

Urban Planning Report – Material Change of Use & Reconfigure a Lot
Alpha Bypass Road, Clermont

within
Isaac Regional Council

for

CLERMONT SOLAR PTY LTD

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STATEMENT OF LIMITATION

Data and conclusions of this report are the findings and opinions of iCubed consulting and are not an expressed or implied representation, warranty or guarantee. This report has been prepared for Clermont Solar Pty Ltd, iCubed Consulting does not accept liability for any third party's use or reliance on this report.



1. Executive Summary

SITE DETAILS	
ADDRESS	Alpha Bypass Road, Clermont
LOT ON PLAN	Lot 6 SP159756, Lot 220 CLM102 and Lot 153 CLM230
SITE AREA	<p>Lot 220 CLM102: 175.821ha</p> <p>Lot 153 CLM230: 365.052ha</p> <p>Lot 6 SP159756: 242.6ha</p> <p>Total: 783.473 ha</p>
LAND OWNERS	<p>Lot 220 CLM102: JAMES PATRICK COOK SHERYLE ANNE COOK</p> <p>Lot 153 CLM230: GREG JAMES RANDELL MARIANNE SUMMER RANDELL</p> <p>Lot 6 SP159756: WILLIAM EDWARD FAINT JANICE SYBIL FAINT ROSS WILLIAM FAINT</p>
LOCAL AUTHORITY	Isaac Regional Council
RELEVANT PLANNING SCHEME	Planning Scheme for Belyando Shire July 2008
ZONE	Rural
APPLICABLE PLANNING SCHEME CODES	Rural Zone Code
DEVELOPMENT PROPOSAL DETAILS	
REFERRALS	Department of Transport and Main Roads (State Road) Department of Natural Resources and Mines (Vegetation) Ergon Energy (Advice Agency)
APPLICATION TYPE	Material Change of Use - Public Utility Reconfigure a Lot – Lease greater than 10 years Reconfigure a Lot – Subdivision of Land One (1) into Two (2) lots
DEFINED USES	Public Utility
LEVEL OF ASSESSMENT	Impact Assessable
CURRENT USE	Agricultural Activities
PROPOSAL	Public Utility (Solar Farm) over above mentioned lots, which requires: Lease over part of Lot 153 CLM230 for 30 years Subdivision of Lot 6 SP159756 into two (2) lots
PUBLIC NOTIFICATION	Required
APPLICANT	Clermont Solar Pty Ltd
CONTACT	c/- Elizabeth Cruice P – 07 3870 8888 i3 Consulting Pty Ltd PO Box 878, TOOWONG QLD 4066



2. Introduction

2.1 Proposal Summary

This town planning report has been prepared to accompany a development application for a Material Change of Use - Public Utility (Solar Farm), and Reconfiguration of Land being a Lease over 10 years, and Subdivision of one into two allotments for Clermont Solar Pty Ltd over land generally located on or near the Alpha Bypass Road, Clermont. The subject site can be further identified as Lot 6 SP159756, Lot 220 CLM102 and Lot 153 CLM230. The site is currently used for Agricultural Activities and is zoned under the current *Planning Scheme for Belyando Shire July 2008* as being within the Rural Zone.

The proposed development is for the subject site to be developed as a Public Utility (Solar Farm), which will be completed in two (2) stages. As a result of negotiations with landowners the proposed use can only proceed on the basis that the applicant wholly purchases Lot 220 CLM102, leases part of Lot 153 CLM230, and purchases part of Lot 6 SP159756 by way of land subdivision into two lots. Below is a brief synopsis of development that will occur on site.

Table 1 - Development Synopsis

Stage 1	Description	Usage / Location	Approximate Area
Reconfiguration of Lot			
	Subdivision of Land into 2 lots	Lot 6 SP159756	185.6ha Proposed Lot 1 57.0ha Proposed Lot 2
Solar Farm Use			
	Solar Panel Arrays	Lot 220 CLM102 Proposed Lot 1 (formerly part of Lot 6 SP159756)	115.08ha 77.51ha
	Substation & Compound Area:	Lot 220 CLM102	1.8ha
	Control Room	Operation of PowerStation	-
	Battery Store	Storage of Electricity	-
	Capacitor Banks	Within internal substation	-
	Switch Room	Within internal substation	-
	Back Up Generator (B.U.G)	Generator	-
	Transformer	Conversion of Power	-
	Solar Invertors	Central to solar arrays	-
		Subtotal	194.39ha
Removed			
	-	-	-
		Subtotal	-
Miscellaneous			
	Existing Shed	Storage	162m ²
	Landscaping	5m wide screen for solar array fronting Alpha Bypass Road on Proposed Lot 1	5.8ha
	Access Track	Lindley Road to Substation	1.85ha
	Stormwater Detention Basin	Near substation	480m ²
	Stormwater Bioretention Basin	Near substation	240m ²
	Fencing	Perimeter of Stage 1	-
		Subtotal	7.7382ha
		Approximate Total Use Area	202.1282ha



Stage 2	Description	Usage / Location	Approximate Area
Reconfiguration of Lot			
	Lease over 30 years	Part of Lot 153 CLM230	57.50ha
Solar Farm Use			
	Solar Panel Arrays	Lot 153 CLM230	57.50ha
		Proposed Lot 1 (formerly part of Lot 6 SP159756)	59.52ha
		Subtotal	117.02ha
Removed			
	-	-	-
		Subtotal	-
Miscellaneous			
	Access Track	Creek bed vehicle crossing	-
	Fencing	Perimeter of Stage 1	-
		Subtotal	-
		Approximate Total Use Area	117.02ha

The proposal generally complies with the planning criteria outlined by the Isaac Regional Council and the relevant codes associated with the Planning Scheme for Belyando Shire July 2008. The proposed development has been identified as Impact Assessable and will therefore require public notification.

This report will furthermore provide information on the site and application details; an overview of the proposed development and details on how the proposed development will comply with the planning criteria associated with the Planning Scheme for Belyando Shire July 2008. Supporting material is provided in addition to this report to offer further details on engineering, planning, environmental, and proposal plans. This report should be read in conjunction with its Appendices.

3. Site Description and Context

3.1 Subject Site

The subject site is located at Alpha Bypass Road, Clermont and is made up of three (3) individual land parcels, being Lot 220 CLM102, Lot 6 SP159756 and Lot 153 CLM230, encompassing a total area of 783.473ha. The subject lots are situated approximately 6km West South West of the inland City of Clermont being within the jurisdiction of Isaac Regional Council as illustrate in Figure 1 and Figure 2. The general arrangement of the proposed solar farm within the subject site lots is as shown in Figure 3.

The subject site is bordered by a two way gravel graded road called the Alpha Bypass Road which adjoins the northern perimeter of Lot 6 SP159756, and connects to Clermont Alpha Road to the West and Clermont Rubyvale Road to the East. It can be noted that several other roads separate the subject lots, being Lindley Road which adjoins Lot 6 SP159756 and 220 CLM102 in a general north-south alignment, Appos Road which divides Lot 153 CLM230 into parts, and an Unnamed Road which divides both Lot 6 SP159756 and Lot 153 CLM230 into parts as shown in Figure 4.

The subject lots are generally unimproved with clearing evident for grazing purposes, and some structures, being a shed on Lot 220 CLM102 and a dwelling and associated structures within Lot 153 CLM230. The remaining mature vegetation onsite is clumped unsystematic, with larger areas noticeable along the eastern and western boundaries of Lot 6 SP159756, and the north eastern and south western end of Lot 220 CLM102. Refer to Figure 2.

Topography of the land generally adheres to an undulating landscape with stormwater flowing in all directions over the subject site. Waterholes / dams exist within every lot of the subject site as do dry creeks, the most noticeable of which divides Lot 6 SP159756 in an east-westerly manner.

Below are aerial photographs of the subject site in its current form. Refer to Figure 5 to Figure 8.

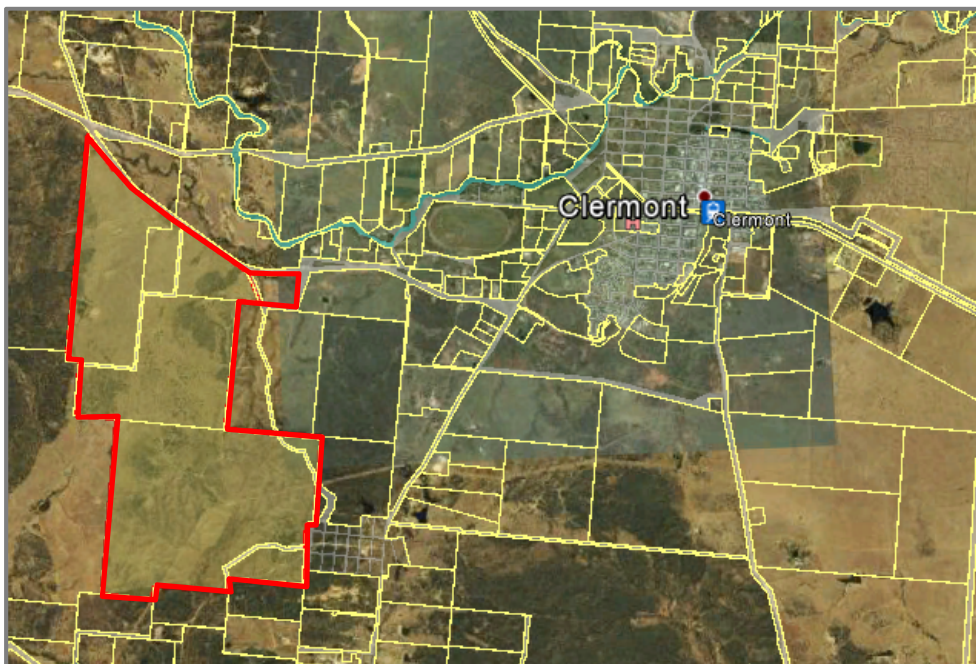


Figure 1 - Aerial photo showing locality of subject site
Source: Google Maps, 2016

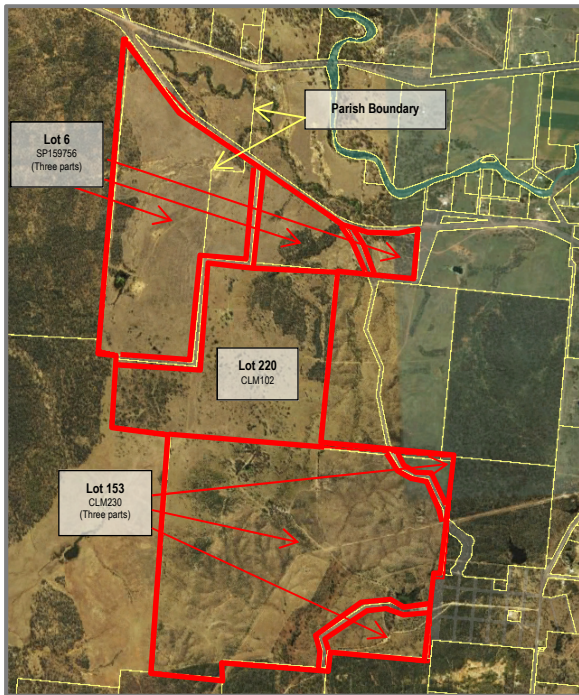


Figure 2 - Aerial photo showing subject site
Source: Google Maps, 2016

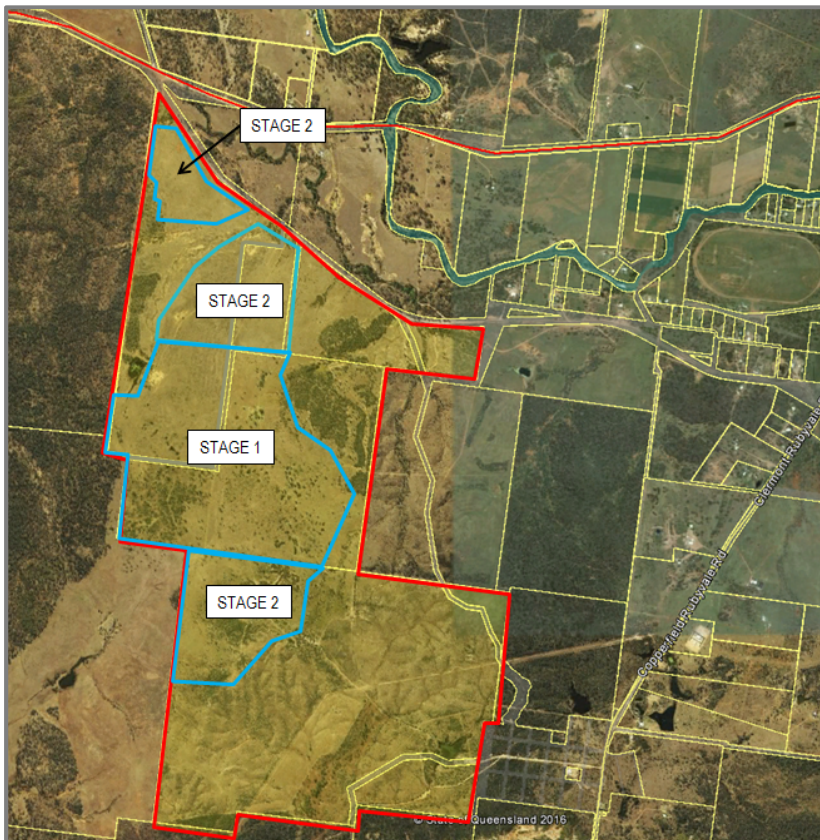


Figure 3 - Proposed location of solar farm (blue border) on subject site (red border)
Source: Google Maps, 2016

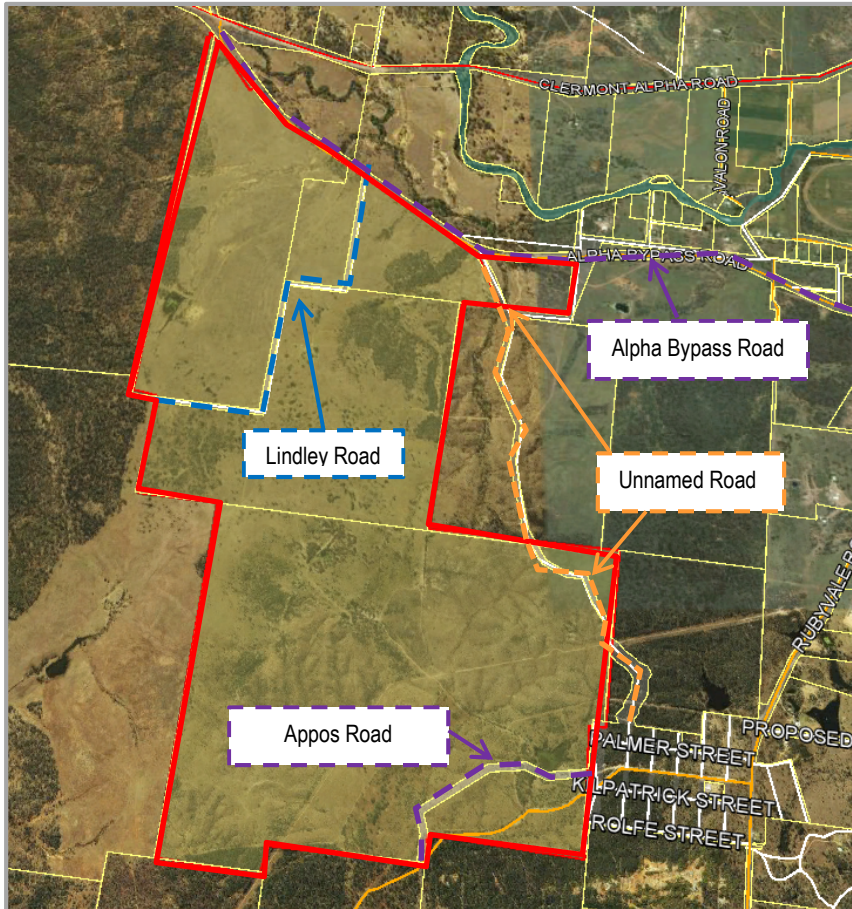


Figure 4 - Aerial photo showing roads on and adjoining subject site
Source: Google Maps, 2016



Figure 5 - View of proposed Solar Farm from North corner of Lot 6 SP159756 on Alpha Bypass Road looking SE
Source: Environmental Ethos, 2016

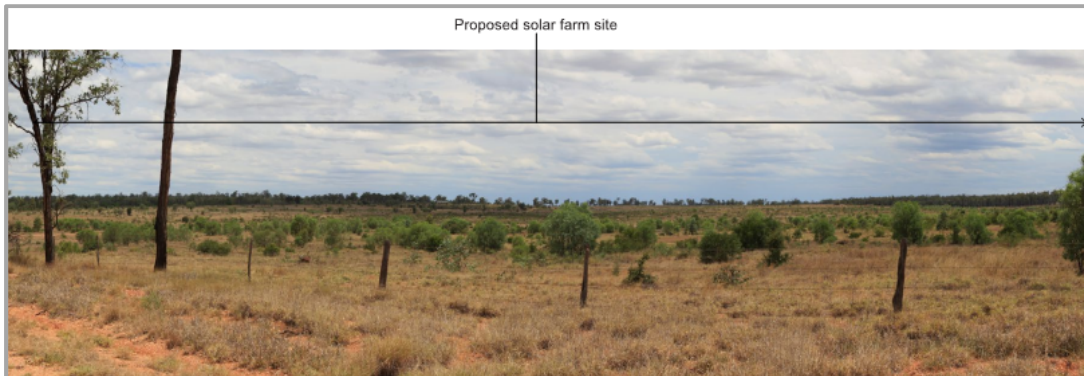


Figure 6 - View of proposed Solar Farm from Lot 6 SP159756 on Alpha Bypass Road looking south
Source: Environmental Ethos, 2016



Figure 7 - View of proposed Solar Farm from Lot 6 SP159756 on Alpha Bypass Road looking south
Source: Environmental Ethos, 2016



Figure 8 - View of proposed Solar Farm from Lot 6 SP159756 on Alpha Bypass Road looking south
Source: Environmental Ethos, 2016



3.2 Surrounding Land Uses

Development in the locality predominately consists of rural agricultural activities, with residential uses being largely concentrated around townships and transport nodes. Refer to Figure 9. Large tracts of cleared fields and heavily vegetated land surround the subject site with the nearest urban centre being Clermont. Refer to Figure 1. A brief description of the surrounding land uses has been provided below.

Table 2 - Surrounding Land Uses Summary

East	Rural Lots – Zoned Rural, and utilised for either grazing purposes or untouched heavily wooded areas. State Owned Land, being Lot 49 CLM455, adjoins the subject site and is currently leased by Knoble Honey for beekeeping purposes. An existing 132kV electricity line owned by Ergon Energy traversed this land which connects to a substation on Clermont Rubyvale Road. Refer to Figure 10.
West	Rural Lots – Zoned Rural, and utilised for either grazing purposes or untouched heavily wooded areas.
North	Rural Lots – Zoned Rural, and utilised for hobby farm residents of Clermont with cleared areas and remanent vegetation around waterways and near road reserves.
South	Rural Lots – Zoned Rural, heavily vegetated with some residential uses occurring on the smaller allotments.

Of note, is the presence of an old township called Copperfield to the East of the subject site. This township is generally closed with the State owning most of the land apart from a few blocks, including Lot 9 CLM581, which is currently utilised as a place of residence. Mature vegetation covers with land with the exception of the above residence and a track that links Lot 153 CLM230 to Clermont Rubyvale Road.

The proposed use is designed to complement the existing rural character of this locality with appropriate measures implemented to mitigate impacts as outlined in further sections of this report. Furthermore, it can be noted that part of the subject allotments will be retained for agricultural purposes, fundamentally complementing the surrounding rural character of the locality. The retention of rural activities will largely be confined to the southern area of the subject site.

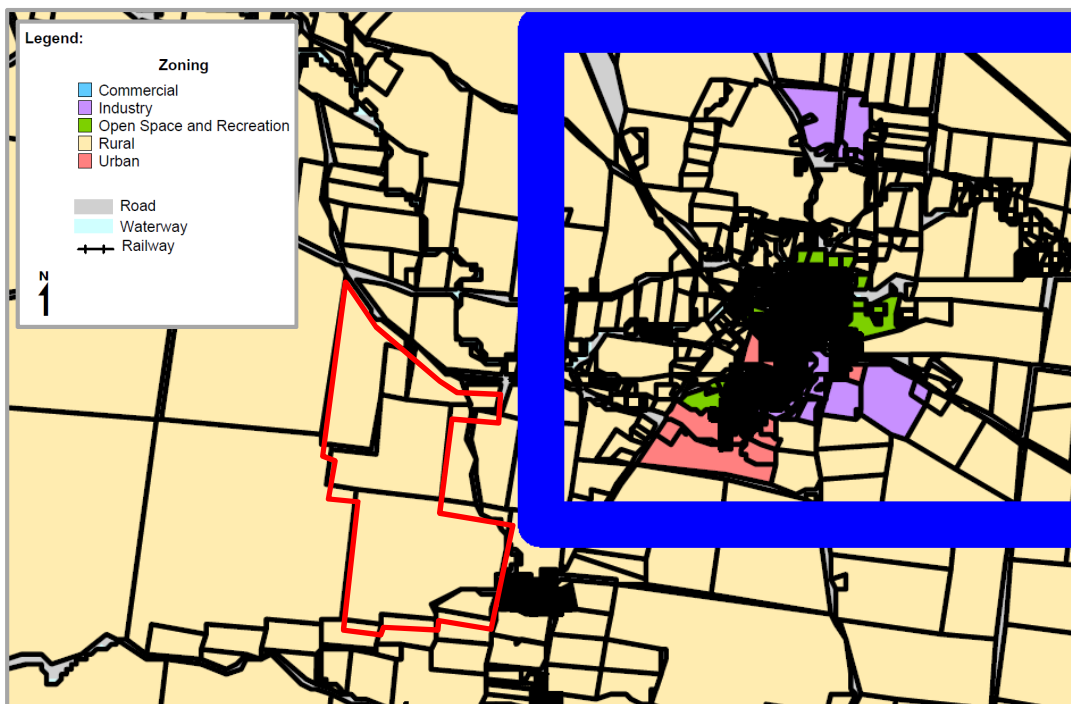


Figure 9 - Map of Surrounding Land Uses
 Source: Zoning Map from Belyando Shire Planning Scheme, 2008



Figure 10 - Map of Substation Location
Source: Google Maps, 2016

3.3 Site Characteristics

Located within a rural zone, the following characteristics have been identified through assessment of aerial photography, survey, and available mapping.

3.3.1 Access

As aforementioned in section 3.1, the Alpha Bypass Road borders the northern perimeter of Lot 6 SP159756 and is identified as the sites primary road frontage. Refer to Figure 4. It should be noted that the Alpha Bypass Road connects to Clermont Alpha Road, which is identified as a State Controlled Road, and is therefore owned and maintained by the Department of Transport and Main Roads (TMR). Refer to Figure 11. The intersection of these two roads is generally unformed but is in reasonable condition. Refer to Appendix E.

Vehicular access to the site is attained via Lindley Road from the Alpha Bypass Road, which divides Lot 6 SP159756 and 220 CLM102 East-West. Refer to Figure 4. It can be noted that the existing access track will be upgraded as part of the proposed development to accommodate larger vehicles including AVs during the construction phase.

The Unnamed Road which divides Lot 6 SP159756 and Lot 153 CLM230 contains a track but is generally not utilised. Appos Road which divides Lot 153 CLM230 does not contain any discernible access tracks, although one informal track does exist further to the south that appears to be generally used by the landowners of Lot 153 CLM230 to access Clermont Rubyvale Road via the old Copperfield Township.



Figure 11 - State Controlled Road Assessment Triggers
 Source: SDAP Mapping, 2016

3.3.1 Services

Stormwater/Sewer/ Water

The subject lots are not connected to any formal stormwater, reticulated sewer or water network. Furthermore, no formal systems exist within a relatively comfortable distance to service these lots. It can be noted that existing surface flows exit the site into the natural waterways located as shown in the plan of development. Refer to Appendix A.

Electricity:

It can be noted that an existing Ergon 132kV line runs through Lot 153 CLM203 in a north easterly direction which connects to the Clermont Substation on Clermony Rubyvale Road via Lot 49 CLM455. It can further be noted that the Planning Scheme for Belyandro Shire 2008 has identified this line as being a 'High Voltage Electricity Line' as per the Land Characteristics Overlay Map below. Refer to Figure 12. As no residential uses are proposed, this matter is not an issue for the proposed development in terms of health and safety.

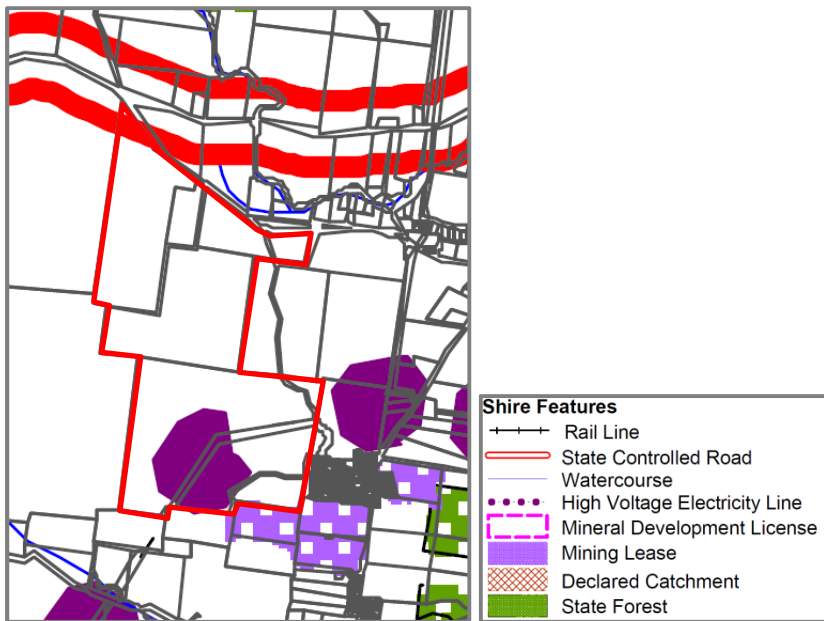


Figure 12 - Land Characteristics Map on Subject Site
 Source: Planning Scheme for Belyando Shire 2008

3.3.2 Vegetation

The subject site contains scattered vegetation being placed in an unsystematic manner with clumping particularly occurring to the eastern and western boundary of Lot 6 SP159756, and north eastern and south western end of Lot 220 CLM102. It can be noted that the vegetation identified as State Significant Remnant Vegetation is located within the subject site, however the solar farm will avoid these areas, and has no need to remove this vegetation as part of its operations. Refer to Figure 13. Further details regarding the classification of vegetation identified onsite can be found in Appendix H - Ecological Assessment

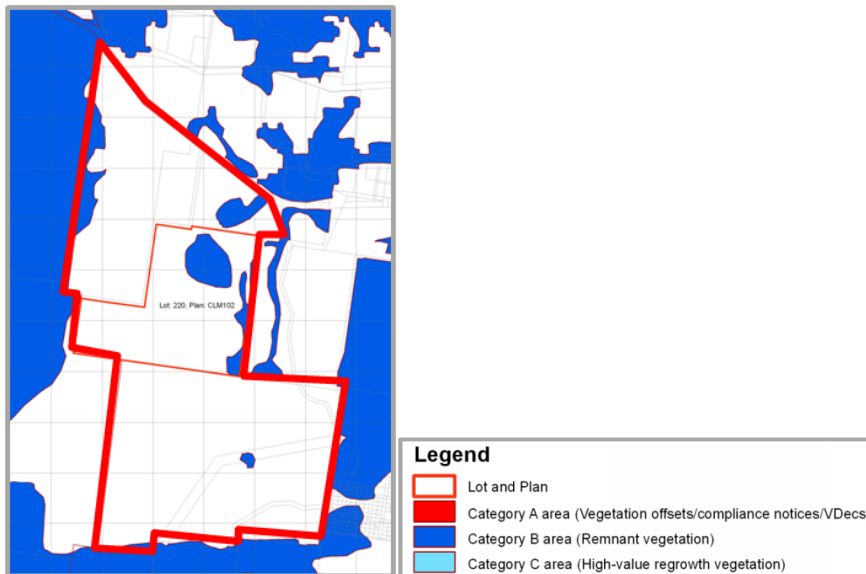


Figure 13 - Regulated Vegetation Management Map within subject site
 Source: State Government (DNRM), 2016

3.3.3 Easements

One (1) easement exists on the subject site burdening Lot 153 CLM230 for the purpose of providing electricity services in favour of Ergon Energy. Refer to Figure 14. This easement currently contains a 132kV electrical line as discussed previously.

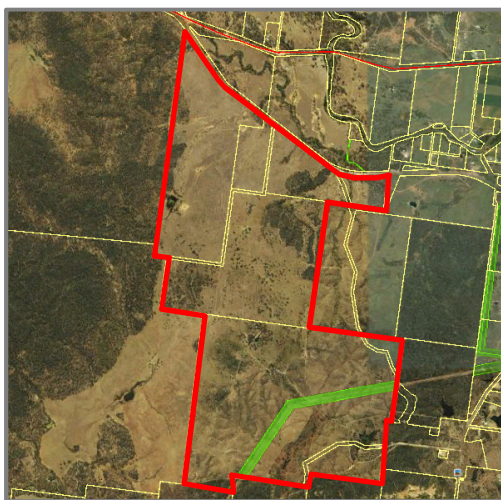


Figure 14 - Aerial photo showing existing easement
 Source: Google Maps, 2016

3.3.4 Good Quality Agricultural Land (GQAL)

Part of the subject land is identified by the Planning Scheme for Belyando Shire 2008 as containing Class C1 GQAL. Refer to Figure 15. It can be noted that the mapped area for Class C1 agricultural land would have at one point covered the township of Clermont which contained urban uses that have permanently removed agricultural land from production. This is also true of the current semi-rural uses by residents north of the subject site. As such a precedence has been set in the area, which allows uses inconsistent with good quality agricultural land to



occur when necessary. This matter is addressed further with respect to the proposed development in later sections of this report.

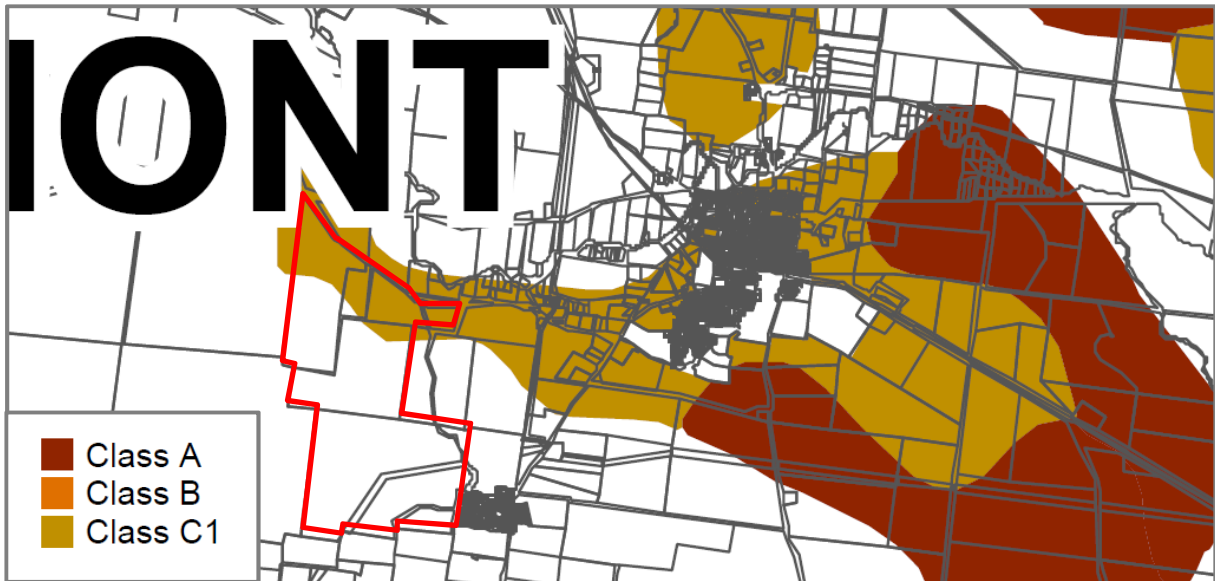


Figure 15 - Aerial photo showing location of Good Quality Agricultural Land relative to the subject site
 Source: Planning Scheme for Belyando Shire 2008

3.3.5 Aviation Facilities

The subject land is located just over 6 kilometres from the nearest aviation facility. Refer to Figure 16. Although this is relatively close, the proposed development and its subsequent activities are not considered to be an attraction for birds or bats, and thus no consideration of bird strike is required in this instance.

Its distance precludes the subject site from being a distraction to aeroplanes landing with respect lighting, flares or the like which may cause confusion to the pilot's vision. Although not triggering further assessment, for clarity this matter is further address in section 4 of this report.

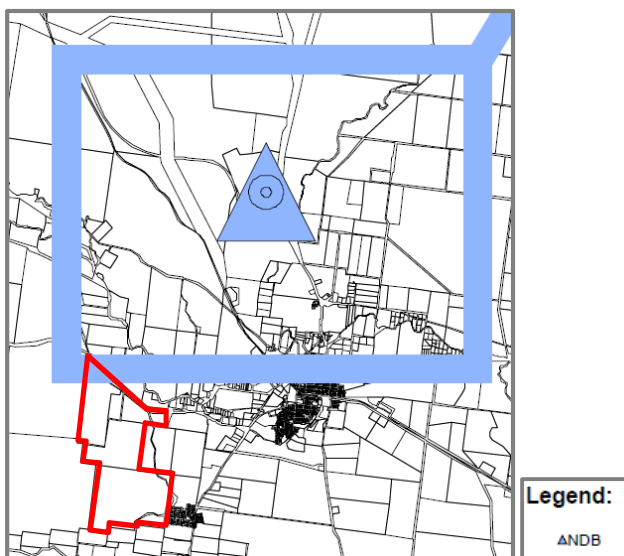


Figure 16 - Aviation Facilities Map with subject site
 Source: Planning Scheme for Belyandro Shire 2008



3.3.6 Other Matters of Consideration

The subject site is identified as adjoin land with existing mining leases as shown in Figure 12, however, given that the proposed use does not extend into this land there is no need for further consider assessment of this matter.

3.4 Pre-lodgement Advice

The applicant met with officers from Isaac Regional Council, and State Departments to discuss the proposed development. Please be aware that there have been some significant changes to the proposed development since these meetings took place and thus some items are no longer relevant and have not been included in this assessment.

The pre-lodgment meeting with Isaac Regional Council was held on the 30th August, 2016, the minutes of which are attached in Appendix D, and are summarized below;

- The ROL and MCU recommended to be submitted concurrently, as both are dependent on each other
- Preference to close or relocated Lindley Road so that land can be consolidated rather than subdivided
- Easements for powerline access is recommended to be a part of the future development application
- Advised that the subdivision of the GQAL is not an issue provided that the land is subdivided for the specific purposes ie. solar farm
- Existing vegetation buffer is deemed sufficient with regards to visual impacts and landscape buffering
- Expression of concern regarding glare from solar panels affecting drivers on the Alpha Bypass Road and part of the Clermont Alpha Road, particularly afternoon glare
- No issues with regards to lighting
- Basic Stormwater Management Plan required
- Recommend locating car parking near facilities
- Advised to provide plans that show where all services and facilities for staff are to be provided onsite
- No Traffic Impact Assessment required

The pre-lodgment meeting with the State was held on the 27th July 2016 and a number of departments attended including;

- Department of Infrastructure, Local Government and Planning (DILGP)
- Department of Transport and Main Roads (TMR)
- Department of Energy and Water Supply (DEWS)
- Department of Natural Resources and Mines (Vegetation and SLAM)
- Department of Agricultural and Fisheries (DAF)

The minutes of this State pre-lodgment meeting are attached in Appendix D and are as summarized below;

- Any easement for Epuron over state land will require an application to SLAM for approval
- A ROL will trigger referral if resulting lot size is less then 25ha and any future exemptions for clearing of remnant vegetation will need to be considered
- Clearing of vegetation should be minimized or avoided where possible
- A traffic impact assessment for the construction phase is required for utilized intersections ie. Clermont Alpha Road/ Alpha Bypass Road, Clermont Connection Road/ Clermont Alpha Road, and Tropic Street (Clermont Connection Road) / Jellicoe Street, in accordance with DTMR's Guidelines for Assessment of Road Impacts of Development.
 - o Sweep path turn movements are to be assessed at these intersections
- TMR is unconcerned by traffic during construction phase given level of heavy traffic in area
- Works within the creekbeds are generally self-assessable during the construction phase of the development if compliant with DAF Codes. No other assessment required for development application.



3.5 Community Consultation

Community consultation for this project was carried out in a two pronged approach, with neighbors directly adjoining the subject site consulted during the conceptualization phase of the proposed development, by Epuron, as well as a community consultation event held on the 7th December 2016 by Wall Planning & Environmental Consulting. Refer to Appendix G for further details on this consultation event.

The outcome of these discussions, proved that overall the proposed solar farm was supported by the local community for its ability to provide jobs, with the following items identified for further discussion;

- Local employment and the use of local supplies and businesses.
- Visual impact of the solar panels on the landscape
- Glare from solar farm
- Screening along Alpha Bypass Road
- Process of decommissioning
- Land devaluation concerns
- Electro-magnetic field concerns
- Maintenance of vegetation during operational of solar farm
- Control of additional traffic, noise and dust during construction
- Stormwater and sediment runoff during construction

The above concerns have been considered in our detailed assessment of this development, in the following section of this report.



4. Application Details

4.1 Proposed Development

Clermont Solar Pty Ltd intends to establish a Utility Scale Photovoltaic Solar resource (Solar Farm) 6km WSW of the inland City of Clermont. On completion the project will generate up to 150MW of renewable energy from approximately 470,000 solar panels, which is sufficient to supply electricity to approximately 30,000 homes within Clermont. Operation of the power plant over 30 years will avoid the need to burn approximately 3.2 million tonnes of coal.

Details of the proposed solar farm development are outlined in the following sections.

4.1.1 Proposed Use

It is proposed to retain part of the subject allotments for agricultural purposes, whilst allowing for the majority of lots to be utilised as a 150MW Solar Farm (Stages 1 to 2). Refer to Appendix A.

The retention of rural activities onsite will enable the continuity of a rural link to fulfil the intent of the locality. This use is largely confined to the balance area within the south area of Lot 153 on CLM203, although use of animals to reduce ground cover within the solar farm itself is a consideration for future practices by the applicant. Within the balance area it is proposed to retain the existing farming buildings and structures that will continue to serve the rural use of this land. These are to be located on the southeast corner of the balance area. Refer to Appendix A for more details. It is also proposed to retain the existing farm shed on Lot 220 CLM102.

The proposed solar farm is spread over the majority of the subject site, and will occur in two (2) stages as shown in Appendix A. Renewable resource activities within a rural setting are fast becoming a familiar use, with several solar farms approved within Queensland over the last few years. Typically these uses are located near existing transmission infrastructure and appear to be generally acceptable for the rural locality given the low level of impacts once operations commence. These are discussed in latter sections of this report.

A solar farm's purpose is to collect solar radiation and convert this energy into electricity that can then be transferred to other parts of the community for consumption via the existing (fixed) electricity network. To do this a solar farm typically comprises of several interlinked and integral components include: solar modules, steel mounts for the modules, electrical transformers and inverters, electrical wiring, telecommunication equipment and electrical control enclosures. This solar farm may also include a battery/electrical storage component to store surplus power generated during the day to be released over night, or during periods of high or low demand, and as a support to the grid if required.

The panels utilised in the facility are similar to those used for domestic power generation purposes and will be supported on steel frames. The frames will be either fixed mounted or tracking. Fixed tilt mounted arrays align east-west and are permanently tilted north towards the sun. Tracking arrays are aligned north-south and operate under a solar tracking system to increase power generation through tracking the movement of the sun from East to West. An underground reticulation system will be used to collect the power to an internal substation which will transform the power voltage to a level that is compatible with the nearby Ergon Energy transmission infrastructure. Power will be connected to the grid, approximately 3km from the western boundary of the solar farm development area using overhead transmission line/s that cross Crown Land (being a road for public use) using existing electricity pathways where available and terminating at the existing Ergon Substation. Refer to Appendix A for illustration of possible transmission route. Ergon Energy will build own and operate the transmission line and no further consents are required for this infrastructure under the Electricity Act 1994¹.

¹ "Detailed Enquiry Response Clermont Epron Island GP Management Pty Ltd 75MW Solar Farm Ver 1.0", Ergon Energy 16 November 2016.



Solar panels will cover approximately 310ha and are to be installed in arrays consisting of linear strings of mounted modules organised into blocks generally as shown in Appendix A. The solar panels are up to 3m high and mounted on monopole structures which are connected in strings of approximately 100 metres, with a 3 to 7m gap between centres. The monopole structures will be supported by steel screw piles, or steel driven piles or FRP Composite Driven Piles, to a depth of between 1 – 3 metres below the existing ground surface level. These foundations will be readily removable at the end of life of the facility to enable the land to be restored to rural activities.

Inverter/transformer stations or Power Conversion Units (PCUs) are located throughout the solar array field to convert the power collected from direct current (DC) energy into grid-compatible alternating current (AC) energy. Foundations for the PCUs shall be similar screw pile, or driven pile technology to the solar panel supports, and are removable at the end of the project's life. A medium voltage collector system will be installed by direct burying to a depth of approximately 1.0 metre below ground level. At the end of the project the cables may be recovered for metal recycling or may be left insitu if this results in better agricultural viability due to minimising soil disturbance.

Collection, storage and distribution of the electricity generated from the solar farm occurs within the internal substation located in the southeast corner of Lot 220 on CLM102, and will generally be as outlined in Appendix A. Such uses and buildings within this area are the control room, B.U.G. (backup generator), storage shed, switch room etc. The exact location of these buildings and structures within this area will be determined in conjunction with Ergon Energy, but suffice to say the development will generally be compliant with the typical plans presented for the purpose of a development permit.

Storage of batteries within the above area may be considered depending on the capacity of the electricity network and the economics of the project at any time during its operation. If batteries are utilised, they may be enclosed within a building as shown in the Appendix A.

A construction laydown area is to be established within the designated substation area. This location although mostly cleared, is to be constructed by way of grubbing, grading, and compacting the land for the proposed laydown and collection, storage and distribution area.

Management of the solar farm will be remote with periodic management being taking place from the proposed control room building.

4.1.2 Staging

The development is to be staged in two (2) parts, to enable the orderly construction of the onsite operations. It should be noted that completion of both stages together is a consideration of the applicant should the need arise.

Timing of this staged development is critical as the proposed use can take many years to be completed, and the roll over timeframe provisions in SPA2009 would be hard to realise given that there are few related approvals for this use, particularly in the later stages. Thus, a development approval will need to be valid for 8 years ie;

- Stage 1 – 6 years
- Stage 2 – 8 years

Stage 1

Stage 1 is to be completed within 6 years of development approval.

The extent of Stage 1 is as outline in Appendix A, and covers the south portion of Lot 6 on SP159756 and the western portion of Lot 220 on CLM102, which are separated by Lindley Road. It is the intention of Clermont Pty



Ltd to wholly purchase Lot 220 on CLM220 to operate Stage 1, as illustrated in Appendix A. It is proposed to subdivide Lot 6 on SP159756 into two lots for the express purpose of creating an allotment that will be purchased by Clermont Pty Ltd to operate the proposed solar farm as shown in Appendix A.

The new allotment and balance land not directly occupied by the solar farm will continue to be used for rural practices.

The single farming shed on Lot 220 on CLM102 will be retained as part of the operational works.

Removal of existing regrowth vegetation within the solar farm extent is proposed, however, no clearing permit is required from local, state or federal authorities given that the vegetation is not identified as being significant. This is supported by EHP's Ecological Assessment report in Appendix H. Appendix H - Ecological Assessment



A construction laydown area and internal substation area is to be established near the south east corner of Lot 220 on CLM220 through clearing, grubbing, grading, and compacting.

Construction of the internal substation will incorporate a number of concrete foundations for the electrical plant such as a Control Building/ Switch Room, transformer, and possible battery storage building. This infrastructure is indicative as the exact type and location of electrical infrastructure will depend on the final detailed electrical design of the solar farm. All other internal areas of the new substation are to be laid with gravel for ease of maintenance by vehicles, including up to five (5) carparking spaces provided in this substation area.

Solar panels will cover approximately 192.59ha and are to be installed in arrays consisting of linear strings of mounted modules organised into blocks with central inverter/transformer stations generally as shown in Appendix A.

A new transmission line will connect the solar farm from the internal substation area to the existing Ergon Substation as generally shown in Appendix A. The exact location and design of this infrastructure is yet to be determined by Ergon once detailed electricity designs are completed. This connection does not form part of this application, and all approvals for this work can be carried out subsequently this development approval. The most favoured option is as shown in Appendix A where the line/s traverse Lot 153 on CLM230 which forms part of this solar farm, and crosses Easement B on RP616691 in favoured by Ergon for electricity services, before heading into the road reserves of Lawson, Palmer, Christoe Streets and Copperfield Rubyvale Road and terminating at the Ergon Substation. Consent from the landowner of Lot 153 has already been obtained and Ergon Energy is progressing the necessary technical and commercial studies in order for it to build own and operate the transmission line. Consent from Council (the roads authority under Section 102 of the Electricity Act), has been sought and is being progressed in parallel to this development application. No further consents are required for Ergon Energy to build, own and operate the line pursuant to the Electricity Act 1994.

A new vehicle access point is proposed from Lindley Road to Lot 220 on CLM102 and Lot 6 on SP159756, generally as shown in Appendix A. A gravel access track which is wide enough for a single vehicle shall be provided along the eastern perimeter of Stage 1 (within Lot 220 CLM102), which connects the proposed substation area to Lindley Road by way of a gate for security purposes. A gravel access track wide enough for a single vehicle shall be provided around the perimeter of Stage 1, taking into consideration Lindley Road, and will be constructed to be durable and have a dust minimising surface, and will also act as a fire break.

Internal access tracks will be proposed around the solar array blocks to provide occasional access to the central inverter/transformer equipment pads located at the centre these blocks.

Security fencing will align the full perimeter of Stage 1, accommodating Lindley Road as illustrated in Appendix A.

Stage 2

Stage 2 is to be completed within 8 years of development approval.

The extent of Stage 2 is as outline in Appendix A, and covers the northern portion of Lot 6 on SP159756 and Lot 153 on CLM230, which are separated by Stage 1. At this point in time Clermont Pty Ltd will be the owner of proposed Lot 1 (parent lot being Lot 6 on SP159756) with the intention of operating Stage 2 North of Lindley Road, whilst obtaining a Lease over part of Lot 153 on CLM230 to operate Stage 2 South of Lindley Road, as illustrated in Appendix A.

Use of the balance land not directly occupied by the solar farm will continue to be used for rural practices.



The existing dam on Lot 153 on CLM230 is likely to be removed as part of operational works.

Removal of existing vegetation within the solar farm extent is proposed, however, no clearing permit is required from local, state or federal authorities given the vegetation is not identified as being significant. This is supported by EHP's Ecological Assessment report in Appendix H.

Solar panels will cover approximately 117.02ha and are to be installed in arrays consisting of linear strings of mounted modules organised into blocks with central inverter/transformer stations generally as shown in Appendix A.

A gravel access track wide enough for a single vehicle shall be provided around the perimeter of Stage 1 and 2 north of Lindley Road, with connection over a dry watercourse. A gravel access track wide enough for a single vehicle shall be provided around the perimeter of Stage 1 and 2 south of Lindley Road. Both tracks will be constructed to be durable with a dust minimising surface, and will also act as a fire break.

Internal access tracks will be proposed around the solar array blocks to provide occasional access to the central inverter/transformer equipment pads located at the centre these blocks.

Security fencing will align the full perimeter of Stages 1 and 2 (North and South), accommodating Lindley Road as illustrated in Appendix A.

4.1.3 Decommissioning Procedure

It is intended that the facility will have minimal impact when decommissioned as the development components do not require substantial disturbance to the landscape.

The following actions will be taken to decommission the solar farm and return the land to its former agriculture use;

- Solar panels including any foundations, will be removed
- Removal of central inverters
- Removal of above ground infrastructure such as substation and ancillary buildings
- Removal of fencing
- Materials sorted and packaged for removal from site for recycling or reuse where possible. Much of the steel and copper will be recyclable and solar modules will likely have residual value
- Subject to consultation with landowners/ future landowners, below ground cabling may be left in situ to avoid ground disturbance and maintain ground cover.

Possible removal of the following solar farm items pending agreement with landowners who may wish to have these retained;

- Fencing
- Repurposing buildings for agricultural activities
- Driveway crossovers
- Stormwater improvements
- Septic disposal unit

4.1.4 Proposed Location

The proximity of existing transmission infrastructure is a key factor in the siting of renewable energy facilities such as Wind and PV Solar farms. This is based on the economics of using this existing infrastructure to create



distributed generation within the grid, rather than centralised generation close to the fuel source as is the case with fossil fuel powered thermal generation. Careful siting of renewable energy facilities not only reduces the initial capital costs of transmission infrastructure it also reduces the electrical losses as power is transported to the demand centres. This ultimately results in the Lowest Cost of Energy for all consumers as we move to alternative, low carbon energy sources.

It is acknowledged that the solar farm is located within the Mackay, Isaac and Whitsunday Region which represents 11% of the State's agricultural production (2009-2010). The majority of the proposed solar farm is not located within the good quality agricultural land of this regional and thus does not cause significant impact to the regions ability to provide sufficient agricultural production to meet the needs of the wider community. It is also noted that with the proposed pasture grasses in place, the proposed development is increasing the rural production value of this land in the future.

In conclusion, the solar farm is co-located in a rural area predominately due to the location of an existing substation with capacity to supply electricity to the wider community that need this resource.

4.1.5 Need for Solar Farm

There is overwhelming scientific evidence that demonstrates our Earth is heating at rates never before seen in the history of this planet. The main contributing element is the amount of CO₂ within the atmosphere which arrives there predominately by the burning of fossils fuels which are non-renewable. The need to switch to renewable energy resource is paramount to the wider global movement of reducing the amount of airborne CO₂. This project contributes to that need, and in a small way assists in shifting Queensland's economic dependence on extracting fossil fuel.

As outlined in the above section, solar farms are dependent on the capacity and demand of the electrical network as well as its proximity to the grid in order to make it financially viable. The recent approval of a solar farm, opposite the subject site, clarified that not only is there capacity within the existing Ergon substation but that there is sufficient demand from the community for the supply of electricity. Subsequent assessment by Ergon Energy confirms that there is further capacity beyond what is requested for this development, at the existing substation. Hence, the demand for electricity to grow the community is available.

This is a \$255million project (refer to Appendix K), which will generate approximately 200 jobs during the 9 month construction phase of the project, with 1 to 5 staff members once operational. As with most large project of this nature, the flow-on effects to the local community are direct and indirect through employment, financial investment, and long-term growth of local businesses.

The direct economic impacts arising from the project will consist of the following:

- During each 9 month construction period (per stage), the proponent will spend approximately \$37 million on project construction labour, materials, and related services, with approximately half of this to be in wage related
- Employment is expected to peak at approximately 200 workers during each construction period.
- Typical workers will be labourers/ handymen (for mechanical assembly tasks), electricians (for electrical wiring tasks), civil contractors, plant operators, construction manager, electricians, engineers and other unskilled and skilled labour
- Over 30 years, the ongoing operation of the proposed project will directly employ up to 5 employees throughout the life of the project ie. security, green keeper.

Indirectly the project will stimulate an estimated \$60 million from local businesses through the sale of construction equipment, construction materials, fuel, security services and other goods and services that support



the construction and operations of the PV Facility. Employees of the solar farm and those within businesses affiliated with this project will spend their incomes on housing, transportation, medical services and a variety of household goods and services such as food and clothing in the area. These employee expenditures are expected to induce additional economic activity which will support more local jobs.

4.1.6 Car Parking

Car parking will generally be in accordance with the intent of the Rural Zone Code and Schedule 1, Division 2: Standards for Roads, Carparking, Manoeuvring Areas and Access, within the Belyando Shire Planning Scheme 2009.

Carparking spaces for the proposed development under these standards do not provide a mandatory number required for the use 'public utility'.

A minimum of five (5) carparking spaces will be provided in total, including one (1) carparking space for persons with disabilities.

These will be located towards the front of the main entrance to the site, outside the substation as generally illustrated in the attached plan in Appendix A.

4.1.7 Hours of Operation

Operational hours may occur 24hours a day 7 days a week, with typical onsite working hours occurring;

- Monday to Friday: 7 am to 6 pm
- Saturday 8 am to 1 pm
- Excluding Sundays and public holidays

Furthermore any construction outside of standard construction hours would only be undertaken in consultation with relevant roads authorities, where required, and in consideration of audible noise impacts to nearby residents. It should be noted that during summer months, the solar farm may continue to produce electricity after 6pm and prior to 7am while the days are longer.

4.1.8 Staffing

The solar farm will be operated and monitored remotely. There are to be approximately 1 to 5 employees working on the site as needed at any one time once solar farm operations commence onsite, with up to 200 employees contracted during each construction phase of the development.

4.1.9 Access

Vehicle access is to be obtained from Lindley Road via the existing access track which is to be upgraded to accommodate AVs during the construction phase of this development. As per the traffic impact assessment report in Appendix E it is noted that a gravel graded road is sufficient for construction and the ongoing operations/maintenance of the site which will be largely restricted to single light vehicles, being a SRV or occasional MRV, to enable a technician to service and maintain the solar panels.

The gravel graded Alpha Bypass Road which aligns the entire frontage of the subject site (Lot 6 on SP159756) therefore does not need to be upgraded, which was accepted by Council during the pre-lodgement meeting. However, the condition of this road will be maintained during the construction phase of this development as outlined in later sections.



An upgrade of the Clermont Alpha Road intersection with Alpha Bypass Road is also not proposed to be upgraded given the findings of the traffic impacts assessment report.

The existing informal track from Copperfield Rubyvale Road to Lot 153 CLM230, via the old Copperfield township, is not required for access to the solar farm. However this track will remain unchanged to ensure that the owners of Lot 153 CLM230 will have access to their land for continued farming practices.

A new vehicle access point is proposed from Lindley Road to Lot 220 CLM102 and Lot 6 SP159756, generally as shown in Appendix A.

Internal access tracks to service the solar arrays will be provided to accommodate single light vehicles traversing the perimeter of Stages 1 and Stages 2 on either side of Lindley Road. These tracks are to be designed with a gravel surface, and dust suppression measures will be enacted as part of ongoing operations of the site.

Informal access aisles between the solar panel array blocks which are designed to provide access to the inverter/transformer equipment pads are to remain grassed for this occasional use.

4.1.10 Site Cover

The proposed development's total site coverage (excluding solar panels due to water being capable of running underneath panels) is approximately 1.8ha, which is less than 0.2% of the subject site which is a reasonable expectation within a rural locality.

4.1.11 Solar Panels Built Form

At three (3) meters in height, the solar panels are smaller than a 1 storey building and are to be aligned in rows following the contours of the land to give a smooth visual appearance over the landscape, which is reminiscent of the row features found elsewhere in the rural locality such as cropping and wineries landscapes.

The rows of solar panels are broken into distances of 3 to 7 meters from each other, and are further separated into block of arrays by tracks which added articulation to the waving formation of the solar panel rows.

It should be noted that solar panels do not significantly vary in their colour, finish or materials. Examples of what solar panels look like are found in Figure 18 to Figure 22 of this report.

4.1.12 Solar Panels Glint / Glare

There is a perceived issue of glint and glare surrounding the reflectivity of the proposed PV solar panels, causing possible distractions to motorists, aircraft and eye damage.

The proposed solar panels are designed to maximise absorption of the sun's light by direct conversion to electricity. The modules used in this development will absorb approximately 80-97% of the light received and have been designed using anti-reflective coatings.

The level of glare and reflectance from the solar panels is considerably lower than the typical rural environment as can be seen in Figure 17.

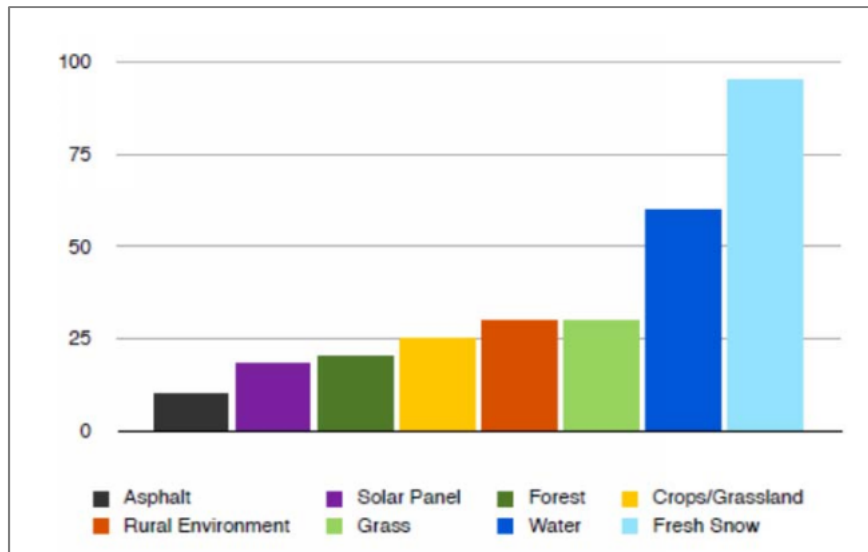


Figure 17 – Comparison of reflection level for different surfaces
 Source: Solar Choice, www.solarchoice.net.au/blog/solar-panels-near-airports-glare-issue, 2013

Furthermore, solar panels have been installed close to a number of airports throughout the world, including Australia's Adelaide Airport, Singapore's Changi Airport, London's Gatwick Airport, USA's California San Jose Airport, and Germany's Dusseldorf Airport. Refer to Figure 18 to Figure 22. Glare to pilots is of concern when landing or taking off, however the reflection from solar panels is not deemed to be detrimental to warrant the avoidance of co-locating this infrastructure close or within airport operational space.



Figure 18 – Solar panels being laid on roof of Terminal 1, Adelaide Airport, 2008
 Source: Solar Choice, www.solarchoice.net.au/blog/solar-panels-near-airports-glare-issue, 2013



Figure 19 – Solar panels on roof of Changi Airport Budget Terminal, Singapore, 2010
Source: Solar Choice, www.solarchoice.net.au/blog/solar-panels-near-airports-glare-issue, 2013



Figure 20 – Solar panels 150m from one of Europe's most frequently used landing strip, Gatwick Airport
Source: Solar Choice, www.solarchoice.net.au/blog/solar-panels-near-airports-glare-issue, 2013



Figure 21 – Solar panels on roof of Rental Car Center, San Jose International Airport, 2010
Source: Solar Choice, www.solarchoice.net.au/blog/solar-panels-near-airports-glare-issue, 2013



Figure 22 – 8,400 solar panel array on roof of Dusseldorf International Airport, 2011
Source: Solar Choice, www.solarchoice.net.au/blog/solar-panels-near-airports-glare-issue, 2013

Furthermore, an independent assessment of the impact that glare may have on drivers along the Alpha Bypass Road and on nearby residents was undertaken by Environmental Ethos. Refer to Appendix I. With regards to rotational solar panels it was found that there was no incident of glare having any impact on road users or residents. Fixed panels may have caused some glare to residents, but once existing vegetation was factored into the assessment this impact was found to be negligible. It was found that fixed panels in Stage 2 had the potential to cause glare as viewed from Alpha Bypass Road. However in considering the existing vegetation, and the proposed vegetation to be planted along this road frontage any potential glare has been negated. Refer to Appendix I for further specific details on glare assessment, and the following section for details on landscaping provisions.

4.1.13 Landscaping / Amenity Provisions

Landscaping along the southern boundary of Alpha Bypass Road is proposed to comprise of native shrubs and grasses just south of its intersection with the Clermont Alpha Road to Lindley Road. This vegetation will have a mature height of approximately 3 to 5 meters which is sufficient to adequately screen solar panel arrays from drivers along this road. This means that the solar farm will be shielded from view by people driving along Alpha Bypass Road which are local thoroughfares in this area. The height of the vegetation as detailed in the plans of development also ensures that any potential glare from fixed solar panels are negated, should the applicant choose this type of panel.

It is proposed to plant this vegetation as part of the first stage of the development, which will ensure that any potential glare or visual signs of Stage 2 from Alpha Bypass Road are negated.

Furthermore, a mix of pasture grass species are proposed to cover the understorey of the solar panel arrays, and any other surfaces not gravel coated or sealed. This planting is possible due to the rotation of the solar panels which allows sunlight and water to penetrate the ground underneath. Grasses will be maintained through periodic slashing and occasional short term sheep grazing.



As demonstrated in the attached visual assessment report, the proposed landscaping ensures that the visible impact to adjoining residents is minimised. Refer to Appendix J. For those with some slight impact, the overall visibility with appropriate landscaping is sufficient to align itself with the amenity of the rural environment in which it is located.

An existing track adjoins a residential dwelling in the old Copperfield town, and was at one time the preferred option for transmission lines to traverse given that there was an existing overhead powerlines along this track and it avoided the need to clear native vegetation. However the current preferred transmission route that aligns Palmer Street is approximately 185m from this dwelling and will be partly screened from view by the existing mature vegetation (Location VP16 in Appendix J). The visual assessment concludes that existing vegetation would provide some screening however due to the varied height of the existing canopy it is possible that some top sections of this infrastructure will be visible. This change is considered small in context of the overall viewscape. It is important to note that these transmission lines will be designed, owned and constructed by Ergon, and whilst this is currently the preferred route, Ergon is entitled to make a determination about where this infrastructure will be located under provisions set out in the *Electricity Act 1994*.

An existing dwelling house on nearby Lot 5 SP198276 is located at least 550m north of the solar farm between Clermont Alpha Road and the Alpha Bypass Road (Location VP11 in Appendix J). An onsite assessment and photos taken from this dwelling clearly illustrate that the subject site is not visible due to existing vegetation within Lot 5 SP198276. Thus no visual amenity impact will occur.

It has been indicated by the landowner of Lot 5 SP198276 that they would like to build another dwelling on their land that would be closer to the solar farm (Location VP04 in Appendix J). This location is approximately 200m from the solar farm. Whilst existing vegetation along the Alpha Bypass Road will provide some screening the solar farm will be slightly visible from this location. It is noted that this dwelling may never be realised, and thus is not strictly considered a planning matter which needs to be addressed. However, the applicant will be providing vegetation along the Alpha Bypass Road as described previously, which will negate any visual impact from this location.

An existing dwelling house on nearby Lot 6 M1001 is located at least 550m south of the solar farm development area (Location VP17 in Appendix J). As this dwelling was surrounded by vegetation and unable to view the subject site, the onsite assessment and photos were undertaken from the rear of this property adjoined the southern boundary of the subject site. It was determined that even at this location, the proposed development was not visible and this does not create any visual amenity impact.

The visual assessment also considered the potential short and long term change to the landscape by the proposed development. It concluded that the internal substation area is not visible from the Alpha Bypass Road and poses no change in the short to long term character of the existing landscape. It was also determined that the low rise horizontal nature of the solar panels did not create a significant visual disruption to the existing landscape pattern. This is largely due to the presence of existing vegetation and the location of Stage 1 which is further away from visual reception points in the short term, and the provision of landscaping along the Alpha Bypass Road during Stage 1 which supports the extent of the overall proposed development in the long term.

Thus, it can be concluded that the proposed development does not create any significant visual impacts, and that where slight changes to the landscape have been identified, appropriate landscaping has been provided.

4.1.14 Flora and Fauna

Vegetation over the subject site including the road reserves for the transmission lines have been mapped by the State Government as remnant vegetation (Figure 13) ranging from 'of least concern regional ecosystem' to 'endangered significant regional ecosystem'.



No clearing of mapping vegetation is proposed over the development area for this solar farm, however the preferred transmission route will involve the clearing of vegetation by Ergon Energy to facilitate this infrastructure under the *Electricity Act 1994*.

An ecological assessment of the site was undertaken by Ecology and Heritage Partners (Refer to Appendix H) over the subject site for flora and fauna. It was found that the regulated vegetation communities mapped over the subject site were not always present;

Table 3 – Summary of Regulated Vegetation found onsite

Regulated Vegetation Type	Existence of Vegetation Community on subject site
RE 11.3.2 / 11.3.25	Does Not Exist
RE 11.4.9	Does Not Exist
RE 11.5.3	Exists in small patch along western boundary of drainage line
RE 11.11.1 / 11.11.16	Exists
RE 11.11.2	Does Not Exist
RE 11.11.15	Exists

A Property Map of Assessable Vegetation (PMAV) could be initiated given the above results, however;

- there is no need for the proposed development to extend into the mapped vegetated areas;
- only regrowth vegetation or non-regulated mature vegetation will be removed to facilitate this development; and
- the proposed development will be providing a break between its infrastructure and the mapped vegetation such that no further exempt clearing under the Vegetation Management Act 1999 will be necessary

Regrowth of vegetation within the extent of the solar farm is possible, and thus on-going maintenance will be required to suppress this vegetation.

Weed and regrowth management control will be undertaken as part of the normal requirements for a development to provide an Erosion and Sediment Control Plan, an Environmental Management Plan, and a Rehabilitation Plan as part of subsequent operational work approvals. The expertise of an agronomist will be engaged and soil testing will be completed to identify any site specific soil attributes or limitations which require consideration to ensure that ground cover is maintained, and to determine what appropriate weed and regrowth management practices need to be in place for the proposed development. The resulting methodology will be detailed in the afore mentioned documents.

Significant fauna within the subject site was also investigated by Ecology and Heritage Partners (Refer to Appendix H). It was determined that the subject site provides suitable habitat for several species, including the threatened squatter pigeon, echidna and koala species. However, the extent of the proposed development does not significantly impact on the habitat of this fauna.

4.1.15 Utility Connections

Connection to the electricity and telecommunication mains is required for the operation of this development. It is proposed to install cables within the preferred transmission route connecting the site from the internal substation to the existing Ergon substation as illustrated in Appendix A. This work is likely to be undertaken by Ergon Energy given their long-term ownership of this infrastructure.

A private underground electricity cable connection across Lindley Road is required to facilitate a connection between the two halves of Stage 1. This crossing will likely require further consent from Council's road manager



to grant occupancy to this infrastructure via the Local Government Act, which is separate to this development approval and will occur during the construction phase of this project.

Neither of the above infrastructure extensions are issues that would potentially halt the proposed development.

Telecommunication connection is required from the existing main in Alpha Bypass Road to service the Control Room within the internal substation area.

Water will be sourced locally from commercial/ council water supplies and will be trucked to site and stored on site as needed.

During the peak of construction approximately 600L per day of potable water will be needed, dropping to 60L per day during shoulder construction periods. The water for dust suppression will vary according to traffic and weather conditions. On hot days approximately 80kL will be used to wet down unsealed roads/ tracks as needed.

During operations a small amount of potable water will be brought to site and stored on site. Water use for regular washing of modules is not expected to be required. In the event of an abnormal soiling event e.g. a severe dust storm, water would be trucked to site and modules cleaned with a portable pressure washer without the use of detergent.

Sewerage onsite will be removed for treatment and disposal in an off-site facility.

4.1.16 Waste

A waste management plan will be developed to minimise waste and maximise the opportunity for reuse and recycling.

Construction

A number of different construction activities associated with the proposal would produce solid wastes, including:

- Packaging materials
- Excess building materials
- Scrap metal and cabling materials
- Plastic and masonry products, including concrete wash
- Excavation of topsoils and vegetation clearing (minimal)
- Bio wastes, from onsite septic systems

Construction waste will be disposed of offsite in accordance with applicable regulations and to appropriate facilities.

Operation

Waste from operations will be generated from the office operations. Office waste will be general rubbish including putrescible waste, and recyclable material which are to be placed into bins and collected for disposal.

Decommissioning

Decommissioning of the site would involve the recycling or reuse of materials including:

- Solar panels and mounting system
- Metals from posts, cabling, fencing
- Buildings and equipment such as the inverters, transformers and similar components would be removed for resale or reuse, or for recycling as scrap



Items that cannot be recycled or reused, such as excess of above, would be disposed of in accordance with applicable regulations and to appropriate facilities. All above ground infrastructure would be removed from the site during decommissioning.

4.1.17 Stormwater

The majority of the site covered by the solar panel arrays will have a negligible impact on stormwater as the land will remain grassed with rotating panels allowing for continued infiltration of stormwater flows into the ground below. Existing surface flows exit the site into the natural waterways located as shown on the plans of development, and no further changes to the arrangement is proposed as any residual pollutants from existing agricultural activities will be mitigated by the grassed buffering proposed.

To be clear, it was found through further stormwater assessment, that the surface below and between the panels will be vegetated such that runoff from panels will return to sheet flow once it reaches the surface and existing soil conservation bunds to be shaped to ensure no soil erosion and gulying.

It was found that the existing surface of the PV Array will be vegetated and soil conservation bunds will be repaired to ensure no scouring, erosion and gulying. It was found that the best long term scour protection is likely to be the establishment of good vegetative cover. Where scouring does occur, the scour is to be filled and surface rehabilitated via seeding and erosion control blanket or hydromulch depend in scour size and surface gradient. Maintenance staff for the solar farm facility will ensure that the vegetation and drainage will be maintained, which can be conditioned as part of any approval granted.

Impervious surfaces are created by the proposed internal substation features and these have been mitigated by the proposed detention and bio-retention basin which will be located near the internal substation area.

For further details refer to the Stormwater Management Report in Appendix F.

4.1.18 Lighting

All lighting proposed will be in accordance with Table 2.1 and 2.2 of Australian Standard AS4282-1997 using a control level of 1.

Permanent security lights will also be installed to provide adequate illumination around the substation area and points of ingress/egress. All lighting will be directed downward to minimise the potential for glare or spill-over onto adjacent properties. Lighting is proposed to be used from dusk to dawn once the facility is operational.

4.1.19 Security

A chain wire security fence up to 3m high will surround the proposed access tracks for each solar farm section for security purposes. The internal substation and laydown area will be appropriately restricted to private access during construction and throughout ongoing operational use. CCTV and underground security wire may also be implemented as additional site security.

4.1.20 Dust

Generation of dust from vehicle movements has been mitigated by the provision of hardstand area in the frequently used areas (ie. carpark) and compacted gravel in irregularly used areas (ie. internal substation and perimeter tracks). Refer to plans in Appendix A.



Construction of this facility requires limited earthworks and appropriate dust suppression measures are to be adopted and will form part of the conditional approval. A key factor in the development of this facility will be the progressive and early establishment of the proposed pasture grasses to limit the potential for dust, and more importantly to provide a stable surface, protected from wind and water erosion in the long term.

Reduction of dust is essential to the long-term optimal performance of the solar panels and thus there is sufficient impetus to ensure this issue is managed appropriately.

Dust generated from truck movements on the Alpha Bypass road and high use access tracks during the construction phase will be mitigated via periodic watering down of the road where unsealed. Once operational the few vehicles accessing the site will not create dust that is significant to impact neighbouring land, and thus further dust suppression measures are not proposed on Alpha Bypass Road once the solar farm is operational, although ongoing dust control measure will monitored and managed appropriately as required.

For further details refer to the Traffic Management Report in Appendix E.

4.1.21 Noise

The operational plant will not generate noise above allowable background levels for sensitive receptors as outlined in the Environmental Protection Act.

During construction, care will be taken to undertake activities during normal daylight working hours. Construction plant will be the primary source of noise and is considered to be similar to the large diesel powered equipment used currently as part of normal farming activities and can be appropriately conditioned in terms of timing and audibility above existing background levels.

4.1.22 Environmentally Relevant Activities

None of the activities from the solar farm trigger the requirement for an ERA.

4.1.23 Traffic Generation

A Traffic Impact Assessment was carried out for the proposed development, and found that the low levels of traffic generated by the number of employees during the operation of this use was negligible, and would not trigger a requirement to upgrade the existing road network. Refer to Appendix E for further details.

During the construction phase traffic volumes are increased and there is the potential for impacts on the external road network which have been carefully considered and are addressed in the Traffic Impact Assessment submitted. Unlike the uncontrolled and significant heavy vehicle movements that exist in this area, this construction traffic from this project has the ability to be implemented with significant control. Key feature of the traffic aspect of the Construction Management Plan will include;

- Pre and post construction dilapidation surveys on key transport routes
- Implement controls and signage plans
- Implement a School Bus Management Plan (if required)

It is anticipated that these requirements will be included in councils' conditional approval of the project and should the dilapidation surveys indicate any damage to the road network attributed to the project, then remedial works would be undertaken by the proponent.



The Traffic Impact Assessment also assessed the intersections which would be affected during the construction phased of the proposed development and found that the optimal route is the Clermont Connection Road / Clermont Alpha Road / Alpha Bypass Road. Both intersections were found to be capable of accommodating the proposed traffic generation and vehicle types, with no further upgrade of these roads required.

For further details refer to the Traffic Management Report in Appendix E.

4.1.24 Electromagnetic Fields (EMF)

Electromagnetic fields (EMFs) consist of electric and magnetic fields and are produced whenever electricity exists; for example household appliances and overhead transmission lines. As electricity use has become a part of everyday life, concerns have been raised about the potential for exposure to EMFs to adversely affect human health. While it is accepted that short-term exposure to very high levels of electromagnetic fields can be harmful to health, the International EMF Proposal has concluded that there are no substantive health consequences from exposure to the extra low frequency electric fields at the low levels generally encountered by the public². As Australia does not have a standard that regulates extremely low frequency EMF, the Australian Radiation Protection and Nuclear Safety Agency references the limits in the National Health and Medical Research Council's (NHMRC) Interim guidelines on limits of exposure to 50/60 Hz electric and magnetic fields (1989):

- General public: whole day limit of 5,000 volts per meter and 100 micro-teslas
- General public: short term limit of 10,000 volts per meter and 1000 micro-teslas
- Occupational exposure: whole day limit of 10,000 volts per meter and 500 micro-teslas
- Occupational exposure: short term limit of 30,000 volts per meter and 5,000 micro-teslas

The project includes the following types of infrastructure that create EMFs:

- An overhead 66-132kV transmission line
- A 66-132kV substation
- 22-33kV inverter stations and associated underground cables
- 0.9-1.5kV DC solar array

EMFs are highest when close to the source and decrease with distance. Also, higher voltage infrastructure often coincides with a higher EMF (see Figure 23 and Figure 24)³.

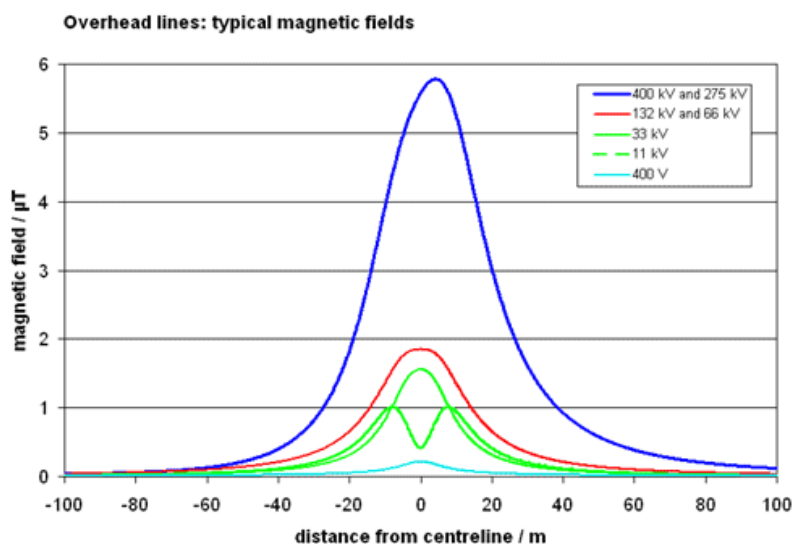


Figure 23 – Typical Magnetic Fields for Overhead Lines
 Source: <http://www.who.int/peh-emf/publications/facts/fs322/en/>

² <http://www.who.int/peh-emf/publications/facts/fs322/en/>
³ <http://www.emfs.info>

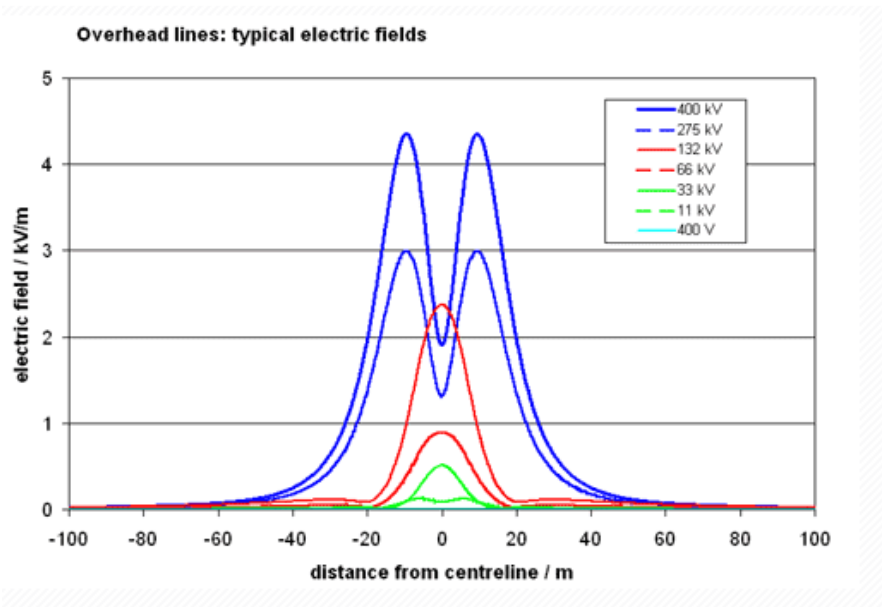


Figure 24 – Typical Electric Fields for Overhead Lines
 Source: <http://www.who.int/peh-emf/publications/facts/fs322/en/>

The closest residence to the project is 185m at which distance the EMF diminishes significantly.

Typically, EMFs from substations do not extend much or at all beyond the substation perimeter fence³. Therefore, the 66-132kV substation EMF is not discussed further by this assessment and instead the 66-132kV overhead line is considered.

From Figure 23 and 24 it can be seen that overhead 132kV lines have a typical EMF of between 200-2,400 volts per meter and between 0.7 to 1.8 micro-teslas at a 0-20m distance.

Underground 22-33kV cabling does not produce external electric fields but does produce a magnetic field in the range of 1-0.07 micro-teslas⁴.

Typical EMFs indicative of the proposed infrastructure, are compared to the NHMRC guidelines in Table 4. Limits for the general public are shown as these are the most stringent.

Table 4 assesses EMF at a 0m distance, under long term exposure, and under the most stringent category (general public). In practice, the general public and operational staff will not be in such close proximity to the infrastructure for long periods of time. As can be seen from Table 4, the proposed solar farm infrastructure is well within the (NHMRC) Interim guidelines on limits of exposure to 50/60 Hz electric and magnetic fields (1989) even for the most stringent criteria.

⁴ <http://www.emfs.info> (using a 33kV cable at a depth of 0.5m at a distance between 0 and 20m)



Table 4 - Typical EMFs for Proposed Solar Farm Infrastructure at 0-20m Distance

Infrastructure	Electric Field Strength (volts per meter)	Electric Field Limit (volts per meter)	Magnetic Field Strength (micro-teslas)	Magnetic Field Limit (micro-teslas)	Within Limit
132kV overhead line (indicative of the 66-132kV overhead line)	200-2,400	5,000 whole day and 10,000 short term	0.7-1.8	100 whole day and 1,000 short term	Yes
22-33kV underground cabling	0	5,000 whole day and 10,000 short term	1-0.07	100 whole day and 1,000 short term	Yes
33kV overhead line (indicative of the 22-33kV inverter stations and 1.5kV DC arrays).	100-400	5,000 whole day and 10,000 short term	0.3-1.5	100 whole day and 1,000 short term	Yes

4.1.25 Radiation / Heat

Solar panels are generally dark in colour to maximise the absorption of light, which in and of itself, creates heat on the surface of the panels. Solar module temperatures can typically be approximated to ambient temperature plus 25 degrees Celsius⁵. Therefore the surface temperatures are not significant, given that they do not affect the mechanics of solar operations, nor the health of immediate vegetation and dual agricultural uses as demonstrated by the existence of solar farms which have both of these.

Thus, the issue of heat from the proposed solar farm is not significant.

4.1.26 Chemicals

Cleaning of panels:

The panels shall be cleaned up to twice annually, dependent upon observed soiling rates. Cleaning is undertaken using only water. No chemicals and detergents are used in the cleaning of panels as this can impact the long term performance of the panels and vendor warranties.

Mechanical Systems:

The biodegradable grease is the preferred lubricant for the solar panel tracking system. We note that the maintenance program will be undertaken in accordance with a strict Work Method Procedure and any spillage of grease during the maintenance procedure would be collected and disposed of in accordance with the Hydrocarbon spill procedure, which will be prepared as part of the Operations and Maintenance Manual for the project. This procedure will eliminate the opportunity for hydrocarbons to enter the environment.

⁵ "Applied photovoltaics", Wenham et al., 2007



Maintenance vehicles such as water carts, tractors used for weed control and grass slashing etc. will be diesel powered. The spill procedure for the maintenance of the tracking system will be identical for these vehicles. Periodic maintenance servicing of these vehicles will be offsite.

The proposed inverters are air cooled and do not require any liquid coolant. Inverter transformers are oil filled with mineral oil and will be sealed and fully banded for 110% of capacity to ensure that in the event of a leak or complete loss of fluid, any oil spilled from the steel enclosed transformer is captured by the outer bunding.

Compliance with AS1940 will prevent any hydrocarbons associated with these plant items from entering the environment.

Dust suppression and weed control:

During the operational phase of the project, no chemicals or dust surfactants will be applied to the access tracks. The need to traffic these areas will be limited and speed controls of 10km per hour will be implemented.

The project area will be largely vegetated with a mix of perennial grasses. These areas and the vegetated buffer will need to be managed with respect to potential herbaceous weeds. This will include occasional spaying with selective herbicides such as 24D and for more invasive weed species, spot spraying with glyphosate. Both of these products are not systemic and will not accumulate. As the site grasses and vegetated buffer become more established, the need and frequency of weed control will significantly diminish.

Impacts on Stormwater Quality Improvement Devices:

The primary means of stormwater quality improvement devices for this project comprise grasses for the main part of the project and a bio-retention system for the substation area, which will cater for this area which comprises largely sealed pavements. Effective management of the site spill control measures and implementation of bunding in accordance with AS1940 and AS2067 will prevent release of any hydrocarbons to the treatment systems.

Heavy metals in solar panels:

As of June 2016 rooftop PV installations in Australia exceed 5.4GW, many of which are in rural areas where the supporting roofs also form part of the potable water supply. There is no evidence to indicate that the minor concentrations of heavy metals within solar panels can be mobilised during normal operating conditions or in the case where a panel may be cracked. It is important to note is that the modules as connected electrically, in series and therefore if a panel does become cracked or damaged, the entire string in that array will not produce electricity. The completed installation at this site will be subject to frequent visual inspections as well as periodic UAV survey using thermal imaging cameras to identify damaged or defective modules, which would immediately be removed and replaced. This is to ensure power production at optimum availability and as consequence eliminates any concerns regarding damaged panels.

4.1.27 Advertising

An advertising sign will be placed at the front of the main entrance from Lindley Road. This signage will be in accordance with Council's current policies at the time of placement.



4.1.28 Earthworks

The solar farm has been designed in such a manner as to minimise the extent of civil works required to occur on the site, by the following;

- All existing overland drainage flow paths are intended to be maintained so as to minimise the impact on the surrounding land uses
- No formalised internal roads are envisaged to be provided between panels and the level of sealing in the carparking area has been kept to a minimum.
- Maintenance of the soil conservation contour banks to ensure that they are mowable once pasture grass understory has been established
- Limited cut and fill at the location of the internal substation
- Limited cut and fill at the location of stormwater detention basin
- Creation of the access tracks

No work is required within the existing waterways, except as indicated, which can be designed from compliance with local and state requirements. No retaining walls are required or proposed.

When installing infrastructure, it can be conditioned that any excavated soil material is to be reinstated so that subsoil material (>300mm deep) is not placed on the infilled land surface. This will ensure that the land can be returned back to rural cropping activities.

4.1.29 Lease Arrangement

It is proposed to reconfigure the land by creating a lease area over part of Lot 153 CLM203 to contain part of Stage 2 of the proposed solar farm as illustrated in Appendix A. Timeframe for the lease is 30 years, upon commencement of Stage 2, and will allow the applicant to occupy and utilise the land as a solar farm under the existing commercial agreement in place.

The lease is of sufficient size to facilitate the operations of the solar farm and will expire on its decommission. Thus, the proposed lease does not have a detrimental effect to the long-term viability of the land which can be reverted to rural activities in the future.

4.1.30 Land Subdivision

It is proposed to reconfigure the land by subdivision of Lot 6 SP159756 into two lots as illustrated in Appendix A. Proposed Lot 1, at 185.6ha is to be utilised as an integral part of the proposed solar farm, whilst proposed Lot 2 will consist of two parts totalling 57ha, and will be retained for agricultural production.

The subdivision allows for the proposed development to occur, in that Proposed Lot 1 will be predominately utilised as a solar farm with the balance area, being covered by waterways and remnant vegetation, to remain in-situ. Proposed Lot 2 will consist of two part allotments that are sufficient in size to allow a hobby farm (10-40ha allotments) to occur on the land, and given its proximity to the Clermont township it would be in keeping with the rural nature of the locality where rural residential / hobby farms allotments dominate the land uses on Alpha Bypass Road. There is potential opportunity for it to be used in conjunction with other larger lots in the vicinity as part of rotational grazing practices. It should be noted that once the solar farm is decommissioned proposed Lot 1 will revert to rural activities and is of sufficient size to enable this, as demonstrated through existing land practices over this area.

With regards to Council's pre-lodgement meeting comments, we advised that the possible closure or relocation of Lindley Road to avoid land subdivision was not possible given the preferences of landowners who currently enjoy legal access to their property from this road reserve.



Despite this setback, the proposed subdivision has proven it is consistent with the intent of Council's planning criteria for the purpose of this planned solar farm as outlined in section 5.5 and Appendix B.

4.1.31 Easement

An easement for electricity services in favour of Ergon Energy will be created over Lot 153 CLM203 which will generally follow the transmission line alignment illustrated in Appendix A. The exact dimensions and location of this easement will be determined by Ergon Energy once detailed design work has been completed. This easement does not form part of this development application as Ergon Energy will be undertaking this work, but it is mentioned in this application for clarity given Council's pre-lodgement comments.

4.2 Approvals Required

This application seeks the following approval/s:

- Development Permit Material Change of Use to a Public Utility (Solar Farm of approximately 150MW)
- Development Permit Reconfigure a Lot to Subdivide Land into Two Lots (Lot 6 SP159756)
- Development Permit Reconfigure a Lot by a Lease greater than 10 years (30 year term on commencement of Stage 2)

4.3 Level of Assessment

The proposed development is Impact Assessable in accordance with the Planning Scheme for Belyando Shire July 2008 and thus, public notification of the development will be carried out in accordance with Section 297 of the *Sustainable Planning Act 2009*.

4.4 Referral Agencies

As per Section 5.3 of this report, the proposed development triggers referral to the following departments through the State Assessment Referral Agency (SARA);

- Department of Transport and Main Road (Concurrency)
- Department of Natural Resources and Mines (Concurrency)
- Ergon Energy (Third Party)



5. Statutory Provisions and Compliance

5.1 Regional Plans

The subject land is located within the Central Queensland Regional Plan 2013. Refer to Figure 25. The Planning Scheme for Belyando Shire July 2008, specifically the strategic framework, appropriately advances the Central Queensland Regional Plan 2013, as it applied in the planning scheme area.



Figure 25 – Central Queensland Regional Map 2013
 Source: Department of Infrastructure, Local Government and Planning (DILGP)

The purpose of the Central Queensland Regional Plan 2013 is to identify the state’s interests in land use planning for the region. Specifically, the plan identifies regional outcomes for the region, regional policies for achieving the regional outcome, the state’s intent for the future spatial structure of the region, including Priority Agricultural Areas (PAA), and Priority Agricultural Land Uses (PALU) and priority outcomes for infrastructure.

Of note is the reference to the Regional Outcomes for Protecting Priority Agricultural, in which “...compatible resource activities to co-exist with high value agricultural land uses within PAAs. This will in turn maximise opportunities or economic growth to ensure that Central Queensland remains a resilient, diversified and prosperous region” (pg 3 of Central Queensland Regional Plan 2013).

Given the above policies, it is argued that the proposed solar farm creates renewable energy which is a sought after resource in this region, and that due to its minimal disturbance of the land from installation to decommissioning, it will protect the future agricultural ability of the land.

Thus, the solar farm is **COMPLIANT** with the policies and regional outcomes that are applicable from the Central Queensland Regional Plan 2013.



5.2 State Planning Policies

As per s324(3) of SPA 2009, assessment against the *State Planning Policy (SPP) April 2016* is required for any Local Government Planning Scheme which does not adequately reflect the state interests listed within this policy.

Given that the Planning Scheme for Belyando Shire 2008 is not classified as a SPA2009 Scheme, assessment against Part E—Interim development assessment requirements of the SPP is required, and has been completed as follows;

LIVEABLE COMMUNITIES

The application of the requirement is **NOT APPLICABLE** for this development proposal.

MINING AND EXTRACTIVE RESOURCES

Given that the material change of use proposed is not for extractive resources this state interest is **NOT APPLICABLE**.

BIODIVERSITY

Given that the subject site, on which the material change of use and reconfiguration a lot is proposed, has an identified state environmental significance, this state interest is applicable. The native vegetation and fauna found on the subject site also triggers further state assessment under SDAP provisions in the following sections of this report, but for the purpose of this assessment provision, we can confirm that the proposed development avoids the removal of significant vegetation (and by virtue habitat) by the appropriate placement of infrastructure and property boundary lines. **COMPLIES**

COSTAL ENVIRONMENT

Given that the subject site, on which the material change of use and reconfiguration a lot is proposed, is not located within the coastal management district, this state interest is **NOT APPLICABLE**.

WATER QUALITY

Given that the subject site, on which the material change of use is proposed, has a site area greater than 2500 square metres, the state interest for *receiving waters* is applicable. Avoidance of adverse effects from stormwater flows to receiving waters has been achieved as described in the Stormwater Management Report in Appendix F and as outlined in Table 5. **COMPLIES**

Given that the subject site, on which the material change of use is proposed, is not located in a *water supply catchment in South East Queensland* this state interest is **NOT APPLICABLE**.

It is contended that the subject site is not within an acid sulfate soils affected area, as the topography of the land does not induce this issue. Thus, the state interest for *acid sulfate soils* is **NOT APPLICABLE**.



Table 5 – SPP Water Quality Assessment Code

PERFORMANCE OUTCOME	ACCEPTABLE OUTCOMES
Plan to avoid/minimise new impacts	
<p>PO1 The development is planned and designed considering the land use constraints of the site for achieving stormwater design objectives.</p>	<p>AO1.1 A site stormwater quality management plan (SQMP) is prepared, and:</p> <ul style="list-style-type: none"> a. is consistent with any local area stormwater management planning, and b. provides for achievable stormwater quality treatment measures meeting design objectives listed below in Table A (construction phase) and Table B (post construction phase), or current best practice environmental managements, reflecting land use constraints, such as: <ul style="list-style-type: none"> • erosive, dispersive, sodic and/or saline soil types • landscape features (including landform) • acid sulfate soil and management of nutrients of concern • rainfall erosivity. <p><i>Editor's note: Local area stormwater management planning may include Urban Stormwater Quality Management Plans, or Catchment or waterway management plans, Healthy Waters Management Plans, Water Quality Improvement Plans, Natural Resource Management Plans.</i></p>
<p>AO1.1 Complies: A site stormwater quality management plan (SQMP) has been prepared and can be conditioned to comply with the acceptable solutions mentioned above. Refer to Appendix F.</p>	
<p>PO2 Development does not discharge wastewater to a waterway or off site unless demonstrated to be best practice environmental management for that site.</p>	<p>AO2.1 A wastewater management plan (WWMP) is prepared by a suitably qualified person and addresses:</p> <ul style="list-style-type: none"> a. wastewater type, and b. climatic conditions, and c. water quality objectives (WQOs), and d. best-practice environmental management, and <p>AO2.2 The WWMP provides that wastewater is managed in accordance with a waste management hierarchy that:</p> <ul style="list-style-type: none"> a. avoids wastewater discharges to waterways, or b. if wastewater discharge to waterways cannot practicably be avoided, minimises wastewater discharge to waterways by re-use, recycling, recovery and treatment for disposal to sewer, surface water and groundwater.
<p>PO2 Complies: Existing surface flows exit the site into the natural waterway located near the subject site and no further changes to the arrangement is proposed as any residual pollutants from existing agricultural activities</p>	



PERFORMANCE OUTCOME	ACCEPTABLE OUTCOMES
<p>will be mitigated by the proposed grassed buffering. Furthermore, as detailed in the SWMP any wastewater generated from toilets or hand basins are to be collected and treated offsite for appropriate disposal. Refer to Appendix F.</p>	
<p>PO3 Any non-tidal artificial waterway is located in a way that is compatible with the land use constraints of the site for protecting water environmental values in existing natural waterways.</p>	<p>AO3.1 If the proposed development involves a non-tidal artificial waterway: environmental values in downstream waterways are protected, and any groundwater recharge areas are not affected, and the location of the waterway incorporates low lying areas of a catchment connected to an existing waterway, and existing areas of ponded water are included, and</p> <p>AO3.2 Non-tidal artificial waterways are located: outside natural wetlands and any associated buffer areas, and to minimise disturbing soils or sediments, and to avoid altering the natural hydrologic regime in acid sulfate soil and nutrient hazardous areas.</p>
<p>AO3.1 and AO3.2 Not Applicable: The proposed development and/ or subject site does not propose to create a non-tidal artificial waterway.</p>	
<p>PO4 Any non-tidal artificial waterway is located in a way that is compatible with existing tidal waterways.</p>	<p>AO4.1 Where a non-tidal artificial waterway is located adjacent to, or is connected to, a tidal waterway by means of a weir, lock, pumping system or similar: a. there is sufficient flushing or a tidal range of >0.3 m, or b. any tidal flow alteration does not adversely impact on the tidal waterway, or c. there is no introduction of salt water into freshwater environments</p>
<p>AO4.1 Not Applicable: The proposed development and/ or subject site does not propose to create a non-tidal artificial waterway.</p>	
<p>Design to avoid/minimise new impacts</p>	
<p>PO5 Stormwater does not discharge directly to a non-tidal artificial waterway without treatment to manage stormwater quality management.</p>	<p>AO5.1 Any non-tidal artificial waterway is designed and managed for any of the following end-use purposes: a. amenity including aesthetics, landscaping and recreation, or b. flood management, or c. stormwater harvesting as part of an integrated water cycle management plan, or d. aquatic habitat, and</p> <p>AO5.2 The end-use purpose of any non-tidal artificial waterway is designed and operated in a way that protects water</p>



PERFORMANCE OUTCOME	ACCEPTABLE OUTCOMES
	environmental values.
AO5.1 and AO5.2 Not Applicable: The proposed development and/ or subject site does not proposed to create a non-tidal artificial waterway.	
Construct to avoid/ minimise new impacts	
P06 Construction activities for the development avoid or minimise adverse impacts on stormwater quality.	AO6.1 An erosion and sediment control plan (ESCP) demonstrates that release of sediment-laden stormwater is avoided for the nominated design storm, and minimised when the nominated design storm is exceeded, by addressing design objectives listed below in Table A (construction phase) or local equivalent, for: <ul style="list-style-type: none"> a. drainage control, and b. erosion control, and c. sediment control, and d. water quality outcomes, and AO6.2 Erosion and sediment control practices (including any proprietary erosion and sediment control products) are designed, installed, constructed, operated, monitored and maintained, and any other erosion and sediment control practices are carried out in accordance with local conditions and appropriate recommendations from a suitably qualified person, OR The ESCP demonstrates how stormwater quality will be managed in accordance with an acceptable regional or local guideline so that target contaminants are treated to a design objective at least equivalent to Acceptable Outcome AO6.1.
P06 Complies: Construction activities for the development minimise any potential adverse impacts on stormwater quality. It can be noted that minimal cut and fill will occur on the site throughout the construction phase, and runoff will be maintained on site using appropriate control measures. This construction activity can be controlled through the implementation of a condition which requires the creation of an ESCP for future operational works approvals.	
Operate to avoid/minimise new impacts	
P07 Operational activities for the development avoid or minimises changes to waterway hydrology from adverse impacts of altered stormwater quality and flow	AO7.1 Development incorporate stormwater flow control measure to achieve the design objectives set out below in and Table B (post construction phase). The operational phases for the development comply with design objectives in Table B (post construction phase), or current best practice environmental management, including management of frequent flows, and peak flows.
P07 Complies: Operational activities for the proposed development avoid changes to waterway hydrology from	



PERFORMANCE OUTCOME	ACCEPTABLE OUTCOMES
adverse impacts of altered stormwater quality and flow, as outlined in the attached SWMP in Appendix F.	
<p>PO8 Any treatment and disposal of waste water to a waterway accounts for:</p> <ul style="list-style-type: none"> • the applicable water quality objectives for the receiving waters, and • adverse impact on ecosystem health or receiving waters, and • in waters mapped as being of high ecological value, the adverse impacts of such releases and their offset. 	<p>AO8.1 Implement the WWMP prepared in accordance with AO2.1.</p>
<p>PO8 Complies: Waste water from the proposed development will not be disposed to a waterway as outlined in the response to A02 above.</p>	
<p>PO9 Wastewater discharge to a waterway is managed in a way that maintains ecological processes, riparian vegetation, waterway integrity, and downstream ecosystem health</p>	<p>AO9.1 Wastewater discharge waterways is managed to avoid or minimize the release of nutrients of concern so as to minimize the occurrence, frequency and intensity of coastal algal blooms, and</p> <p>AO9.2 Development in coastal catchments avoids or minimises and appropriately manages soil disturbance or altering natural hydrology, and</p> <p>AO9.3 Development in coastal catchments:</p> <ol style="list-style-type: none"> a. avoids lowering groundwater levels where potential or actual acid sulfate soils are present, and b. manages wastewaters so that: <ol style="list-style-type: none"> (i) the pH of any wastewater discharged is maintained between 6.5 and 8.5 to avoid mobilisation of acid, iron, aluminium, and metals, and (ii) holding times of neutralised wastewaters ensures the flocculation and removal of any dissolved iron prior to release, and (iii) visible iron floc is not present in any discharge, and (iv) precipitated iron floc is contained and disposed of, and (v) wastewater and precipitates that cannot be contained and treated for discharge on site are removed and disposed of through trade waste or another lawful method.
<p>AO9.1 to AO9.3 Not Applicable: The proposed development is not located within a coastal catchment.</p>	
<p>PO10 Any non-tidal artificial waterway is managed and operated by suitably qualified persons to achieve water quality objectives in natural waterways.</p>	<p>AO10.1 Any non-tidal artificial waterway is designed, constructed and managed under the responsibility of a suitably qualified registered professional engineer, Queensland (RPEQ) with specific experience in establishing and managing artificial waterways, and</p>



PERFORMANCE OUTCOME	ACCEPTABLE OUTCOMES
	<p>AO10.2 Monitoring and maintenance programs adaptively manage water quality in any non-tidal artificial waterway to achieve relevant water-quality objectives downstream of the waterway, and</p> <p>AO10.3 Aquatic weeds are managed in any non-tidal artificial waterway to achieve a low percentage of coverage of the water surface area (less than 10%). Pests and vectors (such as mosquitoes) are managed through avoiding stagnant water areas, providing for native fish predators, and any other best practices for monitoring and treating pests, and</p> <p>AO10.4 Any non-tidal artificial waterway is managed and operated by a responsible entity under agreement for the life of the waterway. The responsible entity is to implement a deed of agreement for the management and operation of the waterway that:</p> <ul style="list-style-type: none"> a. identifies the waterway, and b. states a period of responsibility for the entity, and c. states a process for any transfer of responsibility for the waterway, and d. states required actions under the agreement for monitoring the water quality of the waterway and receiving waters, and e. states required actions under the agreement for maintaining the waterway to achieve the outcomes of this code and any relevant conditions of a development approval, and f. identifies funding sources for the above, including bonds, infrastructure charges or levies
<p>AO10.1-10.4 Not Applicable: The proposed development does not involve a non-tidal artificial waterway.</p>	

EMISSIONS AND HAZARDOUS ACTIVITIES

Given that the subject site, on which the material change of use and reconfiguration a lot is proposed, is not located wholly or partly within a management area, this state interest is **NOT APPLICABLE**.

NATURAL HAZARDS, RISK AND RESILIENCE

Based on Council's Overlay Mapping, the subject site, on which the material change of use and reconfiguration a lot is proposed, is not located within a flood hazard area, a bushfire hazard area, a landslide hazard area. There is no coastal hazard, given that no coastal waters touches land within Council's jurisdiction. Thus, these state interests are **NOT APPLICABLE**.

STATE TRANSPORT INFRASTRUCTURE

Given that the subject site, on which the material change of use and reconfiguration a lot is proposed, is not located within 400 metres of a public passenger transport facility or a future public passenger transport facility, this state interest is **NOT APPLICABLE**.



STRATEGIC AIRPORTS AND AVIATION FACILITIES

The subject site, on which the material change of use and reconfiguration a lot is proposed, does not lie or encroach in the operational or safety areas of an airport. This this state interest is **NOT APPLICABLE**.

In conclusion, given above assessment it can be concluded that overall the proposed development **COMPLIES** with the assessment provisions Queensland Government's *State Planning Policy (SPP) April 2016*.

5.3 State Development Assessment Provisions (SDAP)

The SDAP (version 1.10) is prescribed in the *Sustainable Planning Regulation 2009*, and contains the matters that either Council or a Referral Authority may have regard to, when assessing a development application.

With regards to Council's assessment, it was found that none of the matters listed in Table B.2, column 3, triggered further assessment against the SDAP modules for this development application.

With regards to any Referral Authorities assessment, it was found that of the matters listed in Table B.3, column 3 the following triggered further assessment against the SDAP modules for this development application;

1. Sch 7, Table 3, Item 1 of *SPARegs 2009* given that the proposed development, being a Material Change of Use, is within 25m a State Controlled Road, being the Clermont Alpha Road. Assessment of proposed development against SDAP Module 1, 18 and 19.
2. Sch 7, Table 2, Item 2 of *SPARegs2009* given that the proposed development, being a Reconfigure a Lot (subdivision 1 into 2 lots) is within 25m of a State controlled road, being the Clermont Alpha Road. Assessment of proposed development is against SDAP Module 1, 18 and 19.
3. Sch 7, Table 3, Item 10(b) of *SPARegs2009* given that the proposed development, being a Material Change of Use, could carry out additional exempt operational work being clearing of regulated regrowth vegetation on freehold land. Assessment of proposed development is against SDAP Module 8.

It should be noted that referral under Sch 7, Table 2, Item 4 of *SPARegs2009* is not triggered even though the proposed development involves a reconfiguration of a lot (subdivision 1 into 2 lots). This is due to the fact that the lots created are greater than 25ha each, being Proposed Lot 1 at 185.6ha and Proposed Lot 2 at 57ha.

Third Party Referral to Ergon Energy is required under Sch 7, Table 2, Item 21 of *SPARegs2009* given that the proposed development, being and Reconfigure of a Lot, triggers referral to Ergon Energy as an Advice Agency. No further assessment material is required for this referral, and Ergon Energy are aware of the proposed development.

Given the assessment provided in Appendix C, it can be concluded that the proposed development **COMPLIES** with the assessment provisions of SDAP (version 1.10).



5.4 Local Government Strategic Framework Assessment

The proposal is for a Public Utility (Solar Farm) and is consistent with the strategic direction of the Planning Scheme for Belyando Shire July 2008.

The Natural Environment and Cultural Heritage	
<i>In Belyando Shire, ecological systems, the natural environment (including natural features and unique habitats such as Peak Range National Park, Mazeppa National Park, Narrien Range National Park, Epping Forest National Park, Wilandspey Conservation Park, Doongmabulla Springs Important Wetland and the declared catchment), and items and places of cultural and heritage significance are protected such that biodiversity, cultural heritage values and existing or intended landscape character are maintained.</i>	
Strategic Direction	Proposed Development Assessment
<p>(a) Development is regulated to minimise any adverse impacts on air and water quality, to prevent land degradation, loss of unique habitat and biodiversity and to maintain the integrity of riparian areas, ridgelines and escarpments.</p> <p>(b) Development is regulated to be compatible with the environmental, habitat, biodiversity and landscape values and historic significance of protected areas (including Peak Range National Park, Mazeppa National Park, Narrien Range National Park, Epping Forest National Park, Wilandspey Conservation Park, Doongmabulla Springs Important Wetland and the declared catchment) and areas, local items and places of cultural significance (including areas along water courses).</p>	<p>(a) The proposed development aims to retain the natural features and geological material of the land with minimal earthworks proposed and minimal changes to the existing stormwater drainage onsite.</p> <p>(b) The subject site, on which the material change of use is proposed, is not located wholly or partly within any of the mentioned protected areas, or areas containing landscape values and/or historic significance.</p>

Economic Development	
<i>The viability of the mining industry is protected, while the economy of Belyando Shire is diversified in a manner that supports the intended land use structure and character of the urban centres of Clermont and Moranbah and the rural parts of the Shire.</i>	
<i>Activities that do not require a rural location are consolidated within the towns of Clermont and Moranbah, so that investment in the towns is maximised.</i>	
<i>Moranbah's role as the primary service centre for the northern Bowen Basin mining industry is enhanced.</i>	
<i>Town centres in each of the Shire's urban communities form vibrant and compact commercial and community cores. Industrial nodes in Clermont and Moranbah are consolidated.</i>	
<i>Natural resources (including land, water and mineral resources) are used sustainably.</i>	
Strategic Direction	Proposed Development Assessment
<p>(a) The planning scheme reinforces the roles of Clermont and Moranbah as the principal places for administrative services, business, industry, retail, education and community services and transport services within the Shire.</p> <p>(b) Sufficient and suitable areas are identified for urban development, and key transport infrastructure are identified and protected.</p>	<p>(c) The proposed development will support the ability of the Clermont in its principal role as an economic hub for services.</p> <p>(d) The subject site, on which the material change of use is proposed does not interfere with the existing electrical transmission line within the</p>



<p>(c) Residential activities (with minor exceptions) are required to be located within the towns of Moranbah and Clermont.</p> <p>(d) Commercial activities are limited (with minor exceptions) to identified centres in the towns of Clermont and Moranbah.</p> <p>(e) Confidence in investment in the Shire's towns and in its major industries is maintained by identifying clear development intentions.</p> <p>(f) Urban and other sensitive forms of development are regulated to avoid or minimise potential conflicts with existing or future mining operations.</p> <p>(g) Productive rural land, rural industries and unique natural features (including mineral and extractive resources and tourist resources such as national parks, conservation parks and wetlands) are protected to preserve their continued economic potential and viability.</p> <p>(h) Industrial activities are directed to identifiable industrial nodes in the towns of Moranbah and Clermont.</p>	<p>subject site, nor any other function of key transport infrastructure.</p> <p>(e) The proposed development does not seek approval for a residential activity.</p> <p>(f) The proposed development does not seek approval for a commercial activity.</p> <p>(g) As mentioned before the proposed development will support the ability of the Clermont in its principal role as an economic hub for services</p> <p>(h) The proposed development does not seek approval for an urban or other sensitive form of development.</p> <p>(i) The proposed solar farm being located within the Rural locality of the Shire of Belyando will reflect the continuing economic viability, and will generate further employment prospects both directly and indirectly. Furthermore, it can be noted that the proposed solar farm will create a strong economy of support to the local area of Clermont and beyond.</p> <p>(j) The proposed development does not seek approval for an Industrial activity.</p>
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<p>Community Wellbeing</p> <p><i>Moranbah and Clermont provide a wide range of government and community services and employment opportunities. Moranbah continues to have a significant role as the primary service centre for the northern Bowen Basin mining industry.</i></p> <p><i>The towns of Moranbah and Clermont accommodate strong, connected and vibrant communities, well supported by recreational and other community facilities, highly accessible by walking and cycling. Town centres provide a clear community focal point.</i></p> <p><i>Moranbah and Clermont are characterised by a strong and growing permanent resident population. A wide range of affordable housing types is available and all housing is designed to contribute to the quality of the urban environment. Dwelling units providing for permanent accommodation are predominant, with a significantly smaller proportion of other forms of accommodation intended for temporary residents.</i></p> <p><i>The rural amenity and productive capacity of other parts of the Shire is maintained.</i></p>	
Strategic Direction	Proposed Development Assessment
<p>(a) The planning scheme seeks to ensure that people are connected to public spaces (including recreational areas) and community services through an appropriate</p>	<p>(a) The proposed development does not prevent this</p>



<p>land use structure and the provision of infrastructure within the towns of Clermont and Moranbah.</p> <p>(b) Increased opportunities are created for a larger proportion of the mining (and related) workforce and their families to permanently reside in the Shire's towns through:</p> <ul style="list-style-type: none"> - the designation of sufficient urban land to accommodate expected population growth; - the encouragement of medium density, small lot and other forms of permanent housing to increase housing choices available within the Shire's towns; and - limitations on the size of accommodation facilities for non resident workers. <p>(c) The planning scheme seeks to ensure all residential activities (with minor exceptions) are located within the towns of Clermont and Moranbah.</p> <p>(d) All forms of "residential activities" (including accommodation intended for visitors and temporary residents) are required to be designed to integrate with the surrounding urban environment and be of a high quality urban design.</p> <p>(e) Development is regulated to protect the health and safety of people.</p> <p>(f) Infrastructure reflects community expectations and needs, meets appropriate engineering and environmental standards and is provided in an orderly and logical sequence to ensure cost effectiveness.</p> <p>(g) Rural communities are protected from incompatible forms of development, and rural residential development is not supported by the planning scheme.</p>	<p>from occurring.</p> <p>(b) The proposed development will indirectly and directly support further employment opportunities</p> <p>(c) The proposed development does not seek approval for a residential activity.</p> <p>(d) The proposed development does not seek approval for a residential activity.</p> <p>(e) The proposed solar farm will not impact on the health and safety of people within the locality, in that the EMF from this facility will be in accordance with the WHO regarding safe limits for Human Exposure – Refer to Section 4.1.24 for further details on EMF compliance.</p> <p>(f) The proposed development does not compromise the orderly development of the Clermont township</p> <p>(g) The proposed public utility (solar farm) reflects the intentions of the rural zone, with the solar farm being within the rural locality strategically located near an existing substation to ensure the efficient transfer of electricity to service the population of Clermont.</p> <p>It can further be noted that the proposed solar farm will not impede or be of an incompatible built form within the rural locality, thus meeting community expectations and meeting the Rural Character criteria outlined within the Isaac Regional Council jurisdiction.</p>
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Given the above material it can be concluded that the proposed development **COMPLIES** with the Strategic Outcomes of Planning Scheme for Belyando Shire July 2008.



5.5 Local Government Code Assessment

The proposal is for a Public Utility (Solar Farm) and is consistent with the definition of a Rural Use within Isaac Regional Council. The proposal has been designed to comply with the applicable Planning Scheme for Belyando Shire July 2008, being;

- Rural Zone Code
- Reconfiguring a Lot Code

Statements of the proposal's compliance with the Acceptable Solutions and Performance Criteria of the relevant Codes are provided in Appendix B of this report.

Given above material it can be concluded that the proposed development **COMPLIES** with the Impact Assessable material in the Planning Scheme for Belyando Shire July 2008.



6. Conclusion

This planning report addresses an application for a Development Permit for a Material Change of Use - Public Utility (Solar Farm), and Reconfiguration of Land being a Lease over 10 years and Subdivision of one into two allotments for Clermont Solar Pty Ltd over land near Alpha Bypass Road, Clermont within the Isaac Regional Council (Lot 6 SP159756, Lot 220 CLM102 and Lot 153 CLM230).

As demonstrated in this report, the proposed use complies with the assessment criteria of the Local and State Government planning instruments which are applicable to such a development.

By enabling this innovative and environmentally sustainable use to proceed, the economic opportunities and diversity of growth within the region will be enhanced.

We therefore submit that the proposed development, being a Material Change of Use - Public Utility (Solar Farm), and Reconfiguration of Land being a Lease over 10 years and Subdivision of one into two allotments, be **APPROVED**.



Appendix A - Development Plans

Drawings prepared by i³ Consulting Pty Ltd

Document No:	Document Description
A00 Rev G	PROJECT OVER VIEW
A01 Rev E	DEVELOPMENT AREA
A02 Rev G	DETAIL SITE PLAN
A03 Rev F	DETAIL SITE PLAN
A04 Rev F	LEASE AND SUBDIVISION PLAN
A05 Rev E	TYPICAL DETAILS
A100 Rev D	INDICATIVE CONTROL/ SWITCHROOM FLOOR PLAN AND ELEVATIONS
A101 Rev A	EXISTING STORAGE SHED



Appendix B- Planning Scheme Codes



Appendix C - State Codes



Appendix D - Prelodgement Meeting Minutes

Meeting Minutes Reference No:	Relevant Authority
Pre-Lodgement Meeting Minutes by icubed consulting (reference: 16-076)	ISAAC REGIONAL COUNCIL
SPL-0616-031319	DEPARTMENT OF STATE DEVELOPMENT, INFRASTRUCTURE AND PLANNING



Appendix E - Traffic Impact Report



Appendix F - Stormwater Report



Appendix G - Community Consultation



Appendix H - Ecological Assessment



Appendix I - Glare Assessment



Appendix J - Visual Assessment



Appendix K - Solar Farm Capital Investment Value
