Appendix C - LUCRA

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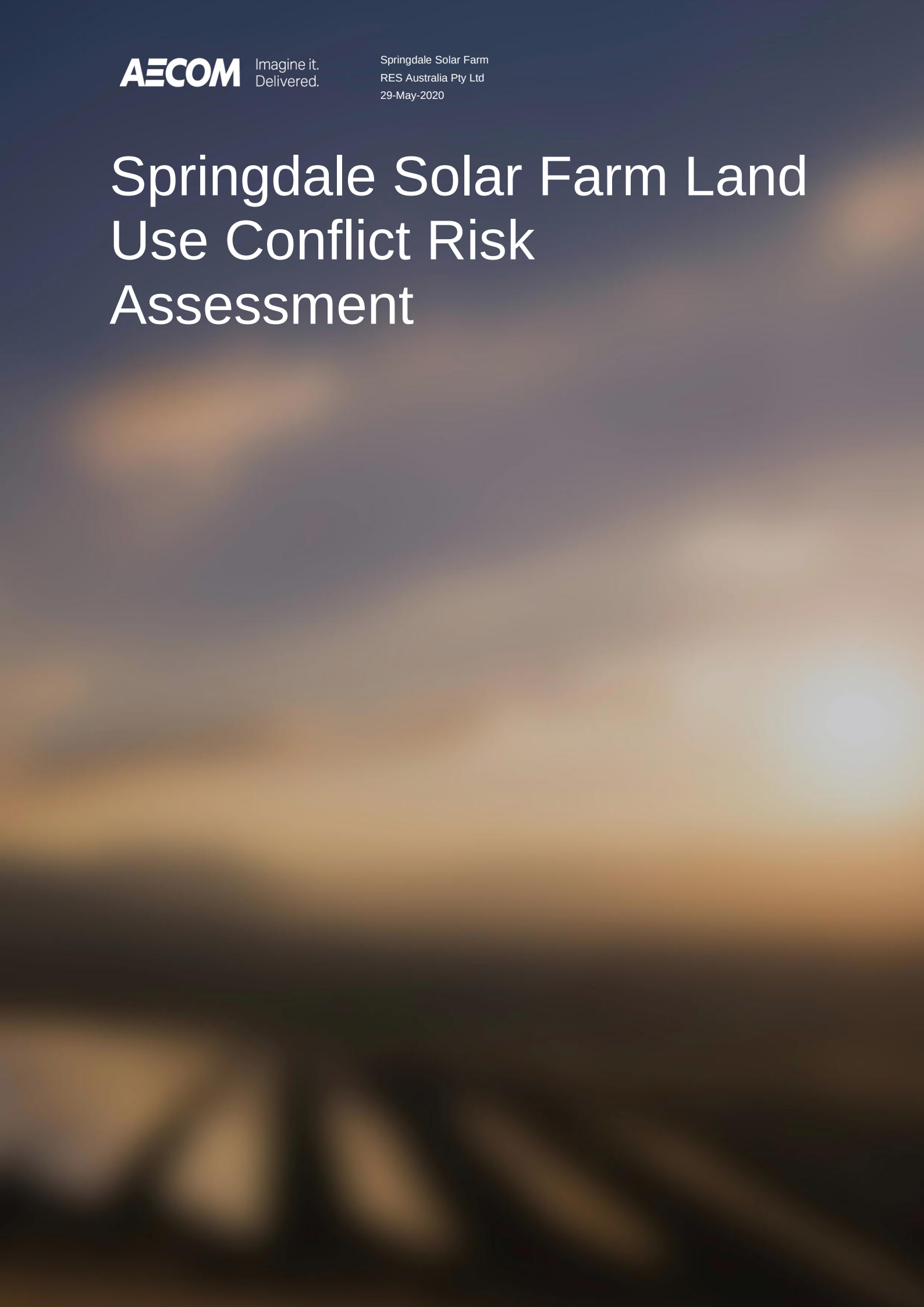
Springdale Solar Farm
RES Australia Pty Ltd
29-May-2020

Springdale Solar Farm Land Use Conflict Risk Assessment



Springdale Solar Farm Land Use Conflict Risk Assessment

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1.0 Introduction

1.1 Purpose and scope of assessment

AECOM Australia Pty Ltd (AECOM) was commissioned by RES Australia Pty Ltd (RES) to prepare a Land Use Conflict Risk Assessment (LUCRA) to support the Environmental Impact Statement (EIS) prepared as part of the State Significant Development Application (SSDA) for the proposed Springdale Solar Farm.

This LUCRA has been prepared with reference to *Living and Working in Rural Areas – A handbook for managing land use conflict issues on the NSW North Coast* (Learmonth et al. 2007) ('the Handbook), as well the *Land Use Conflict Risk Assessment Guide* (NSW Department of Primary Industries, 2011) ('the Guide').

The purpose of a LUCRA is to identify land use compatibility and potential conflict between neighbouring land uses, and the identification of conflict avoidance or mitigation measures. A LUCRA aims to:

- accurately identify and address potential land use conflict issues and risk of occurrence before a new land use proceeds or a dispute arises
- objectively assess the effect of a proposed land use on neighbouring land uses
- increase the understanding of potential land use conflict to inform and complement development control and buffer requirements, and
- highlight or recommend strategies to help minimise the potential for land use conflicts to occur and contribute to the negotiation, proposal, implementation and evaluation of separation strategies.

In order to achieve those aims, a four-step assessment process is undertaken:

1. **information gathering** – gather information about the proposed land use change and associated activities, surrounding land uses and the site's environmental characteristics
2. **risk level evaluation** – each proposed activity is recorded and potential land use conflict level is assessed. The higher the risk level, the more stringent the mitigations measures that would be required
3. **identification of risk mitigation strategies** – mitigation strategies are identified which assist in lowering the risk of potential conflict
4. **record results** – key issues, risk level and recommended management measures are recorded and summarised.

1.2 Project background

RES propose to develop the Springdale Solar Farm at Sutton, NSW, in the Yass Valley Local Government Area (LGA). The project site (the Site) is generally greenfield and is located approximately 3.5 kilometres north of the border with the ACT, and approximately 7 kilometres north west of the village of Sutton. The solar farm includes solar generation equipment and associated electrical infrastructure and has a design life of approximately 35 years. The project has a capacity of up to 120 megawatts of direct current (MWdc) and 100 megawatts of export capacity (alternating current) (MWac).

An EIS was prepared for the Springdale Solar Farm and submitted to the Department of Planning and Environment (now the Department of Planning, Industry and Environment) in 2018. The Project was placed on exhibition and a number of submissions were received from the general public, non-government organisations and government agencies. A common concern raised in the submissions process was the solar farm's ability to integrate with the surrounding rural landscape. A Response to Submissions (RTS) report has been prepared providing responses to these submissions. This LUCRA supplements and supports the findings of the RTS.

1.3 Regional strategic plans

1.3.1 Yass Valley Settlement Strategy 2036

The Yass Valley Settlement Strategy 2036 provides a clear direction for long term growth and development within the Yass Valley LGA. With constrained land supply in Canberra and Queanbeyan and high rates of population growth projected to continue in Yass Valley, ensuring an adequate supply of new and strategically located residential land in a number of release areas is vital for managing housing affordability and ensuring the social, economic and environmental sustainability of the Yass Valley.

The Yass Valley Settlement Strategy seeks to compliment the Regional Growth Plan with a more comprehensive settlement strategy for Yass Valley LGA. The Strategy includes recommendations as to how the Yass Valley Council can approach current and future urban growth pressures to deliver environmentally, economically and socially sustainable settlements for the period 2016-36 and beyond. The majority of this future growth in the short to medium term (to 2036) will be focused in the existing settlements of Yass and Murrumbateman.

In order to achieve sustainable growth in the region securing a new water supply is required. The Strategy outlines that it is not recommended that water supply from the ACT water infrastructure be sought for areas to the north east of Canberra including Sutton, Gundaroo and Mulligans Flat. In terms of Sutton, the Strategy concludes that because of a lack of a secure water supply and adequate sewerage treatment, limited future development could be permitted where its impact did not compromise existing village characters or surrounding agricultural uses.

Given that Sutton has not been identified as a priority urban growth area for the Yass Valley LGA, the development of a solar farm would not preclude the overall goals of the Yass Valley Settlement Strategy 2036 of accommodating for future urban growth. This is because the solar farm would not be located in a part of the Yass Valley LGA that is intended to support urban development and would therefore not prevent urban development from occurring. While a solar farm is not an agricultural use, the presence of it would not comprise the village character or surrounding agricultural uses because of stringent mitigation and management measures in place aimed at significantly reducing its amenity impacts.

1.3.2 The Tablelands Regional Community Strategic Plan 2016 – 2036

In July 2016 Goulburn - Mulwaree Council, Upper Lachlan Shire Council and Yass Valley Council decided to prepare a joint Regional Community Strategic Plan (CSP) for the Tablelands region.

The CSP aims to:

- inform Councils' priority setting and decision making
- inform the decision making of other agencies and organisations, including the State and Federal Governments
- provide a rationale for any organisation pursuing grants and other resources for specific projects that can be shown to fit within a particular strategic priority outlined within the plan
- inform stakeholders of the community's long-term vision for the region
- guide local and regional planning documents and initiatives

The CSP is based on the social justice principles of access, equity, participation and rights and addresses quadruple bottom line strategic objectives, and the councils adopted five strategic pillars:

- community (Life and Welfare in the Community)
- environment (Conditions and Influences in the Area and Sustainability)
- economy (Generation, Distribution, Use of Income, and Business Development)
- infrastructure (Facilities, Transport, and Systems Serving the Area)
- civic Leadership (System of Government or Management)

The project is specifically aligned to the CSP's strategy under the environment strategic pillar, in particular strategy EN5 – To investigate and implement approaches to reduce our carbon footprint. As part of this strategy, a Council's role is to support the development of renewable energy facilities where appropriate in the region. Examples of renewable energy projects in the region includes the Collector Wind Farm and Gunning Solar Farm. The wider region covered by each of the Councils in the CSP features predominantly rural and agricultural land uses and landscapes. Renewable energy electricity generation facilities by their nature do not automatically fit seamlessly within a rural landscape as they do not involve activities typically associated on those lands. It is therefore important that these facilities are located on sites that can make use of the topography and surrounding land uses to support their development.

The Site for the project is one such site. Its natural topography and positioning away from townships and main roads provide excellent attenuation of a number of potential amenity issues including visual impacts and noise generation. In addition to the setting of the land, stringent mitigation measures would be applied for the project to reduce residual impacts that cannot be resolved due to the lay of the land. The Site for this project is appropriate within the wider region as a result of its location as it is positioned away from major townships and is within a relatively isolated part of the region where potential amenity impacts would not be experienced by a high volume of receivers.

In addition to the environment strategic pillar, the project is also aligned to the community, economy and infrastructure strategic pillars. While the project is not necessarily aligned to the specific objectives under those pillars, it provides benefits to each. In relation to the community and infrastructure, the project contributes through the proposed voluntary planning agreement,. In relation to the economy, the project would be contributing by providing a source of employment for the region in the construction and operational phases of the project. During works, it is likely that the construction workforce would make use of local supplies for construction materials and personal use.

1.3.3 Southern Tablelands Regional Economic Development Strategy 2018 – 2022

The vision implemented by this strategy seeks to grow the region's core strengths in agriculture, energy, extractive industries, aged care, transport, and tourism and deliver a highly liveable community which attracts and rewards residents and visitors. It sets out a long-term economic vision and associated strategy for the three local government areas (LGAs) of Goulburn-Mulwaree, Upper Lachlan Shire and Yass Valley (the Region).

The strategy provides five key objectives:

- **sustain** the Region's agriculture and agricultural processing advantage, especially in livestock
- **build** on the Region's core strength in energy generation and natural resource extraction
- **realise** the economic opportunity presented by public order, safety and aged care
- **drive** growth in the transport, access and logistics sector
- **enhance** the liveability of the Region and grow its visitor economy

The strategy highlights that the Southern Tablelands has become a powerhouse for renewable energy generation in the 21st century. The Region generates large scale and commercial energy from waste projects, solar farms and wind turbines. This project is specifically aligned to the **sustain** and **build** objective as it would allow sheep grazing to continue within the project site and by proposing a renewable energy generation project.

The project would include the following key components:

- Construction activities including:
    - Site clearing
    - Minor earthworks
    - Establishment of temporary site access roads
    - Minor road grading on Tallagandra Lane
    - Construction of the solar farm

- Operational structures and works including:
  - Photovoltaic (PV) solar modules on a single-axis tracking system mounted on steel piles
  - Approximately 22 containerised power conversion stations, containing electrical switchgear, inverters and transformers
  - An electrical switchyard and substation that would be connected to the existing 132 kilovolt (kV) TransGrid transmission line that traverses the Site
  - DC and AC cabling for electrical reticulation
  - A control building including office, supervisory control and data acquisition (SCADA) systems, operation and maintenance (O&M) facilities, staff amenities, and associated carpark
  - Two meteorological stations
  - Internal all-weather access tracks
  - Security fencing
  - Landscaping
  - Subdivision of Lot 209 DP754908 to create a new lot for the proposed substation.

2.0 Information gathering

2.1 Site location and zoning

2.1.1 Location

The project is proposed to be located on existing farmland in Sutton, NSW, within the Yass Valley Council LGA, approximately 3.5 kilometres northeast of the ACT border. The Site is accessible via the partially sealed Tallagandra Lane from the east via Mulligans Flat Road. This site is also accessible via Murrumbateman Road and Tallagandra Lane from the north.

The Site is approximately 370 hectares in size, of which approximately 190 hectares would be occupied by the solar farm and associated infrastructure (the development envelope).

The Site is located across the following lots:

- Lot 1 DP198933
- Lot 10 DP754908
- Lot 15 DP754908
- Lot 54 DP754908
- Lot 97 DP754908
- Lot 111 DP754908
- Lot 161 DP754908
- Lot 182 DP754908
- Lot 189 DP754908
- Lot 190 DP 754908
- Lot 202 DP754908
- Lot 209 DP7549088

The landowner of these lots will lease the land to the proponent during the life of the project.

The Site also includes a number of paper roads, being unformed Crown roads located adjacent to the boundaries of several of the above lots.

Tallagandra Lane, which runs in a northwest-southeast direction, divides the lots in the southern portion of the Site (Figure 1).

2.1.2 Zoning

The *Yass Valley Council Local Environment Plan 2013* (LEP) governs land use within the Yass Valley Local Government Area (LGA). The project is located on land zoned RU1 - Primary Production, under this LEP. The objectives of the RU1 zone include the following:

- To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.
- To encourage diversity in primary industry enterprises and systems appropriate for the area.
- To minimise the fragmentation and alienation of resource lands.
- To minimise conflict between land uses within this zone and land uses within adjoining zones.
- To maintain areas of high conservation value vegetation.
- To protect and enhance the water quality of receiving watercourses and groundwater systems and to reduce land degradation.

The primary objective of the RU1 zone is to encourage primary production. Electricity generating works are not listed as permissible with consent under the LEP, but are permissible with consent under *State Environmental Planning Policy (Infrastructure) 2007* (the ISEPP), which governs the permissibility of this project.

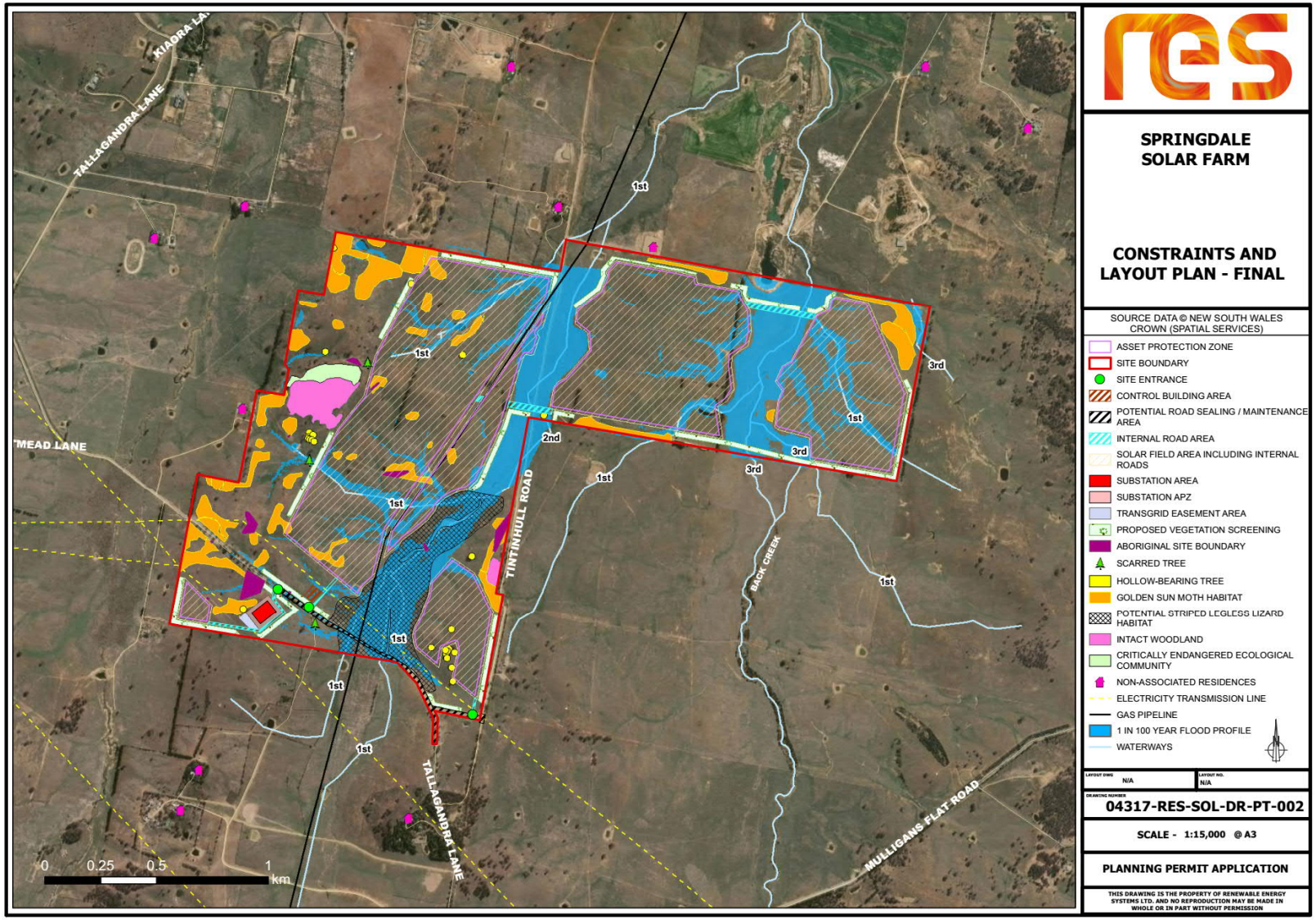

Figure 1 Site layout and constraints

2.2 Site history and land use

The Site is greenfield, comprising large paddocks used predominantly for grazing sheep and cattle. With the exception of a seven-hectare patch of woodland in the western portion of the Site (lots 189 and 190), the Site is largely cleared, with some scattered trees and rows of trees along fence lines. The topography is gently undulating with minor knolls and ridges. The Site contains a small number of dams and various tributaries that drain into Back Creek, which flows towards the northeast and eventually discharges into the Yass River.

There are no residential dwellings or other major structures within the Site. The Site is fenced into paddocks with barbed wire and wooden fencing.

Two large overhead electricity transmission lines traverse the southern portion of the Site in a northwest-southeast direction. The transmission lines are both TransGrid owned and operated assets and are comprised of the Canberra to Capital Wind Farm 330 kV circuit and the Canberra to Queanbeyan 132 kV circuit. The project is proposing to connect to the 132 kV circuit (feeder 977) via an onsite substation under the transmission line. A buried gas pipeline also runs through the Site in a southwest-northeast direction.

2.3 Surrounding land use

The primary surrounding land uses consist of agricultural and grazing activities on lots that are significantly cleared of vegetation so as to be used for that purpose, albeit with sporadic and small pockets of remnant bushland and isolated paddock trees. Historically, surrounding lots have been large-scale rural agricultural land holdings, with the majority of surrounding dwelling houses being established in the last decade. Thus currently, surrounding properties also feature a number of rural-residential buildings including dwelling houses and sheds. Notably in addition to the rural-residential land uses, the Kiaora Park Pet Care centre is located approximately 850 metres north-west (as the crow flies) of the Site boundary.

Satellite imagery shows that historically, a quarrying operation existed immediately to the north of the proposed site boundary for the project. It is understood that this quarry is abandoned and inactive.

Another smaller quarry is present to the south of the Site. YVC has indicated that quarrying is only undertaken at this location on an intermittent basis as required for infrastructure projects, though it has been inactive for several years. It is noted that the general operations of a quarry are significantly more works-intensive that what would be required for a solar farm.

More broadly, the Yass Valley Council LGA occupies around 4,000 km^2 of land in south-eastern NSW with Yass as its main town centre. Yass is approximately 40 kilometres northwest of the Site, with Canberra being the Site's nearest major settlement, approximately 22 kilometres to the southwest. Sutton is the nearest village, approximately 8 kilometres to the southeast. Sutton includes a store, primary school and sporting facilities. Sutton is supported by a local Community Association (Sutton and District Community Association). Other townships and villages within the LGA include Gundaroo, Murrumbateman, Binalong, Bookham, Bowning and Wee Jasper. It is estimated that around half of the LGA's work force commutes to the ACT.

The Yass Valley Council LGA has a population of approximately 16,000 as recorded in the 2016 Census, which has been steadily increasing over the past decade (ABS, 2016). The population density is 0.04 persons per hectare, reflecting its largely undeveloped, rural setting (ABS, 2016). The region was originally inhabited by the Ngunnawal people as early as 20,000 years ago (Yass Valley Council, 2014a).

The wider region is dominated by cool climate wineries east of the Murrumbidgee River and sheep and wool production in the north and west (Yass Valley Council, 2017). In 2010/11 the total value of agricultural output in the LGA was $63 million which increased from $55 million in 2005/6. The largest commodity produced was livestock products, which accounted for 46.7% of the LGA's total agricultural output in value (ABS, 2011).

2.4 Proposed land use

It is proposed to change the existing primary land use of the Site from agricultural/grazing land to electricity generating works through the development of a solar farm, although sheep grazing would still be able to continue. The main activities are outlined in **Section 1.3**. It is not proposed to change the land use zoning of the proposed solar farm, as the development is permissible on the existing land use zoning (RU1).

2.4.1 Compatibility with surrounding land uses

The development of the proposed solar farm would change the existing land use within the Site from agricultural to electricity generating works, making it inconsistent with surrounding agricultural and grazing land uses. It should be noted however that a lack of consistency with surrounding land uses does not mean that the land use is incompatible with other land uses - that is, that they cannot exist together without conflict. To understand the compatibility of the proposed solar farm with surrounding land uses in this location, it is important to understand the relevant environmental and amenity issues arising from the solar farm that have the potential to affect adjacent and nearby land uses. These have been considered below.

Visual

A total of seventeen visual receptor locations were identified within the zone of theoretical visibility in the EIS prepared for the project. These viewpoints were selected to represent typical views of the solar farm for the proposed assessment of potential impacts on views. Impacts to those receptors were assessed for construction and operation of the project.

The majority of construction activities which would result in physical changes to the landscape are generally temporary in nature.

While minor levelling and grading may be undertaken to achieve more consistent gradients, the areas of disturbance would be rehabilitated, and the surrounding groundcover would be retained. Areas of earthworks would be subject to dust control measures that would aim to minimise any airborne dust that could affect local visibility.

The majority of construction activities would be unlikely to result in an unacceptable level of visual impact due to the relatively short duration (approximately twelve months) and temporary nature of the works.

In terms of operational impacts, the significance of the visual impacts were assessed as high for one residence, high-moderate for two residences, moderate for three residences, moderate-low for two residences, low for three residences, and negligible for three residences. The visual impact to road users of Tallagandra Lane was assessed as moderate.

While the solar farm would be visually prominent from some visual receivers, appropriate mitigation and management measures have been integrated into the project and are proposed as part of development to reduce visual impacts and allow the solar farm to integrate better within the existing landscape. This includes sensitive siting of panels and other infrastructure (e.g. generally away from ridgelines) to reduce the overall zone of theoretical visibility of the project and the preparation and refinement of a landscape plan including screening vegetation in consultation with the most affected visual receptors.

Surface water flow

Potential impacts to surface waters could occur during the construction phase as a result of exposure of soils during earthworks which may result in erosion and mobilisation of sediment into watercourses and contamination due to accidental spillages of chemicals used in the construction process.

Surface water falling on the site generally drains towards one of two waterways. In general, the gentle slope of the Site and its existing grass cover means that sheet and gully erosion is low. It is however recognised that runoff from this and surrounding agricultural land in the region is substantially greater than that from the moderately wooded landscape that has replaced over the past 220+ years.

The existing runoff characteristics of the Site would be maintained throughout the operation of the solar farm. This would be achieved primarily through maintaining adequate grass cover beneath the solar arrays. During operation the runoff characteristics of the Site would be monitored. Should runoff

regularly exceed that of the pre-development Site appropriate controls would be implemented. These may include the establishment of dams, vegetation, retention basins, infiltration trenches or swales.

Future land use capability

The estimated inherent soil fertility for the Site varies from moderately low to moderate from east to west. A search of Biophysical Strategic Agricultural Land (BSAL) areas returned no results within 30 kilometres of the Site. The closest BSAL is located approximately 40 km to the east.

During operation, the Site would be modified from the present land use for a period of approximately 35 years. Whilst current cattle grazing activities would be taken out of production, the grazing of sheep may continue to occur underneath and between the solar arrays. The grazing of sheep would allow the agricultural land use to continue and would provide fire and weed management benefits through reducing and maintaining pasture growth. It is also noted that such grazing practices would provide beneficial outcomes for the maintenance of habitat for some native species and ecological communities, such as the golden sun moth and natural temperate grassland especially within the sections of the Site that would not be used for the solar array. This area is within the western area of the site, which also serves as a habitat area for the golden sun moth.

Noise

Construction activities are predicted to comply with the recommended noise management levels at most receiver locations with the exception of five receivers, during certain construction stages only. An exceedance of up to 11 dB(A) has been predicted during the site establishment stage at those receivers. During the piling/foundations stage exceedance of up to 10 dB(A) have been predicted at two of those receivers. Exceedances of up to 4 dB(A) are predicted at the same two receivers during the assembly stage. The construction noise model incorporated a number of conservative assumptions with actual noise levels likely to be lower in reality.

Background noise surrounding the project is likely reflective of the its location within a rural setting. The loudest source of noise within the area would likely be from heavy vehicle or heavy plant movements, while the most consistent noise sources would likely be from wind, wild animal calls, domestic animal calls and light vehicle movements.

A total of 35 residential dwellings were identified as sensitive receivers with the closest receiver being approximately 35 metres to the north of the project. The predicted operational noise levels comply with the most stringent (evening time) operational noise criteria at all locations except for a new receptor that has been constructed since the preparation of the EIS. This receptor may be subject to minor exceedances of the very low operational noise criterion. The operational noise criterion is 36 dB(A), with noise levels at this receptor likely to be around 41 dB(A), which is still extremely low. The proponent will continue to investigate methods to manage operational noise impacts for this receptor throughout the detailed design stage. It is expected that the inverters (which are the dominant noise sources), would operate at a reduced load in the evening compared to during the daytime and as such the noise emission levels would also be reduced.

Traffic generation

The Site is located off Tallagandra Lane in Sutton, NSW and can be accessed from the Federal Highway via Sutton Road. In general, private properties surrounding and in the vicinity of the Site are rural in nature, with some comprising a dwelling. It is understood that the vast majority or transport to and from these properties is by private vehicle, with the exception of school bus services that are known to use Tallagandra Lane.

Traffic and transport impacts during operation would be negligible with approximately 10 additional light vehicle movements per day.

Summary

Potential adverse impacts due to the operation of the proposed solar development would include a change in the use of the land (whilst maintaining an agricultural use in the form of sheep grazing) and a change in landscape character and visual amenity for visual receptors.

Whilst the project would not remove agricultural practices from the Site it is anticipated that the type and intensity of livestock on the Site would change. This change is not considered to be a significant impact in the context of agricultural activity across the wider Yass Valley.

Upon decommissioning, solar infrastructure would be removed and the Site would be returned to a condition near to its current state, which would be suitable for future agricultural activities such as grazing.

Given the benign nature of the project including low dust and vehicle emissions and noise, with appropriate mitigation measures, the operation of the project is anticipated to be compatible with adjacent land uses.

3.0 Land use conflict risk assessment

3.1 Introduction

The LUCRA process uses a "probability and consequence" matrix to estimate the potential for land use conflict. It assesses the environmental, public health and amenity impacts according to the:

- probability of occurrence
- consequence of the impact.

The risk ranking matrix used by the Land Use Conflict Risk Assessment Guide has been reproduced below in **Table 3-1**.

Table 3-1 Risk ranking matrix

Probability	A	B	C	D	E
Consequence					
1	25	24	22	19	15
2	23	21	18	14	10
3	20	17	13	9	6
4	16	12	8	5	3
5	11	7	4	2	1

The risk ranking matrix provides a risk ranking from 25 to 1. It covers each combination of five levels of 'probability' (a letter A to E as defined in **Table 3-2**) and five levels of 'consequence' (a number 1 to 5 as defined in **Table 3-3**) to identify the risk ranking of each impact. For example, an activity with a 'probability' of D and a 'consequence' of 3 creates a risk rank of 9.

Table 3-2 Probability table descriptions

Level	Descriptor	Description
A	Almost certain	Common or repeating occurrence
B	Likely	Known to occur, or 'it has happened'
C	Possible	Could occur, or 'I've heard of it happening'
D	Unlikely	Could occur in some circumstances, but not likely to occur
E	Rare	Practically impossible

Table 3-3 Consequence table descriptions

Level	Descriptor	Description
1	Severe	• Severe and/or permanent damage to the environment Irreversible • Severe impacts on the community • Neighbours are in prolonged dispute and legal action involved.
2	Major	• Serious and/or long-term impact to the environment • Long-term management implications • Serious impact on the community • Neighbours are in a serious dispute

Level	Descriptor	Description
3	Moderate	• Moderate and/or medium-term impact to the environment and community • Some ongoing management implications • Neighbour disputes occur
4	Minor	• Minor and/or short term- impact to the environment and community • Can be effectively managed as part of normal operations • Infrequent disputes between neighbours
5	Negligible	• Very minor impact to the environment and community • Can be effectively managed as part of normal operations • Neighbour disputes unlikely

3.2 Initial risk evaluation

This section details:

- The activity that may cause a conflict
- The potential conflict arising from that activity
- Risk rating without mitigation or management measures.

A list of the potential sources of conflict arising from the project have been developed and are presented in **Table 3-4** below.

Table 3-4 Initial risk evaluation

Activity	Identified potential conflict	Unmitigated risk ranking
Construction	Generation of dust affecting human health, animal health and viability of grazing activities	17
Construction	Erosion of land and sediment run off onto neighbouring properties, particularly during rain events that alters the topography of that land and requires works to be carried out that would rectify the issue. This may also affect agricultural productivity on neighbouring properties.	17
Construction	Exceedance of noise management levels on a frequent basis, affecting human amenity	13
Construction	Spread of high-threat weeds into neighbouring properties	18
Construction	Contamination or sedimentation of watercourses resulting in a degradation of watercourse health and quality, in-turn affecting the health of neighbouring livestock using it as a water source	13
Construction	Increased heavy vehicle movements resulting in road safety issues for livestock and other vehicles	14
Construction	Degradation of local access roads through consistent heavy vehicle movements, resulting in road conditions that may cause damage to other vehicles or compromise road safety	13

Activity	Identified potential conflict	Unmitigated risk ranking
Operation	Potentially adverse impacts upon the existing visual amenity of surrounding residents and road users	23
Operation	Reduction in productivity of the region for agricultural activities through decreasing the extent of land available for grazing	8

3.3 Risk reduction controls

As per the Land Use Conflict Risk Assessment Guide (Department of Primary Industries, 2011) the process of risk reduction aims to identify management strategies that affect the probability of an event occurring, such as the implementation of certain procedures; new technology or scientific controls that might lower the risk probability values.

It is also appropriate to look at management strategies which affect consequences e.g. supply staff with a mechanism to change impacts or establish better communication procedures. Such matters can sometimes lower negative consequences.

The objective of risk reduction controls is to lower the risk ranking score to 10 or below.

A revised risk evaluation for the potential sources of conflict arising for the project is provided below in **Table 3-5**..

Table 3-5 Revised rink rankings

Activity	Identified potential conflict	Existing risk rating	Management strategy	Revised risk ranking
Construction	Generation of dust affecting human health, animal health and viability of grazing activities	17	• Use water trucks for dust suppression throughout the construction and decommissioning phases particularly in the vicinity of adjacent residential dwellings. • All disturbed areas shall be re-vegetated as soon as practicable to minimise exposed areas • Vehicle speed limits shall be controlled to minimise dust from vehicle movement	9
Construction	Sediment run off onto neighbouring properties, particularly during rain events, altering the topography of the land	17	Prepare and Erosion and Sediment Control Plan (ESCP) in accordance with *Managing Urban Stormwater: Soils and Construction* (Landcom, 2004). This plan should be implemented in advance of site disturbance and be updated as required as work progresses. The ESCP would include, at minimum, the following provisions: • install erosion and sediment controls prior to and during construction • regularly inspect and maintain erosion and sediment controls, particularly following large rainfall/wind events • ensure vehicles, plant and equipment leave the Site in a clean condition to minimise mobilisation of sediment onto adjacent roads • soil handling and stockpiling procedures • identify exclusion zones to limit disturbance • stabilise and rehabilitate disturbed areas as soon as practicable • procedures for the testing, treatment and discharge of construction wastewater to be established and implemented where appropriate.	9
Construction	Exceedance of noise management levels on a frequent basis, affecting human and animal amenity	13	Preparation of a Noise Management Plan that specifies: • appropriate plant and equipment should be selected for each task to minimise the noise contributions • turn off plant that is not being used where practicable • ensure plant is regularly maintained, and repair or replace equipment that becomes more noisy • noisier activities to be scheduled during less noise sensitive periods • use non-tonal reversing alarms where practicable • wherever feasible, turning circles should be created at the end points of vehicle work legs, which should allow trucks to turn and avoid the need for reversing • emphasis should be placed during driver training and site induction sessions on the potential adverse impact of reversing alarms and the need to minimise their use. Incorporate barriers, attenuators, acoustic louvres and mufflers as best practicable. Consult with sensitive receivers that have been identified as likely to experience noise levels exceeding the noise management levels for the project prior to, during and after construction Installation of noise walls to attenuate noise generated from inverters in the operational phase.	8
Construction	Spread of high threat weeds to neighbouring properties	18	To prevent the spread of weed seed, all weed material removed should be disposed of in a suitable waste facility and not mulched on site. This is to avoid the reintroduction and further spread of weeds in the area. Weed management should be undertaken in accordance the *Biosecurity Act 2015*: • **General Biosecurity Duty**: All plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable. In addition, machinery should be washed between sites following best practice hygiene protocols to prevent the spread of weed seed, pathogens and fungi. Hygiene protocols should be in accordance with the *Biosecurity Act 2015*. Vehicles and personnel would not enter neighbouring properties	8

Construction	Contamination or sedimentation of watercourses resulting in a degradation of watercourse health and quality, in-turn affecting the health of neighbouring livestock using it as a water source	13	An ESCP would be prepared as per the mitigation measures for sediment run off. Further, the project's construction environmental management plan would be prepared, which among other things would ensure: • all retained farm dams and associated drainage infrastructure to be maintained in a functional condition • incidental spills would be intercepted by active spill management practices • storage of hazardous materials such as oils, chemicals and refuelling activities would occur in bunded areas • all works within waterfront land (as defined in the WM Act) to be undertaken in accordance with the Controlled Activities on Waterfront Land guidelines (DPI 2012). • procedures for the testing, treatment and discharge of construction wastewater to be established and implemented where appropriate. • groundcover to be re-established as soon as practicable on disturbed areas • installation of any permanent scour protection measures required for the operational phase as soon as practicable • all construction staff to be engaged through toolbox talks or similar with appropriate training on water management practices	9
Construction	Increased heavy vehicle movements causing safety issues including striking people, livestock and other vehicles	14	Preparation of a Traffic Management Plan in consultation with Yass Valley Council, Transport for NSW prior to construction that covers: • programs for monitoring road traffic conditions, to repair damage exacerbated by construction traffic • the designated routes of construction traffic to the Site • carpooling and shuttle bus arrangements to minimise vehicle numbers throughout construction and decommissioning • consideration for cumulative impacts with any nearby developments • scheduling delivery of major components where possible to minimise safety risks to other road users including avoiding major deliveries during school pick-up and drop-off times • temporary traffic controls such as signage, speed restrictions and traffic safety flagmen as necessary to ensure safety of all road users and the public. • procedure for monitoring traffic impacts and adapting controls to minimise impacts traffic risks. Implementation of a communication and consultation strategy with stakeholders including Transport for NSW, emergency services, local stakeholders (landholders and business owners) regarding changes to roads uses during construction and decommissioning. Transport for NSW and Yass Valley Council should also be consulted on the access route, particularly regarding the delivery of the transformer to the Site. Implementation of a complaints management system as part of the Construction Environmental Management Plan for the project to ensure any community concerns regarding traffic are addressed effectively and promptly	8
Construction	Degradation of local access roads through consistent heavy vehicle movements, resulting in road conditions that may cause damage to other vehicles or lead to road accidents	13	Damage to road pavement on local roads. In selecting the proposed routes for the delivery of materials, the proponent has considered the nature of existing road surfaces, as well as the potential impact of project vehicles. The selected route generally travels along large regional, sealed arterial roads which are designed to handle such vehicles. Ongoing maintenance of the unsealed section of Tallagandra Lane would be undertaken as required throughout construction.	9
Operation	Amenity issues arising from views of the solar farm in its current agriculturally dominant landscape	23	The landscape plan for the project will be prepared in consultation with the most affected visual receptors and other stakeholders. This plan would be implemented during the construction phase and provide visual attenuation throughout the operational lifespan of the project for those receivers and stakeholders. The project has been designed to reduce its zone of theoretical visibility (ZTV) to reduce the impact on the local area. The following would be further considered as part of the detailed design of the project: • refinement in the design and layout which may assist in the mitigation of bulk and height of proposed structures • a review of materials and colour finishes for selected components in keeping with the surrounding landscape including the use of non-reflective finishes to structures.	8
Operation	Reduction in productivity of the land for agricultural activities through decreasing the extent of land available for grazing	8	Preparation and implementation of an Operational Environmental Management Plan (OEMP) to reduce the impact of the proposed project on: • land and soil capability within the Site • neighbouring agricultural operations • regional biosecurity (pest and weed management)	5

			• erosion The OEMP would cover: • sheep grazing as a means of vegetation maintenance and weed control throughout the life of the project • restricting vehicle movements to formed access tracks. • maintaining ground cover beneath the PV solar panels to manage erosion, weed infestation and surface water runoff. • procedures for waste materials to be removed from the site regularly and the site kept in a clean and orderly condition in order to deter potential pest animals. • a targeted pest management program (as necessary). The Site would be rehabilitated to its original condition as far as reasonably practicable following the decommissioning of the Site.	

3.4 Performance monitoring

The performance of the proposed mitigation and management measures would be evaluated through a process of internal auditing and consultation with affected receivers and stakeholders. These audits and consultation activities would be undertaken in accordance with the mitigation measures outlined in the EIS, as well as the environmental management plans prepared for construction. These plans describe how various activities would be undertaken and detail measures to reduce their impacts to the environment and to sensitive receivers. These plans include:

- Construction Environmental Management Plan
- Biodiversity Management Plan
- Aboriginal Cultural Heritage Management Plan
- Landscape Plan
- Erosion and Sediment Control Plan
- Noise Management Plan
- Traffic Management Plan
- Bushfire Management Plan
- Waste Management Plan
- Decommissioning Environmental Management Plan.

Throughout the construction, operational and decommissioning phases of the project, the activities within those phases would be checked against the commitments of the EIS, the conditions of consent and relevant environmental management plans by a suitably qualified environmental practitioner with view to compliance with these at all times. in doing so the proponent seeks to reduce the extent of amenity impacts to neighbouring properties and affected stakeholders, in-turn reducing the potential for a land-use conflict.

In addition to the above, consultation would be undertaken throughout construction, operation and decommissioning to ensure that the community and relevant agencies have the opportunity to voice their concerns. Reasonable and practical efforts would be made to ensure that these concerns are addressed at the earliest possible opportunity.

The proponent proposes to implement the following broad targets with regard to mentoring the performance of measures aimed at reducing land use conflict:

- full compliance with relevant legislation, commitments made in the EIS, conditions of consent and relevant environmental management plans throughout construction, operation and decommissioning activities
- availability of contact details on the Project website at all times
- contact made with relevant stakeholders or community members within three business days of receiving a complaint, with a view to swift resolution.

4.0 Conclusions and recommendations

Whilst this LUCRA has identified several potential sources of land use conflict It is recognised that the development would allow nearby existing land-uses to continue largely unaffected. The potential for land use conflict is considered to be manageable, especially in light of the mitigation/management measures and environmental management plans that will be implemented to manage amenity and other off-site impacts.

The primary potential sources of land use conflict predicted for the project are a result of amenity impacts arising from the construction and operational phases of the project. These include:

- construction works:
    - generation of dust
    - erosion of land and sediment run off
    - noise
    - spread of noxious weeds
    - contamination or sedimentation of watercourses
    - heavy vehicle movements causing safety issues and damaging roads.
- operational:
    - landscape impacts
    - reduced productivity of the land for agricultural and grazing activities

With the application of relevant mitigation measures, each of the potential sources of conflict are considered to be low, with the exception of visual amenity impacts. In this case the initial high-end potential conflict has been reduced to a low-middle conflict with the application of relevant mitigations. This is based on the fact that the solar farm would remain visible for some receptors despite screening vegetation proposed around the perimeter. This potential conflict is however expected to ease over time for most receptors as screening vegetation matures and people become accustomed to the development.

The mitigation measures proposed in this LUCRA have been largely sourced from the project EIS. They are specific, easily understood, easily designed and relatively easy to implement by the proponent. The measures are proven and common methods for reducing potential amenity impacts from large construction projects.

The implementation of various treatments and measures outlined in this LUCRA, especially with regard to noise and visual attenuation measures, would allow the project to integrate well with the surrounding landscape and to avoid significant land use conflict.