

2023-2027 MMP Condition 4 Report – Black Cockatoo clearing FCA23B

1. Purpose

The purpose of this report is to meet Condition 4 (c) of the Ministerial Conditions accompanying the approval of Alcoa's 2023-2027 Mining and Management Program (MMP) on 20 December 2023:

Any clearing, exploration, mining or other operations permitted by this MMP approval must be implemented by Alcoa to meet the following environmental objectives:

- (a) avoiding or otherwise minimising clearing within 50 metres of Black Cockatoo nesting trees; and*
- (b) avoiding or otherwise minimising discharge of environmentally hazardous material outside of containment infrastructure.*

If:

- (c) clearing within 50 metres of Black Cockatoo nesting trees; and/or*
- (d) discharges of environmentally hazardous material outside of containment infrastructure,*

cannot be avoided, Alcoa must provide, to the satisfaction of the State Development Minister, a written report explaining why the relevant avoidance cannot be met prior to the clearing being undertaken.

2. Forest Clearing Advice 2023B

The Forest Clearing Advice 2023B (FCA 2023B) was submitted 13 October 2023 under the 2023-2027 MMP. Conditional endorsement of two pits occurred on 23 May 2024 and an additional three pits were endorsed on 6 August 2024. The remaining Notice Areas are currently under assessment by the Mine Operations Group (MOG).

As the clearing areas were designed and endorsed in the 2023-2027 MMP (before the application of the 2023-2027 MMP condition), the mine plan did not consider the condition to avoid and minimise clearing within 50 metres (m) of Black Cockatoo nesting trees when the FCA 2023B was submitted as it predated the application of Condition 4.

3. Unavoidable clearing within 50 metres of Black Cockatoo nesting trees

Within the FCA 2023B there are 23 instances at Huntly (covering 12.6 ha) and 2 instances at Willowdale (0.52 ha) where clearing within 50 m of Black Cockatoo nesting trees is unavoidable (Tables 1 and 2, Figures 1 and 2).

4. Minimisation and mitigation strategies

As per Condition 4(c), where clearing within 50 m is unavoidable, Alcoa undertakes several measures to minimise clearing in proximity to nesting trees and to mitigate the impact to the nesting trees:

- Review of proposed clearing by Mine Planning to minimise clearing.
- Application of a 10 m Mining Avoidance Zone (MAZ), a 15 m clearing safety buffer, and an additional 6 m rehabilitation buffer around Black Cockatoo nesting trees.
- Monitoring is currently in place to ensure the health of the nesting trees within the current buffer zones.
- Implementation of a 50 m buffer in future mine plans.

5. Constraints to avoidance

Due to the integrated nature of operations, there are complex interdependencies and constraints within Alcoa's systems, making operational changes difficult. These interdependencies mean changes to processes and practices at Alcoa's mining operations directly affect refinery operations.

Alcoa has an existing shortage of available bauxite in approved areas and is consequently mining lower grades at the Huntly and Willowdale mines, which supply the Pinjarra and Wagerup refineries. This impacts the refineries' economic viability by increasing the use of caustic, energy, and bauxite ore while decreasing alumina output.

A detailed review of the mine plan has been conducted, and amending the mine plan to implement a 50 m buffer is impractical due to several factors including:

- Increased clearing footprint - The realignment of haul roads is likely to expand the clearing footprint, potentially breaching Condition 9 of the Ministerial conditions associated with the approval of the 2023-2027 MMP. This would mean greater habitat disturbance, affecting wildlife and plant species. Additional clearing could also lead to the loss of native vegetation, impacting carbon sequestration and various species' habitats.
- Spatial constraints - Alcoa is constrained by the 2023-2027 MMP conceptual clearing footprint and the Environmental Protection (Darling Range Bauxite Mining Proposals) Exemption Order 2023 Huntly Mine Native Vegetation Disturbance Footprint. Pits and haul roads cannot clear or encroach into areas outside the approved footprint.
- Disruption of ore supply – inability to access sufficient ore risks further inefficiencies and potential curtailment at Pinjarra and Wagerup Refineries.
- Significant scheduling delay - Redesigning pits and haul roads near nesting trees and haul roads is a long process. Delays to execution of mining schedules can result in decreased productivity, reduced regional revenue and potential job losses.
- Infrastructure constraints - The long lead time required for the development and installation of infrastructure means there are no readily accessible alternatives for ore supply to the Pinjarra and Wagerup refineries in the short to medium term.

6. Impact of 50 m buffer

Implementing a 50 m buffer to Black Cockatoo nesting trees for the 25 identified, unavoidable trees would impact 3 million tonnes of bauxite at the Huntly and Willowdale refineries.

Clearing of the Willowdale FCA23B area (Figure 1) is planned in the first quarter of 2025 to ensure access to the Giles and Warrington regions. The clearing footprint is constrained to within the approved MMP conceptual clearing footprint. Clearing is required by early 2025 to ensure access to 2.2 million ore tonnes. There is insufficient area within the approved MMP conceptual clearing footprint to construct the haul road, if the 50 m buffer is required. Implementation of the 50 m buffer would require inclusion in a future MMP and subsequent FCA endorsement, therefore delaying clearing until at least late 2026.

At Huntly, the Jankata haul road, as shown in Figure 13, will ensure access to 1.13 million ore tonnes within the Myara region. Due to the spatial constraint of the Huntly Mine Native Vegetation Disturbance Footprint¹, there is no option to relocate the haul road.

7. Ore supply risk

Alcoa's Pinjarra and Wagerup refineries require access to bauxite ore of sufficient volume and grade, in the sequence proposed, to sustain continuity of current production profiles, consistent with the approved 2023 - 2027 MMP.

Alcoa's refinery operations remain under significant pressure on many fronts including rising costs, reduced grade and risks of schedule delay to available ore. To minimise risks to production continuity and full production, Alcoa has made significant changes to mining and refinery operations, with significant financial, economic and social impacts:

- reducing the cutoff grade of ore mined and supplied to the refineries.
- decreasing ore demand by curtailing bauxite supply to the Kwinana refinery.

While these changes should ensure sufficient ore supply to the Pinjarra refinery is maintained, the operating environment remains challenging. The Huntly mine plan is particularly vulnerable while Alcoa transitions to a more contemporary mine approvals regime and adjusts to meet the conditions related to the approval of the 2023 - 2027 MMP and the granting of the exemption under Section 6 of the Environmental Protection Act 1986.

The removal or rescheduling of any mine areas outlined in the 2023 - 2027 MMP increases the risk of partial or full curtailment of the Pinjarra refinery and the loss of the economic and social benefits associated with the refinery's ongoing operations

8. Conclusion

Following Condition 4 being applied to the 2023-2027 MMP on 20 December 2023, Alcoa reviewed the mine plan and identified 25 Black Cockatoo nesting trees (See Table 1 and 2 below) located in proximity to FCA

¹ Environmental Protection (Darling Range Bauxite Mining Proposals) Exemption Order 2023 Condition 2.2

2023B areas which did not consider avoidance of a 50 m buffer. The clearing areas were designed and endorsed in the 2023-2027 MMP, which did not include the condition to avoid and minimize the clearing within 50 metre of Black Cockatoo nesting trees.

There are a number of constraints to inclusion of a 50 m buffer around identified nesting trees, however Alcoa is seeking to minimise clearing within 50 m of trees and mitigate impacts where possible.

Implementing a 50 m buffer for FCA 2023B areas would impact Alcoa's already constrained ore supply increasing the risk of curtailment of the Wagerup and Pinjarra refineries.

Alcoa will subsequently minimise clearing in these areas where viable and within the timeframe available, resulting in 13.1 ha of required clearing within the 50 m Black Cockatoo buffer for FCA 2023B.

Black Cockatoo nesting tree ID	Black Cockatoo nesting tree Details	Location (Easting, Northing - GDA84Z50	Proximity of Clearing to Black Cockatoo nesting tree (m)	Clearing Purpose	Clearing Area (ha)	Ore Loss (t)	Figure	Comments
3733	Marri tree (860mm diameter) in good condition with a possible nest. Identified January 2023.	411605, 6350234	10	Haul Road	0.38	-	Figure 1	Alcoa considered various redesign options for the haul road to implement a 50 m buffer, but none were feasible due to the constraints imposed by the clearing footprint. The Haul Road cannot be constructed if avoidance of the 50 m buffer is required, therefore, delaying clearing into this area until at least 2026 and access to 514,000 ore tonnes.
913	Marri tree in good condition with a nest. Evidence of recent heavy chewing. Identified February 2014.	411943, 6350581	22	Haul Road	0.14	-	Figure 1	Alcoa considered various redesign options for the haul road to implement a 50 m buffer, but none were feasible due to the constraints imposed by the clearing footprint. The Haul Road cannot be constructed if avoidance of the 50 m buffer is required, therefore, delaying clearing into this area until at least 2026 and access to 1,426,000 ore tonnes.

[illegible]

Black Cockatoo nesting tree ID	Black Cockatoo nesting tree Details	Location (Easting, Northing - GDA84Z50)	Proximity of Clearing to Black Cockatoo nesting tree (m)	Clearing Purpose	Clearing Area (ha)	Ore Loss (t)	Figure	Comments
1852	Marri Tree in good condition (770mm diameter) with a nest and well chewed hollow. Identified in September 2022.	417039, 6407980	10	Ore	0.62	35,000	Figure 4	Clearing is required to extract a portion of 35,000 t and the entirety of the 50 m buffer is not expected to be impacted.
1531	Marri Tree in poor condition (1000mm diameter) with a nest. Evidence of old chewing. Identified in December 2019	416136, 6403327	10	Haul Road & Ore	0.44	-	Figure 13	Alcoa considered various redesign options for the haul road to implement a 50 m buffer, but none were feasible due to the constraints imposed by the clearing footprint. The Haul Road will provide access to over 1.1 Mt of ore and cannot be constructed if avoidance of the 50 m buffer is required.
2761	Jarrah Tree in good condition with potential nest. Identified in July 2012.	416762, 6404738	10	Ore	0.71	48,000	Figure 11	Clearing is required to extract a portion of 48,000 t and the entirety of the 50 m buffer is not expected to be impacted.
1603	Marri Tree in good condition (1000mm diameter) with a nest. Evidence of a chewed hollow entrance. Identified in August 2020.	417431, 6406398	10	Ore	0.77	101,000	Figure 8 Figure 9	Clearing is required to extract a portion of 101,000 t. Application of a 50 m buffer would lead to significant ore loss as the buffer would impact in-pit access to the ore located to the west and north of the Black Cockatoo nesting trees.
1604	Marri Tree in good condition (800mm diameter) with a nest. Evidence of a chewed hollow entrance. Identified in August 2020.	417411, 6406392						
2019	Marri Tree in good condition (1140mm diameter) with nest. Identified in October 2023.	425020, 6404408	10	Ore	0.41	11,000	Figure 12	Part of the 50 m buffer has already been cleared based on previously endorsed FCA. Additional clearing is required to extract a portion of 11,000 t.
6769	Marri Tree in good condition (1190mm diameter) with nest. Identified in October 2023.	425187, 6404567	10	Ore	0.54	18,000	Figure 12	Clearing is required to extract a portion of 18,000 t and the entirety of the 50 m buffer is not expected to be impacted as no clearing is expected to occur east of the Black Cockatoo nesting tree.
2056	Marri Tree in good condition (1100mm diameter) with nest. Identified in October 2023.	425423, 6404230	10	Ore	0.94	32,000	Figure 12 Figure 13	Clearing is required to extract a portion of 32,000 t and the entirety of the 50 m buffer around Black Cockatoo nesting tree ID 6289 is expected to be impacted. No clearing is expected east of Black Cockatoo nesting tree ID 2056.
6289	Marri Tree in good condition with potential nest. Identified in April 2014.	425373, 6404640						
2064	Marri Tree in good condition (1500mm diameter) with nest. Identified in October 2023.	425393, 6404157	10	Ore	0.5	10,000	Figure 12	Clearing is required to extract a portion of 10,000 t and the entirety of the 50 m buffer is not expected to be impacted.
6813	Stag Tree in good condition (770mm diameter) with nest. Identified in September 2023.	428872, 6407084	10	Ore	0.56	51,000	Figure 7	Part of the 50 m buffer has already been cleared based on previously endorsed FCAs. Additional clearing is required to extract a portion of 51,000 t.
2132	Marri Tree in good condition (1300mm diameter) with nest. Identified in June 2024.	418575, 6407364	10	Ore	0.45	5,600	Figure 5	Application of a 50 m buffer would impact access to the remainder of the pit. Additional clearing is required to extract a portion of 5,600 t.

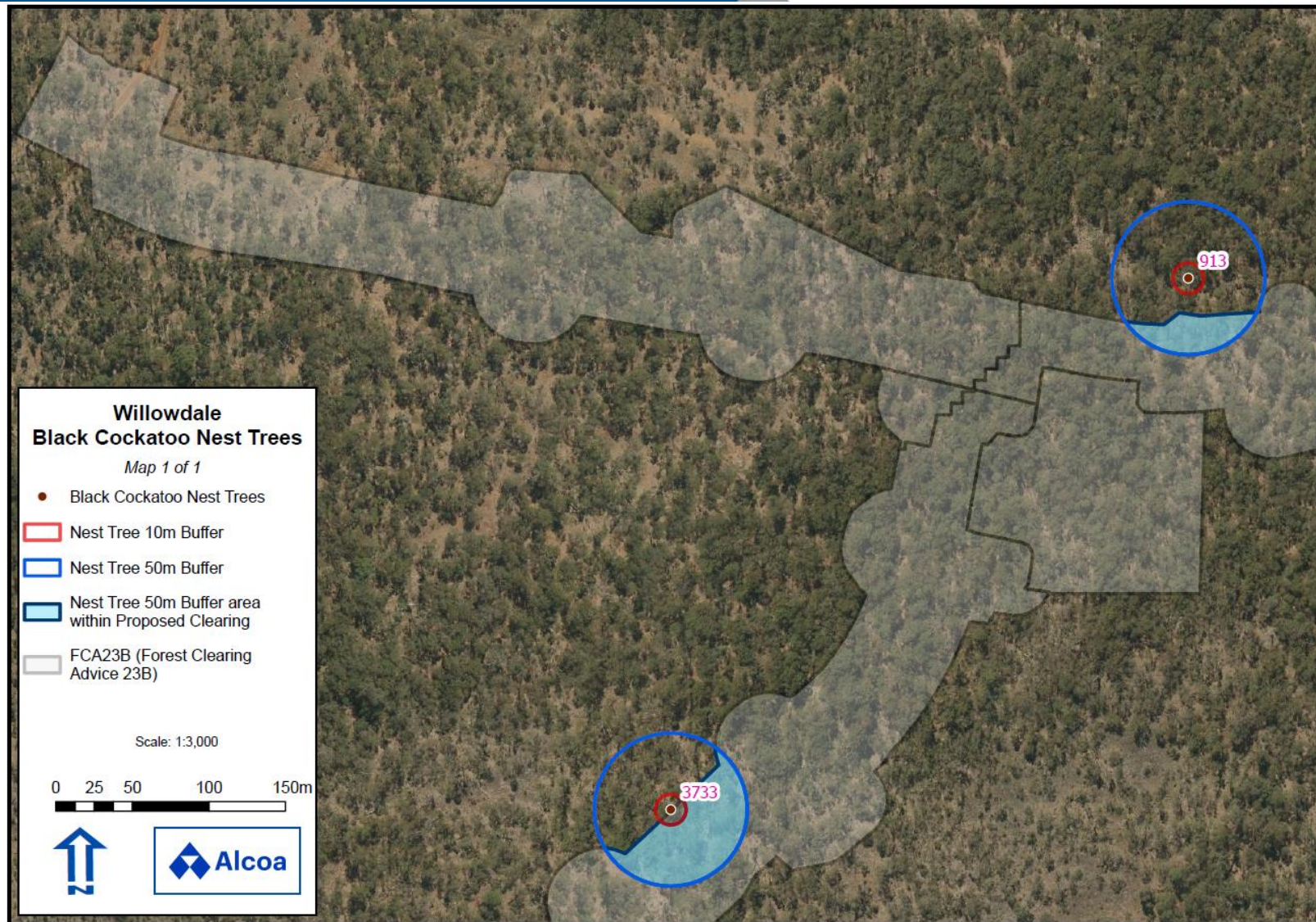


Figure 1: Black Cockatoo nesting trees at Willowdale

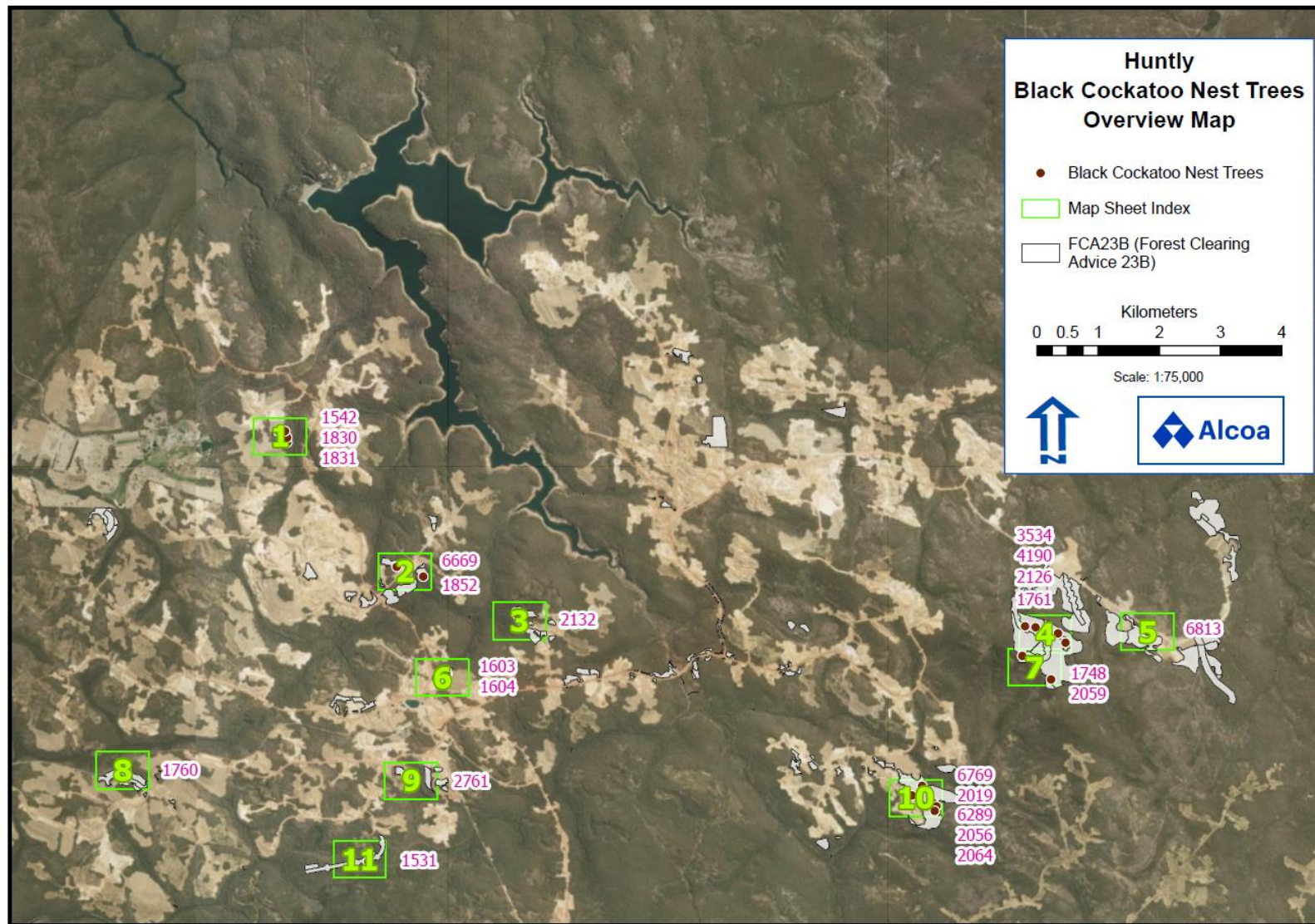


Figure 2: Black Cockatoo nesting trees at Huntly

Appendix: Detailed Maps of Black Cockatoo nesting trees at Huntly

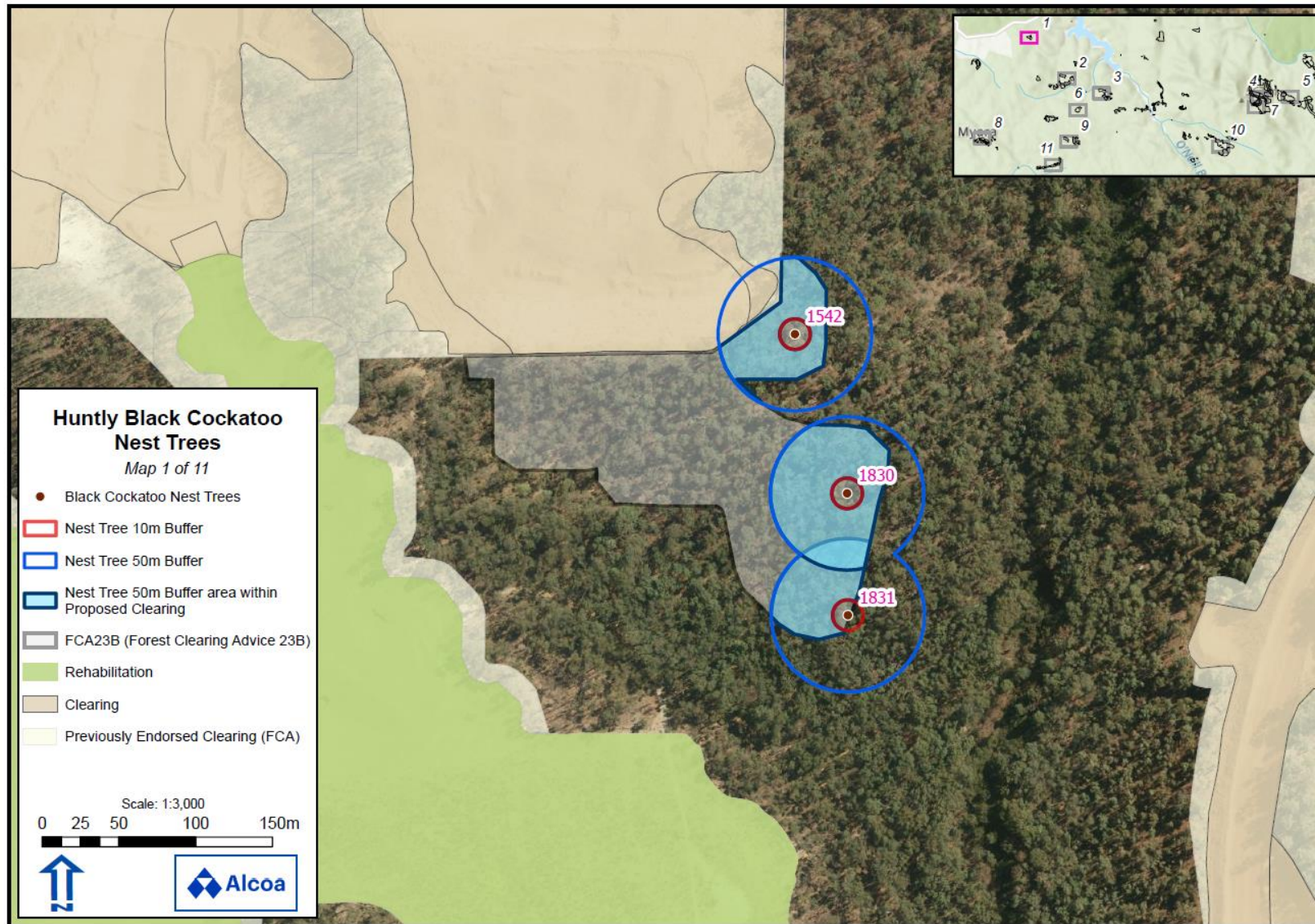


Figure 3: Black Cockatoo nesting trees at Marshall 9

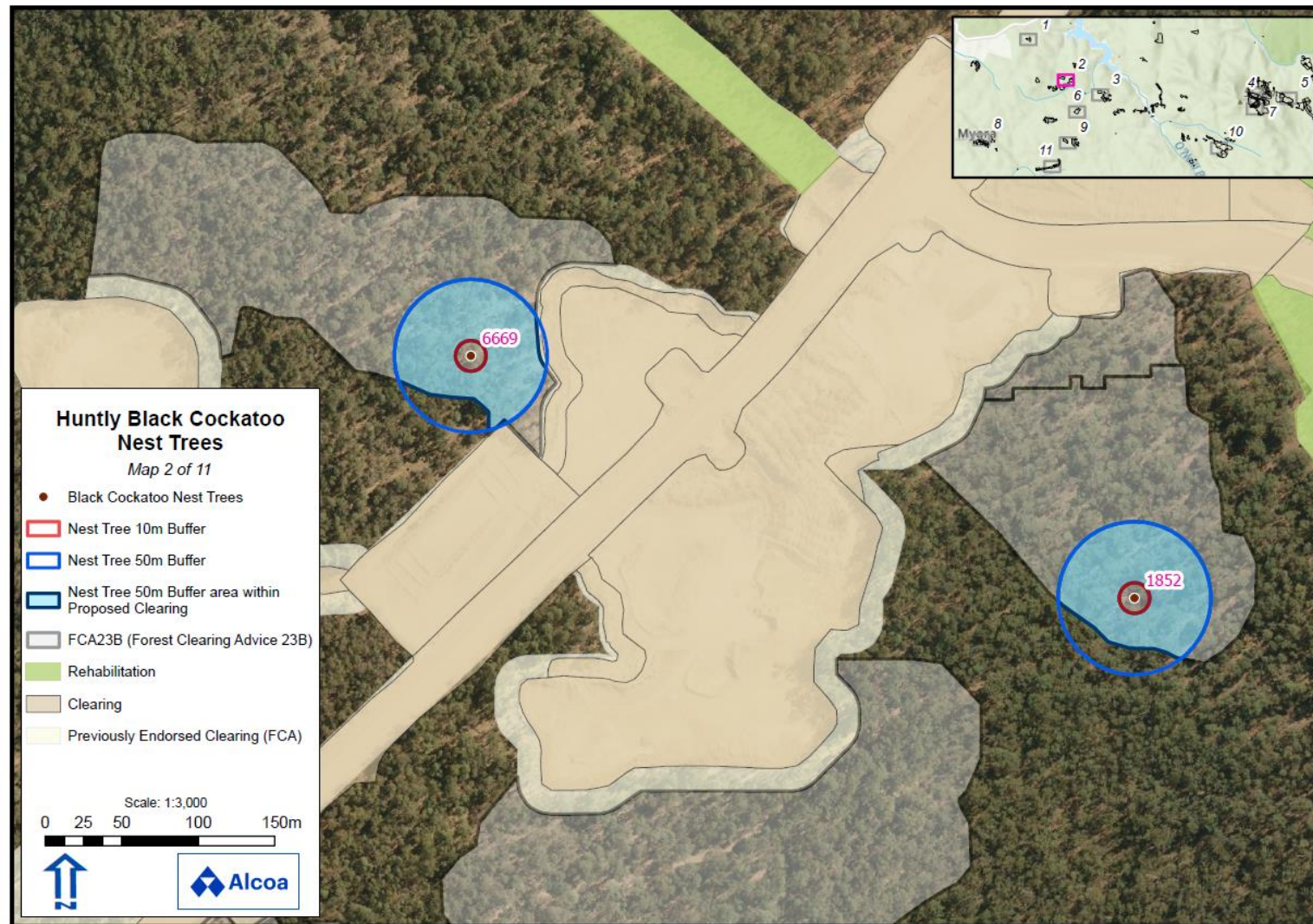


Figure 4: Black Cockatoo nesting trees at Llyod 1

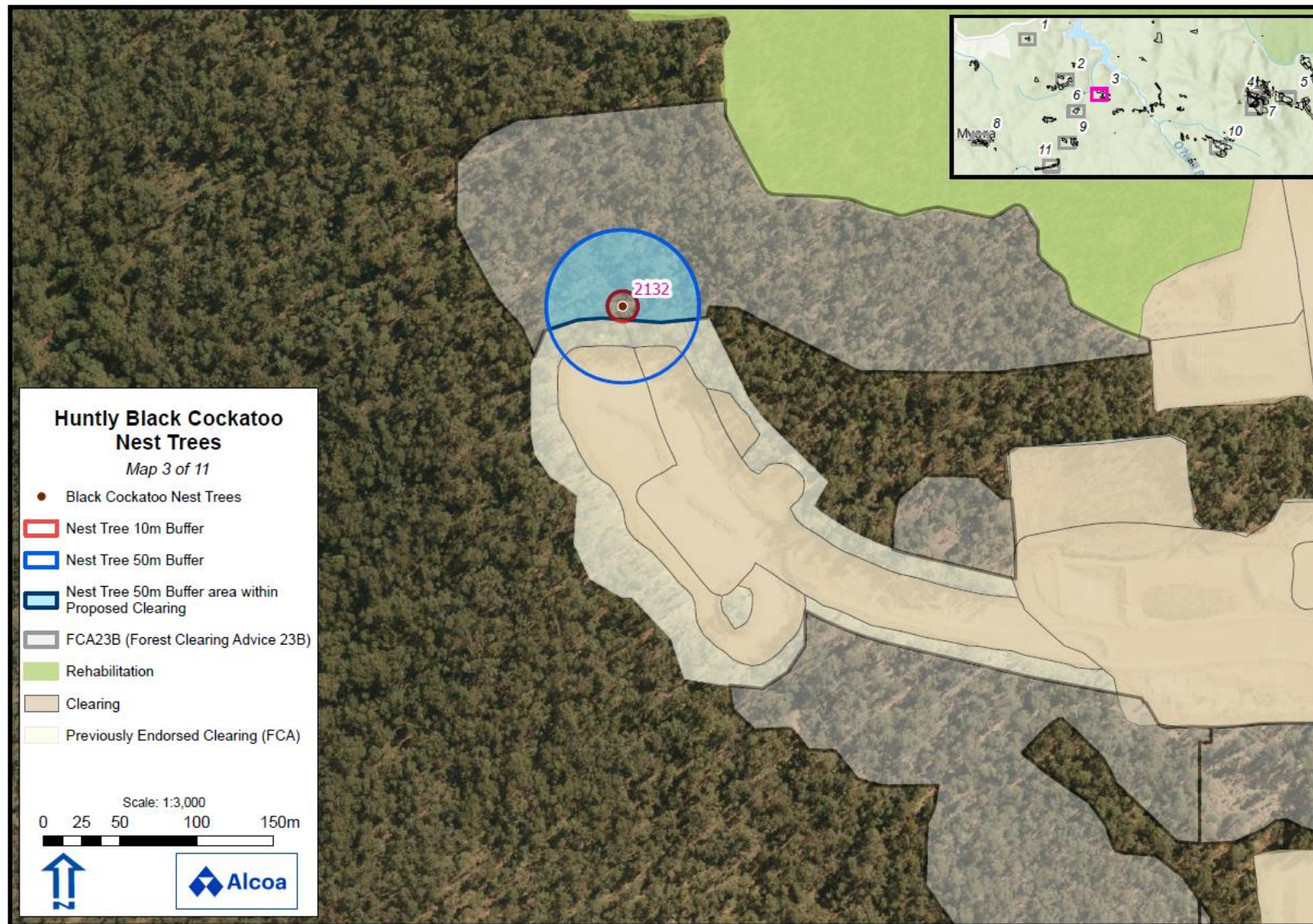


Figure 5: Black Cockatoo nesting tree at Demarte 2

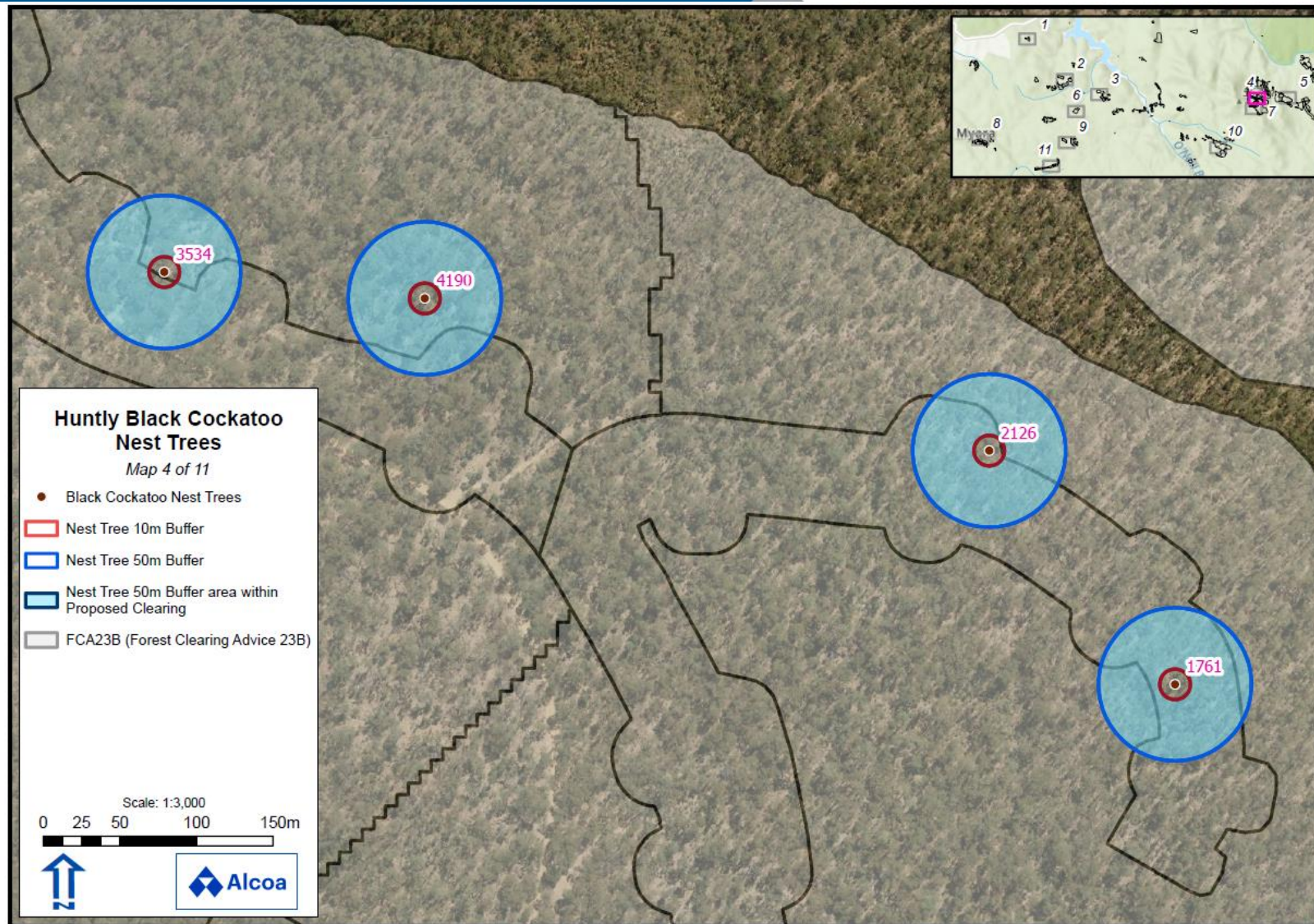


Figure 6: Black Cockatoo nesting trees at Wittwer 6

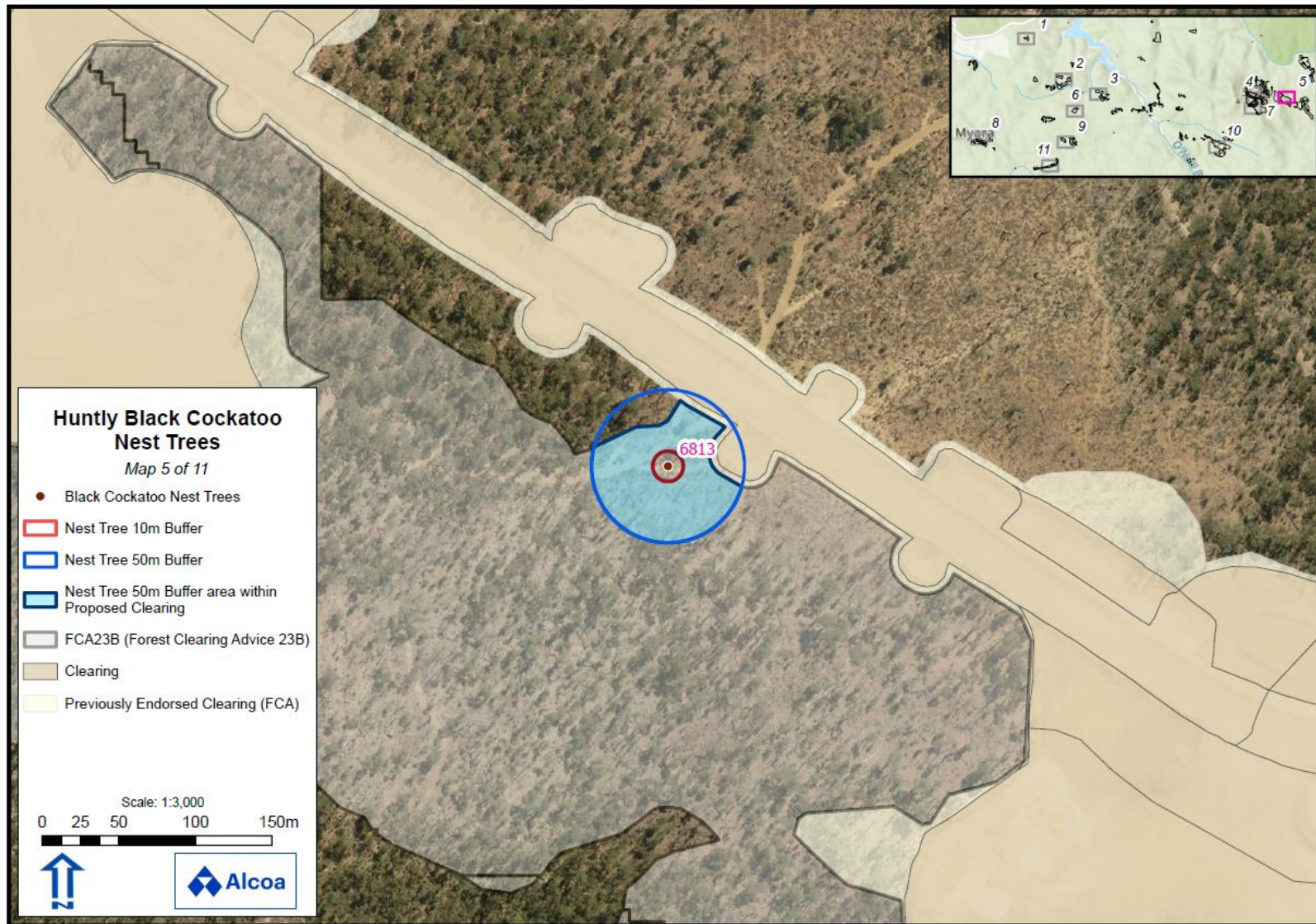


Figure 7: Black Cockatoo nesting tree at Wittwer 8

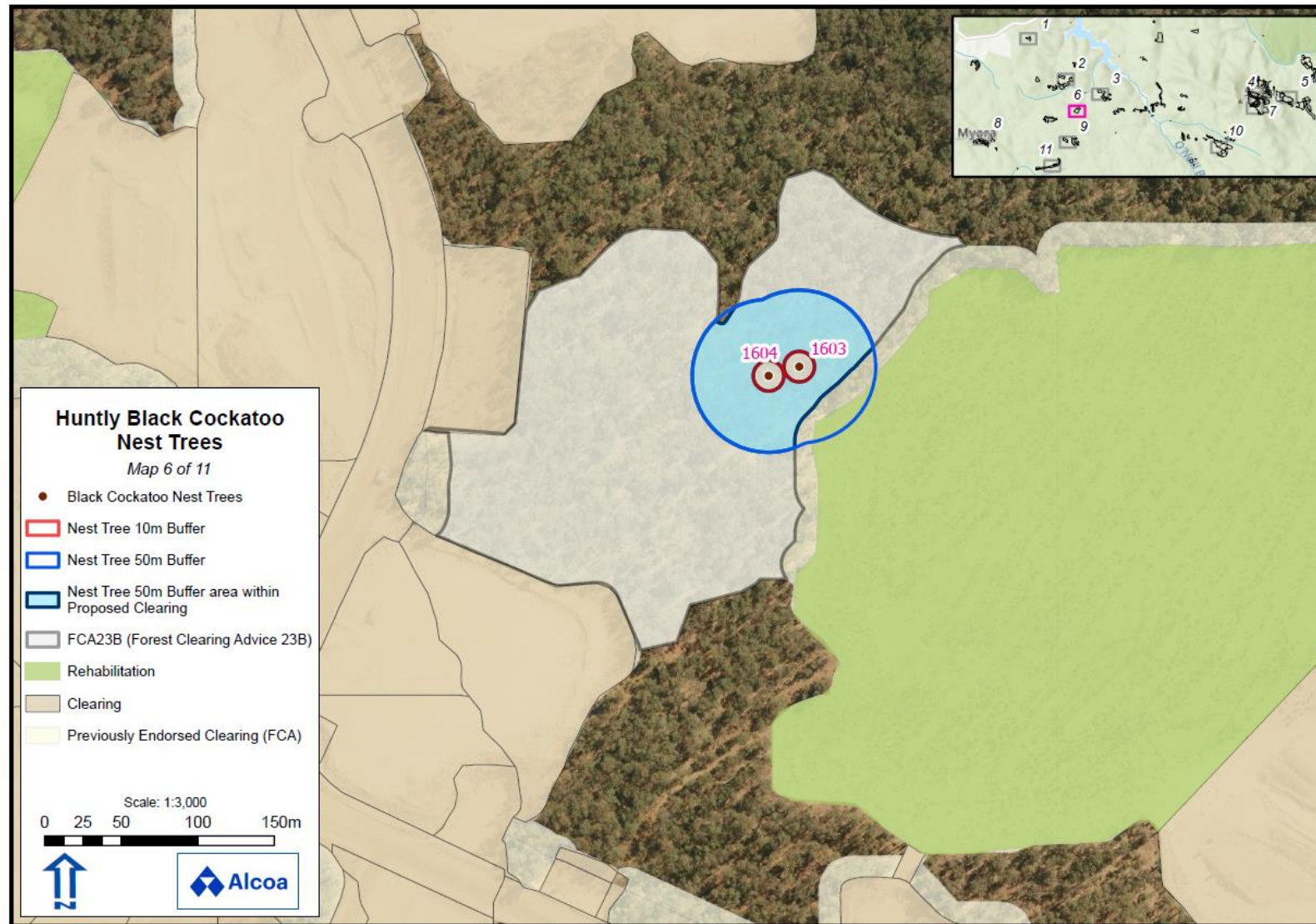


Figure 8: Black Cockatoo nesting trees at Downes 1

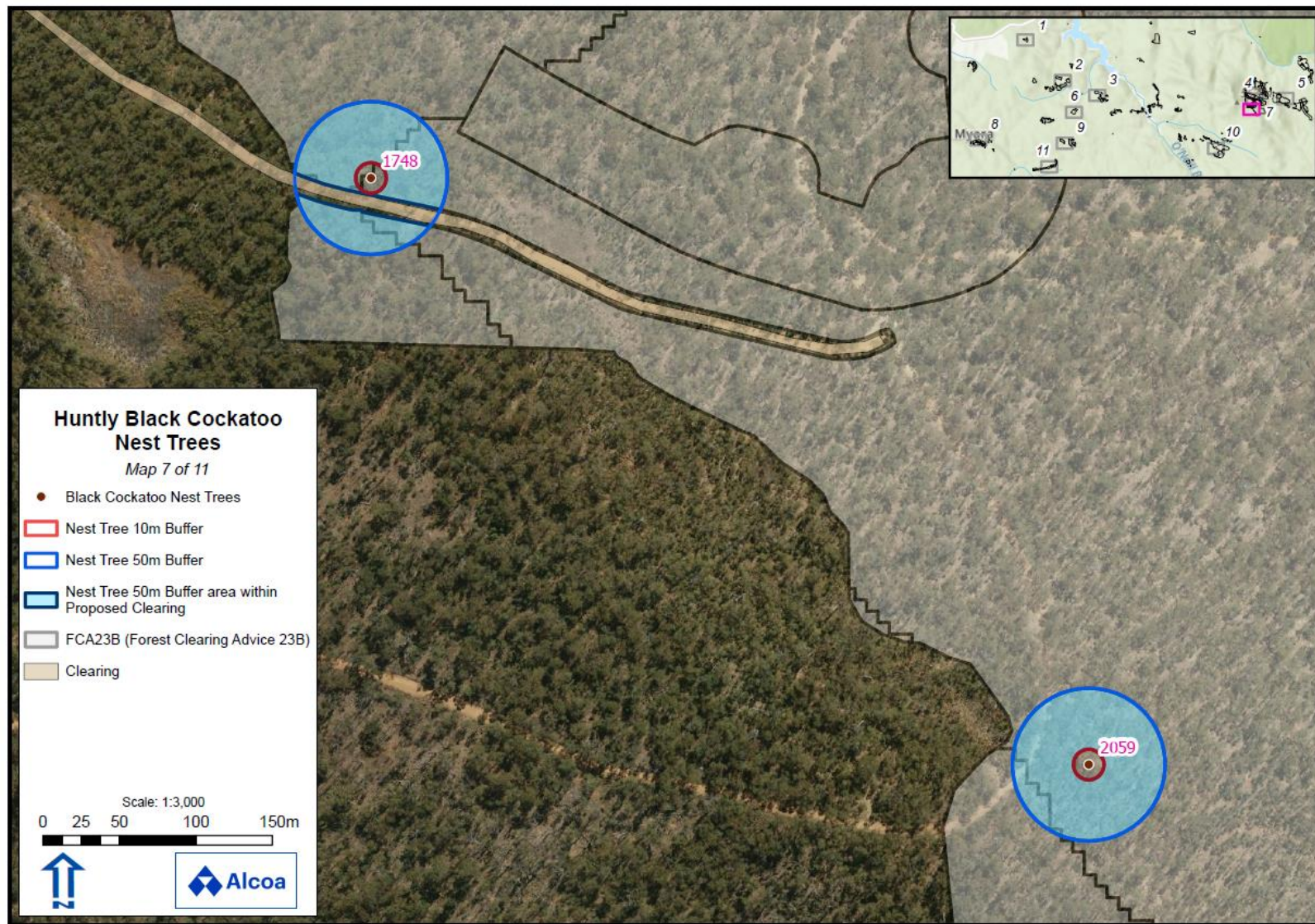


Figure 9: Black Cockatoo nesting trees at Wittwer 6

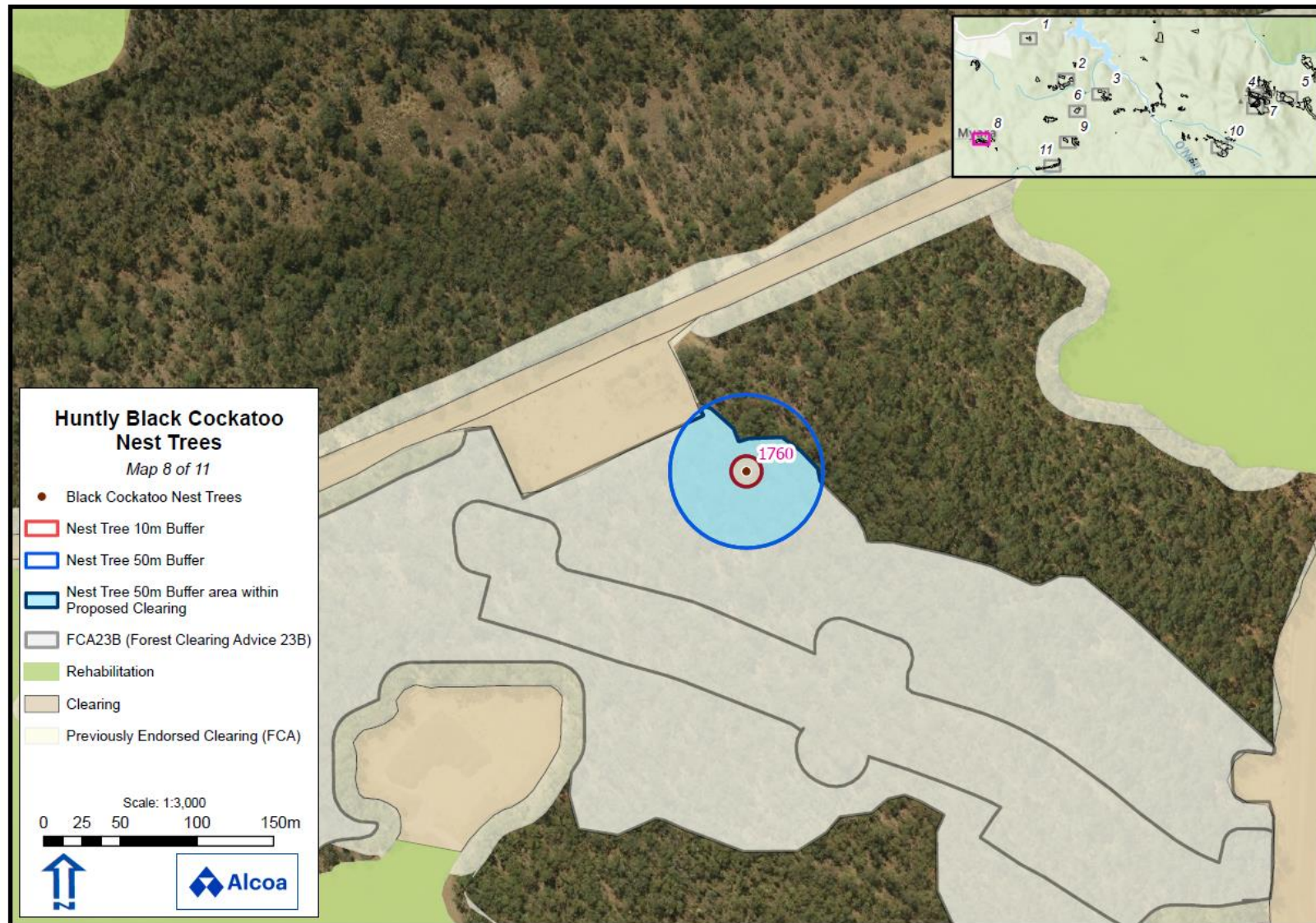


Figure 10: Black Cockatoo nesting tree at McCarthy 7

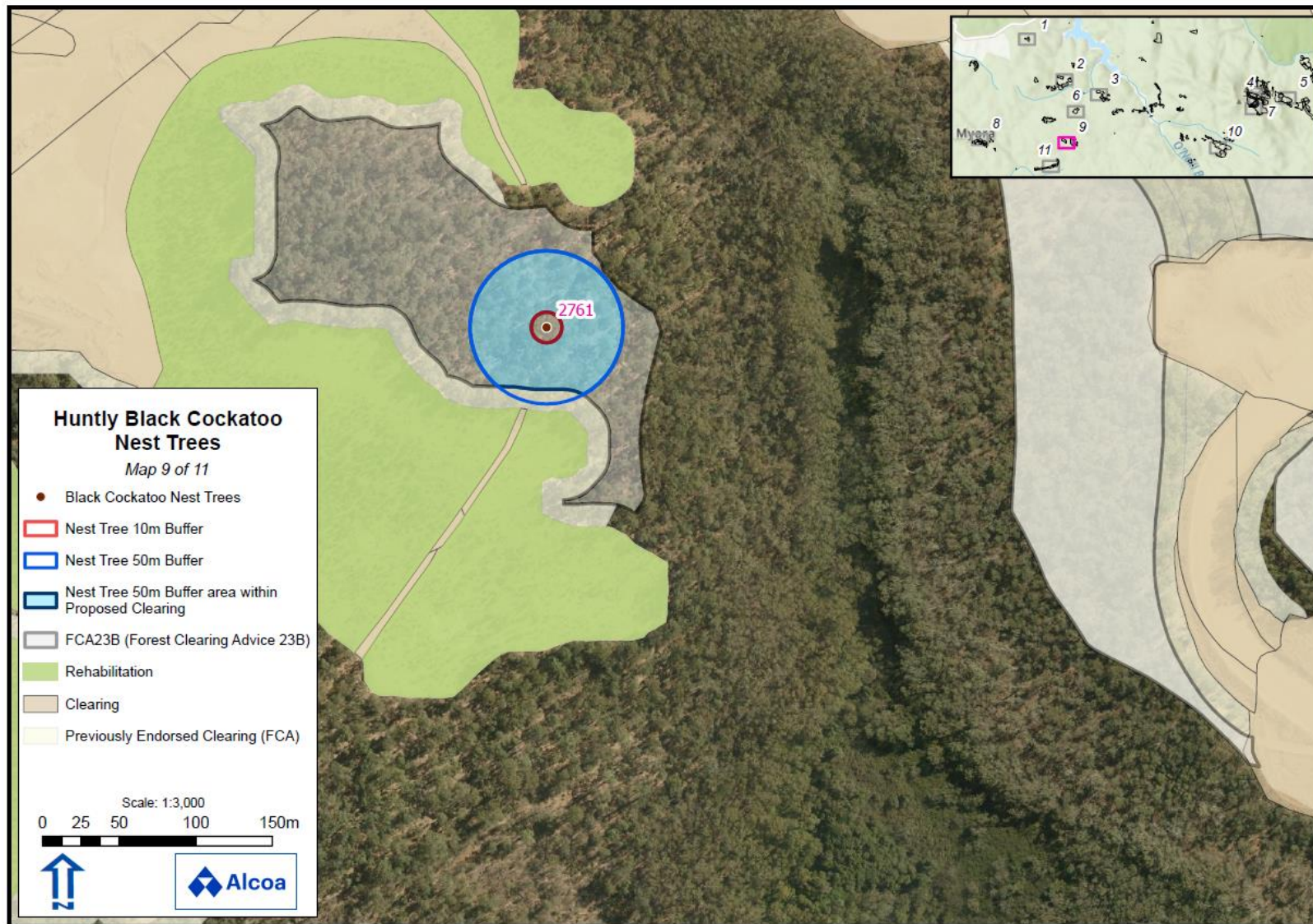


Figure 11: Black Cockatoo nesting tree at Rhodes 2 and Rhodes 3

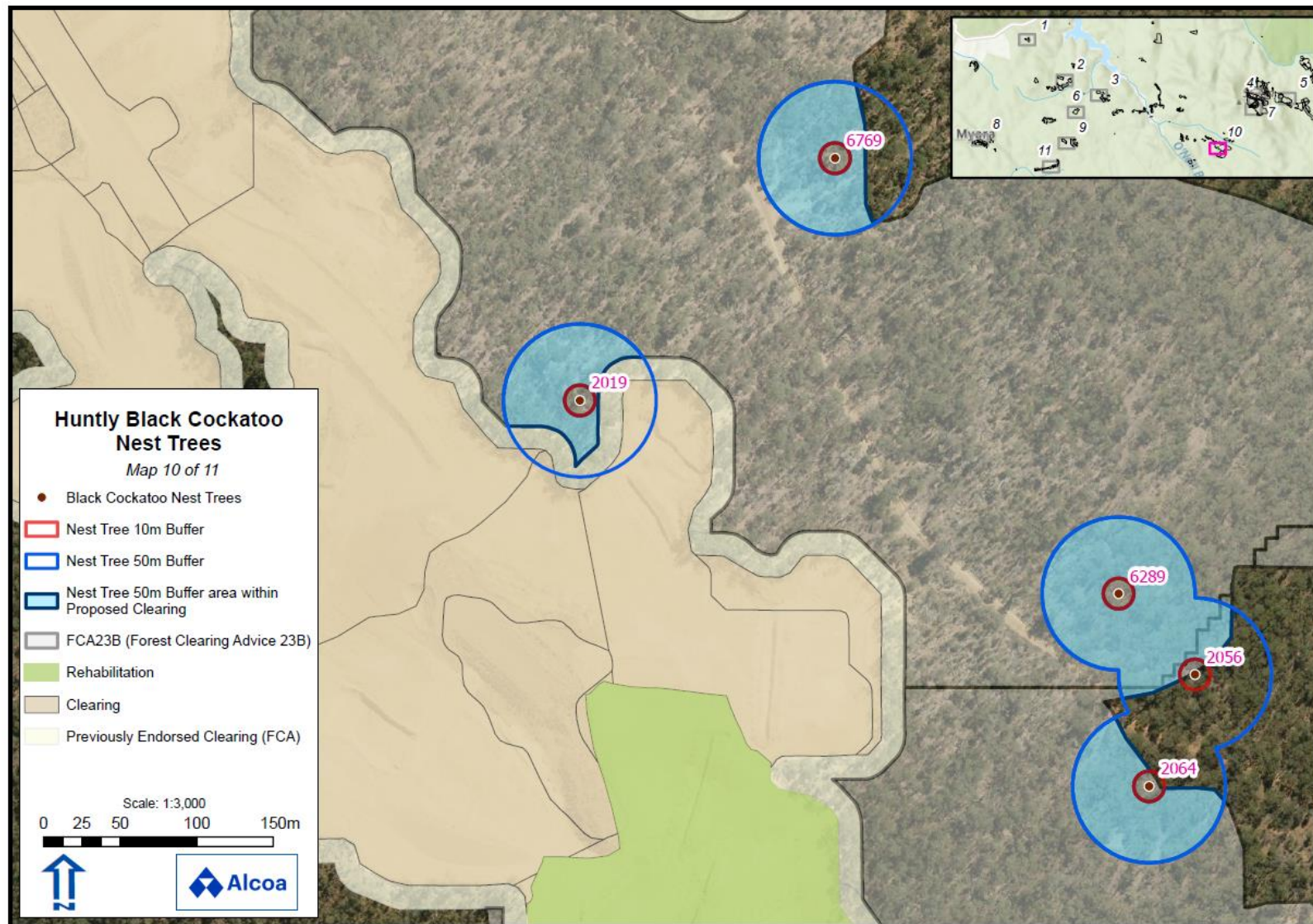


Figure 12: Black Cockatoo nesting trees at Blacklock 6

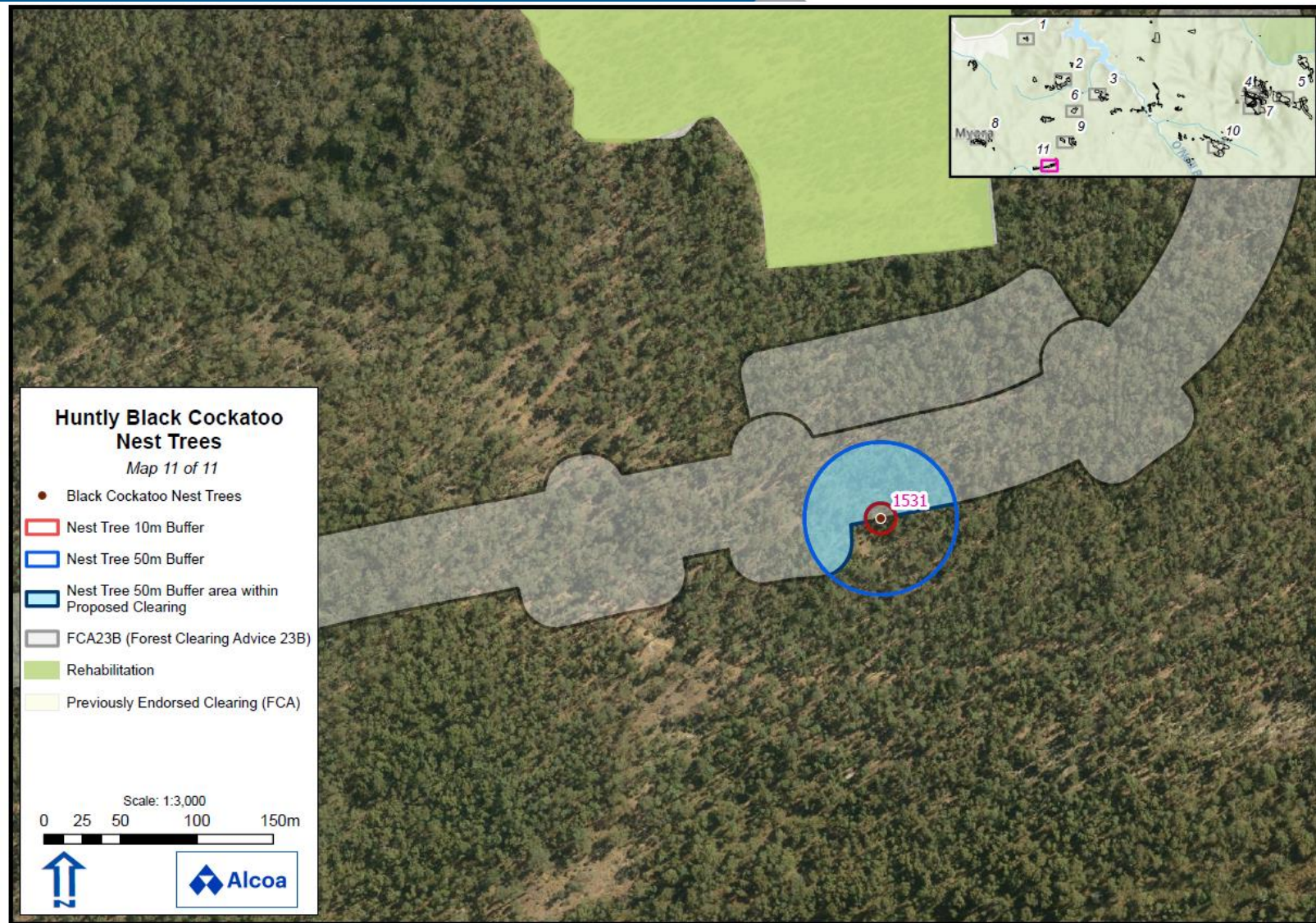


Figure 13: Black Cockatoo nesting trees at Jankata 4