AMENDMENT REPORT 2

Jindera Solar Farm

June 2020

Project Number: 17-323

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W. www.nghconsulting.com.au

BEGA - ACT & SOUTH EAST NSW
Suite 11, 89-91 Auckland Street (PO Box 470) Bega NSW 2550 **T.** (02) 6492 8333

BRISBANE
Suite 4, Level 5, 87 Wickham Terrace Spring Hill QLD 4000 **T.** (07) 3129 7633

CANBERRA - NSW SE & ACT
8/27 Yallourn Street (PO Box 62) Fyshwick ACT 2609 **T.** (02) 6280 5053

GOLD COAST
PO Box 466 Tugun QLD 4224 **T.** (07) 3129 7633

E. ngh@nghconsulting.com.au

NEWCASTLE - HUNTER & NORTH COAST
Unit 2, 54 Hudson Street Hamilton NSW 2303 **T.** (02) 4929 2301

SYDNEY REGION
Unit 18, Level 3, 21 Mary Street Surry Hills NSW 2010 **T.** (02) 8202 8333

WAGGA WAGGA - RIVERINA & WESTERN NSW
Suite 1, 39 Fitzmaurice Street (PO Box 5464) Wagga Wagga NSW 2650 **T.** (02) 6971 9696

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An approximately 120 Megawatt (MW) Alternating Current (AC) photovoltaic (PV) solar farm is proposed at Jindera, southern NSW (equivalent to up to 150 MW Direct Current; DC). The 521-hectare (ha) Subject Land is freehold rural land approximately 4 kilometres (km) north of the township of Jindera.

The Environmental Impact Statement (EIS) was prepared in accordance with Part 4 of the New South Wales (NSW) *Environmental Planning and Assessment Act 1979* (EP&A Act) placed on public exhibition between 16 October and 13 November 2019. The Proposal is classified as State Significant Development (SSD).

Jindera Solar Farm (JSF) reviewed submissions from the public and government stakeholders in November 2019. The proponent prepared a Response to Submissions (RTS) along with Amendment Report 1 (AR1), which was lodged in March 2020.

Since the lodgement of the RTS and the AR1, changes to the design, layout and infrastructure have been proposed as a result of additional consultation with relevant agencies and investigation. Changes have also been made to strengthen the environment safeguards that form a commitment of the proposal.

1. INTRODUCTION

1.1. PURPOSE

With the agreement of the Planning Secretary, the applicant of an SSD application may amend what it is seeking approval for at any time before the Development Application (DA) is determined.

These amendments may be necessary to:

- Improve the design of the project.
- Respond to issues raised in submissions or further community engagement.
- Reduce the impacts of the project.

The Department requires the applicant to submit an Amendment Report with any amended DA.

The purpose of the Amendment Report is to outline the changes to the project and help the community, Government agencies and the consent authority to understand the implications of these changes.

In preparing the Amendment Report, the Applicant may:

- Refine the design of the project.
- Undertake further engagement with the community and Government agencies.
- Undertake further assessment.
- Update the evaluation of the merits of the project to incorporate the findings of any further assessment or engagement.

This Amendment Report details the alterations to the State Significant Development (SSD) Application # 9549. The alterations to the design of the solar farm layout have been proposed to reduce biodiversity impacts, and address feedback from the Department of Planning, Industry and Environment (DPIE) and the Biodiversity Conservation Division (BCD).

1.2. JINDERA SOLAR FARM PROJECT

The proposal is in the Greater Hume Local Government Area (LGA) approximately 4 km north of Jindera township. The subject land comprises Lot 2 DP213465, Lots 70, 90, 133-136, 138-141, 147, 148, 153-155 DP753342, Lots 1-3 DP1080215, Lot 1 DP1252930 (former Crown road), Lot 1 DP588720 (45 m wide proposed transmission line easement for the grid connection corridor), Urana Road, Walla Walla Jindera Road, Ortlipp Road and Council Road (CADID 105338106).

The proposed Jindera Solar Farm, as described in the EIS and the RTS, has the following characteristics:

- Single axis tracker photovoltaic (PV) solar panels mounted on steel frames at about 3 m above ground level at maximum tilt.
- Battery Energy Storage System (BESS) with maximum capacity of 30MW/60MWh.
- Electrical cables and conduits.
- Inverter/Transformer stations which have an aggregate capacity of approximately 155 MVA.
- Weather station.

- On-site high voltage substation.
- Control room and storage facility.
- Site office, staff amenities, parking area and perimeter fencing, and CCTV.
- Overhead transmission line infrastructure on poles connecting the project's on-site high voltage substation to the existing TransGrid Jindera 330/132kV substation. A portion of the proposed grid connection inside the TransGrid substation boundary may be underground (as required).
- Internal access tracks.
- Access road entrances from public roads.
- Upgrade to existing roads.
- On-site vegetative screening.
- Other associated ancillary infrastructure.
- A native vegetation buffer to minimise visual impacts in specific locations.

The solar farm would connect from the on-site high voltage substation to the existing TransGrid Jindera substation, via a new overhead 132kV transmission line adjacent to Ortlipp Road, crossing to the eastern side of the Ortlipp Road corridor to access the TransGrid substation property frontage, and continuing to the TransGrid Jindera 330/132kV substation switchyard inside the property. Works would be required inside the TransGrid switchyard to facilitate the connection. A portion of the transmission line inside TransGrid property may use underground cabling (if required by TransGrid).

Major construction and operational access are proposed off Urana and Walla Walla Jindera Road. Urana Road forms the major haulage transport route to and from the site for construction. During operation, there would be additional emergency access off Klinberg Road and maintenance and emergency access off Ortlipp Road. Construction access is not proposed off Klinberg or Ortlipp Roads, however Ortlipp Road will be used to facilitate construction works for the proposed transmission line (Refer Section 2.6 of AR1).

The development site is proposed to be leased from the involved landowners for the life of the project, with all above and below ground infrastructure removed in consultation with the landowner, and the site returned to its existing land capability upon decommissioning.

The proposed amended solar farm constraints layout map (Figure 1-1) illustrates the updated indicative layout, including a concept development footprint for the solar arrays, roads and fencing. Detailed design would allow for avoidance of sensitive features on site.

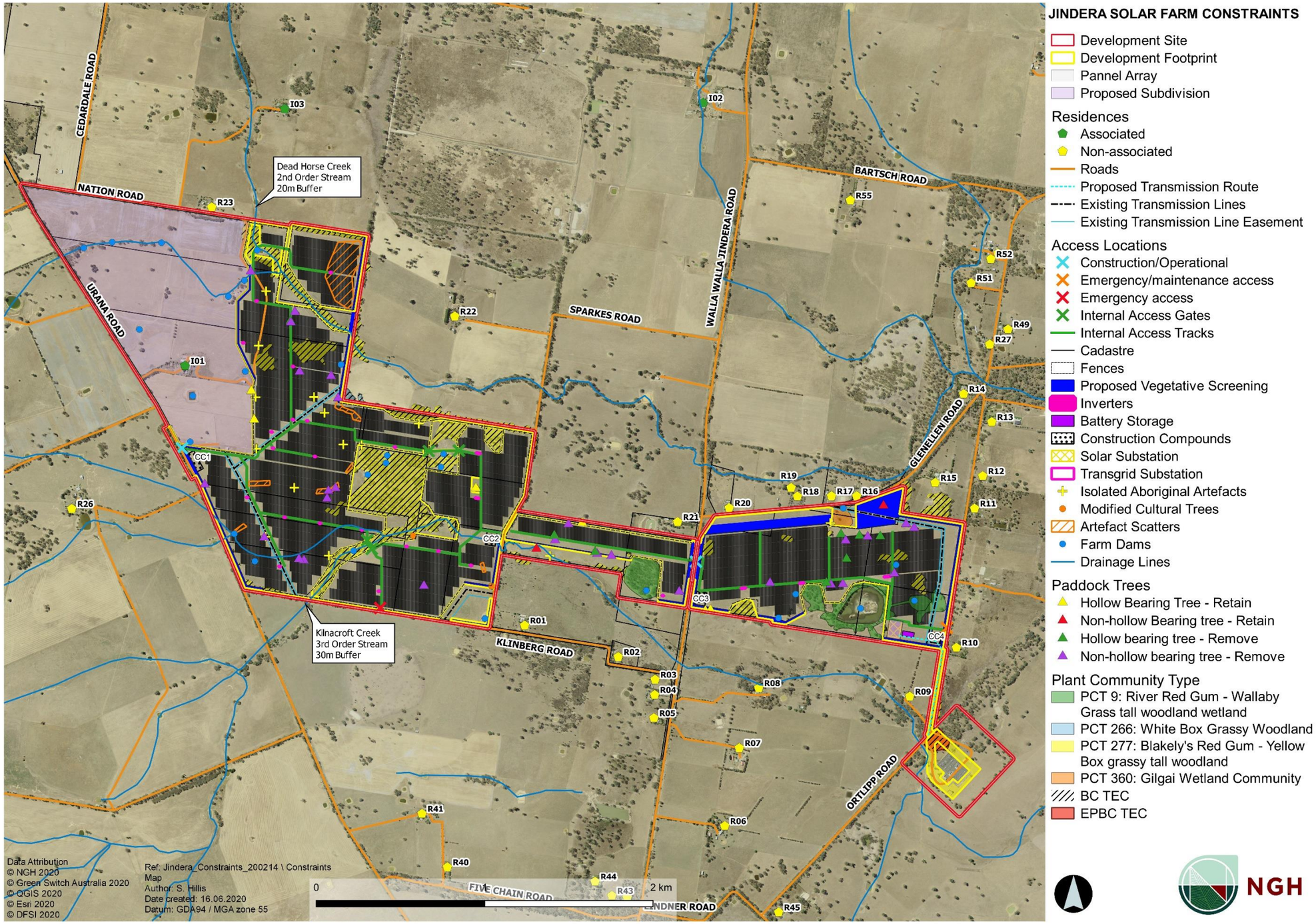

Figure 1-1 Jindera Solar Farm Constraints Layout

2. AMENDMENT 2 PROPOSAL

This Amendment Proposal has been developed as a response to comments obtained from BCD and DPIE regarding RTS and AR1. The changes now proposed also reflect comments made more generally in respect of submissions received from other sources during and after exhibition of the EIS.

Key changes are all positive, reducing the potential for impact from the project and include

- The retention of an additional 3.9 ha of PCT 277 to ensure improved connectivity between areas of this vegetation type and avoid potential for a key area of PCT 277 already identified for protection from becoming isolated.
- Consequent reduction of clearing of Threatened Ecological Community (TEC) and Serious and Irreversible Impacts (SAII).
- Reduction of credit obligations.
- Fencing of protected PCT 277 and exclusion of grazing stock.
- Two dams retained within the protected fence line.

2.1. REDUCTION OF CLEARING

Based on field survey, three Plant Community Types (PCT) were identified to occur within the development site:

- PCT 9 – River Red Gum – wallaby grass tall woodland wetland on the outer River Red Gum zone mainly in the Riverina Bioregion;
- PCT 277 – Blakely's Red Gum – Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion; and
- PCT 360 – Gilgai wetland mosaic in the southern NSW South Western Slopes Bioregion.

Of particular importance, PCT 277 forms part of the TEC White Box – Yellow Box – Blakely's Red Gum Woodland which is listed as endangered under the *Biodiversity Conservation Act 2016* (BC Act). The PCT is also listed as a potential SAII entity in the *Guidance to assist a decision-maker to determine a serious and irreversible impact*.

The development footprint has been refined to avoid three patches of PCT 277 within Lot 155 DP753342, as well as retaining additional vegetation overhanging Lot 138 PCT 753342 (Figure 2-1). This has resulted in a reduced clearing of approximately 3.9 ha of PCT 277 and overall reduction of credit offset obligations (Section 4.1).

Two isolated artefacts will also now be located within the fence line boundary.

2.2. DEVELOPMENT FOOTPRINT

The development footprint has been refined within the vicinity of Kilnacroft Creek to provide better linkage between the vegetation along the creek line and the areas of PCT 277 that have been retained / protected within the site layout. The updated development footprint along the creek, retains all riparian vegetation, whilst allowing a minimum 30 m buffer from the creek bed as per the requirements of the *Guidelines for Controlled Activities on Waterfront Land (Natural Resources Access Regulator 2018).*

The net area of development footprint is now 337 ha.

This figure is similar to that originally indicated in the EIS. The figure has fluctuated over development on the site layout across the RTS and AR1 due to the amendment of works within the TransGrid Substation area and inclusion of intersection works on Urana and Walla Walla Jindera Roads within the calculation of footprint. (as indicated in the RTS and AR1).

The capacity of the proposed solar farm remains as set out in the EIS, that is to say 120 megawatt (AC).

The preservation of additional PCT 277 has reduced the overall area of solar panels but small design changes can ensure overall capacity can be maintained.

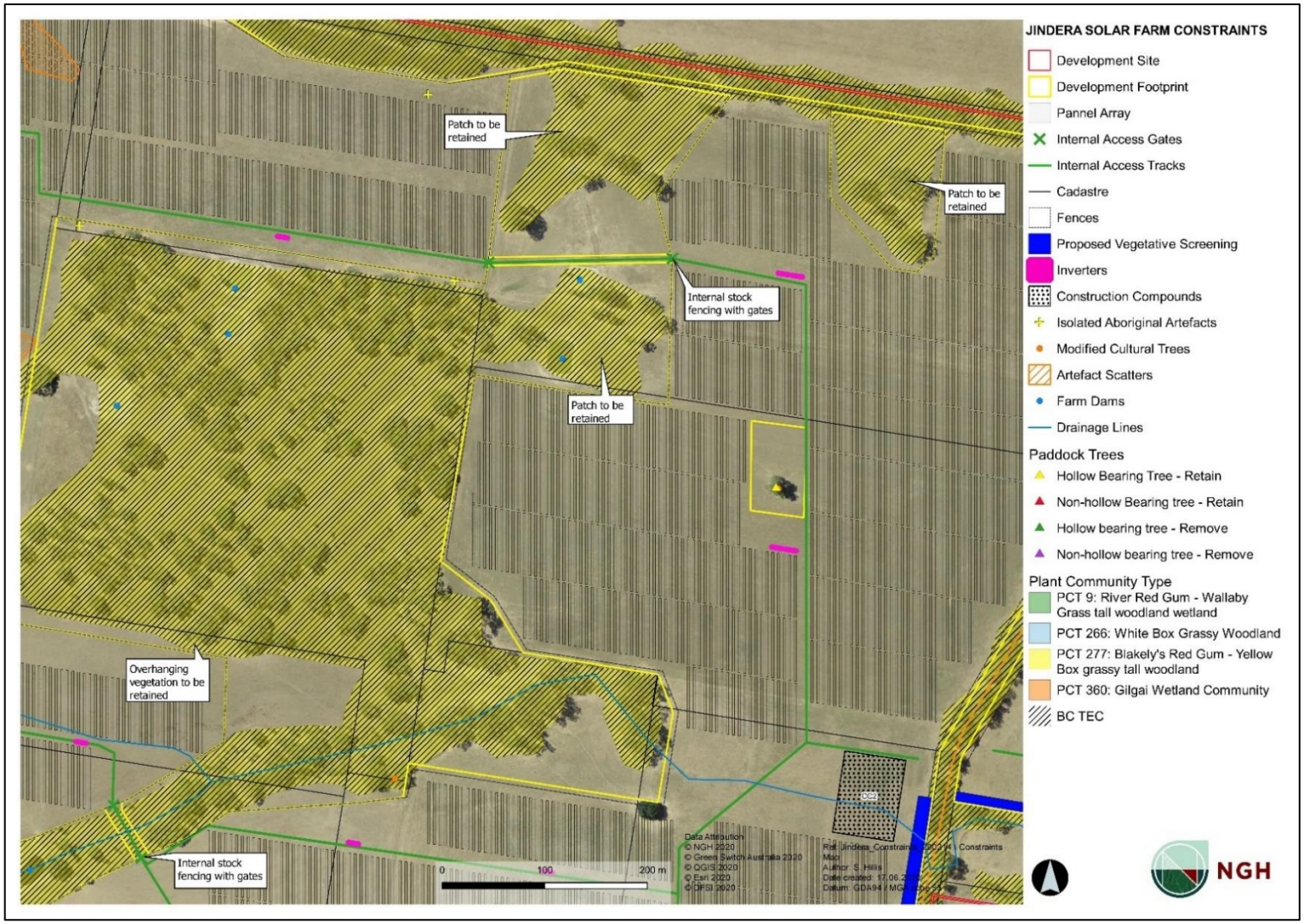

Figure 2-1 Retained native vegetation, and road and fence locations*

*PCT data was captured by on-site survey. Shadows on the aerial photography used on Figure 2-1 may produce the appearance that some PCT lies outside the fence line.

2.3. RELOCATION OF FENCING, ROADS AND ACCESS GATES

The retained patches of PCT 277 (Figure 2-1) will be fenced by stock-proof fencing. Access gates will be added to allow access on the newly formed road that intersects two patches of vegetation. The length of Kilnacroft Creek will also be fenced with stock-proof fencing, with access gates to allow access on existing proposed internal roads.

As per the updated Safeguard and Mitigation Measure **BD12** (as presented in the RTS and AR1):

Barbed wire would not be used on internal fences surrounding retained native vegetation. The boundary fence will have three strands of barbed wire for security purposes and where glider poles and ropeways are installed, the top two wires will be covered with appropriate protection (such as PVC piping). The retained native vegetation would be considered as an offset site.

The exclusion of barbed wire on stock fences for sheep is acceptable and will not pose a risk to either livestock or native fauna.

By fencing the retained areas of PCT 277 and Kilnacroft Creek, it is expected that these sites will naturally regenerate and be enhanced through weed and pest control and through stock exclusion over the 30-year operational life of the proposal.

As a result of the relocation of fences, two farm dams will also be retained and protected.

3. ENVIRONMENTAL IMPACT ASSESSMENT

The environmental aspects from the original EIS are assessed in Table 3-1 to determine environmental impacts required for this Amendment.

Table 3-1 Assessment of environmental impacts for this Amendment.

EIS Environmental Impact	Comment
Biodiversity	The development footprint has been refined to avoid three patches of PCT 277 within Lot 155 DP753342, as well as retaining additional vegetation overhanging Lot 138 PCT 753342 (Figure 2-1). This has resulted in a reduction in clearing of approximately 3.9 ha of PCT 277 and overall reduction of credit offset obligations. The EIS, RTS, AR1 and BDAR mitigation measures and safeguards are sufficient to manage any impacts to biodiversity.
Aboriginal Heritage	There are no Aboriginal heritage issues associated with the proposed amendment. Two artefacts will however now be located within the proposed fenced area of PCT 277. The mitigation measures and safeguards in the EIS, ACHAR, RTS and AR1 are considered sufficient.
Visual Impacts	There will be no additional negative impacts to the landscape or visual amenity as a result of this amendment. Retention of additional PCT 277 provides small positive visual impact, particularly in terms of long-range views towards the proposal area. The mitigation measures and safeguards in the EIS, VIA, RTS and AR1 are considered sufficient.
Land use and resources	By fencing off the areas around Kilnacroft Creek and the three PCT 277 patches, land available for grazing will be reduced by approximately 13.5 ha (or 4% of the total area available for grazing). As such, farm gate revenue values will decrease slightly as a result of this amendment. The mitigation measures and safeguards in the EIS, RTS and AR1 are considered sufficient.
Noise Impacts	There will be no additional noise impacts as a result of this amendment. The mitigation measures and safeguards in the EIS, RTS and AR1 are considered sufficient.

EIS Environmental Impact	Comment
Soils resources	There are no additional soil impacts associated with the proposed amendments. The mitigation measures and safeguards in the EIS, RTS and AR1 are considered sufficient.
Water use and quality	There are no additional negative water use and quality impacts associated with the proposed amendments. Two additional dams will be retained within the proposed fenced area of PCT 277 as a slight beneficial impact. The mitigation measures and safeguards in the EIS, RTS and AR1 are considered sufficient.
Traffic and Transport	There are no traffic and transport issues associated with the proposed amendments. The mitigation measures and safeguards in the EIS, RTS and AR1 are considered sufficient.
Climate and air quality	There are no additional negative climate and air quality impacts associated with the proposed amendments. The mitigation measures and safeguards in the EIS, RTS and AR1 are considered sufficient.
Hazards	There are no additional hazards associated with the proposed amendments. The mitigation measures and safeguards in the EIS, RTS and AR1 are considered sufficient.
Socio-economic and community	There are no socio-economic and community consideration issues associated with the proposed amendments. A slight reduction of economic farm gate revenues can be expected as a result of reduction of available grazing land. The mitigation measures and safeguards in the EIS, RTS and AR1 are considered sufficient.
Resource use and waste generation	There are no additional resource and waste issues associated with the proposed amendments. The mitigation measures and safeguards in the EIS, RTS and AR1 are considered sufficient.
Historic Heritage	No impacts are considered likely on heritage values by the proposed solar farm development. The EIS, RTS and AR1 mitigation measures and safeguards are sufficient to manage historic heritage.

EIS Environmental Impact	Comment
Cumulative impacts	There are no additional cumulative impact issues associated with the proposed amendments. The mitigation measures and safeguards in the EIS, RTS and AR1 are considered sufficient.

4. IMPACT SUMMARY

Section 4 of this report assesses the environmental impact of key issues relevant to the amendment to the proposed Project. The assessment identified that no changes to the proposed mitigation measures are required for the proposed works.

Table 4-1. Impact Summary

Environmental factor	Any additional, increased or decreased impacts of the amended project?	Any changes to the mitigation strategies required?
Biodiversity	Yes – Positive impacts to credit obligations, retaining TEC and SAII and habitat retention through reduced clearing	No
Aboriginal heritage	No	No
Visual impact	No	No
Land use and resources	Yes – minor reduction in sheep grazing capacity	No
Noise impacts	No	No
Soil resources	No	No
Water use and quality	Yes – retention of two dams	No
Traffic, transport and road safety	No	No
Climate and air quality	No	No
Hazards	No	No
Socioeconomic and community	Yes – slight reduction in farm gate revenue	No
Resource use and waste generation	No	No
Historic heritage	No	No
Cumulative impacts	No	No

4.1. Biodiversity

4.1.1. Approach

NGH completed an updated BDAR (V2.0) report in February 2020. The updated report documents the assessment undertaken for the additional 22 ha for the substation (Lot 1 DP588720) and two access point into the solar farm, as well as additional plots and survey to meet the requirements of the BCD.

4.1.2. Assessment

Since the completion of the BDAR V2.0, NGH has completed a Biodiversity Development Assessment Report (BDAR) (V3.0), to assess the impact of the reduction of 3.9 ha of cleared PCT 277.

4.1.3. Potential impacts

An updated credit and impact summary is provided within Sections 7 to 11 of the updated BDAR (V3.0) (Appendix A). The table below sets out the credit requirements that were calculated in the original EIS, AR1 and this AR2. AR1 saw in some instances the level of credits increases from the original EIS. This was due to the amendment of the proposed works within the TransGrid substation and intersection upgrades (as detailed within AR1). This increase in credits in AR1 has been reversed for PCT 277 by retention of the three areas of PCT 277 (as indicated in Figure 2-1) and consequent further decrease of species credits for the squirrel glider and eastern pygmy possum. The changes resulting to the credit requirements from the original EIS, AR1 and AR2 are as follows:

Table 4-2 Credit summary from the BDAR V3.0

Ecosystem credits	EIS Stage offset requirements	AR1 offset requirements	AR2 offset requirements FINAL
PCT 277	201	259	216
PCT 277 paddock trees	26	27	27
PCT 9	26	33	33
TOTAL	**253**	**319**	**250**
Species credits	**EIS Stage offset requirements**	**AR1 offset requirements**	**AR2 offset requirements FINAL**
Squirrel glider	105	125	72
Southern Bell Frog	0	0	0
Eastern Pygmy Possum	63	59	52
Small Scurf Pea	93	96	96
Silky Swainson-pea	53	49	49
Small Purple-pea	53	49	49

Southern Myotis	7	0	0
TOTAL	**374**	**378**	**318**

A reduction in impacts to PCT 277 has resulted in minimisation of impacts to White Box - Yellow Box – Blakely's Red Gum Woodland which is listed as a TEC under the BC Act. The avoidance of native vegetation by the development footprint has reduced impacts to White Box - Yellow Box – Blakely's Red Gum Woodland which. In addition to being a TEC, is also listed as an entity at risk of SAII. A total of 3.90 ha of native vegetation has been avoided by the development footprint which has resulted in a reduction in impacts to Squirrel Glider habitat, a species listed as vulnerable under the BC Act.

4.1.4. Safeguards and mitigation measures

There will be no additional negative impacts to biodiversity as a result of this amendment. Positive impacts can be seen through reduced credit obligations and clearing of PCT 277. The mitigation measures and safeguards in the EIS and RTS and AR1 are considered sufficient.

4.2. LAND USE AND RESOURCES

4.2.1. Approach

The Proponent engaged Riverina Agriconsultants and Progressive Agriculture to undertake an Agricultural Impact Assessment (AIS) as part of AR1.

The AIS, amongst other things, looked at the changes in the lands agricultural capacity and value to study the effect of moving from the current agricultural practices to the sheep grazing that is proposed.

The AIS suggested a 25% reduction in productive sheep carrying capacity could be assumed based on current information available on agrivoltaic systems, insights from studies and interviews with landowners and agronomists. Key to this assumption, it was estimated that approximately 10% of the land would have be temporarily removed from agricultural productivity due to the construction of physical infrastructure such as access roads, inverter stations and fenced areas.

Post development reduction in productivity, which is described as related economic activity, post development impact in the table below was based on a 25% reduction and using an economic multiplier of 2.1788 of the farm gate as detailed below:

Table 4-3 Reduction in productivity as described in the AIS

Reduction (%)	Gross Revenue (p.a.)		Post Development Impact	
	Pre-development	Post-development	Farm Gate	Related Economic Activity
25%	$300,000	$200,000	$100,000	$215,000

4.2.2. Assessment

Since the submission of the AIS and due to the updated stock-proof fencing around Kilnacroft Creek and the three areas of PCT (Figure 2-1), it has been determined that an additional 13.5 ha of development footprint will become unavailable for stock grazing. This represents an additional 4% decrease in stocking availability of the site.

The changes to the layout described in this amendment result in an additional 13.5 ha of land temporarily being removed from agricultural activity. This is because the areas of PCT 277 that are being protected will be fenced to prevent grazing. Overall, this will mean that 14% of the development site will not be available for farm production (sheep grazing).

Assuming an updated 14% reduction in agricultural productivity due to the construction of physical activity (previously 10% as described above), the following updated gross revenue and post development impacts can be assumed:

Table 4-4 Reduction in productivity assuming an additional 4% reduction in productivity

Reduction (%)	Gross Revenue (p.a.)		Post Development Impact	
	Pre-development	Post-development	Farm Gate	Related Economic Activity
25%	$300,000	$192,000	$96,000	$207,000

The reduction of 4% in farm gate revenue is very small and may indeed be recoverable with optimised farming techniques.

4.2.3. Safeguards and mitigation measures

Minor reductions in grazing capacity can be expected through the fencing of retained vegetation. However, this is expected to have a positive impact to biodiversity through regeneration and enhancement through stock exclusion. The mitigation measures and safeguards in the EIS and RTS and AR1 are considered sufficient.

5. SUMMARY AND CONCLUSION

Based on the assessment presented in Section 4, the proposed amendment to remove 3.9 ha of PCT 277 from the development footprint and to fence removed vegetation and Kilnacroft Creek will not significantly increase any key environmental impacts:

- There will be a reduction of impact to TEC and SAII. The safeguards and mitigation measures detailed in the EIS, RTS and AR1 are considered adequate to manage all environmental impacts.
- A 4% reduction in stocking capacity will not significantly impact gross revenue and productivity. The safeguards and mitigation measures detailed in the EIS, RTS and AR1 are considered adequate to manage all land use impacts.
- The site will continue to have a solar farm capacity of 120 MW (AC).

APPENDIX A BIODIVERSITY DEVELOPMENT ASSESSMENT REPORT V3.0