



kakadu[™]
NATIONAL PARK

Environmental Impact Assessment (EIA)

“Wild Harvesting of Kakadu Plum for Commercial Purposes”

Gundjeihmi Aboriginal Corporation

Revision 3 November 2018



INTRODUCTION

The Kakadu National Park (NP) Management Plan 2016-2026 is the key document which determines what activities are allowed in Kakadu NP and how they should be assessed. The Plan establishes different categories of action according to the degree of potential impacts (Section 9.5: Table 4 - Impact Assessment Procedures).

All proponents must refer to the full explanation of these categories and the impact assessment process in the EIA Guidelines before completing the following.

CATEGORY 1 ASSESSMENT

If your proposal involves an action considered likely to have

- no impact
- or no more than a negligible impact on the Park's environment and natural and cultural values
- and no impact on Bininj/Mungguy

► COMPLETE KAKADU NP'S PRELIMINARY CHECKLIST, NOT THIS FORM

Some examples of Category 1 activities:

- Minor capital works e.g. maintenance, replacement repairing or improving existing infrastructure in its present form.
- Regular/routine ongoing operations to implement prescriptions in the Kakadu NP Management Plan e.g. patrols, weed control or fire management.
- Seasonal opening/closing of visitor areas.
- Issuing permits for regular activities in accordance with the Kakadu NP Management Plan, e.g. land-based tours, camping, research.

CATEGORY 2 ASSESSMENT

If your proposal involves an action considered likely to have

- More than a negligible impact
- but a not a significant impact on the Park's environment and natural and cultural values
- More than a negligible but not a significant impact on Bininj/Mungguy.

► ► AN EIA IS REQUIRED. COMPLETE THIS FORM. ALL SECTIONS OF THE FORM ARE TO BE COMPLETED UNLESS OTHERWISE SPECIFIED.

Some examples of activities requiring an EIA are:

- Moderate capital works e.g. new infrastructure or moderate expansion/upgrade of existing infrastructure.
- Rehabilitation of heavily eroded sites.
- Development for approved existing tourism activities that do not require major works e.g. small safari camps.
- Minor new operations or developments to implement prescriptions in the Kakadu NP Management Plan.
- Prescribed burns in areas comprising fire sensitive communities i.e. *Allosyncarpia ternate*, *Callitris intratropica*, *Pityrodia spp*, rainforest communities and sandstone heath communities.

CATEGORY 3 ASSESSMENT

If your proposal is considered likely to have

- A significant impact on the Park's environment and natural and cultural values
- And a significant impact on Bininj/Mungguy.

► ► ► A CATEGORY 3 ASSESSMENT IS REQUIRED.

BEFORE COMPLETING THIS FORM, ADVICE MUST BE OBTAINED FROM THE DIRECTOR OF NATIONAL PARKS (DNP) AS TO WHETHER IT SHOULD BE REFERRED AS A CONTROLLED ACTION UNDER THE ENVIRONMENTAL PROTECTION AND BIODIVERSITY CONSERVATION (EPBC) ACT.

Some examples of proposals requiring CATEGORY 3 ASSESSMENT are:

- Major capital works e.g. new major infrastructure or major expansion/upgrade of existing infrastructure
- Major new operations or developments to implement prescriptions in the Kakadu NP Management Plan.
- Major/long-term changes to existing visitor access arrangements
- Large-scale mine rehabilitation
- Expansion of the Jabiru township
- New types of commercial activities
- New or major expansion of Bininj living areas
- Impacts on threatened species or threatened environmental communities.

1 BACKGROUND INFORMATION

1.1 Proponent's Details

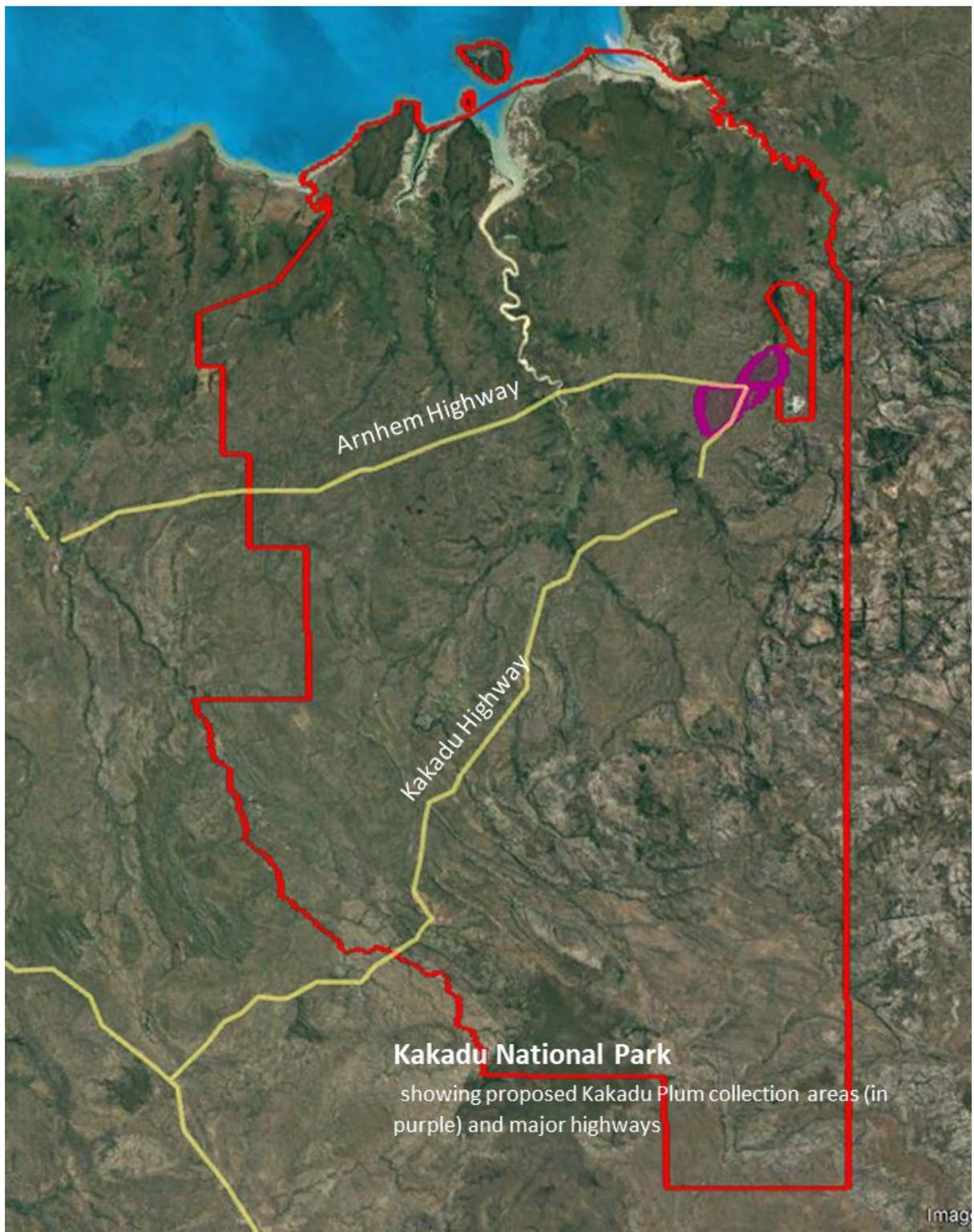
- Proponent's name: Gundjeihmi Aboriginal Corporation ICN 2458
(Include organisation and contact name if different)
- Phone number (business hours): 08 89792200
- Mobile number: 0438820147
- Facsimile number: 08 89792299
- Postal address: PO Box 245 Jabiru NT 0886
- Email address: chris@mirarr.net
- ABN (if applicable): 55 881 818 247

1.2 Location of the proposed action (Insert map showing relation to Park boundary, access route, locality names, rivers and other key landscape features)

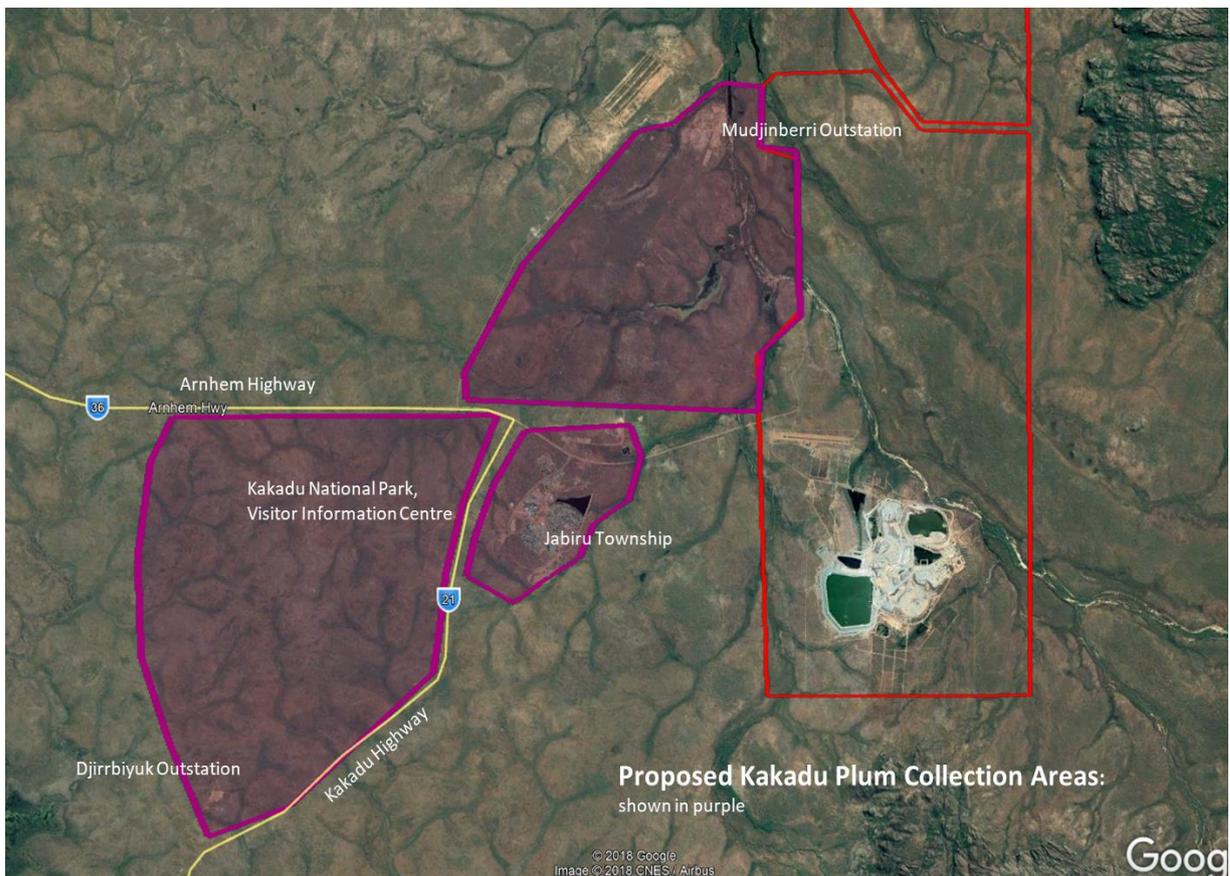
Proposed activity will be within the Mirarr estate in the north eastern region within Kakadu National Park.

More specifically the activities will generally be confined to the areas around the Djirrbiyuk Outstation, Jabiru Township, and the Mudjinberri Outstation.

See maps below.



Map 1: Showing the location of the proposed Kakadu Plum collection areas relative to the boundaries and major highways of Kakadu National Park



Map 2; Showing in greater detail the locations and relative sizes of proposed areas for collection of Kakadu Plum proposed within this application.

The areas are further defined as follows:

- Djirrbiyuk Collection Area: 5,600 ha
- Mudjinberri Collection Area: 3,800 ha
- Jabiru Collection Area: 500 ha

1.3 Project description (provide a comprehensive description of action or project including: area of site [hectares] or footprint [metres]; current use of the site if any; description of what is involved in the action; steps or stages of the action; what access routes will be used; who will carry out the work; how long the work will take; what machinery will be required for the work). Attach plans, diagrams or specifications as necessary.

Background

Traditional Australian medicinal plants remain an underdeveloped biological, cultural and economic resource, despite the increasing global popularity of traditional and natural medicines from other parts of the world. The current global market for traditional medicinal plants has been estimated at US\$83 billion per year. With Australian natural healthcare and agriproducts enjoying an international reputation for their quality and clean, green image, enabling the development of a local industry with Indigenous wellbeing and medicinal plants at its base represents huge opportunities in areas of Indigenous workforce development, sustainable regional development in Northern Australia, and export of uniquely Australian products.

Global interest in Kakadu Plum (*Terminalia ferdinandiana*) is growing quickly with a number of large multinational companies now believed to be developing products, using Kakadu Plum in the constituents, ranging from health drinks and food preserving products to skin treatments and natural medicines. The Indigenous Land Council has established a specific business development role to pursue the market opportunities associated with the Kakadu Plum and is working with Aboriginal Corporations to test these markets.

In addition to these potential for new products, substantial areas of Kakadu National Park could benefit from further rehabilitation following historical land clearing for pastoralism, mining and road building gravel extraction. The amenity and ecological function of some outstations could also benefit from supplemental plantings with native species. The 1995 Kakadu Land Management Strategy has been sub-optimally implemented despite repeated formal commitments. Inclusion of rehabilitation in successive plans of management (Kakadu Board of Management 1998, 2007, 2014) has seen progress on old uranium mining sites in Stage 3, but provides further opportunity for additional rehabilitation work in other areas of the Park.

Bininj/Mungguy residents and traditional owners wish to explore options to carry out this rehabilitation work themselves, funded in part through revenues from sale of the fruit of the Kakadu Plum (*Terminalia ferdinandiana*), which they propose would form an important component of the suite of species used to rehabilitate such sites. In addition to providing a source of revenue, this work would also help restore fruit trees in the lowlands, where abundance is likely to have been suppressed by long term adverse fire regimes (Russell-Smith et al 2003; NAILSMA 2014).

Specifically, a wild harvest of Kakadu Plum would contribute to meeting commitments to Aboriginal employment and enterprise that have been poorly delivered to date (DNP 2012; NAILSMA 2015). In accepting the Bininj/Mungguy proposal for wild harvest of Kakadu Plum activity, a small but important step will be made towards Aboriginal administration, management and control, a fundamental obligation established in the foundation charter for the Park, the Kakadu lease.

Gundjeihmi Aboriginal Corporation, funded in part by the Indigenous Land Corporation, commissioned a scoping study (Brady and Gorman 2015) to explore options. That study recommended that prior to making the substantial financial investments specified in the full project proposal, interested individuals and organisations test important aspects wild harvesting before launching into more widespread and commercial scale endeavours. They proposed starting with examination of operational issues and financial viability through a trial harvest conducted in a manner that contributes positively to the Park's conservation management goals.

The proposal

Through relatively small-scale wild harvesting during 2019 and 2020, the proposed activities will examine several related questions:

Land and Resource Management issues

1. Local impact, if any, of harvest on tree condition and other aspects of environmental quality
2. Effects of harvests on density of fruit remaining in the landscape at ecologically relevant spatial scales
3. Implications, if any, of reduced fruit density in harvested areas
4. Implications of the pre-harvest environmental condition of harvest sites for present approaches to management (especially reducing fire, weed and feral animal impacts).

Social and Cultural issues

1. Reconnection of Bininj to traditional practices of collecting plum and understanding the significance in relation to cultural heritage sites
2. Examining the learnings from these proposed activities through the lens of the traditional ecological knowledge (TEK)
3. Employment opportunities for Bininj and training in the activity of collecting

Economic issues

1. Influence of tree densities on rates of harvest
2. Economies of harvest, transport, storage and delivery to processing facilities
3. Quality of product achievable under locally relevant operational conditions
4. Potential incomes for harvesting and processing

Methods

Field Harvest

1. Select three regions /harvest sites each based on criteria relating to:
 - local knowledge of tree density, fruit production and quality;
 - proximity to roads or existing tracks;
 - absence of conflict caused by harvester activity, including avoidance of sites important to local people for customary harvest, sacred sites and places regularly used by or accessible to tourists;
 - local knowledge of use of fruit by fauna and formal records of presence of species likely to use fruit and/or seed, with intent to avoid sites unusually significant for fauna; and
 - acceptability of commercial harvest to traditional owners and local managers, including those with particular associations with the plant harvested or with other wildlife using the fruit or the site.
2. Describe sites in terms of dominant vegetation, soils, slope, aspect and other potentially relevant features.
3. Prepare instructions for and train harvesters in agreed (non-destructive) methods requiring no significant damage to stems or loss of leaf.
4. The fruit is picked when it is full formed but not soft. It is picked directly from the tree using secateurs and pole extension secateurs. This will usually be done from the ground or access via ladder or from the tray of a flat tray utility. Appropriate safety assessments are made, and precautions applied prior to any work undertaken off the ground. Care and assessment shall be made prior to entering areas with vehicles where the ground might be unstable or waterlogged. This to avoid getting bogged and unnecessarily disturbing the surrounding ground and area.
5. Fruit that has already fallen to the ground will be left on the ground. This generally indicates that the fruit is too ripe for harvesting and freezing.
6. Conduct harvest, recording effort (person hours), number of trees harvested, and quantities of fruit taken from the site (to nearest 0.1 kg) and, if applicable, discarded on site as unsuitable for use or sale.
7. Record travelling time to and from harvests, post-harvest effort in packing and freezing and transport to processing sites and details of vehicles used and distances travelled.
8. Record prices received and buyer assessments of quality.
9. Maintain a digital database of the records connecting geographic data with field information.

Observations related to effects of harvest

10. At each harvest site take pre- and post-harvest digital photographs from permanently-marked positions and consistent orientation to record the condition of at least 20 harvested trees in each site and their immediate surrounds.
11. Using photographs, also estimate fruit remaining on unharvested trees or inaccessible parts of larger trees.
12. Record incidental observations of native fauna and other fruiting during harvests.
13. Record evidence of fire using the same methods as employed at Kakadu fire plots, feral animal use and impacts (pugging, compaction, erosion) and weeds (relative cover).
14. Within at least two of the marked photo-points, record sign of use by native fauna (tracks, scats, partially consumed fruits or seeds) along 20 m x 2 m quadrats. The use of remote sensing cameras will be investigated and put to use in selected areas.
15. In the same quadrants record numbers of all stems, including seedlings, of *Terminalia ferdinandiana* and other trees producing fleshy fruits and presence and relative abundance of weeds.

Analysis

16. Compare direct observations of fauna use and other signs among sites and between years.
17. Compare condition of harvested trees immediately before and following harvest and between years (pre-harvest 2019 and pre-harvest 2020), including estimates of changes in relative fruit production, leaf area, or structure.
18. Compare density of stems of fruit trees (recording seedlings separately) in 2016 and 2017.
19. Relate observations to environmental data including fire histories and represent spatially in mapping.

Study sites

20. It is anticipated that sites will include:

- Djirrbiyuk Outstation, Mudjinberri Outstation, Jabiru Township
- The sites/landmarks above are well established within Kakadu National Park. The specific collection areas will be on Mirarr land within the Mirarr estate, and within the immediate surroundings of these landmarks, and generally within eight (8) kilometres of these landmarks
 - Djirrbiyuk: 12°43'19.91"S, 132°46'7.48"E
 - Mudjinberri: 12°35'36.57"S, 132°51'58.03"E
 - Jabiru Township: 12°39'52.70"S, 132°50'17.73"E
- These areas have been selected because they are on the traditional lands of the Mirarr, and because they are in close proximity to the residences of the Bininj/Mungguy that will be actively participating in the proposed wild harvest.
- *Djirrbiyuk Collection Area: 5,600 ha*
- *Mudjinberri Collection Area: 3,800 ha*
- *Jabiru Collection Area: 500 ha*
- *KMZ files can be provided should further definition regarding these sites be required*

Reporting

Captured within a digital database along with the relevant field information will be the outcomes from the analysis associated with the proposed activities, including;

21. Present conclusions about the economic viability of harvest, taking account of all relevant costs (confining access to detailed information on costs and incomes to participants in the trial and funders of related work). Consider implications of linking harvest to other (paid) activity.
22. Assess, so far as practicable over a short time frame, impacts if any of harvest activity (removal of fruit and related human disturbance) on condition of sites, including continued recruitment of the harvested species.
23. Assess impacts of other disturbance (fire, ferals, weeds) on sites and so far as practicable compare with harvest effects.
24. Summarise evidence of native fauna use of harvest sites and any change during the study and implications.
25. Make recommendations for improving management of sites and the need for longer-term studies of site condition, harvest impacts and appropriate methods for further study.
26. Report the number of Bininj participating in the activities and any social impacts from participating in these proposed activities.

1.4 Project objectives and justification (include the reasons why the action is being proposed; and how it relates to existing facilities or proposed future initiatives as applicable)

The key project objectives will be to determine the biophysical impacts and determine the economies, and social and cultural impacts associated with a wild harvest of Kakadu Plum.

Approach to and scale of trial harvest

The trial must be large enough to offer a real test of fruit availability, operational capability, economic plausibility, prices available and indications of potential environmental impacts, if it is to provide a platform for a genuine adaptive management study (Walters 1986). To inform collaborative management, the research will ensure that relevant community interests are well-represented and strongly engaged (Oglethorpe 2002; Whitehead 2003).

We propose that planning be based on a total harvest of between 4,000 kg and 8,000 kg of fruit per year over two years. This harvest represents <0.03% of a very conservative estimate of annual fruit production in Kakadu, and 1/3rd of the sustainable harvest estimated for just 3 high density sites near Kakadu outstations (Brady and Gorman 2015). At trial harvest sites, which are likely to have a total area of <100 km² (i.e. <1% of the lowland area in Kakadu) the proportion of fruit taken is estimated up to less than 50% per hectare area, to mimic approaches that may be adopted for a more commercially focussed harvest.

Sale of fruit is an essential component of the trial for a number of reasons. These include;

- to provide real-world assessments of the commercial quality of fruit,
- to assess the capacity to deliver high quality reliably under conditions prevailing on the Park,

- to raise participants' awareness of the commitments required and impacts of harvest and handling practice, and
- to assess arrangements for returning benefits to participants and their communities.
- to assess any sociocultural impacts arising from the harvest

Availability of a Kakadu “premium”, based on Kakadu National Park’s significant brand, will also be tested best by real sales. Income from sales will potentially fund the labour and other costs incurred during the trial.

Benefit-sharing

Arrangements to promote the benefits to Bininj from commercial use of active compounds in biological resources used traditionally, in line with EPBCA-implemented obligations under the Convention on Biological Diversity (CBD), have already failed with Kakadu Plum (Cunningham et al. 2009; Brady and Gorman 2015). Engagement in supply of fruit does, however, offer some opportunity for modest benefits reaching Indigenous participants through payments for labour in harvests and diversification of incomes for their resource management and related organisations.

In addition to its potential cultural and social benefits this trial harvest research is part of a larger initiative for development of an Aboriginal landscape rehabilitation and management capability based in Kakadu. Fruit trees will be an important component of the flora requiring restoration given long term adverse fire regimes. The Kakadu plum supply project will be entirely under the control of Aboriginal people, with all incomes returned to them directly or through services provided by their corporations. It is probable that for the trial a model similar to that used by Thamurrur will be used, involving:

- direct (cash) payments to individual harvesters at a fixed rate per kilogram
- nil or modest royalties to landowners
- reinvestment of any surplus in equipment and related business development.

Bininj/Mungguy experience with and reviewing these arrangements to refine longer-term agreements on benefit-sharing approaches to this and other collaborative commercial activity will be an important aspect of the trial.

It is possible (albeit unlikely given the pre-emptive activity already seen) that companies to which fruit are supplied may choose to investigate themselves or provide product to others to identify additional properties and uses. To cover such possibilities the proponents of this project will seek to enter into agreements with all buyers to the effect that they will not conduct themselves nor provide material to others to investigate genetic or other resources and will advise the proponents of any requests to supply fruit or seed for such purposes. We will also seek commitments to destroy or return seed from whole fruit supplied by this project. The proponents will also investigate other options to protect material and remaining intellectual property associated with the species' traditional uses generally in northern Australia and in the Kakadu Region in particular.

Given that the material taken during this proposed research focusses on the potential to supply for processing within established commercial uses and given that this research is entirely under Bininj/Mungguy control, a benefit-sharing agreement under the terms of the *Environment Protection and Biodiversity Conservation Regulations* has not been included within this application for a scientific permit.

A copy of the Brady and Gorman “Kakadu Plum Property Management Plan / Scoping Study” can be made available should you require further information.

1.5 Alternatives and preferred option (include alternative alignments, layouts, materials, work methods etc and brief explanation of why the preferred option was selected)

No alternatives are presented.

1.6 Business plan (include source of funding; approval information if relevant; information about joint venture arrangements if relevant; list set-up costs and maintenance requirements separately)

Gundjeihmi Aboriginal Corporation, the recognised representative of the Mirarr people, Traditional Owners of the Mirarr Estate, will auspice the activity through its land management group, the Djurrubu Rangers.

2 LEGISLATION, PLANNING AND POLICY CONSIDERATIONS

Kakadu NP is managed in a multi-layered legislative framework which includes international, national, regional, and park-specific considerations. In addition, policies are developed to assist in day-to-day park management.

This section of the EIA indicates whether the proposed action is:

- (a) legally permissible within the legislative framework; and
- (b) appropriate under existing park management policies.

The Kakadu NP Management Plan 2016-2026 is the key instrument for determining if an action is permissible in Kakadu NP. Other planning and policy documents should only be referred to as relevant. Complete the following sections by following the prompts and inserting text from the Management Plan or other relevant document (available on Department of Environment website – see EIA Guidelines), with an accompanying statement as necessary.

Is the Action Permissible and Appropriate under:	YES	NO
PARK-SPECIFIC CONSIDERATIONS: (to be completed by all proponents)		
<p>KNP Management Plan 2016-2026¹</p> <p>Is the proposed action referred to specifically? Are other general provisions of the plan relevant to the proposal? Does Section 9.9 <i>Carrying out and authorising activities not otherwise specified</i> apply? Has the process under section 4.1 <i>Making decisions and working together</i> been applied in relation to the proposal?</p> <p>Provide details The proposal satisfies all of the obligations of the Director and the Board under Section 4.1, namely</p> <ul style="list-style-type: none"> • manage the park to the highest possible standard • protect the interests of Bininj/Mungguy and areas and things that are important to them • encourage the maintenance of Bininj/Mungguy traditions • use traditional skills in park management • promote Bininj/Mungguy engagement in park management and service delivery • encourage businesses within the park • promote biodiversity within the park <p>The proposed application also appeals to the Director, as per Section 9.9 and 10.1 of the KNP Management Plan 2016 – 2026, to grant licence to undertake the proposed activities.</p> <p>The commercial use of resources is addressed in Section 10.5 of the KNP management plan 2016-2026. It provides for harvest activities in accordance with numerous requirements outlined therein. Section 4.1 Making decisions and working together has been applied to this proposal through the consultation process.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<p>Memorandum of Lease between the Aboriginal Land Trusts and the Director of National Parks (specify which ALT lease applies)</p> <p>Does the proposal impact on the interests of Relevant Aboriginals? Yes. Proposal has been requested by the Traditional Owners for this country. Does the proposal refer to Sickness Country in the south of the Park? No</p>		

¹ If not permissible under the Kakadu NP Management Plan, the action cannot be approved.

<p>Has an environmental evaluation been carried out for proposed development as required by the lease? Yes</p> <p>Provide details</p> <p>The Jabiluka and Kakadu ALT are relevant to this proposal. The proposal has the potential to provide economic and social benefits to the land owners as is required under the Lease.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<p>Kakadu National Park policies, management strategies or area plans e.g. weed management strategy, fire management plans, feral animal strategy, walking track strategy etc. KNP policies and procedures²</p> <p>Is the proposal consistent with the relevant strategy or policy? Yes If not, provide justification.</p> <p>Provide details</p> <p>During the wild harvesting other related and allied observations will be made and recorded, consistent with good land management practices, namely</p> <p>The most relevant KNP strategy to this proposal is the weed strategy. The proposal is consistent with the weed strategy in that best practice weed hygiene procedures will be practiced during fruit collection to minimise spread of weeds</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<p>KNP Board of Management resolutions</p> <p>Provide details</p> <p>Tba</p>	<input type="checkbox"/>	<input type="checkbox"/>

INTERNATIONAL AGREEMENTS (complete only if relevant)		
RAMSAR Convention	<input type="checkbox"/>	<input type="checkbox"/>
World Heritage listing	<input type="checkbox"/>	<input type="checkbox"/>
CAMBA (China-Australia Migratory Bird Agreement) and JAMBA (Japan – Australia Migratory Bird Agreement)	<input type="checkbox"/>	<input type="checkbox"/>
Tri-Nation Wetlands Agreement	<input type="checkbox"/>	<input type="checkbox"/>
NATIONAL AND AUSTRALIAN GOVERNMENT CONSIDERATIONS (complete only if relevant)		
<p>EPBC Act & EPBC Regulations</p> <p>Is the proposal consistent with the objects of the Act? The proposal is consistent with the objects of the EPBC Act including: "... to promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources" (1)(a) and "... to recognise the role of indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity" (1)(f).</p> <p>Is the proposal consistent with the purposes and objectives of a national park as defined under the Act? The purposes and objectives of a 'national park' as defined under the Act include the principle of 'ecologically sustainable use' for any resource use in the reserve. The proposal by Mirarr traditional owners to collect Kakadu Plum fruit from Mirarr country takes into account the capacity of the collection areas and reserve to sustain natural processes and the life-support systems of nature, and that the benefit of the use to the present generation should not diminish the potential of the collection areas to meet the needs and aspirations of future generations. Similarly, the IUCN principles for 'national park' include "The aspirations of traditional owners of land within the reserve of zone, their continuing land management practices....and the benefit the traditional owners derive from enterprises established in the reserve or zone...should be recognized and taken into account." The proposed activity is consistent with this principle since it is a wholly Bininj owned business with potential economic and social benefits.</p> <p>Is the proposed action specified in Section 354 of the Act? The proposed action is covered by Section 354 (1) in that it involves the taking and trading of native species also the proposed action is to be undertaken for commercial purposes: "A person must not do one of the following acts in a Commonwealth reserve except in accordance with a management plan in operation for the reserve: (a) kill, injure, take, trade, keep or move a member of a native species; or (f) take an action for commercial purposes." Under ss.354 and 354A of the EPBC Act, commercial taking or harvesting of resources may only be carried on in accordance with the management plan. Section 10.5 of the management plan provides for commercial harvest of resources.</p> <p>Does the proposal relate to a "matter of national environmental significance (NES)" as defined under the Act? (Refer to list of NES matters in Appendix 1)</p> <p>Do specific provisions in the Regulations apply? eg use of genetic resources Part 8A of the EPBC regulations (access to genetic resources) does not apply in the case of this proposal since the material will not be used for research and development</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Australian Standards/Building Code of Australia Have the relevant Australian Standards been adopted and adhered to in the construction and design of the proposal? eg <i>Australian Standard for Walking Tracks, Building Code of Australia</i>	<input type="checkbox"/>	<input type="checkbox"/>
Burra Charter (the <i>Australian ICOMOS Charter for Places of Cultural Significance</i>) Where the proposal involves non-Aboriginal heritage values, is it consistent with the guidelines of the Charter?	<input type="checkbox"/>	<input type="checkbox"/>
National Strategies and Policies e.g. National Strategy for the Conservation of Australia's Biological Diversity; National Strategy for Ecologically Sustainable Development; National Forest Policy Statement; National Reserves System; Wetlands Policy of the Commonwealth Government of Australia.	<input type="checkbox"/>	<input type="checkbox"/>
Threatened Species Recovery Plans e.g. <i>Recovery Plan for Marine Turtles in Australia (2003)</i> . Where the proposal involves a nationally listed threatened species, is it consistent with the provisions of the Recovery Plan?	<input type="checkbox"/>	<input type="checkbox"/>
Department of Environment policies and protocols (to be completed by KNP) eg eriss	<input type="checkbox"/>	<input type="checkbox"/>
NORTHERN TERRITORY LEGISLATION, STRATEGIES, POLICIES AND REGIONAL AGREEMENTS (complete only if relevant)		
Northern Territory Threatened Species List N/A. NT threatened plant species will not be collected as part of these activities.	<input type="checkbox"/>	<input type="checkbox"/>
Northern Territory Aboriginal Sacred Sites Act	<input type="checkbox"/>	<input type="checkbox"/>
Northern Territory Bushfires Act	<input type="checkbox"/>	<input type="checkbox"/>
Northern Territory Weeds Management Act	<input type="checkbox"/>	<input type="checkbox"/>
OTHER (specify)	<input type="checkbox"/>	<input type="checkbox"/>

3 DESCRIPTION AND FEATURES OF THE EXISTING ENVIRONMENT

The environment of Kakadu NP includes physical, cultural, and social aspects so that a comprehensive description is needed to provide the context for the proposed action. Site-specific information, rather than generic information is needed as evidence of the proponent's familiarity with the site. The condition of the environment, including its conservation value needs to be described in order to assess what changes or impacts the proposed action may have.

Briefly describe the existing 'environment' under the following headings as they are relevant to the proposal.

3.1 Natural heritage

- a) Landforms and landscapes** (include the physiographic unit of the subject area, names of regional features, unusual or outstanding landscape features)

See maps provided in the previous sections.

The park's natural environment is a vast one of exceptional beauty and unique biodiversity. The rugged and ancient stone country provides refuge for a great diversity of native species and is a hotspot of endemic plants and animals. Extensive floodplains support diverse habitats and a great concentration of waterbirds and other aquatic species. Largely intact woodlands and open forest dominate the lowlands and represent the largest area of savanna within a protected area in the world, while pockets of rainforest provide a cool and shady refuge for many other species. (Kakadu National Park, Management Plan, 2016-2026, Section 1.1)

- b) Geology, geomorphology**

Not applicable as no excavation will be undertaken

- c) Soils** (include information on stability, erodibility etc)

Not applicable as no excavation will be undertaken

- d) Hydrology and water flows** (refer to rivers, creeks, wetlands and other catchment values and their conservation value; include information on seasonal flooding, presence of any built structures for visitor/management access, crocodile management, flood control etc)

Not applicable. The areas proposed do not have any natural water bodies within them

- e) Vegetation** (indicate the condition of the vegetation on site including weed infestations and how much of the site is cleared, provide names of the vegetation community(ies) present and their conservation value, include information about fire sensitivity and fire zoning under KNP policy if known, provide records of threatened and regionally significant flora species relevant to the site. NOTE: it is not necessary to list all plant species which occur).

Vegetation in all areas of proposed activity is Woodland Savanna. No site clearing will occur. Vegetation disturbance will be limited to that caused by pedestrian traffic and limited quad bike movements. Activity will take place during wet season. Some fire management activity may occur concurrently at the direction and discretion of traditional owners and custodians.

The lowlands – termed Gugarnhgarndan in the management plan – are the primary area in which Kakadu Plum is found. The plan highlights the following values and condition of this environment.

- The lowlands within Kakadu are the dominant ecological fabric of the park and the one that connects all the other landscapes
- They are largely intact and represent the world's largest savanna protected within a reserve
- They comprise a great diversity of species, with the majority of Kakadu's species existing in this landscape
- They are the primary habitat for 20 threatened species, particularly mammals
- They are the primary habitat for many culturally significant species such as Kakadu plum (*Terminalia ferdinandiana*) and other plants and animals collected for food and materials
- They are a nationally significant carbon store
- Compared with other savanna lowlands around the world, the Kakadu lowlands are largely intact but their condition is declining: the extent and impact of weeds, particularly ecosystem transforming grasses, is increasing; large and frequent fires are leading to simplification of the woodland structure; feral animals are impacting on some environments and species; and populations of some threatened species, particularly mammals, are falling rapidly.

(EcOz, "Kakadu Plum Scoping Study/Property Management Plan", 2015)

In a 2004 report “Threatened plants and animals in Kakadu National Park: a review and recommendations for management” by John Woinarski identified the following listings of plant species occurring in Kakadu National Park, that are considered as threatened under the *Environment Protection and Biodiversity Conservation Act 1999* and/or the *Territory Parks and Wildlife Conservation Act*.

Table 1a. List of plant species recorded from Kakadu NP and currently (August 2004) considered as threatened under the *Environment Protection and Biodiversity Conservation Act 1999* and/or the *Territory Parks and Wildlife Conservation Act*. Note that no Kakadu plant species were listed under Federal legislation at the time of the publication of the Endangered Species Program for Kakadu (“STATUS 1995”: Roeger and Russell-Smith 1995). Abbreviations: CE=Critically Endangered; EN=Endangered; VU=Vulnerable. For Northern Territory status only: NT=Near Threatened and DD=Data Deficient. Three species indicated are proposed to be downlisted in the next revision of Northern Territory conservation status (Kerrigan 2003). Note that this listing also includes one recently (re-)discovered species (*Acacia* D19063 Graveside Gorge) whose conservation status has not been assessed (NA) in previous considerations, but for which a listing of Critically Endangered (CE) is proposed by Kerrigan (2004) for the NT listing.

Scientific name	NT Status	EPBCA	STATUS 1995	Kakadu significance
<i>Acacia</i> D19063 Graveside Gorge ●	NA (-> CE)	not listed	not listed	High
<i>Boronia laxa</i> ●	NT	VU	not listed	High
<i>Boronia rupicola</i> ●	NT	VU	not listed	High
<i>Boronia suberosa</i> ●	VU (->NT)	VU	not listed	High
<i>Boronia verecunda</i> ●	NT	VU	not listed	High
<i>Boronia xanthastrum</i> ●	NT	VU	not listed	High
<i>Calytrix inopinata</i> ●	VU (->NT)	not listed	not listed	High
<i>Cycas armstrongii</i> ●	VU	not listed	not listed	Low
<i>Dubouzetia australiensis</i> ●	EN (->VU)	not listed	not listed	Low-Moderate
<i>Gleichenia dicarpa</i> *	VU (-> DD)	not listed	not listed	Moderate
<i>Helicteres D21039 linifolia</i> ●	VU (->NT)	not listed	not listed	High
<i>Hibiscus brennanii</i> ●	VU	not listed	not listed	High
<i>Lithomyrtus linariifolia</i> ●	VU	not listed	not listed	High
<i>Malaxis latifolia</i>	VU	not listed	not listed	Moderate-High
<i>Monochoria hastata</i>	VU	not listed	not listed	Low-Moderate
<i>Sauropus filicinus</i> ●	DD	VU	not listed	High
<i>Utricularia subulata</i>	EN	not listed	not listed	Moderate

* n.b. Listed as *Gleichenia microphylla*, a name changed subsequently in light of recent taxonomic treatment (Short *et al.* 2003).

- Endemic to the Northern Territory

The Kakadu Plum, *Terminalia ferdinandiana*, is not represented on this listing.

- f) **Fauna and fauna habitat values** (provide records of threatened, migratory, and regionally significant fauna species within a radius relevant to the site, include the conservation status of each recorded species, describe habitat values present on the site relevant to each recorded species, include information about non-native species and their use of the area as relevant)

Fauna and fauna habitat values are known to the traditional owners and custodians and will be respected and considered accordingly.

A search of the EPBC Protected Matters Database (14/10/2015) for listed threatened species revealed five bird and seven mammals that potentially occur in the woodland environment of the Kakadu/west Arnhem region where Kakadu Plum is common (Table 2)

Table 2. Threatened species (EPBC) that potentially occur in the woodlands of the Kakadu/West Arnhem region

Species	Scientific name	Frugivorous
Red Goshawk	<i>Erythrotriorchis radiatus</i>	
Gouldian Finch	<i>Erythrura gouldiae</i>	
Crested Shrike-tit	<i>Falcunulus frontatus whitei</i>	
Partridge Pigeon	<i>Geophaps smithii smithii</i>	
Masked Owl (northern)	<i>Tyto novaehollandiae kimberli</i>	
Brush-tailed Rabbit-rat	<i>Conilurus penicillatus</i>	✓
Northern Quoll	<i>Dasyurus hallucatus</i>	
Black-footed Tree-rat	<i>Mesembriomys gouldii</i>	✓
Golden-backed Tree-rat	<i>Mesembriomys macrurus</i>	✓
Northern Hooping Mouse	<i>Notomys aquilo</i>	
Northern Brush-tailed Phascogale	<i>Phascogale pirate</i>	
Bare-rumped Sheath-tail Bat	<i>Saccolaimus saccolaimus</i>	

(EcOz, "Kakadu Plum Scoping Study/Property Management Plan", 2015)

Furthermore, in the 2004 report "Threatened plants and animals in Kakadu National Park: a review and recommendations for management" by John Woinarski identified the following listings of animal species occurring in Kakadu National Park, that are considered as threatened under the *Environment Protection and Biodiversity Conservation Act 1999* and/or the *Territory Parks and Wildlife Conservation Act*.

Table 1b. List of animal species recorded from Kakadu NP and currently (May 2004) considered as threatened under the *Environment Protection and Biodiversity Conservation Act 1999* and/or the *Territory Parks and Wildlife Conservation Act*. Also indicated is the nationally threatened status as at 1995, at the time of the publication of the Endangered Species Program for Kakadu (Roeger and Russell- Smith 1995). Abbreviations as in Table 1a, plus LC=Least Concern.

Scientific name	Common Name	NT Status	EPBCA	STATUS 1995	Kakadu significance
<i>Taractrocera ilia ilia</i> ●	Northern Grassdart Butterfly	VU	not listed	not listed	Moderate
<i>Cynoglossus heterolepis</i> ●	Freshwater Tongue Sole	EN (->NT)	not listed	not listed	Uncertain
<i>Glyphis</i> sp.A.	Speartooth Shark	EN	CE	not listed	Moderate-High
<i>Glyphis</i> sp. C.	Northern River Shark	EN	EN	not listed	Uncertain
<i>Pristis clavata</i>	Dwarf Sawfish	VU	not listed	not listed	Low-Moderate
<i>Pristis microdon</i>	Freshwater Sawfish	DD	VU	not listed	Low-Moderate
<i>Caretta caretta</i>	Loggerhead Turtle	EN	EN	EN	Low
<i>Chelonia mydas</i>	Green Turtle	LC	VU	VU	Low
<i>Lepidochelys olivacea</i>	Olive Ridley	DD	EN	VU	Low-Moderate
<i>Natator depressus</i>	Flatback Turtle	DD	VU	not listed	Moderate

<i>Carettochelys insculpta</i>	Pig-nosed Turtle	NT	(VU)**	not listed	High
<i>Diplodactylus occultus</i> ●	Yellow-snouted Gecko	VU	not listed	not listed	Moderate
<i>Egernia obiri</i> ●	Arnhemland Egernia	DD*	not listed	not listed	High
<i>Morelia oenpelliensis</i> ●	Oenpelli Python	VU	not listed	not listed	High
<i>Dromaius novaehollandiae</i>	Emu	VU	not listed	not listed	Low
<i>Erythroriorchis radiatus</i>	Red Goshawk	VU	VU	VU	Low-Moderate
<i>Ardeotis australis</i>	Australian Bustard	VU	not listed	not listed	Low
<i>Geophaps smithii smithii</i> ●	Partridge Pigeon	NT	VU	not listed	Moderate
<i>Tyto novaehollandiae kimberli</i>	Masked Owl	NT	VU	not listed	Uncertain
<i>Amytornis woodwardi</i> ●	White-throated Grasswren	VU	not listed	not listed	High
<i>Epthianura crocea tunneyi</i> ●	Yellow Chat	EN	not listed	not listed	High
<i>Falcunculus (frontatus) whitei</i>	Northern Shrike-tit	DD	VU	not listed	Low
<i>Erythrura gouldiae</i>	Gouldian Finch	EN	EN	EN	Moderate
<i>Dasyurus hallucatus</i>	Northern Quoll	VU	(EN)***	not listed	Uncertain
<i>Phascogale (tapoatafa) pirata</i> ●	Northern Brush-tailed Phascogale	VU	not listed	not listed	Moderate-High
<i>Isoodon auratus auratus</i>	Golden Bandicoot	EN	VU	not listed	Uncertain
<i>Saccolaimus saccolaimus nudicluniatus</i>	Bare-rumped Sheath-tail Bat	DD	CE	not listed	Uncertain
<i>Macroderma gigas</i>	Ghost Bat	DD	not listed	VU	
<i>Hipposideros diadema inornata</i> ●	Arnhem Leaf-nosed Bat	VU	not listed	not listed	High
<i>Conilurus penicillatus</i>	Brush-tailed Rabbit-rat	VU	not listed	not listed	Moderate-High
<i>Mesembriomys macrurus</i>	Golden-backed Tree-rat	EN	VU	VU	Uncertain
<i>Xeromys myoides</i>	Water mouse (False water-rat)	DD	VU	VU	Uncertain
<i>Zyzomys maini</i> ●	Arnhem Rock-rat	VU	not listed	not listed	High

* This species is not currently listed, but is likely to be added in the forthcoming (2005) revision of the Northern Territory's threatened species list.

** This species has been nominated as Vulnerable in 2004, and is now in the process of assessment.

*** This species was nominated in 2004, and is in the process of assessment.

In addition to recognising the published information above, this proposal is cognizant of the more recent publication "Optimising management actions for the conservation of threatened species in Kakadu National Park, Background Paper for Kakadu National Park Threatened Species Strategy" by J.C.Z. Woinarski and S. Winderlich, dated October 2014, and the listings contained within this publication.

g) Dangerous fauna (include information about risk and current management measures for crocodiles and buffaloes in the area)

As per customary Bininj/Mungguy hunting protocols and practices, and in adherence to the Djurrubu Rangers OH&S Safety Management Plan.

3.2 Aboriginal cultural heritage (to be completed by NLC)

a) Bininj/Mungguy interests (identify clan or family group who speak for Country in this part of Kakadu NP)

Mirrarr Kundjeyhmi; Mirrar Mengerrdji

- b) Bininj/Mungguy cultural heritage values** (include sacred sites, other cultural sites and/or landscape features; indicate cultural heritage values which are specifically referred to in the Kakadu NP leases, indicate cultural constraints if known)

All participants will be Bininj/Mungguy directed by senior Mirarr and will therefore be made aware of cultural and site sensitivities as appropriate.

- c) Bininj/Mungguy customary use values** (include plant and animal species or other resources specific to the site which are used by Bininj/ Mungguy)

The proposal promotes the Bininj/Mungguy customary practice of collecting and utilising a native plant endemic to the region, and hence is seen as supporting customary use values.

3.3 Non-Aboriginal cultural heritage (include listed and unlisted sites, identify conservation value of sites and adopted management regime if assessed)

Not applicable.

3.4 Community

- (a) Visitor use** (describe nature and scale of visitor use, include season, include type and numbers of tour operators, include type and number of vehicles, include information on visitor management as relevant)

Not applicable. Activity will not impact on visitors or their vehicles

- b) Existing infrastructure** (include access routes, toilets and visitor facilities, services, park management works; include condition of all built structures)

Not applicable. Activity will not impact on existing infrastructure

- c) Education and scientific values** (include research and/or monitoring action, refer to permits as relevant)

Not applicable.

- d) External stakeholders** (identify relevant stakeholders eg Northern Territory Government, Bushfires Council, leaseholders, neighbouring landowners, interest groups, etc)

Not applicable

- e) Aesthetic values** (include scenic and amenity values)

Not applicable. Scenic and amenity values will not be impacted by the proposed activities

4 REFERENCES, AND BIBLIOGRAPHY

Record all information sources including spoken interviews.

Intermittent consultations over the past three years with a range of Bininj stakeholders including traditional owners, corporation chairpersons, and organisation staff across Kakadu/West Arnhem region. It was obvious that the majority of Bininj had some knowledge Kakadu Plum and had already had some discussion about potential involvement.

Communities, organisations and people with whom discussions were held included the GAC Board of Directors, Peter Christophersen, Djurrubu Rangers, DEMED (Syd Laker) Adjumarrarl Rangers, Patonga Outstation (Ben Tyler), Njanjma Rangers (Tom and Jazz, Andrew – Jimmy and James), and Alfred Nayinggul and family and Njanjma women rangers at Kunbarlanya. Discussions were also held with Parks Australia staff Kasia Gabrys and Louise Harrison, Indigenous Land Council, Northern Land Council and Charles Darwin University. Consultations began with providing people with some information on the development and current status of the industry, followed by discussion on people's interest and capacity to be involved.

Discussion generally covered the following topics: -

- Level at which people wanted to be involved (wild harvest, horticulture, processing, marketing, ownership)
- The potential areas that these activities could take place
- Existing skills people have to be involved
- Barriers to involvement (cultural, political, logistics)

The general views of people are succinctly summarised here rather than views attributed to individuals. This said there was a general consensus on most issues.

Key findings

- General consensus that Bininj would like to be involved in the Kakadu Plum industry, in sustainable wild harvest and well planned horticulture and ownership in the industry.
- Many Bininj expressed concern that their cultural and ecological knowledge associated with the commercialisation of Kakadu Plum was currently not resulting in economic benefit.
- Bininj are aware that under the Joint KNP Management agreement they have a right to have access to land and resources for both cultural and commercial purposes as long it is sustainable and does not negatively impact on the parks environmental and cultural values. There is a belief that Park management is sometimes a barrier to people asserting this right.
- Bininj stressed it is important that any harvest follows cultural protocols, with the right people giving the right authorisation for a harvest on country.
- Bininj believe involvement in wild harvest activities would encourage people to be on country with social, cultural and ecological benefits. Transmission of knowledge from the old to young people was considered an especially important potential benefit of wild harvesting.
- There is a major concern about the current fire regime in the park and its impact on biodiversity, including impact of recruitment of Kakadu Plum trees.

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5 NATURE AND EXTENT OF THE LIKELY IMPACTS OF THE ACTION

This section is one of the most critical of the EIA and must be completed by all proponents. Its purpose is to describe the likely impacts of actions on Kakadu NP (as Commonwealth land) and actions taken by the Commonwealth according to the requirements of the EPBC Act.

Proponents must briefly describe the possible impacts likely to occur as a result of the action including consideration of the extent, size, scope, intensity and duration (refer to Guidelines).

A rating is also needed to categorise impacts as:

- low (or negligible), medium or high adverse impact, OR
- positive impact,

taking into account any mitigation measures that have been specified. Boxes should also be marked as N/A where the prompts are not applicable. These ratings made by the proponent for individual aspects of the proposed action, will help KNP staff determine whether or not there will be a significant impact from the action overall (refer Section 6.0).

5.1 NATURAL HERITAGE

Physical and chemical impacts during construction and operation

	IMPACT RATING (N/A, low, medium or high adverse OR positive)	DESCRIPTION OF IMPACT taking into account the receiving environment, proposed mitigation measures and proposed monitoring
1. is the action likely to impact on soil quality or land stability?	N/A	No excavations or heavy vehicle traffic
2. Is the action likely to affect a waterbody, watercourse, wetland or natural drainage system?	N/A	No landform disturbances, no water bodies present
3. Is the action likely to change flood or tidal regimes or be affected by flooding?	N/A	
4. Does the action involve the use, storage or transport of hazardous substances or the use of chemicals which could be released to the environment?	N/A	
5. Does the action involve the generation or disposal of gaseous, liquid or solid waste or emissions?	N/A	
6. Will the action involve the emission of dust, odours, noise vibration or radiation in the proximity of housing or other sensitive locations?	N/A	

Biological impacts		
1. Is any vegetation to be cleared or modified?	N/A	
2. Is the action likely to introduce weeds, increase weed distribution or otherwise impact on existing weed infestations?	Low	No vehicles from outside the Park area to be used. All vehicles used in the collection of fruit will be inspected daily and washed down in the Djurrubu Rangers yard wash bay to ensure that any weed seeds or plants are not spread through the Park.
3. Will the action affect fire sensitive vegetation communities?	N/A	
4. Is the action likely to affect a vegetation community or flora species of conservation significance?	Low	Fruit harvesting to be capped at 50% per hectare area. At trial harvest sites, which are likely to have a total area of <100 km ² (i.e. <1% of the lowland area in Kakadu) the proportion of fruit taken is estimated up to 50% per hectare area, to mimic approaches that may be adopted for a more commercially focussed harvest.
5. Does the action have the potential to endanger, disturb or permanently displace native fauna?	Low	Monitoring of sites through use of remote sensor cameras will assist in determining whether disturbance to native fauna will be an issue
6. Is the action likely to affect threatened or regionally significant fauna?	Low	Monitoring of sites through use of remote sensor cameras will assist in determining whether disturbance to native fauna will be an issue
7. Is the action likely to affect habitat values for threatened or regionally significant fauna?	Low	Monitoring of sites through use of remote sensor cameras will assist in determining whether disturbance to native fauna will be an issue
8. Is the action consistent with any applicable Recovery Plan or threat abatement plan for listed or threatened fauna?	Low	Monitoring of sites through use of remote sensor cameras will assist in determining whether disturbance to native fauna will be an issue
9. Is the action likely to have an impact on migratory fauna species or their habitat?	Low	Fruit harvesting to be capped at 50% per hectare area
10. Is the action likely to have an affect on dangerous fauna?	N/A	
11. Is the action likely to introduce feral animals, change their distribution or otherwise impact on feral populations?	N/A	
5.2 ABORIGINAL CULTURAL HERITAGE (to be completed by KNP in consultation with NLC)		
1. Will the action affect places of significance or other cultural value of importance to	<i>Medium</i>	<i>Action promotes cultural values and caring for country activities</i>

Traditional Owners?		
2. Is the action likely to affect bush resources or access to bush resources which are used by Traditional Owners?	High	Action promotes cultural values and caring for country activities
3. Will the action affect a listed sacred site?	N/A	Action directed by Traditional Owners and Custodians
4. Will the action affect an area subject to a Native Title Claim?	N/A	
5.3 NON-ABORIGINAL CULTURAL HERITAGE		
1. Will the action alter or disturb places or built structures which have cultural heritage significance?	N/A	
5.4 COMMUNITY		
Visitors		
1. Is the action likely to affect visitor access routes to or within the Park?	N/A	
2. Is the action likely to affect visitor services within the Park?	N/A	
3. Is the action likely to have an impact on the safety of visitors, Traditional Owners or staff?	N/A	
Existing Infrastructure		
4. Is the action likely to affect services or infrastructure for people who reside in Jabiru?	N/A	
5. Is the action likely to affect services or infrastructure for people who reside elsewhere in the Park?	N/A	
6. Is the action likely to affect camping grounds or other visitor infrastructure ?	N/A	
Aesthetics		
7. Does the activity affect a site(s) of importance to the broader community for their recreational or other values or access to these values?	N/A	
8. Will the action affect the visual or scenic landscape?	N/A	
Economic impacts		
9. Is the action likely to have an impact on employment for Bininj/Mungguy?	High	Bininj/Mungguy favourably impacted as the action provides employment to Bininj/Mungguy

10. Will the action affect economic factors within the Park?	Low	Actions will favourably contribute to ongoing research into supply chain possibilities and effectiveness, the efficiencies of wild harvest and the economics of plum harvesting
Scientific and Education Value		
11. Will the action impact on research priorities or activities?	Med	Actions will favourably contribute to ongoing research through providing a resource for current researchers into the nutritional and medicinal properties of the Kakadu Plum
12. Will the action impact on education priorities or activities?	N/A	
Stakeholder Interests		
13. Will the action impact on other relevant Aboriginal people within the Park?	Low	Action confined to Mirarr estate, at the direction of Mirarr.
14. Will the action impact on other relevant Aboriginal people outside of the Park?	N/A	
15. Will the action impact on other stakeholders?	N/A	

5.5 MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE (these matters are determined by the EPBC Act and should be completed only if relevant by referring to Appendix 1)

	DESCRIPTION OF IMPACT (taking into account the receiving environment and proposed mitigation measures)	SIGNIFICANT IMPACT (Yes / No)
1. Listed threatened species and communities		
2. Listed migratory species		
3. World Heritage		
4. RAMSAR Wetlands of International importance		

6.0 SUMMARY OF ENVIRONMENTAL IMPACTS (do not complete this section if you completed Section 5.5)

This section requires a synthesis of the findings of Section 5.1 to 5.4.

The purpose of the Overall Impact Rating column is to allow for an assessment of the cumulative impact associated with each category and therefore, rapid identification of which aspect(s) of the environment of the Park could experience a significant impact as the result of the proposed action. To fill out this column, consider all impacts in each individual section and provide an overall assessment of the likely impacts as low, medium, or high.

The Sensitive Aspects column should not duplicate the findings of Section 5 above but be used to highlight features which may require special attention.

CATEGORY OF IMPACT	Overall impact rating	Nature of key impacts	Sensitive aspects
Physical & chemical	N/A		
Biological	Low	Fruit removed from plants may impact on availability of fruit as food source for native fauna. Disturbance of country and threat to fauna species	Fruit removal will be capped at 50%, and will be removed before fully ripe. This unripe fruit is not considered a food source for native fauna. Less than 1% of Kakadu National Park land will be accessed during this harvesting. Pre-inspections using sensor cameras will be undertaken to ensure minimal disturbance to fauna.
Aboriginal cultural heritage	High, positive	<i>Favourably impact on cultural involvement</i>	Harvesting provides the opportunity for Bininj to reengage with country in the collection of a traditional food source
Non-Aboriginal cultural heritage	N/A		
Community	Med	Favourable impact through providing some employment to traditional owners	Harvesting will provide data on the economics of fruit collection and whether future harvests will be economically viable.

7.0 CONSULTATION (to be completed by PA)

7.1 Traditional Owners (include date of consultations concerns, and requests for changes to proposal as relevant; attach NLC/Kakadu NP consultation records and Board Minutes if available)

The proposal is put forward and driven by the Traditional Owners of the land on which the proposed activities will take place. The proposal has been discussed and resolved on a number of occasions by the Board of Directors of Gundjeihmi, the representative body of the Mirarr Traditional Owners of the lands on which the proposed activities will occur.

Intermittent consultations over the past three years with a range of Bininj stakeholders including traditional owners, corporation chairpersons, and organisation staff across Kakadu/West Arnhem region. It was obvious that the majority of Bininj had some knowledge Kakadu Plum and had already had some discussion about potential involvement.

Communities, organisations and people with whom discussions were held included the GAC Board of Directors, Peter Christophersen, Djurrubu Rangers, DEMED (Syd Laker) Adjumarrlarl Rangers, Patonga Outstation (Ben Tyler), Njanjma Rangers (Tom and Jazz, Andrew – Jimmy and James), and Alfred Nayinggul and family and Njanjma women rangers at Kunbarlanya. Discussions were also held with Parks Australia staff Kasia Gabrys and Louise Harrison, Indigenous Land Council, Northern Land Council and Charles Darwin University.

Consultations began with providing people with some information on the development and current status of the industry, followed by discussion on people's interest and capacity to be involved.

Discussion generally covered the following topics: -

- Level at which people wanted to be involved (wild harvest, horticulture, processing, marketing, ownership)
- The potential areas that these activities could take place
- Existing skills people have to be involved
- Barriers to involvement (cultural, political, logistics)

The general views of people are succinctly summarised here rather than views attributed to individuals. This said there was a general consensus on most issues.

Key findings

- General consensus that people would like to be involved in the Kakadu Plum industry, in sustainable wild harvest and well planned horticulture and ownership in the industry.
- Many people expressed concern that their cultural and ecological knowledge associated with the commercialisation of Kakadu Plum was currently not resulting in economic benefit.
- People are aware that under the Joint KNP Management agreement they have a right to have access to land and resources for both cultural and commercial purposes as long it is sustainable and does not negatively impact on the parks environmental and cultural values. There is a belief that Park management is sometimes a barrier to people asserting this right.
- People stressed it is important that any harvest follows cultural protocols, with the right people giving the right authorisation for a harvest on country.
- People believe involvement in wild harvest activities would encourage people to be on country with social, cultural and ecological benefits. Transmission of knowledge from the old to young people was considered an especially important potential benefit of wild harvesting.
- There is a major concern about the current fire regime in the park and its impact on biodiversity, including impact of recruitment of Kakadu Plum trees.

7.2 External Stakeholders

External stakeholder were included within the consultations referenced within the previous section.

8.0 CONCLUSION OF ENVIRONMENTAL IMPACT ASSESSMENT (to be completed by KNP)

Complete one of the following:

- The proposal is likely to have no impact or no more than a negligible impact on the Park's environment and natural and cultural values and on Bininj.

RECOMMENDATION -The proposal is recommended for approval.

- The proposal will have more than a negligible impact but not a significant impact on the Park's environment and natural and cultural values or on Bininj and does not affect a matter of national environmental significance.

RECOMMENDATION -The proposal is recommended for approval (subject to conditions) by the Director and the Board.

- The proposal is not likely to have a significant impact on the Park's environment and natural and cultural values, or a significant impact on Bininj/Munggy but is not supported.

RECOMMENDATION - The proposal is recommended for refusal by the Kakadu Board of Management for the following reasons:

The Board's reasons for refusal will be forwarded to the Director of National Parks who will consider whether or not the proposal should be referred under the EPBC Act.

- The proposal will have, or is likely to have, a significant impact on the Park's environment and natural and cultural values, and a significant impact on Bininj/Munggy

RECOMMENDATION - CATEGORY 3 ASSESSMENT is required. The Director of National Parks will consider whether or not the proposal should be referred under the EPBC Act.

- The proposed action involves a Matter of National Environmental Significance under the EPBC Act but a decision about whether or not there is a significant impact has not been determined.

RECOMMENDATION - The proposal is to be referred to the Kakadu NP Board of Management, for advice prior to referral to the Director of National Parks for determination of whether the action constitutes a controlled action under the EPBC Act.

- The proposed action is likely to have a significant impact on a Matter of National Environmental Significance under the EPBC Act.

RECOMMENDATION - The proposal is to be referred to the Kakadu NP Board of Management for advice, prior to referral to the Director of National Parks for determination of whether the action constitutes a controlled action under the EPBC Act.

9 Endorsement of the Conclusion & Recommendation in 8
(to be completed by KNP)

The Conclusion and Recommendation ticked in Section 8.0 above is supported/not supported as follows:

POSITION	DECISION Supported/Not supported *	SIGNATURE/DATE
KNP Work Unit supervisor (if not the author of the EIA) eg Chief Ranger		
Relevant Manager (Operations/TVS/CHBM)		
KNP Planning Officer (if relevant)		
Park Manager		
Assistant Secretary PA JMB (as needed)		
Director of National Parks (as needed)		

* **provide comments as necessary** (eg considerations which should be included in conditions, reasons why the proposal should be forwarded to the Assistant Secretary etc)

APPENDIX 1 - Significance Test of NES Values (complete this section and transcribe the results to the table in Section 5.5)

This section allows an assessment of whether the proposed action will have a significant affect on the following matters of national environmental significance (NES) under the EPBC Act:

- listed threatened species and communities (each species must be addressed separately so as to provide a thorough assessment of the potential impacts of the proposal);
- listed migratory species;
- RAMSAR wetlands of international importance; and
- World Heritage.

(The following matters of NES are not relevant to Kakadu NP: the Commonwealth marine environment, National Heritage places, and nuclear actions).

Listed threatened species and ecological communities

- a) In the case of **extinct-in-the-wild species**, state whether the action will
- adversely affect a captive or propagated population or one recently introduced/reintroduced to the wild
 - or interfere with the recovery of the species or its reintroduction into the wild.

Yes No

Explanation:

- b) In the case of **critically endangered or endangered species** will the action lead to:
- a long-term decrease in the size of a population,
 - reduce the area of occupancy of the species,
 - fragment an existing population into two or more populations,
 - adversely affect habitat critical to the survival of a species,
 - disrupt the breeding cycle of a population,
 - modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline,
 - result in invasive species that are harmful to a critically endangered or endangered species becoming established in the habitat,
 - introduce disease that may cause the species to decline or interfere with the recovery of the species.

Yes No

Explanation:

- c) In the case of **vulnerable species** will the action lead to:
- a long term decrease in the size of an important population of a species,
 - reduce the area of occupancy of an important population,
 - fragment an existing important population into two or more populations,
 - adversely affect habitat critical to the survival of a species,
 - disrupt the breeding cycle of an important population,
 - modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline,
 - result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat,
 - introduce disease that may cause the species to decline,
 - or interfere substantially with the recovery of the species.

Yes No

Explanation:

- d) In the case of **critically endangered and endangered ecological communities** will the action:
- reduce the extent of an ecological community,
 - fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines,
 - adversely affect habitat critical to the survival of an ecological community,
 - modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns,
 - cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting,
 - cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to:– assisting invasive species, that are harmful to the listed ecological community, to become established,
 - or – causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community
 - or interfere with the recovery of an ecological community.

Yes No

Explanation:**Listed Migratory Species**

- e) In the case of **Listed Migratory Species** will the action:
- substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species;
 - result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species;
 - or seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.

Yes No

Explanation:**World Heritage**

- f) In the case of **World Heritage Properties**³ will the action cause
- one or more of the World Heritage values to be lost;
 - one or more of the World Heritage values to be degraded or damaged; or
 - one or more of the World Heritage values to be notably altered, modified, obscured or diminished.

Yes No

Explanation:

³ Note - For a full description of significant impacts on World Heritage Properties refer to EPBC Act Policy Statement 1.1 Significant Impact Guidelines.

RAMSAR Wetlands of International Importance

(g) An action is likely to have a significant impact on the ecological character of a declared Ramsar wetland if there is a real chance or possibility that it will result in:

- areas of the wetland being destroyed or substantially modified;
- a substantial and measurable change in the hydrological regime of the wetland, for example, a substantial change to the volume, timing, duration and frequency of ground and surface water flows to and within the wetland;
- the habitat or lifecycle of native species, including invertebrate fauna and fish species, dependant upon the wetland being seriously affected;
- a substantial and measurable change in the water quality of the wetland – for example, a substantial change in the level of salinity, pollutants, or nutrients in the wetland, or water temperature which may adversely impact on biodiversity, ecological integrity, social amenity or human health; or
- an invasive species that is harmful to the ecological character of the wetland being established (or an existing invasive species being spread) in the wetland.

Yes

No

Explanation: