Report and recommendations of the Environmental Protection Authority

Carlton Plain: Stage 1 - Irrigated agriculture

Kimberley Agricultural Investment Pty Ltd

Report 1614

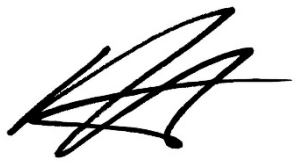
March 2018

Environmental Impact Assessment Process Timelines

Date	Progress stages	Time (weeks)
01/08/2017	EPA decides to assess – level of assessment set	
25/10/2017	EPA received Draft Environmental Management Plan (EMP)	12
30/10/2017	Public review period for EMP commences	3 days
20/11/2017	Public review of EMP Closed	3
07/02/2018	Proponent provides adequate EMP	11
15/02/2018	EPA completed its assessment	2
14/03/2018	EPA provided report to the Minister for Environment	4
21/03/2018	EPA report published	3 days
04/04/2018	Close of appeals period	2

Timelines for an assessment may vary according to the complexity of the proposal and are usually agreed with the proponent soon after the EPA decides to assess the proposal and records the level of assessment.

In this case, the Environmental Protection Authority met its timeline objective to complete its assessment and provide a report to the Minister.



Dr Tom Hatton
Chairman

21 March 2018

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Summary

This report provides the Minister for Environment with the outcomes of the Environmental Protection Authority's (EPA) environmental impact assessment of the proposal to develop the Carlton Plain: Stage 1 - Irrigated agriculture project by Kimberley Agricultural Investment Pty Ltd (KAI).

Proposal

KAI proposes to develop 3,055 hectares (ha) of land for surface and pressurised irrigated agricultural cropping which may include grains, cotton, perennial horticulture, and other crops.

The site is located between House Roof Hill and the Ord River, approximately 40 kilometres (km) north-west of Kununurra, in the Shire of Wyndham East Kimberley.

Background and context

The proponent referred the project on 21 July 2017. On 1 August 2017 the EPA decided to assess the proposal and set the level of assessment at Assessment on Referral Information with an Environmental Management Plan (Public Review of the Environmental Management Plan).

The *Environmental Protection Act 1986* (EP Act) requires that the EPA's report sets out key environmental factors identified during the assessment, as well as the EPA's recommendations as to whether or not the proposal may be implemented and, if so, the conditions and procedures that should apply. The EPA may also include any other information, advice and recommendations in the assessment report that it thinks fit.

Public submissions

Key issues raised in the submissions on the Environmental Management Plan included:

- potential impacts to surface water quality through the increase in nutrients and acid sulphate soil leachate
- the proposal is in close proximity to the Parry Lagoons Nature Reserve, Ord River floodplain and the Ord River floodplain Ramsar site of international significance
- potential impacts to surface water regimes that could lead to altered salinity concentrations, sediment dynamics and nutrient cycling, that may impact sensitive receptors downstream
- potential impacts to terrestrial environmental quality as a result of salinisation, acid sulphate soils and use of fertilisers.

Key environmental factors and relevant principles

The EPA identified the following key environmental factors (see Section 4) during its assessment:

1. **Flora and Vegetation, Hydrological Process and Inland Waters Environmental Quality** – Potential impacts from clearing of native vegetation; disturbance of the Ord River banks; impacts from the use of chemicals, nutrients and water runoff, leading to a decline in groundwater and surface water quality, increased sedimentation and turbidity.
2. **Terrestrial Fauna** – Potential impacts to conservation significant fauna, including migratory birds and aquatic fauna. Potential impacts from pest species.
3. **Terrestrial Environmental Quality** – Potential impacts of soil erosion and soil salinity from vegetation clearing. Potential for sodic soils.
4. **Social Surroundings** – Potential impacts to Aboriginal heritage and culture, and the amenity of the Ord River.

In identifying the key environmental factors, the EPA had regard for the object and principles set out in section 4A of the EP Act and considered all the principles were relevant to this assessment (see Section 4):

1. the precautionary principle
2. the principle of intergenerational equity
3. the principle of the conservation of biological diversity and ecological integrity
4. principles relating to improved validation, pricing and incentive mechanisms
5. the principle of waste minimisation.

Assessment

The EPA has taken the following into account in its assessment of the proposal as a whole:

- the impacts to the key environmental factors including Flora and Vegetation, Terrestrial Environmental Quality, Terrestrial Fauna, Hydrological Processes, Inland Waters Environmental Quality and Social Surroundings
- Its confidence in the proponent's proposed mitigation measures
- the relevant EP Act principles, including the precautionary principle, the principle of intergenerational equity and the principle of the conservation of biological diversity and ecological integrity
- Its view that the key environmental; factors are manageable, provided the recommended condition requiring the Environmental Management Plan is implemented.

Given the above, the EPA has concluded that the proposal is environmentally acceptable and therefore recommends that the proposal may be implemented subject to the conditions recommended in Appendix 4.

Conclusion and recommendations

Having assessed the proposal, the EPA has concluded that the proposal is environmentally acceptable.

The EPA recommends that the Minister notes:

1. That the proposal assessed is for the proposed clearing and development of the Carlton Plain: Stage 1 - Irrigated agriculture project.
2. The key environmental factors identified by the EPA during its assessment are Flora and Vegetation, Hydrological Processes and Inland Water Environmental Quality, Terrestrial Fauna, Terrestrial Environmental Quality, and Social Surroundings, which are set out in Section 4.
3. That the EPA has concluded the proposal may be implemented, provided the implementation of the proposal is carried out in accordance with the recommended conditions and procedures set out in Appendix 4. Matters addressed in the conditions include the implementation of an Environmental Management Plan that aims to:
    a) maintain and improve the ecological condition of the riparian vegetation along the Ord River, vegetation retention zones, including House Roof Hill and Carlton wetland
    b) minimise impacts of irrigated cropping on adjacent vegetated areas
    c) implement riparian zone management
    d) maximise the ecological corridor values of retained vegetation, while minimising weed infestation
    e) maintain soil productivity and ensure no decline in soil quality, in particular, no increase in surface and sub-surface salinity on Carlton Plain Stage 1 and adjacent areas
    f) maintain habitat for terrestrial and avian fauna species, in particular migratory birds
    g) comply with the provisions of the *Ord River surface water allocation plan* (DoW 2013) in relation to the Carlton-Mantinea sub-area; to ensure flood management does not negatively impact upon environmental values or farm infrastructure; and to ensure that depth to groundwater under Carlton Plain is not negatively impacted by the development of the Stage 1 project
    h) protect the Carlton wetland, Ord River and downstream wetland areas, including the Parry Lagoons Nature Reserve and the lower Ord floodplain Ramsar site from the impacts of the agricultural development.

1. Introduction

This report provides the advice and recommendations of the Environmental Protection Authority (EPA) to the Minister for Environment on the outcomes of the EPA's environmental impact assessment of the proposal by Kimberley Agricultural Investment Pty Ltd (KAI). The proposal is for the clearing and development of Carlton Plain, using surface and pressurised irrigation technologies, to grow food and fibre crops.

The EPA has prepared this report in accordance with section 44 of the *Environmental Protection Act 1986* (EP Act), which requires that the EPA prepare a report on the outcome of its assessment of a proposal and provide this assessment report to the Minister for Environment. The report must set out:

- what the EPA considers to be the key environmental factors identified during the assessment
- the EPA's recommendations as to whether or not the proposal may be implemented, and if the EPA recommends that implementation be allowed, the conditions and procedures to which implementation should be subject.

The EPA may also include any other information, advice and recommendations in the assessment report as it thinks fit.

The proponent referred the proposal to the EPA on 21 July 2017. On 1 August 2017 the EPA decided to assess the proposal and set the level of assessment at 'Referral Information, with a requirement for an Environmental Management Plan (EMP)' for a three week public review. The draft EMP was released for public review from 30 October 2017 to 20 November 2017.

1.1 EPA procedures

The EPA followed the procedures in the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Administrative Procedures 2016* and the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual 2016*.

2. The proposal

2.1 Proposal summary

The proponent, KAI, proposes to develop the Carlton Plain Stage 1 irrigated agriculture project. The proposal would require disturbance of up to 3,055 ha of land. The proposal is situated between House Roof Hill and the Ord River, located approximately 40 km north-west of Kununurra, in the Shire of Wyndham-East Kimberley (refer Figure 1).

KAI is the freehold owner of the 16,117 ha Carlton Plain Station. Carlton Plain was formerly included within the boundaries of the Carlton Hill Station pastoral lease (also owned by KAI), but was excised in 2006 following the endorsement of the Ord Final Agreement (an Indigenous Land Use Agreement) by Traditional Owners and the Western Australian Government in 2006.

The development of the land parcel is to be undertaken for the purposes of perennial and annual cropping, including grains, cotton, and horticulture (which may include citrus and/or mango trees or other tree crops) and will use a combination of surface and pressurised irrigation technologies.

The proposed development of the Carlton Plain Stage 1 project includes the following activities:

- Clearing and laser leveling of the land and any other works which may be required to enable flood-irrigated agriculture to occur.
- Construction of hillside drains to divert runoff from surrounding ranges and protect both irrigation land and new channel infrastructure from inundation.
- Construction of water supply infrastructure, including pumping infrastructure (unlikely to be visible from the lower Ord River) and tailwater recycling facilities.
- Construction of smaller distribution channels off the main supply infrastructure to service agricultural land.
- Construction of levee banks, as required, around the perimeter of the farming land to prevent inundation.
- Enhancing the existing internal drainage system to divert excess storm water runoff from the developed area and protect irrigated land, channels and farm infrastructure from long term inundation.
- Construction of on-farm capital works required for the planting and farming of crops.
- Construction and operation of groundwater management and disposal infrastructure, including sub-surface drains, groundwater bores and pipelines.
- Construction of suitable internal farm roads.
- Construction of farm sheds and houses, product and input storage facilities.
- Retention of vegetation in areas not required or not considered suitable for irrigated agriculture.

- Utilisation of water released from Lake Argyle, via the Ord River and Lake Kununurra, pumped from the Ord River to irrigate crops.

The majority of the proposal is located on freehold lease area. The proposal requires an easement for river access to the Ord River to install pumping infrastructure. The proponent will be required to obtain this easement under the *Land Administration Act 1997*. The EPA notes there was a public submission regarding an issue raised on the tenure of the land. The EPA has identified the Minister for Lands as a decision-making authority for the proposal and there is a legal process the proponent will need to go through to obtain the required easement.

The key characteristics of the proposal are summarised in tables 1 and 2 below. A detailed description of the proposal is provided in Section 1 of the Environmental Management Plan (Kimberley Boab Consulting Pty Ltd (KBC), 2017a).

Table 1: Summary of the Proposal

Proposal title	Carlton Plain Stage 1
Short description	Clearing and development of 3,055 ha between House Roof Hill and the Ord River, for the purpose of surface and pressurised irrigated agricultural cropping, which may include grains, cotton, perennial horticulture, and other crops.

Table 2: Location and proposed extent of physical and operational elements

Element	Location	Proposed extent
Physical elements		
Surface irrigation of annual crops	Figure 2	1,735 ha Three sectioned areas 286 ha, 356 ha and 1,093 ha) within Stage 1 development envelope.
Pressurised irrigation of perennial crops	Figure 2	510 ha Pressurised irrigation infrastructure to be constructed where soils do not allow for surface (flood) irrigation.
Infrastructure	Figure 2	810 ha Within Stage 1 development envelope
Operational elements		
Annual irrigation water abstraction	Figure 2	27.6 gigalitres (GL) from the Ord River system

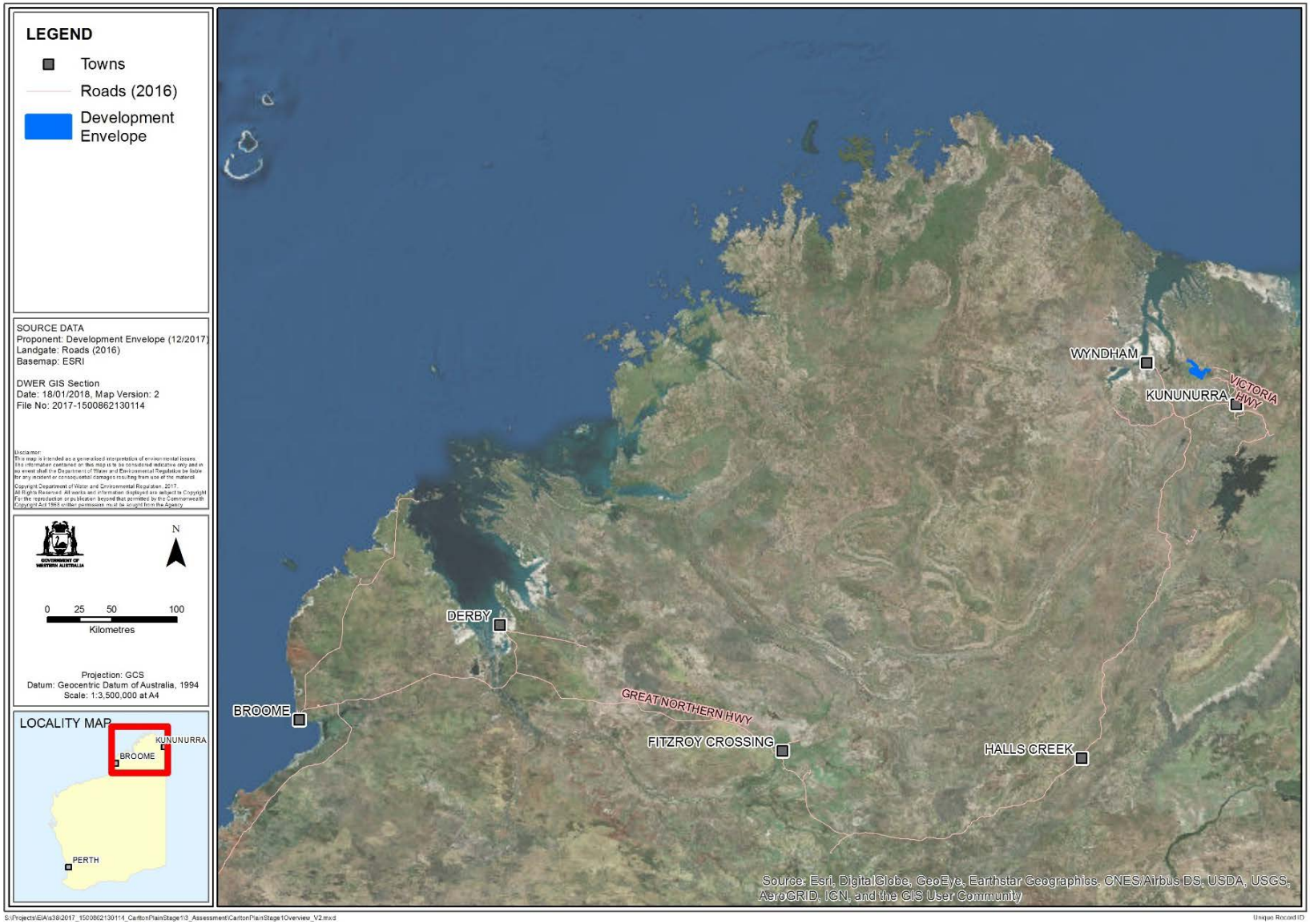

Figure 1: Carlton Plain: Stage 1 - Regional location

Figure 2: Carlton Plain: Stage 1 - Development envelope

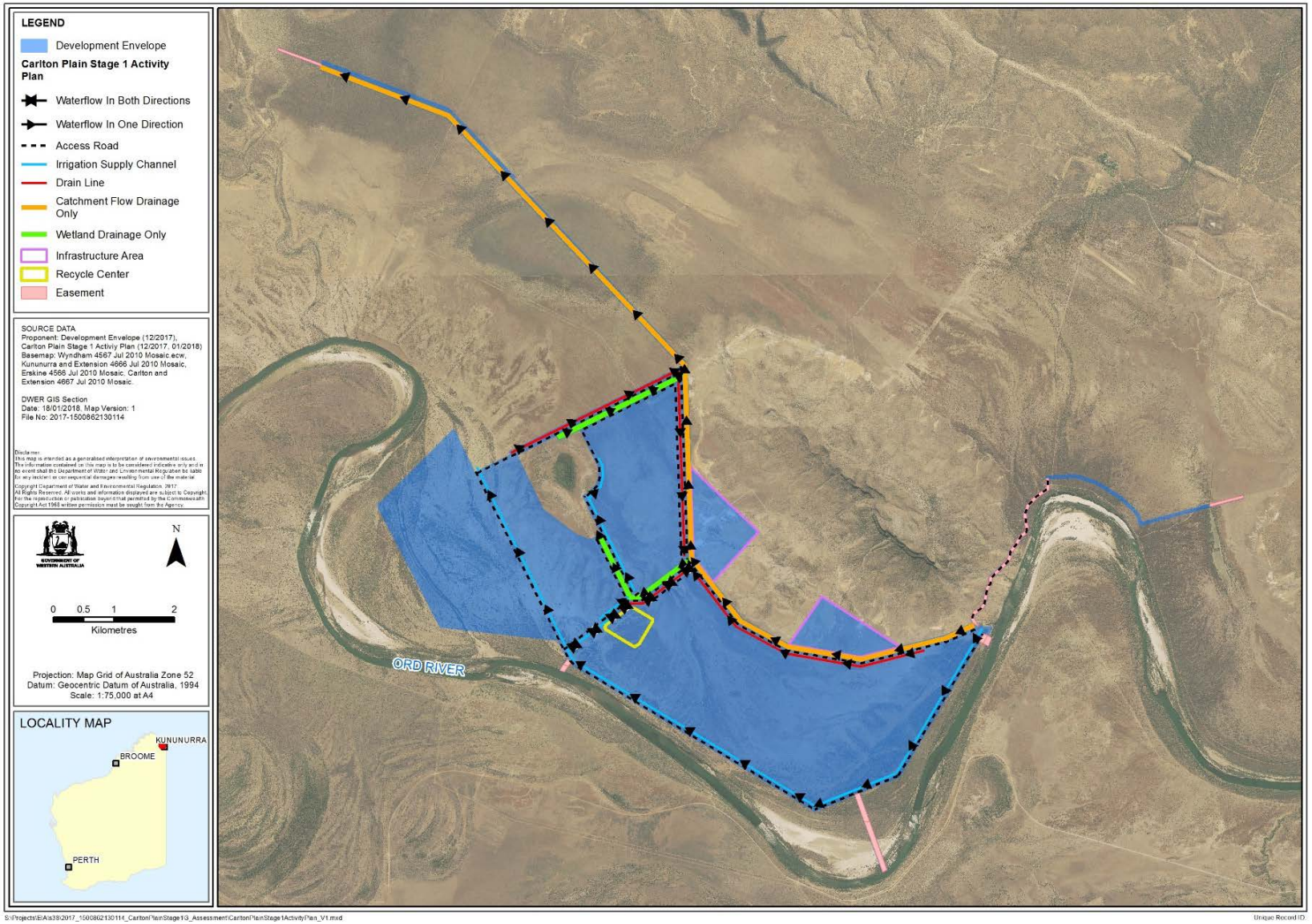

Figure 3: Carlton Plain: Stage 1 - Activity plan

2.2 Changes to proposal during assessment

At the time of referral, the total clearing required for the proposal was 3,086 ha. As a result of revised irrigation planning, the area to be retained and managed as wetland habitat has increased and this has decreased the clearing required to 3,055 ha. This change was reflected in the EMP that was released for public comment.

The EPA, concluded that the change was unlikely to significantly increase any impact that the proposal may have on the environment and gave consent under section 43A of the EP Act to the change on 15 February 2018.

2.3 Context

Carlton Plain is located north of the lower Ord River, between the townships of Wyndham and Kununurra. The study area is located within the Victoria Bonaparte Interim Biogeographic Regionalisation for Australia (IBRA) Region, specifically within the VIB01 (Keep) IBRA Subregion. Carlton Plain is predominantly within the mapped Ivanhoe Land System.

The study area is adjacent to and upstream of the Ord River floodplain Ramsar site, an area that encompasses the Parry Lagoons Nature Reserve and the Ord River Nature Reserve. Carlton Plain has been continuously grazed for 100 years and, as a result the vegetation is sparse and largely degraded due to cattle grazing.

As alluded to by its name, the proposal forms the initial component of the staged development of three stages of land designated for future irrigated agriculture, within the overall Carlton Plain freehold area. Any decisions made in Stage 1 are separate for stages 2 and 3. Separate referrals to the EPA for the remaining areas may be prepared in the future.

Abstraction of up to 115 GL of water per annum from the Ord River system is considered to be within the assessed ecologically sustainable limits and allocation determined by the State with input from the Commonwealth government. This includes consideration of the impact of this water extraction upon the downstream lower Ord floodplain Ramsar site and Parry Lagoons wetland areas.

The *Ord River surface water allocation plan* (DoW 2013) notes the following:

> *"The Ord River Dam's construction in the early 1970s greatly changed the flow regime of the lower Ord River. These hydrological changes in turn dramatically altered the river's environment."*

And, notes:

> *"In 1999 the EPA, in line with the COAG Water Reform Framework of 1994, recognised the importance of the post-dam environmental values that had developed in the lower Ord River and required that these be protected. In response to this, the Department of Water has established the environmental water regime required to maintain the post-dam riverine environment of the lower Ord River"*

Therefore, the water allocation limits in the plan are designed to maintain the post-dam water regime. The Carlton Plain Stage 1 proposal is located within a surface water area proclaimed under the *Rights in Water and Irrigation Act 1914* and is required to comply with the water licensing requirements of this Act now administered by the Department of Water and Environmental Regulation (DWER).

3. Consultation

The EPA advertised the Referral Information for public comment in late July 2017, and received six comments. All comments requested that the EPA assess the proposal.

The proponent consulted with government agencies and key stakeholders during the preparation of the proposal provided with the referral. The agencies and stakeholders consulted, the issues raised and the proponent's response is detailed in Section 11 of the proponent's referral document (KBC, 2017a).

The draft EMP was released for public review from 30 October 2017 to 20 November 2017. Key issues raised in the submissions on the Environmental Management Plan included:

- potential impacts to surface water quality through the increase in nutrients and acid sulphate soil leachate
- the proposal is in close proximity to the Parry Lagoons Nature Reserve, Ord River floodplain and the Ord River floodplain Ramsar site of international significance
- potential impacts to surface water regimes that could lead to altered salinity concentrations, sediment dynamics and nutrient cycling, that may impact sensitive receptors downstream
- potential impacts to terrestrial environmental quality as a result of salinisation, acid sulphate soils and use of fertilisers.

In July 2017, the Chairman of the EPA visited the site of the proposal. Further meetings with stakeholders were also held in November 2017 regarding questions on the Environmental Management Plan.

In February 2018, the proponent provided the EPA with a revised Environmental Management Plan which contained additional information that describes the proposed management and predicted impacts.

The EPA considers that the consultation process has been appropriate and that reasonable steps have been taken to inform the community and stakeholders on the proposed development. Relevant significant environmental issues identified from this process were taken into account by the EPA during its assessment of the proposal.

4. Key environmental factors

In undertaking its assessment of this proposal and preparing this assessment report, the EPA had regard for the object and principles contained in s.4A of the EP Act to the extent relevant to the particular matters that were considered.

The EPA considered the following information during its assessment:

- the proponent's referral information
- public comments received on the referral, and stakeholder comments received during the preparation of proponent documentation
- the EPA's own inquiries
- the EPA's *Statement of environmental principles, factors and objectives*
- the relevant principles, policy and guidance referred to in the assessment of each key environmental factor in sections 4.1 to 4.4.

Having regard to the above information, the EPA identified the following key environmental factors during the course of its assessment of the proposal:

- **Flora and Vegetation, Hydrological Process and Inland Waters Environmental Quality** – Potential impacts from clearing of native vegetation; disturbance of the Ord River banks; impacts from the use of chemicals, nutrients and water runoff, leading to a decline in groundwater and surface water quality, increased sedimentation and turbidity.
- **Terrestrial Fauna** – Potential impacts to conservation significant fauna, including migratory birds and aquatic fauna. Potential impacts from pest species.
- **Terrestrial Environmental Quality** – Potential impacts of soil erosion and soil salinity from vegetation clearing. Potential for sodic soils.
- **Social Surroundings** – Potential impacts to Aboriginal heritage and culture. Potential impacts to the amenity of the Ord River.

The EPA considered other environmental factors during its assessment of the proposal. These factors, which were not identified as key environmental factors, are discussed in the proponent's referral documentation (KBC 2017a). Appendix 3 contains an evaluation of why these other environmental factors were not identified as key environmental factors.

Having regard to the EP Act principles, the EPA considered that all principles were relevant to its assessment of the proposal:

1. **The precautionary principle -** Investigations on the biological and physical environment undertaken by the proponent have provided sufficient certainty to assess risks and identify measures to avoid or minimise impacts. There is no threat of serious or irreversible damage.
2. **The principle of intergenerational equity -** The EPA notes that the proponent has taken measures to avoid and minimise impacts, and this,

together with the recommended conditions, will ensure the environment is maintained for future generations.

3. **The principle of the conservation of biological diversity and ecological integrity -** the EPA has concluded that provided the recommended conditions are imposed on the implementation of the proposal, the proposal will not compromise the biological diversity and ecological integrity of the affected areas.
4. **Principles relating to improved valuation, pricing and incentive mechanisms –** the EPA notes that the proponent will take responsibility for preventing pollution, particularly the containment of chemicals used for the proposal.
5. **The principle of waste minimisation –** the EPA notes that the proposal involves the recycling of water to prevent the discharge of water to the environment.

Appendix 2 provides a summary of the principles and how the EPA considered these principles in its assessment.

The EPA's assessment of the proposal's impacts on the key environmental factors is provided in sections 4.1 – 4.4. These sections outline whether or not the EPA considers that the impacts to each factor are manageable. Sections 5 and 6 provides the EPA's conclusion and recommendations as to whether or not the proposal as a whole is environmentally acceptable.

4.1 Flora and Vegetation, Hydrological Processes and Inland Waters Environmental Quality

EPA objectives

The EPA's environmental objectives for these factors are:

- Flora and Vegetation - to protect flora and vegetation so that biological diversity and ecological integrity are maintained.
- Hydrological Processes - to maintain the hydrological regimes of groundwater and surface water so that environmental values are protected.
- Inland Waters Environmental Quality - to maintain the quality of groundwater and surface water so that environmental values are protected.

Relevant policy and guidance

The EPA considers that the following current environmental policy and guidance is relevant to its assessment of the proposal for this factor:

- *Environmental Factor Guideline – Flora and Vegetation* (EPA, 2016a);
- *Environmental Factor Guideline – Hydrological Processes* (EPA, 2016b)
- *Environmental Factor Guideline – Inland Waters Environmental Quality* (EPA, 2016c)

- *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016d).

The considerations for environmental impact assessment (EIA) for these factors are outlined in *Environmental Factor Guideline - Flora and Vegetation* (EPA, 2016a); *Hydrological Processes* (EPA, 2016b) and *Inland Waters Environmental Quality* (EPA, 2016c).

The proponent has undertaken a flora and vegetation survey relevant to the proposal. The flora and vegetation assessment of the Carlton Plain Stage 1 study area was undertaken at a Level 1 standard as defined by the Environmental Protection Authority's (EPA) *Guidance Statement No. 51* (EPA, 2004a).

The intent and content of *Guidance Statement No. 51* has been incorporated into the *Environmental Factor Guideline – Flora and Vegetation* (EPA, 2016a). In addition, the 2015 Technical Guide was revised in 2016 to align with the EPA's new guidelines and procedures framework. The revision clarified the terminology and hierarchy of surveys in the guidance, while maintaining the standards and information required for surveys. The EPA therefore considers that the flora and vegetation surveys undertaken for the proposal are consistent with the current policy and guidance documents.

EPA assessment

Flora and vegetation

It should be noted that the study area for the flora and survey incorporated stages 1, 2 and 3 of the original Carlton Plains proposal, however this report is evaluating only the Stage 1 impacts as the subsequent stages will subject to a separate referral.

The flora and vegetation survey (Woodman Environmental, 2016) identified:

- no Threatened Ecological Communities (TECs) are known from the study area;
- one Priority Ecological Community (PEC) is known from the study area Priority 3 PEC Ivanhoe Land System
- eight vegetation types were recorded during surveys
- no Threatened Flora taxa are known to occur in the study area
- four Conservation Significant flora taxa have known locations outside of the study area, *Brachychiton tuberculatus (*P3), *Echinochloa kimberleyensis* (P1), *Goodenia brachypoda* (P1) and *Solanum pugiunculiferum* (P1)
- the vegetation condition was classified as over 60 per cent being poor, very poor, degraded or cleared condition. Forty per cent of the survey area has been assessed as exhibiting 20–80 per cent weed coverage.

The Carlton Plain Stage 1 proposal forms part of the PEC. However, as there are no alluvial black soil plains in the Stage 1 area, the proposal will not impact on the PEC.

The EPA notes that no conservation flora species have been recorded in the development envelope. The EPA also notes that 60 per cent of the vegetation is considered to be in poor or worse condition.

The EPA considers that the principal environmental value associated with the vegetation in the development envelope is its value as a vegetation buffer to the Ord River.

As part of its assessment of the proposal, the EPA required the development of an Environmental Management Plan (EMP) that details the measures to be undertaken to prevent the proposal from having a significant environmental impact. The EPA considers that the EMP is important in ensuring the Ord River is protected from significant impacts.

Riparian zone management

The EPA recognises the importance of vegetated buffers in protecting water resources from contamination from surrounding land use. Where there are multiple contamination barriers (in addition to the buffer) a buffer of 100 metres has long been considered appropriate to protect water resources (DoW 2006).

The proponent has proposed to establish a minimum of 100 metre setback between the Ord River and the boundary of irrigated fields, for the purpose of maintaining riparian function and a biodiversity corridor (KBC 2017b).

Weed management

The EPA notes that the EMP includes the retention of a minimum 100 metre vegetation buffer between the irrigated fields and the Ord River (except for two proposed easements for water pumping infrastructure). This buffer will help to maintain the riparian vegetation along this section of the Ord River, which has been historically been impacted by weeds.

The proponent will manage weeds within the freehold boundary as required under the *Biosecurity and Agriculture Management Act 2007*. Vegetation condition monitoring and weed coverage is a requirement and has been addressed in the EMP.

Groundwater

The development area is not considered to be at high risk of groundwater salinity. It is not expected that deep drainage for salinity mitigation will be required for the Carlton Plain Stage 1 project. The Soil Commissioner has provided advice and suggests that is unlikely acid sulphate soils would be a factor in the Carlton Plain area, due to the nature of the soils and the depth to watertable. The EPA notes that acid sulphate soils are not expected to be exposed.

The proponent has begun groundwater monitoring under the provisions proposed in the EMP. The groundwater monitoring includes the use of existing bores and

regional reference sites, with additional monitoring using dataloggers to help better understand any tidal influence with the Ord River and groundwater.

The ongoing monitoring program includes high intensity bores with dataloggers capturing daily records and low intensity bores that are monitored manually and regionally located reference bores, and will include the broader Carlton Plain and nearby Mantinea Plain bores.

The proponent has committed to groundwater monitoring to be undertaken under the provisions of the EMP will inform future proposed developments on other parts of the Carlton and Mantinea Plains, for which groundwater risk is considered higher than on the Carlton Plain Stage 1 project (KBC 2017b).

The EPA notes that there will be no groundwater pumping and discharge required for project, therefore no direct impacts on groundwater from water removal. The EPA notes that the farm operations are designed to recycle and reuse water and prevent groundwater mounding.

Surface water

The proponent is required to apply for an annual water entitlement (licence) from the DWER. The DWER will assess the application against the requirements of the, *Rights in Water and Irrigation Act 1914* (RiWI Act).

The annual water entitlement required for the Carlton Plain Stage 1 project is 27.6 GL. Crop water usage requirements will be negotiated with the DWER under the RiWI Act water licensing requirements. An operating strategy, including monitoring and reporting requirements, will be agreed under the licence arrangements.

The then Department of Water assessed the impact of the lower Ord River water levels on the Ord River floodplain Ramsar site through the *Ord River surface water allocation plan* (DoW 2013). It found that changes in dry season flow rates expected under the five scenarios studied in the allocation plan will have no significant impact on the range of salinities experienced in the Ord Estuary (KBC 2017a).

The EPA notes that the allocation of 27.6 GL sits within the available surface water allocation under the Ord River surface water allocation plan.

The proponent has committed that there will be no discharge of farm water into the Ord River and the proponent will maintain water quality on the farm to ensure its farm productivity does not decline (KBC 2017b).
The EPA notes that Carlton Plains Stage 1 EMP includes the maintenance of a minimum buffer of 100 metres, as well as management measures such as tailwater recycling and no tailwater discharge to prevent contaminants such as nutrients and pesticides from entering the Ord River.

Floodplain management

The proponent has considered the following flood management techniques into the farm design:

- Flooding from the Ord River - topography falls from east to west, with six metres of natural fall throughout the Stage 1 development area. Farm design complements the existing profile of the area. Pumps and infrastructure are located above the 2006 flood level. No impediments to flood flow are proposed due to the main supply channels following the natural topography of the site and flowing to the west.
- Watershed from vegetation retention areas and House Roof Hill - north of the proposal (House Roof Hill), hillside drains will manage the watershed and contain flows, directing these as close as possible to traditional paths, including the flow of water to the Carlton wetland. South and east sides of the development, the main supply channel and road are located on the 'high line'. The storm water external to the irrigation area naturally flows away from the proposed development, towards the Ord River.
- Internal (farm) storm water management - wet season stormwater will be captured in the farm drainage system and will enter the hillside drainage system. Farm stormwater will not pass through the wetland, and will drain away from the site through the western portion of Carlton Plain into Reedy (also known as Collins) Creek. In the event of unseasonal (dry season) stormwater flows, recycling and pump capacity has been designed to be sufficient to ensure on-farm capture (KBC 2017b).

The EPA considers that proposed measures will ensure floodplain management does not significantly impact on the quality and quantity of stormwater runoff.

Impacts to seasonal wetland

The proponent has committed to protecting the seasonal wetland located to the west of the Carlton Plain Stage 1 project, from clearing under the proposal, with tailwater drainage diverted around the wetland in the dry season, while allowing for stormwater inflow in the wet season. The wetland will remain as an important habitat for native species, including migratory birds.

The EPA notes that the seasonal wetland will not be directly impacted by the proposal and has been excluded from the development envelope. It is the management of the indirect impacts of the proposal on the seasonal wetland that is considered important.

The proponent's management of stormwater flow in the wet and dry season will ensure that farm stormwater does not enter the Carlton wetland. With appropriate farm design, drainage out of the wetland will be prevented in the dry season via the construction of control structures, enabling a permanent wet area for native fauna. Wetland supply and exit drains will be designed to complement existing slopes into the wetland. There will be no irrigation drainage water (tailwater) entering the wetland (KBC 2017b).

The EPA notes that the EMP also includes weed management within the wetland. The EPA also notes that the application of a condition requiring an EMP will ensure that water quality will be protected.

Decommissioning and rehabilitation

The proponent proposes in the event that the irrigated area is to be decommissioned, the land will be returned to its current dryland farming use, with the intention of improving the comparative condition and health of native pastures and reducing weed coverage. Management will include landform rectification to the natural state, topsoil retention erosion and weed control. Rehabilitation to native vegetation condition equal to or better than the baseline dry season condition recorded by Woodman (2016) will be undertaken within five years, through natural regeneration (topsoil seedbank) or direct seeding (KBC 2017b).

Management of proposal

The EPA considers that given the measures taken to avoid impacts by excluding the seasonal wetland from the development envelope, and establishing the Carlton Plain Stage 1 project on areas of degraded vegetation means that direct impacts of the proposal are unlikely to be significant. The EPA considers that the implementation of the EMP to avoid indirect impacts is important. The recommended conditions require the proponent to implement the version of the EMP that has been developed following the public review.

The outcomes required by the EPA's recommended conditions are intended to align with the Ord River surface water allocation plan so that the proponent's management of water through the operating strategy that is also required by the RiWI Act can be consistent with the EPA's recommended conditions for the proposal.

Summary

The EPA has paid particular attention to the:

- *Statement of Environmental Principles, Factors and Objectives* (EPA 2016);
- *Environmental Factor Guideline – Flora and Vegetation* (EPA 2016a)
- *Environmental Factor Guideline – Hydrological Processes* (EPA, 2016b)
- *Environmental Factor Guideline – Inland Waters Environmental Quality* (EPA, 2016c)
- *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016d)
- the application of the mitigation hierarchy to avoid and minimise the impacts to flora and vegetation
- small extent of clearing of native vegetation.

The EPA considers, having regard to the relevant EP Act principles and environmental objective for Flora and Vegetation, Hydrological Processes and

Internal Waters Environmental Quality, that the impacts to this factors are manageable and would no longer be significant, provided there is:

- maintenance or improvement of the ecological condition of the riparian vegetation along the Ord River, and in vegetation retention zones including House Roof Hill and Carlton wetland
- minimization of the impacts of irrigated cropping on adjacent vegetated areas
- maintenance or improvement of the ecological corridor values of retained vegetation, while minimising weed infestation risks
- control of impacts through the authorised extent in schedule 1 of the Recommended Environmental Conditions (Appendix 4)
- implementation of recommended condition 6 to maintain the riparian vegetation zone and the buffer outside of the Development Envelope through the implementation of an Environmental Management Plan (Condition 6).

4.2 Terrestrial Fauna

EPA objective

The EPA's environmental objective for this factor is to 'protect terrestrial fauna so that biological diversity and ecological integrity are maintained'.

Relevant policy and guidance

The EPA considers that the following current environmental policy and guidance is relevant to its assessment of the proposal for this factor:

- *Environmental Factor Guideline – Terrestrial Fauna* (EPA 2016e);
- *Technical Guidance – Sampling methods for terrestrial vertebrate fauna* (EPA 2016f).

The considerations for EIA for this factor are outlined in *Environmental Factor Guideline – Terrestrial Fauna* (EPA 2016e).

EPA assessment

The proposal would involve development of up to 3,055 ha of land and would result in some loss of fauna habitat. Terrestrial fauna could also be impacted from increased light, noise, and vibration from construction and operational activities.

Fauna habitats

Carlton Plain Stage 1 development area contains seven broad fauna habitat types. Grasslands is the dominant habitat type in the development area. The proponent has mapped Carlton Plain Stage 1, following the 2016 dry season survey. Table 3 summarises areas of each habitat type (KBC 2017a).

Table 3: Fauna habitat types mapped

Fauna Habitat	% of Carlton Plain Stage 1
Grasslands	39.9%
Savannah woodlands	33.8%
Floodplains	20.7%
Stony plains	3.2%
Creeklines	0.9%
Seasonal wetlands	0.6%
Sandstone hills	0.5%
Outside of mapped area	0.4%
Cleared Land	0.1%

As noted under Flora and Vegetation, much of the vegetation within the development envelope is in poor condition or worse which reduces its value as fauna habitat. The main habitat types to be impacted (grasslands, savannah woodlands, and floodplains) extend outside the development envelope and across the wider region.

Conservation significant fauna

A fauna assessment was undertaken at a Level 1 standard in line with the EPA's *Guidance Statement No. 56* (EPA 2004b).

Conservation significant fauna known to be present within the region include migratory birds and (non-terrestrial) aquatic fauna in the Ord River. Modification of the landscape through the introduction of irrigated crops and additional water sources has been shown to increase native birds and mammals, particularly migratory birds (KBC 2017b).

The proposal has been designed to avoid direct impacts on the seasonal wetland and it will not be disturbed. The main potential impact on the seasonal wetland relates to the potential in-flow of tailwater should drainage not be carefully managed. The proponent will ensure that tailwater is recycled as required, and will not be stored in or diverted to the wetland area (KBC 2017b).

With year-round flow of the Ord River and associated wetlands, and the creation of additional migratory bird habitat through the practice of irrigation, the impact on migratory birds is not considered to be significant (KBC 2017b).

The EPA notes that the majority of the disturbance associated with the proposal is to areas that have been impacted and are in poor quality, providing limited fauna habitat.

Pest fauna species

The proponent will use management based provisions to control pest or plague fauna as required to minimise negative environmental impacts, within the statutory requirements of the *Biosecurity and Agriculture Management Act 2007* or the *Wildlife Conservation Act 1950.* Management targets will include:

- negative vegetation and habitat impacts in vegetation and riparian zones are reduced to a sustainable or locally acceptable level
- control pest or plague fauna through restricting access (where possible) including mustering, or culling if necessary (with appropriate licences if required).

Monitoring will include regular visual monitoring as part of ongoing farm management and recording pest fauna damage and numbers.

Reporting will include summary information in the Annual Environmental Report of any fauna pest control undertaken. Mitigation efforts and outcomes will be documented and pest fauna management will be reported to the Department of Biodiversity, Conservation, and Attractions, and licences obtained if required (KBC 2017b).

Management of proposal

The EPA considers it important that the indirect impacts of the proposal are managed to prevent off-site impacts on areas of more important fauna habitat including the Ord River. The EPA notes that the EMP includes the maintenance of a minimum 100 metre buffer between the Ord River as well as other measures to prevent impacts from habitat destruction in vegetation and riparian zones.

The EPA considers the measures contained in the Carlton Plains Stage 1 EMP are appropriate to prevent significant impacts on Terrestrial Fauna as a result of implementation of the proposal. The EPA therefore recommends that a condition is applied that requires the implementation of this EMP.

Summary

The EPA has paid particular attention to the:

- *Environmental Factor Guideline – Terrestrial Fauna* (EPA 2016e).
- mitigation measures proposed by the proponent to avoid and minimise impacts to fauna and fauna habitat.

The EPA considers, having regard to the relevant EP Act principles and environmental objective for Terrestrial Fauna that the impacts to this factor are manageable and would no longer be significant, provided there is:

- maintenance or enhancement of habitat for terrestrial and avian fauna species, in particular migratory birds.
- control through the authorised extent in schedule 1 of the Recommended Environmental Conditions (Appendix 4).

- implementation of recommended condition 6 to maintain habitat and the buffer outside of the Development Envelope through the implementation of an Environmental Management Plan.

4.3 Terrestrial Environmental Quality

EPA objective

The EPA's environmental objective for this factor is *to maintain the quality of land and soils so that environmental values are protected.*

Relevant policy and guidance

The EPA considers that the following current environmental policy and guidance is relevant to its assessment of the proposal for this factor:

- *Environmental Factor Guideline – Terrestrial Environmental Quality* (EPA 2016g).

The considerations for EIA for this factor are outlined in Environmental Factor *Guideline – Terrestrial Environmental Quality* (EPA 2016g).

EPA assessment

The proponent has arranged an efficient farm design in relation to flood water management and minimising the risk of water erosion. The design includes careful water management, drainage and avoiding scour. Wind erosion is not considered to be a substantial risk due to crop coverage during dry season periods of higher winds (KBC 2017b).

The proponent has a detailed irrigation design that has been developed to meet the size requirement for the farm and applicable gradient to soil type. The design addresses drainage channel design, stormwater management, reuse and recycling of tailwater, monitoring of water application, and the use of soil moisture probes to measure optimum application times for irrigation (KBC 2017b).

These measures are designed to avoid groundwater levels rising and thereby minimising the risk of impacts on soil salinity.

The proponent has committed to manage the risk of soil sodicity through trigger and threshold targets set out in the EMP.

The EPA notes that the EMP includes ongoing monitoring and investigations to ensure the trigger and threshold targets are appropriate based on the knowledge gained from the proposal being in operation.

The proponent has committed to undertake baseline soil sampling at the projects commencement. If the site was to be decommissioned, the proponent commits to the remediation of soils to baseline quality range by utilising appropriate soil treatments (KBC 2017b).

Summary

The EPA has paid particular attention to the:

- *Environmental Factor Guideline – Terrestrial Environmental Quality* (EPA 2016g)
- mitigation measures proposed by the proponent to avoid and minimise environmental impacts related to soils, drainage and salinity

The EPA considers, having regard to the relevant EP Act principles and environmental objective for Terrestrial Environmental Quality that the impacts to this factor are manageable and would no longer be significant, provided there is:

- maintenance of soil productivity and no decline in soil quality — in particular no increase in surface and sub-surface salinity on Carlton Plain Stage 1 and adjacent areas — as a direct result of the irrigation development.
- control through the authorised extent in schedule 1 of the Recommended Environmental Conditions (Appendix 4).
- implementation of recommended condition 6 to maintain the riparian vegetation zone and the buffer outside of the Development Envelope through the implementation of an Environmental Management Plan.
- implementation of recommended condition 6 to minimise Soil erosion (scour) where possible on fields, flood protection levees, drainage and other significant infrastructure affecting project environmental outcomes.

4.4 Social Surroundings

EPA objective

The EPA's environmental objective for this factor is to 'protect social surroundings from significant harm'.

Relevant principles, policy and guidance

The EPA considers that the following current environmental policy and guidance is relevant to its assessment of the proposal for this factor:

- *Environmental Factor Guideline – Social Surroundings* (EPA 2016h)

The considerations for EIA for this factor are outlined in *Environmental Factor Guideline – Social Surroundings* (EPA 2016h).

EPA assessment

Aboriginal heritage

The development envelope sits within an area over which the Miriuwung Gajerrong people have been determined to have title. The Ord Final Indigenous Land Use Agreement was signed between the Government of Western Australia, the Miriuwung Gajerrong Traditional Owners and private sector developer interests in

2005. The Ord Final Agreement provided for Carlton Plain (and other areas) to become freehold land for the development of agricultural projects.

The proponent is required to comply with the requirements and expectations of the Ord Final Agreement and the *Aboriginal Heritage Act 1972* in relation to Traditional Owners' rights. In June 2017 an Aboriginal heritage clearance with MG Corporation (the administrative body of the Miriuwung Gajerrong people) was obtained by the proponent.

The *Ord River surface water allocation plan* (DoW 2013) notes that access to the Ord River for traditional activities and the flow regimes of the river are important for the Traditional Owners.

The proponent is seeking a water licence that is in accord with the Ord River surface water allocation plan. The proponent has also indicated that the proposal will not restrict public access to the Ord River (KBC 2017a).

Visual amenity

Tourism on the lower Ord River is an important aspect of the East Kimberley economy, including use of the Mambi Island camping facilities maintained by the Shire of Wyndham East Kimberley (SWEK). This campsite is located within the riparian reserve on the southern bank of the Ord River. Visual amenity of the Ord River relating to the Stage 1 Carlton Plain includes public access to recreational fishing and camping in the lower Ord River area (KBC 2017a).

The EPA does not anticipate there will be any significant amenity issues in relation to the Ord River, as Carlton Plain sits 20 meters higher than the river level thus there will be minimal direct visual impact. However, river users will have sight of pumping infrastructure (KBC 2017b).

Summary

The EPA has paid particular attention to the:

- *Environmental Factor Guideline – Social Surroundings*
- Direct visual impact to the Ord River.
- Ord Final Indigenous Land Use Agreement, signed by Traditional Owners in 2005, allows for the agricultural development occurring in the Ord River region.

The EPA considers, having regard to the relevant EP Act principles and environmental objective for Social Surroundings that the impacts to this factor are manageable and would no longer be significant, provided there is:

- control through authorised extent in schedule 1 of the Recommended Environmental Conditions (Appendix 4)

5. Conclusion

In conclusion, the EPA has considered the assessment in the previous sections and taken a holistic view of the likely residual impacts of the proposal. The EPA has considered the degree of connectivity and inter-relatedness of processes operating across systems and communities that make up the environment.

From its assessment of the proposal — including how the environment responds to pressures generated by irrigated agriculture activities — the EPA has taken into consideration:

- The impacts to all the key environmental factors.
- Its confidence in the proponent's predictions and proposed mitigation measures including application of mitigation hierarchy.
- The five EP Act principles and the EPA's objectives for the key environmental factors.
- Its view that the impacts to the key environmental factors are manageable, provided the recommended condition requiring implementation of the Carlton Plains Stage 1 Environmental Management Plan to meet defined Environmental Protection Outcomes is imposed.

Given the above, the EPA has concluded that the proposal is environmentally acceptable and therefore recommends that the proposal may be implemented subject to the conditions recommended in Appendix 4.

6. Recommendations

The EPA recommends that the Minister for Environment notes:

1. The proposal assessed is for the construction and operation of the Carlton Plain Stage 1 irrigated agriculture project which would require up to 3,055 ha of clearing.
2. The key environmental factors identified by the EPA in the course of its assessment are:
    a) Flora and Vegetation
    b) Hydrological Processes and Inland Waters Environmental Quality
    c) Terrestrial Fauna
    d) Terrestrial Environmental Quality
    e) Social Surroundings as set out in Section 4.
3. The EPA has concluded that the proposal may be implemented, provided the implementation of the proposal is carried out in accordance with the recommended conditions and procedures set out in Appendix 4. Matters addressed in the conditions include the implementation of the Environmental Management Plan that aims to:
    a) maintain and improve the ecological condition of the riparian vegetation along the Ord River, vegetation retention zones, including House Roof Hill and Carlton wetland
    b) minimise impacts of irrigated cropping on adjacent vegetated areas
    c) implement riparian zone management
    d) maximise the ecological corridor values of retained vegetation, while minimising weed infestation
    e) maintain soil productivity and ensure no decline in soil quality, in particular, no increase in surface and sub-surface salinity on Carlton Plain Stage 1 and adjacent areas
    f) maintain habitat for terrestrial and avian fauna species, in particular migratory birds
    g) comply with the provisions of the Ord River surface water allocation plan (DoW 2013) in relation to the Carlton-Mantinea sub-area; to ensure flood management does not negatively impact upon environmental values or farm infrastructure; and to ensure that depth to groundwater under Carlton Plain is not negatively impacted by the development of the Stage 1 project
    h) protect the Carlton wetland, Ord River and downstream wetland areas, including the Parry Lagoons Nature Reserve and the lower Ord floodplain Ramsar site from the impacts of the agricultural development.

Appendix 1

References

Department of Water, 2006, *Water Quality Protection Note No. 6: Vegetation Buffers to Sensitive Water Resources*, Department of Water, Perth, WA.

Department of Water, 2013, *Ord River surface water allocation plan*, Department of Water, Perth.

EPA 2004a, *Guidance Statement No. 51 – Guidance for the assessment of environmental factors – terrestrial flora and vegetation surveys for environmental impact in Western Australia*. Environmental Protection Authority, Perth, WA.

EPA 2004b, *Guidance for the assessment of environmental factors 56 - Terrestrial fauna surveys for environmental impact assessment in WA*. Environmental Protection Authority, Perth, WA.

EPA 2016, *Statement of Environmental Principles, Factors and Objectives*, Environmental Protection Authority, Perth, WA.

EPA 2016a, *Environmental factor guideline – Flora and vegetation*, Environmental Protection Authority, Perth, WA.

EPA 2016b, *Environmental factor guideline – Hydrological processes*, Environmental Protection Authority, Perth, WA.

EPA 2016c, *Environmental factor guideline – Inland waters environmental quality*, Environmental Protection Authority, Perth, WA.

EPA 2016d, *Technical guide – Flora and vegetation surveys for environmental impact assessment*, Environmental Protection Authority, Perth, WA.

EPA 2016e, *Environmental factor guideline – Terrestrial fauna*, Environmental Protection Authority, Perth, WA.

EPA 2016f, *Technical guidance – Sampling methods for terrestrial vertebrate fauna*, Environmental Protection Authority, WA

EPA 2016g, *Environmental factor guideline – Terrestrial environmental quality*, Environmental Protection Authority, Perth, WA.

EPA 2016h, *Environmental factor guideline – Social Surroundings*, Environmental Protection Authority, Perth, WA.

Kimberley Boab Consulting Pty Ltd, KBC 2017a, *Carlton Plain Stage 1 – Referral to EPA, Supplementary Report, Project Description and Environmental Factors*, Report prepared for Kimberley Agricultural Investment, Kununurra, WA.

Kimberley Boab Consulting Pty Ltd, KBC 2017b, *Carlton Plain Stage 1 – Environmental Management Plan*, Report prepared for Kimberley Agricultural Investment, Kununurra, WA.

Woodman Environmental, 2016, *Mantinea and Carlton Plain Project Level 1 Flora, Vegetation and Fauna Assessment*, Prepared for Kimberley Agricultural Investment Pty Ltd, Perth, WA.

Appendix 2

Consideration of principles

EP Act principle	Consideration
1. The precautionary principle 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 application of this 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.	In considering this principle, the EPA notes that Flora and Vegetation, Hydrological Processes and Inland Waters Environmental Quality; Terrestrial Fauna; Terrestrial Environmental Quality; and Social Surroundings could be significantly impacted by the proposal. The assessment of these impacts is provided in this report. Investigations into the biological and physical environment undertaken by the proponent have provided sufficient scientific certainty to assess the risks and identify measures to avoid or minimise impacts. The EPA has recommended conditions to ensure these measures are implemented by the proponent. From its assessment of this proposal the EPA has concluded that if the recommended conditions are imposed on the implementation of the proposal, there is no threat of serious or irreversible damage.
2. The principle of intergenerational equity *The present generation should ensure that the health, diversity and productivity of the environment is maintained and enhanced for the benefit of future generations.*	The EPA notes that the proponent has taken measures to avoid and minimise impacts of the proposal on the environment. Additionally, the EPA has recommended conditions to manage impacts to the key environmental factors identified during the course of this assessment. From its assessment of this proposal the EPA has concluded that provided the recommended conditions are imposed on the implementation of the proposal, the environmental values will be protected and that the health, diversity and productivity of the environment will be maintained for the benefit of future generations.
3. The principle of the conservation of biological diversity and ecological integrity Conservation of biological diversity and ecological integrity should be a fundamental consideration.	In considering this principle, the EPA notes that the proposal will result in impacts to Flora and Vegetation and Terrestrial Fauna. In assessing this proposal, the EPA has considered these impacts and taken into consideration measures proposed by the proponent to avoid and minimise impacts to the affected values. From its assessment of this proposal the EPA has concluded that provided the recommended conditions are imposed on the

EP Act principle	Consideration
	implementation of the proposal, the proposal will not compromise the biological diversity and ecological integrity of the affected areas.
4. Principles relating to improved valuation, pricing and incentive mechanisms *(1)* Environmental factors should be included in the valuation of assets and services. *(2)* The polluter pays principles – those who generate pollution and waste should bear the cost of containment, avoidance and abatement. *(3)* The users of goods and services should pay prices based on the full life-cycle costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste. *(4)* Environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structure, including market mechanisms, which enable those best placed to maximise benefits and/or minimize costs to develop their own solution and responses to environmental problems.	In considering this principle, the EPA notes that the proponent will take responsibility for preventing waste and pollution, and that rehabilitation and ongoing management of the proposal would be the responsibility of the proponent. The EPA has had regard to this principle during the assessment of the proposal.
5. The principle of waste minimisation All reasonable and practicable measures should be taken to minimise the generation of waste and its discharge into the environment.	In considering this principle, the EPA notes that the proponent's management approach for its irrigated agricultural development centres around minimising water wastage (tailwater), having direct benefit to the environment in terms of abstraction impacts and downstream pollution. Tailwater recycling has been factored into the proponent's development planning and will be implemented continuously. The EPA has had regard to this principle during the assessment of the proposal.

Appendix 3

Evaluation of other environmental factors

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments	Evaluation of why the factor is not a key environmental factor
LAND			
Landforms	• The proposed development area includes the alluvial plains. The plains exhibit a low-grade topography, for which contouring for irrigation development will occur to ensure water distribution and drainage can be achieved. • Impacts to the distinctive House Roof Hill landform. • Impacts to the stability and integrity of House Roof Hill.	**Public comments** • Recommend fencing reserves off from cattle, doing infill tree replanting of native species to halt erosion as well as ensure a strong buffer (500m) between the bank of the river and the irrigated agriculture area to be cleared. • Trees could be planted along the whole river reach of the project, in the 500 m buffer, reducing the potential for groundwater related downstream water quality impacts, including erosion.	Landforms was not identified as a preliminary key environmental factor at the level of assessment. Having regard to the: • Detailed farm planning has been undertaken, with natural contours underpinning the irrigation proposal. • Drainage from House Roof Hill will be managed via hillside drains. • Minimal clearing of foothill vegetation will be required. • Avoidance of impacts to the landform of House Roof Hill. • Avoidance of the impacts to the changes of the Ord River and its banks. The EPA considers that it is unlikely that the proposal would have a significant impact on Landforms and can be managed to meet the EPA's environmental objective. Accordingly, the EPA did not consider Landforms to be a key environmental factor at the conclusion of its assessment.

Appendix 4

Identified Decision-Making Authorities and Recommended Environmental Conditions

Identified Decision-making Authorities

Section 44(2) of EP Act specifies that the EPA's report must set out (if it recommends that implementation be allowed) the conditions and procedures, if any, to which implementation should be subject. This Appendix contains the EPA's recommended conditions and procedures.

Section 45(1) requires the Minister for Environment to consult with decision-making authorities (DMAs), and if possible, agree on whether or not the proposal may be implemented, and if so, to what conditions and procedures, if any, that implementation should be subject.

The following decision-making authorities have been identified:

Decision-making authority	Legislation (and Approval)
1. Minister for Environment	*Wildlife Conservation Act 1950*
2. Minister for Water	*Rights in Water and Irrigation act 1914* • Water abstraction licence • Bed banks permits
3. Minister for Aboriginal Affairs	*Aboriginal Heritage Act 1972* • Section 18 clearances
4. Minister for Lands	*Land Administration Act 1997* • Easements on crown land for pumping stations

Note: In this instance, agreement is required with DMA 1-4 since these DMAs are a Ministers.

Statement No. xxx

RECOMMENDED ENVIRONMENTAL CONDITIONS

STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED
***(Environmental Protection Act 1986*)**

CARLTON PLAIN STAGE 1

Proposal:	Clearing and development of 3,055ha between House Roof Hill and the Ord River, for the purpose of surface and pressurised irrigated agricultural cropping which may include grains, cotton, perennial horticulture and other crops.
Proponent:	Kimberley Agricultural Investment Pty Ltd Australian Company Number 154 270 194
Proponent Address:	Lot 398 Moonamang Road, Kununurra WA 6743
Assessment Number:	2126

Report of the Environmental Protection Authority: 1614

Pursuant to section 45 of the *Environmental Protection Act 1986* it has been agreed that the proposal described and documented in Table 1 of Schedule 1 may be implemented and that the implementation of the proposal is subject to the following implementation conditions and procedures:

1 Proposal Implementation

1-1 When implementing the proposal, the proponent shall not exceed the authorised extent of the proposal as defined in Table 2 in Schedule 1, unless amendments to the proposal and the authorised extent of the proposal have been approved under the EP Act.

2 Contact Details

2-1 The proponent shall notify the CEO of any change of its name, physical address or postal address for the serving of notices or other correspondence within twenty eight (28) days of such change. Where the proponent is a corporation or an association of persons, whether incorporated or not, the postal address is that of the principal place of business or of the principal office in the State.

3 Time Limit for Proposal Implementation

3-1 The proponent shall not commence implementation of the proposal after five (5) years from the date on this Statement, and any commencement, prior to this date, must be substantial.

3-2 Any commencement of implementation of the proposal, on or before five (5) years from the date of this Statement, must be demonstrated as substantial by providing the CEO with written evidence, on or before the expiration of five (5) years from the date of this Statement.

4 Compliance Reporting

4-1 The proponent shall prepare, and maintain a Compliance Assessment Plan which is submitted to the CEO at least six (6) months prior to the first Compliance Assessment Report required by condition 4-6, or prior to implementation of the proposal, whichever is sooner.

4-2 The Compliance Assessment Plan shall indicate:

(1) the frequency of compliance reporting;

(2) the approach and timing of compliance assessments;

(3) the retention of compliance assessments;

(4) the method of reporting of potential non-compliances and corrective actions taken;

(5) the table of contents of Compliance Assessment Reports; and

(6) public availability of Compliance Assessment Reports.

4-3 After receiving notice in writing from the CEO that the Compliance Assessment Plan satisfies the requirements of condition 4-2 the proponent shall assess compliance with conditions in accordance with the Compliance Assessment Plan required by condition 4-1.

4-4 The proponent shall retain reports of all compliance assessments described in the Compliance Assessment Plan required by condition 4-1 and shall make those reports available when requested by the CEO.

4-5 The proponent shall advise the CEO of any potential non-compliance within seven (7) days of that non-compliance being known.

4-6 The proponent shall submit to the CEO the first Compliance Assessment Report fifteen (15) months from the date of issue of this Statement addressing the twelve (12) month period from the date of issue of this Statement and then

annually from the date of submission of the first Compliance Assessment Report, or as otherwise agreed in writing by the CEO.

The Compliance Assessment Report shall:

(1) be endorsed by the proponent's Chief Executive Officer or a person delegated to sign on the Chief Executive Officer's behalf;

(2) include a statement as to whether the proponent has complied with the conditions;

(3) identify all potential non-compliances and describe corrective and preventative actions taken;

(4) be made publicly available in accordance with the approved Compliance Assessment Plan; and

(5) indicate any proposed changes to the Compliance Assessment Plan required by condition 4-1.

5 Public Availability of Data

5-1 Subject to condition 5-2, within a reasonable time period approved by the CEO of the issue of this Statement and for the remainder of the life of the proposal the proponent shall make publicly available, in a manner approved by the CEO, all validated environmental data (including sampling design, sampling methodologies, empirical data and derived information products (e.g. maps)) relevant to the assessment of this proposal and implementation of this Statement.

5-2 If any data referred to in condition 5-1 contains particulars of:

(1) a secret formula or process; or

(2) confidential commercially sensitive information;

the proponent may submit a request for approval from the CEO to not make these data publicly available. In making such a request the proponent shall provide the CEO with an explanation and reasons why the data should not be made publicly available.

6 Operational Environmental Management Plan Implementation

6-1 The Proponent shall ensure implementation of the proposal achieves the following environmental outcomes:

(1) Avoid, where possible, and minimise direct and indirect impacts so that the proposal does not cause long term impacts on the health or cover of the riparian vegetation.

(2) Avoid, where possible, and minimise direct and indirect impacts so that the proposal does not cause long term impacts to the environmental values of the Ord River.

(3) Avoid, where possible, and minimise direct and indirect impacts so that the proposal does not cause long term impacts on Aboriginal heritage values.

6-2 The proponent shall implement the *Carlton Plain Stage 1 Environmental Management Plan* (Rev 0, February 2018) (the Plan), until the CEO has confirmed by notice in writing that the Plan meets the environmental outcomes required by condition 6-1.

6-3 The proponent shall implement the most recent version of the Plan which the CEO has confirmed by notice in writing, addresses the requirements of condition 6-1.

6-4 In the event that monitoring carried out under the Plan, determines that any of the environmental outcomes set in condition 6-1 are not being achieved by implementing the proposal, the Proponent shall:

(1) immediately implement the contingency management actions specified in the Plan, and continue implementation of those actions until the CEO has determined that the environmental outcomes set in condition 6-1 are being achieved and will continue to be achieved;

(2) investigate to determine the likely cause of the environmental outcomes set in condition 6-1 not being achieved;

(3) within 7 days of determining that any of the environmental outcomes set in condition 6-1 are not being achieved, report the non-achievement to the CEO;

(4) within seven 21 days of determining that any of the environmental outcomes set in condition 6-1 are not being achieved submit to the CEO a report detailing the following:

(a) the results of the monitoring that led to the determination that any of the environmental outcomes set in condition 6-1 are not being achieved;

(b) the investigation being undertaken as required by condition 6-4(2) into the cause of the environmental outcomes set in condition 6-1 not being achieved; and

(c) any contingency management actions implemented by the proponent following determination that any of the environmental outcomes set in condition 6-1 are not being achieved,

(5) provide a report detailing the findings of the investigation required by condition 6-4(2) to the CEO within 60 days of first determining that any of the environmental outcomes set in condition 6-1 are not being achieved.

6-5 The proponent shall submit to the CEO annual compliance assessment reports in accordance with condition 4-6 which includes:

(1) all monitoring data and reportable incidents required by conditions 6-3 and 6-4;

(2) an analysis and interpretation of monitoring data to demonstrate compliance with the requirements of condition 6-1; and

(3) an assessment of the effectiveness of monitoring, management and contingency measures implemented to ensure compliance with the requirements of conditions 6-1.

6-6 Any changes to trigger criteria, threshold criteria, monitoring, trigger level actions, threshold contingency actions or reporting and/or any changes to management targets, management actions, monitoring and reporting in the Plan must be approved by the CEO in writing.

Schedule 1

Table 1: Summary of the Proposal

Proposal Title	Carlton Plain Stage 1
Short Description	Clearing and development of 3,055 ha between House Roof Hill and the Ord River, for the purpose of surface and pressurised irrigated agricultural cropping which may include grains, cotton, perennial horticulture and other crops.

Spatial coordinates for the boundaries of the proposal (MGA Zone 50)

Coordinates defining the boundaries shown in Figure 1 are held by the Department of Water Environmental Regulation, Document Reference Number DWERDA-024955

Table 2: Location and authorised extent of physical and operational elements

Column 1	Column 2	Column 3
Element	**Location**	**Authorised Extent**
Surface irrigation of annual crops	Figure 1	Clearing of up to 1,735 ha
Pressurised irrigation of perennial crops	Figure 1	Clearing of up to 510 ha; Pressurised irrigation infrastructure to be constructed where soils do not allow for surface (flood) irrigation.
Infrastructure	Figure 1	Clearing of up to 810 ha; Within Stage 1 development envelope
Annual irrigation water abstraction	Figure 1	27.6 gigalitres (GL) from the Ord River system

Table 3: Abbreviations and Definitions

Acronym, abbreviation or term	Definition
CEO	The Chief Executive Officer of the Department of the Public Service of the State responsible for the administration of section 48 of the *Environmental Protection Act 1986*, or their delegate.
Environmental Management Plan Provisions	Key component of the Environmental Management Plan which are the legal requirements to be met by the proponent in implementing the Environmental Management Plan.
EPA	Environmental Protection Authority
EP Act	*Environmental Protection Act 1986*
ha	Hectare
Outcome-based provisions	
Outcome	Proposal-specific, desired state for an environmental factor/s to be achieved from the implementation of outcome-based provisions

Acronym, abbreviation or term	Definition
Trigger criteria	Criteria that provide an early warning that the threshold criteria may not be met.
Threshold criteria	Limit of acceptable impact beyond which there is likely to be a significant effect on the environment, which indicates the environmental outcome is not being met.
Monitoring	Monitoring to determine if trigger criteria and threshold criteria are exceeded.
Trigger level actions	Actions to be implemented in the event that trigger criteria are exceeded.
Threshold contingency actions	Actions to be implemented in the event that threshold criteria are exceeded.
Reporting	Reporting of monitoring results against trigger criteria and threshold criteria to demonstrate that the outcome/s have been met.
Management-based provisions	
Management actions	Risk-based actions to be implemented to meet the environmental objective.
Management targets	Targets to determine the effectiveness of the management actions.
Monitoring	Monitoring to measure the effectiveness of management actions.
Reporting	Reporting of implementation of management actions and reporting on the effectiveness of management actions to demonstrate that the objective/s have been met.

Figure (attached)

Figure 1 Carlton Plain Stage 1 Development Envelope

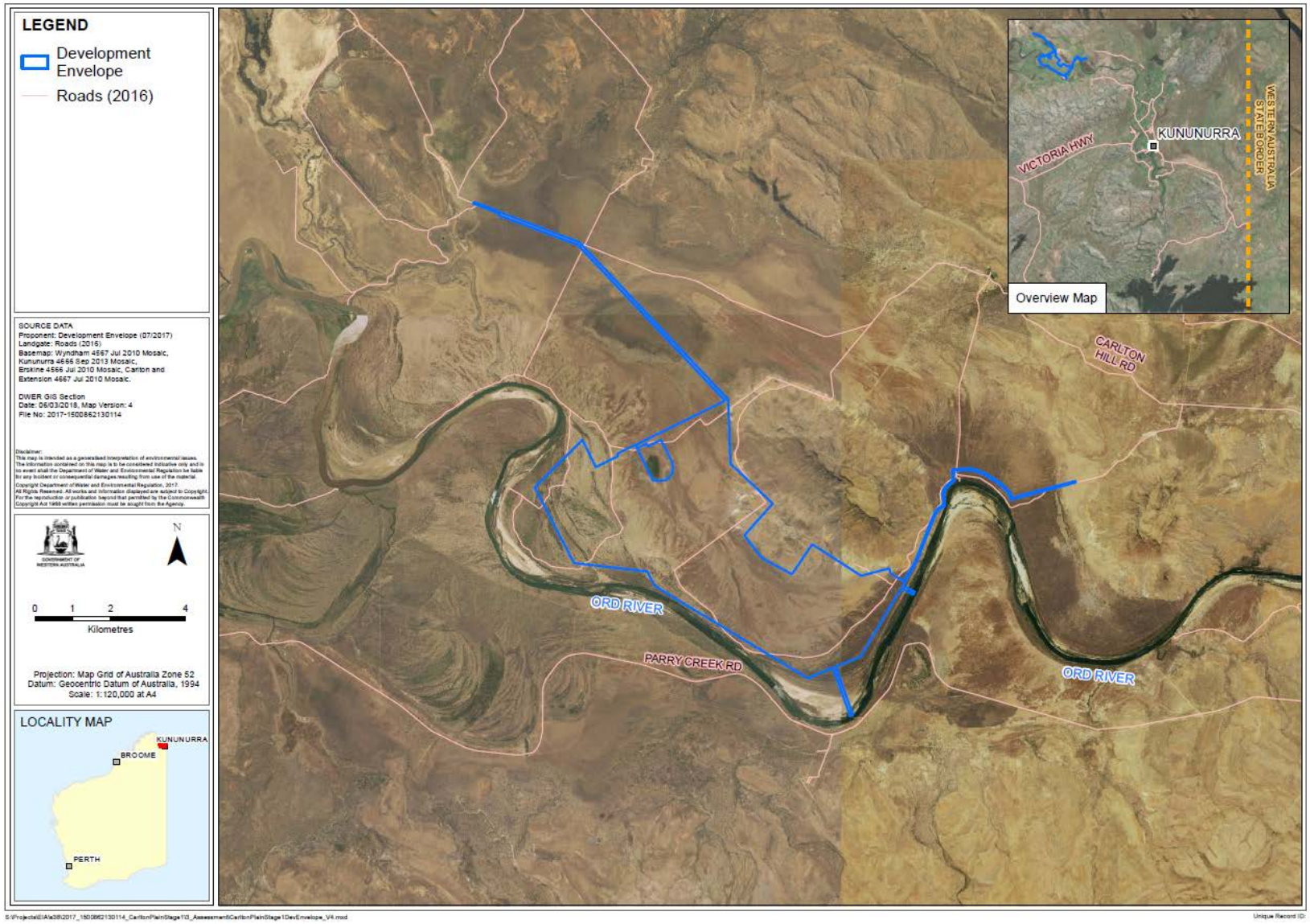

Figure 1 Carlton Plain Stage 1 Development envelope