submitted to the Commonwealth Environment Minister, the MNES Plan, and the Final Report, comprised of the revised draft Impact Assessment Report (or the draft impact assessment report and a supplementary report), public responses relating to the draft Impact Assessment Report, and comments on how the public responses

<table>
<tr><td colspan="2"></td><td>have been taken into account in the final impact assessment report.</td></tr>
<tr><td colspan="2">Have you provided electronic spatial data, maps, and figures in the appropriate format?</td><td>✓ Yes
☐ No</td></tr>
<tr><td>What type of proposal is being referred?

For significant amendment or derived proposal, provide the associated existing Ministerial statement number/s

For a proposal under an assessed planning scheme, provide the scheme number and name</td><td colspan="2">✓ significant proposal. Choose which type of significant proposal
✓ new proposal
☐ significant amendment (proposal only)
☐ significant amendment (conditions only)
☐ significant amendment (proposal and conditions)
☐ strategic proposal
☐ derived proposal
☐ proposals of a prescribed class
☐ proposal under an assessed planning scheme</td></tr>
<tr><td colspan="3">Proposal content: Complete the corresponding template (Proposal Content Document) from the Instructions and template: How to identify the content of a proposal for the type of proposal identified above. The completed form must be submitted with the referral.</td></tr>
</table>

Alternatives	1. The EPA instructions for proposal alternatives is: 'To the extent reasonably practicable, describe any feasible alternatives to the proposal, including a comparative description of the environmental impacts of each alternative, and sufficient detail to make it clear why any alternative is preferred to another.' 2. Regarding alternatives, several points must be made. 3. First, consideration of alternatives must occur through the application of the mitigation hierarchy to the proposal, and thus to the measures that the proponent can take to avoid, reduce or rehabilitate the environmental impact of the proposal or as measures that offset residual impacts. 4. Second, the mitigation hierarchy must be applied to the direct, indirect and cumulative impacts of the loss of c. 20 000 ha+ of feeding habitat. 5. The proponents – by continuing to implement the proposal across two decades without a Part IV implementation decision – have fundamentally altered the environment (land within the Gnangara, Pinjar and Yanchep plantations in State Forest 65) to which the proposal relates. 6. The proponents cannot now rely on the altered condition of that environment as a reason to avoid the proper application of the mitigation hierarchy in relation to the direct, indirect and cumulative impacts of the loss of c. 20 000 ha+ of feeding habitat, and the proper assessment of residual impacts and determination of their significance. 7. It is similarly self-serving for the proponents to use competing environmental objectives for the Gnangara as a reason to avoid a proper application of the mitigation hierarchy and proper assessment of residual impacts and determination of their significance. 8. It is also self-serving – in circumstances where the proponents have continued to implement the proposal across two decades without a Part IV implementation decision – for the proponents to use conservation actions implemented outside of the Gnangara, Pinjar and Yanchep plantations in State Forest 65 as mitigation measures for the removal of pine. Part IV of the *Environmental Protection Act 1986* functions as a vital check and balance on the power of State Government proponents precisely because the Part IV assessment and approval process provides a transparent, independent and publicly accountable way to evaluate the proper application of the mitigation hierarchy to a proposal and the proper assessment of residual impacts and determination of their significance. As regards offsets for residual impacts, the Part IV process allows for proper consideration of the additionality and integrity of proposed offsets – see Supporting Document 6 (*Threatened Species Recovery Hub – Better Offsets for WA Black Cockatoos Findings Factsheet*) and Brooke Richards,

	Miriam Sullivan, and Petr R. Mawson. (2020). A case study of environmental offsets for the endangered Carnaby's cockatoo (Calyptorhynchus latirostris). 26(3) *Pacific Conservation Biology* 269-281: https://doi.org/10.1071/PC19038. 9. The following measures represent actions that are alternatives to the proposal: a. **Immediate cessation of harvesting** within the Gnangara, Pinjar and Yanchep pine plantations in State Forest 65; b. **Alternative softwood supply measures**, including sourcing of softwood from other plantations, paying penalties/damages to Wesbeam, and re-negotiating Wesbeam agreement; c. If further harvesting occurs, a **moratorium on harvesting** until food plants established through rehabilitation, replanting and revegetation measures or emergent from fallow areas have matured and provide food sources for Carnaby's Cockatoos/ Ngolyenok; d. A **moratorium on the clearing on *Banksia* woodland, *Banksia sessilis* thickets, and other native vegetation habitats** for Carnaby's Cockatoos/Ngolyenok while revegetation actions are implemented and allowed to mature, with the moratorium to extend for least 20km beyond the Gnangara, Pinjar and Yanchep pine plantations in State Forest 65; e. **Replanting of pine to at least 5000 ha**, within the Gnangara, Pinjar and Yanchep pine plantations in State Forest 65, or surrounds; f. **Planting of native vegetation to achieve a net gain of habitat** within the Gnangara, Pinjar and Yanchep pine plantations in State Forest 65 and surrounds, to provide food sources for Carnaby's Cockatoos/ Ngolyenok, and habitat and ecological linkages for other native fauna, with consideration of additionality, best practice revegetation measures, and a redundancy factor, to ensure an actual net gain of habitat and with on-going monitoring to ensure vegetation persists; g. **Sympathetic post-harvesting land management of priority groundwater recharge areas** to allow for pine wildings, as well as Marri, Jarrah, *Banksia* spp., and other appropriate native vegetation; h. **Addition of all existing *Banksia* woodland in the northern Swan Coastal Plan to the conservation estate**, noting that the conservation status of the Banksia Woodlands of the Swan Coastal Plain ecological community and the significance of these

	woodlands as feeding habitat for Carnaby's Cockatoos/ Ngolyenok. *Gnangara Groundwater Allocation Plan* 10. Figure 5 in the *Draft Gnangara groundwater allocation plan - methods report* (link) (November 2021) states that represents 'the likely mix of post-harvest land use in the Gnangara, Pinjar and Yanchep pine plantations'. 11. As discussed in the Supplementary Information, although it is advantageous that assessment of the proposal will overlap with the planning process for Gnangara groundwater allocation plan and open for the EPA to have regard to that process and to the potential for the Gnangara groundwater allocation plan's implementation conditions – as things the proponent (the Department of Water and Environmental Regulation) of the assessed plan can be required to do, to mitigate impacts of the change in land use, purpose and condition on Carnaby's Cockatoos/Ngolyenok – the EPA must decide to assess the proposal to change the land use, purpose and condition, as a stand-alone significant proposal and with an appropriate proponent. 12. This is necessary to ensure that mitigation of the impact of pine removal on Carnaby's Cockatoos/Ngolyenok is properly and fully assessed, including the identification and evaluation of residual impacts) and the preparation of advice and recommendations for the implementation of measures to address residual impacts that extend beyond the scope of the Gnangara groundwater allocation plan and the land to which the Gnangara groundwater allocation plan relates. 13. The *Gnangara groundwater allocation plan: draft for public comment* (link) set out groundwater level objectives to protect important groundwater-dependent ecosystems, such as wetlands and bushland areas, and outcomes that the Department of Water and Environmental Regulation expects to see from implementing the plan. 14. The four proposed outcomes do not includes outcomes that support the mitigation of the impact of pine removal on Carnaby's Cockatoos/Ngolyenok or implementation of measures to address residual impacts: 1) Groundwater abstraction from the Gnangara groundwater system is reduced to be more secure and sustainable in the long term. 2) Perth's unique groundwater-dependent wetlands and bushlands are healthier and more resilient to climate change. 3) Groundwater users and state and local government are optimising how the Gnangara groundwater system is used for water supply, storage and reuse.

	4) Groundwater users, infrastructure and the environment are safer from deteriorating water quality. 15. To meet the plan's proposed water resource objectives, four main strategies are proposed – these strategies also do not support the mitigation of the impact of pine removal on Carnaby's Cockatoos/Ngolyenok or implementation of measures to address residual impacts: 1) Reduce groundwater abstraction over the next decade 2) Encourage efficient use of water, water trading and where appropriate alternative water source options 3) Set aside water for the future strategic needs of Perth where it is available and appropriate to do so 4) Use our monitoring network to review our management 16. The statutory responsibilities of the Department of Water and Environmental Regulation relate to the management resources, and there are intrinsic conflict between the Department's statutory functions and duties on the one hand and the management of land within the Gnangara, Pinjar and Yanchep plantations in State Forest 65 to meet conservation objectives for Carnaby's Cockatoos/Ngolyenok on the other hand. Similarly, the Department's statutory responsibilities do not encompass, or extend to, mitigation of the impact of pine removal on Carnaby's Cockatoos/Ngolyenok or implementation of measures to address residual impacts. 17. The Department of Water and Environmental Regulation is responsible for managing the State's water resources of, including the Gnangara groundwater system, consistent with the objects of the *Rights in Water and Irrigation Act 1914*, which are to a To provide for the management of water resources, and in particular – i. for their sustainable use and development to meet the needs of current and future users ii. for the protection of their ecosystems and the environment in which water resources are situated, including by the regulation of activities detrimental to them. b To promote the orderly, equitable and efficient use of water resources. 18. The functions and powers of the Minister for Water are also focused on water resources, and are at conflict with, or do not clearly extend to mitigation of the impact of pine removal on Carnaby's Cockatoos/Ngolyenok or implementation of measures to address residual impacts.

	19. Under the *Water Agencies (Powers) Act 1984* the Minister for Water has the general functions and powers to conserve, protect and manage the state's water resources by assessing and planning for the use of water resources.

PART B: ASSESSMENT OF ENVIRONMENTAL IMPACTS

Environmental factors

What are the likely significant environmental factors for this proposal?	☐ Benthic Communities and Habitat ☐ Coastal Processes ☐ Marine Environmental Quality ☐ Marine Fauna ☐ Flora and Vegetation ☐ Landforms ☐ Subterranean Fauna ☐ Terrestrial Environmental Quality ✓ Terrestrial Fauna ☐ Inland Waters ☐ Air Quality ☐ Greenhouse Gas Emissions ☐ Social Surroundings ☐ Human Health

*For **each** of the environmental factors identified above, complete the following table, or provide the information in a supplementary report*

Potential environmental impacts – for each environmental factor

1	**EPA policy and guidance**	▪ *Environmental Factor Guideline: Terrestrial Fauna* ▪ *EPA Advice: Carnaby's Cockatoo in Environmental Impact Assessment in the Perth and Peel Region*
2	**Receiving environment**	1. The Gnangara, Pinjar and Yanchep pine plantations are being progressively harvested of pine, without replanting. 2. Most of the plantation system is now classified as 'fallow ground', as indicated in the figure *Defined Forest and Plantation Areas - Map 1 of 5* (Forest Management Branch – DBCA, October 2021) [link].

3	**Likely environmental impacts**	1. Carnaby's Cockatoos/Ngolyenok *(Calyptorhynchus latirostris)* (are listed as Endangered under the *Biodiversity Conservation Act 2016* (WA) (*Wildlife Conservation (Specially Protected Fauna) Notice 2018*, schedule 2) and as Endangered under the *Environement Protection and Biodiversity Conservation Act 1999* (Cth). 2. The significance of pine in the Gnangara, Pinjar and Yanchep pine plantations as a food resource for Carnaby's Cockatoos/Ngolyenok is well recognised (Finn et al. 2009 link; Stock et al. 2013 link; Government of Western Australia 2015 link; any of the Great Cocky Counts; Williams et al. 2016 link; Williams et al. 2017 link; Shephard and Warren 2018 link; EPA 2019; Etten et al. 2020 link). 3. The proposal will have a **direct impact** on Carnaby's Cockatoo/Ngolyenok by removing a food source, and by removing roosting habitat. Land that is converted to grassland or low water use vegetation cover areas will provide no feeding or roosting habitat for Carnaby's Cockatoos/Ngolyenok and will contain little native vegetation habitat for other native species. 4. The environmental impact of the proposal must be seen within the **local and regional cumulative impact** of extensive clearing of native vegetation feeding habitat, notably *Banksia* woodlands. As noted in Ritchie et al. (2021) link: *'By 2016, between 50 and 60% of the original extent of the [Banksia] woodlands had been cleared (Fig. 1a) (Commonwealth of Australia 2016a). Decline in BWs extent is most profound in the Perth metropolitan area with 72% estimated to have been cleared (Commonwealth of Australia 2016a link). Current rates of clearing are estimated at 0.34% loss (by area) per year overall, but are much greater in the Perth metropolitan area, at ~1.2% annually (Commonwealth of Australia 2016a). In addition to clearing, much remaining BWs bushland in the metropolitan area is now highly fragmented (Fig. 1) and degraded' (page 54).*

		5. The **regional and population-level cumulative impact** also includes loss of breeding habitat (hollows) and associated feeding habitat near nest sites: *Carnaby's Cockatoo (Calyptorhynchus latirostris) Recovery Plan* (October 2013 link). 6. In terms of the direct impact of removing a food source for Carnaby's Cockatoos/Ngolyenok, the proposal is closest to the 'Maximum Water' scenario modelled by Williams et al. (2017) in their use of a daily ration model and integration of population viability analysis (PVA) with alternative scenarios of potential resource change to evaluate the effects of foraging habitat loss on the population size and viability of Carnaby's Cockatoo/ Ngolyenok in the Perth–Peel region. However, that scenario was based on an assumption of 5000 ha of 'new pine plantations' (Table 3). In that context, the ability of Carnaby's Cockatoos/ Ngolyenok to use alternative food sources (such as 'new pine plantations') must be considered in light of the findings from Shepherd and Warren (2018), who studied the movement patterns of Carnaby's Cockatoos/ Ngolyenok within the Gnangara, Pinjar and Yanchep pine plantations using GPS and satellite tag data. 7. Outputs for the Williams et al. (2017) PVA included: a. projected carrying capacity; b. expected minimum abundance; c. mean population size of Carnaby's Cockatoo/Ngolyenok at 2050 in the Perth–Peel region; and d. the probability of a decline of 50% or more during 2001–2050, under Changes relative to the initial estimates (i.e. carrying capacity of 12,453 and population size of 8000 birds). 8. Outputs for the 'Maximum Water' scenario were: a. projected carrying capacity – **5624 birds (−55%)**; b. expected minimum abundance – **3012 birds (−62%)**;

		c. mean population size of Carnaby's Cockatoo/Ngolyenok at 2050 in the Perth–Peel region – **3550 birds (−56%)**; and d. the probability of a decline of 50% or more during 2001–2050, under Changes relative to the initial estimates (i.e. carrying capacity of 12,453 and population size of 8000 birds) – **0.97%**. 9. Without diminishing the value of native vegetation food sources for Carnaby's Cockatoos/Ngolyenok, the carrying capacity of the pine plantations is about nine times that of Banksia woodland, and the pines provide an abundance and energetically food resource just at the end of the breeding season and for months thereafter (Williams et al. 2017).

4	**Application of the mitigation hierarchy**	1. As this proposal has not been formalised in the normal way by a proponent, comments about the application of the mitigation hierarchy for the proposal are based on recent public comments and other information available publicly. 2. Since the early 2000s, the proposal has been implemented through a land management approach for the Gnangara, Pinjar and Yanchep pine plantations in State Forrest 65 of harvesting without replanting, (except for c. 2000 ha of pines replanted between ~2008-2018) and some limited area native vegetation where native vegetation has been replanted). The Dick Perry Reserve will be retained as a stand of 150 ha of mature pines to be retained as a food source, and some wilding pines have regrown (without management intervention) in previously harvested areas. 3. This management approach of harvesting without replanting has been followed even though the State Government has recognised the impact of pine removal on Carnaby's Cockatoos/ Ngolyenok since at least the *Carnaby's Black-cockatoo (Calyptorhynchus latirostris) Recovery Plan 2002-2012*. 4. Thus, the proponents have undertaken minimal measures to **avoid** or **minimise** the environmental impact of the proposal, through retention or replanting of pine within the Gnangara, Pinjar and Yanchep pine plantations or within nearby areas on the Swan Coastal Plain that are accessible to the Carnaby's Cockatoos/Ngolyenok using the Gnangara, Pinjar and Yanchep pine food source. 5. The proponents have undertaken limited measures to **rehabilitate** land within Gnangara, Pinjar and Yanchep pine plantations by planting native vegetation food sources for Carnaby's Cockatoos/ Ngolyenok (e.g. c. 500 ha of *Banksia* food plants near Yanchep). These food sources are not immediately available – pine cones take at least 7 years before seed is available for cockatoos and

		Banksia species take 5-10 years before food is available. 6. Importantly, the proponents have not applied the mitigation hierarchy for the environmental impact of the proposal (ie removing pine from the Gnangara, Pinjar and Yanchep pine plantations in a systematic, proposal-specific way). 7. For example, statements in Parliament in May 2021 by (or on behalf of) the Minister for Forestry and the Minister for Environment indicate that, currently, the proponents: a. do not intend to address the environmental impact of the proposal through the statutory processes for preparation of management plans for State Forest land under the *Conservation and Land Management Act 1984* or the obtaining of environmental and other approvals for harvesting operations under the *Environmental Protection Act 1986* and the *Conservation and Land Management Act 1984*; but b. instead intend to address the impact of the complete removal of pine from Gnangara, Pinjar and Yanchep pine plantations as a part of general management activities for Carnaby's Cockatoos/Ngolyenok on the Swan Coastal Plan, as part of recovery efforts. 8. For example, in response to a Question on Notice asked on 6 May 2021 relating to the 'expected starvation of black cockatoos on the Swan coastal plain due to the harvest of the remaining pines in the Gnangara pine plantation', the minister representing the Minister for Forestry replied in Parliament in May 2021 that: *'Harvesting operations are managed under the provisions of the Forest management plan 2014–2023 and various subsidiary documents produced in accordance with the Conservation and Land Management Act 1984. This includes an extensive approval process through the Department of Biodiversity, Conservation and Attractions to ensure all harvesting is carried out in accordance with applicable environmental standards. Harvesting of pines occurs within a broader context of meeting obligations under state*

		agreement acts, water catchment management and conservation of threatened species. Details on the management activities in place for Carnaby's black cockatoos on the Swan coastal plain should be referred to the Minister for Environment.' [Hansard link] 9. Similarly, in response to a Question on Notice that asked 'Will the government commit to refusing to harvest the remaining Gnangara pines until such time as a sufficient amount of native feed has been planted and reached maturity to support the cockatoo population currently relying on these pines?', the minister representing the Minister for Environment replied on 13 May 2021 that: '*Further to the response from the Minister for Forestry, a number of management activities are in place for Carnaby's cockatoo on the Swan coastal plain. The Department of Biodiversity, Conservation and Attractions works with the recovery team for Carnaby's cockatoo to guide and coordinate conservation efforts. DBCA, in partnership with the WA Museum, non-government organisations including BirdLife Australia and the World Wildlife Fund, research institutions and community volunteers, is implementing actions from the recovery plan for this species to guide ongoing conservation efforts. Recovery efforts include the installation and repair of artificial nest boxes to improve breeding success, measures to reduce vehicle collisions with adult birds, rehabilitating injured cockatoos, protecting habitat, and monitoring and research to understand the movements and requirements of the species. One action of relevance to the conservation of Carnaby's cockatoo is the carbon for conservation initiative, released as part of the government's COVID-19 economic stimulus and recovery plan. One of the candidate sites identified for the carbon for conservation initiative is the northern Swan coastal plain area, including the areas of harvested pine plantation within the Gnangara state forest. DBCA has recently partnered with the Water Corporation and BirdLife Western Australia to plant 15 000 to 20 000 native plant seedlings in the Gnangara state forest each year over the past five years. This complements DBCA's ongoing annual*

		replanting program within the former pine plantation areas to create habitat for the endangered Carnaby's cockatoo and other native wildlife. DBCA will continue to explore opportunities for such partnerships to return native vegetation to the former pine plantation areas of the Gnangara state forest and create habitat for Carnaby's cockatoo and other native wildlife.' [Hansard link]

5	**Assessment and significance of residual impacts**	1. The residual impact of the proposal has, and will be, substantial, as implementation of the proposal has – as of October 2021 – involved the conversion of 16 530 ha of mature pine plantation to fallow land, and the remaining mature pine will be harvested within the next few years. 2. The ultimate residual impact of the proposal will depend on what measures the proponents take to avoid, minimise, or rehabilitate the environmental impact of the proposal. 3. The proponents cannot claim that actions taken to improve or replant feeding habitat at sites that are not accessible to Carnaby's Cockatoos/ Ngolyenok associated with the Gnangara, Pinjar and Yanchep pine plantations as measures that avoid, reduce or rehabilitate the environmental impact of the proposal or as measures that offset residual impacts. Among other issues, this practice raises serious questions about the integrity and additionality of offsets. 4. A basic principle for offsets must be that the offset benefits the birds affected by the loss of pine food sources within the Gnangara, Pinjar and Yanchep pine plantations.

6	**Likely environmental outcomes**	1. Starvation of adult and immature Carnaby's Cockatoos/Ngolyenok 2. Reduced reproductive success of Carnaby's Cockatoos/Ngolyenok 3. Substantial reduction in the carrying capacity of the northern Swan Coastal Plain region for Carnaby's Cockatoos/ Ngolyenok 4. Substantial population decline of more than 50% The proposal will likely: ▪ cause a decrease in carrying capacity of about 55% (from the current estimated 12,545 to 5624 birds; ▪ reduce the mean population size of Carnaby's Cockatoo/Ngolyenok at 2050 in the Perth–Peel region by about 56% (from an estimated 8000 in 2017 to 3550 birds in 2050); and ▪ reduce the expected minimum abundance by around 62% - to 3012 birds.

Holistic impact assessment

1. A proper holistic impact assessment for the proposal is outside the scope of this referral, which focuses on the environmental impact of the proposal on Carnaby's Cockatoos/Ngolyenok.

Cumulative environmental impact assessment

1. A proper cumulative environmental impact assessment for the proposal is outside the scope of this referral, which focuses on the environmental impact of the proposal on Carnaby's Cockatoos/Ngolyenok.
2. There is relevant discussion about cumulative impacts in *EPA Advice: Carnaby's Cockatoo in Environmental Impact Assessment in the Perth and Peel Region* (May 2019), although this discussion should be updated and extended.

Consultation

Outline the outcomes of consultation on the Proposal and its likely environmental effects.

1. As the person preparing this referral is not the proponent, I am not aware of the outcomes of consultation on the Proposal and its likely environmental effects.

Supporting documents

- Chronology
- Supplementary Information
- 1 – Defined Forest and Plantation Area (Map 1 of 5: Midwest-Gnangara) (October 2021)
- 2 – Gnangara Mound Harvest Plan 2022/23 (May 2022)
- 3 – Letter - Murdoch University Black Cockatoo Conservation Management Project (26 May 2022)
- 4 – BirdLife Australia - Public Submission - Green Growth Plan (June 2016)

▪ 5 – EDO Devolving Extinction Report (2020) – extract ▪ 6 – Threatened Species Recovery Hub – Better Offsets for WA Black Cockatoos Findings Factsheet ▪ 7 – Draft Gnangara Groundwater Allocation Plan - Methods Report - Figure 5 (November 2021) ▪ 8 – Letters of Support for the Referral	
Has the referrer provided survey information according to the *Instructions and Form: IBSA Data Packages* and/or the *Instructions and form: IMSA Data Packages*	☐ Yes ✓ No
Conclusion	
Do you consider the proposal may have a significant effect on the environment? **Yes**	

PART B: ASSESSMENT OF ENVIRONMENTAL IMPACTS FOR SIGNIFICANT AMENDMENTS ONLY	
Type of significant amendment	☐ significant amendment to the approved proposal ☐ significant amendment to the implementation conditions ☐ significant amendment to both the proposal and the implementation conditions
Information of the approved proposal	N/A
Combined effects of the approved proposal and significant amendment	N/A
Analysis of existing implementation conditions	N/A
Previous changes to the Proposal and or implementation conditions	N/A
Compliance	N/A
Environmental Performance	N/A
Control of implementation of significant amendment	N/A

PART B: ASSESSMENT OF ENVIRONMENTAL IMPACTS FOR A PROPOSAL UNDER AN ASSESSED SCHEME ONLY	
What new environmental issues are raised by the proposal that were not assessed during the assessment of the planning scheme?	N/A

How does the proposal not comply with the assessed scheme and/or the environmental conditions in the assessed planning scheme?	N/A

PART B: ASSESSMENT OF ENVIRONMENTAL IMPACTS <u>FOR DERIVED PROPOSALS ONLY</u>	
Demonstrate how the proposal will meet the environmental outcomes defined through the assessment of the strategic proposal	N/A
Provide an analysis of the existing implementation conditions of the related strategic proposal in relation to the derived proposal	N/A

PART C: OTHER APPROVALS AND REGULATION	
Decision-making authorities and their approvals	
Provide a table list of the decision-making authorities, associated legislation or agreement regulating the activity and the specific approval required. (Example table at the end of form)	1. This table list has not been prepared, as this referral document has not been prepared by the proponent.
Provide a summary of the statutory decision-making processes you consider can mitigate the potential impacts of the proposal on the environment. (Note: this should be a summary of the information provided in Part B section 2.4).	1. The environmental impact of the proposal has not been dealt with under statutory decision-making processes relating to the management, and preparation of management plans, for State Forest areas. 2. As described above, the environmental impact of the proposal was not considered in the 2004-2013 or the 2014-2023 Forest Management Plans or in the EPA's assessment of those Plans. 3. The Strategic Assessment of the Perth and Peel Regions is a relevant process. However, this process has been deferred indefinitely and this deferral must not be used to delay this referral of this proposal or defer the assessment of this proposal.
Tenure and Local Government approvals	
Location of proposal: a) street address, lot number, suburb, and nearest road intersection; or b) if remote, the nearest town and distance and direction from that town to the proposal site.	Gnangara, Pinjar and Yanchep pine plantations (Gnangara-Moore River State Forest, State Forest 65)

Name of the Local Government Authority in which the proposal is located.	N/A
Is rezoning of any land required before the proposal can be implemented? If yes, please provide details.	☐ Yes ✓ No
What is the current land use on the property, and the extent (area in hectares) of the property?	Commercial pine plantation 23 000 ha
Does the proponent have the legal access required for the implementation of all aspects of the proposal? ***If yes**, provide details of legal access authorisations / agreements / tenure.* ***If no**, what authorisations / agreements / tenure is required and from whom?*	☐ Yes ☐ No Not able to answer as am not the proponent.
Commonwealth Government approvals	
Does the proposal involve an action that may be or is a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)?	✓ Yes ☐ No
Has the proposed action been referred? If yes, when was it referred and what is the reference number (EPBC No.)?	☐ Yes ✓ No Date: _____ EPBC No.: _____
If referred, has a decision been made on whether the proposed action is a controlled action? If 'yes', check the appropriate box and provide the decision in an attachment.	☐ Yes ☐ No ☐ Decision – controlled action ☐ Decision – not a controlled action
If the proposal is determined to be a controlled action, do you request that this proposal be assessed under a Bilateral Agreement or as an accredited assessment?	☐ Yes - Bilateral ☐ No ☐ Yes - Accredited
Is approval required from other Commonwealth Government/s for any part of the proposal? *If yes, describe.*	☐ Yes ☐ No Approval:
Decision-making authority referrals <u>ONLY</u>	
What approval/s, under your authority, are required for this proposal? *Please provide details.*	N/A – as am not a decision-making authority

Example Table: Other approvals

Decision-making authority	Legislation or Agreement regulating the activity	Approval required (and specify which proposal element the approval is related to)	Whether and how statutory decision-making process can mitigate impacts on the environment? (Yes/No and summary of reasons. Include a separate line item for each relevant impact, and discuss how the EPA's factor objective will be met)

Supplementary Information

The document provides supporting information for the Referral Document.

We respectfully acknowledge the Traditional Owners of the land where we are, the Wadjuk people of the Noongar Nation, and the Indigenous Elders, custodians, their descendants and kin of this land past and present.

I. Introduction

(a) As described in the Referral Document, the proposal involves a change in the use, purpose and condition of land within the Gnangara, Pinjar and Yanchep pine plantations (located within State Forest 65: Gnangara-Moore River State Forest) from commercial pine plantation managed for purpose of timber production to a combination of new uses, purposes and conditions, but principally to a state of 'fallow land'.

(b) The pine plantations were established on the land between 1932 and 1994 for the purpose of timber production. In 1996, the State Government proposed the Gnangara Park concept, which envisioned a long-term change in the use of land in the Gnangara, Pinjar and Yanchep pine plantations.

(c) Since the early 2000s, the land management approach for the Gnangara, Pinjar and Yanchep pine plantations has been to harvest pine without replanting/replacement (except for about 2000 ha of pines replanted over 10 years [~2008-2018] and limited native vegetation replanting including about 500 ha near Yanchep), and convert the harvested areas to fallow land.

(d) This change in the use, purpose and condition of the land, which is currently being implemented, has a likely effect on the environment that, if implemented, can be categorised as 'significant', notably the removal of 23 000 ha of a regionally significant food source (the seeds of Maritime Pine *Pinus pinaster*) for a threatened species – Carnaby's Cockatoo/Ngolyenok (*Calyptorhynchus latirostris*) – with consequent population- and species-level impacts, as well adverse impacts on the welfare of individual cockatoos, including starvation, reduced body condition, and stress-related pathologies as birds search for food in which food resources are removed or substantially depleted, resulting in reduced survivorship and individual reproductive success.

(e) This proposal:

   a. constitutes a project, undertaking, development, change in land use, policy, plan, and/or programme that falls within the meaning of 'proposal' in section 3 of the *Environmental Protection Act 1986*;

   b. is sufficiently specific to enable its likely effect on the environment, if implemented, to be assessed;

   c. proposes to use, or change the use, purpose or condition of land – and is currently being implemented in a way that uses, and changes the use, purpose and condition of land – in a way that is likely to have an effect on the environment, in the sense of causing a change in the environment;

d. has a likely effect on the environment that, if implemented, can be categorised as 'significant'; and

e. is capable of being a 'significant proposal' within the meaning of section 37B of the *Environmental Protection Act 1986*;

f. is a proposal which can now be referred to the EPA for assessment under section 38 of the *Environmental Protection Act 1986*.

II. Three considerations makes it an abuse of power for the State Government to rely on its section 146(1) agreement with the Commonwealth as a reason not to refer the proposal to the EPA and, likewise, as a reason not to refer the proposal as a controlled action to the Commonwealth Department of Agriculture, Water and the Environment:

(a) the unreasonable delay of the State Government in performing its obligations under the section 146(1) agreement;

(b) the fact that the section 146(1) agreement was commenced more than a decade ago, and

(c) the fact that information in the draft Impact Assessment Report and the public submissions is now more than six years old

1. The Strategic Assessment of the Perth and Peel Regions process is founded in a formal agreement made under section 146(1) of the *Environment Protection and Biodiversity Conservation Act 1999* between the Commonwealth and the State of Western Australia relating to the assessment of the impacts of a Plan for the protection of Matters of National Environmental Significance in the Perth and Peel regions in Western Australia.

2. The following is a chronology for relevant events in relation to the section 146(1) agreement.
   a. July 2011: The State and Commonwealth Environment Ministers agree to undertake a strategic assessment for the Perth and Peel regions.
   b. August 2011: The State Government open a public comment period for the draft Terms of Reference for the strategic assessment of the Perth and Peel regions.
   c. 7 October 2011: The public comment period closes.
   d. May 2012: The Commonwealth Environment Minister approves the final terms of reference and minor amendments to the strategic assessment agreement.
   e. 17 December 2015: The State Government opens a public comment period for the draft Strategic Conservation Plan and the draft Impact Assessment Report, the 'Perth and Peel Green Growth Plan for 3.5 million'.
   f. 8 April 2016: The public comment period closes.
   g. 2018: State Government initiates a review of the strategic assessment, to be completed in 2019.
   h. 2020: State Government indicates that the strategic assessment is deferred indefinitely.

3. The section 146(1) agreement (link) imposes obligations on the parties. Relevant obligations for the State Government to perform are contained in clauses 6 (terms of reference for the report), 7 (preparation of report), and 8 (consideration of the report).

4. Since April 2016, the State Government has failed to perform its obligations under clause 7.4 to, upon closure of the public comment period for the draft Impact Assessment Report and taking

account of the comments received, to prepare a revised draft Impact Assessment Report or a supplementary report to the draft Impact Assessment Report.

5. As a consequence, the State Government has also not performed its obligation under clause 8.1 to submit to the Commonwealth Environment Minister:
    a. the MNES Plan, and
    b. the Final Report, comprised of the revised draft Impact Assessment Report (or the draft impact assessment report and a supplementary report), public responses relating to the draft Impact Assessment Report, and comments on how the public responses have been taken into account in the final impact assessment report.

6. The section 146(1) agreement does not indicate that time is of the essence for the section 146(1) agreement, but does use the phrase 'as soon as practicable' in clauses 6.1, 6.6 and 7.1.

7. However, an inter-government agreement of this kind, made pursuant to a statutory provision, necessarily implies a duty on the parties to perform their obligations within a reasonable time. This is because, among other things, the status of the matters of national environmental significance (MNES) protected under Part 3 of *Environment Protection and Biodiversity Conservation Act 1999* to which the section 146(1) agreement relates will change over time because of (e.g.) changes in the size and trajectory of populations of a species; changes in the quality and amount of habitat available for a species; and changes in the type and intensity of threatening processes affecting a species.

8. As such, there is a finite period in which a report on the impacts to which the strategic agreement relates will be valid, at least in the sense of the Commonwealth Minister for the Environment being satisfied that the Final Report adequately addresses the impacts to which this Agreement relates, and noting also the requirement for the Minister to comply with the provisions in Part 10 Division 1 Subdivision C, including for listed threatened species such as Carnaby's Cockatoos/Ngolyenok.

9. In that context, a six-year lapse in performing the obligation in clause 7.4 is unreasonable. Although the circumstances of the pandemic are relevant, the State Government did not perform its obligations for a 4-year period until 2020, and did not complete the review that was implemented in 2018.

10. Given this unreasonable delay – and the fact that the section 146(1) agreement was commenced more than a decade ago and the information in the draft Impact Assessment Report and the public submissions is now more than six years old – it is an abuse of power for the State Government to rely on the section 146(1) agreement as a reason not to refer the proposal to the EPA and, likewise, as a reason not to refer the proposal as an action to the Commonwealth Department of Agriculture, Water and the Environment.

11. The agreement provides no exemption or immunity to the section 67A prohibition on taking controlled action without approval or the section 68(1) requirement that a person proposing to take an action that the person thinks may be or is a controlled action must refer the proposal to

the Commonwealth Minister for the Environment for the Minister's decision whether or not the action is a controlled action.

III. The State Government expressly indicated in 2009 that the removal of pine from the Gnangara, Pinjar, and Yanchep plantations is a change in land use that is likely, if implemented, to have a significant on the environment

1. The *Gnangara Sustainability Strategy: Draft for Public Comment* (link), published by the State Government in July 2009 expressed the removal of pine in the Gnangara, Pinjar and Yanchep plantations (State Forest 65) as a change in land use, and described this change in land use in a manner that indicates the change is likely, if implemented, to have a significant impact on the environment.

2. Statements in this document represent an express recognition by the State Government that the removal of pine without replacement in the Gnangara, Pinjar and Yanchep plantations (State Forest 65) constitutes a 'significant proposal' for the purposes of Part IV of the *Environmental Protection Act 1986*.

3. The document states, at pages 18-19:

   > Pine plantations have also become an important food source for Carnaby's black-cockatoo, which is listed as threatened under both federal and state legislation. Around 50 per cent of the original Banksia woodland has been lost from the Gnangara system. Combined with favourable energetics and lack of competition for pine nuts from other species, this has meant that the pine plantations within the Gnangara system have become an important food source for the cockatoos. Carnaby's black cockatoo typically migrates to the coastal regions in the summer and moves inland to the Wheatbelt in winter and spring to breed. It is uncertain how cockatoos will respond to the removal of the pines as a food source. Ultimately, the loss of pine plantations for summer forage may affect breeding success. Further monitoring of cockatoos will be required following pine removal. The change of land use recommended in the GSS post-pine harvest may need to be assessed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), which protects nationally listed threatened species.
   >
   > The GSS recommends that around 9000 hectares of strategic ecological linkages be established postpine harvest across the entire plantation area to connect the existing areas of native vegetation, in order to increase the ecological system's resilience, or where appropriate, ability to adapt to change.
   >
   > Except for those areas identified for urban and commercial uses, options for the remaining 13 000 hectares of post-pine land use are still being considered. Although the model assumed annual grassland would replace pine plantation, it is more likely to be a form of parkland with low density native trees and shrubs providing amenity while maximising recharge, with some possibilities for a low density future timber resource in the northern plantation areas.

4. The document also states, at page vii, that the 'removal of 22 000 hectares of pine plantations represents one of the most significant land use changes within the system'.

IV. The Department of Biodiversity, Conservation and Attractions has conflicts of interest in relation to the proposal because of its status as a proponent for the proposal and competing

statutory duties and functions as simultaneously, a decision-making authority under the *Environmental Protection Act 1986*, a land manager for State Forest land under the *Conservation and Land Management Act 1984*, the implementing body for the current *Forest Management Plan*, and the administrator and regulator for the *Biodiversity Conservation Act 2016*

1. The Department of Biodiversity, Conservation and Attractions is a proponent for this proposal.

2. There clear conflicts of interest for the Department of Biodiversity, Conservation and Attractions (and, in previous forms, the Department of Conservation and Land Management, Department of Environment and Conservation, and Department of Parks and Wildlife) in relation to the harvesting without replacement of pine within the Gnangara, Pinjar and Yanchep pine plantations in State Forest 65 because the Department has statutory functions and duties under the *Conservation and Land Management Act 1984* and the *Biodiversity Conservation Act 2016* to:
    a. manage State Forest land, including the Gnangara, Pinjar and Yanchep pine plantations in State Forest 65;
    b. be responsible for implementing the *Forest Management Plan 2014-2023*, including administering environmental and other approvals for Forest Products Commission harvesting contractors seeking to access State Forest 65 land and harvest pine in the Gnangara, Pinjar and Yanchep plantations;
    c. ensure that the management of State Forest land and the forest produce, flora and fauna is carried out in accordance with the *Forest Management Plan 2014-2023*; and
    d. be responsible for the conservation and protection of flora and fauna throughout the state, including threatened species and fauna such as Carnaby's Cockatoos/Ngolyenok and the enforcement of offences under the *Biodiversity Conservation Act 2016* such as the prohibition on the taking of threatened fauna in section 150.

3. The *Forest Management Plan 2014-2023* identifies the obligations of the statutory bodies and State Government agencies responsible for implementing the plan. The Parks and Wildlife Service within the Department of Biodiversity, Conservation and Attractions and the Forest Products Commission (FPC) are responsible for most implementation activities, pursuant to a Memorandum of Understanding (MOU) between the Parks and Wildlife Service and the FPC for the performance of statutory functions and joint obligations with respect to the sustainable management of native forests, the management of public plantations, the harvesting of forest products and related matters. The Plan indicates that an MOU was entered into in March 2001 and that under the MOU working arrangements were formalised in February 2016 – this is prior to the commencement of relevant provisions of the *Biodiversity Conservation Act 2016*.

4. The *Forest Management Plan 2014-2023* (page 42) provides, under 'Operations proposed to be undertaken (management activities)':

    (**Plantations**): The FPC will advise the Department of its planned harvesting and management activities within plantations, and where those activities may impact on threatened species and threatened or priority ecological communities, the FPC will propose and the Department will approve the conditions for access.

5. The EPA advice *Environmental Protection (Swan Coastal Plain Lakes) Policy 1992: Advice to the Minister for Environment, as Required under Section 33(2) of the Environmental Protection*

Act 1986, published in November 2015, describes management arrangements for the Gnangara, Pinjar and Yanchep pine plantations in State Forest 65:

> The pine plantation, lying within the State Forest 65, is vested in the Conservation Commission of Western Australia and managed by the Department of Parks and Wildlife. Currently the Department of Parks and Wildlife are continuing to fell the pine plantations with a view to balancing groundwater recharge with Carnaby Cockatoo foraging habitat. Management of the pines is to be further addressed through the Strategic Assessment of the Perth and Peel Regions (SAPPR) where pine basal area and Banksia woodland densities will be further refined. Pine plantation management is being implemented by the Department of Parks and Wildlife. (page 10)

6. Under a standard of reasonableness in performing their statutory duties, it should have been obvious to staff in the Department of Parks and Wildlife during preparation and completion of the *Forest Management Plan 2014-2023* (which included consultation with the Forest Products Commission and review and consultation with the EPA, including for an Environmental Scoping Document) that:
    a. the proposed harvesting operations in the Gnangara, Pinjar and Yanchep pine plantations (located within State Forest 65) that would take place under the Plan between 2014 and 2023 constituted, or may have constituted, a change of land use and condition, that was likely, if implemented, to have a significant effect on the environment, that effect being the removal of an important food source for Carnaby's Cockatoos/Ngolyenok; and
    b. such an impact needed to be considered within the *Proposed Forest Management Plan 2014-2023*, so that impact could be assessed by the EPA in its review of the *Proposed Forest Management Plan 2014-2023* and preparation of a report and recommendations to the Minister for Environment, or ought otherwise to be referred to the EPA for assessment.

7. These considerations also apply to:
    a. the granting of environmental approvals by the Department of Parks and Wildlife and then the Department of Biodiversity, Conservation and Attractions before harvesting operations commence, noting that the *Forest Management Plan 2014-2023* (page 42) provides, under 'Operations proposed to be undertaken (management activities)':

        > (**Plantations**): The FPC will advise the Department of its planned harvesting and management activities within plantations, and where those activities may impact on threatened species and threatened or priority ecological communities, the FPC will propose and the Department will approve the conditions for access.

    b. the granting of environmental approvals by the Department of Biodiversity, Conservation and Attractions after the commencement of the *Biodiversity Conservation Act 2016*.

8. This issue is discussed further in the section below: 'Harvesting operations for pine in the Gnangara, Pinjar and Yanchep plantations (State Forest 65) should be subject to a section 40 authorisation under the *Biodiversity Conservation Act 2016*, issued by the Minister for Environment, to authorise the taking of a threatened species (*Carnaby's Cockatoo/Ngolyenok*)'.

V. Harvesting operations for pine in the Gnangara, Pinjar and Yanchep plantations (State Forest 65) should be subject to a section 40 authorisation under the *Biodiversity Conservation Act 2016*, issued by the Minister for Environment, to authorise the taking of a threatened species (*Carnaby's Cockatoo/Ngolyenok*)

1. The *Forest Management Plan 2014-2023* (page 42) provides, under 'Operations proposed to be undertaken (management activities)':

   (**Plantations**): The FPC will advise the Department of its planned harvesting and management activities within plantations, and where those activities may impact on threatened species and threatened or priority ecological communities, the FPC will propose and the Department will approve the conditions for access.

2. In part, this provision of the *Forest Management Plan 2014-2023* reflects the function of the Department of Biodiversity, Conservation and Attractions in managing State Forest land under the *Conservation and Land Management Act 1984*, and in authorising access to Forest Products Commission harvesting contractors.

3. However, the Department of Biodiversity, Conservation and Attractions also has the function of conserving and protecting the State's fauna, and in administering the *Biodiversity Conservation Act 2016*.

4. It is an offence under the *Biodiversity Conservation Act 2016* to take any species of fauna listed as a threatened species under section 19 of the *Biodiversity Conservation Act 2016* unless the person is authorised under section 40.

5. As threatened fauna can only be taken under a *Biodiversity Conservation Act 2016* section 40 authorisation – and as discussed further below – in circumstances where the Forest Products Commission advises the Department of Biodiversity, Conservation and Attractions of FPC's planned harvesting and management activities within plantations, and where those activities may impact on threatened species and threatened or priority ecological communities (as they will in the Gnangara, Pinjar and Yanchep (State Forest 65) pine plantations, and the FPC proposes and the Department approves the conditions for access, it is also necessary for the Minister for Environment to authorise the taking of Carnaby's Cockatoos/Ngolyenok under section 40 of the *Biodiversity Conservation Act 2016*.

6. To my knowledge, there is no publicly available information regarding a section 40 authorisation for harvesting contractors operating in the Gnangara, Pinjar and Yanchep (State Forest 65) pine plantations.

7. Section 150(1) of the *Biodiversity Conservation Act 2016* provides that:

   A person must not take threatened fauna unless the person is authorised under section 40 to take it and complies with the conditions, if any, to which the authorisation is subject.

8. Section 5 of the *Biodiversity Conservation Act 2016* provides that:

   take —

   (a) in relation to fauna, includes the following —

   (i) to kill, injure, harvest or capture fauna by any means;

   (ii) to cause or permit anything referred to in subparagraph (i) to be done;

9. Unless the context suggests otherwise, use of the word 'includes' in a statutory definition is generally taken to enlarge the ordinary meaning of the word (eg 'take') and to mean that the specific examples given ('kill, injure, harvest or capture') do not encompass all of the items (or verbs, in this case) that might fall within in the defined word. This reading of 'includes' as non-

exhaustive is also consistent with the phrase 'by any means', which is best read as applying to all of kill, injure, harvest or capture'.

10. Further, the meaning of 'take' in section 150(1) – read in context with the defence available for the taking of threatened fauna in section 151(2) and the provisions in section 41 relating to the conditions of a section 40 authorisation (including an emphasis on conditions relating to habitat and 'land of conservation value' and the requirement in section 41(4) that the Minister not impose a condition described in section 41(3) unless the Minister considers that the condition is necessary for the purpose of mitigating or offsetting the impact that activity carried out under the authorisation is likely to have on the total known population of the relevant species in the State and on relevant habitat) – should:
    a. not be restricted to the direct and intended consequences of conduct constituting the taking or killing of fauna (see *Corkill v Forestry Commission NSW* [No 2] (1991) 73 LGRA 126); and
    b. be construed to include an act which actually kills or injures fauna, and such an act to include significant habitat destruction or degradation where that destruction or degradation actually kills or injures individual fauna by significantly impairing an essential behavioural activity, including feeding and sheltering.

11. There is a reasonable scientific basis to infer that harvesting of pines kills Carnaby's Cockatoos/Ngolyenok, particularly chicks born in the breeding season the year prior, immature birds, and adult birds in poor body condition. Without limiting the pathological mechanisms, the unavailability of a food source can cause death through, e.g.:
    a. **dehydration**;
    b. **starvation**, whether through a bird's inability to adequately feed themselves or parents' inability to provision still-dependent chicks;
    c. **predation**, because of greater susceptibility to predation arising from a bird's behavioural response to the unavailability of a food source (e.g. movement, feeding, drinking, and roosting patterns);
    d. **temperature-related injuries**, including heat stress, arising from a bird's behavioural response to the unavailability of a food source (e.g. movement, feeding, drinking, and roosting patterns);
    e. **stress-related pathology**, arising from a bird's behavioural response to the unavailability of a food source (e.g. movement, feeding, drinking, and roosting patterns);
    f. **exertional myopathy**, arising from a bird's behavioural response to the unavailability of a food source (e.g. movement, feeding, drinking, and roosting patterns);
    g. **misadventure**, arising from a bird's behavioural response to the unavailability of a food source (e.g. movement, feeding, drinking, and roosting patterns); and
    h. **reduced cognitive performance** because of heat stress which:
        (i) diminishes the ability to acquire, process and act on environmental information, including decisions about (e.g.) where to roost, where to find water, where to find food;
        (ii) causes the bird to become separated from other members of a flock and isolated;
        (iii) causes the bird to engage in maladaptive or high-risk behaviours and suffers predation, accident or other death by misadventure.

12. Finn et al. (2009; link) proposed a risk assessment for the removal of pine (Table 26, page 82), which identified 'removal of food resource (pine cones) reduces food availability for Carnaby's Black-Cockatoos' as a 'risk' event. The risk assessment nominated three categories for reduced survivorship (dependent chicks, independent juveniles, and adults) and described the basis for reduced survivorship:
    a. Reduced survivorship: dependent chicks - Pine is important for pairs who have returned to the GSS area with a chick that is still at least partially dependent on its parents for food. Pine has

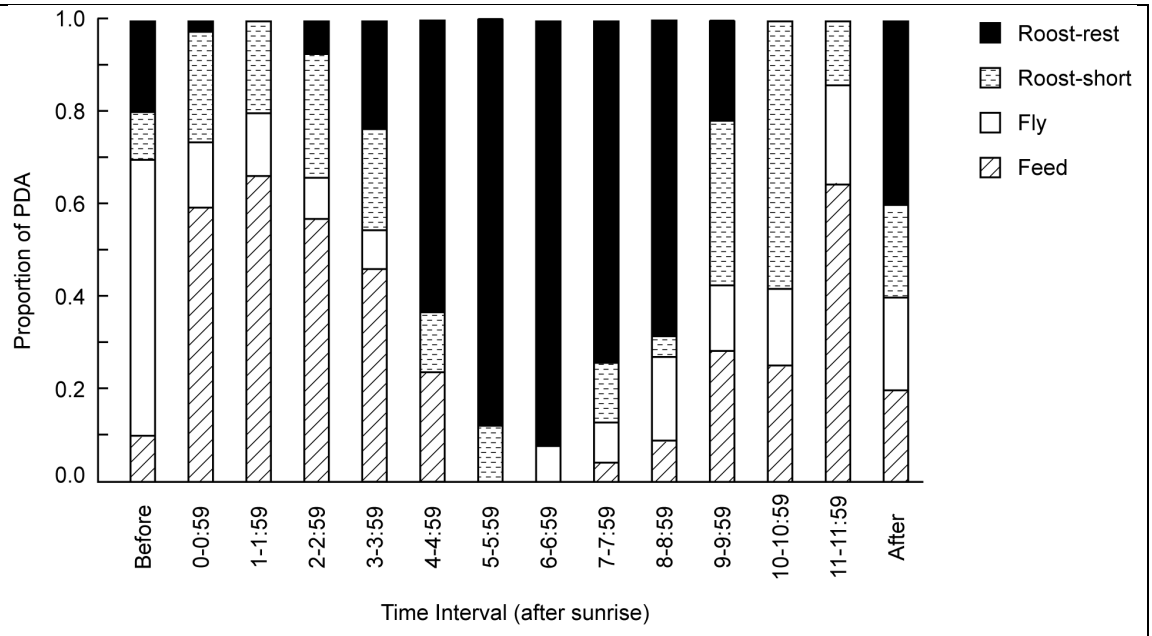
several useful characteristics in this regard: a) it is dense, thus minimising the distance that must be moved (unless there are other factors such as water); b) chicks may roost in pine while parents feed; and c) pine itself can be used as a day or over-night roost.

b. Reduced survivorship: independent juveniles - Given its abundance, year-round availability, and ease of use, pine is likely to be a critical determinant of the survivorship of fledged and independent juveniles (i.e. immature and non-breeding) that may reside in the GSS year-round. Like other species with similar life histories, mortality is often high during the first year post-fledging, often because birds are unable to find adequate food.

13. Stock et al (2013: link) reported field field observations of Carnaby's Cockatoos/Ngolyenok in the Gnangara, Pinjar and Yanchep (State Forest 65) pine plantations conducted in 2009. They noted that, along with the advantages of pine as a food source:

> The Gnangara landscape allows provides two additional ecological benefits for Carnaby's Cockatoos: reliable water sources during summer and suitable roosting habitat near to feeding habitat. Maintaining hydration is a key ecological challenge for black cockatoos, particularly in summer [1,37,50,51]. Large Psittacines must drink at least once a day during high temperatures and must carefully manage their daily hydration status in order to maintain normovaelemia and blood electrolyte balances [52,53]. A recent mortality event emphasised the vulnerability of Carnaby's Cockatoos to heat stress. In January 2010, 208 birds died in the Hopetoun and Munglinup region in southern Western Australia when air temperatures reached 47°C combined with a 60 km h^{-1} northerly wind [54]. Post-mortem examination attributed the deaths to heat stress and subsequent dehydration, as no potential toxins were detected and birds had recently ingested food [54]. A midday roost period allows Carnaby's Cockatoos to avoid heat stress when temperatures and solar radiation are most intense [37]. As the pine stands provide a suitable habitat for the midday roost, flocks are able to remain at feeding sites after the morning feeding bout, thereby avoiding energy expenditure and flight activity during peak temperatures. Similarly, the presence of abundant natural and artificial water sources along the margins of the plantations allows easy access to water when birds are leaving or returning to their over-night roosts.

14. Stock et al. (2013) documented the diurnal behavioural patterns of flocks using the plantations and surrounds, as indicated in their Figure 6 (Distribution of predominant activity (PDA) states for Carnaby's Cockatoos/Ngolyenok from before sunrise to after sunset standardised to a 12-hour day; page 8). This behavioural pattern demonstrates the linkage of food, water and roost trees in a landscape, and suggest costs if (e.g.) birds must travel farther for food or roost in sub-optimal areas because food sources have been removed:



15. Shephard and Warren (2018: link) used satellite and GPS data collected as part of ongoing movement ecology research by their research group (The Black Cockatoo Conservation Project, Murdoch University) to gain an understanding of Carnaby's Cockatoo/Ngolyenok movement dynamics across the Perth-Peel Coastal Plain and specifically to determine if Midwest pine plantations offer an alternative food resource to Carnaby's Cockatoos/Ngolyenok using the Gnangara-Pinjar-Yanchep plantations. They stated, at page 29:

    > As both pine and native food resources are seasonal, the combined impact of continued clearing of native vegetation of the SCP and the projected food shortages forecast for 2019-2024, due to continued clearing of GPY plantations, raises the issue of whether there will be sufficient food on the plain to support the current population.

16. Yeap et al. (2021; link) reported on accelerometer data, from accelerometers housed in GPS tags and attached to nine Carnaby's Cockatoos/Ngolyenok released after successful rehabilitation, and stated (at pages 106-107):

    > It is anticipated that planned removal of pine plantations on the Swan Coastal Plain will reduce food availability for Carnaby's cockatoos (Williams et al. 2017). Pine seeds provide a readily available, high-energy food source in summer and autumn, when breeding birds are feeding fledgling chicks. Removal of pine plantations and loss of this food source may affect fledgling survival (Stock et al. 2013; Williams et al. 2017).
    >
    > The daily pattern of activity of cockatoos is generally considered to be dictated by a bird's energy requirements and the availability of food. If a bird cannot meet its daily energy requirements in one location, inevitably it will need to move to find another food source or risk starvation. Increased energy demands, such as during the breeding season, will also increase the length of foraging time required to meet those demands. The length of time a bird spends foraging is affected by its foraging strategy, supply of food and feeding technique. Time of year and weather will also have an impact on foraging ability. Cockatoos only forage in daylight hours; thus, time available for foraging is less in winter when daylength is reduced. Cockatoos need suitable foraging habitat and water close to (6–7 km) breeding and roosting sites (Saunders 1990; Groom 2015; Le Roux 2017). With land clearing and development resulting in habitat loss and fragmentation, loss of roosting trees and food resources, one would anticipate cockatoos will need to spend more time flying greater distances between diminishing resources. They will need to forage more to meet increasing energy demands.

> Numerous studies by Saunders (1982, 1990) and Saunders et al. (1985) have shown an association between longer foraging distances and poor chick health and reduced breeding success. In some locations, inadequate food resources have resulted in breeding areas being abandoned.

17. Williams et al. (2017) also discussed mortality scenarios in their used of detailed demographic and food resource data to model future population size and extinction risk of Carnaby's Cockatoo/Ngolyenok under potential land-use scenarios in the Perth-Peel region.

18. Soravia et al. (2021; link) discuss the impacts of heat stress on animal cognition and state that:

> With global surface air temperature rising rapidly, extensive research effort has been dedicated to assessing the consequences of this change for wildlife. While impacts on the phenology, distribution, and demography of wild animal populations are well documented, the impact of increasing temperature on cognition in these populations has received relatively little attention. Cognition encompasses the mental mechanisms that allow individuals to process information from the surrounding environment, respond accordingly, and flexibly adjust behavior. Hence, it is likely to be a key factor in allowing animals to adjust adaptively to climate change. Captive studies show that heat stress can negatively affect cognitive performance not only in the short-term but also in the long-term, by altering cognitive development at early life stages. Field studies indicate that cognitive performance may affect survival and reproductive success. (Abstract)

19. Finn and Stephens (2017; link) examined the effects of land clearing on animals, including the consequences of an animal's behavioural response to the loss of habitat, such as greater exposure to predators and other environmental challenges (including human interactions) an animal will encounter in the environments they disperse through and in the habitat they are ultimately displaced to. Table 1 includes definitions and descriptions of relevant pathological conditions.

20. On the basis of this construction of 'take' and the scientific basis underpinning it, it is necessary for the Minister for Environment to authorise persons to undertake the act of harvesting pine in the Gnangara, Pinjar and Yanchep plantations (State Forest 65) – specifically, and pursuant to section 40 of the *Biodiversity Conservation Act 2016*, the Minister must authorise, by instrument, a person (including a public authority) to take a threatened species, namely Carnaby's Cockatoo/Ngolyenok present in the plantation areas during harvesting operations.

21. The authorisation is necessary because the section 151(2) defence for the taking of threatened fauna would not be available for persons engaged in harvesting operations in the Gnangara, Pinjar and Yanchep plantations (State Forest 65). The defence in section 151(2) has three elements:
    a. the taking occurred in the course of a lawful activity the sole or dominant purpose of which was not to take fauna (other than fish or pearl oyster) [section 151(2)(a)(i)]; and
    b. the taking could not reasonably have been avoided [section 151(2)(a)(ii)]; and
    c. the person charged did not know, and could not reasonably have known, that the specially protected fauna or threatened fauna concerned was present [section 151(2)(b)].

22. Of these three elements, it might be accepted that:
    a. a taking would occur in the course of a lawful activity (harvesting operations on State Forest conducted pursuant to relevant authorisations for access to the land and other related issued by the Department of Biodiversity, Conservation and Attractions, pursuant to an MOU between Forest Products Commission and the Department of Biodiversity, Conservation and Attractions); and

b. the sole or dominant purpose of the activity was not to take fauna.

23. However, the presence of the fauna – Carnaby's Cockatoo/Ngolyenok – and their use of pine seeds in any standing crop of pine within the Gnangara, Pinjar and Yanchep plantations (State Forest 65) is well-known (see Stock et al. (2013) and Etten et al. (2020; link) for evidence that cockatoos feed on pine throughout the plantation system and annually exhaust the entire standing crop of pine). Thus, a person conducting harvesting operations could not say that they 'could not reasonably have known', that the threatened fauna concerned was present in the areas in which harvesting occurred.

VI. The EPA should decide to assess the proposal and not rely on other statutory decision-making processes that can mitigate the potential impacts of the proposal on the environment

1. The EPA should decide to assess the proposal and not rely on other statutory decision-making processes that can mitigate the potential impacts of the proposal on the environment.

2. The current planning process to develop a proposed *Gnangara groundwater allocation plan* is a relevant planning process as it is considering land use and land management in the Gnangara, Pinjar and Yanchep plantations. The *Gnangara groundwater allocation plan* will be subject to assessment by the EPA, and then to approval by the Minister for Environment and a Ministerial Statement to include revisions to water level criteria or other environmental conditions.

3. However – although it is advantageous that assessment of the proposal will overlap with the planning process for *Gnangara groundwater allocation plan* and open for the EPA to have regard to that process and to the potential for the plan's implementation conditions – as things the proponent (the Department of Water and Environmental Regulation) of the assessed plan can be required to do, to mitigate impacts of the change in land use, purpose and condition on Carnaby's Cockatoos/Ngolyenok – the EPA must decide to assess the proposal to change the land use, purpose and condition, as a stand-alone significant proposal and with an appropriate proponent.

4. There are several reasons for this.

5. First, the *Gnangara groundwater allocation plan* is a planning instrument that will set out the system's water resource management objectives and how Department of Water and Environmental Regulation will use statutory powers for water licensing under the *Rights in Water and Irrigation Act 1914* and other relevant legislation and other measures to maintain or increase groundwater levels to avoid further damage to water quality and environmental health at important locations, reduce the rate of groundwater level decline in other locations, and maintain a reliable water supply.

6. The *Gnangara groundwater allocation plan* is not an appropriate mechanism to assess the impact of the change in land use, purpose and condition from commercial pine plantation to fallow land (or other new use) and, specifically, to:

a. fully and properly consider the proponent's application of the mitigation hierarchy to avoid and reduce the environmental impacts of the proposal on Carnaby's Cockatoos/Ngolyenok, including the articulation of likely residual impacts ('proposal-centric');
b. fully and properly propose and evaluate the environmental outcomes (environment-centric) the proponents believe are achievable during and after the implementation of their proposal up until the proposal is fully implemented; and
c. fully and properly propose and evaluate appropriate outcome-based conditions as things that the proponent (in this case, the Department of Water and Environmental Regulation) could be required to do through the implementation conditions imposed.

7. This is an important point because, to date, the proponent for the proposal has not had to articulate an 'environmental outcome' for the proposal, which the EPA, in the context of environmental impact assessment under Part IV of the Act, has defined as the 'state of the environment at a point in time during implementation or after a proposal has been implemented' (*Interim Guidance - Outcomes and Outcomes-based Conditions*, page 3: link).

8. Thus, a transparent and robust environmental impact assessment process for the proposal is needed, under Part IV of the Act. In this context, the EPA's *Interim Guidance* is especially relevant:

> 'In identifying environmental outcomes, it is important to distinguish the difference between an environmental outcome and a residual impact. Residual impacts are the impact/s of a proposal that are expected to remain after the application of the mitigation hierarchy. Environmental outcomes are the state of the environment at a point in time during implementation or after a proposal has been implemented. Residual impacts are "proposal-centric" whereas environmental outcomes are "environment-centric".' (page 2)
>
> Proponents should apply the mitigation hierarchy to reduce the environmental impacts of their proposal at pre-referral and referral, and then continue to apply the mitigation hierarchy throughout any further assessment phase as more information about the proposal and its impacts is known. Proponents should then assess likely residual environmental impacts as a result of their proposals.
>
> Once the likely residual impacts (proposal-centric) from a proposal are assessed, proponents should then propose the environmental outcomes (environment-centric) they believe are achievable during and after the implementation of their proposal up until the proposal is fully implemented. This process should take into account whether the proposed environmental outcomes are consistent with the EP Act principles and EPA objectives for environmental factors.' (Page 5)

9. Second, and similarly, the *Gnangara groundwater allocation plan* is also not an instrument onto which the full suite of implementation conditions necessary to address the impacts of the proposal on Carnaby's Cockatoos/Ngolyenok could be attached.

10. Finally, the *Gnangara groundwater allocation plan* has also, necessarily, has the element of 'futurity' to it, as it will focus upon the future state of groundwater use and land management in the Gnangara mound area, rather than the historic and future impact of a change in land use, purpose and condition which has been on-going since the early 2000s.

VII. Cumulative impacts

1. Section 3(1B) of the Act provides that a 'reference in this Act to the effect of a proposal on the environment includes a reference to the cumulative effect of impacts of the proposal on the environment.'

2. The EPA has stated that:

   > The EPA recognises the increasing importance of assessing and managing cumulative environmental impacts. This is established in section 3(2)(1B) [sic] of the amended EP Act, where the assessment of proposals includes the consideration of cumulative effects of the impacts of a proposal. The assessment of cumulative impacts broadly encompasses the successive, incremental and combined impacts of one or more activities on the environment, arising from past, present and reasonably foreseeable future actions. Consideration of cumulative impacts shifts the focus from a single activity, development or proposal to the receiving environment as a whole.[1]

3. In the context of the proposal to change the land use in the Gnangara, Pinjar and Yanchep plantations, the cumulative effect of impacts of the proposal on the environment include the loss of c. 16 000 ha of pine feeding habitat within the plantations, and changes to abundance and quality of food sources in native vegetation in the surrounds of the plantations, including the adverse effects of bushfire, climate change, clearing, fragmentation and other processes on Banksia and eucalypt woodlands and *Banksia sessilis* thickets.

VIII. For two decades, State Government proponents, decision-making authorities, and regulators (including the EPA) have failed to apply the precautionary principle to the impact of pine removal on Carnaby's Cockatoos/Ngolyenok

1. The object of the *Environmental Protection Act 1986* is to protect the environment of the State having regard to the principles set out in section 4A which include the precautionary principle, namely that:

   > Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.
   >
   > In the application of the precautionary principle, decisions should be guided by —
   >
   > (a) careful evaluation to avoid, where practicable, serious or irreversible damage to the environment; and
   > (b) an assessment of the risk-weighted consequences of various options.

2. Section 3(1) defines 'environment' to mean 'living things, their physical, biological and social surroundings, and interactions between all of these' and 'protection', in relation to the environment, to include conservation, preservation, enhancement and management thereof.

3. This definition of 'environment' encompasses:
   a. Carnaby's Cockatoos/Ngolyenok, as 'living things'; and
   b. the pine trees within the Gnangara, Pinjar and Yanchep plantations in State Forest 65, as 'their physical, biological and social surroundings, and interactions between all of these'.

[1] https://www.epa.wa.gov.au/sites/default/files/Publications/EPA%20s.16e%20Report%20-Exmouth%20Gulf.pdf

4. Nothing in the definition of 'environment' in section 3(1) implies that the term 'surroundings' can only refer to 'natural habitat' (if that could be defined), or excludes man-made environments and resources (e.g. food sources).

5. For two decades, State Government proponents and decision-makers have failed to apply the precautionary principle to decision-making about the impact on Carnaby's Cockatoo/ Ngolyenok of harvesting pine without replacement in the Gnangara, Pinjar, and Yanchep plantations within State Forest 65.

6. Assessment of the proposal – as a 'significant proposal' in itself – by the EPA under Part IV is necessary because, for two decades, State Government proponents and decision-makers have failed to apply the precautionary principle to the evaluation and mitigation of the impact of pine removal on Carnaby's Cockatoos/Ngolyenok.

7. A range of planning and decision-making processes have operated in relation to the Gnangara, Pinjar, and Yanchep plantations in State Forest 65 since a nominal policy of harvesting without replacement was proposed in 1996, when the State Government announced the Gnangara Park concept, including: planning for the Gnangara Mound groundwater resource; development and implementation of two *Forest Management Plans*; administration of the Wesbeam Agreement (from 2003 onwards); the Gnangara Sustainability Strategy; the Strategic Review of the Perth and Peel Regions (now indefinitely deferred); and presently through the current Gnangara Mound planning process.

8. The State Government has long accepted that the removal of pines from the Gnangara, Pinjar, and Yanchep plantations in State Forest 65 may constitute a threat of serious or irreversible damage to the environment. Since 2003, State Government documents have articulated a basis for pine removal having a significant impact on Carnaby's Cockatoos/Ngolyenok, with discussion of this issue in:
    a. the *Carnaby's Black-Cockatoo (Calyptorhynchus latirostris) Recovery Plan 2002-2012*; and
    b. a paper included in the proceedings for a 2003 Carnaby's Cockatoo/Ngolyenok symposium by David Mitchell (then the Regional Leader Nature Conservation, for Department of Conservation and Land Management's Swan Region) 'Clearing of Gnangara Pine Plantation: Implications for Carnaby's Black-Cockatoo on the Swan Coastal Plain' (link, pp 23-31).

9. The Mitchell (2003) symposium paper stated:

    'As yet we don't have a good idea of what the impact of removal of the pine food source at Gnangara will be on Carnaby's Black-Cockatoo. It is possible to imagine the impact as being minimal or huge. Without knowing we cannot factor it into the planning process for Gnangara Park. Additional information, as described above, will allow a rough indication of the magnitude of impact, and more detailed investigations will allow clarification of the mechanism of impact.

    Finally, we should consider the relative significance of this threat to the species recovery compared with other threatening processes. In particular we need to consider those threats operating at the time of breeding, such as nest hollow availability (including protection and production), food availability during breeding (protection and creation of feeding habitat in breeding areas) and nest robbing.

    If the loss of pines is found to pose a significant threat to the Carnaby's Black-Cockatoo, it is important to identify the mechanism of impact and then factor that into Gnangara Park management

and pine harvesting planning as soon as possible, including influencing where, and when pines are removed and the rehabilitation requirements.' (page 31)

10. Thus, since at least 2003, the State Government has accepted that the two 'conditions precedent' (or thresholds) for the application of the precautionary principle were satisfied in the relation to the removal of pine without replacement in the Gnangara, Pinjar, and Yanchep plantations, namely that there was:
    a. a threat of serious or irreversible environmental damage; and
    b. scientific uncertainty as to the environmental damage.

11. Despite these two condition precedents being satisfied, State Government proponents, decision-making authorities and regulatory bodies have cited the lack of full scientific certainty as a reason for postponing measures to prevent environmental degradation or, more specifically, to mitigate the impact of pine removal.

12. The EPA's conduct in failing to require the referral of the proposal since the State Government decision to indefinitely defer the Strategic Assessment of the Perth and Peel Regions in 2020 is a recent example of this because – given the indeterminate setting aside of the SAPPR process and the clear status of the proposal as a 'significant proposal' – section 38A of the EPA now obligates the EPA to require the proponent or a decision-making authority to refer the proposal to the EPA. That the EPA has not done so would seem, objectively, to indicate that the EPA relies on the position set out in its 2019 technical report, which is to the effect that, after 20 years of the risk being known and extensive scientific research and expert discussion, it remains difficult for the State's peak environmental body – specifically tasked with protecting the State's environment – to predict the significance of the impact of pine clearing on Carnaby's cockatoo until further research is completed to 'resolve this uncertainty'.

13. The normative standard that ought to apply is that, in the application of the precautionary principle, decisions should be guided by:
    a. careful evaluation to avoid, where practicable, serious or irreversible damage to the environment;
    b. an assessment of the risk-weighted consequences of various options; and
    c. a shift in the onus or burden of showing that the threat does not in fact exist, or is negligible, to the proponent of the development plan, program or project (that is, the decision-maker to assume that there is, or will be, a serious or irreversible threat of environmental damage and to take this into account, notwithstanding that there is a degree of scientific uncertainty about whether the threat really exists).

14. An alternative view is that there now exists – and, indeed, has been for some time – a sufficient scientific basis for environmental impact assessment of the proposal under Part IV, notwithstanding there remains scientific uncertainty, to some degree, about certain issues, similar in degree and kind to the uncertainty that the EPA encounters generally n assessing proposals under Part IV.

15. In relation to the impact of pine removal on Carnaby's Cockatoos/Ngolyenok, the consistent approach of decision-makers has been to:
    a. indicate uncertainty about significance of the impact of pine removal;

b. insist that assessments of the significance of the impact and evaluations of actions to mitigate that impact must be considered in context with (and in comparison to):
   (i) other threatening processes for the species;
   (ii) other competing environmental issues for the Gnangara Mound groundwater region;
c. call for more research about the impact;
d. fail to take actions to mitigate the impact by:
   (i) delaying decisions about mitigation measures;
   (ii) implementing weak mitigation measures;
   (iii) resiling from implementing mitigation commitments or only partially them; and
   (iv) claiming that un-related conservation measures mitigate the impact.

16. Put another way, the approach of decision-makers has been to:
    a. **claim scientific uncertainty about the damage**;
    b. **deny the activity full or proper status as a threat, and/or prevent full or proper consideration of the seriousness or irreversibility of environmental damage of the threat itself**; and
    c. **postpone or avoid measures to prevent environmental degradation**.

17. The necessary corrective to this sustained failure to apply the precautionary principle is that the EPA decide to assess the proposal, so that the proposal can be subject to the normal Part IV assessment processes that apply for changes in land use, purpose and condition that are likely, if implemented, to have a significant effect on the environment.

IX. Part IV of the *Environmental Protection Act 1986* provides a vital check and balance measure on State Government power and proponents should not be allowed to avoid it

1. Part IV of the *Environmental Protection Act 1986* provides a vital check and balance on the power of State Government proponents to undertake developments, actions or changes in land use that are likely, if implemented, to have a significant effect on the environment – that is, to implement 'significant proposals'.

2. As a check and balance measure on State Government power, and specifically the power of State Government agencies to implement significant proposals, Part IV operates to:
   a. ensure environmental factors are identified and given weight and are considered in isolation, ahead and independent of other factors in decision-making about the proposed change in land use and condition;
   b. allow the EPA, as an independent statutory body, to evaluate the environmental acceptability of proposed change in land use and condition which is likely to have a significant effect on the environment;
   c. provide opportunities for public participation during the assessment process for the proposal; and
   d. enable public scrutiny of the proponent's assessment documentation and the EPA's assessment report and recommendations, and consequently allow the community to better understand and evaluate a proposed government action to change land use and condition.

3. Part IV also gives the Minister for Environment power – on advice and recommendations from the EPA in relation to an assessed proposal, and with agreement of other relevant Ministers and decision-making authorities – to decide whether or not a proposal from a State Government

proponent that is likely to have a significant effect on the environment can be implemented and, if so, to impose conditions on the proposal's implementation.

4. This check and balance function of Part IV only operates if significant proposals are subject to EPA assessment and Ministerial approvals under Part IV. Significant proposals that are never referred or called in, but are nevertheless implemented, will escape the impact assessment, public scrutiny, and approvals processes that Part IV imposes for proposed State Government developments, actions or changes in land use likely to have a significant effect on the environment.

5. The provisions in Division 1 (Referral and Assessment of Proposals) of Part IV are essential to the work of Part IV as a check and balance on the power of State Government proponents.

6. Section 38(1) provides that the proponent of a significant proposal, or any other person, may refer the proposal to the Authority. The EPA then has to decide whether or not to assess the referred proposal (section 38G).

7. Section 37B(1) provides that 'significant proposal' means 'a proposal likely, if implemented, to have a significant effect on the environment and includes a significant amendment of an approved proposal'.

8. Relevantly, section 3(1) defines a 'proposal' as a policy, plan or programme, project, undertaking or development, or a change in land use, and 'proponent' in relation to a proposal, to mean the person who or which is responsible for the proposal, or the public authority on which the responsibility for the proposal is imposed under another written law.

9. The referral of a proposal under section 38 is the formal statutory gateway to, first, a decision by the EPA about whether to assess the proposal, and then to formal assessment under Part IV, including opportunities for public participation and the preparation of an assessment report if a decision to assess is made.

10. Part IV depends on State Government entities acting responsibly to refer proposals to the EPA, as there is no express or implied prohibition in the Act against implementing a proposal that is likely to have a significant effect on the environment. Instead, Part V of the Act makes it an offence to, e.g., cause pollution and unreasonable emissions (section 49), discharge waste in circumstances in which it is likely to cause pollution (section 50), and – relevantly for the proposal – cause serious environmental harm (section 50A) or cause material environmental harm (section 50B). In addition, permits, approvals or licences are required for activities identified in Division 2 (Clearing of Native Vegetation) and Division 3 (Prescribed Premises, Works Approvals and Licences) of Part V of the Act.

11. A safeguard to the failure of State Government proponents to refer a significant proposal are the respective duties placed on the EPA and decision-making authorities to either call in a proposal under section 38A or refer the proposal to the EPA pursuant to section 38(4) in certain circumstances.

12. Section 38A provides that if a proposal has not been referred to the EPA under section 38, the EPA must require the proponent or a decision-making authority to refer the proposal to the EPA if the EPA considers that the proposal is a significant proposal. Similarly, section 38(4) provides that a decision-making authority must refer a proposal to the EPA as soon as it has notice of the proposal if the proposal appears to it to be a significant proposal.

13. The provisions in Division 2 (Implementation of Proposals) of Part IV operate in conjunction with the Division 1 provisions, to achieve the overall check and balance function of Part IV on State Government power to implement significant proposals.

14. Following any appeals under Part VII, the Minister and relevant decision making authorities may reach agreement under section 45(1) as to whether or not the proposal may be implemented and, if so, the conditions and procedures to which that implementation should be subject.

15. An implementation agreement which provides that the proposal may be implemented, or may be implemented subject to conditions, must be set out in a Ministerial Statement: section 45(5). A Ministerial Statement has four relevant consequences which extend to persons concerned with the implementation of the proposal:
    a. Persons (including proponents) will no longer commit an offence against s 41A if they do anything to implement the proposal.
    b. Proponents can obtain approvals required for the lawful implementation of the proposal from other decision making authorities because section 41 ceases to apply.
    c. Persons implementing the proposal in accordance with the implementation agreement/decision (including implementation conditions) reflected in the Ministerial Statement have a defence to various criminal proceedings (and also do not require a clearing permit to avoid committing an offence against section 51C).
    d. The proponent will commit an offence against section 47(1) if it does not ensure that implementation of the proposal is carried out in accordance with implementation conditions in the Ministerial Statement.

16. The rule of law underpins the check and balance function of Part IV to control the ability of State Government proponents to implement significant proposals.

17. In relation to this proposal, the basic principle is that a government agency as a proponents for change in land use, purpose and condition is bound by the same rules as private nongovernment proponents. This principle is fundamental to the rule of law in relation to the State's environment.

18. All government proponents understand, or should understand, that the *Environmental Protection Act 1986* binds the Crown, and that they are subject to the same liabilities for offences of pollution, environmental harm, and native vegetation clearing as other members of the public.

19. The rule of law also requires that other statutory bodies understand their responsibilities under the *Environmental Protection Act 1986*. All decision-making authorities understand, or should understand, that the *Environmental Protection Act 1986* binds the Crown, and that they are obliged by law to comply with the section 38(4) requirement that a decision-making authority

must refer a proposal to the EPA as soon as it has notice of the proposal if the proposal appears to it to be a significant proposal.

20. Similarly, the EPA understands that, pursuant to section 38A, if the EPA considers that a proposal is a significant proposal and if the proposal has not been referred to the EPA under section 38, the EPA must require the proponent or a decision-making authority to refer the proposal to the EPA.

21. Section 15 of the Act strengthens the obligation in section 38A, in providing that:

> It is the objective of the Authority to use its best endeavours —
>
> (a) to protect the environment; and
>
> (b) to prevent, control and abate pollution and environmental harm.

22. These rule of law consideration are relevant because, in 2020, the Strategic Assessment of the Perth and Peel Regions was deferred indefinitely. As the Strategic Assessment of the Perth and Peel Regions was the statutory decision-making process that the State Government intended to assess and mitigate the impact of pine removal on Carnaby's Cockatoos/Ngolyenok, the decision to indefinitely defer the Strategic Assessment of the Perth and Peel Regions enlivened the statutory obligations for decision-making authorities to refer the proposal to the EPA and for the EPA to call in the proposal.

23. The failure of the EPA to require the proponent to refer the proposal since the State Government decision to indefinitely defer the Strategic Assessment of the Perth and Peel Regions is a key reason why the EPA must decide to assess the proposal under Part IV.

24. Currently, there are no existing implementation conditions relating to the proposal that bind the proponents to properly mitigate the impact of the proposal on Carnaby's Cockatoos/Ngolyenok.

25. As such, an EPA decision not to assess the proposal, but instead to provide advice and recommendations, only continues the abuse of power that has allowed the State Government to avoid substantive mitigation action for the environmental impact of the proposal for the last two decades. This is so even if the EPA considers that the Department of Water and Environmental Regulation-led *Gnangara groundwater allocation plan* planning process is a statutory decision-making process that that can mitigate the potential impacts of the proposal on the environment, for reasons discussed below.

26. Among other issues, allowing a State Government proponent – such as the Department of Conservation, Biodiversity and Attractions – to implement a significant proposal without going through Part IV assessment and approval (or another statutory decision-making process that achieves the EPA's environmental objectives) means that the State Government proponent avoids the financial burden and legal responsibility of having to comply with implementation conditions – this has the effect of externalising the financial benefits and administrative conveniences as an environmental cost.

27. To the extent that the implementation conditions for a proposal may impose significant financial costs on a State Government agency as the proponent, compliance with legal

requirements is a fundamental requirement of Chief Executive Officers for government agencies and, necessarily, legal compliance is a top priority for the procurement and allocation of agency budgets. Ministers have oversight for the agencies they supervise, and the Minister for Environment has the responsibility of articulating budgetary needs for legal compliance within Cabinet.

28. That a State Government proponent must implement a proposal to satisfy commercial or other environmental objectives is also not relevant to the decision to refer a proposal once the proponent is satisfied the proposal may, if implemented have a significant effect on the environment.

X. The need for public accountability and public participation requires that the EPA decide to assess the proposal

1. Part IV of the *Environmental Protection Act 1986* enables public accountability of decision-makers and proposed government actions that will significantly impact the environment by making all relevant information about a proposal publicly available.

2. This principle was encapsulated the UK House of Lords in *R v Shayler* [2003] 1 AC 247:

> Modern democratic government means government of the people by the people for the people. But there can be no government by the people if they are ignorant of the issues to be resolved, the arguments for and against different solutions and the facts underlying those arguments. The business of government is not an activity about which only those professionally engaged are entitled to receive information and express opinions. It is, or should be, a participatory process. But there can be no assurance that government is carried out for the people unless the facts are made known, the issues publicly ventilated.

3. This statement of principle in *Shayler*, although not directed to environmental decision-making, encapsulates well the basic rationale for the public participation and public scrutiny that Part IV provides for.

4. In *Shayler*, the House of Lords went on to state that, in matters of public trust, 'publicity is a powerful disinfectant'. This is also key reason why a decision to assess the proposal is required.

5. Assessment of this proposal under Part IV is necessary to address a failure of government accountability that has gone on for two decades and that has involved a range of public officials who – even as the Gnangara Sustainability Strategy was abandoned and the Strategic Assessment of the Perth and Peel Regions dragged on and the harvesting of pine proceeded apace and the scientific basis for the significance of pine for Carnaby's Cockatoos/Ngolyenok strengthened – nonetheless failed to recognise the abuse of power inherent in continuing to allow a State Government proponent to implement a proposal that had significant effect on the environment as it effected a change in land use and condition within the Gnangara, Pinjar and Yanchep plantations in State Forest 65.

6. Part IV of the Act also provides a vital function in allowing for public participation in the assessment of proposals by State Government entities, through the opportunity to make public submissions. Similarly, Part VII of the Act also allows members of the community to appeal and the content and recommendations of the EPA's assessment report for a proposal.

7. This public participation function is lost if the EPA decides not to assess, and to give advice and recommendations. As discussed in another section, the *Gnangara groundwater allocation plan* process is also not well-suited for public participation in relation to the impact of pine removal on Carnaby's Cockatoos/Ngolyenok and appropriate public scrutiny of the proponent's application of the mitigation hierarchy and proposed residual impacts and proposal outcomes.

8. Another important benefit of a State Government significant proposal undergoing the environmental impact assessment process under Part IV is to demonstrate the legitimacy of a proposed State Government action that will impact significantly on the environment, and the underlying legitimacy of an exercise of government power to take that action. Where a State Government significant proposal evades assessment and approval under Part IV, community members may naturally question the legitimacy of the proposal and the underlying exercise of government power.

9. Thus, a sometimes under-appreciated aspect of Part IV assessment and approval is its public demonstration that a proposed State Government action is within lawful authority, and that an independent, transparent and publicly accessible process has been undertaken to consider the significance of the proposed action's effect on the environment.

XI. State Government decision-makers apply a different logic in assessing the impact of pine removal than for other losses of feeding habitat

1. Finn et al. (2009; link) noted the State Government decision-makers tended to treat the impact of pine removal differently than the loss of other feeding habitat.

> There is also a need for consistency in how this impact is assessed. Previous assessments have established the expectation (and possible precedent) that almost any loss of potential feeding habitat on the Swan Coastal Plan is concerning. Reasoning a priori that birds will compensate for the loss of pine habitat by switching to native vegetation is clearly inconsistent with the view—established in previous assessments and draft recommendations—that feeding habitat is limited and loss of feeding areas should be avoided wherever possible. The action should be assessed for what it is—a substantial loss of feeding habitat that will affect several thousand birds. (page 83)

2. Put another way, if other Carnaby's Cockatoo/Ngolyenok feeding habitat is lost, then the loss is assessed with in a cumulative context and is understood to contribute a decline in the carrying capacity of the environment.

3. In contrast, with pine, decision-makers sometimes assume that Carnaby's Cockatoos/ Ngolyenok are 'under utlising' the available food in the *Banksia* woodland in the surrounds of the Gnangara, Pinjar and Yanchep plantations within State Forest 65. From the perspective of environmental impact assessment for a threatened assumption, this assumption is a distinct issue from the question of *how* birds respond to the loss of pine feeding habitat, and the available evidence is that birds will forage in the *Banksia* woodland, as they have long been observed to do during the breeding and non-breeding period on the Swan Coastal Plain.

4. Decision-makers need to question the validity or appropriateness of applying a fundamentally different impact assessment logic to the loss of pine than for the loss of other feeding habitat –

a consequence of assuming a level of compensatory capacity when there is, in fact, little or no degree of under-utilisation and birds are (or will soon be) fully exploiting the available food resources in *Banksia* woodland given stressors of climate change, disease, bushfire, inappropriate fire regimes, and clearing and fragmentation.

5. The mistake of such an assumption is to substantially underestimate the reduction in carrying capacity that the removal of pine will cause – put another way, in environmental impact assessment for a threatened species in a rapidly changing landscape with a range of cumulative impacts it is much better to make a type I error (that is, incorrectly concluding there is an impact, when in fact there is none) than a type II error (that is, incorrectly concluding there is no impact, when there really is). Here, the question here is not of whether there will be an impact, but the extent of the impact – however, same preference for a Type I-type error about the extent of the impact remains.

6. In the context of the proposal to change the land use in the Gnangara, Pinjar and Yanchep plantations within State Forest 65, the cumulative effect of impacts of the proposal on the environment include the loss of c. 16 000 ha of pine feeding habitat within the plantations, and changes to abundance and quality of food sources in native vegetation in the surrounds of the plantations, including the adverse effects of bushfire, climate change, clearing, fragmentation and other processes on *Banksia* and eucalypt woodlands and *Banksia sessilis* thickets.

7. Koalas (*Phascolarctos cinereus*) in the eastern states are a useful comparator species for environmental impact assessment and animal welfare (see Hynes et al. (2021; link)), as koalas also uses trees in the commercial tree plantations as a food source (although they feed on leaves, not seeds).

8. McAlpine (2015; link), in their review of regional trends, outlooks and policy challenges for koalas, noted that:

   > 'Koalas have colonised commercial plantations of Tasmanian blue gum (*Eucalyptus globulus*) in southwest Victoria, where they can occur in moderate to high densities, presenting a challenging animal welfare issue during clearfell operations. As there are about 130,000 ha of blue gum plantation within the range of the koala in south-west Victoria the number of koalas using this habitat is considerable, probably greater than 150,000 (Menkhorst, unpublished data).' (page 230)

9. Koala can be abundant in plantations with young trees if the trees are a preferred browse species. For example, Ashman et al. (2020; link) reported that young blue gum *Eucalyptus globulus* plantations in Victoria support higher mean koala density than either native vegetation blocks or native strips. Kavanagh and Stanton (2012; link) found that koalas use (i.e. feed and shelter in) eucalypt plantations as young as 4–7 years old in New South Wales.

XII. The harvesting of pine without replanting meets the statutory meaning of 'environmental harm' under the *Environmental Protection Act 1986*

1. The act of harvesting pine meets the statutory meaning of 'environmental harm' under the *Environmental Protection Act 1986*.

2. Section 3A of the Act defines 'environmental harm' as:

   > direct or indirect —

(a) harm to the environment involving removal or destruction of, or damage to —
  (i) native vegetation; or
  (ii) the habitat of native vegetation or indigenous aquatic or terrestrial animals;
  or
(b) alteration of the environment to its detriment or degradation or potential detriment or degradation; or
(c) alteration of the environment to the detriment or potential detriment of an environmental value; or
(d) alteration of the environment of a prescribed kind

3. First, the activity of harvesting involves direct 'harm to the environment through the removal or destruction of, or damage to … the habitat of … indigenous terrestrial animals' – namely the removal and destruction of the feeding habitat provided by a system of 23 000 ha of pine plantations that tens of thousands of individual Carnaby's Cockatoos/Ngolyenok have consistently and intensively used each year across many decades. The act of harvesting is sufficient to cause this direct harm – it does not require that the activity be characterised as harvesting without replacement. This is because, even if pine is immediately replanted in the harvested area, the new stems take 7-10 years to produce seed.

4. Second, the activity of harvesting without replacements involves direct alteration of the environment to its detriment or degradation or potential detriment or degradation. This is on the basis that the definition of 'environmental harm' in section 3A(2)(b) is read with the reference to 'environment' from section 3, in this way:

> alteration of [*living things, their physical, biological and social surroundings, and interactions between all of these*] to its detriment or degradation or potential detriment or degradation

5. This construction follows the approach of Malcolm CJ in *Palos Verdes Pty Ltd v Carbon* (1991) 6 WAR 223, 239, such that the words 'detriment' and 'degradation' imply detriment and degradation within the context of the meaning of 'environmental harm' in section 3A read with the meaning 'environment' in section 3, and 'environmental harm' read in context with the meaning of the parallel term 'pollution' in section 3A and the requirement for 'pollution' to involve an emission.

6. The relevant question is therefore whether the condition or state of '*living things, their physical, biological and social surroundings, and interactions between all of these*' is altered to its detriment or degradation. Here, Carnaby's Cockatoos/Ngolyenok are 'living things' and their 'biological' surroundings are a feeding habitat consisting of a system of pine plantations that many thousands of Carnaby's Cockatoos/Ngolyenok have consistently and intensively used since the 1930s, and those biological surroundings are altered to their:
   (a) 'detriment', in the sense of those surroundings being harmed or damaged, and this harm/damage adversely affecting living things (ie Carnaby's Cockatoos/Ngolyenok); or
   (b) 'degradation', in the sense of those surroundings being degraded – that is, reduced in quality or value for living things (ie Carnaby's Cockatoos/Ngolyenok).

7. There is nothing in the concept of 'environment' in section 3, applied in the context of the definition of 'environmental harm' in section 3A, that prevents the phrase 'physical, biological … surroundings' from applying to man-made landscapes such as pine plantations. Indeed, the physical and biological surroundings of many species are now some kind of combination of

'natural' and 'man-made' environment. Similar, commercial timber plantations can be important feeding habitats for native species, eg the koala in Victoria and New South Wales (where they are a threatened species).

8. There likely would be a defence under section 74B of the *Environmental Protection Act 1986* for causing serious environmental harm or material environmental harm on the basis that the person charged with that offence could prove that the environmental harm was, or resulted from, an authorised act which did not contravene any other written law – the act being authorised through an approval issued by the Department of Biodiversity, Conservation and Attractions under the *Conservation and Land Management Act 1984* or other legislation (eg *Biodiversity Conservation Act 2016*) for the Forest Products Commission contractors to conduct harvesting operations in the Gnangara, Pinjar and Yanchep plantations within State Forest 65.

9. Section 74B relevantly provides:

   (1) It is a defence to proceedings under this Part for causing serious environmental harm or material environmental harm if the person charged with that offence proves that the environmental harm was, or resulted from, an authorised act which did not contravene any other written law.

   (2) For the purposes of subsection (1) an act was authorised if it was —

      (a) done in accordance with an authorisation, approval, requirement or exemption given in the exercise of a power under another written law

10. The Department of Water and Environmental Regulation is the regulatory agency responsible for administering the *Environmental Protection Act 1986*. The Department's Compliance and Enforcement Policy (link) states that 'The Western Australian community has an expectation that the State's laws will be applied and their application enforced' (page 5), its Prosecutions Guideline (link) notes that the Director General of the Department approves the commencement of all prosecution proceedings.

XIII. Possible outcomes of this referral

1. Assuming this Referral Document is accepted as a valid referral of the proposal, several administrative processes may occur prior before the EPA makes a decision on whether or not to assess the proposal, such as the nomination of a person responsible for the proposal (s 38H); the proponent seeking to amend the proposal (s 38C); the EPA requesting further information about the proposal (s 38F); and the EPA conducting its own investigations and inquiries (s 38G).

2. On the face of the provisions in Part IV Division I of the *Environmental Protection Act 1986*, there are several potential outcomes for the referral of this proposal, including:

   a. **Outcome 1**: the EPA decides to assess the proposal;

   b. **Outcome 2**: the EPA decides not to assess the proposal, which will be a decision (ie a recorded decision of the EPA that a proposal is not to be assessed) that any decision-making authority, responsible authority, proponent or other person that disagrees with the decision can appeal pursuant to section 100 of the *Environmental Protection Act 1986*;

c. **Outcome 3**: the proponent gives written notice that the proponent does not wish to proceed with the proposal, and the referral of the proposal will then be taken to have been withdrawn;

d. **Outcome 4**: the EPA decides not to assess a proposal, but nevertheless gives advice and makes recommendations on the environmental aspects of the proposal to the proponent or any other relevant person or authority;

e. the proponent requests the EPA to declare that the proposal is a derived proposal on the basis that a previous proposal (possibly the *Forest Management Plan 2014-2023*), and

i. **Outcome 5**: the EPA refuses to declare the referred proposal to be a derived proposal because the EPA considers that:

1. environmental issues raised by the proposal were not adequately assessed in the strategic assessment; or
2. there is significant new or additional information that justifies the reassessment of the issues raised by the proposal; or
3. there has been a significant change in the relevant environmental factors since the strategic assessment was completed.

ii. **Outcome 6**: the EPA declares that the referred proposal is a derived proposal, and thus the EPA cannot decide to assess the proposal;

iii. **Outcome 7**: the EPA declares that the referred proposal is a derived proposal, but initiates an inquiry under section 46(4) to inquire into whether or not the implementation conditions relating to the proposal, or any of them, should be amended.

XIV. Carnaby's Cockatoo Recovery Plan

1. The importance of Gnangara pine as a food source to Carnaby's Cockatoos/Ngolyenok has been recognised for decades – as was stated in the current Carnaby's Cockatoo Recovery Plan (published in October 2013: link): 'In particular, the pine plantations immediately north of Perth have been recognized as an important food resource for Carnaby's cockatoo for over 60 years (Perry 1948; Saunders 1980; Johnstone et al. 2011).' (page 12). For a discussion of the historical context for Carnaby's Cockatoos/Ngolyenok in the Gnangara, Pinjar and Yanchep plantations within State Forest 65, see pages 4-11 in Finn et al. (2009; link).

2. The current Carnaby's Cockatoo Recovery Plan provides the following guidance and clearly expresses the nature of the proposal and its likely significant effect on Carnaby's Cockatoos/ Ngolyenok:

a. 'The removal, without adequate replacement, of extensive areas of commercial pine plantations on the Swan Coastal Plain, and elsewhere, on which major flocks now depend for food' as among the activities that may have an impact on Carnaby's cockatoo, or its habitat'. (page 22)

b. 'Pine plantations have been demonstrated to be an important food source for Carnaby's cockatoo (Saunders 1980; Johnstone and Storr 1998; Higgins 1999; Finn et al. 2009). Historically plantations have been managed on a rotation basis resulting in a consistent food supply over the landscape and over years. The removal process for pines in the Gnangara, Pinjar and Yanchep plantations is underway (staged removal between 2004 and 2031) with no stated plan to re-establish the pine plantations. Not providing an alternative food resource following removal of pines is likely to have a significant impact on the food resources available to Carnaby's cockatoo in the Perth region. Efforts to avoid (by retaining pine trees that might otherwise be harvested) or mitigate (replanting of cockatoo feed species) this impact may incur significant economic costs.' (page 27)

c. '**Recovery Actions**

Action 1: Protect and Manage Important Habitat

…

Protection and management of non-breeding habitat

Tasks include:

…

Develop and implement approaches to avoid, mitigate or offset impacts of harvesting pine trees without replacement, especially in the Yanchep, Pinjar and Gnangara plantations.' (pages 38-40)

XV. Abuses of power in relation to the proposal

1. There are a number of abuses of power in relation to the power that bear consideration, and which support, as a corrective to poor public accountability, a decision to assess the proposal.

2. First, there is an abuse of power inherent in two State Government using the Strategic Assessment of the Perth and Peel Regions process as a reason to delay implementing substantive mitigation of the impact of pine removal for a period of 11 years and counting.

3. The State Government has expressly acknowledged the significant impact of pine removal on several occasions since at least 2009 (and, indeed, consistently during the Strategic Assessment of the Perth and Peel Regions process), but has nonetheless proceeded with the implementation of the proposal through the continuing harvesting without replacement of pine with the Gnangara, Pinjar and Yanchep plantations within State Forest 65 – with the exception of the replanting of c. 2000 ha of pine and a brief reduction in harvesting in 2018-2019.

4. Second, there is an abuse of power occurs when a State Government proponent fails to refer a proposal that is likely, if implemented, to have a significant effect on the State's environment.

5. The public expects State Government agencies to be model proponents, and this is proposal should have been referred by a State Government proponent – e.g. the Department of Biodiversity, Conservation and Attractions – as soon it appeared that the activity of harvesting without replacement in the Gnangara, Pinjar, and Yanchep plantations in State Forest 65 met, or may have met, the elements of a 'significant proposal' – that is, a change of the use, purpose and condition of land that was likely, if implemented, to have a significant effect on the environment, the environment being 'living things, their physical, biological and social surroundings, and interactions between all of these'.

6. State Government officials and bodies responsible for a change in land use, purpose or condition have a general responsibility to refer that proposal to the EPA if the proposal is likely, if implemented, to have a significant effect on the environment. The failure to refer such a proposal is inconsistent with the public trust in which statutory powers are conferred on public officials, notably Chief Executive Officers but also managers, administrators and other officers within government agencies.

7. This responsibility to refer extends to proposals whose implementation has already commenced. Under the *Environmental Protection Act 1986*, a 'proposal' remains a proposal during the course of its implementation – that is, the Act continues to operate until such time as a proposal has been

fully implemented (ie carried into effect completely): *Greendene Development Corporation Pty Ltd v Environmental Protection Authority* (2003) 28 WAR 107, [31]-[43].

8. Third, an abuse of power arises because the failure of a proponent to refer a significant proposal to the EPA has the perverse consequence of providing freedom from liability for the commission of various offences to persons concerned with the implementation of a proposal (see *Mineralogy Pty Ltd v Chief Executive Officer, Department of Environment Regulation* [2014] WASC 468, [48]).

9. For example, section 41A provides that if the EPA decides to assess a proposal, a person commits an offence if the person does anything to implement the proposal before a statement is published under s 45(5) or notification is given under s 45(8). However, if a proponent does not refer a significant proposal to the EPA, there will be no recorded decision by the EPA to assess the proposal. A consequence of there being no public record of an EPA decision to assess the proposal is that person who does anything to implement the proposal will have a freedom from liability for a section 41A offence.

10. In the context of the proposal, a person who does anything to implement the proposal would include (e.g.) decision-makers in the Department of Biodiversity, Conservation and Attractions, who provide authorisations for harvesting operations to occur in the Gnangara, Pinjar, and Yanchep plantations in State Forest 65 and the Forest Products Commissions contractors who conduct those harvesting operations.

11. A second example is that a decision-maker in the Department of Biodiversity, Conservation and Attractions who provides an authorisation for harvesting operations in the Gnangara, Pinjar, and Yanchep plantations in State Forest 65, can thereby confer the Forest Products Commissions contractors freedom from liability for environmental harm offences under Part V of the *Environmental Protection Act 1986*.

12. As discussed in another section, there is no express or implied prohibition in the Act against implementing a proposal that is likely to have a significant effect on the environment. Instead, persons implementing the proposal in accordance with the implementation agreement or decision contained in the Ministerial Statement for the proposal have a defence to various criminal proceedings. Part V of the Act contains various offences (e.g. for causing pollution, clearing native vegetation, causing environmental harm) that persons implementing a significant proposal might otherwise be liable for. For example, sections 50A and 50B make it an offence to cause serious or material environmental harm, respectively.

13. Section 74A provides a defence for pollution and environmental harm offences if the pollution or environmental harm occurred in the implementation of a proposal in accordance with an implementation agreement or decision.

14. Similarly, section 74B provides a defence for an environmental harm offence if the person charged with the offence proves that the environmental harm was, or resulted from, an authorised act which did not contravene any other written law and, pursuant to section 74B(2)(a) was

authorised because the act was done in accordance with an authorisation, approval, requirement or exemption given in the exercise of a power under another written law.

15. The effect of the defence provision in section 74B is that a Department of Biodiversity, Conservation and Attractions authorisation to conduct harvesting operations in the Gnangara, Pinjar and Yanchep pine plantations in State Forest 65 issued under the *Conservation and Land Management Act 1984* or the *Biodiversity Conservation Act 2016* may operate to provide a harvesting contractor, a person concerned with the implementation of the proposal, freedom from liability for an environmental harm offence.

16. Fourth, under a standard of reasonableness in performing their statutory duties, it should have been clear to the members of the Conservation and Parks Commission, the CEO of the Department of Biodiversity, Conservation and Attractions, the CEO of the Forest Products Commission, the Minister for Forestry, and the Minister for Environment that – once the State Government made the decision, in 2020, to indefinitely defer the Strategic Assessment of the Perth and Peel Regions – it was then necessary to ensure that the proposal was referred to the EPA, so that orderly assessment and approval of the proposed change in land use, purpose and condition could occur.

17. The circumstances of the COVID-19 pandemic obviously bear on the standard of reasonableness that applies. However, this failure to refer has now dragged for more than two years, without any public indication of an intent to refer the proposal to the EPA, and these public officials remain obliged – by the general standards of the public trust afforded to them, the standards of conduct appropriate for a public official or statutory body that is the proponent for the proposal, and/or by statutory obligation in section 38(4) of the *Environmental Protection Act 1986* to refer the proposal to the EPA.

18. To accord with the public trust, public officials must be vigilant in discharging the important functions conferred on them and in recognising how continued government inaction to refer the proposal and mitigate the impact of pine removal on Carnaby's Cockatoos/Ngolyenok undermines public confidence in the integrity and fairness of government decision-making, including the ability of members of the public to participate in the formal assessment of proposed changes in the use, purpose and condition of public land that are likely, if implemented, to have a significant effect on the environment.

19. In this context, it is important to recognise that the conduct of public officials can fail short of the public trust conferred on them even if there is no obvious error, incompetence, misbehaviour, dereliction of duty, or dishonesty in how the officials exercise their statutory powers and carry out their statutory functions.

20. A stronger view is that the failure of a State Government proponent to refer the proposal to the EPA for assessment under Part IV, and the failure of decision-making authorities to meet their obligation under section 38(4) to refer the proposal, is unreasonable, in the sense of being conduct (either as a positive act, such as the granting of an approval for an activity or as an omission to act, such as a failure to refer the proposal) that:

a. is arbitrary and unjust, in its consistent disregard for the sustained and cumulative impact of the removal without replacement of pine on a threatened species;

b. is lacking in good faith, as it subverts the welfare of individual Carnaby's Cockatoo/ Ngolyenok and the persistence of an important local population (or populations) of a threatened species to the administrative convenience and commercial advantage of not treating the change of land use, purpose and condition on its merits as a significant proposal that should be referred to the EPA;

c. lacks evident or intelligible justification because the conduct is clearly inconsistent with the available evidence before public officials and agencies regarding:

   i. the ongoing de facto change in the use, purpose and condition of State Forest land in the Gnangara, Pinjar and Yanchep pine plantations since the early 2000s; and

   ii. the significance of the impact of the removal of pine on the environment (being living things – Carnaby's Cockatoos/Ngolyenok – their physical, biological and social surroundings, and interactions between all of these);

d. has no rational basis as a course of administrative action or decision-making because the conduct failed to properly consider, or did not consider at, a fundamental aspect of the circumstances animating the statutory powers, responsibilities and obligations imposed on public officials and decision-making authorities, namely the effect of an act – the harvesting of pine – and the impact of a change in land use, purpose and condition on a threatened species; and

e. derogates from the standard of conduct expected or required of public officials and statutory bodies as proponents and as decision-making authorities for the purposes of Part IV of the *Environmental Protection Act 1986*.

21. The assessment of this proposal under Part IV of *Environmental Protection Act 1986* is therefore necessary to correct:

    a. the sustained failure of public officials and statutory bodies to properly exercise the statutory powers and functions conferred on them in relation to this proposal; and

    b. for decision-making authorities, the sustained derogation from their obligations under the *Environmental Protection Act 1986* to refer this proposal to the EPA.

22. Assessment of the proposal under Part IV will address the sustained failures and derogations and allow for public participation in decision-making through, among other things:

    a. the preparation of an assessment report by the EPA, setting out advice and recommendations in relation to the proposal (including recommended implementation conditions);

    b. the identification and consideration of the implementation issues by the relevant Ministers for the proposal;

    c. the making of a formal implementation agreement or decision in relation to the proposal;

    d. if the decision is that the proposal may be implemented subject to implementation conditions – the imposition of binding conditions and procedures that properly mitigate the impact of the proposal on Carnaby's Cockatoos/Ngolyenok and which are enforceable under section 48 of the *Environmental Protection Act 1986*; and

    e. an appeals process allowing members of the community to appeal in relation to the content of, or any recommendation in the assessment report.

23. Consistent with the need to restore public confidence in government decision-making in relation to the proposal, the EPA should – for the purposes of assessing the proposal and with the approval

of the Minister and subject to section 42 – conduct a public inquiry in such manner as it sees fit or appoint a committee consisting of either EPA members and persons other than EPA members or only persons other than EPA members, to conduct a public inquiry and report to the Authority on its findings on the public inquiry.

Dr Hugh Finn

Curtin University

1 June 2022

Chronology

Relevant events and publications relating to the proposal, with selected excerpts and links

Event/Publication/Matter	Year	Note
The pine plantations were established on the land for the purpose of timber production.	1932 to 1994	
EPA Bulletin 817: Gnangara Mound groundwater resources Discussion of need for pine thinning, and Memorandum of Understanding to be developed between CALM and the Water Authority. Does not discuss Carnaby's Cockatoos/Ngolyenok.	1996	Link
State Government proposed a change in the use, purpose and condition of land in the Gnangara, Pinjar and Yanchep pine plantations, as part of the Gnangara Park concept.	1996	Media statement Concept plan
Ministerial Statement 438 - Gnangara Mound Groundwater Resources February 1997 Does not discuss Carnaby's Cockatoos/Ngolyenok. Includes, as a procedure, that: 'The Water and Rivers Commission and the Department of Conservation and Land Management will enter into a 'Memorandum of Understanding' to document the management of land vested in the Department of Conservation and Land Management on the Gnangara Mound. The 'Memorandum of Understanding' will include consideration of the following issues: 1 In the existing or proposed management plans for land on the Gnangara Mound, the principle objectives should include protection of native vegetation (in areas other than areas where control of vegetation is required, such as adjacent to young pines); 2 Wetland management should have a high priority and management objectives for the wetlands should be consistent with the water levels specified by the Department of Environmental Protection; and 3 Management plans, as far as they relate to State Forest 65, should clearly reflect "water production" as a priority purpose. The pine plantations in State Forest 65 should be managed with the objective of achieving and maintaining their water use at a level that is no more than that of the pre-existing native vegetation. This should be based on progressively moving towards an average basal area within the pine plantation of approximately 11 square metres per hectare.	1997	Link
East Gnangara Environmental Water Provisions Plan Public Environmental Review - Waters and Rivers Commission Does not discuss Carnaby's Cockatoos/Ngolyenok. Proposes to develop an MOU between Waters and Rivers Commission and the Department of Conservation and Land Management on pine management regimes in State Forest 65.	1997	Link
Groundwater resource allocation, East Gnangara EPA Bulletin 804 - Report and recommendations Does not discuss Carnaby's Cockatoos/Ngolyenok. Includes discussion of the progressive removal of pine. The Ministerial Statement published in February 1999 included a proponent (Waters and Rivers Commission) commitment to:	1998	Link

'consult with [the Department of Conservation and Land Management] to endeavour to develop a Memorandum of Understanding (MOU) on pine management regimes in State Forest 65 which recognises the dual use of forests and optimises water and timber production, while minimising environmental impacts. The MOU will include agreements associated with the removal of the pine plantation over the next 20 years and the proposed establishment of Gnangara Park.'		
Gnangara Land Use And Water Management Strategy: Final Report Western Australian Planning Commission Does not discuss Carnaby's Cockatoos/Ngolyenok. The Strategy discusses the recognition and proposed reservation of the Gnangara Park, to be established for conservation, recreation and forestry purposes and managed by the Department of Conservation and Land Management (CALM) to replace the pine plantation areas as pine is progressively harvested over the next 20 years. It nominates forestry as an interim land use. At page 27: 'CALM is proposing to establish the Gnangara Park which would extend from Gnangara Road to north of Yanchep National Park (Figures 5 & 6). Gnangara Park includes 23,000 ha of existing pine plantations, which will be progressively harvested over the next 20 years, and 27,000 ha of surrounding bushland within State Forest No. 65. Land for Gnangara Park is currently in Crown ownership and the Strategy will enable this area to remain available for the establishment of the Park which may also incorporate other land reserved for Parks and Recreation in the MRS such as the System 6 M8 East Wanneroo wetlands (See Figures 5 and 6). Gnangara Park will protect water quality on the Mound and offer new, nature-based recreation opportunities with a lessened fire risk in Perth's rapidly developing northern corridor. As the pines are progressively harvested and the longer term plans for the proposed Gnangara Park are formulated, the predominant land use will change to conservation and recreation activities compatible with the Priority 1 source protection.'	2001	Link
Wood Processing (Wesbeam) Agreement Act 2002 commences Recital A in the Wood Processing (Wesbeam) Agreement in Schedule 1 states: 'The State of Western Australia has established softwood plantations on land covering and adjacent to the aquifer known as the Gnangara Mound. The Gnangara Mound is an important source of potable water for Western Australia. The State wishes the progressive harvesting of its softwood plantations on and adjacent to the Gnangara Mound to continue as part of its plans to protect the Gnangara Mound groundwater resource.'	2002	Link
Carnaby's Cockatoo (Calyptorhynchus latirostris) Recovery Plan 2000-2009 Impact of loss of pine feeding habitat discussed during the drafting of Recovery Plan and in the Recovery Plan.	2003	Cale
Clearing of Gnangara Pine Plantation: Implications for Carnaby's Black-Cockatoo on the Swan Coastal Plain Presentation at Carnaby's Cockatoo/Ngolyenok Symposium	2003	Link Mitchell
Conservation of Carnaby's Black-Cockatoo on the Swan Coastal Plain, Western Australia	2006	Document Shah
Analysis and Response to Public Submissions Section 46 Review of Ministerial	2008	Link

Conditions on the Groundwater Resources of the Gnangara Mound Does not discuss Carnaby's Cockatoos/Ngolyenok. 'The assumptions relating to future land uses and their influence on groundwater regime are critical, and their application is beyond the control of DoW. The extent and rate of urbanisation, the management of the pine plantations and fire management are key aspects with a major effect on groundwater level regimes that are only partly understood.' - Water Corporation		
The Reserve System of the GSS Gnangara Sustainability Strategy document within 'Gnangara Park', 22 0000 ha of Gnangara, Pinjar and Yanchep pine plantations proposed for clearfelling between 2002 and 2027. Pine products owned by FPC. Post-pine land use to be determined by DEC.	2008	Document
Food resources of Carnaby's black-cockatoo (Calyptorhynchus latirostris) in the Gnangara Sustainability Strategy area	2008	Document Valentine and Stock
about 2000 ha of pines planted over 10 years (~2008-2018)	c. 2008 - 2018	
Pines and the ecology of Carnaby's Black-Cockatoos (Calyptorhynchus latirostris) in the Gnangara Sustainability Strategy study area	2009	Document Finn, Stock and Valentine
Gnangara Mound Groundwater Resources — Change to Environmental Conditions EPA Report 1324 - Section 46 Report and Recommendations Does not discuss pine thinning/removal or Carnaby's Cockatoos/Ngolyenok.	2009	Link
Gnangara Sustainability Strategy: Draft for Public Comment Published by the State Government in July 2009 expresses the removal of pine in the Gnangara, Pinjar and Yanchep plantations (State Forest 65) as a change in land use, and describes this change in land use in a manner that indicates the change is likely, if implemented, to have a significant impact on the environment.	2009	Document
Great Cocky Counts Conducted annually in April, includes roost sites in Gnangara, Pinjar and Yanchep pine plantations and surrounds. BirdLife Australia coordinates the count each year with significant support from the Western Australian Department of Biodiversity, Conservation and Attractions (DBCA).	2010 – 2019; 2021	Link
Black cockatoos on the Swan Coastal Plain Page 28: '**Loss of Gnangara Pine Plantation.** The Gnangara, Pinjar and Yanchep pine plantations are to be progressively removed over the next 20 years. This is likely to have a significant impact on the number and movements of birds on the northern Swan Coastal Plain. Overall pine plantations appear to provide a very high percentage of food for large migratory flocks on the northern Swan Coastal Plain in the January to June period. The loss here will be compounded by the loss of remnant Banksia woodland. Recent studies in the East Wanneroo area confirm the importance of both pine plantations and remnant blocks of Banksia woodlands for Carnaby's Cockatoos in the January-July period…The further reduction of pines and Banksia woodlands in this area will no doubt lead to a reduction in numbers of birds wintering in this region.'	2010	Link Johnstone and Kirkby

July 2011: The State and Commonwealth Environment Ministers agree to undertake a strategic assessment for the Perth and Peel regions. August 2011: The State Government open a public comment period for the draft Terms of Reference for the strategic assessment of the Perth and Peel regions. October 2011: The public comment period closes.	2011	Link
May 2012: The Commonwealth Environment Minister approves the final terms of reference and minor amendments to the strategic assessment agreement.	2012	Link
Forest Management Plan 2004–2013 End-of-term audit of performance report Significant areas of unrehabilitated land exist where plantations are not being re-established following clearfelling of the existing crop, for example, the area of fallow ground in Gnangara plantation is approximately 5,000 hectares. (page 84)	2012	Link
Carnaby's Cockatoo (Calyptorhynchus latirostris) Recovery Plan Discusses impact of pine removal on Carnaby's Cockatoos/Ngolyenok. 'Pine plantations have been demonstrated to be an important food source for Carnaby's cockatoo (Saunders 1980; Johnstone and Storr 1998; Higgins 1999; Finn et al. 2009). Historically plantations have been managed on a rotation basis resulting in a consistent food supply over the landscape and over years. The removal process for pines in the Gnangara, Pinjar and Yanchep plantations is underway (staged removal between 2004 and 2031) with no stated plan to re-establish the pine plantations. Not providing an alternative food resource following removal of pines is likely to have a significant impact on the food resources available to Carnaby's cockatoo in the Perth region. Efforts to avoid (by retaining pine trees that might otherwise be harvested) or mitigate (replanting of cockatoo feed species) this impact may incur significant economic costs.' (page 27) 'Protection and management of non-breeding habitat Tasks include: … • Develop and implement approaches to avoid, mitigate or offset impacts of harvesting pine trees without replacement, especially in the Yanchep, Pinjar and Gnangara plantations.' (page 39-40)	2013	Link
Forest Management Plan 2014–2023 Does not discuss impact of pine removal on Carnaby's Cockatoos/Ngolyenok. The issue of pine removal was not included in the Environmental Scoping Document (2012). The *Draft Forest Management Plan 2014–2023* (link) noted that: 'Related to this is the 2011 agreement between the Commonwealth and State governments to conduct a strategic assessment of future development in the Perth and Peel regions, under the EPBC Act. This work will focus on the likely urban, industrial and infrastructure developments required for future population growth in the area, and consider issues related to the protection of Carnaby's cockatoo, including the progressive removal of the Gnangara, Pinjar and Yanchep pine plantations and subsequent rehabilitation and land use in these areas.' (page 31)	2013	Link
In 2014, BirdLife Australia wrote to the Federal Environment Minister and their State counterpart with the results of the 2014 Great Cocky Count, indicating that legal advice received suggested 'harvesting without replacement' did not constitute a lawful continuation of a use of land under section 43B of the EPBC Act, and met	2014 and after	Document

the criteria for 'significant impact' on a Matter of National Environmental Significance. In response to repeated referral requests, successive Federal Ministers have cited the removal of pine plantations, and any potential impact on Carnaby's Cockatoos/Ngolyenok, as being considered within the Strategic Assessment of the Perth and Peel Regions.		
EPA Interim Strategic Advice - Perth and Peel @ 3.5 Million: Environmental Impacts, Risks and Remedies Does not discuss impact of pine removal on Carnaby's Cockatoos/Ngolyenok and, among 'Actions impacting on the environment' indicates that Pine harvesting is 'Commonwealth only'.	2015	Link
Environmental Protection (Swan Coastal Plain Lakes) Policy 1992: Advice to the Minister for Environment, as Required under Section 33(2) of the Environmental Protection Act 1986 The Commonwealth component to the SAPPR is intended to ensure the Banksia woodlands of the Gnangara EPP will be protected due to the widespread presence of Carnaby Cockatoo habitat over more than half of the Gnangara Mound. (page 6) The pine plantation, lying within the State Forest 65, is vested in the Conservation Commission of Western Australia and managed by the Department of Parks and Wildlife. Currently the Department of Parks and Wildlife are continuing to fell the pine plantations with a view to balancing groundwater recharge with Carnaby Cockatoo foraging habitat. Management of the pines is to be further addressed through the Strategic Assessment of the Perth and Peel Regions (SAPPR) where pine basal area and Banksia woodland densities will be further refined. Pine plantation management is being implemented by the Department of Parks and Wildlife. (page 10) The SAPPR is also addressing the protection of the Carnaby Cockatoo habitat which covers more than half of the Mound. (page 15)	2015	Link
17 December 2015: The State Government opens a public comment period for the draft Strategic Conservation Plan and the draft Impact Assessment Report, the 'Perth and Peel Green Growth Plan for 3.5 million'.	Dec 2015	Link
Draft *Perth and Peel Green Growth Plan for 3.5 Million* released for public comment, including *Draft Action Plan E: Harvesting of Pines and Post-Harvesting Land Use* 'Widespread clearing of Banksia woodlands, the predominant native food source for Carnaby's cockatoo, has accelerated since 1950. Pine plantations established from the 1920s have progressively replaced Banksia woodlands as a major food source for the cockatoos in the region, mitigating some of the loss of native habitat. It is estimated that, before the commencement of the removal of the Gnangara, Pinjar and Yanchep pine plantations, these plantations provided approximately 57 percent of the total food resource available to Carnaby's cockatoo upon the Swan Coastal Plain portion of the Strategic Assessment area. In order to avoid some of the impacts of harvesting and provide a continuous food source for Carnaby's cockatoo, 5,000 ha of pines will be replanted in the Yanchep area. Replanting commenced in 2012 at a rate of 500 ha per year.' (page 2) 'In order to avoid some of the impacts of harvesting and provide some replacement food source for Carnaby's cockatoo, 5,000 ha of pines will be replanted for the primary objective of providing foraging habitat. Following harvesting of the	Dec 2015	Link Draft Action Plan E

remaining pines, a total of 16,825 ha will be managed in order to maximise groundwater recharge.' (page 3) 'The *Wildlife Conservation Act 1950* has limited effect relating to harvesting of the pine plantations as this Act deals with protection of native flora and fauna species. Pines are not native flora, and while Carnaby's cockatoo is a listed protected species, removal of pine habitat is not included in this Act.' (page 13) – comment: *The application of State biodiversity legislation to harvesting operations for pine must be re-considered given the commencement of the Biodiversity Conservation Act 2016 (see comments in Supplementary information about the need for a section 40 authorisation).* 'The harvesting of pines in the Gnangara, Pinjar and Yanchep pine plantations is predicted to have a significant impact on Carnaby's cockatoo as a result of a large area of high value food resource for the species being lost from the Swan Coastal Plain. The predicted impacts of this Class of Action on the species are provided in the EPBC Act Strategic Impact Assessment Report for the Perth and Peel Regions. The Gnangara, Pinjar and Yanchep pine plantations make up 23,000 ha of the total area of Carnaby's cockatoo feeding habitat affected by development identified in the Strategic Assessment area. This area also provides some of the most important roost sites for the species in the Strategic Assessment area. As detailed in Action Plan F, the conservation objective for the Carnaby's cockatoo is the continued use of the Strategic Assessment area of the species through the maintenance of habitat and connectivity of habitat throughout and outside the region. The decision to replant 5,000 ha of pines in the northern part of the Yanchep plantation contributes towards this objective.' (page 15)		
Perth and Peel Green Growth Plan for 3.5 Million – Carnaby's Cockatoo This State Government document discusses the impact of pine removal on Carnaby's Cockatoos/Ngolyenok and the outcomes of a draft version of the population viability analysis that was subsequently published in Williams et al. (2017). 'It is anticipated that the loss of Carnaby's cockatoo habitat as a result of further clearing of native vegetation and pines for the development proposed under the Green Growth Plan will lead to a further decline in the number of Carnaby's cockatoo that can be supported within the Perth and Peel regions.' 'To compensate for some of the loss of Carnaby's habitat associated with the harvesting of pines, 5,000 hectares of pines will be replanted and maintained in the Yanchep plantation area on a non-commercial basis for the purpose of Carnaby's cockatoo foraging habitat. Under the draft Green Growth Plan it is proposed that the remaining area of the ex-plantations will primarily be transitioned to low water use vegetation (16,875 hectares) to maximise water recharge and 1,175 hectares will be investigated for future urban and industrial land supply.'	Apr 2016	Link
8 April 2016: The public comment period for the draft Strategic Conservation Plan and the draft Impact Assessment Report, the 'Perth and Peel Green Growth Plan for 3.5 million' closes.	2016	Link
Hansard – Legislative Assembly Thursday, 12 May 2016, p2876b-2877a Mr Albert Jacob, Minister for Environment	2016	Link

The State Government expressly acknowledges the impact of removing pine from the Gnangara, Pinjar and Yanchep plantations, and the need to implement compensatory actions for this impact. 'To compensate for the loss of Carnaby's cockatoo feeding habitat—albeit this is not their natural feeding habitat, these are introduced species; they have shown themselves to be adaptive in moving into introduced pine plantations … For the Carnaby's cockatoo, the plan proposes to replant 5 000 hectares of pines in the Yanchep area, primarily for foraging habitat into the future.'		
Combined demographic and resource models quantify the effects of potential land-use change on the endangered Carnaby's cockatoo. Abstract: 'Measuring how land-use changes affect the availability of resources for threatened species is critical for conservation policy and management. Combining demographic population models with models of food supply provides a means of quantifying the relative effects of land-use change and life-history characteristics on population viability. However, few phenomenological population models explicitly link demography to food supply, probably because of the lack of sufficient quantitative data necessary to estimate them. We synthesized detailed demographic and food resource data to model future population size and extinction risk of the endangered Carnaby's cockatoo *Calyptorhynchus latirostris* under potential land-use scenarios in a rapidly expanding urban region. Carnaby's cockatoo relies primarily on the annual seed crops of native Banksia spp. woodlands and introduced Pinus pinaster plantations. Population viability analysis was combined with estimates of food resources and a daily ration model to estimate carrying capacity, predict the number of birds that could be supported in the region, and the extinction risk. Assuming no changes in the extent or quality of breeding habitat, and current breeding or survival rates, the most important factor currently limiting population growth for Carnaby's cockatoo is adult survival rate, whereas population size is limited by recurring bottlenecks in food availability resulting from a trend of resource depletion combined with large variability in annual seed production.' The proposal is closest to the 'Maximum Water' scenario modelled in their use of a daily ration model and integration of population viability analysis (PVA) with alternative scenarios of potential resource change to evaluate the effects of foraging habitat loss on the population size and viability of Carnaby's Cockatoos/Ngolyenok in the Perth-Peel region (Table 3). That scenario was based on an assumption of 5000 ha of 'new pine plantations'.	2017	Link Williams et al.
Review initiated for Strategic Assessment of Perth-Peel Region State Government indicates harvesting will drop from a projected 2200ha to 500ha until 30 June 30 2019 to reduce the impact of pine harvesting on the Swan Coastal Plain Carnaby's cockatoo population.	2018	Link Media statement Media article
EPA Technical Report: Carnaby's Cockatoo in Environmental Impact Assessment in the Perth and Peel Region Makes no evaluation of the impact of pine removal on Carnaby's Cockatoos/Ngolyenok, except to make comments that indicate scientific uncertainty about the impact and call for further research but make no mention of the application of the precautionary principle, e.g: 'The predicted impacts of pine clearing on carrying capacity and estimated minimum abundance were modelled through population viability analysis	2019	

(Williams et al. 2017), but there is no known on-ground research to verify the assumptions of the model.' (page 8) 'No quantitative study has been undertaken to document foraging on the pine wildings, and as a result, predicting the significance of the impact of pine clearing on Carnaby's cockatoo is difficult.' (page 12) 'There will be a time lag between the harvesting of mature pine trees in the Gnangara-Pinjar plantation and maturation of pine wildings. To reduce the impact of pine clearing, about 800 to 1 500 ha of regenerated pine wildings per year have been retained since 2002. It is proposed that these pine wildings could be actively managed to maximise future foraging options for Carnaby's cockatoo. An additional 2 000 ha of commercial plantation pine, planted since 2012, will provide some foraging habitat until 2029, when they will be harvested.' (page 12) 'The State Government has committed [11 April 2018] to temporarily slow clearing of the remaining 6 300 ha of mature pines in the Gnangara-Pinjar plantation, from 2 200 ha to 500 ha per year and source pine from alternative locations, until July 2019 when clearing will recommence (Government of Western Australia, 2018a). This delayed clearing is intended to temporarily postpone the predicted population decline until 2023, and provides the opportunity to implement mitigation strategies to help stabilise the population.' (page 14) 'The suspension of clearing of the Gnangara-Pinjar plantation, to June 2019, provides an opportunity to initiate research to resolve uncertainty regarding the impact of pine removal on Carnaby's cockatoo and test the projections of the PVA, specifically: 1. Determine the how Carnaby's cockatoos are responding to pine clearing, including their distribution, movements and abundance, feeding and roosting requirements. 2. Quantify how Carnaby's cockatoo use pine wildings and native revegetation in the post-pine areas. 3. Determine how reliant Carnaby's cockatoo is on the Gnangara-Pinjar plantations and the availability of alternative foraging resources within and outside the Perth-Peel region (e.g. Midwest pine plantations), including pine wildings. 4. Determine the breeding origin of flocks that utilise the Gnangara-Pinjar plantations. Outcomes of the above research can be used to inform decision-making regarding the pine harvesting rates, post-pine landscape use and habitat replacement, and future clearing of Carnaby's cockatoo habitat, particularly in the northern Swan Coastal Plain.' (page 23)		
2019 Great Cocky Count Most (70%) of the Carnaby's Cockatoos recorded in the Perth-Peel Coastal Plain were associated with the Gnangara pine plantation, north of Perth. The large number of Carnaby's Black-Cockatoos (9,330) recorded in roosts associated with the pine plantation is similar to the last three years. In previous years, the pine plantation has supported 28 – 73% of the Carnaby's Black-Cockatoos recorded in the Perth-Peel Coastal Plain during the non-breeding season, emphasising the importance of pines as both a roosting area and food resource during this period. A single roost site located east of Yanchep had a count of 5,145 Carnaby's Cockatoos. This accounted for 39% of all of the Carnaby's Cockatoos recorded on the Perth-Peel Coastal Plain, and is the second highest single count ever recorded in	2019	Document

a Great Cocky Count survey. The same site had counts of 6,226, 4,897 and 3,528 in the last three years and has come to be known as the 'mega roost'.		
Bibliography for Carnaby's Black-Cockatoo (Calyptorhynchus latirostris)	2019	Link Burbidge
Strategic Assessment of Perth-Peel Region deferred indefinitely.	2020	Link
Question on Notice by the Hon Alison Xamon to the Minister representing the Minister for Forestry: 'I refer to the expected starvation of black cockatoos on the Swan coastal plain due to the harvest of the remaining pines in the Gnangara pine plantation. (1) Will the government commit to refusing to harvest these pines until such time as a sufficient amount of native cockatoo feed has been planted and reached maturity to support the cockatoo populationcurrently relying on the Gnangara pines? (2) If not, why not?' Hon Allanah MacTiernan replied: 'I thank the member for the question. The following information has been provided by the Minister for Forestry. (1) Harvesting operations are managed under the provisions of the *Forest management plan 2014–2023* and various subsidiary documents produced in accordance with the Conservation and Land Management Act 1984. This includes an extensive approval process through the Department of Biodiversity, Conservation and Attractions to ensure all harvesting is carried out in accordance with applicable environmental standards. Harvesting of pines occurs within a broader context of meeting obligations under state agreement acts, water catchment management and conservation of threatened species. Details on the management activities in place for Carnaby's black cockatoos on the Swan coastal plain should be referred to the Minister for Environment.' (2) Not applicable.	May 2021	Hansard Link
Question on Notice by the Hon Alison Xamon to the Minister representing the Minister for Environment: 'I refer to the Minister for Forestry's answer to my question without notice 64 asked on 6 May 2021, directing questions regarding the impact on Carnaby's black cockatoos from the Gnangara pines harvesting schedule to the Minister for Environment. (1) Will the government commit to refusing to harvest the remaining Gnangara pines until such time as a sufficient amount of native feed has been planted and reached maturity to support the cockatoo population currently relying on these pines? (2) If not, why not?' Hon Stephen Dawson replied: 'I thank the honourable member for some notice of the question. The following answer is provided on behalf of the Minister for Environment. (1)–(2) Further to the response from the Minister for Forestry, a number of management activities are in place for Carnaby's cockatoo on the Swan coastal plain. The Department of Biodiversity, Conservation and Attractions works with the recovery team for Carnaby's cockatoo to guide and coordinate conservation	May 2021	Hansard link

efforts. DBCA, in partnership with the WA Museum, non-government organisations including BirdLife Australia and the World Wildlife Fund, research institutions and community volunteers, is implementing actions from the recovery plan for this species to guide ongoing conservation efforts. Recovery efforts include the installation and repair of artificial nest boxes to improve breeding success, measures to reduce vehicle collisions with adult birds,rehabilitating injured cockatoos, protecting habitat, and monitoring and research to understand the movements and requirements of the species. One action of relevance to the conservation of Carnaby's cockatoo is the carbon for conservation initiative, released as part of the government's COVID-19 economic stimulus and recovery plan. One of the candidate sites identified for the carbon for conservation initiative is the northern Swan coastal plain area, including the areas of harvested pine plantation within the Gnangara state forest. DBCA has recently partnered with the Water Corporation and BirdLife Western Australia to plant 15 000 to 20 000 native plant seedlings in the Gnangara state forest each year over the pastfive years. This complements DBCA's ongoing annual replanting program within the former pine plantation areas to create habitat for the endangered Carnaby's cockatoo and other native wildlife. DBCA will continue to explore opportunities for such partnerships to return native vegetation to the former pine plantation areas of the Gnangara state forest and create habitat for Carnaby's cockatoo and other native wildlife.'		
Gnangara Groundwater Allocation Plan: Draft for Public Comment November 2021: The Department of Water and Environmental Regulation releases the Plan for comment. February 2022: Public comment period closes.	Nov 2021	Link
Third party referral of proposal to EPA	Jun 2022	

Defined Forest and Plantation Areas - Map 1 of 5

The Defined Forest Area (DFA) is described as follows:
- Within the area covered by the *Forest Management Plan (2014-2023)*, the categories depicted as State forests, timber reserves, freehold land held in the name of the CALM Executive Body, and pine plantation areas within conservation reserves, land purchased by the Commission and on private lands.
- Outside of the area covered by the *Forest Management Plan (2014-2023)*, FPC pine plantations mainly sharefarms on private land and on land purchased by the Commission.

Note: Areas subject to active mining and initial rehabilitation establishment are excluded from the DFA.

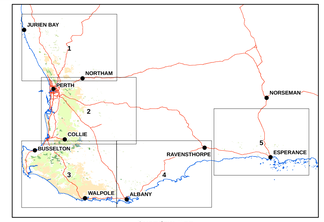
Map Legend

- State forest and timber reserves
- Conservation reserves*
- FPC owned property
- State pine plantation
- Pine sharefarm
- Fallow land in the Gnangara, Pinjar and Yanchep plantations
- *Forest Management Plan 2014 - 2023* boundary
- Forest block boundary

* Land categories as proposed in the *Forest Management Plan 2014 - 2023*

Existing and proposed tenure as at June 2021	Native Forest area (ha)	Plantation areas (ha)				Areas mined and/or Alcoa rehabilitation < 2 years old (ha)	Areas planned to be mined for bauxite 2021 (ha)
		State	Sharefarm	DWER	Fallow land Gnangara		
State forest and timber reserves	1,128,160	33,520	-	-	16,530	21,560	400
Conservation reserves	1,326,520	520	60	-	-	190	-
Section 34A freehold	9,250	12,380	-	-	-	-	-
FPC owned property	480	7,440	-	-	-	-	-
Non-DBCA/FPC tenure	-	*540*	*26,250*	*4,880*	*40*	-	-
Total	2,464,930	54,400	26,310	4,880	16,570	21,750	400

Total Gross Defined Forest Area (ha)	1,224,480
Total Area Excluded (ha)	38,490
Total Net Defined Forest Area (ha)	1,185,990



Overview Map

Scale 1:250,000 (A0)

0 5 10 20 30 40 Km

DATA DIRECTORY

theme	source	month	year	custodian
Proposed tenure	DBCA	June	2021	Forest Management Branch
Pine plantations	FPC	October	2021	Forest Products Commission

Produced by the Forest Management Branch under the direction
of the Director General, Parks and Wildlife Service,
Department of Biodiversity, Conservation and Attractions
for the Forest Products Commission
October 2021

Department of **Biodiversity, Conservation and Attractions**

PARKS AND WILDLIFE SERVICE

fpc Forest Products Commission

Gnangara Mound Harvest Plan 2022/23

FPC Plantations
- Standing (5922.53 Ha)
- Fallow

Harvest Plan
- Clearfell (1260.26 Ha)

Produced by the GIS Section
Resource Information Branch
Forest Products Commission, Western Australia.

05 May 2022 02:14 PM

Forest Products Commission

Scale 1:125,000 (A3)

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Maxar

Dr Hugh Finn
Curtin Law School
Curtin University
26 May 2022

Murdoch University

90 South Street, Murdoch
Western Australia 6150

T +61 8 9360 6000

murdoch.edu.au

CRICOS Provider Code 00125J
ABN 61 616 369 313

Dear Dr Finn,

As requested, please find below advice and comments from Murdoch University's Black Cockatoo Conservation Management Project regarding Carnaby's cockatoo habitat use in the Gnangara-Pinjar-Yanchep pine plantations, and surrounding areas. The information that we have provided here is specifically an update to communicate relevant findings from our recent tracking work in 2021, to supplement the findings from the initial tracking of flocks in 2018, which were presented in the 2018 Report for the Forest Products Commission – *The Potential Role of the Forest Product Commission's Midwest Pine Plantations as a Food Source for Carnaby's Cockatoo: A Concept Study using GPS and Satellite Tag Data*.

Subsequent tracking work conducted by the Black Cockatoo Conservation Management Project in the Gnangara pines in May 2021 has revealed the remaining stands of pine to be of continued importance to Carnaby's cockatoos. In 2021, our research team captured three weeks of high-resolution GPS data from a tagged Carnaby's cockatoo, travelling with a flock, as well as up to three months of ARGOS satellite data (broader-scale movement data) from three other tagged individuals, and their associated flocks following release. All these birds had been fitted with tags and released, following rehabilitation, at a roost on Water Road, Pinjar on 27 May 2021.

Our 2021 tracking data show that during 2021, pine cones from the plantations were depleted as a food resource for flocks earlier in the year, compared with previous years. This is to be expected, given that far fewer pines are now available for flocks, due to the ongoing harvesting of the plantations. Our tracking data show that in 2018, Carnaby's cockatoo flocks continued to forage on pine cones into June. In contrast, in 2021, by the time that our tagged Carnaby's cockatoos were released into wild flocks in late May, the stocks of pine cones had already been almost completely depleted. Instead of feeding on the pine plantations into June, as our tagged birds and flocks had been able to do in 2018, the birds from our 2021 release were, by May, already foraging extensively in banksia woodland to the east of the plantation.

Importantly, our 2021 data show that while our tagged Carnaby's cockatoos and their flocks are now depleting the pine and switching to feeding on banksia earlier in the year, the flocks are continuing to utilise the remaining pine plantations for roosting even after they have switched to foraging on banksia. In 2021, our tagged birds and their flocks used the pine plantations as roosts through until at least August; after which the last satellite tag was shed and we were unable to identify roost locations.

Together, our 2021 tracking data indicate that the remaining pine continues to provide critical foraging habitat to Carnaby's cockatoos in the immediate post-breeding season, when they first return from the breeding grounds. We note that this includes acting as a food resource for fledglings. Importantly also, our 2021 tracking data show that even once pine cones are depleted and the flocks begin foraging on banksia to the east of the plantations, the flocks continue to rely on the pine stands as roosts, well into the latter parts of the year. By providing roosting habitat, the remaining pine stands enable flocks to have access to areas of banksia foraging habitat; which will now be of increasing importance as a foraging resource in the absence of sufficient pine. Without this roosting habitat in the form of tall, mature stands of pine, the flocks may have limited access to the banksia, due to the lack of other suitable roosting habitat in the area.

We note also that any further clearing of foraging habitat in this area may have a particularly significant impact because of a specific combination of factors already at play in this area, which together represent a serious risk to Carnaby's cockatoos. First, this area is home to 70% of the Swan Coastal Plain's Carnaby's cockatoos, before they start their annual breeding migrations (data from the annual Great Cocky Count). These flocks feed annually in this area, on both the pine plantations and the smaller patches of remnant native habitat around the pine. Adding to the foraging pressure which flocks will be experiencing from the clearing of the pine is another recent impact on foraging habitat: the 2019-20 and 2021 bushfires in this area. The 2019-20 Yanchep bushfires alone destroyed over 12,000 hectares of the remaining foraging habitat for Carnaby's cockatoo flocks in this area; the 2021 fires will have added to this loss. It will be important for the significance of all remaining food sources for Carnaby's cockatoos in this area to be evaluated in the context of these unplanned losses of foraging habitat from recent fires, and the likelihood of additional fire-related losses in future years.

Thank you for your interest in receiving a summary of research findings from our 2021 release and tracking of Carnaby's cockatoos in the Gnangara region, including use of the remaining pine by flocks as both a foraging resource and a roosting resource. Please don't hesitate to be in touch with any queries.

Yours sincerely,

Professor Kristin Warren BSc, BVMS (Hons), PhD, Dip ECZM (Wildlife Population Health)
Professor in Wildlife, Zoological and Conservation Medicine
Academic Chair, Postgraduate Studies in Conservation Medicine
School of Veterinary Medicine
College of Science, Health, Engineering and Education
Murdoch University, Murdoch, 6150
k.warren@murdoch.edu.au

Dr Jill Shephard
Senior Research Fellow
Black Cockatoo Conservation Management Project
College of Science, Health, Engineering & Education
Murdoch University, Murdoch, 6150
j.shephard@murdoch.edu.au

Thursday 12th May, 2016

Draft Perth and Peel Green Growth Plan
Department of the Premier and Cabinet
Locked Bag 3001
WEST PERTH WA 6872
Email: consultation@dpc.wa.gov.au

To Whom It May Concern:

BirdLife Australia is a highly respected science-based conservation organisation with more than 85,000 supporters across the country. We have over 32 community branches, including a very active network in Western Australia.

Initially, BirdLife Australia welcomed the commitment by Commonwealth and Western Australian Governments to take a more strategic approach to the management and protection of Matters of National Environmental Significance (MNES) within the Perth and Peel regions. Used well, strategic assessments have the potential to take account for cumulative impact. If the *Perth and Peel Green Growth Plan for 3.5 million* was likely to improve environmental outcomes for MNES in the Perth Peel region, we would not oppose it.

However the current draft of the Plan seeks to approve the destruction of more than 30,000 hectares of Carnaby's Black-Cockatoo habitat. Carnaby's is already declining at an alarming rate. The past six years of BirdLife Australia's *Great Cocky Count* suggest that the Perth population is declining by around 15% per annum. To conserve Perth's population of Carnaby's the clearing of its habitat needs to be halted, not accelerated as proposed by this Plan.

The Plan's proposal to remove around 50% of the known feeding habitat for this species in the Perth-Peel area is likely to result in a similar (50%) decline of the bird. This is negligently inconsistent with the species Recovery Plan, and indeed the objectives of the EPBC Act. The conservation measures proposed in the Green Growth Plan are inadequate and based on cherry-picked literature. Promises to increase the level of protection of existing feeding habitat (already being used by the cockatoos and protected to some degree) are more than cancelled out by the loss of habitat in areas of prime habitat zoned for development. The bottom line is that less habitat cannot sustain the same number of cockatoos.

The *Green Growth Plan* should outline a strategy for protecting Perth's iconic Carnaby's Black-Cockatoo population, not significantly increase its risk of extinction. The Plan is a lost opportunity to integrate world's best practice in biodiversity and urban planning. It lacks vision in terms of providing incentives for Councils and Private Landholders to protect and restore habitat and connectivity for MNES.

BirdLife Australia acknowledges the Plan has some positive proposals that have the potential to protect and enhance a number of key estuarine/wetland habitats and the species that depend on them. If implemented, we believe these initiatives will help arrest the deterioration of, and in some instances enhance, the ecological character of the Ramsar-listed Peel-Harvey-Yalgorup Wetland system. However some of these initiatives are likely to be eclipsed by developments (such as the Point Grey Development) that have not been factored into the planning (see Appendix 3).

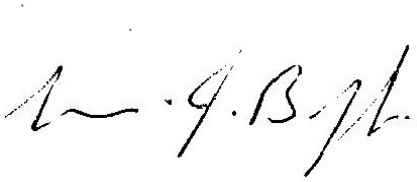
BirdLife Australia
Suite 2–05
60 Leicester Street
Carlton VIC 3053
T 03 9347 0757
F 03 9347 9323
info@birdlife.org.au
birdlife.org.au

ABN 75 149 124 774

BirdLife Australia staff and volunteers from our Western Australia Branch have endeavoured to work collaboratively with the Western Australian Government over the last three years in the hope that the Strategic Assessment would deliver improved environmental outcomes. However we are disappointed to see that our advice has been largely ignored, predominately in relation to the conservation of Carnaby's Black Cockatoo, and the complete failure to even consider listed species such as the Fairy Tern within the Plan.

Cities and biodiversity are not incompatible. Many progressive cities around the world successfully integrate urban growth and biodiversity. BirdLife Australia believes the Plan in its current form requires significant change and a commitment to participatory planning with ecological experts to arrest the decline of Carnaby's Black Cockatoo in Perth. We would welcome an opportunity to work with the government to do this.

Yours sincerely,



Paul Sullivan
CEO

Mike Bamford
Convenor – Western Australia Branch

Table 1. Summary of issues

Commitment/ environmental value	**BirdLife position**	**Justification**	**What amendments or alternatives are we asking for?**	**Related links**
Gap: Commitment to adequately manage for the long-term viability of Carnaby's Black-Cockatoo. Actions proposed by the Green Growth Plan are inconsistent with the Carnaby's Black-Cockatoo Recovery Plan	A new commitment is required in response to this gap	The Plan seeks approval for the removal of around 50% of the known feeding habitat for this species in the Perth-Peel area. The remaining Perth-Peel Carnaby's population is projected to decline by a similar amount (50%). Removal of the remaining pine plantation, without viable replacement, as well as further clearing of Swan Coastal Plain and Jarrah Forest used by Carnaby's Black-Cockatoos will therefore result in an unacceptable outcome, inconsistent with both state and federal commitments. • The accelerated removal of the Gnangara pine plantation, without planned, suitable replacement will directly result in an unacceptable decline in the Perth and Peel Region's Carnaby's population. • The additional removal of 14 100 ha of known feeding habitat of Carnaby's Black-Cockatoo will place additional significant pressure on the survivorship of the Perth-Peel population, particularly during the non-breeding season. • The replanting of 5 000 ha of pine specifically as a food source for Carnaby's Black-Cockatoo is proposed on a timeline that is inappropriate, planted in an arrangement with no indication of giving maximum benefit and lacks a clear commitment to maintaining the viability of these pines as an ongoing food source. In light of this we find it tokenistic and unacceptable. • Commitments to revegetation activities were vague and therefore unlikely to firmly benefit Carnaby's. • Actions proposed by the *Green Growth Plan* are inconsistent with the Carnaby's Black-Cockatoo Recovery Plan and federal MNES commitments: o The recovery plan clearly identifies that 'clearing of feeding habitat on the Swan Coastal Plain (e.g. *Banksia* woodlands and commercial pine plantations which provide a significant food resource)' forms a significant known threat to the species. o The Carnaby's Cockatoo Recovery Plan identifies that a reduction in the Carnaby's population of 10% (pooled over three years) is the cut-off at which the plan is deemed to have not succeeded. o Population Viability Analysis for Carnaby's Black-Cockatoo	See Appendix 1 this submission. The *Green Growth Plan* be brought into alignment with the recovery actions outlined by the Carnaby's Black-Cockatoo Recovery Plan The clearing of the pine plantation be immediately ceased until adequate replacement feeding habitat becomes available. Existing native feeding and roosting habitat be protected with vegetation corridors be planted to create connectivity in already cleared landscapes. Replanting of feeding vegetation for Carnaby's be conducted in a way that maximises long-term food availability for Carnaby's across the landscape. Clear, quantifiable commitments be made for revegetation activities, in terms of species composition. The approach to anthropogenic and environmental water use should be balanced, open, and forward-thinking. This means serious consideration	*Draft EPBC Act Strategic Impact Assessment Report Part D: MNES Assessment – Chapter 15* Section 3 of the *Draft Action Plan F – MNES Conservation Commitments*, Carnaby's Black-Cockatoo Recovery Plan (Department of Parks and Wildlife 2013)

		(Williams *et al.* in prep.) predicts a 50% (10% of the total population) decline in Carnaby's as a direct result of the clearing of the Gnangara mound, shows the *Green Growth Plan* proposes to directly undermine the success of the Carnaby's Cockatoo Recovery Plan	of alternative water sources outside of the Gnangara aquifer to feed Perth's water supply requirements, as well as considering all extraction sources on the Gnangara mound.	
Gap: Commitment to protection of habitat for Migratory Shorebirds Commitment to protect Migratory Shorebirds from disturbance as a result of increasing human population	A new commitment is required in response to this gap	The Plan does not address the issue of increasing water use and it's effect on the quality and availability of shorebird habitat. The Plan does not address the key threat of disturbance to EPBC listed shorebirds, which is highly likely to increase in intensity with an increasing human population	See Appendix 3.	
Gap: Commitment to protection of habitat for the Fairy Tern	A new commitment is required in response to this gap	The Fairy Tern (*Sternula nereis nereis*) is a migratory seabird listed as Vulnerable under both state and federal legislation. A migratory subpopulation of the Western subspecies has significant reliance upon the Strategic Assessment Area as both a breeding ground and as part of a migratory flyway. Under the definition provided on p48 of the Strategic Conservation Plan, the tern's significant reliance upon the strategic assessment area should mean that specific conservation commitments be made for it. **However the Fairy Tern is not mentioned in any of the Green Growth Plan documentation.** The Fairy Tern makes use of wetlands, tidal and coastal flats, beaches, islands and coastal habitat of southwestern Australia. The Fairy Tern is vulnerable to anthropogenic disturbance at these locations, as well as predation from introduced cats and foxes. During breeding and pre-migration, the Fairy Tern is particularly vulnerable to interruption to oceanic food sources as a result of disturbance and pollution. While some part of its habitat overlaps with that used by migratory shorebird species, not all of it does. It is acknowledged that the growth of the human population within the Perth-Peel area will continue to place pressure on the Fairy Tern and its habitat, so commitments must be made to address it. At present there are no commitments to maintain the quality of coastal habitats, in particular oceanic water quality and pollution minimisation and control.	Commitments be included that will ensure the long-term viability of this species with the assessment area through the protection, maintenance and possible enhancement of suitable breeding, roosting and foraging habitat for use by the species within the Strategic Assessment Area. • Reduce disturbance at key breeding, roosting and feeding sites. • Undertake research to improve knowledge about the species and inform conservation effort and management in the Strategic Assessment Area.	Strategic Conservation Plan, p 47-48. Dunlop (2015) Fairy Tern Conservation in South-Western Australia.
Gap: Commitment to improved ecological connectivity and urban corridors in the Strategic	A new commitment is required in response to	Various conservation objectives and commitments within the GGP refer to habitat connectivity, for example: • "Maintain habitat connectivity across the Strategic Assessment Area between the north–eastern and southern extent of the species' range	It is suggested that a greater commitment to maintaining and enhancing ecological connectivity could	Strategic Conservation Plan p 50 Action Plan G p7

Assessment Area	this gap	(the conservation objective for Carnaby's Black-Cockatoo (*Calyptorhynchus latirostris*); Strategic Conservation Plan, p50) • "Improve habitat connectivity and ecological linkages through revegetation and replanting programs in conservation reserves, RSNA's and other retained areas" (State Commitment #9 in relation to the maintaining the representation, viability and ecological function at the species population and community level (the objective for the State factor – Flora and Vegetation, Action Plan G, p7). The GGP proposes a Conservation Program in response that will include the following on-ground management activities: revegetation (re-establishment of native vegetation in degraded areas) and rehabilitation (repair of ecosystem processes) focused on improving habitat quality for multiple species and restoring or improving habitat connectivity and ecological linkages across the landscape" (Action Plan H, p11). In general the commitment to maintain and improve ecological connectivity is focused on proposed conservation areas, **with no evidence presented that these areas provide the habitat requirements for all MNES** species, and no ecological analysis of the habitat ranges of these species, and their **ability to move across the landscape that is planned.** BirdLife acknowledges that ecological connectivity has been a consideration in various parts of the impact assessment, and is alluded to as a consideration in the State's commitments (as per the reference to Action Plan H). However, there is a significant need for more direct commitments to maintain and enhance connectivity, particularly where remnant habitat is already largely fragmented. The GGP provides little evidence of how the commitment to maintain ecological connectivity, in light of a 7000 ha net loss of native vegetation, will be planned, implemented and monitored. Further, there is little discussion of the ecological connectivity value of rivers and other waterways, and other existing native vegetation. BirdLife acknowledges that significant benefits occur through the actions of city councils and private landholders to manage and protect bushland, rivers and other natural areas for conservation, and to plant urban gardens and verges to provide ecological function and connectivity. Most Town and City Councils within the assessment area have some provision for habitat creation and protection, including big tree registers, advice on selection of suitable native plants, supply of street trees, or encouraging and rewarding native gardens, such as City of Cockburn's Green Links Program. Together these have created, protected and	be achieved by: • the formal recognition of regionally significant ecological linkages (such as in the Peel Region Scheme); • The inclusion of provisions in the Scheme which require the maintenance and enhancement of regional ecological linkages for their ecological, water quality improvement and stormwater management values (in that order) • Incentives for private landholders to restore or create habitats and vegetation patches within identified linkages should be included as a commitment of the plan. This would provide the much-needed connectivity, particularly in established suburbs, connecting bushland and wetlands. These could be for the planting of solely native trees, to create an urban forest, or to supplement native species with food trees to benefit particular species, such as almonds and macadamias to benefit Carnaby's Black-Cockatoo.	Action Plan H, p11

		managed habitat and ecosystem function throughout the assessment area. The SAPPR process and propose Strategic Conservation Plan has not recognised this approach to conservation as a **more cost-effective means of achieving conservation outcomes.** Furthermore these private actions have the potential to create the corridors alluded to, but not provided for, under the plan.		
Gap: Recognition of private land conservation	A new commitment is required in response to this gap	BirdLife acknowledges the many significant efforts of private landholders to manage and protect bushland, rivers and other natural areas for conservation, and to restore degraded habitat so that it continues to provide ecological function. Schemes such as Land for Wildlife and the Serpentine-Jarrahdale Conservation Zone have protected and managed habitat throughout the assessment area. Most Town and City Councils within the assessment area have some provision for habitat restoration and protection, including big tree registers, advice on selection of suitable native plants, or encouraging and rewarding native gardens. The SAPPR process and propose Strategic Conservation Plan has not recognised this approach to conservation as a more cost-effective means of achieving conservation outcomes. Examples of sites where private land conservation has been effective are Lowlands and the Kingia Properties in the Shire of Serpentine-Jarrahdale (both properties support MNES and State environmental values).	The Strategic Conservation Plan should include several **new initiatives for the protection of remnant habitat on private land.** A Voluntary Conservation of Private Land Scheme would take advantage of the benefits and cost-effectiveness of securing private lands for conservation. This initiative could include an incentives scheme for eligible landholders to make entry into the Scheme financially appealing, and support on-going management costs. A compulsory **Big Tree Register for each Council** in the assessment area would encourage councils to protect and retain large, old habitat trees, particularly in established suburbs.	

Appendix 1

Green Growth Plan and Carnaby's Black-Cockatoo

Overview

BirdLife Australia is pleased to see the December 2015 draft of the *Perth and Peel Green Growth Plan for 3.5 million* (hereafter *Green Growth Plan*) acknowledge the importance of protecting Carnaby's Black-Cockatoo, an iconic, but endangered, West Australian. Taking a strategic approach to urban development provides a unique opportunity to stabilise the declining Carnaby's Black-Cockatoo population. Despite the listed objective, unfortunately the strategies proposed by the current draft of the *Green Growth Plan* will fall well short of achieving this aim. Given the unparalleled opportunity the *Green Growth Plan* presents to secure the future of this endangered species, as the Western Australian Government is mandated to do under the Carnaby's Black-Cockatoo Recovery Plan, we feel it critical to address these shortfalls. In the following submission, BirdLife highlight the particular parts of the Green Growth Plan that are contradictory, problematic and unviable to the long-term survival of Carnaby's Black-Cockatoo in the Perth and Peel region, and provide solutions to these.

The proposed reduction in Carnaby's Black-Cockatoo habitat in the Perth and Peel Region will have a deleterious effect upon the population of this endangered species. Carnaby's are known to be reliant upon pine plantations for food and shelter. Removal of the remaining pine plantation, without viable replacement, as well as further clearing of Swan Coastal Plain and Jarrah Forest used by Carnaby's Black-Cockatoos will decimate this already much-reduced population. This is an unacceptable outcome, inconsistent with both state and federal environmental responsibilities. We are pleased to see some commitments to ongoing monitoring of this threatened species, but monitoring alone will not conserve Carnaby's Black-Cockatoo. BirdLife Australia rejects the assumption that the decimation of a threatened species is an acceptable price for the development of the Perth and Peel Region.
BirdLife Australia considers that:

- The *Green Growth Plan* is inconsistent with the Carnaby's Black-Cockatoo Recovery Plan and federal MNES commitments.
- The accelerated removal of the Gnangara pine plantation, without planned, suitable replacement will directly result in an unacceptable decline in the Perth and Peel Region's Carnaby's population.
- The additional removal of 14 100 ha of known feeding habitat of Carnaby's Black-Cockatoo will place additional significant pressure on the survivorship of the Perth-Peel population, particularly during the non-breeding season.
- The replanting of 5 000 ha of pine specifically as a food source for Carnaby's Black-Cockatoo is proposed on a timeline that is inappropriate, planted in an arrangement with no indication of giving maximum benefit and lacks a clear commitment to maintaining the viability of these pines as an ongoing food source. In light of this we find it tokenistic and unacceptable.
- Commitments to revegetation activities were vague and therefore unlikely to firmly benefit Carnaby's.
- Considering the pine removal in isolation of broader water extraction issues on the Gnangara Mound and the Perth water supply is a close-minded approach.

BirdLife Australia proposes instead:

- The *Green Growth Plan* be brought into alignment with the recovery actions outlined by the Carnaby's Black-Cockatoo Recovery Plan and federal MNES commitments.
- The clearing of the pine plantation be ceased, to maintain both a food source and landscape connectivity for Carnaby's.
- The avoidance of clearing further native feeding habitat, with vegetation corridors be planted to create connectivity in already cleared landscapes.
- Replanting of pine specifically as a food source for Carnaby's be conducted in a way that maximises long-term food availability for Carnaby's across the landscape.
- Clear, quantifiable commitments be made for revegetation activities, in terms of species composition.
- The approach to anthropogenic and environmental water use should be balanced, open, and forward-thinking. This means serious consideration of alternative water sources outside of the Gnangara aquifer to feed Perth's water supply requirements, as well as considering all extraction sources on the Gnangara mound.

Carnaby's Black-Cockatoo Population Dynamics

- The population of Carnaby's Black-Cockatoo is not robust and stable but in decline. As a result, future stresses will have a disproportionate impact upon population health and size.
- The more genetically diverse western population of Carnaby's should be prioritised for protection.
- Not enough is known about subpopulation movements to judge which breeding grounds the birds using the Gnangara pines use, so proposed actions outside the assessment area will be happening blindly and without confirmed benefit.
- Carnaby's are capable of surviving stochastic events such as bushfire, but areas of high food value, such as pines, become critical in supporting displaced birds until burned areas recover and regenerate.

The consequences of reduction of Carnaby's feeding habitat and inevitable reduction in population cannot be considered in isolation. Between the 1950s to the early 2000s Carnaby's Black-Cockatoo had already experienced significant decline. It is estimated in that period Carnaby's disappeared from 30% of their former distribution, their known breeding range contracted by over a third, and their total estimated population declined by 50% (Garnett & Crowley 2000; Mawson 1995; Saunders & Ingram 1998a, b). Furthermore the Great Cocky Count, conducted annually since 2010, has recorded a decline in excess of 45% of the Perth-Peel Carnaby's population in the period 2010 – 2014 (Finn *et al.* 2014), attributable directly to the removal of the Gnangara pines as a food source. There can be no doubt this is a species that has already experienced a dramatic, widespread decline, and populations on the Swan Coastal Plain could most conservatively be estimated as having declined by a staggering 75% since the 1950s. The impacts of the *Green Growth Plan* upon the population of Carnaby's Black-Cockatoo are therefore not impacts on a robust, stable population able to respond well to stochastic events, but impacts on a population likely less than a quarter the size it was 65 years ago, a population potentially skewed towards older birds past breeding age and suffering from effects of a drying climate (Saunders *et al.* 2011).

Despite being a species that is found throughout the southwest, Carnaby's Black-Cockatoos cannot be treated as a single, continuous population. Genetics studies, long-term banding recoveries, and tracking data show Carnaby's form distinct subpopulations, with habits and movements that are consistent and repeatable on both daily and seasonal scales (Rycken *et al.* 2015, White *et al.* 2014, Saunders *et al.* 2011). Given the genetic diversity of the western Carnaby's population (White *et al.* 2014), there should be increased effort in conserving this diverse population. A population's inherent genetic diversity leaves it better placed to have the diverse physiological mechanisms to survive stochastic events such as extreme heat events, and will assist the species in coping with a changing climate (Fuller *et al.* 2010). It is therefore important to ensure the Perth and Peel population of Carnaby's is treated as a subpopulation of the more widespread species, and it is vital that this subpopulation, not just the species as a whole, maintains long-term viability.

Furthermore, despite what we do know about Carnaby's movements in their breeding and non-breeding habitats, we are yet to fully understand subpopulation dynamics of where birds from particular non-breeding roost sites go to breed. In particular, we do not know the location of the breeding grounds used by Carnaby's using the Gnangara pine plantation. Because of this knowledge gap, there is substantial potential to mismatch effort. The *Green Growth Plan* proposes to sacrifice 10% of the total population of Carnaby's by clearing the pines on the Gnangara mound. Where Table 3 in *Draft Action Plan F: MNES Conservation Commitments* identifies the installation of artificial hollows as a mitigation action, without full understanding of the seasonal movements and migration pathways used by these subpopulations, this action has the potential to have negligible benefit.

Carnaby's Black-Cockatoos are able to survive broadscale habitat removal events, such as bushfire and habitat clearing, provided that the displaced birds have access to viable interim food sources and roost sites until the habitat recovers and regenerates. The recent Great Cocky Count, held on Sunday 3rd April 2016, recorded evidence of this - a 'megaroost' of 4897 Carnaby's Black-Cockatoos in the Pinjar Pine Plantation, due east of Yanchep National Park. This was confirmed as an accurate count in additional surveys over the following days. It is important to emphasise several points. Firstly, this is not a previously undiscovered Carnaby's roost site. This roost site has been surveyed thoroughly in previous Great Cocky Counts, as have other roost sites in the vicinity. Dedicated volunteers reconnoitre the plantation thoroughly in the lead up to the count to ensure no additional roosts exist/ are being used. Roost sites in this area do consistently recorded large numbers of Carnaby's, highlighting its importance as an ongoing food source. However given the number of extremely large bushfires that have occurred in the last 18 months throughout Carnaby's range, with fires consuming large swathes of Carnaby's habitat including Cape Arid, Two People's Bay, Northcliffe, Lower Hotham, Waroona, Yarloop, Parkerville and Moore River we view this flock as a displaced group seeking temporary refuge in the pines. As a result, this flock emphasises the importance of high-value food sources such as pines in supporting Carnaby's, particularly in aiding survivorship of stochastic events.

Inconsistency with the Carnaby's Black-Cockatoo Recovery Plan and MNES Commitments

- Actions proposed by the *Green Growth Plan* are negligently inconsistent with the Carnaby's Black-Cockatoo Recovery Plan, and will directly result in the failure of the recovery plan.
- The literature has been cherry-picked to provide support for the actions proposed in the *Green Growth Plan*.

- Changing the tenure of existing feeding habitat will have no immediate benefit and arguably minimal long-term benefit to Carnaby's, and in the context of the assessment area will still result in a net loss of 17 600 ha of Carnaby's habitat.
- The *Green Growth Plan* requires a more robust approach to the factors that influence reproductive success of Carnaby's, not just installation of artificial hollows.

Section 3 of the *Draft Action Plan F – MNES Conservation Commitments*, provides a common 'Conservation Outcome' for 'Listed threatened species and ecological communities'. It claims that the "conservation status of [Carnaby's Black-Cockatoo], as a listed threatened species in the Perth and Peel regions will be maintained, and where possible improved, with measures and actions consistent with any approved Commonwealth recovery plans, threat abatement plans or conservation advice". In its current form, the *Green Growth Plan* is negligently inconsistent with the Carnaby's Black-Cockatoo Recovery Plan.

The *Draft EPBC Act Strategic Impact Assessment Report Part D: MNES Assessment – Chapter 15* cherry picks from the Carnaby's Cockatoo Recovery Plan (Department of Parks and Wildlife 2013) in determining that the *Green Growth Plan* is consistent with the outcomes of the Recovery Plan. When listing threats to the species (s15.9.6), the document ignores that the recovery plan clearly identifies that 'clearing of feeding habitat on the Swan Coastal Plain (e.g. *Banksia* woodlands and commercial pine plantations which provide a significant food resource)' (Department of Parks and Wildlife 2013) forms a significant known threat to the species. The Carnaby's Cockatoo Recovery Plan (Department of Parks and Wildlife 2013) identifies that a reduction in the Carnaby's population of 10% (pooled over three years) is the cut-off at which the plan is deemed to have not succeeded. Using the information provided in *Chapter 15*, it is outlined that 20% of the Carnaby's population is associated with the Perth-Peel area. That 50% of that population (10% of the total), is associated with the Gnangara pines, and the Population Viability Analysis for Carnaby's Black-Cockatoo (Williams *et al.* in prep.) predicts a 50% (10% of the total population) decline in Carnaby's as a direct result of the clearing of the Gnangara mound, shows the *Green Growth Plan* proposes to directly undermine the success of the Carnaby's Cockatoo Recovery Plan.

The *Green Growth Plan* congratulates itself for not clearing 116 000 ha of Carnaby's Black-Cockatoo feeding habitat (s15.1.6), suggesting that this will improve the population viability in excess of that modelled by Williams and colleagues (in prep). Given that this 116 000 ha is already available to Carnaby's as a food source, and that the proposed action of adding these 116 000 ha to the conservation reserve will involve neither restoration of degraded habitat nor revegetation of existing habitat, this statement is bewildering. Across the entire assessment area, there will still be a net loss of Carnaby's foraging habitat - 9 700ha of Swan Coastal Plain feeding habitat; 4 400ha of Jarrah Forest feeding habitat, and the estimated 3 500 ha of pine plantations (the remaining 8 500 ha minus the 5 000 ha proposed replanted pines). The argument that altering tenure will increase protection makes the assumption that there will be resources available to appropriately manage these lands. The current scenario does not favour this outcome. As a result of understaffing, employment freezes and ongoing budget cuts the Department of Parks and Wildlife has difficulty managing existing lands, even where management plans exist (e.g. Lake McLarty). To assume that this will change without a proportional increase in funding and resources is unrealistic. Under existing resourcing levels, 'managed' lands will continue to degrade, particularly with increased recreational pressure from a growing population.

Pine plantations are known to provide a critical food source for Carnaby's Black-Cockatoos. Not only do pines feed adult birds, but they contribute to the breeding success rates as pine is used as a food source when breeding pairs still have dependent young. Removal of these will not just reduce the size of the population, but also reduce the breeding success of the individuals that remain. The Carnaby's Black-Cockatoo breeding habitat outlined in *Commonwealth IAR Part D* takes a very narrow approach to breeding success. While feeding habitat in the immediate vicinity of breeding sites is considered critical, so are food resources where juveniles are still dependent upon adult birds for food. A robust approach to breeding success should encompass protecting existing breeding habitat as well as protecting the foraging resources of dependent young.

Vegetation Clearing: Pines

- Clearing of the pines without replacement is directly correlated to the decline of Carnaby's.
- Increasing the proposed clearing rate of the pines will increase the rate of decline of Carnaby's.
- Immediate cessation of pine harvesting on the Gnangara mound will provide the best outcome for Carnaby's.
- The prioritised protection of mature pine at keystone sites will ensure these sites continue to support Carnaby's in the face of stochastic events.
- Retaining wildings in the landscape to provide additional food and corridors across the landscape, and provide a mitigating food source.
- Long-term strategies should consider the reimplemention of a pine rotation system, with benefits to Carnaby's, the timber industry, and the potential to reduce groundwater salinity levels as long as these do not result in perverse outcomes for biodiversity and the environment.
- Offset commitments must focus on protection of breeding and non-breeding habitat.

Habitat loss and fragmentation are considered the key drivers of Carnaby's decline (Department of Parks and Wildlife 2013). Pine plantations are known to provide a critical food source for Carnaby's Black-Cockatoos (Stock *et al.* 2013), with around 50% of Carnaby's in the Perth and Peel region roosting within 1km of the Gnangara Pine Plantation complex (Byrne *et al.* 2015). The cessation of the pine plantation rotation system at Gnangara, and the systematic removal of these pines, without substantial replacement, has seen an ongoing, annual reduction of Carnaby's Black-Cockatoo populations in the Perth-Peel region of 15% per year (Finn *et al.* 2014; Byrne *et al.* 2015; Williams *et al.* 2015). If this rapid decline in both flock size and number of occupied roosts is representative of the wider population trends of the species, this is clearly unsustainable for such a long-lived, slow-breeding species (Williams *et al.* 2015).

That the response proposed by the *Green Growth Plan* to this acknowledged trend is to increase the annual harvesting rate and remove all remaining pines by 2020 is absurd. That this is done while touting the *Green Growth Plan* as supporting black-cockatoo conservation is ludicrous. At completion, this action will remove around 50% of the known feeding habitat for this species in the Perth-Peel area (D. Mitchell, pers. comms.) The remaining Perth-Peel population is projected to decline by a similar 50% (Williams *et al.* in prep). This component of the plan is incompatible with the Green Growth Plan's stated objective of preserving Carnaby's Black-Cockatoos, and incompatible with federal responsibilities of protecting this endangered species.

We propose that clearing on the Gnangara pine plantations be ceased immediately. Modelling suggests that this is the land management option that is projected to have the least impact on Carnaby's (Williams *et al.* in prep). While the legacy of historical clearing is still projected to reduce Carnaby's population size, this strategy will result in the best outcome for this threatened species. The Carnaby's Black-Cockatoo Recovery Team is in a fortunate position compared with Recovery Teams for other threatened species, as historical and ongoing research have provided a wealth of information to better inform and direct recovery actions. This is one of the few species where a reliable estimate of population trend exists, and a rare example where PVA modelling is informed by a large proportion of field-collected data, not just assumptions. It appears the Department of Premier and Cabinet have downplayed the credibility of this data and modelling based upon it simply because they don't like what the numbers tell them. It is known what is required to save this species. All that is lacking is government commitment.

Pine is acknowledged as an important food source for Carnaby's, both for adults in the non-breeding season, and for adults feeding dependent young. Carnaby's Pines also provide favoured roost sites, however it is the close proximity of other resources – predominantly water and Banksia woodland for mixed foraging, that make the pines viable. There are several locations that seem disproportionately favoured by Carnaby's, by their close proximity to these other vital resources. One of these is on the Pinjar pine plantation, the location of the 'megaroost' in the 2016 Great Cocky Count. This site has historically and continues to support high numbers of Carnaby's. The site is in close proximity to water in Yanchep National Park and to patches of remnant Banksia Woodland provide corridors.

At present wildings, pines that recolonise themselves immediately after harvest, are cleared as part of the site preparation process for the next rotation's planting. However these pines, spread throughout the landscape, and allowed to grow in a more open form that supports increased pine cone formation compared with pines planted in timber plantation density, can provide an important food and protection resource for Carnaby's. Carnaby's Black-Cockatoos move large distances on a daily basis, and are at increased risk of predation as they fly across open landscapes. When accompanied by dependent young, they are less able to move across the landscape quickly, as the young birds need to stop and rest frequently (T Douglas, pers. obs.). Elements in their habitat that assist them in moving across the landscape should therefore be retained.

To retain maximum food for Carnaby's on the northern Swan Coastal Plain, BirdLife Australia advocate that the immediate pine production commitments under the Wesbeam agreement be supplemented by pine from outside the Gnangara pine plantation area, where the pine rotation system is still operating, and alternative food sources exist for Carnaby's. In the long-term, if pine plantations were to be re-established on existing cleared land within the assessment area they would likely provide significant benefit to Carnaby's. Not only would it provide a continuous food source for a threatened species, but it would have the added benefit of being land with a clear management commitment, in addition to the obvious economic benefit. Plantations could be placed strategically as they have in other areas, to fulfil ecosystem functions such as reducing salinity levels in catchments (e.g. Denmark River, see Bari *et al*. 2004). However, this in no way negates the critical importance of food resources for Carnaby's in the Gnangara area. If no alternative arrangement can be reached to fulfil Wesbeam obligations, BirdLife suggest instead that structural adjustment packages be directed to protecting habitat where it is needed and where it will provide direct benefit to Carnaby's, i.e. the protection of known food resources such as the Gnangara pines, rather than the reservation of vegetation of unknown foraging benefit.

Conversion to 'grassland'

- Fallow land has substantial fire risk potential.
- Replanting corridors will have positive outcomes for both mobile and less agile fauna, and replanting with Banksia and other Carnaby's food plants that don't recolonise easily will provide significant conservation benefit.

The Green Growth Plan proposes to leave vast swathes of land as 'grassland', or 'low water use vegetation', to facilitate water recharge into the Gnangara aquifer. There has been no further information to support that this will be anything other than leaving the land fallow, to be taken over by perennial invasive weed species. Under a drying climate, encouraging the proliferation of an unmanaged, highly-flammable vegetation type is unethical and irresponsible. Repeated raking and burning of ex-pine plantation will result in not only more wildfires burning said grassland, but where grassland adjoins Banksia woodland, a long term reduction in the viability of the 'conservation reserve' the *Green Growth Plan* has promised to establish, not to mention an ongoing threat to lives and infrastructure. The value of Banksia woodland as a food resource is known to increase with increasing age of the vegetation (Valentine *et al.* 2014).

'Grassland' provides no habitat value to Carnaby's Black-Cockatoo, nor any other native species. We propose instead several alternatives. Where land has already been cleared, a return to some proportion of native habitat will provide some benefit to native species, including Carnaby's. Understorey species have shown some capacity for regeneration following pine harvesting, although banksia species are often absent. BirdLife advocate where existing pine has been harvested and the area is not designated to be replanted, corridors of banksia and other canopy species be replanted to provide connectivity and ecosystem function across the landscape.

Pine Replacement

- The proposed pine replacement strategy is flawed in several ways that make it inherently not fit for the purpose of providing an alternative food source for Carnaby's Black-Cockatoo.
- The replanting schedule and the clearing schedule do not align, creating a clear gap in Carnaby's food availability.
- Lack of clarity on the arrangement and location of these pines make it unclear whether this arrangement will be of maximum benefit to Carnaby's.
- There is no certainty provided with regards to ongoing management and retention of these pines

The plan proposes to ameliorate some of the negative impacts of the Gnangara pine removal by the re-planting of 5000ha of pines, with the primary objective of this becoming an ongoing food source for Carnaby's into the future (4.5.3). However this tokenistic effort is unsuitable in timing, extent, and lacks a clear commitment to maintaining the viability of this 5000 ha of pines as a food source into the future.

<u>Timing</u>

As pines don't begin producing food for Carnaby's Black-Cockatoo until approximately 10 years old (p4), with replanting only starting in 2012, under this proposal there will be a two year gap between when the *entire* Gnangara plantation is cleared in 2020 and when the first 500ha of replanted trees start producing cones in 2022. It is further accepted that younger trees do not produce cones at the same density as mature trees, taking 45 years to reach maximum cone production (according to *Action Plan E*, p4). Based upon these grounds, the proposed clearing regime for the Gnangara plantation is unacceptable, and in direct opposition to the

outlined Conservation Outcome of threatened species, particularly Carnaby's (*Draft Action Plan F – MNES Conservation Commitments*, Section 3).
As old stands of pines produce a disproportionately higher yield of seeds compared with younger trees (Stock *et al* 2013). Therefore retention of middle- and older-aged trees should be prioritised.

Extent
Draft Action E – Pine Harvesting outlines 'considering that the prime objective of the 5,000 ha of pines is to provide food for Carnaby's cockatoo, the pines will not all be planted as a traditional plantation but some will be established over a wider area or in different arrangements so as to maximise the food resource while providing the same groundwater recharge.'

The specific arrangement of trees can have dramatic impacts upon the density of cone production in pine (Per Christensen, pers. comm.). The optimised densities of pine trees planted for timber production are pine trees planted for cone production are different. Where the draft plan allocates 5000ha of pine to be replanted at suitable stem density, we propose instead that these be planted at a lower density. We request some clarity

The replanted pines should be spread across the Gnangara, Pinjar and Yanchep pine plantation areas. Clumping trees in a few areas will have limited benefit to Carnaby's.

Continued viability of replanted pines as a food source
A commitment needs to be made to the ongoing management of these trees, to ensure their continued viability as a food source. If these pines were to die prior to maturity, or eradicated by fire, then there needs to be plan for management and replacement.

Native vegetation clearing

- Given the historical clearing of the Perth-Peel region, measures to retain the quality of existing habitat should be maximised, and the proposals to clear native vegetation should be avoided.
- Particular attention should be given to maintaining and improving the condition of high-quality habitat, particularly where it exists as islands and forms corridors through the landscape.

Draft Action Plan F: MNES Conservation Commitments outlines the proposed clearing of an additional 14 100 ha of Carnaby's Black-Cockatoo foraging habitat, consisting of 9 700 ha of Swan Coastal Plain feeding habitat (assumed to be primarily Banksia Woodland), and 4 400 ha of Jarrah Forest feeding habitat. Historical and ongoing clearing of native vegetation for agriculture and urban development has already removed.
While the Green Growth Plan outlines that the proposed model will have less impact than a 'business-as-usual' approach to clearing, this does not provide an optimal result for native flora and fauna. Instead existing intact native habitat should be retained, and existing cleared land should be used for development.

As detailed in *Action Plan F*, the conservation objective for Carnaby's Black-Cockatoo is the continued use of the Strategic Assessment Area through the maintenance of habitat and connectivity of habitat throughout and outside the region. The *Green Growth Plan* gives no indication of how habitat and connectivity will be maintained. This is particularly incongruent with the replacement of patches of habitat and corridors with 'grassland', as proposed in Action Plan E.

Balancing needs

The future of Perth's water resources need to be considered from a balanced perspective of both environmental and anthropogenic water requirements. This draft of the *Green Growth Plan* demonstrates that extraction requirements are being considered ahead of environmental matters, particularly MNES.

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Appendix 2.

2.1 Identification of species impacted by the *Green Growth Plan*

The Strategic Conservation Plan fails to identify all of the species of threatened avifauna (Wildlife Conservation (Specially Protected Fauna) Notice 2015) that have high or moderate reliance upon the Strategic Assessment Area (Table 4.4; p50), as outlined in s4.3.2 (p48) of the *Strategic Conservation Plan*. While Carnaby's Black-Cockatoo is misidentified as *Calyptorhynchus baudinii*, not correctly as *C. latirostris*, Baudin's Black-Cockatoo (*C. baudinii*) is missing from the list altogether, despite the Strategic Assessment Area incorporating significant parts of Baudin's overwintering range (Johnstone & Kirkby 2008). Baudin's Black-Cockatoo are mentioned in other accompanying documentation. The Fairy Tern (*Sternula nereis nereis*) was also absent, despite having moderate reliance upon the Strategic Assessment Area for breeding and as part of a known migration route. We make the following suggestions for their inclusion, using the format provided in Table 4.4:

Scientific name	Common name	EPBC status	WA status	Conservation objectives
Calyptorhynchus baudinii	Baudin's Black-Cockatoo	Vulnerable	Endangered	• Maintain the long-term viability of the species within the Strategic Assessment Area through the protection and maintenance of a mosaic and diversity of suitable habitat including: – habitat within the Jarrah Forest IBRA region; and – key resources that provide for feeding, breeding and roosting. • Undertake actions that contribute to the conservation of habitat outside of the Strategic Assessment Area. • Maintain habitat connectivity to facilitate species movement within and outside the Strategic Assessment Area. • Undertake research to improve knowledge about the species and inform conservation effort and management in the Strategic Assessment Area.
Sternula nereis nereis	Australian Fairy Tern	Vulnerable	Vulnerable	• Maintain the long-term viability of the species within the Strategic Assessment Area through the protection, maintenance and possible enhancement of suitable breeding, roosting and foraging habitat for use by the species within the Strategic Assessment Area. • Reduce disturbance at key breeding, roosting and feeding sites.

				• Undertake research to improve knowledge about the species and inform conservation effort and management in the Strategic Assessment Area.

2.2 Conservation Objectives

The Conservation Objectives (s4.3.2, p48) of the *Strategic Conservation Plan* emphasise the key concept of long-term viability, however this phrase is absent from the Conservation Objectives outlined in Table 4.4 for both Carnaby's Black-Cockatoo and the Forest Red-tailed Black-Cockatoo. Claims of conservation of Carnaby's Black-Cockatoo and Forest Red-tailed Black-Cockatoo are meaningless without aiming for long-term viability of populations. We suggest the following correction:

Scientific name	Common name	EPBC status	WA status	Conservation objectives
Calyptorhynchus banksii naso	Forest Red-tailed Black-Cockatoo	Vulnerable	Vulnerable	• Maintain the long-term viability of the species within the Strategic Assessment Area through the protection and maintenance of a mosaic and diversity of suitable habitat for use by the species within the Strategic Assessment Area. • Protect habitat in the Strategic Assessment Area that is required to maintain the north–western extent of the species distribution and population. • Maintain habitat connectivity across the Strategic Assessment Area between the north–eastern and southern extent of the species' range. • Undertake research to improve knowledge about the species and inform conservation effort and management in the Strategic Assessment Area.
Calyptorhynchus latirostris	Carnaby's Black-Cockatoo	Endangered	Endangered	• Maintain and improve the long-term viability of the species within the Strategic Assessment Area through the protection and maintenance of a mosaic and diversity of suitable habitat for use by the species including: – habitat within the Swan Coastal Plain IBRA region; – habitat within the Jarrah Forest IBRA region; and – key resources that provide for

				feeding, breeding and roosting. • Undertake actions that address and replace the lost feeding habitat within areas of pine plantations. • Undertake actions that contribute to the conservation of habitat outside of the Strategic Assessment Area. • Maintain habitat connectivity to facilitate species movement within and outside the Strategic Assessment Area. • Undertake research to improve knowledge about the species and inform conservation effort and management in the Strategic Assessment Area.

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CASE STUDY 3

Carnaby's cockatoos – Western Australia

Carnaby's black cockatoo. 📷 *Ralph Green, Flickr*

Carnaby's Black-Cockatoo is federally listed as Endangered, and the Perth-Peel subpopulation of Carnaby's Black-Cockatoos is estimated to have declined by 35% since 2010, due to the ongoing clearing of foraging and roosting habitat on the Swan Coastal Plain. With more than 70 per cent of banksia woodland now cleared, the species has become increasingly reliant upon pine plantations north of Perth to survive.

The importance of pines as a food source for Carnaby's is well understood (and recognised in the species' Recovery Plan). Indeed, in 2017, three quarters of Perth-Peel Carnaby's were recorded roosting within one kilometre of Perth's pine plantations, underscoring the importance of the plantations to sustain this population. Despite the known importance of this habitat, these plantations have been harvested—without replacement—at a rate of around 1,000 hectares each year since 2004. At its greatest, this plantation spanned 23,000 hectares; today, less than 5,000 hectares remains and all pines will be harvested by 2023.

Harvesting pines without adequately compensating for the loss of habitat has demonstrable consequences for this Endangered species. Since 2010, BirdLife Australia has undertaken regular monitoring of Perth's Carnaby's Black-Cockatoo population via its Great Cocky Count and has recorded sharp declines linked to the cumulative removal of mature pine trees.

In 2014, BirdLife Australia wrote to the Federal Environment Minister and their State counterpart with the results of the 2014 Great Cocky Count, indicating that legal advice received suggested 'harvesting without replacement' did not constitute a lawful continuation of a use of land under section 43B of the EPBC Act, and met the criteria for 'significant impact' on a Matter of National Environmental Significance. BirdLife Australia requested this be referred to the Federal Department of Environment to determine if it constituted a 'controlled action' (requiring further assessment of environmental impacts) and sought assurances from both the State and Federal Ministers that any further harvesting without replacement would be subject to referral under Part 7 of the EPBC Act, pointing to powers of the Federal Minister under section 70 to request a referral of the proposal. To date, the Government of Western Australia has failed to refer this action to the Commonwealth for assessment, despite repeated requests by BirdLife Australia, and the ongoing and significant decline of Carnaby's Black-Cockatoo populations. **By failing to refer the action for assessment under Commonwealth laws, the WA Government's action raises serious issues of transparency and accountability—legal responsibility is avoided and compliance seems optional.**

In response to repeated referral requests, successive Federal Ministers have cited the removal of pine plantations, and any potential impact on the Carnaby's Black-Cockatoo, as being considered within the **Strategic Assessment of the Perth and Peel Regions**—a process that commenced in 2011 and has now been abandoned. During this time, at least 5,000 hectares of pine forest has been cleared without replacement, consideration or recourse for its impact on a nationally-listed threatened species. The discretionary powers available to the Minister to call an action in, which in this case were not exercised, also point to a legal system vulnerable to politicisation—even when the case for referral is clear, the Minister is not compelled to act.

The information provided by the WA State Government through the Strategic Assessment consultation process was grossly inadequate. Endeavours by BirdLife Australia and other groups to provide constructive feedback were thwarted by a lack of disclosure of key information, including granular mapping and modelling projections, ultimately requiring requests under Freedom of Information laws. This highlights the inherent challenges the community faces when seeking to effectively participate in or scrutinise assessment processes. While the data produced by organisations like BirdLife Australia fills critical knowledge gaps and is relied upon to inform environmental decision making, the burden of holding governments to account for poor decisions, non-referral and the outright dismissal of scientific evidence effectively outsources regulatory and compliance responsibility to non-state actors. Prohibitive legal costs also represent a significant barrier to individuals and non-government organisations, acting as a further deterrent to ensuring robust environmental checks and balances, and undermining the effectiveness of the legal system tasked with the protection of federally listed species.

This case study demonstrates how responsibility for acting on known impacts from individual actions can be deferred pending an accreditation process such as a strategic assessment process, and that significant impacts continue to occur whilst accreditation processes are being undertaken.

Science for Saving Species

Research findings factsheet

Project 5.1

Threatened Species Recovery Hub

National Environmental Science Programme

Better offsets for Western Australia's black-cockatoos

Background

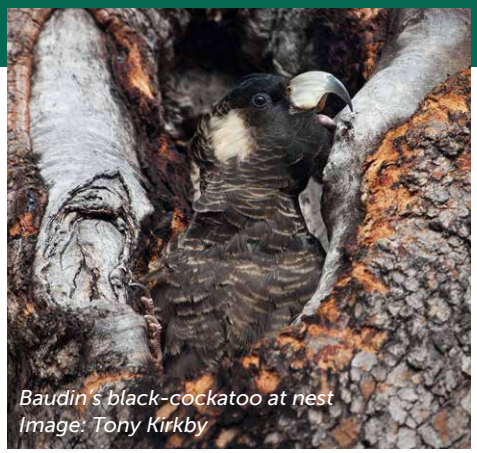
Biodiversity offsets are commonly used to compensate for unavoidable development impacts on species or ecosystems by aiming to create an equivalent benefit for the same species or ecosystem elsewhere. In Australia, offsets are routinely prescribed as conditions of approval for proposed development that will impact species or ecological communities listed as threatened either nationally under the *Environment Protection and Biodiversity Conservation Act 1999*, or under state and territory laws.

To ensure an offset compensates for the impact of development, we need to be able to quantify how much benefit an offset action will provide for a species or ecosystem at the site level. For many poorly-understood species and ecological communities, however, important knowledge gaps exist. This makes it hard to know what type and how much offset action is needed to offset a given impact.

This project developed an approach for eliciting the knowledge of threatened species experts in a structured way, so as to guide estimates of both the benefits and the costs of alternative offset approaches. Although it doesn't replace field-based studies, it can help decision-makers ensure that offset decisions are based on the best available information at the time, and help identify how much uncertainty there is about the effectiveness of particular offset actions. We tested the approach using several case study species that commonly trigger offset requirements, and for which developing appropriate offset proposals is considered challenging. Here, we describe the approach and findings for three taxa of black-cockatoos in Western Australia: Baudin's, Carnaby's and forest red-tailed black-cockatoos.

Carnby's black-cockatoo in flight. Image: Tony Kirkby

Figure 1:



Baudin's black-cockatoo at nest
Image: Tony Kirkby

Carnaby's black-cockatoo at nest
Image: Keith Lightbody

Forest red-tailed black-cockatoos
Image: Keith Lightbody

Declining black-cockatoos in Western Australia

There are three threatened taxa of black-cockatoo in Western Australia (Figure 1), all of which have a recovery plan in place. Black-cockatoos in WA were locally common until the 1950s, when all three taxa began to decline.

All three taxa are long-lived, obligate hollow breeders with a low reproductive output. They have some overlap in feeding requirements. Baudin's black-cockatoo *Calyptorhynchus baudinii* feeds on jarrah and marri species, Carnaby's black-cockatoo *Calyptorhynchus latirostris* on proteaceaous (banksia, grevillea and hakea) and myrtaceaous species, and forest red-tailed black-cockatoos *Calyptorhynchus banksii naso* on marri, jarrah and other native and introduced species. They may occur in small to large flocks, comprised of single species, or co-occur with other black-cockatoos, during non-breeding periods.

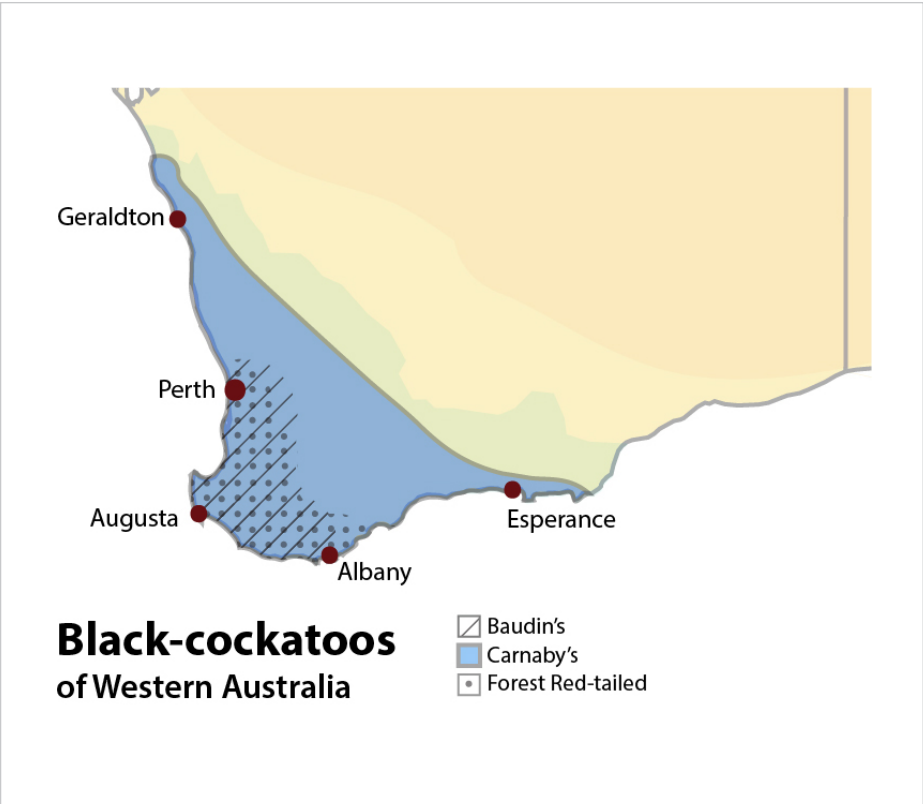


Figure 2: Distribution of Baudin's, Carnaby's and forest red-tailed black-cockatoos in south-west Western Australia (Source: Threatened Species Recovery Hub).

Baudin's black-cockatoo and forest red-tailed black-cockatoo

Baudin's black-cockatoo is listed as Endangered under the EPBC Act, and is endemic to south-west WA (Figure 2). The forest red-tailed black-cockatoo, one of five subspecies of red-tailed black-cockatoos in Australia, is listed as Vulnerable under the EPBC Act and is found in south-west WA (Figure 2). Baudin's and forest red-tailed black-cockatoos have a combined recovery plan in place.

Baudin's and forest red-tailed black-cockatoos have been declining as a result of widespread logging. Many nest trees were felled as part of timber harvesting operations, and this loss is likely to continue as a result of mining activity, timber harvesting, and fires. The principal threat they face is a shortage of suitable hollows for breeding. Other threats affecting Baudin's and forest red-tailed black-cockatoos are competition for nest hollows with other birds and introduced bees, loss of feeding habitat, vehicle strike, illegal shooting (of Baudin's) and reduced food and water availability due to climate change.

Carnaby's black-cockatoo

Carnaby's black-cockatoo is found only in south-west WA (Figure 2), and listed as Endangered under the EPBC Act. Carnaby's black-cockatoos have been declining, with the principal threat being loss and fragmentation of foraging habitat, which includes native proteaceaous (e.g. Banksia, Grevillea and Hakea spp.) communities as well as pine plantations. The remaining foraging habitat may be too far from breeding habitat, or degraded due to salinisation, weed invasion, dieback or fire. Other threats affecting Carnaby's black-cockatoos include loss of breeding habitat, competition for nest hollows with other birds and introduced bees, reduced food and water availability due to climate change, vehicle strike, disease, and illegal shooting and, historically, nest robbing for the illegal bird trade.

Current offset approaches

Carnaby's black-cockatoos trigger more offsets under the EPBC Act than other threatened species in Western Australia. The most common offset type for Carnaby's black-cockatoo is land acquisition for conservation. Other offsets include those focused on vegetation management (rehabilitation, restoration and revegetation), threat management actions (dieback disease control, installation of fencing, weed management, feral animal control), research and education. The current offset approaches for Baudin's and forest red tailed black-cockatoos have received less research attention but are broadly similar to the offsets used for Carnaby's black-cockatoos.

A recent review on biodiversity offsets for Carnaby's black-cockatoo proposed that a stewardship program which funds private landholders who carry out conservation management and maintain bush on properties could provide an alternative option for biodiversity offsets (Richards et al. 2020). While we did not specifically consider a stewardship program in this project, we included management actions that could feasibly be included in such arrangements, such as installation of artificial nest hollows, feral species control, weed control and fire management.

The recent review on biodiversity offsets for Carnaby's black-cockatoos also showed that offsets implemented to date have resulted in a net loss of habitat for the species. Threatening processes are still impacting remaining habitat and potential offset sites of all three WA black-cockatoos, meaning that measures that arrest the adverse impacts of habitat loss are needed.

Engaging experts to improve outcomes

Black-cockatoos are highly mobile and move widely across the landscape; they may use different areas and different vegetation types at different times of the year, and readily move from forests to agricultural and urban areas. This mobility, and their reliance on a small number of food plants and on hollows of a particular size and structure, poses challenges for long-term conservation.

We elicited information about the effectiveness and cost of a series of management activities for foraging and breeding habitats (summarised in Figure 3) that may benefit WA black-cockatoos, based on expert knowledge. To do this, we first identified candidate management actions based on interviews with two key WA black-cockatoo experts. Next, we used a structured expert elicitation protocol involving two rounds of online anonymous surveys with 17 WA black-cockatoo experts. Experts provided quantitative estimates of the benefits of a range of management actions at two hypothetical offset sites which had different types of habitats, site conditions and past land management (Box 1).

We asked experts to envisage the outcomes for WA black-cockatoos in each hypothetical offsets site after 20 years if current management did not change (called the baseline or 'do nothing' scenario), and if particular management actions, or combinations of these actions, were implemented. By comparing the estimated outcomes with and without the management actions, we could identify the estimated benefit for black-cockatoos. We also explored the costs and cost-effectiveness of these alternative strategies.

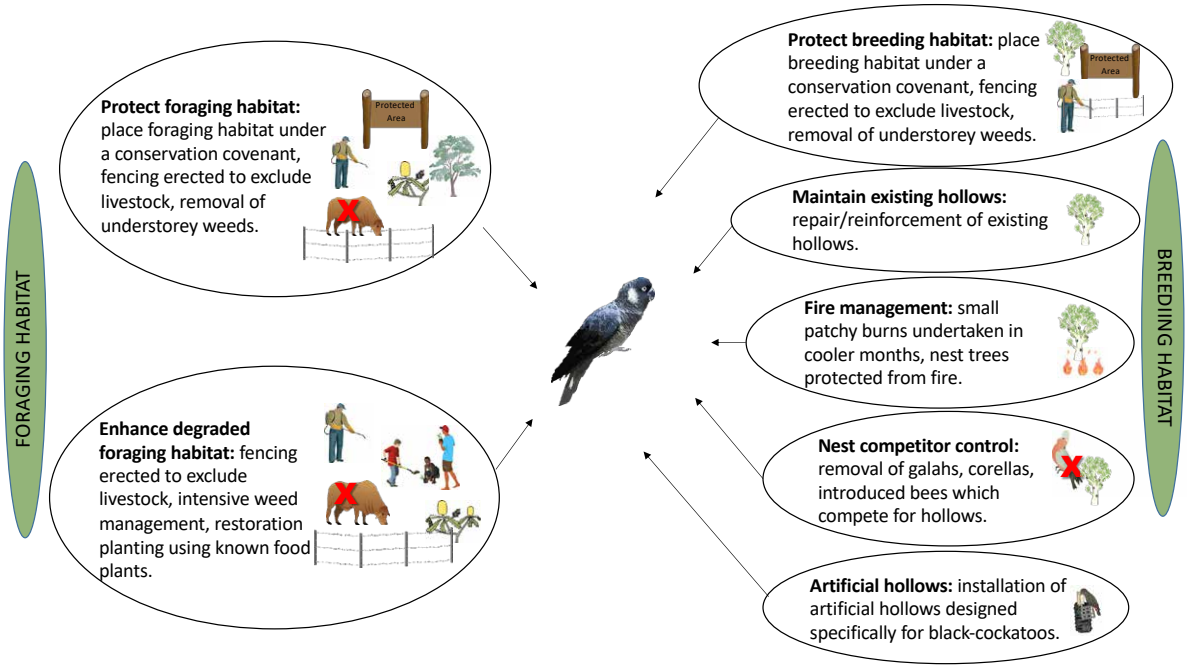
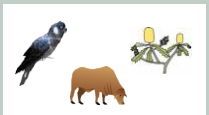


Figure 3: Potential management actions that could benefit WA black-cockatoo populations. Experts considered how these actions, alone and in different combinations, would benefit WA black-cockatoos at two different hypothetical offset sites (see Box 1).

Box 1: Hypothetical offset sites and benefit indicator

Management actions are likely to differ in their benefit to black-cockatoos at different types of sites. We therefore asked experts about outcomes of different management actions (Figure 3) after 20 years at five different hypothetical offset sites, each 50 ha in size, with different starting conditions (foraging habitat score, and number of nest hollows where a pair bred successfully) and assumptions.

For foraging habitat, the hypothetical offset sites were:

	1. High-quality foraging habitat: a marri/jarrah and or banksia native vegetation remnant in very good condition.
	2. Medium-quality foraging habitat: a marri/jarrah and/or banksia native vegetation remnant in moderate condition; a range of domestic livestock and sometimes feral herbivores access and graze the site.
	3. Very poor-quality foraging habitat: a predominantly cleared site, containing scattered marri/ jarrah/banksia native species; a range of domestic livestock and feral herbivores regularly access and graze the site.

For breeding habitat, the hypothetical offset sites were:

	1. High-quality breeding habitat: a forest remnant on private property, with 50 hollowing bearing trees used annually by WA black-cockatoos. Experts were asked to assume that, at the start of the scenarios, only one species of black-cockatoo was present at the site, all 50 of the nest hollows were being used and nest success (= at least one fledgling from a nest) was 60%, and that there was adequate food, roosting and water resources in close proximity of the site to support breeding.
	2. Medium-quality breeding habitat for black-cockatoos: a site with 25 hollow bearing trees used intermittently by WA black-cockatoos. Experts were asked to assume that there was a moderate level of competition from nest competitors, all 25 nest hollows were being used and nest success was 40%, only one species of black-cockatoo was present at the site, and that there was adequate food, roosting and water resources in close proximity of the site to support breeding.

To estimate the benefits of different management actions, a suitable *benefit indicator* was required. The *benefit indicator* needed to be able to be measured and monitored at the site level, and be highly likely to relate to the viability of the species. For WA black-cockatoos, we used the following benefit indicators:

- Foraging habitat: we developed a linear scoring scale from 0 (no food plants) to 10 (excellent quality foraging habitat, with very high density and productivity of food plants).
- Breeding habitat: the number of nest hollows where a pair of black-cockatoos successfully bred and fledged at least one chick.

Effective offsetting

There are similarities in the results for the three taxa, which are displayed individually (where applicable) below.

Foraging habitat

On average, the experts believed that the baseline ('do nothing') option would result in a decline in the condition of high-quality foraging habitat for all three taxa of WA-black cockatoos, over a 20-year period. This decline was attributable to a range of factors: fire, impacts of grazing, natural attrition of foraging vegetation species, climate change, and dieback.

Of all the combinations of management interventions, the greatest benefit for WA black-cockatoos was expected to be from protection with enhancement through restoration at medium and low-quality sites (Figure 4). However, experts thought that even with these actions, they would not be able to improve the quality of poorer-quality sites to match the high-quality foraging habitat score (8). This highlights the irreplaceability of the remaining high-quality foraging habitat for WA black-cockatoos.

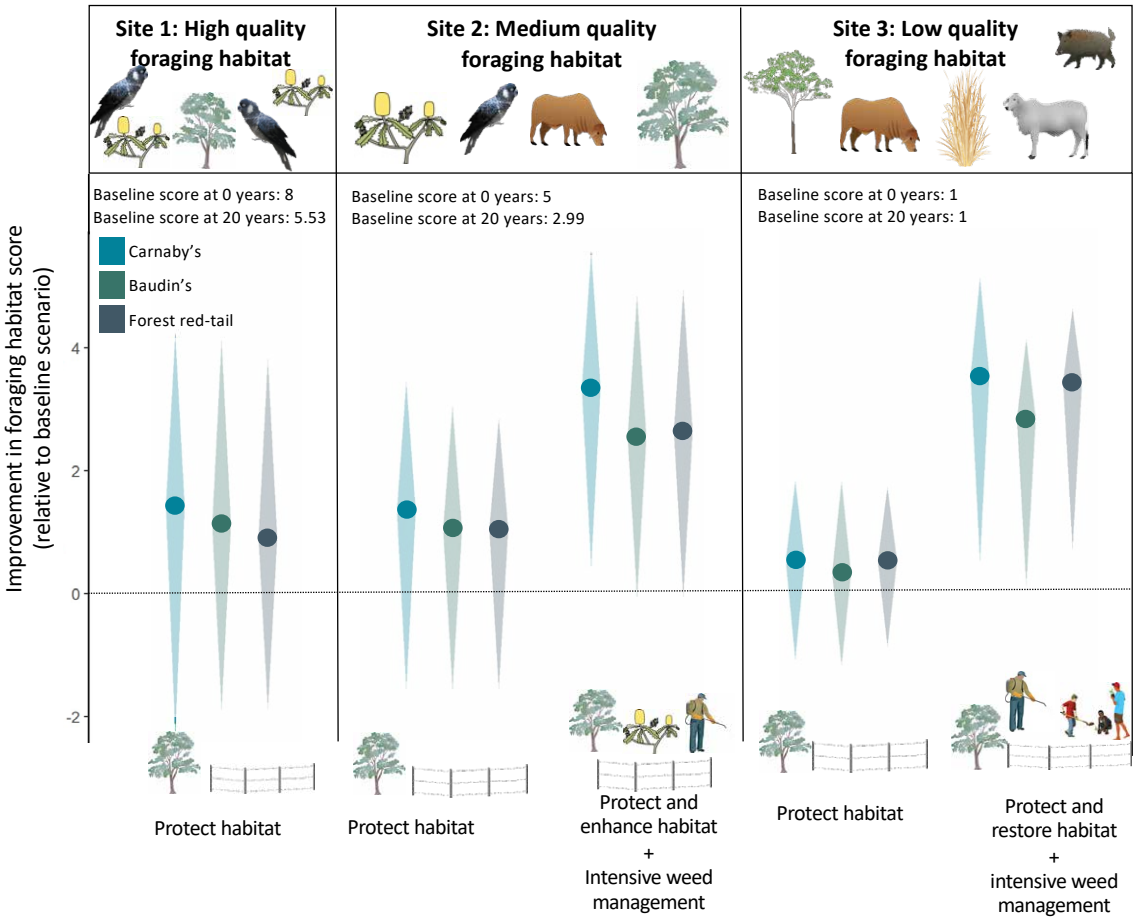


Figure 4: Results of expert elicitation showing the estimated benefit (defined as improvement in foraging habitat score) of different management actions for black-cockatoos after 20 years, relative to a baseline scenario with no active management ('do nothing'). The circle at the widest point in the diamond is the aggregated 'best guess' estimate. Diamonds capture the 90% confidence intervals around expert estimates.

Enhancement of medium-quality foraging habitat for Carnaby's black-cockatoos was believed to be achievable in the 20-year time frame, if there was ongoing resourcing to manage weeds and impacts from native and feral herbivores. Experts noted that Carnaby's foraging habitat is particularly vulnerable to impacts of fire and dieback. The experts commented that it was not possible to establish new foraging habitat for Baudin's and forest red-tailed black-cockatoo within a 20-year timeframe. Marri and jarrah plant communities take a long time to establish and mature, and therefore protection of remaining key foraging habitats for these species is critical.

Experts believed that while WA black-cockatoos could benefit from intensive management of threats and enhancement or restoration of moderate or low-quality foraging habitats, none of the management actions applied at the moderate or low-quality sites would allow them to reach a high-quality foraging habitat score within the time period considered. This suggests that equivalent offsets for impacts on high-quality foraging habitat would be extremely difficult to achieve, as offsets are usually required to reach the same quality score as the impacted site they are compensating for. Experts suggested that protecting and enhancing medium-quality foraging habitat, through supplementary plantings, may be a suitable offset action to consider for sites in close proximity to nesting sites for Carnaby's black-cockatoos, to counterbalance impacts on poor to medium-quality sites (but not high-quality sites).

Breeding habitat

On average, experts believed that the breeding success of WA black-cockatoos would decline in the baseline ('do nothing') scenario, due to the natural attrition of trees with nest hollows (Figure 5). The results suggest that in order to increase the relative success of breeding over 20 years, protection, combined with active management (hollow maintenance and fire management) in existing high-quality habitat are required. These actions were thought to increase the number of successful nests for all three taxa, with an average estimate of 9-10 successful nests gained above the baseline ('do nothing') scenario at sites that started with 30 nests.

The greatest relative benefit for breeding habitat was from a combination of protection, hollow maintenance, fire management, installation of artificial hollows and targeted nest competitor control, in medium quality breeding habitat (starting out with 25 suitable nests), with an average estimated gain (but high uncertainty) of 29-33 successful nests relative to a baseline scenario with no management ('do nothing'). Part of this is attributed to the installation of 50 artificial nest hollows. A recent study has shown that Carnaby's black-cockatoo readily uses artificial nest hollows; trials have also shown that forest red-tailed black-cockatoos will also nest readily in artificial nest hollows if they are installed in the correct areas and are of a suitable design (Johnstone and Kirby 2019). The results suggest that protecting medium-quality breeding habitat, combined with active management, could be effective biodiversity offset options for Carnaby's and forest red-tailed black-cockatoos.

There is less detailed knowledge about the breeding cycles of Baudin's and forest red-tailed black-cockatoos. It is possible these species may not breed annually. Experts also highlighted that little is known about how food quality may affect breeding success. Forest red-tailed black-cockatoos have shifted to introduced food sources, notably *Melia azedarach* (Cape lilac), which may have lower nutritional value than their 'traditional' food sources. Experts also noted that forest-red tailed black-cockatoos will feed on *Eucalyptus caesia* in suburban gardens. Further research is warranted to determine the impact of introduced food sources on breeding success.

Experts highlighted that a critically important factor affecting breeding success of all three species is having adequate foraging habitat in close proximity to the breeding habitat, and that proximity between foraging, foraging and roosting habitats should be a key consideration in the development of offset actions.

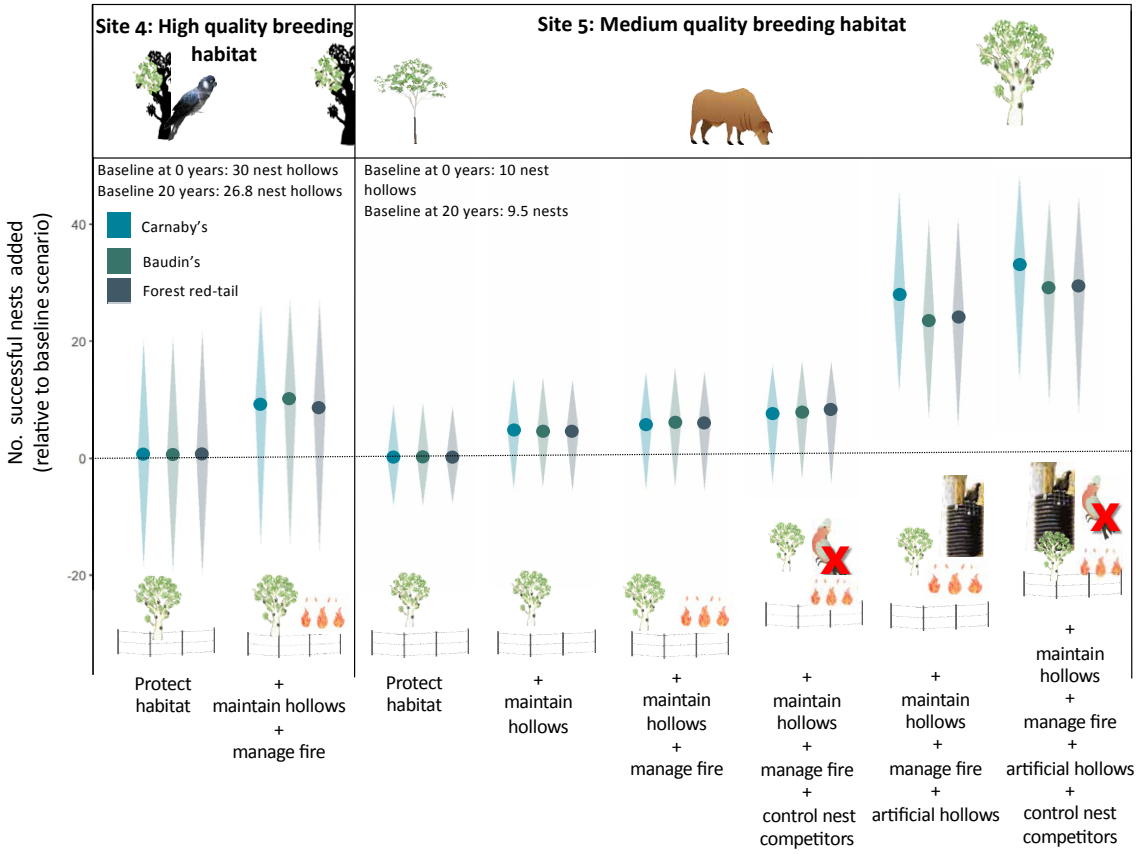


Figure 5: Results of expert elicitation showing the estimated benefit (defined as number of nest hollows where a breeding pair successfully fledged a chick) of different management actions for black-cockatoos after 20 years, relative to a baseline scenario with no management ('do nothing'). The circle at the widest point in the diamond is the aggregated 'best guess' estimate. Diamonds capture the range of 90% confidence intervals around expert estimates.

Cost-effectiveness

The cost estimates apply only to the management scenarios included in the expert elicitation process. While our results can provide a guide for scaling up the area managed to achieve greater benefits for black-cockatoos (as long as other site conditions remained consistent), they cannot be used to scale down – a given fraction of the investment would be very unlikely to achieve an equivalent fraction of the estimated benefit. The cost data were collected from a range of sources, including revegetation costs from existing projects in WA.

We collected cost estimates for the restoration of two types of foraging vegetation (1) Proteaceae and (2) marri/jarrah. We present the cost effectiveness estimates for the three black-cockatoos in terms of their favoured foraging habitat (Proteaceae for Carnaby's, marri/jarrah for Baudin's and forest red-tails). There are similarities in the cost-effectiveness results for the three taxa, which are displayed individually (where applicable) below. Costs for some actions (for example, protection of habitat via a conservation covenant) were considered to be the same across taxa.

Based on the cost data we collected from experts, the cheapest management action for WA black-cockatoos was to protect and manage weeds in high-quality foraging and breeding habitat. However, a much more informative metric to consider than cost per action is cost per unit benefit – in other words, how much each additional unit of foraging habitat score, or successful nests gained, was estimated to cost. For WA black-cockatoos, cost-effectiveness was strongly related to the quality of the foraging habitats, with costs increasing in medium-quality habitats and being highest for low-quality habitat.

For foraging habitat, the most cost-effective action (measured as cost per unit of habitat score gained over 20 years) was protection (Figure 6) of high-quality habitat (via conservation covenant). This was estimated to cost $6,838/year to gain one unit of habitat quality across 50 ha. It should be noted, however, that this is a very small gain, with considerable uncertainty. The least cost-effective option (for Carnaby's black-cockatoo) was protection and restoration of very low-quality habitat, combined with intensive weed management, which cost $26,699/year per unit of habitat quality gained across 50 ha.

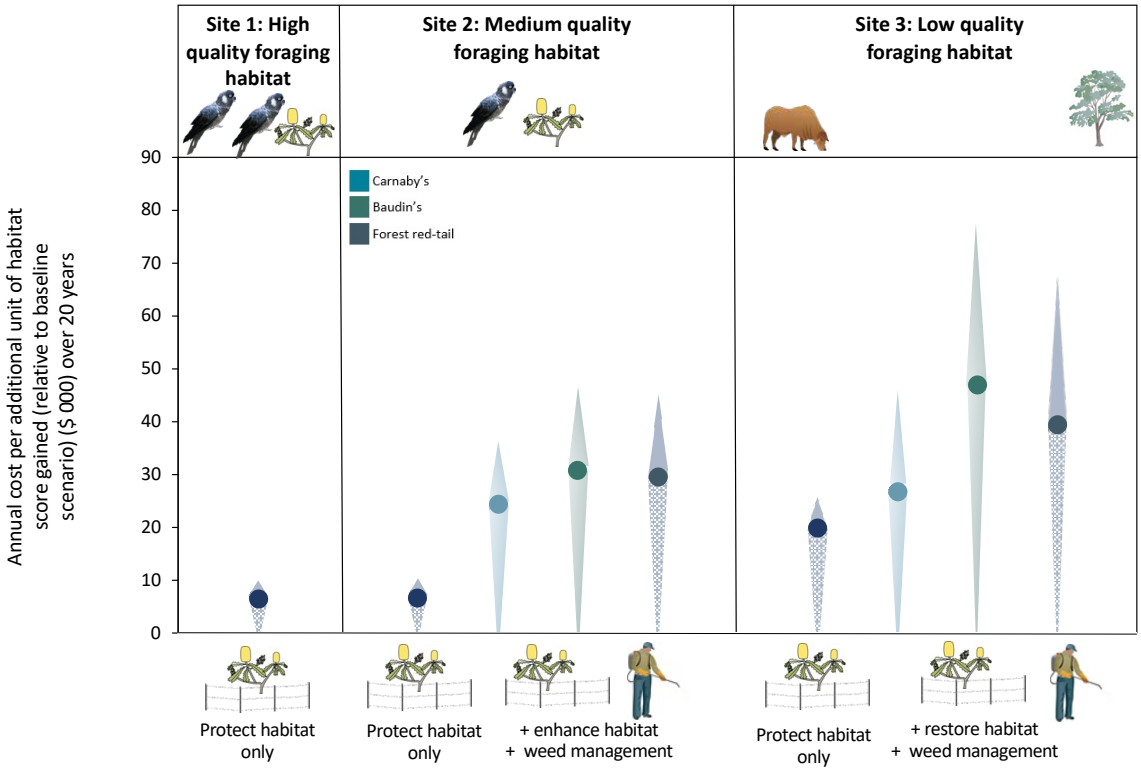


Figure 6: Cost of each management action to gain a single unit in foraging habitat score for black-cockatoos (in 2020 dollars, over 20 years at a 50 ha site). The circle represents the best estimate, and the top and bottom points capture the low and high estimates of cost per additional habitat score. Note: annual cost per habitat score gained was obtained by dividing the total annual costs of the management action by the habitat score experts thought could be added as a result of the management action. Different costs for the three taxa are shown for restoration actions (where cost estimates differed between proteaceaous and marri/jarrah vegetation types).

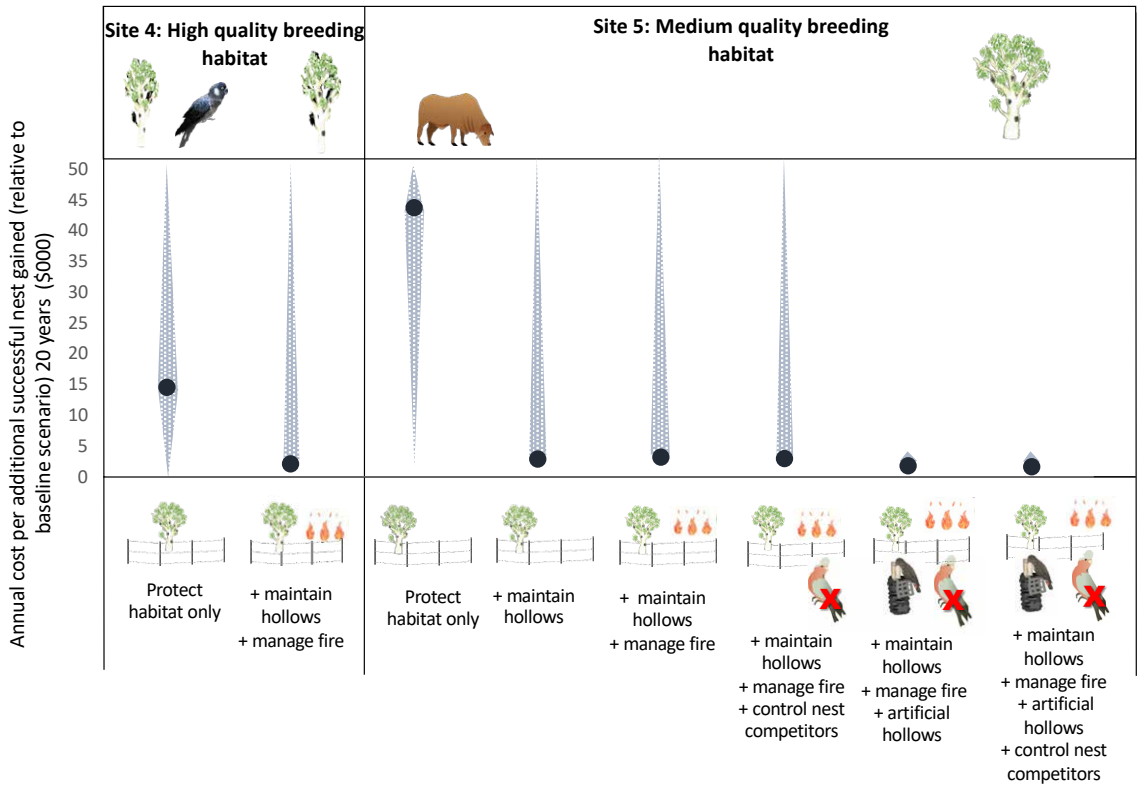


Figure 7: Cost of each management action to gain an additional nest hollow where a breeding pair successfully fledge a chick (in 2020 dollars, over 20 years at a 50ha site). The circle represents the best estimate, and the top and bottom points capture the low and high estimates of cost per additional successful nest. Due to the fact it was possible for a benefit to be less than 0, the upper cost-effectiveness estimates for most actions are non-defined. Note: annual cost per successful nest gained was obtained by dividing the total annual costs of the management action by the number of nests (where a pair successfully breed and fledge at least one chick) experts thought could be added as a result of the management action. shown in the 'enhance habitat' options for the three taxa.

Protection of breeding habitat (Figure 7) alone was regarded as the least cost-effective of the management actions considered for breeding habitat ($14,608/year per additional successful nest for high quality breeding habitat, and $43,825/year for medium quality breeding habitat); all the other management actions estimated costs <$10,000/year per additional successful nest. Note that these estimates are likely highly sensitive to the size of the hypothetical site (50 ha supporting 25 nest hollows as a starting point).

Implications of research

Biodiversity offsets must only occur after all previous steps in the mitigation hierarchy have been considered. The design of better biodiversity offsets for threatened species will remain an ongoing challenge for policy makers, particularly for species where the relative contribution of key threats are poorly known, or for which limited quality habitat remains. A well-designed biodiversity offset is one that is based the principles of the IUCN policy, and incorporates:

- Current ecological knowledge (action plans, recovery plans, management plans, peer reviewed literature, where available) and
- Full consideration of cumulative impacts (geographically and over time).

Expert elicitation is not a perfect tool or solution for addressing issues with biodiversity offsets in Australia. It does not replace the urgent need for empirical studies to evaluate and improve on-ground management approaches. Instead, it provides a relatively quick, inexpensive and repeatable method of obtaining current and best available knowledge in a way that reduces bias, in a form that is useful to inform decision making on biodiversity offsets.

The development of offsets poses an ongoing challenge as the human population and associated development in the south-west Western Australia continues to increase. In many cases, developments may involve clearing small parcels of land that may not trigger offset requirements. It is essential that cumulative impacts of these developments, and the importance of habitat connectivity, are considered in decision-making regarding offsets for these species.

All three taxa of WA black-cockatoo occur in areas that include agricultural and urban land use. Private landholders are important stakeholders in the conservation of WA black-cockatoos, and there is considerable scope to expand the use of stewardship programs for WA black-cockatoo habitat on private land.

Results from this expert elicitation process suggest:

- effective offsetting for these species rely heavily on avoiding and mitigating impacts to high quality habitat first, since there is very limited scope for impacts to high quality habitat to be offset in a 20 year timeframe;
- it is not possible to establish foraging plants for Baudin's and forest red-tailed black-cockatoo within a 20-year timeframe. Marri and jarrah plant communities take a long time to establish and mature, and therefore protection of remaining foraging habitats for these species is critical;
- protection and management of weeds in high-quality foraging habitat is the most cost-effective action for all WA black-cockatoos, but gains are small;
- there can be some gains in restoring medium and low-quality foraging habitats, but these options are expensive, may not be achievable in a 20 year timeframe, and are unlikely to match the quality of existing high-quality habitat, even with intensive management, within reasonable timeframes. As such, they are not appropriate for offsetting losses of high-quality foraging habitat but may be useful for offsetting losses of low to moderate quality habitat;
- forest-red-tailed black-cockatoos are increasingly using urban landscapes for feeding and the link between food quality and breeding warrants further investigation;
- the retention and active management of high-quality breeding habitat is especially crucial for Baudin's black-cockatoos;
- artificial hollows are regarded as a useful short-term measure for supporting breeding of Carnaby's and forest red-tailed black-cockatoos. If artificial hollows are used as part of a biodiversity offset, they should be combined with restoration of foraging and breeding habitat for long-term success.

Authors

Martine Maron/UQ; Megan Evans/UNSW and UQ; Jessica Walsh/UQ and Monash University; Helen Mayfield/UQ; Tida Nou/UQ; Christy Davies/UQ; Mike Bamford/Bamford Consulting Ecologists; Mandy Bamford/Bamford Consulting Ecologists; Geoff Barrett/WA Department of Biodiversity Conservation and Attractions; Rob Davis/Edith Cowan University; Rick Dawson/Australian Black Cockatoo Specialists; Christine Groom/University of Western Australia; Ron Johnstone/WA Museum; Tony Kirkby/WA Museum; Peter Mawson/WA Department of Biodiversity Conservation and Attractions/University of Western Australia; Dave Mitchell/WA Department of Biodiversity Conservation and Attractions; Adam Peck/BirdLife Australia; Karen Riley/Murdoch University; Erika Roper/University of Western Australia; Sam Rycken/Murdoch University; Denis Saunders/CSIRO Land & Water; Jill Shephard/Murdoch University; Claire Stevenson/WA Department of Water and Environmental Regulation; Kristin Warren/Murdoch University

Graphics

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Further Information

Professor Martine Maron – m.maron@uq.edu.au

Threatened Species Recovery Hub

National Environmental Science Programme

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This project is supported through funding from the Australian Government's National Environmental Science Program.

Government of **Western Australia**
Department of **Water and Environmental Regulation**

Gnangara

groundwater allocation plan

draft methods report

Water resource allocation
and planning series
Report no. 77
November 2021

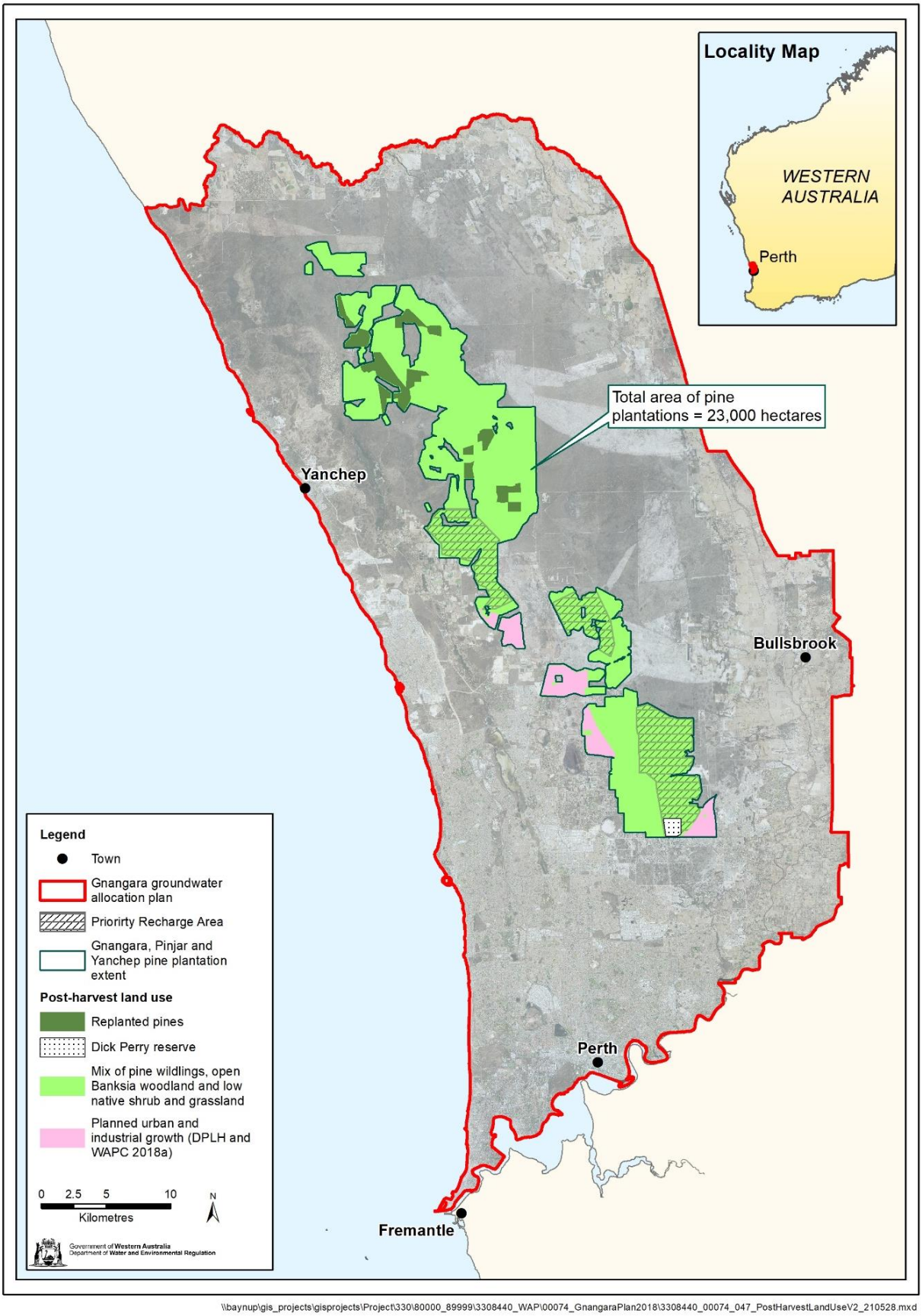


Figure 5 Likely post-harvest land use in the Gnangara, Pinjar and Yanchep pine plantations

2nd June 2022

EPA Services
Department of Water and Environmental Regulation
Locked Bag 10
Joondalup DC
WA 6919

ATTN: Registrar, EPA Services

This letter confirms BirdLife Australia's support of the referral to the Environmental Protection Authority by Dr Hugh Finn for assessment of the change of land use, purpose and condition of land within the Gnangara, Pinjar and Yanchep pine plantations (Gnangara-Moore River State Forest, State Forest 65).

Birdlife Australia takes a science- and evidence-based approach to bird conservation, citizen science and advocacy. With a 120-year history and Australia's strongest and longest-lived collection of bird data and surveys, BirdLife Australia brings a wealth of observation and experience to the protection of native birds. Under our current conservation strategy, BirdLife is on a mission to put birds and nature on the path to recovery within a decade. This will be achieved by leading and facilitating action that halts biodiversity loss and restores ecosystems. Where strong conservation plans are in place and well-resourced the evidence tells us that threatened species can be brought back from the brink of extinction. In Western Australia, black-cockatoos are front and centre of this mission.

BirdLife Australia has been involved with conservation of Ngolyenoks (Carnaby's Black-cockatoo) for almost twenty years. Supported by our knowledgeable community base we have developed and coordinated citizen science projects that capture valuable data on roosting flocks, breeding sites and breeding success, important feed sites and habitat preferences. This knowledge has provided the backbone for informed on-ground conservation efforts, including revegetation works, installation of supplementary breeding hollows and water points, voluntary management agreements and community advocacy. This information feeds directly to recovery teams, local, state and federal government and other stakeholders.

This long history of evidence-based conservation enables us to reiterate with certainty that the Gnangara, Pinjar and Yanchep pines are a critical food and roost resource for Ngolyenoks in the greater Perth-Peel area. The removal of these pines without replacement has and continues to be detrimental to the long-term population viability and genetic diversity of the species. Data show that around 70% of Ngolyenoks within the Perth-Peel area roost in close proximity to these pine plantations. They form a vital food resource for birds during the non-breeding season, allowing them to successfully feed up both before and after their breeding migration. The population trend for Ngolyenoks in the Perth-Peel area has directly mirrored the

BirdLife Australia
Suite 2–05
60 Leicester Street
Carlton VIC 3053
T 03 9347 0757
F 03 9347 9323
info@birdlife.org.au
birdlife.org.au

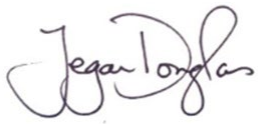
ABN 75 149 124 774

clearing of the pines, falling 35% since 2010 as harvesting without effective replacement has occurred.

The decision to convert the Gnangara, Pinjar and Yanchep pine plantations from commercial pine plantation to a state of 'fallow land' constitutes so significant a change from the original land use, on such a broad scale, and resulting in such certain deleterious impacts on an endangered species that assessment is a necessary step. That the full impact of this proposal has not been assessed is a gap we wish to see addressed, and so support and endorse the referral application and supporting documentation submitted by Dr Hugh Finn. The shift from a productive landscape that allowed long-term co-existence of timber production and threatened species conservation, to be watered down slowly to become a proposal that sees land left abandoned and fallow was well beyond the scope of any early assessment. The impact on Ngolyenoks alone should provide sufficient justification for its immediate re-assessment.

We call on the Environmental Protection Authority to exercise their legal obligation to assess the change of land use, purpose and condition of land within the Gnangara, Pinjar and Yanchep pine plantations (Gnangara-Moore River State Forest, State Forest 65), as provided for under Part IV of the *Environmental Protection Act 1986* (WA). Given that actions under this proposal are already underway, BirdLife Australia ask for an immediate cessation to harvesting these plantations until this proposal can be rigorously assessed.

Yours sincerely,



Dr Tegan Douglas

WA Woodland Bird Project Coordinator

Samantha Vine

Head of Conservation and Science

BirdLife Australia
Suite 2–05
60 Leicester Street
Carlton VIC 3053
T 03 9347 0757
F 03 9347 9323
info@birdlife.org.au
birdlife.org.au

ABN 75 149 124 774

conservation council of western australia abn 35 982 476 107
citywest lotteries house 2 delhi street west perth western australia 6005
t 08 9420 7266 f 08 9420 7273 conswa@**ccwa.org.au**

Chairman and Members
Environmental Protection Authority
Locked Bag 10
Joondalup DC WA 6919

2 June 2022

Dear Professor Tonts and EPA Members,

Support for Dr Hugh Finn's Referral of the Gnangara Pine Harvest

The Conservation Council of WA (CCWA) is deeply concerned that the population of the endangered Carnaby's Cockatoos continues to decline, and that the Perth-Peel sub-population of these birds is being pushed towards local extinction. A key reason for this is that one of their critical food and roost habitats, the Gnangara pine plantations, is being harvested without replanting of either pines or Banksia Woodlands.

CCWA strongly endorses Hugh Finn's referral to the EPA for its formal assessment of the environmental impacts of harvesting the remaining Gnangara, Pinjar and Yanchep pine plantations. The impacts of clearing the pines and leaving the ground fallow has never been assessed by the EPA.

CCWA concurs with Hugh's stance that this proposal is a significant **change of land use, purpose and condition of land** under the Environmental Protection Act, 1986. The proposal should have been referred to the EPA by the Department of Biodiversity, Conservations and Attractions (DBCA).

The impact of this action on the Carnaby's Cockatoos will be significant and include starvation of adult and immature birds; reduced reproductive success; substantial reduction in the carrying capacity of the northern Swan Coastal Plain region; and substantial population decline of more than 50%.

CCWA is the state's foremost not-for-profit, non-government conservation and environment organisation. We have been a prominent voice for conservation for more than 50 years working to promote a more sustainable WA and to protect our natural environment. CCWA represents more than 100 environmental organisations across Western Australia, with tens of thousands of engaged individuals.

The CCWA, along with the public, expect that the EPA and the Minister for Environment will do all that they can to protect the Carnaby's Cockatoo to prevent their slide into extinction.

Yours sincerely,

Maggie Wood
Acting Executive Director
Conservation Council of Western Australia (CCWA)

Friends of Underwood Bushland

86 Daglish Street
Wembley 6014

31 May 2022

Chairman Professor Tonts
Environment Protection Authority
Locked Bag 10
Joondalup DC WA 6919

Letter of support to referral by Dr. Hugh Finn to the EPA regarding assessment of the clearing of the Gnangara Pine Plantation as a change of land use.

Dear Professor Tonts,

The Friends of Underwood Avenue Bushland Inc strongly support the referral by Dr Hugh Finn to reassess the issue of harvesting the last of the Gnangara Pine trees at the Gnangara Plantation.

Our committee, backed by hundreds of supporters, is ashamed by the State Government's inaction, or rather determination to keep harvesting the pine plantation until it is all done. It is harder and harder for the cockatoos to find enough food.

Revegetation was promised but not delivered. Birdlife WA, with community crowd-funding, was able to do some revegetation, but most of the harvested pine area is fallow.

This is a change of land use, and the referral headed by Dr Finn points out the change of land use and that this must be reassessed.

The community has tried every avenue to allow the Gnangara Carnaby's Black-Cockatoos to persist into the future, but without making an impression on the State Government.

The Friends of Underwood Avenue Bushland urge you to act with urgency to commit to a Public Environmental Review for a change of land use of the Gnangara Pine Plantation.

Yours sincerely

Margaret Owen

SAVE THE BLACK COCKATOOS

2nd June 2022

Environmental Protection Authority

Letter of support to referral by Dr Hugh Finn to the EPA regarding the assessment of the clearing of the Gnangara Pine Plantation as a change of land use.

Dear Sir/Madam,

'Save the Black Cockatoos', a coalition of scientists, Traditional Owners and 5 peak environmental groups support the referral by Dr Hugh Finn for the EPA to assess the change in land use of the Gnangara Pine Plantation which is a crucial feeding source for the endangered Ngolyenok (Carnaby's Black Cockatoo).

Scientists say the felling of the pines which is due to be completed by the end of 2023 may push this iconic may species further towards extinction in the Perth Peel area. The fallow land left behind means this is a change of land use and must be reassessed.

A study involving CSIRO and DPAW scientists found that if the Gnangara Pines are cleared the population of Ngolyenoks in the Perth-Peel area will be reduced by 56% by 2050. The plantation has already been reduced from 23 000 hectares to less than 4000 hectares

The WA population has declined by 45% in the last 50 years, and they are locally extinct in a third of their former range. Surveys from Bird life's Cocky Count also indicate a large significant crash in population as the pines have been removed.

In the Perth-Peel area, the population has dropped by more than 30% over the last decade with another huge loss already caused by the clearing of most of the Gnangara pines.

the Black Cockatoo Coalition has petitioned parliament to undertake a Gap Analysis be undertaken to investigate failures in laws and initiatives designed to save the species and create an Emergency Plan, to prevent their extinction. Part of that plan includes saving what remains of the Gnangara Pine Plantation until native vegetation can be grown.

Noongar Traditional Owners have told us said that the Ngolyenoks holds a special place in the landscape and act as a unifying presence across cultural regions: 'they are harbingers of rain and for us, they are spiritual messengers.'

Given the urgency of the situation, we urge you to commit to a Public Environmental Review for a change of use of the Gnangara Pine Plantation so that the full details of this issue can come before and be considered and give every chance for this endangered species to survive.

Yours sincerely

Paddy Cullen Save the Black Cockatoos Campaign Coordinator

31 May 2022

Environmental Protection Authority
Prime House
8 Davidson Terrace, Joondalup
Western Australia 6027

To whom it may concern

Re. Letter of support for referral of proposal: Change of land use, purpose and condition of land within the Gnangara, Pinjar and Yanchep pine plantations.

The Wilderness Society supports the aforementioned referral of proposal, as submitted by Dr Hugh Finn.

Long-term changes to the extent and condition of native vegetation throughout South-Western Australian has forced many species to adapt significantly, in order to survive. One such example is the growing dependance of populations of Carnaby's Black-Cockatoo (*Calyptorhynchus latirostris*) on introduced species as a supplement for roosting habitat and food sources. It is evident that this is occurring within the Gnangara, Pinjar and Yanchep pine plantations.

In expressing our support for referral of this proposal, we seek the EPA to undertake an assessment to ensure that the proposal does not lead to starvation, reduced reproductive success or population decline of Carnaby's Black Cockatoos.

Yours Sincerely

Patrick Gardner
WA Campaigns Manager
The Wilderness Society WA

The Wilderness Society WA Inc

City West Lotteries House, 2
Delhi St, West Perth, WA,
Australia 6005

(08) 9420 7255
ABN: 84 028 469 650

wilderness.org.au
wa@wilderness.org.au

Urban Bushland Council WA Inc

info.epa@dwer.wa.gov.au 2 June 2022

Dear EPA Chairman and Members

Referral to EPA for assessment
Proposal name: Change of land use, purpose and condition within the Gnangara, Pinjar and Yanchep pine plantations (Gnangara-Moore River State Forest, State Forest 65)

The Urban Bushland Council WA Inc (UBC) hereby strongly supports referral to the EPA for formal environmental impact assessment of the above proposal under Part IV of *Environmental Protection Act 1986,* as referred to the EPA by Dr Hugh Finn, BA, LLB, PhD, Lecturer, Curtin Law School.
The referral information and especially the comprehensive Supporting document provide relevant information which is commended to you.

The harvesting of the remaining pine plantation without replanting meets the statutory meaning of 'environmental harm' under the *Environmental Protection Act 1986, (S 3A).* This is well explained in the Supporting document: *'Environmental harm'* is defined as: ***'****direct or indirect harm to the environment involving removal or destruction of, or damage to …*
the habitat of native vegetation or indigenous aquatic or terrestrial animals.'

Thus harvesting of the remaining pines, without replacements, causes 'direct environmental harm' to the environment and Carnaby's Cockatoo.

The Carnaby's Cockatoo Recovery Plan has recognised the importance of pine plantation habitat for over 60 years. Loss of these plantations without replacement is contrary to the Recovery Plan.

Another key issue is that there is a conflict of interest for DBCA (as the land manager for State Forest 65) under the *Conservation and Land Management Act 1984* and under the *Biodiversity Conservation Act 2016* as explained in the Supporting document. DBCA should have referred (some years ago) the proposal to the EPA when there was failure to replace harvested plantations in State Forest 65.

The highly significant environmental factor requiring EPA assessment is that harvesting and clearing of the remaining Gnangara Pine plantation will lead to loss of ~50% or more of the remaining but endangered and declining Carnaby's Cockatoo population. This is totally unacceptable and must be prevented.
Also, the precautionary principle must be applied to prevent this significant loss.

Further, we support Dr Hugh Finn's statement: *'Consistent with the need to restore public confidence in government decision-making in relation to the proposal, the EPA should – for the purposes of assessing the proposal and with the approval of the Minister and subject to section 42 – conduct a public inquiry in such manner as it sees fit or appoint a committee consisting of either EPA members and persons other than EPA members or only persons other than EPA members, to conduct a public inquiry and report to the Authority on its findings on the public inquiry.'*

Yours faithfully

Christine Richardson

Christine Richardson
Chairperson, Urban Bushland Council WA Inc.

PO Box 326 West Perth WA 6872 ubc@bushlandperth.org.au www.bushlandperth.org.au

WA Forest Alliance

2nd June 2022

Environmental Protection Authority

Letter of support to referral by Dr. Hugh Finn to the EPA regarding the assessment of the clearing of the Gnangara Pine Plantation as a change of land use.

Dear Sir/Madam,

The WA Forest Alliance fully supports the referral by Dr Hugh Finn to reassess the Gnangara Pine Plantation land use as this is a crucial lifeline to the Ngolyenok,(Carnaby's Black Cockatoo).

The Ngolyenok is recognised federally and at a state level as a species in need of recovery and while plans have been made, they are not working. Their Banksia woodland continues to decline and the Pines they now rely on in lieu of other food are also being cleared.

Scientists from the CSIRO and other government agencies including DPAW say the felling of the pines which is due to be completed by the end of 2023 will result in the species heading further towards extinction in the Perth Peel area with an estimated 56% reduction in population size. Having already dropped 30% in the last ten years this could be a blow too far for any recovery. The fallow land left behind which does not provide food means this is a change of land use and must be reassessed.

There is an incredible urgency to the situation as the plantation has already been reduced from 23 000 to less than 4000 hectares. Bird life's Cocky Count survey shows a significant crash in population as the pines have been removed. We need action now.

As part of the Black Cockatoo Coalition, we are one of five groups that have petitioned parliament to undertake a Gap Analysis to investigate failures in laws and initiatives designed to save the species and create an Emergency Plan, to prevent their extinction. The number one item on that plan with the greatest urgency is to save what remains of the Gnangara Pine Plantation until native vegetation can be grown.

These much-loved birds play an integral part in seed dispersion, pollination, and insect control in the woodlands and forests of the south west, a global biodiversity zone, and are a significant specie to Traditional Owners who have told us said that the Ngolyenoks holds a Black Cockatoo act as a unifying presence across cultural regions and are spiritual messengers.'

We, therefore, urge you to act with urgency to commit to a Public Environmental Review for a change of use of the Gnangara Pine Plantation so of this issue can be considered and give every chance fully given the best chance for this endangered species to survive.

Yours sincerely

Jess Beckerling