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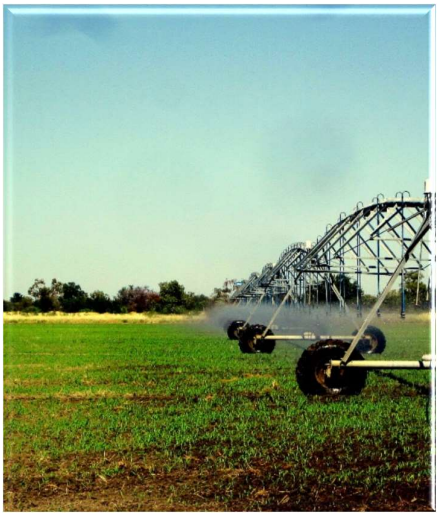

GOGO STATION – SURFACE IRRIGATION DEVELOPMENT PROPOSAL

REFERRAL TO ENVIRONMENTAL PROTECTION AUTHORITY: SUPPORTING DOCUMENTATION

August 2017

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DOCUMENT CONTROL

Project Name	*Supporting Documentation to Accompany Clearing Permit Application for "Gogo Station"*
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0	August 2017	Peter Taylor	Initial Issue

EXECUTIVE SUMMARY

Purpose of Project

The overall aim of the Gogo Station's Kimberley Cropping project is to establish an agricultural enterprise of sufficient size to generate a viable agricultural enterprise on Gogo Station. The potential exists for this development to establish interest for other similar projects in the region.

Benefits of Project

The project has been designed with consideration to policy and strategic frameworks including the: Green Paper on Developing Northern Australia (Federal Government); Royalties for Regions (WA Government) and; Western Australian Regional Development Trust. Accordingly, the project represents the potential for the Western Australian Government to realise several strategic objectives including:

- Building capacity in regional communities
- Improving services to regional communities
- Attaining sustainability
- Expanding opportunity
- Growing prosperity
- Delivering economic infrastructure
- Improving water access and management
- Promoting trade and investment, and strengthening the business environment
- Fostering education, research and innovation

These benefits are touched upon within this document and are discussed in detail within the discussion paper.

Project Description

The Gogo Station project involves conversion of selected pastoral land to cropping land to produce a mosaic of crops. These crops are intended to supply export and regional markets and have the competitive advantage of proximity to Asian markets and favourable seasonal conditions available in the Fitzroy River region. Land selection is based on soil types identified on Gogo Station that have the potential to support both dry-land and irrigated cropping.

Figure 1 presents a Preliminary Plan of Subdivision incorporating the area to be excised from Gogo Station Pastoral Lease and converted to a freehold title to enable the development to proceed once agreement with Department of Planning, Lands and Heritage is finalised. The proposed amendment to the stock reserve and access easements are also presented on this plan. Figure 2 presents a schematic plan of the proposed farm development showing potential field outlines and water storages. Final design will be subject to further investigation.

The development can be considered to comprise of two separate Projects, mainly:

- **Project 1:** Clearing and development of land (up to 8,335ha) for up to 25 surface irrigation fields (covering 4,335ha) and associated infrastructure. Surface irrigation

water is to be sourced from overland flow from within Gogo Station and overbank flows from the Margaret River.

- **Project 2:** Clearing and cultivation for seven centre pivot fields (665ha) based on accessing a total of 5,000 ML of groundwater from the Limestone aquifers that are currently being used to produce a range of hay and forage crops to improve cattle production on Gogo Station.

The Projects are considered separate as each development component is to utilise different resources (surface water vs groundwater) and will require different infrastructure (surface water channels and storages vs bores and below ground pipelines). Each Project will therefore incorporate distinct design characteristics and environmental considerations. The current application relates to the development of Project 1.

A separate referral will be prepared and lodged with WA EPA and the Department of Environment and Water Regulation for Project 2.

Relevant water applications for each section have been lodged with the WA Department of Water. Further information on water resource management is available in the attached Water Resource Plan.

Environmental Impact Assessment

The proposed agricultural development may have environmental risks which will need to be addressed. Preliminary assessment has indicated that the majority of identified risks are manageable to reduce their overall environmental impact. A high standard of project design and implementation of ongoing monitoring will also be required to ensure environmental values are protected. These measures are considered to satisfy the requirements of the Environmental Protection Act 1986.

The Harris family has an extensive background in managing agricultural enterprises in profitable and environmentally responsible systems. The Proponent is suitably qualified to manage Gogo Station Agricultural proposals to high operating standards. SMK Consultants is an experienced consultancy firm, which will continue to work closely with the Harris family throughout the course of the development application and approval process to ensure environmental values of the region are maintained.

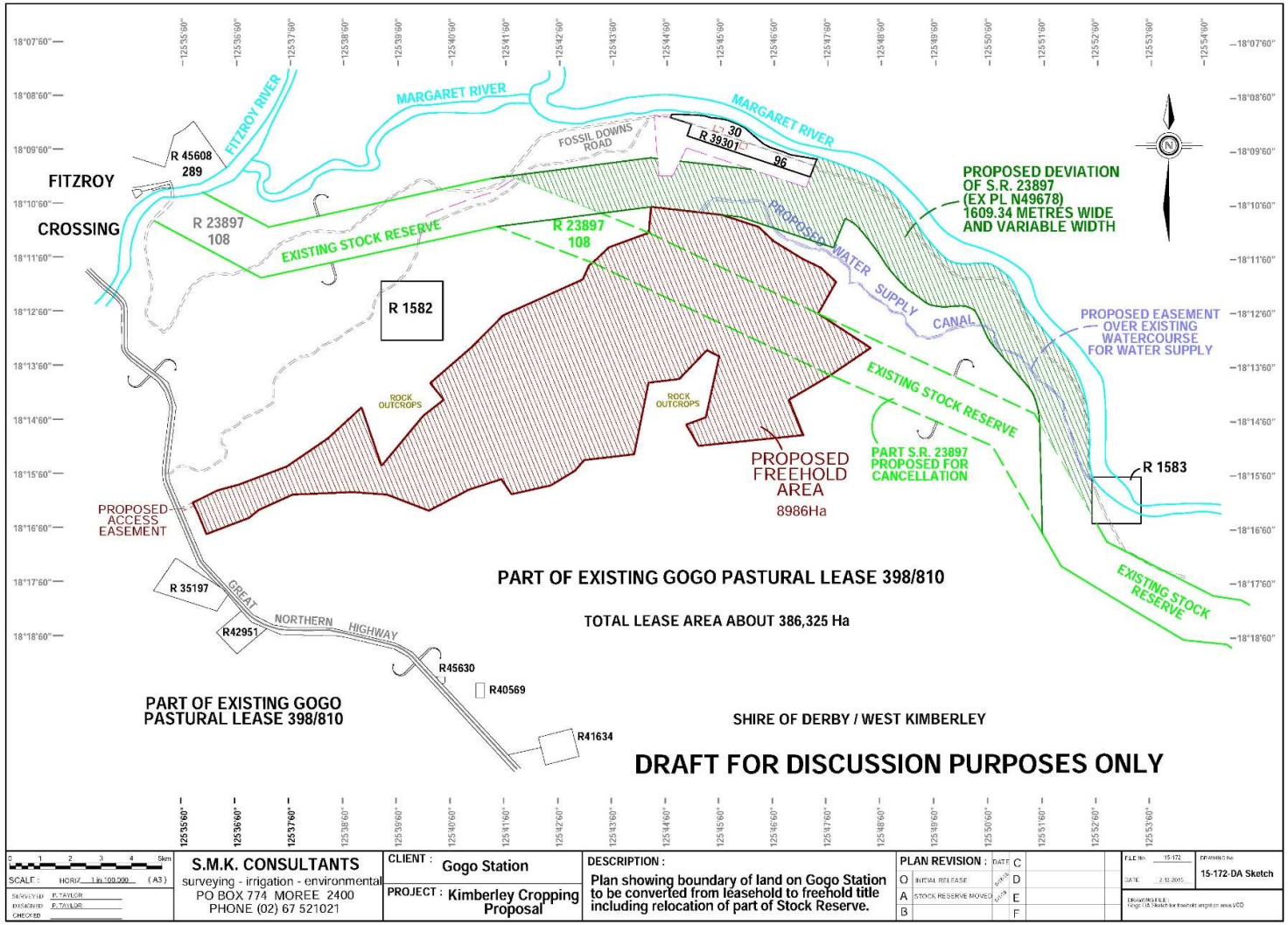

Figure 1: Proposed Freehold Area

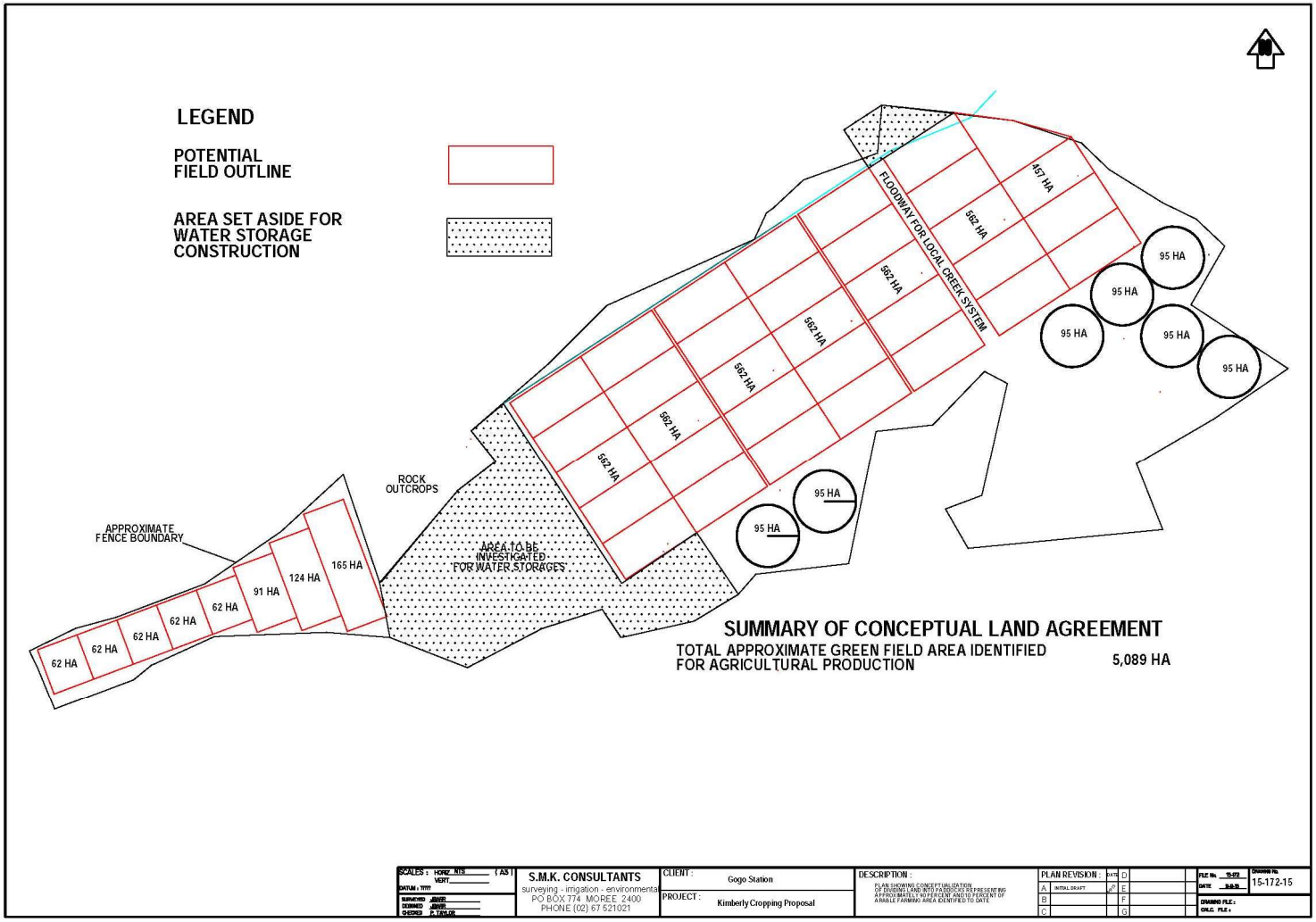

Figure 2: Proposed Field Outline and Land Agreement

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1 Introduction

1.1 Project Overview

The Gogo Station project involves conversion of selected pastoral land to cropping land to produce a mosaic of crops. These crops are intended to supply a variety of export and regional markets using the competitive advantage of proximity to Asian markets and favourable seasonal conditions available in the Fitzroy River region. Land selection is based on soil types identified on Gogo Station that have the potential to support both dryland and irrigated cropping.

Gogo Station includes an area of approximately 57,000 hectares of clay based soils that have been identified by the Western Australian Government as suitable to produce a mosaic of crops. The potential area identified for cropping includes areas that are considered suitable for irrigated cropping as well as dryland cropping. The cropping program would include a fodder production program to maximise the potential quality of cattle available for export throughout the year in addition to grain and other crops which can be marketed from Gogo Station.

The project on Gogo Station is located in a demographic region where the primary sources of employment available is at present dominated by the regional community service industry and the cattle industry. The opportunity exists to diversify from these employment bases to develop an agricultural industry. The industry would potentially generate employment during the development phase, crop production, harvest periods as well as generate opportunities in the transport industry and crop service industry. It would be imperative for the project to employ local staff to undertake the cropping and harvesting through a program of training and development of skilled farmers, technicians as well as offering opportunities for local entrepreneurs to create new enterprises.

Measurable successes of the Gogo Station project would include the potential for triggering the development of similar projects in the local region, based on similar soils and farming models resulting in development of agricultural skills in the Fitzroy Crossing Community.

The project would rely upon innovative management and use of local resources, including labour, to ensure the outcome would be economically successful to the proponent and offer opportunities for local input through employment while enabling the more intense use of the land to remain sustainable within the Kimberley environment to the benefit of the local community.

The overall aim of the agricultural project would be to establish an agricultural enterprise of sufficient size to generate a viable and self-supporting agricultural industry on Gogo Station. This could then support similar opportunities in other parts of the Fitzroy basin.

1.2 Regional Setting

Gogo Station is located to the South-East of Fitzroy Crossing, which is in Northern WA, about 400km East of Broome, as shown in Figure 1. The Station is located approximately within the centre of the Fitzroy Catchment (Figure 2).

Figure 1: Locality of Proposed Development

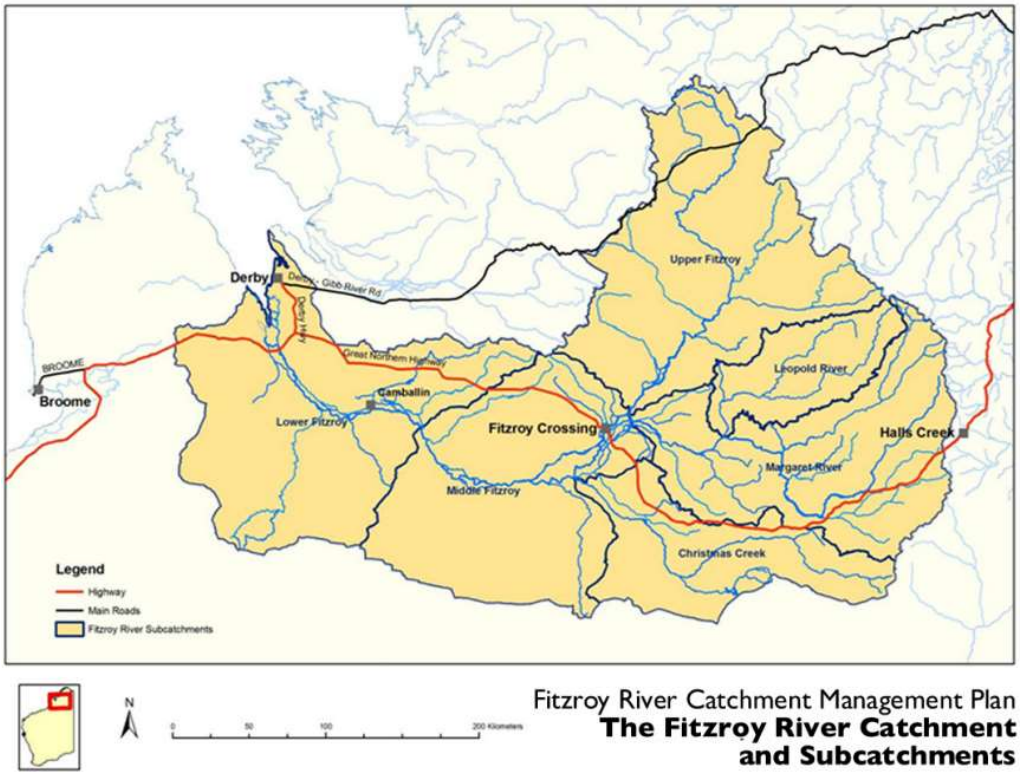

Figure 2: Location of Fitzroy Crossing within the Fitzroy River Catchment.

The Fitzroy Catchment covers over 95,000 km^2 within the Canning Basin. The catchment has a semi-arid/monsoonal climate, with rain falling in the wet season between November and April. Analysis taken by the Australian Bureau of Meteorology as part of their Australian climate variability and change analysis has identified predicted increases of rainfall in the Kimberley by up to 30-40mm per annum as a result of climate change.

The Gogo Station grazing enterprise extends from the Margaret River in the north with the Fitzroy River forming the western boundary and lighter. Figure 3 presents an aerial image showing the boundary of Gogo Station. The property extends along the left bank floodplain of both the Margaret and Fitzroy Rivers.

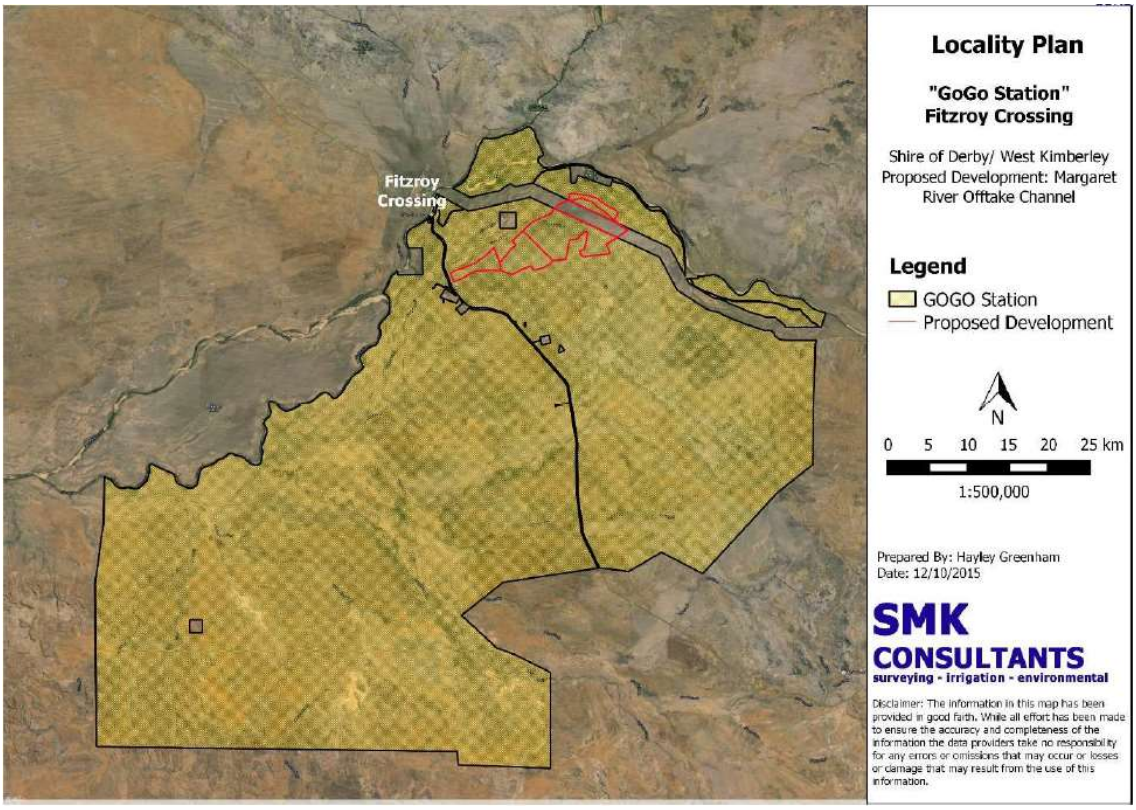

Figure 3: Outline of Proposed Development Site

1.3 Project Description

The Gogo Station project involves clearing of selected land to enable construction of irrigation fields. This will include irrigation channels, water storages and water control structures. Land selection is based on soil types identified on Gogo Station that have the potential to support both dry-land and irrigated cropping.

The selected area on Gogo Station comprises clay based soils that have been identified as suitable for agriculture by soil mapping undertaken primarily by the WA Government. The potential area identified for cropping includes areas that are considered suitable for irrigated cropping as well as dryland cropping. The cropping program would also aim to maintain a fodder

production program that would result in an extension of the seasonal delivery of premium cattle to the live trade market or regional meat industry.

The mosaic of crops that have been identified to have the potential for production over more extensive areas are presented in Table 1.

Table 1: Potential Crops for the Gogo Station Project

Crop Category Crop	Crop
Cereals	Sorghum
	Rice
	Chia
Pulse Crops	Chick Peas
	Lupins
	Azuki Beans
	Faba Beans
	Lentils
Hay Crops	Forage Sorghum
	Millet
	Lucerne
Fibre Crops	Cotton

The number of crops could expand pending further research and market development.

Production of various crops on Gogo Station would remain subject to WA Government approvals. The initial cropping proposal would concentrate on sorghum grain, as there have been recent developments in markets for this grain. It is also a gluten free product which may allow access to new markets, especially for white sorghum. The other potential crops have extensive markets but would require a period of trial to determine the most appropriate varieties. Such crops include rice. The rice industry has made significant changes to varieties and methods of production including moving forward on the potential for dryland rice production in replace of flood irrigated rice varieties. Other crops such as Chia present expanding markets as demand for this grain increases. Pulse crops present an opportunity for production of higher value protein based crops for the Australian and Asian market; however, varieties for these crops may at present be limited.

Cotton has been tried in northern WA previously. Production of this crop would require high capital input for growing and processing costs. Production of this crop would not be considered viable unless a cotton gin was available in the region. The cotton gin would require a minimum annual throughput of 80,000 to 100,000 bales per season or the equivalent of 8,000 to 10,000 hectares of high quality irrigation development. The potential for production of cotton would not be considered until the Gogo Station agricultural development was well established and management had a sound understanding of irrigation reliabilities. This would also require a partnership with a Cotton Processing Company.

Hay production has been successful over the past 5 years on Gogo Station as a result of the development of approximately 1,000 hectares of irrigated and dryland cultivation under a

Diversification Permit. Hay produced on Gogo Station value adds to cattle produced on Gogo Station as part of the strategic management for supply of prime condition cattle through the live cattle trade. The Proponent has assessed the potential to operate a feedlot in conjunction with the agriculture proposal. The feedlot would utilise grain and fodder produced on Gogo Station to value add to cattle produced on the Station as well as other cattle brought from further inland. This would potentially develop a new market for prime conditioning of cattle as an alternative to shipping live cattle to Feedlot operations in Asia. Prior to any development of a full scale Feedlot operation, the marketing of such cattle would need to be confirmed in order to secure the funding requirements for a feedlot proposal.

All cropping proposals would be subject to production and processing costs in addition to transport and marketing options. Sorghum grain crops would appear at present to be the most easily achievable success during the initial establishment and cropping phase. As a result of this, baseline budget proposals have been prepared for dryland and irrigated sorghum. The budgets are based on published data from NSW Agriculture who publish Farm Enterprise Budgets for a wide variety of crops based on recent production costs and market values for a wide range of yields. The unknown issue at present is additional cost of establishment and production that would result from the remoteness of the enterprise. This has initially been referred to as the "Kimberley Factor" which will involve additional costs for establishment of skills and equipment on the property. It is noted that a similar issue is present in many of the agricultural developments in more remote parts of the Northern Territory and is commonly referred to as the "Territory Factor" where costs are as much as three (3) times the normal costs for services readily available in the agricultural regions of eastern Australia. Such costs have led to several failures for new agricultural developments and are a real factor in considering the proposed development that will require skill and innovative management to overcome.

Skills required will include expertise in agricultural consultants to assist with design and agronomical issues. Additional machinery costs would be incurred to initially transport the machinery to the property and secondly to obtain the expertise to repair such equipment. There is a severe limitation on agricultural machinery facilities in the region at present and therefore the machinery technicians required to service and maintain such components as the electronic systems available in modern tractors will require a significant establishment cost as well as delays for parts. Management strategies will need to be considered such as the use of older less electronic based equipment until such expertise is locally available.

The enterprise would need to grow sufficient tonnage of crop to generate a viable transport and storage component as part of the business plan. The transport and storage component of the proposed business operation would need a sufficient level of throughput for establishment of an agricultural product storage and shipping component at local ports including Broome. The potential for export of the crops produced on Gogo Station would be a key component of the success of the industry. This can only be achieved if the logistics of loading and shipping in bulk or containerised units through a local port can be undertaken at a competitive cost base. This is considered as an essential early stage requirement for the development proposal and would rely

upon sufficient production to generate a critical mass of product to support infrastructure that would be utilised for export including the necessary transport, storage and ship loading infrastructure. There is no intention to transport commodities from Gogo Station in an easterly direction toward existing infrastructure in eastern Australia. This has proven to be unviable and often the downfall of many other agricultural industries producing bulk product that have been trialled across the Northern Territory and northwest Western Australia.

When the proposed development reaches a stage where infrastructure development can be operated without external funding support, it would be considered viable and self-sustainable and requires only minimal direct support from Government as a form of development incentive. Two forms of farming opportunity have been identified on Gogo Station. These two opportunities include summer production of various grains and hay under rain grown production with an opportunity for partial assistance from irrigation to improve timing and crop management where possible. Summer production would commence once the rain season commenced to produce some beneficial soil moisture. The lack of rain between April and December creates results in an extremely dry soil.

The second and potentially major opportunity for more intensive agricultural production is to develop broad acre irrigated agriculture based on opportunity harvesting of surface water during flood and local runoff events. The water would be opportunistically obtained in the summer or wet months and then used for production of various crops to be planted in January through to April. The crops would be grown through the wetter months in this region. It is expected that additional water would need to be applied with high efficiency under appropriate planning with allowances for the high evapotranspiration rates that exist in the region. The collection and use of this opportunistic water would provide some significant variations in crop production as a result of seasonal influences primarily affecting seasonal water availability.

1.4 Surface Irrigation Fields

The proposal involves the development of Gogo Station, the overall proposal would include:

- Completion of an application process to obtain all approvals necessary to develop the area of approximately 9,000 hectares for agriculture including obtaining the necessary water access approvals for river water, groundwater and overland flow.
- Development of 25 irrigation fields covering approximately 5,000 Ha
- Construction of 40,350 ML Water storage for capture of floodwater from the Margaret River and Mount Pierre Creek covering up to 807 Ha in area
- Construction of 7,200 ML Water storage covering 144 Ha
- Development of an offtake channel with a design capacity of 3000 ML/Day sourcing water from flood events in the Margaret River
- Amendments to internal access routes to accommodate developments.

The development can be divided into two Projects, as follows:

- **Project 1:** Clearing and development of land (up to 8,335ha) for the development of 25 furrow irrigation fields (covering 4,335ha) and associated infrastructure. Furrow

irrigation water is to be sourced from overland flows and flood water from the Margaret River.

- **Project 2:** Clearing and development of up to seven centre pivot irrigation fields (665ha). Water to be used for centre pivot irrigation is to be sourced from local aquifers.

The Projects are considered separate as each development component is to utilise different resources (surface water vs groundwater) and will require different infrastructure (surface water channels and storages vs bores). Each section will therefore incorporate distinct design characteristics and environmental considerations.

A separate referral will be lodged with the EPA and the Department of Environment and Water Regulation for the clearing and development of the remaining 665ha for the development of up to seven centre pivot irrigation fields (Project 2). This project is currently the subject of further groundwater investigation by the WA Government which aims to determine a sustainable yield from the aquifer on Gogo Station.

Relevant water applications for both sections have been lodged with the Department of Water.

1.4.1 Development Process

The physical development process will involve several stages. These can be summarised as follows:

- Stage 1 – Clearing of natural vegetation by cultivation and other means to commence the process of developing the soil and area to be cropped.
- Stage 2 – Deeper cultivation of the fields to prepare the soil and manage grass and weed growth. This may include the use of various herbicides for management of specific species
- Stage 3 – Commence construction of fields based on a best practice design for optimization of water delivery and water application efficiencies. This stage would include construction of water storages and the diversion channel which will capture opportune floodwater rising into floodplain channels that extend through Gogo Station. The project will include a surrounding levee bank which will encompass the agricultural land to enable management of internal runoff, create a barrier for biosecurity to avoid rouge crop spread from within the development to the surrounding grassland area, including various storm detention system to capture and settle internal storm runoff and any materials/crop matter washed from the fields.
- Undertake several years of trial crops to condition the soil structure for crop production. Crops to mainly consist of forage crops with some minor areas of grain crops
- Undertake commercial scale production of selected crops once the soil is development for optimum cropping conditions.

1.5 Land to be Excised from Pastoral Lease

Currently the land highlighted in yellow in Figure 3, which comprises Gogo Station, is under a pastoral lease. Figure 4 presents a preliminary plan of the area to the excised. As part of the development, it is proposed that the area which comprises the water storage structures, various fields, supporting infrastructure and a buffer to protect native vegetation, be excised from the

pastoral lease and be converted to a freehold land. The exact extent of the buffer, and essentially the 'development boundary' is currently under consideration and subject to further approvals. This remains subject to several years of discussion with WA Lands.

1.5.1 Indigenous Land Owners

As a result of seven months of negotiation, a memorandum of understanding was signed by Gogo and the Gooniyandi Aboriginal Corporation (GAC). This memorandum of understanding has committed both parties to monthly meetings to develop a partnership model to account for compensation. These meetings are on-going and ultimately will result in the creation of "many jobs and opportunities for Gooniyandi people including employment and business opportunities". The Proponent and GAC continue to move toward an Aboriginal Land Use Agreement to ensure that the project is a success and Traditional Land Owners benefit from their association with the development.

The agreement reached to date involves establishment of a close working relationship for training and ongoing employment with the local community of Fitzroy Crossing and surrounding communities. This includes the options for involvement in the application process as well as working on the farm to develop agricultural skills once the farm operations commence.

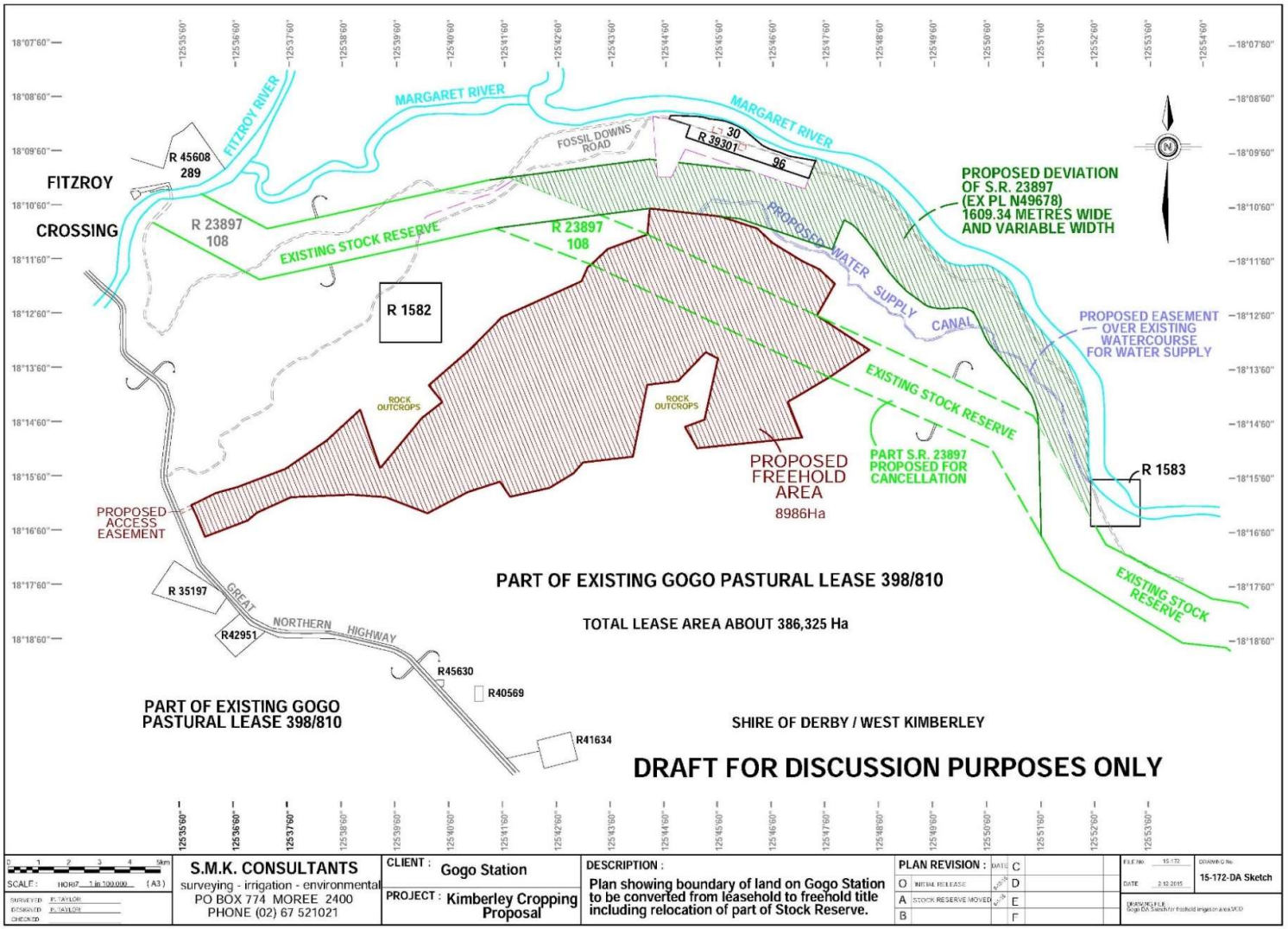

Figure 4: Plan Showing Proposed Relocation of Stock Route around Development on Gogo Station

1.5.2 Travelling Stock Route

The area to be subject of the development is traversed by a Stock Route. The Stock Route has not been used for an extensive period and is generally considered to be of no further use in the modern cattle industry. Discussions were instigated with the Department of Lands to determine an appropriate action to utilise the stock route section traversing the proposed agricultural area on Gogo Station. An agreement in principle was reached to move the stock route to adjoin the river on the basis that the route will remain a similar width and therefore practical option for moving stock if ever needed again.

Figure 4 has been submitted as part of the discussions with the Department of Lands. This plan shows the relocated stock route. The intention is that the new location of the route does not limit the potential for any future use of the route.

1.6 Access

Legal access to the development area is proposed to be provided by the easement depicted in Figure 4. Creation of the access will be subject to discussion with Main Roads to ensure an appropriate intersection is developed.

1.7 Impacted Land

The proposal involves the clearing of up to 8,335ha of land for the purposes of crop production and associated infrastructure (including water supply channels, buildings and internal roads).

Areas to be cleared will be selected based on soil type. Heavy clay soils with low saturated permeability will be favoured for development of water supply channels and water storages, to minimise the risk of deep percolation and loss of surface water and thus improve water use efficiency. Well-structured clay soils will also be targeted for development of cropland, due to their tendency for high water holding capacities and high nutrient content which is desirable for crop production.

Within the primary development area, natural floodways will be retained as areas of native vegetation. Preservation of these floodways minimises the impact of the development on natural hydrological regimes within the locality. Floodways will also function as corridors of native vegetation to permit habitat connectivity across the development.

A desktop assessment of the development site has been undertaken to assess potential environmental impacts of the proposed land clearing on protected ecological assemblages, flora and fauna. The full assessment is available in the associated document, Environmental Values Desktop Assessment. A summary of the desktop assessment is presented in Section 2. The desktop assessment will be used to assist preparation for field surveys to be undertaken at a later stage.

In Section 3, the proposal is assessed against environmental objectives outlined in the Environmental Protection Act 1986. Management and mitigation measures to minimise environmental impacts as a result of the development are outlined in Section 4.

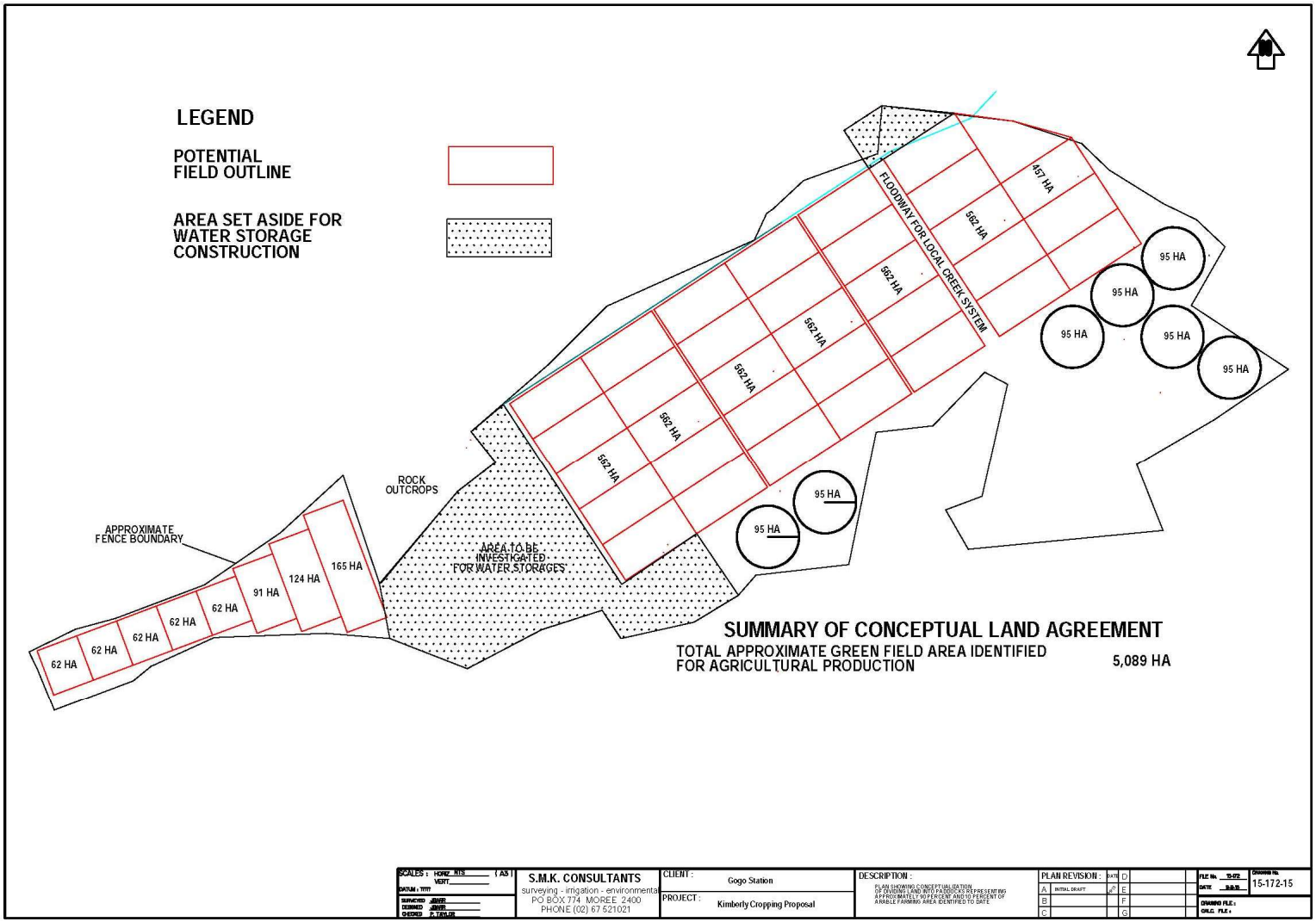

Figure 5: Potential Field and Irrigation Layout for Development of Cropping on Gogo Station

2 Environmental Assessment Overview

A desktop assessment was conducted to assess ecological assemblages and protected/threatened flora and fauna which are likely to be available on the development site. The full assessment is provided in the associated document, Environmental Values Desktop Assessment. A summary of key findings of the assessment is presented below.

2.1 Natural Environmental Values

Vegetation on site varies from grassland to low open woodland. Dominant grass species would include *Astrebla* spp. (Mitchell grass), *Chrysopogon* spp. (ribbon grass) and *Dichanthium fecundum* (bluegrass), whilst dominant tree species would include *Bauhinia cunninghamii*, *E. papuana* (ghost gum) and *E. microtheca* (coolibah). It is considered that large areas of equivalent remnant vegetation are present within the region. Therefore, the clearing of the development site is not considered to pose a significant risk to this ecological community as the community is common to the region.

A total of sixteen protected fauna species and two protected flora species were identified as having the potential to be present on the subject site. Of the fauna species identified, only one species (a land snail, *Westraltrachia recta*) is considered to have some minor potential to be impacted by the proposed development. Little is known about this species. One flora species, *Cullen candidum*, also has the potential to be present on the site. It is recommended that field surveys be undertaken to assess the presence of these species and to further assess the risk posed by the development to these species.

Within the Dampierland bioregion, Devonian limestone outcrops are recognised as significant biodiversity hotspots and important habitat refuge sites for rare and/or threatened species. By comparison, woodland and grassland pastures are less likely to serve as refuge habitat for rare and/or threatened species, as such sites are typically disturbed by grazing practices and altered fire regimes.

The development site has been utilised for grazing cattle for over 100 years, and therefore is likely to be moderately degraded and subsequently is unlikely to function as significant refuge habitat for rare and/or threatened species. To preserve regional biodiversity, it is considered a greater priority that limestone outcrop habitat is protected over degraded grassland and woodland habitat. Limestone outcrop habitat within the region will not be impacted by the proposed development. The impact of the development on rare and/or threatened species is therefore likely to be minimal, as valuable refuge habitat for threatened species within the wider region will be maintained.

2.2 Cultural Environmental Values

The West Kimberley is listed as a National Heritage Place under the Environment Protection and Biodiversity Conservation Act 1999. As part of the listing process under the Act, the Australian Heritage Council (AHC) completed a thorough assessment of heritage values of the region (2011). The AHC's report was assessed with regard to the proposed development, to

ascertain the likelihood of the development impacting upon the region's heritage. Overall, the proposed development is not considered to place national heritage values of the West Kimberley at risk.

There is a potential that material of significance to Aboriginal people is discovered or uncovered during the project. This potential has been considered by Gooniyandi representatives during preliminary discussions and such areas of high potential for sites of significance have been avoided during the land selection process undertaken to date.

Requirements for such items are bound by the Aboriginal Heritage Act 1972 as follows:

- If any human skeletal material is uncovered, work shall cease within 20m of the material and it shall be reported to Police as soon as possible, and
- If any artefacts or material of apparent Aboriginal origin is discovered, work shall cease within 20m of the material and the Project Manager shall acquire the services of a qualified archaeologist to investigate the material and take appropriate actions.

There are seven aboriginal communities currently living on Gogo Station comprising predominantly of the Gooniyandi people. The Proponent is working with local Indigenous Groups in relation to any potential Native Title issues and culturally sensitive sites. This work is progressing from a long history of cooperation between the owners of Gogo Station and the local communities. Discussions with the Marra Worra Worra Aboriginal Council in Fitzroy Crossing have occurred in relation to the potential for employment and development of general community support for the proposed agricultural development. A letter of support from this Local Indigenous Corporation is attached in Appendix 1.

3 Legislative Assessment

3.1 Environmental Principles - Section 4A of the Environmental Protection Act 1986

Section 4A of the Environmental Protection Act 1986 establishes the object and principles of the Act (Box 1). The proposed development has been assessed with regards to each of these principles.

The object of this Act is to protect the environment of the State, having regard to the following principles:

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 the application of the precautionary principle, decision should be guided by:
   a. *careful evaluation to avoid, where practicable, serious or irreversible damage to the environment; and*
   b. *an assessment of the risk-weighted consequences of various options.*

2. ***The principle of intergenerational equity***

The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced 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.

4. ***Principles relating to improved valuation, pricing and incentive mechanisms***
   a. *Environmental factors should be included in the valuation of assets and services.*
   b. *The polluter pays principle – those who generate pollution and waste should bear the cost of containment, avoidance or abatement.*
   c. *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 wastes.*
   d. *Environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, which enable those best placed to maximise benefits and/or minimise costs to develop their own solutions and responses to environmental problems.*

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.

Box 1: Section 4A of the Environment Protection Act 1986

Principle 1 – The precautionary principle

Proposal not at variance with Principle 1

This report assesses known environmental risks associated with the proposed development site. This preliminary assessment is to be followed by site surveys to ground-truth the findings of the desktop assessment, and to further investigate potential risks identified within this assessment. In this instance, the Proponent utilising a range of available resources to carefully evaluate the potential impacts of the development proposal. This assessment process is considered to minimise scientific uncertainty regarding environmental impacts of the proposal as far as is practicable.

The preliminary results of the desktop assessment indicate that the development is unlikely to cause serious and irreversible damage to the environment, as the proposal is unlikely to impact habitat which is rare and/or critical to the survival of rare and/or threatened species. These preliminary results will be explored further following the completion of site surveys.

Principle 2 – The principle of intergenerational equity

Proposal not at variance with Principle 2

The proposed development is considered consistent with the principle of intergenerational equity. The development is considered to unlikely to have significant negative environmental impacts, given that the vegetation to be impacted by the development is common throughout the region and that it is unlikely to serve as significant habitat for rare and/or threatened species in the region.

Further, the development is considered to increase the productivity of the environment by enabling responsible utilisation of natural assets within the region, including fertile soils and abundant water supplies. As is discussed further in the Business Case report associated with this development, the region surrounding Gogo Station is characterised by significant socio-economic disadvantages and low employment rates. The development is considered to contribute positively to the communities within the region by providing opportunities for education and employment. Additionally, this will permit local people (including Indigenous peoples who experience strong connections to community and country) to remain within the region, instead of having to relocate elsewhere in search of employment opportunities.

The proposed development is therefore considered to preserve intergenerational equity by enabling future generations within the region to have an improved standard of living and increased opportunities, whilst protecting environmental values.

Principle 3 – The principle of conservation of biological diversity and ecological integrity

Proposal not at variance with Principle 3

As outlined in Principle 1, this report assesses known environmental risks associated with the proposed development site. This preliminary assessment is to be followed by site surveys to ground-truth the findings of the desktop assessment, and to further investigate potential risks identified within this assessment. The results of these assessments will then be used to design the development proposal to minimise its environmental impact. Where required, mitigating measures will also be adopted to minimise the impact of the development.

Therefore, the conservation of biological diversity and ecological integrity is a core consideration in this development proposal. Thorough environmental assessment accompanied by appropriate planning and mitigation by qualified environmental specialists is considered sufficient to ensure the protection of environmental values.

Principle 4 – Principles relating to improved valuation, pricing and incentive mechanisms

Proposal not at variance with Principle 4

The development will include a suite of measures to protect environmental values, including infrastructure (e.g. tailwater drains to capture and recycle irrigation water), management plans (e.g. erosion control plans) and ongoing monitoring programs (e.g. soil testing). These mitigation measures are to be funded by the development without requiring external

financial assistance. Therefore, the proposal is consisted with the 'polluter pays' principle, in that environmental values are to be maintained at the expense of the Proponent.

The proposal does not involve the development of regulatory mechanisms or market incentives to encourage environmentally sustainable financial decision-making; these considerations are therefore not relevant to the proposed development.

Principle 5 – The principle of waste minimisation
Proposal not at variance with Principle 5
The proposed development is not considered to generate significant quantities of waste. Waste products which may be produced include:

- General domestic waste from personnel on site
- Septic waste from site facilities
- Tailwater runoff from irrigation fields

General domestic waste will be contained and disposed of in appropriately licensed waste facilities. Septic waste from on-site facilities will be disposed of appropriately in accordance with on-site wastewater management plans to minimise environmental impacts and risks to human health.

Tailwater from irrigation fields is to be contained and recycled for reuse. This is considered to minimise the potential for discharge of potentially contaminated tailwater runoff from fields which may at times contain agricultural chemicals and elevated sediment loads. The proposed irrigation system will include mitigation measures that aim to minimise potential offsite impact on the surrounding environment, thus protecting environmental values from agricultural wastes. A significant aspect of this process will include an avoidance of rouge infestation by agricultural crops into adjoining grassland and watercourse areas.

3.2 Key Environmental Factors – Section 44 of the Environmental Protection Act 1986

Section 44 of the Environmental Protection Act 1986 indicates that the EPA consider a suite of key environmental factors when assessing a significant proposal. The EPA has fourteen environmental factors, organized into five themes: sea, land, water, air and people.

Of the fourteen environmental factors, eight are relevant to the proposed development. These include:

- Flora and vegetation
- Subterranean fauna
- Terrestrial fauna
- Terrestrial environment quality
- Hydrological processes
- Inland waters environmental quality
- Air quality
- Social surroundings

A detailed assessment of each factor in relation to the EPA's policies and objectives is presented in Appendix 2. Overall, whilst the development inevitably poses some risks to identified environmental factors, it is considered that adoption of appropriate mitigation measures will be effective in minimising these risks to an acceptable threshold.

It should be noted that factors relating to water and people are also addressed in detail within the Business Case and Water Resource Plan reports associated with the proposed development. These documents provide further outlines regarding the social benefits of the proposal, and information regarding the sustainability of proposed surface water and groundwater extraction and utilisation. Discussions with local indigenous groups and the Department of Water are ongoing to ensure the protection and promotion of EPA factors relating to water and people.

4 Proposed Management and Mitigation Actions

4.1 Soil and Erosion

The proposed development has potential to increase the risk of soil erosion from the site through clearing of native vegetation, construction works and through regular agricultural practices including soil cultivation and fallow rotations of crops in which minimal groundcover is in place to protect the soil surface.

These issues will be managed using the following principles:

- Clearing of native vegetation will be kept to the minimum extent possible;
- Erosion and Sediment Control management such as the retention of some grassed strips and construction of drainage/detention areas at the start of the project are to be in place during construction and site operation;
- Best practice agricultural management to be implemented where possible, including minimum/no till cultivation and maintenance of stubble cover during periods of fallow; and
- Tailwater runoff will be captured and recycled from irrigation fields, decreasing the risk of runoff of surface water with high sediment loads into the surrounding environment.

4.2 Dust and Particulate Generation

Dust has the potential to be generated in multiple ways, including:

- Clearing and burning of native vegetation;
- Physical disturbance of the soil surface during construction;
- Crop harvesting and burning; and
- Movement of vehicles on unsealed roads.

Dust generation will be managed by visual monitoring of conditions and watering down of dust generation surfaces where required. Best practice agricultural operations including limiting of crop burning and adopting stubble retention practices are also effective in reducing dust production. Management is to maintain records of all complaints received regarding dust generation; complaints are to be responded to appropriately.

4.3 Weed, Pest and Plant Pathogen Management

Human activity has the potential to increase the risk of introduction and spread of pests, weeds and plant pathogens through vehicle and personnel movements. This risk will be managed as follows:

- Ensure all personnel are trained in biosecurity management; (Come clean-Go Clean policy)
- Undertake control of pests, weeds and pathogens where present on the farm; and
- Undertake regular visual monitoring for pests, weeds and pathogens within and outside of the development area.

Storage and handling of chemicals for pathogen and weed control has the potential to lead to contamination of areas off site as a result of spills, spray drift or runoff from areas of

application. To minimise this risk, management will ensure that chemicals are to be stored according to best practice, and are to be used in accordance with company product recommendations and statutory requirements.

4.4 Surface Water

Surface water has the potential to be impacted by the development through runoff of sediment and pollutants from construction areas/cropland, through alterations in surface hydrology of the subject site and through capture of opportune floodwater for irrigation purposes from the Margaret River.

Runoff management will assist in maintaining surface water quality to a high standard downstream of the development. Management strategies include:

- Implementation of Erosion and Sediment Control actions during construction and site operation;
- Adoption of agricultural best practice where appropriate including stubble retention and minimum till to reduce erosion risk of agricultural lands;
- Using agricultural chemicals responsibly, in accordance with product recommendations and statutory requirements and only where required;
- Capture and recycling of tailwater from irrigation fields, thus reducing discharge of contaminated water into surrounding environments; and
- Maintenance of buffer zones of native vegetation between the development and waterbodies such as the Margaret River, which will filter surface runoff from site and thus minimise the risk of pollutants entering natural waterways.

Surface hydrology of the development will be protected through maintenance of natural floodways through the subject site. The majority of the development site is considered to be flood free. Where they occur, natural floodways through the development site will be retained with native vegetation in place. This is considered to preserve flood hydrography of the site by maintaining natural surface flow conditions.

Surface water Licences are to be obtained from the Department of Water, to be sourced primarily from Margaret River flood events. Applications for water Licences have been lodged and discussions with the Department are ongoing. Further information on surface water harvesting associated with the development is available within the Water Resource Plan. Given the volume of flow within the Margaret River, the River's undeveloped state and the nature of proposed extraction conditions of the river (only to occur when the river has high flow volumes), the proposed development is considered likely to have minimal impact upon river health and the surface water resources within the catchment.

4.5 Groundwater

Clearing of deep-rooted native vegetation, storage of surface water and irrigation of cropland has the potential to cause the water table to rise, increasing the risk of soil waterlogging and land salinization. Further, deep drainage of agricultural water has the potential to contaminate groundwater resources with agricultural chemicals and fertilisers (such as nitrates). Management of these issues is required.

Groundwater resources will be protected by the following management strategies:

- Water storage and supply infrastructure will be designed with a clay base to minimise the rate of water loss by deep drainage;
- Furrow irrigation will be used on site, in which water is applied to a slightly sloped field. This encourages lateral movement of surface water and decreases the longevity of inundation of irrigation fields, thus decreasing the risk of water loss by deep drainage;
- Groundwater bores will be regularly monitored to detect any changes in the water table, allowing for proactive management; and
- Agricultural chemicals and fertilisers will be used responsibly and in accordance with statutory requirements only when required.

4.6 Biodiversity and Habitat Management

Clearing of native vegetation will impact biodiversity and habitat values within the development site. Whilst some impacts are unavoidable, management strategies will be adopted to ensure minimisation of these impacts as far as practicable. Management strategies include:

- Conduct detailed field surveys with suitably qualified professionals at appropriate times of the year (including wet and dry seasons) to ground-truth the results of the desktop site survey and to assess the presence of rare/protected flora/fauna on site;
- Maintain floodways through the development site with native vegetation in place, to maintain surface hydrology patterns and to provide vegetation corridors for habitat connectivity across the development; and
- Clearly delineate clearing boundaries to ensure that clearing is confined to the smallest possible area.

Pending the results of the field survey and further investigation, additional management strategies may be implemented to further minimise the impact of the development on environmental values of the region.

4.7 Indigenous Heritage

The development has the potential to impact upon indigenous heritage values by disturbing undiscovered sites or artefacts of historical and cultural importance to the indigenous people of the region. To minimise the risk of negatively impacting indigenous heritage values of the site, management will:

- Undertake site surveys with suitably qualified archaeologists in association with representatives of the indigenous communities in the region, to assess the presence of sites or artefacts of significance; and
- Consult with local indigenous communities that reside on Gogo Station throughout the course of the development, to ensure that the development is undertaken in an appropriate and culturally sensitive manner.

It should be noted that the development proposal has the support of local indigenous groups, as it is understood that the development will provide education and employment opportunities for indigenous communities.

4.8 Management and Reporting

General management and reporting structures will be in place to ensure environmental responsibilities are met and that the enterprise operates to a high standard. These include the following:

- All staff will be inducted in statutory responsibilities, to ensure compliance with statutory responsibilities;
- All employees will be trained to a high standard to minimise the possibility of employees accidentally creating environmental risks; and
- Adequate management and reporting will be in place to ensure environmental problems may be foreseen, and that proactive management may take place to address any potential problems in a timely manner.

5 Conclusion

The proposed agricultural development poses a number of environmental risks which will need to be addressed. Further investigation, including field surveys, are required to assess the condition of the site and ground-truth the results of the associated environmental values desktop assessment. However, preliminary assessment has indicated that the majority of identified risks may be managed to reduce their overall environmental impact. A high standard of project design and implementation of ongoing monitoring will also be required to ensure environmental values are protected.

The Harris family originates from the northwest NSW cotton and grain belt where they operate extensive cotton, winter cereals and cattle production enterprises. The family is experienced in the practicalities of agricultural production and has the expertise to conduct the proposed development in a profitable and environmentally responsible manner.

The proposed development is considered to provide significant benefit to the region through the provision of employment and education opportunities. Gogo Station is home to several indigenous communities which typically experience high unemployment rates and social disadvantages as a result of remoteness. Development of employment and education opportunities in such regions has been the target of considerable Government investment and Government policy, including the WA Government's Royalties for Regions and Regional Development Trust, and the Federal Government's Green Paper on Developing Northern Australia. The proposed development is therefore considered to align with stated Government objectives, and will provide considerable benefits to the region.

This referral is considered as a preliminary assessment of the impacts of clearing on the region. Further information regarding the proposed development is available from SMK Consultants as required, who will continue to work closely with the Harris family and Goonyandi throughout the course of the development application and approvals process.

Appendix 1: Letter of Support from Marra Worra Worra Aboriginal Corporation

Marra Worra Worra Aboriginal Corporation
P.O. BOX 35, GREAT NORTHERN HIGHWAY
FITZROY CROSSING W.A. 6765
PHONE: (08) 91 915 089 FAX: (08) 91 915 183
A.B.N: 92 272 775 547 INC#: 104

To whom it may concern,
I am writing this letter to show support of farming operations and development on Gogo Station.

As Employment Coordinator for Marra Worra Worra Aboriginal Corporation, I see the development of farming operations as a necessary way to create more employment opportunities for our growing caseload of participants on the Remote Jobs Community Program (RJCP). Our caseload represents approximately 600 potential job seekers in the Fitzroy Valley with limited employment opportunities available on country.

People that reside on Bayulu, 8 Mile, Karnparrmi, Gillarong, Muludja, Ngalingkadji communities would be well placed to capitalise on a farming endeavour by Gogo Station as well as the several town based communities. These communities represent hundreds of indigenous people looking for local opportunities into the workforce and a way off the welfare programs.

As a past manager of the Community Development Employment Program and by being employed by the current RJCP I have seen years of training of indigenous participants in Horticulture and Rural Operations certificates with no real employment outcomes available. There are qualified people who are ready for the opportunity to work in an agriculture industry right now.

Marra Worra Worra Aboriginal Corporation is also aware and appreciative of Gogo Stations continued commitment to the local indigenous population and their considerable investment in feasibility of farming operation in the Fitzroy Valley.

Marra Worra Worra Aboriginal Corporation Fully support Gogo stations development of farming operations in the Fitzroy Valley.

Daniel Vincent
Employment Coordinator
Marra Worra Worra Aboriginal Corporation
daniel.vincent@mww.org.au
PH 08 91910600
FAX 08 91915183

Appendix 2: Analysis of EPA Environmental Factors

Table A2.1: EPA Factor Assessment - Flora and Vegetation

1	EPA Factor	Flora and Vegetation
2	**EPA Policy and Guidance**	EPA Objective: to protect flora and vegetation so that biological diversity and ecological integrity are maintained. Ecological integrity is the composition, structure, function and processes of ecosystems, and the natural range of variation of these elements. This proposal will involve some land clearing in a largely undeveloped region of the Kimberley. There are considerable tracts of native vegetation in the wider area which are considered as sufficient to maintain regional ecological integrity and biodiversity of native ecosystems.
3	**Consultation**	Discussions have been undertaken with relevant stakeholders and departments including Marra Worra Worra Aboriginal Corporation, Gooniyandi Aboriginal Corporation, the Premier's office, the EPA, Department of Water, Department of Lands, Department of Environment and Regulation and Department of Parks and Wildlife. Stakeholders have thus far indicated in principle support for the development, pending further information as the development process progresses.
4	**Receiving Environment**	Land to be developed is located primarily on the following regions: • Fossil Downs: Cracking clay plains supporting Mitchell grass and ribbon grass-bluegrass grasslands with sparse trees and shrubs, and minor limestone outcrop slopes with patches of hard spinifex. • Gogo System: Active floodplains with broad levee zones supporting ghost gum and coolibah woodlands with frontage grasses, and cracking clay black plains supporting Mitchell grass and ribbon grass-bluegrass grasslands. Each system is moderately disturbed from its natural state, having been utilised for the grazing of cattle for over 100 years. The region is therefore subject to common agricultural land degradation issues including soil compaction and invasive species.
5	**Proposal Activities**	Activities include clearing land, to convert up to 8,335ha of grasslands to cropland for the purposes of irrigated agriculture and supporting infrastructure (including water supply channels, irrigation storages, internal roads and buildings).
6	**Mitigation**	Some native vegetation will be retained within the development area, to provide buffer zones and flood channels between the development and environments outside of the development area.
7	**Impacts**	Overall impact is likely to be minimal as the subject site is located within an extensive region on undeveloped native grasslands, which provide suitable habitat for native species within the area. Limestone outcrops within in the region are likely to serve as more significant refuge habitat for threatened species than the clay alluvial plains; these outcrops will not be impacted by the proposed development. The proposal therefore does not provide a threat to the ecological integrity or biodiversity of ecosystems within the region surrounding the development.
8	**Assumptions**	There is likely to be an absence of endemic or rare species with limited habitat range which rely specifically upon the development area as critical habitat. Site surveys will be undertaken to further investigate these assumptions.

Table A2.2: EPA Factor Assessment - Subterranean Fauna

1	EPA Factor	Subterranean Fauna
2	**EPA Policy and Guidance**	Objective: to protect subterranean fauna so that biological diversity and ecological integrity are maintained. For the purposes of EIA, subterranean fauna are defined as fauna which live their entire lives (obligate) below the surface of the earth. This proposal will involve some land clearing, cultivation and development of infrastructure in a largely undeveloped region of the Kimberley. This is considered to disturb the integrity of the soil environment. There are considerable tracts of native vegetation in the wider area which are considered as sufficient to maintain ecological integrity and biodiversity of regional subterranean native ecosystems.
3	**Consultation**	Discussions have been undertaken with relevant stakeholders and departments including Marra Worra Worra Aboriginal Corporation, Gooniyandi Aboriginal Corporation, the Premier's office, the EPA, Department of Water, Department of Lands, Department of Environment and Regulation and Department of Parks and Wildlife. Stakeholders have thus far indicated in principle support for the development, pending further information as the development process progresses.
4	**Receiving Environment**	Land to be developed is located primarily on the following regions: • Fossil Downs: Cracking clay plains supporting Mitchell grass and ribbon grass-bluegrass grasslands with sparse trees and shrubs, and minor limestone outcrop slopes with patches of hard spinifex • Gogo System: Active floodplains with broad levee zones supporting ghost gum and coolibah woodlands with frontage grasses, and cracking clay black plains supporting Mitchell grass and ribbon grass-bluegrass grasslands Each system is moderately disturbed from its natural state, having been utilised for the grazing of cattle for over 100 years. The region is therefore subject to common agricultural land degradation issues including soil compaction and invasive species.
5	**Proposal Activities**	Activities include clearing land, to convert up to 8,335ha of grasslands to cropland for the purposes of irrigated agriculture and supporting infrastructure (including water supply channels, irrigation storages, internal roads and buildings).
6	**Mitigation**	Some native vegetation will be retained within the development area, to provide buffer zones and flood channels between the development and environments outside of the development area.
7	**Impacts**	Overall impact is minimal as the subject site is located within an extensive region on undeveloped native grasslands, which provide suitable habitat for native species within the area. The proposal therefore does not provide a threat to the ecological integrity or biodiversity of ecosystems within the region surrounding the development.
8	**Assumptions**	There is likely to be an absence of endemic or rare species with limited habitat range which rely specifically upon the development area as critical habitat. Site surveys will be undertaken to further investigate these assumptions.

Table A2.3: EPA Factor Assessment - Terrestrial Fauna

1	EPA Factor	Terrestrial Fauna
2	**EPA Policy and Guidance**	Objective: to protect terrestrial fauna so that biological diversity and ecological integrity are maintained. Ecological integrity is the composition, structure, function and processes of ecosystems, and the natural range of variation of these elements. This proposal will involve some land clearing in a largely undeveloped region of the Kimberley. This is considered to impact available habitat for terrestrial fauna. There are considerable tracts of native vegetation in the wider area which are considered as sufficient to maintain regional ecological integrity and biodiversity of native ecosystems.
3	**Consultation**	Discussions have been undertaken with relevant stakeholders and departments including Marra Worra Worra Aboriginal Corporation, Gooniyandi Aboriginal Corporation, the Premier's office, the EPA, Department of Water, Department of Lands, Department of Environment and Regulation and Department of Parks and Wildlife. Stakeholders have thus far indicated in principle support for the development, pending further information as the development process progresses.
4	**Receiving Environment**	Land to be developed is located primarily on the following regions: • Fossil Downs: Cracking clay plains supporting Mitchell grass and ribbon grass-bluegrass grasslands with sparse trees and shrubs, and minor limestone outcrop slopes with patches of hard spinifex. • Gogo System: Active floodplains with broad levee zones supporting ghost gum and coolibah woodlands with frontage grasses, and cracking clay black plains supporting Mitchell grass and ribbon grass-bluegrass grasslands. Each system is moderately disturbed from its natural state, having been utilised for the grazing of cattle for over 100 years. The region is therefore subject to common agricultural land degradation issues including soil compaction and invasive species.
5	**Proposal Activities**	Activities include clearing land, to convert up to 8,335ha of grasslands to cropland for the purposes of irrigated agriculture and supporting infrastructure (including water supply channels, irrigation storages, internal roads and buildings).
6	**Mitigation**	Some native vegetation will be retained within the development area, to provide buffer zones and flood channels between the development and environments outside of the development area.
7	**Impacts**	Overall impact is minimal as the subject site is located within an extensive region on undeveloped native grasslands, which provide suitable habitat for native species within the area. Limestone outcrops within in the region are likely to serve as more significant refuge habitat for threatened species than the clay alluvial plains; these outcrops will not be impacted by the proposed development. The proposal therefore does not provide a threat to the ecological integrity or biodiversity of ecosystems within the region surrounding the development.
8	**Assumptions**	There is likely to be an absence of endemic or rare species with limited habitat range which rely specifically upon the development area as critical habitat. Site surveys will be undertaken to further investigate these assumptions.

Table A2.4: EPA Factor Assessment - Terrestrial Environment Quality

1	EPA Factor	Terrestrial Environment Quality
2	**EPA Policy and Guidance**	Objective: to maintain the quality of land and soils so that environmental values are protected. The objective recognises the fundamental link between soil quality and the protection of ecological and social values that good soil quality supports. Therefore, the focus of this factor and its associated objective is how changes to soil quality impact environmental values. This proposal will involve some land clearing in a largely undeveloped region of the Kimberley. This has the potential to impact environmental quality by increasing the risk of erosion, decreasing soil carbon and biodiversity and altering nutrient balances of soil through application of fertilisers and farm chemicals.
3	**Consultation**	Discussions have been undertaken with relevant stakeholders and departments including Marra Worra Worra Aboriginal Corporation, Gooniyandi Aboriginal Corporation, the Premier's office, the EPA, Department of Water, Department of Lands, Department of Environment and Regulation and Department of Parks and Wildlife. Stakeholders have thus far indicated in principle support for the development, pending further information as the development process progresses.
4	**Receiving Environment**	Land to be developed is located primarily on the following regions: • Fossil Downs: Cracking clay plains supporting Mitchell grass and ribbon grass-bluegrass grasslands with sparse trees and shrubs, and minor limestone outcrop slopes with patches of hard spinifex. • Gogo System: Active floodplains with broad levee zones supporting ghost gum and coolibah woodlands with frontage grasses, and cracking clay black plains supporting Mitchell grass and ribbon grass-bluegrass grasslands. Each system is moderately disturbed from its natural state, having been utilised for the grazing of cattle for over 100 years. The region is therefore subject to common agricultural land degradation issues including soil compaction and invasive species.
5	**Proposal Activities**	Activities include clearing land, to convert up to 8,335ha of grasslands to cropland for the purposes of irrigated agriculture and supporting infrastructure (including water supply channels, irrigation storages, internal roads and buildings).
6	**Mitigation**	Some native vegetation will be retained within the development area, to provide buffer zones between the development and environments outside of the development area. On-site drainage will be designed to capture tailwater, decreasing the risk of discharges of tailwater containing nutrient and sediment loads into the surrounding environment.
7	**Impacts**	Overall impact is minimal as the subject site is located within an extensive region on undeveloped native grasslands, which provide suitable habitat for native species within the area. Impacts of the proposal on terrestrial habitat quality will be largely constrained to the development site. Limestone outcrops within in the region are likely to serve as more significant refuge habitat for threatened species than the clay alluvial plains; these outcrops will not be impacted by the proposed development. The proposal therefore does not provide a threat to the ecological integrity or biodiversity of ecosystems within the region surrounding the development.
8	**Assumptions**	There is likely to be an absence of endemic or rare species with limited habitat range which rely specifically upon the development area as critical habitat. Site surveys will be undertaken to further investigate these assumptions.

Table A2.5: EPA Factor Assessment - Hydrological Processes

1	EPA Factor	Hydrological Processes
2	**EPA Policy and Guidance**	Objective: to maintain the hydrological regimes of groundwater and surface water so that environmental values are protected. The focus of this factor and its associated objective is on how any alteration of hydrological regime significantly impacts on water dependent ecosystems and other values supported by groundwater and surface water. Water is to be extracted from the Margaret River. This has some potential to decrease water availability to other water users.
3	**Consultation**	Discussions have been undertaken with relevant stakeholders and departments including Marra Worra Worra Aboriginal Corporation, Gooniyandi Aboriginal Corporation, the Premier's office, the EPA, Department of Water, Department of Lands, Department of Environment and Regulation and Department of Parks and Wildlife. Stakeholders have thus far indicated in principle support for the development, pending further information as the development process progresses.
4	**Receiving Environment**	Surface water is to be sourced from the Margaret River at periods of moderate to high flow. The Margaret River is a tributary of the Fitzroy River, joining about 6km to the north-east of Fitzroy Crossing. The entire catchment area of the Fitzroy River covers over 95,000km^2 within the Canning Basin. The catchment has a semi-arid/monsoonal climate, with rain falling in the wet season between November and April. Analysis taken by the Australian Bureau of Meterology as part of their Australian climate variability and change analysis has identified predicted increases of rainfall in the Kimberley by up to 30-40mm per annum as a result of climate change.
5	**Proposal Activities**	Surface water is to be sourced from the Margaret River (50,000ML per annum from a gravity offtake channel, to be taken only when the height of flow in Margaret River is 3m or above), and from captured surface flow (stormwater and tailwater at 2.5ML/ha). Due to natural variation in river height, these extraction conditions would result in an average annual take predicted to be in the order of 2.4% of the river flow (based on current flow volumes). The proposal also includes surface water entitlements to be calculated by a continuous account approach to allow capture of 200-400% of annual entitlements in any one year, such that capture in a single year will not exceed entitlements.
6	**Mitigation**	All extraction measures have been assessed with regards to the sustainable take threshold of each water source. Ongoing monitoring will occur of surface water sources to permit management adjustments as needed to ensure the ongoing sustainability of operations. Storages are to be constructed with clay bases to minimise the risk of seepage into groundwater. Soil groups targeted for crop development are also clay based soils, decreasing the risk of high rates of deep drainage resulting in elevated water tables. Best practice irrigation measures are to be adopted to further minimise the risk of waster wastage via deep drainage resulting in elevated water tables. The Proponent will work closely with Department of Water to ensure the sustainability and practicality of all water extraction and management measures.
7	**Impacts**	The overall impact of water extraction upon the Margaret River is expected to be minimal, given the small volume of water extraction as a percentage of total river flow and predicted increases in rainfall in the region as a result of climate change which are expected to partially offset the water loss as a result of extraction. Water loss via deep drainage from cropland and water storages may raise the water table and increase the risk of land salinisation. Storages are to be located on soils with low permeability to minimise water loss via deep drainage. Clay soils to be used for cropping

1	EPA Factor	Hydrological Processes
		have lower permeability rates which also limit the risk of deep drainage. Best practice irrigation methods, including furrow irrigation, will be implemented on site to improve water use efficiency and minimise deep drainage. Therefore, predicted impacts on hydrological processes are considered to be minimal with with appropriate mitigation measures in place.
8	Assumptions	Assumptions primarily relate to the reliability of data upon which climate and hydrological models are based. Thorough soil surveys will be implemented as required to clarify soil permeability prior to storage and water channel construction to minimise assumptions relating to groundwater and surface water connectivity.

Table A2.6: EPA Factor Assessment - Inland Waters Environmental Quality

1	EPA Factor	Inland Waters Environmental Quality
2	EPA Policy and Guidance	Objective: to maintain the quality of groundwater and surface water so that environmental values are protected. Therefore, the focus of this factor and its associated objective is twofold: • how the discharge of waste is minimised • how any discharge of waste or use of land or water will significantly impact on water quality and the environmental values it supports.
3	Consultation	Discussions have been undertaken with relevant stakeholders and departments including Marra Worra Worra Aboriginal Corporation, Gooniyandi Aboriginal Corporation, the Premier's office, the EPA, Department of Water, Department of Lands, Department of Environment and Regulation and Department of Parks and Wildlife. Stakeholders have thus far indicated in principle support for the development, pending further information as the development process progresses.
4	Receiving Environment	The primary surface water body on Gogo Station is the Margaret River. The Margaret River is a tributary of the Fitzroy River, joining about 6km to the north-east of Fitzroy Crossing. The entire catchment area of the Fitzroy River covers over 95,000km^2 within the Canning Basin. There are two main aquifers in the region: the limestone aquifer, and alluvial aquifers. The limestone aquifer is a source of artesian water, which is alkaline but otherwise of good quality. No specific salinity or other issues having been identified for this water with regard to its continued use for irrigation purposes. The alluvial aquifers comprise of relatively porous sand and gravel deposits associated with river systems on the floodplain. These aquifers are poorly studied, and are assumed to have a direct association with the river in relation to water level and annual recharge.
5	Proposal Activities	Proposal activities include construction of water storages and development of land for the purposes of irrigated crop production. Primary risks associated with these activities is seepage from water storages to create shallow water tables (which increases the risk of land salinization), and runoff of agricultural chemicals from cropland into surface and groundwater bodies.
6	Mitigation	Storages are to be constructed with clay bases to minimise the risk of seepage into groundwater. Clay-based soils will also be targeted for cropland development. These soils typically have low rates of deep drainage, therefore minimising the risk of

1	EPA Factor	Inland Waters Environmental Quality
		groundwater contamination from agricultural chemicals. Further, best practice irrigation management techniques will be implemented on site, to minimise water loss via deep drainage. Cropland is to be flood protected by levee banks, which will minimise the risk of discharge of surface water containing agricultural chemicals into the surrounding natural environment.
7	Impacts	With appropriate mitigation measures in place, the impact of the proposed development on the environmental water quality of the region is considered to be minimal.
8	Assumptions	Assumptions relate to the nature of connectivity of surface water and groundwater bodies in the region. These assumptions will be refined following more detailed soil surveys in future.

Table A2.7: EPA Factor Assessment - Air Quality

1	EPA Factor	Air Quality
2	EPA Policy and Guidance	Objective: to maintain air quality and minimise emissions so that environmental values are protected. For the purposes of environmental impact assessment, the EPA defines the factor air quality as the chemical, physical, biological and aesthetic characteristics of air. The proposed development has potential to impact upon air quality through dust generation from construction and site operations.
3	Consultation	Discussions have been undertaken with relevant stakeholders and departments including Marra Worra Worra Aboriginal Corporation, Gooniyandi Aboriginal Corporation, the Premier's office, the EPA, Department of Water, Department of Lands, Department of Environment and Regulation and Department of Parks and Wildlife. Stakeholders have thus far indicated in principle support for the development, pending further information as the development process progresses.
4	Receiving Environment	Seven aboriginal communities live on Gogo Station, including three schools. The nearest population centre is Fitzroy Crossing (to the north-west of the development), which had a population of 1,144 as of the 2011 census. Dust storms have the potential to occur within the Kimberley, which temporarily elevate dust levels beyond acceptable thresholds. The mean Dust Storm Index value of the Dampierland Bioregion (1992-2005) was 0.79, which is considered to be very low compared with all other rangeland bioregions. This indicates that severe dust storms are a relatively infrequent occurrence in the study area. Further, proposed land clearing and construction is to take place on strongly-structured clay soils. Such soils have a low vulnerability to wind erosion, as the natural structure of the soil results in the formation of aggregates which are too heavy to be blown away in the wind.
5	Proposal Activities	The proposal has the potential to generate dust through: • Clearing and burning of native vegetation; • Physical disturbance of the soil surface during construction; • Crop harvesting and burning; and • Movement of vehicles on unsealed roads.

1	EPA Factor	Air Quality
		Dust production has the potential to impact upon the amenity of the landscape, including the amenity of residential areas of indigenous communities on Gogo Station. Climatic factors such as drought and wind may exacerbate dust production from the development site temporarily. Dust produced in these instances may have the capacity to impact the amenity of a wider region, including the township of Fitzroy Crossing.
6	Mitigation	Dust generation will be managed by visual monitoring of conditions and watering down of dust generation surfaces where required. Best practice agricultural operations including limiting of crop burning and adopting stubble retention practices are also effective in reducing dust production. Management is to maintain records of all complaints received regarding dust generation; complaints are to be responded to appropriately.
7	Impacts	Proposed mitigation practices are considered to be sufficient to minimise dust production from the development site. It should be noted that the Dampierland Bioregion naturally has a low Dust Storm Index value when compared to other rangeland bioregions, indicating that the region has a naturally low susceptibility to producing dust.
8	Assumptions	N/A

Table A2.8: EPA Factor Assessment - Social Surroundings

1	EPA Factor	Social Surroundings
2	EPA Policy and Guidance	Objective: to protect social surroundings from significant harm. For the EPA to consider social surroundings as a factor in EIA, a proposal's or scheme's effect on social surroundings, via its effect on the physical or biological environment, must be significant. The proposed development is considered to have a significant positive impact upon the social surroundings of Gogo Station. The development has broad support from stakeholder groups within the region, including Indigenous groups, and is predicted to create both employment and education opportunities in a region which otherwise has high rates of unemployment and disadvantage.
3	Consultation	Discussions have been undertaken with relevant stakeholders and departments including Marra Worra Worra Aboriginal Corporation, Gooniyandi Aboriginal Corporation, the Premier's office, the EPA, Department of Water, Department of Lands, Department of Environment and Regulation and Department of Parks and Wildlife. Stakeholders have thus far indicated in principle support for the development, pending further information as the development process progresses.
4	Receiving Environment	The 2011 Census identified that Indigenous persons accounted for 38% of the working age population (aged 15-64) in the Kimberley ESA, a figure far higher than that for Western Australia (3%). Indigenous populations of the region are typically disadvantaged, with high unemployment rates and low participation rates. Refer to the table below for a detailed summary of the Indigenous labour market outcome from the working age population in the Kimberley region:

<table>
<tr><td>1</td><td>EPA Factor</td><td>Social Surroundings</td></tr>
<tr><td></td><td></td><td>
<table>
<tr><th rowspan="2">Statistical Local Area</th><th rowspan="2">Indigenous proportion of total population (%)</th><th colspan="2">Unemployment Rate (%)</th><th colspan="2">Participation Rate (%)</th></tr>
<tr><th>Indigenous</th><th>Non-Indigenous</th><th>Indigenous</th><th>Non-Indigenous</th></tr>
<tr><td>Broome</td><td>28</td><td>16.5</td><td>2.3</td><td>48.2</td><td>87.4</td></tr>
<tr><td>Derby-West Kimberley</td><td>44</td><td>9.3</td><td>1.9</td><td>48.2</td><td>49.7</td></tr>
<tr><td>Halls Creek</td><td>73</td><td>24.2</td><td>1.8</td><td>35.3</td><td>92.3</td></tr>
<tr><td>Wyndham-East Kimberley</td><td>32</td><td>16.4</td><td>2.0</td><td>49.2</td><td>90.7</td></tr>
<tr><td>Kimberley ESA</td><td>38</td><td>15.5</td><td>2.2=</td><td>45.8</td><td>80.0</td></tr>
<tr><td>Western Australia</td><td>3</td><td>17.9</td><td>4.5</td><td>51.7</td><td>78.9</td></tr>
</table>
The real employment rate, however, depends on whether or not Community Development Employment Positions (CDEP) are included in employment statistics. The table below shows employment rates for indigenous adults (over 20 in full-time or part-time study or employment, excluding incarcerated Australians and people in CDEP employment):
<table>
<tr><th>LGA</th><th>Real Employment Rate</th></tr>
<tr><td>Shire of Derby West Kimberley</td><td>27%</td></tr>
<tr><td>Broome</td><td>36%</td></tr>
<tr><td>Halls Creek</td><td>17%</td></tr>
<tr><td>Shire of Wyndham-East Kimberley</td><td>33%</td></tr>
</table>
These real employment rates are of concern, as anecdotal evidence would suggest real rates of non-indigenous employment for the Kimberley are as high as 83% when CDEP employment is removed from the employed classification.
</td></tr>
<tr><td>5</td><td>Proposal Activities</td><td>The proposal involves a significant investment of capital from the Proponent to develop not only the proposed land in question, but also to assist the establishment of supporting industries within the region (including mechanics and other agricultural trades) as ancillary enterprises to the main development. This is considered to provide considerable opportunities for education and employment for local populations.</td></tr>
<tr><td>6</td><td>Mitigation</td><td>N/A</td></tr>
<tr><td>7</td><td>Impacts</td><td>By providing opportunities for meaningful employment, the development would significantly reduce the risk of individuals needing to move away from the region to attain employment. Enabling family members to remain together is of particular importance to Indigenous communities, which place high cultural emphasis on familial and community connections and connection to country. Without meaningful employment opportunities in the region, the continued out-migration of indigenous youth and families is</td></tr>
</table>

1	EPA Factor	Social Surroundings
		expected to lead to a continued degradation and loss of Indigenous culture. The proposed development there has the potential to generate significant social and cultural benefits. By generating employment opportunities, the proposal also has the potential to decrease the proportion of the community dependent on government welfare, increasing the region's capacity to be economically self-sufficient. This is also considered to be a net benefit to both the Gogo communities and the wider region.
8	**Assumptions**	Assumptions include support from relevant regulatory authorities in enabling the development to proceed in a responsible, sustainable manner to enable realisation of these social and economic benefits for the community.