



**MAJOR PROJECT ASSESSMENT:  
Moree Solar Farm- Site 3 - Southern  
MP10\_0175 (Mod 1)**



Director-General's  
Environmental Assessment Report  
Section 75W of the  
*Environmental Planning and Assessment Act 1979*

January 2014

## ABBREVIATIONS

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Department	Department of Planning and Infrastructure
Director-General	Director-General of the Department of Planning and Infrastructure
EA	Environmental Assessment
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	<i>Environmental Planning and Assessment Regulation 2000</i>
EPI	Environmental Planning Instrument
MD SEPP	State Environmental Planning Policy (Major Development) 2005
Minister	Minister for Planning and Infrastructure
Part 3A	Part 3A of the <i>Environmental Planning and Assessment Act 1979</i>
Proponent	Moree Solar Farm Pty Ltd

Cover Photograph: photograph of indicative tracker table comprising PV solar modules

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## EXECUTIVE SUMMARY

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The Moree Solar Farm (Site 3, Southern) was approved by the Minister for Planning and Infrastructure on 17 July 2011. The Project comprised a 150 megawatt (MW) solar farm and associated infrastructure inclusive of a series of photovoltaic modules connected to the existing Moree 132kV substation via a 132kV electricity transmission line (ETL).

The Proponent for the project has subsequently changed from BP Solar Pty Ltd to the Moree Solar Farm Pty Ltd (comprising a joint venture between FRV Services Australia Pty Ltd and Pacific Hydro Pty Ltd). The Proponent has lodged a modification under s75W of the *Environmental Planning and Assessment Act, 1979*.

The modification seeks to reduce the size of the project from 150MW to 56MW and re-route the electrical transmission line (ETL) to connect into the existing Moree-Bellata 66kV line thereby reducing the length of the new ETL by up to 3.9km. The modified route also includes the re-conductoring of up to 10.45km of an existing Essential Energy ETL with a new heavier conductor, and replacement of some existing poles.

The Environmental Assessment for the modification was placed on public exhibition for a period of 15 days from 4 December 2013 until 18 December 2013. The Department received 5 submissions from public authorities and 2 submissions from the general public. None of the public agencies objected to the Project. The public submissions (one of which was an objection) raised concerns with respect to community consultation, electric and magnetic fields, impacts to overland water flow and traffic management.

The Proponent prepared a submissions report in response to the submission received. This report was submitted to the Department in January 2014.

The Department has assessed the merits of the project and considers the key issues to include:

- visual impact;
- biodiversity; and
- indigenous heritage impacts.

The Department is satisfied that the impacts of the project have been addressed via the Environmental Assessment and Submissions Report and that these impacts can be adequately managed through the existing or recommended conditions.

The Department considers the modified project to be in the public interest and therefore recommends that this project, as modified, be approved subject to the recommended conditions of approval.

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# 1. BACKGROUND

The Moree Solar Farm (Site 3, Southern) was approved by the Minister for Planning and Infrastructure on 17 July 2011. The Project comprised a 150 megawatt (MW) solar farm and associated infrastructure inclusive of a series of photovoltaic modules connected to the existing Moree 132kV substation via a 132kV electricity transmission line (ETL). The solar farm would have an expected operating life of up to 50 years.

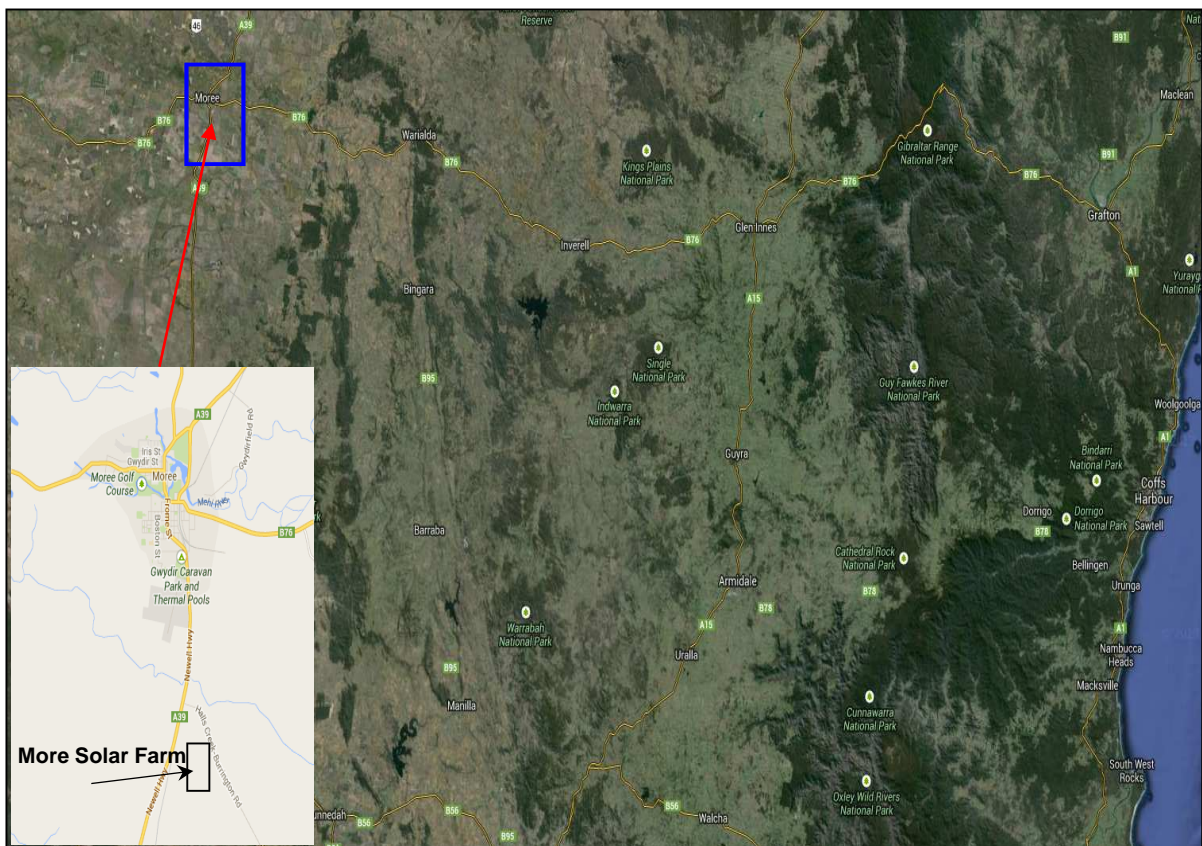
The project is classified as critical infrastructure in accordance with section 75C of the *Environmental Planning and Assessment Act 1979* (EP&A Act). This is by virtue of the then Minister's declaration of 11 November 2009 relating to the generation of electricity derived from renewable fuel sources being development with a capacity to generate at least 30 megawatts, which are the subject of a project application lodged pursuant to section 75E or 75M of the EP&A Act.

Since the approval of the original application, the Proponent for the project has subsequently changed from BP Solar Pty Ltd to the Moree Solar Farm Pty Ltd (comprising a joint venture between FRV Services Australia Pty Ltd and Pacific Hydro Pty Ltd). The new Proponent has lodged a modification under s75W of the *Environmental Planning and Assessment Act, 1979*.

## 1.1. Location

The site is located 10km south of Moree in the Moree Plains Shire in the northwest of New South Wales. The land is currently used for agricultural cropping and cattle grazing with some rotation of uses according to season. The project location is shown in **Figure 1**.

**Figure 1: Project Location**



## 2. PROPOSED MODIFICATION

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### 2.1. Modification Description

The Proponent seeks to modify the existing approval to:

1. Change the name of the Proponent from BP Solar Pty Ltd to Moree Solar Farm Pty Ltd.
2. Reduce the size of the project from 150MW to 56MW via the deletion of solar generation and ancillary works on Lot 32 and 54 DP 751791 (refer **Figure 2**). The solar arrays are now to be wholly contained within Lot 4 DP 751791, with a reduction in ancillary infrastructure such as fencing, internal and external roads and size of the operations building.
3. Use single axis horizontal tracking units in rows with an overall height from the ground of 3m (a reduction in height from the approved tracking units of 3.3m).
4. Reduce the length of the new ETL from 10km to 6.1km. Reduce the size of the new ETL from 132kV to a new re-routed 66kV ETL connecting into the existing Moree-Bellata 66kV line. Two options are proposed for the new ETL (refer **Figure 2**):
  - a. Option 1(a) is to connect from the site substation to the point of connection on the existing Moree-Bellata 66kV line, north west of the Waste Management facility (6.1km long).
  - b. Option 1(b) is to connect directly into the Moree-Bellata 66kV line (3.6km long) (via an overhead ETL however consideration has been given to under-boring the cable (150mm diameter) beneath the existing railway line and trenching elsewhere).
5. Upgrade (reconductor) the existing Essential Energy Moree to Bellata 66kV line (up to 10.45km) inclusive of the replacement of the existing conductor with a heavier conductor and inter-poling and/or replacement of the existing poles along the route (refer **Figure 2**).
6. Delete Condition C16 as it is no longer proposed to have generation facilities installed on the subject road reserve.
7. Amend Condition C5 by inserting the words "if required" before "the Proponent."
8. Amend Condition E1 by inserting the words "if a biodiversity offset is required" prior to the words "Details of."

Refer to **Figure 2** for the modified site boundary and electricity transmission line route and **Figure 3** for the modified site layout.

Figure 2: Modified site boundary and electricity transmission line options

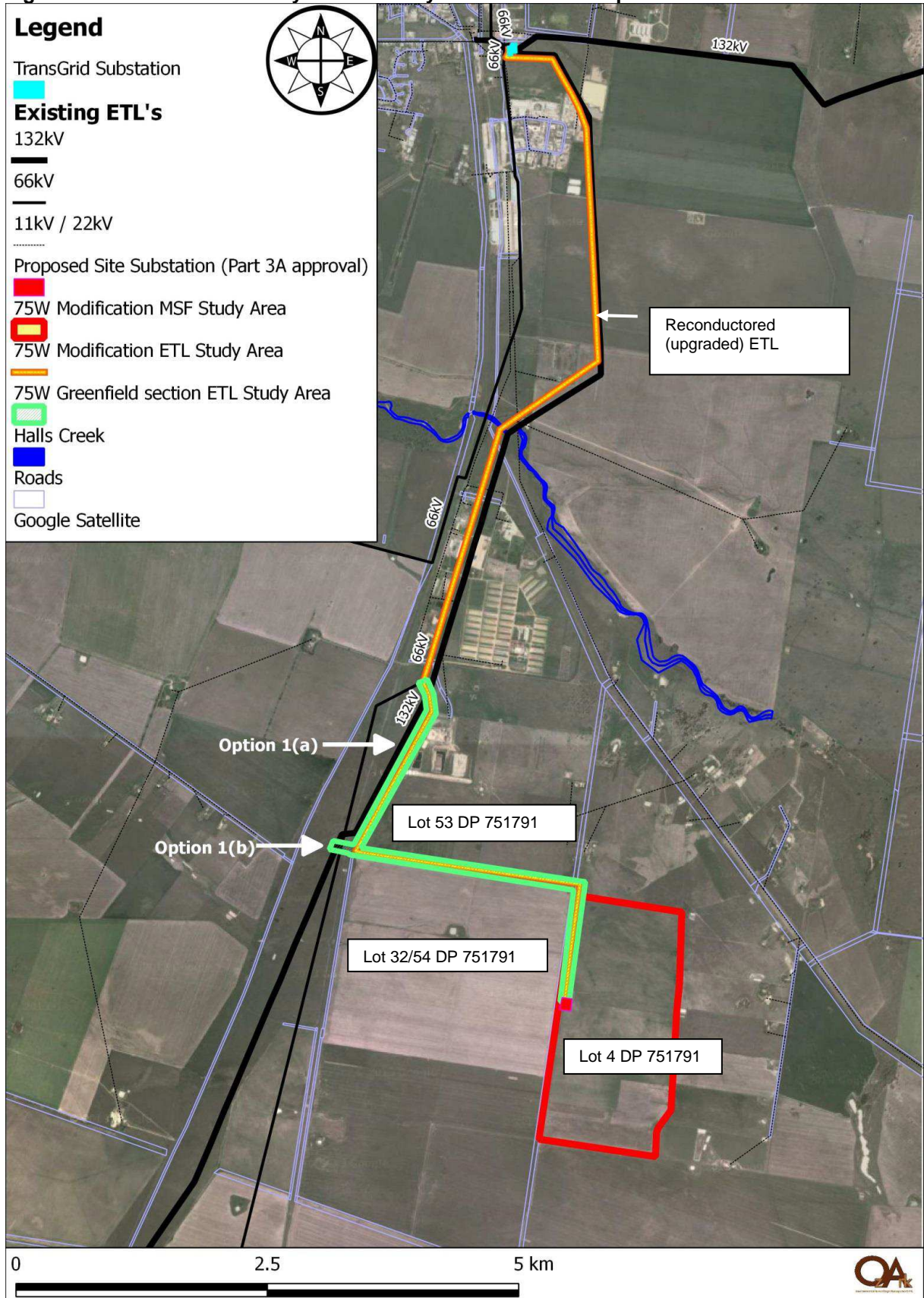
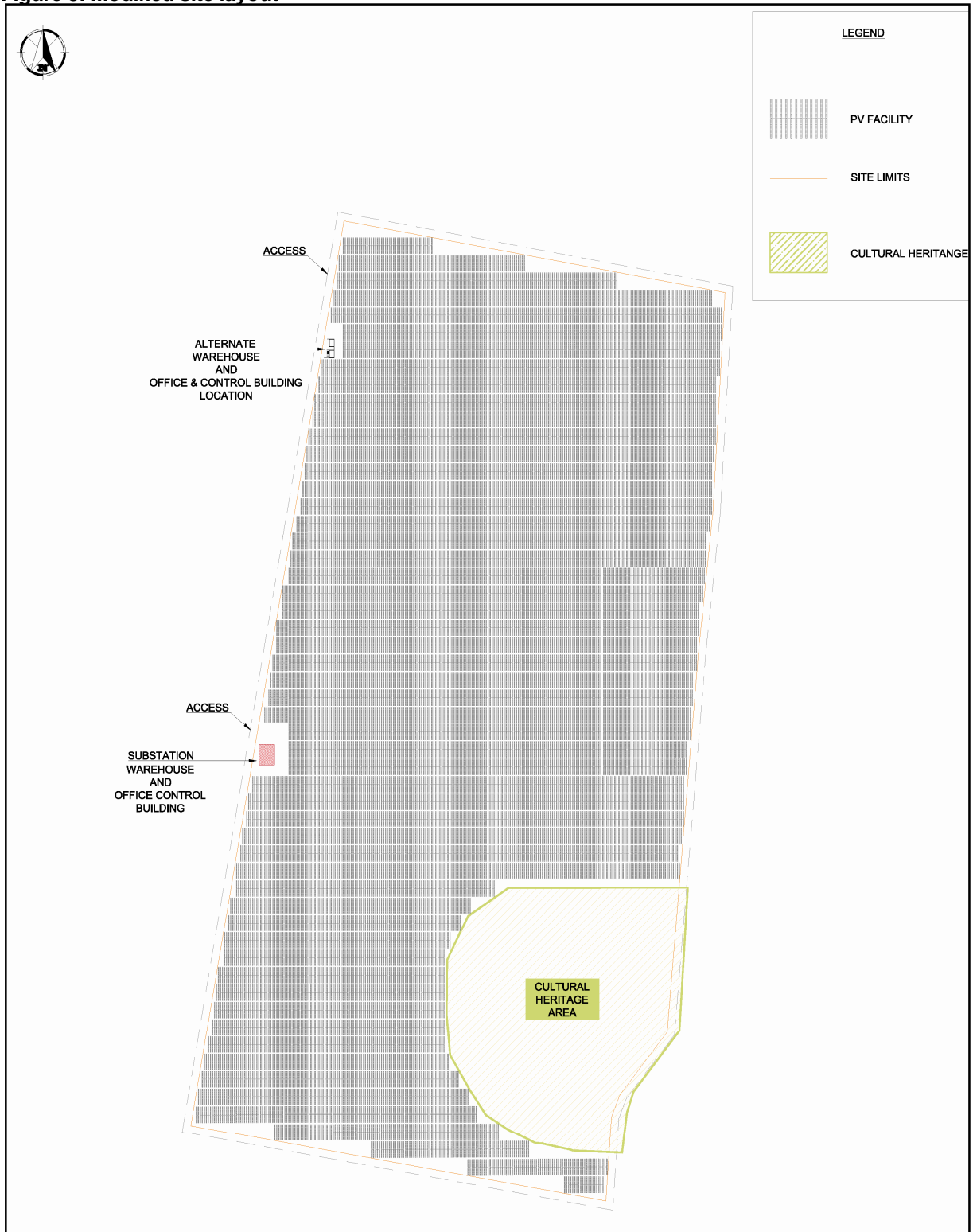


Figure 3: Modified site layout



### 3. STATUTORY CONTEXT

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#### 3.1. Modification of the Minister's Approval

Although Part 3A of the EP&A Act was repealed on 1 October 2011, the project remains a 'transitional Part 3A project' under Schedule 6A of the Act. In accordance with clause 3 of schedule 6A of the Act, section 75W of the Act as in force immediately before its repeal on 1 October 2011 and as modified by schedule 6A, continues to apply to transitional Part 3A projects.

Section 75W of the Act provides that a Proponent may request the Minister to modify the approval of a transitional Part 3A project. The Minister's approval is not required if the project, as modified, will be consistent with the original approval.

The subject modification is not consistent with the approval, but does not constitute a project in its own right, and therefore a modification in accordance with section 75W of the Act is considered appropriate.

#### 3.2. Delegated Authority

An application to modify a transitional Part 3A project approval may be determined by the Director, Infrastructure Projects of the Department of Planning and Infrastructure under delegation from the Minister for Planning and Infrastructure, dated 14 September 2011, where the local council does not object, a political disclosure statement has not been made in relation to the application, and less than 10 objections are received.

This proposed modification meets the terms of this delegation, and may be determined by the Director, Infrastructure Projects of the Department of Planning and Infrastructure.

### 4. CONSULTATION AND SUBMISSIONS

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#### 4.1. Exhibition

Under section 75X(2)(f) of the Act, the Director General is required to make the modification request publicly available. The Department publicly exhibited the Environmental Assessment from 4 December 2013 until 18 December 2013 on the Department's website, and at:

- the Department of Planning and Infrastructure, Information Centre, Sydney;
- the Nature Conservation Council of NSW; and
- the Moree Plains Shire Council.

The Department also advertised the public exhibition in the Moree Border News on 2 December 2013 and Moree Champion on 3 December 2013 and notified neighbouring landowners and relevant state and local government authorities in writing.

The Department received 7 submissions during the exhibition of the Environmental Assessment including 5 submissions from public authorities and 2 submissions from the general public. A summary of the issues raised in submissions is provided below.

#### 4.2. Public Authority Submissions

**NSW Trade and Investment-Mineral Resources Branch**, did not raise any objections to the project.

**NSW Office of Environment and Heritage**, did not raise an objection to the proposal, but provided the following comments:

- It is not clear why the area of impact of the revised electricity poles is determined to be 1m<sup>2</sup> when the original assessment indicates the area of impact to be 3m<sup>2</sup>.
- The construction impacts of the proposal are not clearly set out and the area of disturbance associated with easement tracks is not quantified.
- It is noted that Carbeen remnants will no longer be impacted and no offset is proposed.
- Aboriginal cultural heritage assessment information is adequate.

### **Department of Primary Industries**

Fisheries NSW did not raise any objections to the project.

NSW Office of Water did not raise any objections, but provided the following comments:

- All works should be consistent with the NoW's *Guidelines for Controlled Activities*.
- Adequate erosion and sediment control measures are required.
- Water is to be obtained from an appropriately licensed source, if required.

Crown Lands did not raise any objections, but provided the following comments:

- The project appears to utilise an area of Crown road next to Lot 4 DP 751791.
- The Proponent should make contact with Crown Lands and the holder of the Enclosure Permit to ascertain the ability to use this area, and appropriate approvals and processes that would be involved, including possible closure and purchase.

Agriculture NSW did not raise any objections to the project.

**NSW Environment Protection Authority**, did not raise any objections to the proposal.

**NSW Catchment Management Authority – Border Rivers-Gwydir**, did not raise any objections, but noted that weed management was required.

### **4.3. Public Submissions**

Two submissions were received from the public, one of which objected to the project. The matters raised in the submissions include:

- Community consultation – the community consultation process varied to that described in the Environmental Assessment. The community consultation process failed to demonstrate that community concerns would be considered properly, leading to community distrust in the protection of health, safety and amenity impacts. True community consultation is required and should be a condition of approval.
- Electric and magnetic fields – given the close proximity of the upgraded power lines to houses and the consequential risk to children in these houses, it is unacceptable when the original route to the east of the village has already been identified.
- Overland water flow – the size and shape of the site has changed. The application needs to address the significant overland water flow that could be impeded by the proposed structures, either during construction or on completion. If the overland water flow was inappropriately managed and water movement was changed or diverted through inappropriate works, there would be a sizeable impact on the submitter's property stock carrying capacity or cropping potential.
- Traffic Management – limited speed zones are required for Barton Plains Road.

The Department has considered these issues in its assessment of the project.

### **4.4. Proponent's Response to Submissions**

Moree Solar Farm Pty Ltd, provided a response to the issues raised in submissions (refer **Appendix C**). The Moree Solar Farm Submissions Report was placed on the Department's website on 10 January 2014.

## 5. ASSESSMENT

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The Department considers the key environmental issues for the project to be:

- visual impact;
- biodiversity; and
- indigenous heritage.

### 5.1. Visual Impact

The modification application seeks to reduce the size of the project through a reduction in the size of the solar plant from 150MW to 56MW, resulting in fewer photovoltaic (PV) modules (approximately 610,000 less than approved) and a reduction in ancillary infrastructure such as security fencing, internal and external roads and the size of the operations building. The proposed location of the substation has not substantially changed from its approved location.

A reduction in the length of the new electricity transmission line (ETL) line from 10km to up to 6.1km is proposed (plus up to an additional 10.45km of reconducted line running within an existing 66kV power line easement), and the new ETL will be re-aligned to by-pass the residential receivers located to the north of the site. The reconducted section of the ETL however will pass adjacent to receivers not previously considered.

The Proponent has undertaken a visual impact assessment, which assessed the overall visual impact of the modification as viewed from a number of locations, from distances upto 10km from the solar farm site, and 1.5km from the ETL.

The visual impact of the modified solar array on the surrounding residences was generally assessed to be low, however the visual impact of the ancillary facilities including boundary fencing was assessed to be of moderate impact. Mitigation measures such as painting and/or constructing the facilities and fencing with materials to match the background landscape are seen to be effective measures to reduce this impact. This landscaping is in combination with using matte paints as opposed to glass to reduce contrast and reflectivity.

The reflection from the solar panels was also considered within the assessment to have a low visual impact. The solar panels are not expected to impact on residents surrounding the project, passing motorists or commercial areas as the solar panels are designed to absorb, not reflect sunlight. The PV panels will be designed with anti-reflection coating that minimise potential for sunlight reflection which are less reflective than common materials utilised within the rural/agricultural environments such as steel and black asphalt.

Pre-construction and construction activities such as the erection of the substation, solar panels and boundary fence associated with the modified solar farm were deemed to have a high impact on the surrounding urban/rural residential areas. However construction activities would be for a temporary period and most activities would be undertaken within the site area or discrete areas beyond the solar farm boundaries. Any impacts of dust can also be suppressed via the wetting of the dirt roads during the construction period.

The new 6.1km section of the ETL (option 1(a)) is proposed to connect from the project site substation to the existing Moree-Bellata 66kV line. This requires the ETL to run north from the site's substation along Barton Plains Road, turning west to run along the southern boundary of Council Ski Park land (Lot 53 DP 751791 or potentially along the northern boundary of Lot 32 DP 751791) then north to the waste management facility where it cuts under the existing 132kV line to connect into the existing 66kV line within Lot12 DP1146923.

The second option (1(b)), does not head north to the waste management facility, however will continue west over (or under) the railway track to join the existing ETL.

The visual impact of the modified new section of the ETL on the urban/rural residential areas was deemed to be high, given it will consist of additional poles (up to 24m in height) and wires. However, the length of the new ETL infrastructure has been reduced by up to 3.9km, with the remainder of the ETL replacing existing wires with a heavier conductor (and potentially replacing existing poles), within an existing 66kV easement. The ETL would also largely pass existing industrial/agricultural developments located between the site and Moree substation such as Council's waste management facility; cotton gin; saleyards; bio-energy plant; Moree airport; bulk wheat storage facility and Moree industrial park. The overall visual impacts of the modified ETL were considered to be reduced when compared with the approved ETL and therefore not result in any unacceptable visual impacts.

### **Consideration**

Given the reduced height of the solar panels (which are now 3.0m which is 0.3m lower than the approved heights) and reduced number of solar arrays, the Department is satisfied that the modified solar arrays would result in a reduced level of visual impact when compared to the existing approval. The Department also notes that no objections were lodged on the visual impacts of the modified proposal.

The existing approval also contains a condition that will require the Proponent to prepare a Landscape Plan to investigate mitigation measures to reduce any impacts on surrounding receivers. This report will identify all reasonable and feasible screening and landscaping options available, including demonstration that these measures were determined in consultation with the affected landowners and relevant road authorities. The Proponent has re-affirmed its commitment to undertake these measures.

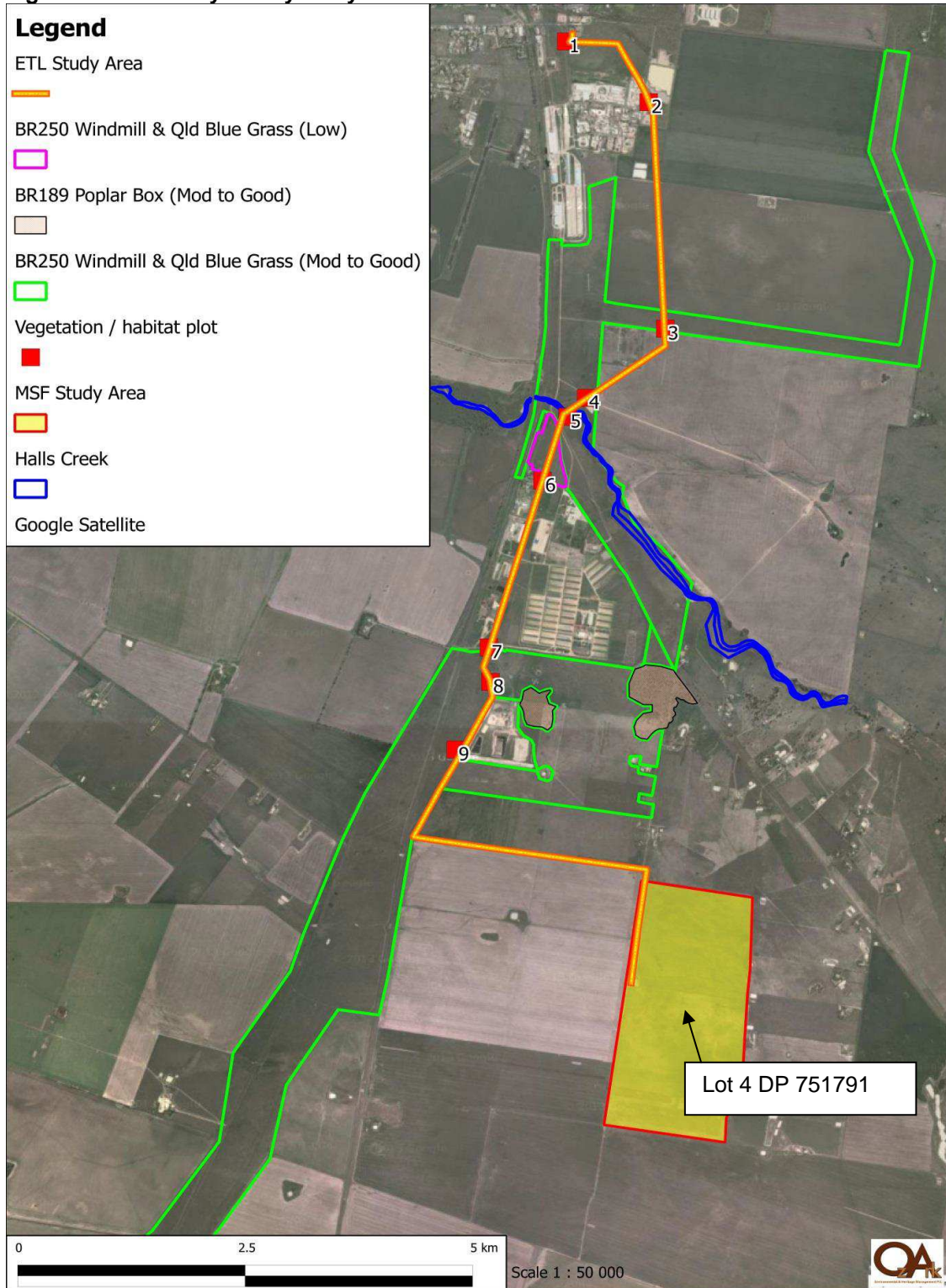
Solar supports and frames will be dull in appearance and the solar panels will reflect less than 10% of the sunlight striking their surface which will ensure no unacceptable visual impacts will occur.

Given the amount of additional electricity poles, being the predominant visual feature of the electricity transmission line, has been reduced via the re-conductoring of the existing 66Kv ETL, and the route of the amended electricity transmission line is clear of residences (both option 1(a) and 1(b) now largely passing the industrial area), the Department is also satisfied that the modified route would result in a reduced level of visual impact when compared to the existing approval.

## **5.2. Biodiversity**

To assess the impacts of the modified project on ecological values, the Proponent undertook a terrestrial ecological assessment which included a field survey of the modified ETL study area (refer **Figure 4**) and desk top surveys.

**Figure 4: biodiversity survey study areas**



The review was undertaken to identify listed species, populations and communities listed in the *Threatened Species Act* (TSC Act) and *Commonwealth Environment Protection and Biodiversity Conservation Act* (EPBC Act). Given that the area has been reduced, and the biodiversity values of this area have been assessed within the existing approval, no additional impacts to biodiversity will occur for this site (Lot 4 DP 751791). The Department's assessment of any additional biodiversity impacts will therefore concentrate on the revised ETL route.

Desktop surveys of the ETL Study area identified 6 flora species listed as threatened under either the TSC Act or EPBC Act, including:

- Finger Panic Grass (*Digitaria porrecta*), Ooline (*Cadellia pentastylis*), Bluegrass (*Dichanthium setosum*) and the Slender Darling Pea (*Swainsona murrayana*) - listed as threatened under the TSC and EPBC Act;
- Creeping Tick-trefoil (*Desmodium campylocaulon*) - listed as threatened under the TSC Act; and
- Lobed Bluegrass (*Bothriochloa biloba*) - listed as threatened under the EPBC Act.

None of the above species were recorded during the field survey. The survey did however identify Windmill Grass-Bluegrass derived grassland of the Moree plains of the Brigalow Belt South Bioregion. This species is listed as the national endangered ecological community (EEC) '*Natural grasslands on basalt and fine-textured alluvial plains of the northern New South Wales and Southern Queensland*' under the EPBC Act. Approximately, 16.42 hectares are contained within the ETL, with 13.72 hectares being in moderate condition and 2.7 hectares being in low condition. An assessment of significance of the modified ETL route on this species concluded that less than 1% of a local population would be affected (147m<sup>2</sup> based on 1m<sup>2</sup> of permanent impact per pole), which would not fragment the community or interfere with the natural recovery of the EEC. The assessment concluded that the modified ETL proposal would not have a significant effect on this endangered EEC.

The ETL route will also pass Halls creek, which contains part of the Aquatic Ecological Community in the Natural Drainage System of the Lowland Catchment of the Darling River. This is a listed EEC in the *NSW Fisheries Management Act 1994*. No impact is deemed to occur given this community will be aerially spanned by the powerline and construction will not traverse the EEC.

No threatened flora were recorded during the field survey, however Creeping Tick-trefoil (*Desmodium campylocaulon*) had been recorded by a previous consultant in the areas adjacent to the proposed ETL route. An assessment of significance however determined that the proposal would not significantly affect this species.

No trees were recorded in the ETL route, and the maximum area of temporary disturbance resulting from construction was estimated to be 10 hectares. No threatened fauna were recorded in the ETL route.

With respect to offsetting, the Proponent has indicated that as the site will no longer include the previous "western study area" (Lot 32/54 DP 751791) and the impacts to the Carbeen woodland in this area will no longer occur. The cumulative residual impacts to Windmill Grass are also less than 4 hectares. Further, whilst Creeping Tick-trefoil has few known or restricted populations in NSW, the ground truthed local population is very well understood, and is currently being managed under a Plan of Management in a dedicated conservation area. The Proponent states that biodiversity offsetting is therefore no longer required as all known impacts of the project on biodiversity are less than the thresholds deemed to have high biodiversity conservation values that require offsetting. As a consequence, the Proponent has requested the Biodiversity condition in the approval to be modified to state that a biodiversity offset strategy and package shall only be prepared if it is required.

### Consideration

The Department has considered the Proponent's ecology assessment. The Department notes that the OEH did not object to the modification, however raised some comments on the methodology of impact assessment and quantification of construction impacts associated with the proposal.

The Department notes that with the length of the ETL is being reduced by up to 3.9km and the amount of infrastructure and associated disturbed areas created by the placement of the

new poles within the ETL easement has also been reduced. The replacement of wires and poles, within the existing easement, or up to 10.45km of the ETL, would also result in reduced clearing when compared to the approved project.

For the new ETL route, the significant impact criteria assessment for the Windmill Grass-Bluegrass derived grassland concluded that with less than 1% percent of the grassland being permanently impacted by the construction of the ETL, the project is not likely to have a significant impact on the local population habitat of this species. The modified project is also unlikely to significantly affect any other listed species, fauna populations or communities.

The Department therefore considers that the project, as modified, is unlikely to result in any unacceptable impacts on biodiversity. However, to ensure that measures are taken to protect and minimise the loss of native vegetation and native fauna habitat during the construction of the project, and that adequate vegetation cover beneath the solar PV arrays would exist, the existing approval contains a condition that as part of the construction environmental management plan (CEMP) a flora and fauna management plan and ground cover management plan are to be prepared. Weed management measures will also be included within the CEMP, as well as measures to monitor and manage soil and water impacts on Halls creek. These would be prepared in consultation with OEH, and would include consideration of the recommended management measures provided within the terrestrial ecology assessments.

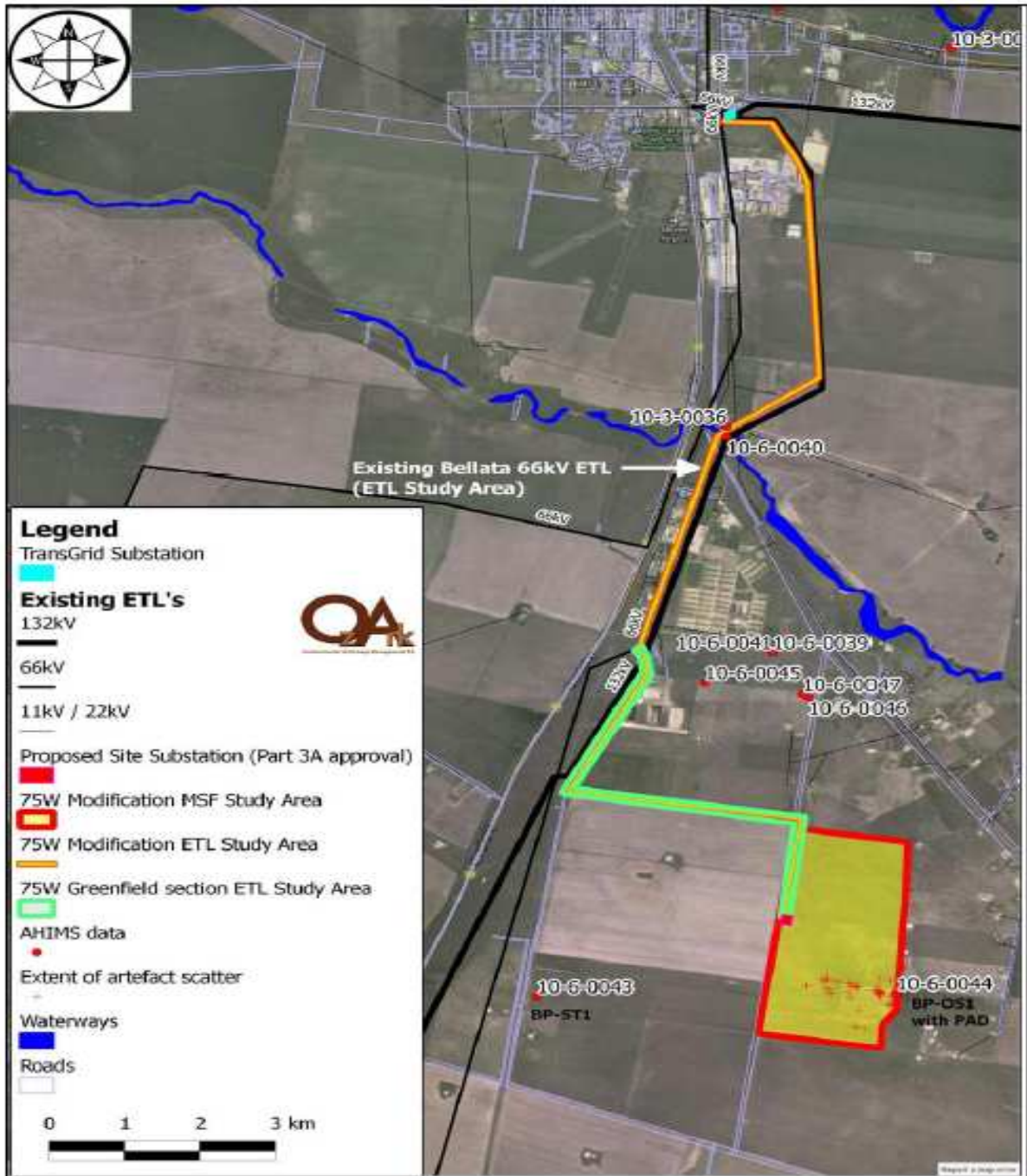
The Department also notes that to adequately compensate for any vegetation losses, the existing approval contains a condition for the preparation of a biodiversity offset package and strategy following final design. This is to be prepared by an ecologist and must consider aspects such as native vegetation losses, demonstration of how the offset will aim to achieve 'improve or maintain biodiversity values', and how the conservation commitment would be ensured in perpetuity. Whilst the Proponent's assessment is of the opinion that the package and strategy may not be required (because of the removal of the Carbeen Woodland impacts), the Department has retained the condition, however recommended consultation occurs with OEH first to determine whether the offset package and strategy are required.

The Department considers that, with the measures outlined above, any impacts on biodiversity can be adequately mitigated and/or managed, and do not propose a constraint to approval of the modification.

### **5.3. Indigenous Heritage**

To assess the impacts of the modified project on Aboriginal Heritage, the Proponent undertook an Aboriginal Heritage Impact Assessment (AHIA) in accordance with the *Guidelines for Aboriginal Cultural Impact Assessment and Community Consultation (DECCW 2005)*, and in consultation with the relevant Aboriginal groups involved in the original surveys for the approved project. The assessment included a field survey of the modified ETL study area (refer **Figure 5**) and desk top surveys.

Figure 5: Identified Aboriginal sites



Given the solar array has been significantly reduced in footprint, the only Aboriginal archaeological site that will potentially be impacted is the previously assessed “open site with potential archaeological deposit” or BP-OS1 (10-6-0044). This was previously determined to have the greatest level of significance (of all the previously identified items) given it contains some relationship to a significant landscape feature, being the extinct billabong/ephemeral wetland, and therefore has greater conservation significance.

The Proponent’s assessment states that only a small portion of the westernmost part of the open site BP-OS1 will be impacted by the modified solar array, being the westernmost part of the site that comprises areas disturbed by ploughing. The potential archaeological deposit (PAD) identified in the approval is located in the eastern portion of the open site. This PAD

remains free of direct project impacts, with a 30 hectare area around the perimeter of the site to be conserved.

Aboriginal sites 10-3-0036 and 10-6-0040, previously recorded in the field assessment within the existing approval, are also contained within the revised ETL route. The AHIA concluded that following the redesign of the ETL route, site avoidance of 10-3-0036 and 10-6-0040 was feasible through the establishment of a suitable protective buffer.

No new Aboriginal archaeological sites were identified within the modified ETL route, however four artefacts thought to relate to 10-6-0040 were recorded that were of low-moderate scientific significance and low aesthetic and historic value, however were considered to be culturally significant to the Aboriginal community. Site avoidance of these items is also feasible through the establishment of a suitable protective buffer.

The modified proposal was assessed as having a low likelihood of encountering undetected Aboriginal sites. The AHIA identified a number of methods of managing potential impacts on the identified sites prior to and during the construction and operation of the solar farm. These include protecting sites during construction by providing a suitable curtilage around the sites, and including signage and fencing. The AHIA also recommends the preparation of an Aboriginal Cultural Heritage Management Plan (AHMP), formulated in consultation with the identified Aboriginal community stakeholders, which will include measures for management and site conservation.

### **Consideration**

The Department is satisfied that the Proponent, through the AHIA, has adequately identified and assessed the potential impacts of the modified project components on indigenous heritage in consultation with the registered stakeholders consisting of local Aboriginal groups.

The Department notes that the footprint of the solar array has reduced significantly, and will no longer extend to the area previously identified as “study area 2” (Lot 32/54 in DP 751791 in **Figure 2**). Impacts to the Aboriginal site identified in the Existing approval as BP-ST2 will therefore no longer occur.

Whilst a small portion of the westernmost part of open site BP-OS1 will be impacted by the modification, the Department notes that the soil in this area has been disturbed by previous ploughing practices, and that the any potential archaeological deposit related to the site is contained within an area not impact by the modification. The establishment of a conservation zone will also ensure the PAD will be free of direct project impacts.

Selective pole placement and aerial spanning of the electricity cables/wires across sites 10-3-0036 and 10-6-0040, in conjunction with a suitable protective buffer such as fencing along the banks of Halls Creek, will also ensure no harm to the sites will occur.

The Department considers that impacts to the Aboriginal items and artefacts could be managed through the establishment of the conservation zone and protective buffers that have been recommended in the Proponent's AHIA. In this respect, the Department has recommended a condition that the Proponent prepare an Aboriginal Heritage Plan in consultation with OEH. This would include procedures for the management of identified sites, in addition to any further archaeological investigations and/or salvage measures to be carried out prior to construction and includes procedures for dealing with unidentified objects and/or human remains.

## 5.4. Other Issues

The Proponent has assessed the potential impacts of the modified project in relation to noise, traffic and transport issues, electric and magnetic fields and overland flow. The Department is of the opinion that the Proponent has undertaken an adequate assessment of the issues. However, conditions are required to ensure that residual impacts are appropriately mitigated and managed. The Department's consideration of these issues is provided in **Table 1**.

**Table 1: Other Issues**

<b>Issue</b>	<b>Department's Consideration</b>
<b>Noise Impacts</b>	<p>The modified project includes a reduced solar array footprint, and a reduction in the length of a new ETL. The solar array will be confined to Lot 4 DP 751791, whilst the ETL will be re-routed to bypass the residential areas located to the north of the project site.</p> <p>The size of the substation is consistent with the existing approval and the configuration of the solar panels has been reduced, with a reduction of moving parts. No additional significant noise will be emitted by the operation of the modified project on nearby receivers.</p> <p>With respect to construction noise impacts, the maximum noise levels as predicted in the existing approval will not be exceeded at nearby receivers.</p> <p>The route of the new ETL has been realigned to bypass the receivers to the north of the site, and largely pass by the industrial waste management facility. For the existing ETL easement, additional receivers not considered in the approval will be in proximity to works associated with the replacement of poles and wires. For all works associated with the construction of the ETL however, noise levels will be consistent with the approval and recommended noise management levels stipulated in the "NSW EPA interim Construction Noise Guidelines".</p> <p>The Department is satisfied that the noise impacts of the modified project have been satisfactorily addressed by the Proponent, and considers that the modified project will not result in any unacceptable noise impacts.</p>
<b>Traffic and Transport</b>	<p>The modified project reduces the scale of the project. This results in a reduced number of traffic movements, particularly by heavy vehicles and oversized trucks, which will reduce impacts to the surrounding road network. In addition, and in response to the public submission regarding traffic safety, the construction environmental management plan will contain a traffic management plan, part of which will contain construction traffic management measures such as speed limits.</p> <p>The Department is satisfied that the modified project, would result in a reduced level of traffic impact when compared to the existing approval.</p>
<b>Electric and Magnetic Fields</b>	<p>Electric and Magnetic Fields (EMF) are produced by virtually all electrical equipment and occur wherever electricity is being used. The electric field is proportional to the voltage, whilst the magnetic field is proportional to the current. For the application, the change to the transmission line and resulting EMF has been raised as a concern in a public submission.</p> <p>The Proponent's assessment predicts the maximum magnetic field (MF) directly below the 66Kv transmission line to be 200mG, which is 10% of the International Commission on Non-Ionising Radiation Protection (ICNIRP) guideline level of 2000mG. Further, no residence is within 15m</p>

<b>Issue</b>	<b>Department's Consideration</b>
	<p>of any project infrastructure, which results in an estimated MF for the 66kV line at this point of approximately 1mG, which is less than 1% of the ICNIRP guideline level.</p> <p>The Proponent's assessment also states that the modification reduces the electric field (EF) associated with the project as the transmission line has been reduced from 132kV to 66kV. The Proponent's assessment further predicts the maximum EF directly below the 66kV transmission line to not exceed 20% of the ICNIRP guideline level of 5kV/m, resulting in a maximum EF at this point of approximately 1kV/m.</p> <p>Assessments of EMF with respect to the potential of any health affects largely focus on MFs, as EFs have been known to diminish rapidly with distance from a source in addition to being effectively shielded by common building materials and human skin. Whilst also diminishing rapidly with distance, MFs however are not readily shielded by common building materials etc. like EFs.</p> <p>In Australia there is no established health standard for the assessment of MFs, however in 2006 the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) issued a draft guideline ("Draft Standard on Exposure Limits for Electrical and Magnetic Fields") which proposes a 24 hour exposure limit for MFs to the general public of 1000mG (100 <math>\mu</math>T). The ARPANSA draft standard has not to date been finalised.</p> <p>More recently (in 2010), the International Commission on Non-Ionising Radiation Protection (ICNIRP), an independent international organisation which works in close collaboration with organisations such as the World Health Organisation, published a guideline on EMF – "Guideline for Limiting Exposure to Time-Varying Electric and Magnetic Fields 1Hz-100kHz". This guideline recommends a MF exposure level for the general public unrelated to exposure time of 2000mG (200 <math>\mu</math>T). This level has not been adopted in Australia.</p> <p>For the development, the main source of any MF for the general public would be with the transmission lines, which is related to the current (amps) flowing through the line. The field strengths are also dependent on other factors such as the height of the wires above ground, line design and geometry. The Department is satisfied that the Proponent has demonstrated the principles of prudent avoidance by locating transmission and power lines as far as practical from residences. The Department is also satisfied that as the levels of MF for the modification (even for the worst case scenario being directly under/beside the source of MF) are significantly lower than the ICNIRP levels, and at the closest residences would be less than other common household sources. As such, impact on human health is unlikely to occur.</p>
<b>Overland Water Flow</b>	<p>A concern was raised in a public submission with respect to the impacts on overland water flow. The modified project comprises a reduction in size of the solar array, and therefore a reduced number of steel posts supporting the solar array racking. The proponent advises that water will be able to flow between the posts with negligible impact on overland water flow. The location and form of the substation/switchyard is also unaltered for the modified project.</p> <p>Whilst the modified project reduces the footprint of the project and the potential for any impact on overland water flow, the existing approval contains a condition that as part of the construction environmental management plan a flood management plan for the project area is to be prepared, which includes a flood model for predicted water levels.</p>

<b>Issue</b>	<b>Department's Consideration</b>
	<p>The Department has also recommended that the flood management plan also include measures for the removal of debris around the perimeter of the site to avoid alterations to floodpaths occurring as a result of debris build up.</p>
<b>Railway Corridor</b>	<p>Option 1(b) of the new ETL is proposed to connect directly into the Moree-Bellata 66kV line (3.6km long), preferably via an overhead ETL, however there is potential for underboring of the cable to be required (150mm diameter) beneath the existing railway line to avoid any disturbance to the track.</p> <p>The Department notes that the works associated with crossing over or under the railway line could be relatively minor. However to ensure any construction works are undertaken to avoid impacts on the rail network, the Department has recommended a condition that prior to construction, approval is to be obtained from the Australian Rail Track Corporation for any works to be undertaken within the railway corridor, in particular the tunnelling of any cables beneath the existing railway line or the construction of any electricity transmission line passing over the existing railway line.</p>

## 6. RECOMMENDATION

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The Department has assessed the merits of the modified project having regard to the Proponent's Environmental Assessment and Submissions Report. In assessing the modified project the Department has also considered the views of the local and state authorities and the public as raised in their submissions during exhibition of the Project.

The Department considers that given the low lying nature of the landscape surrounding the site, reduced height of the predominant feature of the proposal, being the solar panels (which are now 3.0m which is 0.3m lower than the approved heights), reduced size of the project, and mitigation measures detailed in the existing approval (such as tree planting to screen the closest residences), the visual impact of the modified solar arrays would be less than the approved project, which would not be unacceptable.

The Department is also satisfied that the modified ETL route would also result in reduced impacts when compared with the approved ETL, and therefore unlikely to result in an unacceptable visual impact.

The Department acknowledges that the footprint of the solar arrays has been significantly reduced, which in turn has reduced the amount of disturbed area and any impacts on biodiversity values. The impacts on biodiversity values for the solar array site subject to the modification have also previously been assessed within the existing approval. The Department notes that the length of the ETL was reduced by up to 3.9km, which results in a reduction in the amount of new infrastructure and associated disturbed areas created by the placement of the new poles. Whilst the new route does have some impacts on the Windmill Grass-Bluegrass derived grassland species, it was concluded that less than 1% percent of the grassland would be permanently impacted, which is not likely to have a significant impact on the local population habitat of this species. The Department therefore considers that the project is unlikely to result in any unacceptable impacts on biodiversity. However, to ensure any vegetation losses are adequately compensated for, the Proponent is to undertake consultation with the OEH prior to construction to determine whether a biodiversity offset package and strategy is all required.

The Department is also satisfied that the Proponent has identified and assessed the potential impacts on indigenous heritage. The Department considers that impacts could be sufficiently managed through the establishment of the conservation zone and protective buffers that have been recommended in the Proponent's AHIA, and will be explored through the preparation of an Aboriginal Heritage Plan as recommended by the Department.

Overall the Department is satisfied that with the implementation of the Proponent's mitigation measures, existing and recommended conditions of approval, that the potential impacts would be mitigated and/or managed to an acceptable level of environmental performance. The Department considers the modified project to be in the public interest and therefore recommends that this project, as modified, be approved subject to the recommended conditions of approval.

Prepared by

*T Philp 28/1/14*

Toby Philp

**Senior Planner**

**Infrastructure Projects**

Approved by

*Karen Jones 4.2.14*

**Director**

**Infrastructure Projects**

## **APPENDIX A ENVIRONMENTAL ASSESSMENT**

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See the Department's website at

[http://majorprojects.planning.nsw.gov.au/index.pl?action=view\\_job&job\\_id=6283](http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=6283).

## **APPENDIX B SUBMISSIONS**

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See the Department's website at

[http://majorprojects.planning.nsw.gov.au/index.pl?action=view\\_job&job\\_id=6283](http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=6283).

## **APPENDIX C    PROPONENT'S RESPONSE TO SUBMISSIONS**

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See the Department's website at

[http://majorprojects.planning.nsw.gov.au/index.pl?action=view\\_job&job\\_id=6283](http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=6283).

## **APPENDIX E    RECOMMENDED CONDITIONS OF APPROVAL**

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Attached